HP iLO 3 Scripting and Command Line Guide

Abstract

This document describes the syntax and tools available for use with the HP iLO firmware through the command line or a scripted interface. This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

Use this guide for HP iLO ProLiant servers and ProLiant BladeSystem server blades. For information about iLO for Integrity servers and server blades, see the HP website at http://www.hp.com/go/integrityiLO.

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Warranty

HP will replace defective delivery media for a period of 90 days from the date of purchase. This warranty applies to all Insight Management products.

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1 Introduction

Scripting and command line guide overview

HP iLO 3 provides multiple ways to configure, update, and operate HP ProLiant servers remotely. The *HP iLO User Guide* describes each feature and explains how to use these features with the browser-based interface and RBSU. For more information, see the *HP iLO User Guide* on the HP website at http://www.hp.com/go/ilo3 and click More iLO Documentation.

The *HP iLO Scripting and Command Line Guide* describes the syntax and tools available to use iLO 3 through a command line or scripted interface.

Sample XML scripts downloaded from the HP website contain commands for all iLO firmware. Unless otherwise specified, the examples in this guide are for iLO 3 firmware version 1.61 and later. Before using the sample scripts, review the firmware support information in each script to tailor the script for the intended firmware and version. Download the sample scripts from the HP website at http://www.hp.com/go/iLO3. Click **HP iLO Sample Scripts for Windows** or **HP Lights-Out XML Scripting Sample for Linux** under **Helpful Downloads**.

Throughout this manual, iLO 3 is referred to as iLO.

In addition to the GUI, the iLO firmware provides multiple ways to configure and control iLO and the server using scripts and command line instructions.

The scripting tools provide a method to configure multiple iLO systems, to incorporate a standard configuration into the deployment process, and to control servers and subsystems. Using the scripting tools enables you to:

- Change the Administrator password on all your iLO systems
- Configure LDAP directory service settings
- Control the server power state
- Attach a virtual media CD/DVD to the host server
- Update the iLO firmware
- Retrieve power consumption data
- Issue various configuration and control commands

The command line tools provide quick and easy methods to send commands to the iLO firmware and host servers.

Scripting and command line utilities

This section describes the following scripting and command line tools:

- HPQLOCFG.EXE
- LOCFG.PL
- HPONCFG.EXE
- SMASH CLP
- IPMI

The current version of iLO 3 requires upgrades to the following utilities:

Table 1 HP iLO 3 1.61 scripting and command line utilities required versions

Utility	Version	Version notes for iLO 3 1.61
HPQLOCFG	1.0	HP Lights-Out Configuration Utility. This replaces the CPQLOCFG utility.
HPONCFG	4.2.0	To use this version of the HP Lights-Out Online Configuration Utility you must also upgrade your Channel Interface Driver (CHIF) to version 3.9.0.0.
LOCFG.PL	4.20	This utility is available in the HP Lights-Out XML Scripting Sample 4.2.0 bundle.
HPLOMIG	4.2.0	Update to this version of HPLOMIG before installing the iLO 3 1.61 update.
CPQLOCFG	4.11	This utility is being phased out.

NOTE: Upgrades are required only for the utilities you use. Continuing to use utilities without the update will cause the following inform message to appear:

```
Scripting utility should be updated to the latest version.
```

HPQLOCFG Utility

The HP Lights-Out Configuration Utility (HPQLOCFG.EXE) utility replaces the previously used CPQLOCFG.EXE utility. HPQLOCFG is a Windows command line utility that sends XML configuration and control scripts over the network to iLO. Run this utility manually from a Windows command prompt, or create a batch file to run the same script to many iLO devices.

The tool accepts properly formatted XML scripts containing commands and values; see the XML scripts in the *iLO Sample Scripts for Windows* or the *HP Lights-Out XML Scripting Sample for Linux* for examples of proper formatting. All available commands are detailed later in this guide. HPQLOCFG also integrates with HP SIM for easy launching of the same script on multiple devices.

LOCFG.PL Script

The LOCFG.PL scripting utility is a PERL script that provides similar functionality as the HPQLOCFG utility. Run this tool on any client that has a compatible PERL environment (including OpenSSL) installed. This tool uses the same XML scripts as HPQLOCFG input files.

HPONCFG Utility

Use the HPONCFG.EXE utility to send XML configuration and control scripts (the same scripts as HPQLOCFG) from the server host operating system to iLO. HPONCFG has both Windows and Linux versions. One common usage is to run an HPONCFG script to configure iLO to a standard configuration at the end of your server deployment process. HPONCFG integrates with HP RDP and also runs at the end of an unattended OS installation.

When you run HPONCFG from the host operating system, you must be logged in to the host server using an Administrator or root level user account. An iLO user ID and password is not required.

Windows server operating systems also have the HPONCFG_GUI.EXE utility. This utility provides the same basic configuration capabilities as the iLO F8 ROM-RBSU during the server boot-up process.

SMASH CLP

SMASH CLP is the DMTF suite of specifications that deliver industry-standard protocols and profiles to unify the management of the data center. The SMASH CLP specification enables simple and intuitive management of heterogeneous servers in a data center.

SMASH CLP provides a standardized set of commands for configuration and control of management processors (called Management Access Points) and host systems. On iLO, access SMASH CLP through the SSH port.

IPMI

The IPMI specification is a standard that defines a set of common interfaces to a computer system. System administrators can use IPMI to monitor system health and manage the system. IPMI 2.0 defines a mandatory system interface, and an optional LAN interface. The iLO processor supports both interfaces.

The IPMI specification defines a standardized interface for platform management. The IPMI specification defines the following types of platform management:

- Monitors the status of system information, such as fans, temperatures, and power supplies
- Recovery capabilities, such as system resets and power on/off operations
- Logging capabilities for abnormal events, such as over-temperature readings or fan failures
- Inventory capabilities, such as identifying failed hardware components

IPMI commands are sent to iLO using a third-party or open source utility, such as IPMITOOL, IPMIUTIL, OpenIPMI or FreeIPMI.

You must be familiar with IPMI specifications when issuing raw commands. For additional information, see the IPMI specification on the Intel website at http://www.intel.com/design/servers/ipmi/tools.htm.

New in this version

This guide reflects changes in the iLO 3 firmware. This guide covers iLO 3 version 1.60 and later.

The following updates or additions were made:

- New command GET_ALL_LICENSES
- Modified MOD_NETWORK_SETTINGS command and return messages
- Modified MOD_GLOBAL_SETTINGS command and return messages
- Modified GET_NETWORK SETTINGS command
- New command GET_PRODUCT_NAME
- Modified GET_EMBEDDED HEALTH command
- New command SET_PERS_MOUSE_KEYBOARD
- New command GET_PERS_MOUSE_KEYBOARD
- Added information about RIBCL version matching
- Modifed SERVER_AUTO_PWR command
- Added information about properly combining multiple commands in one script

HP Insight Control server deployment

HP Insight Control server deployment integrates with iLO to enable the management of remote servers and to monitor the performance of remote console operations, regardless of the state of the operating system or hardware.

The deployment server provides the capability to use the power management features of iLO to power on, power off, or cycle power on the target server. Each time a server connects to the deployment server, the deployment server polls the target server to verify the presence of a LOM management device. If installed, the server gathers information, including the DNS name, IP address, and user login name. Security is maintained by requiring the user to enter the correct password for that user name.

For more information about the HP Insight Control server deployment, see the documentation that ships on the HP Insight software DVD, or the HP website at http://www.hp.com/go/insightcontrol.

2 HPQLOCFG usage

The HPQLOCFG.EXE utility is a Windows-based utility that connects to iLO using a secure connection over the network. RIBCL scripts are passed to iLO over the secure connection to HPQLOCFG. This utility requires a valid user ID and password with the appropriate privileges. Launch the HPQLOCFG utility from HP SIM for Group Administration, or launch it independently from a command prompt for batch processing.

Download this utility from the HP website at: http://www.hp.com/support/ilo3.

Version 1.0 or later of HPQLOCFG is required to support all features of iLO 3 v1.60.

HP SIM discovers iLO devices as management processors. HPQLOCFG sends a RIBCL file to a group of iLO devices to manage the user accounts for those iLO devices. The iLO devices then perform the action designated by the RIBCL file and send a response to the log file.

Use HPQLOCFG to execute RIBCL scripts on iLO. HPQLOCFG must reside on the same server as HP SIM. HPQLOCFG generates two types of error messages; runtime errors, and syntax errors.

- Runtime errors occur when an invalid action is requested. Runtime errors are logged to the following directory:

  ```
  C:\Program Files\HP\Systems Insight Manager\
  ```

- Syntax errors occur when an invalid XML tag is encountered. When a syntax error occurs, HPQLOCFG stops running and logs the error in the runtime script and output log file. Syntax errors use the following format:

  `Syntax error: expected X but found Y.`

  For example:

  ```
  Syntax error: expected USER_LOGIN=userlogin
                but found USER_NAME=username
  ```

Configuring for unauthenticated XML queries

If configured to do so, the iLO device returns identifying information in response to an unauthenticated XML query. By default, the iLO device is configured to return this information.

To disable this feature, set the CIM_SECURITY_MASK in the `MOD_SNMP_IM_SETTINGS` command to disable unauthenticated XML query return information.

You can also disable the unauthenticated XML query information through the iLO web interface:

1. Go to **Administration→Management**.

   The **Management** page appears.

2. Under the **Insight Management Integration** heading, click the menu for the **Level of Data Returned** option.

   There are two options in the menu:

   - 1) Enabled (iLO+Server Association Data)
   - 2) Disabled (No Response to Request)

3. Select 2) Disabled (No Response to Request) to disable unauthenticated XML query return information

NOTE: You must have unauthenticated XML query enabled if you are performing device discoveries with HP SIM.

To obtain unauthenticated identifying information, enter the following command to the iLO web server port:

https://*<iloaddress>*/xmldata?item=all

Alternatively, you can select option **1) Enabled (iLO+Server Association Data)** from iLO.

A typical response is:

```
<RIMP>
<HSI>
<SBSN>ABC12345678</SBSN>
<SPN>ProLiant BL460c Gen8</SPN>
<UUID>BL4608CN71320ZNN</UUID>
<SP>0</SP>
<cUUID>36344C42-4E43-3830-3731-33305A4E4E32</cUUID>
<VIRTUAL>
<STATE>Inactive</STATE>
<VID>
<BSN/>
<cUUID/>
</VID>
</VIRTUAL>
<PRODUCTID>BL4608-101</PRODUCTID>
<NICS>
<NIC>
<PORT>1</PORT>
<MACADDR>00:17:a4:77:08:02</MACADDR>
</NIC>
<NIC>
<PORT>2</PORT>
<MACADDR>00:17:a4:77:08:04</MACADDR>
</NIC>
<NIC>
<PORT>3</PORT>
<MACADDR>00:17:a4:77:08:00</MACADDR>
</NIC>
<NIC>
<PORT>4</PORT>
<MACADDR>9c:8e:99:13:20:cd</MACADDR>
</NIC>
<NIC>
<PORT>5</PORT>
<MACADDR>9c:8e:99:13:20:ca</MACADDR>
</NIC>
<NIC>
<PORT>6</PORT>
<MACADDR>9c:8e:99:13:20:ce</MACADDR>
</NIC>
<NIC>
<PORT>7</PORT>
<MACADDR>9c:8e:99:13:20:cb</MACADDR>
</NIC>
<NIC>
<PORT>8</PORT>
<MACADDR>9c:8e:99:13:20:cf</MACADDR>
</NIC>
</NICS>
</HSI>
<MP>
<ST>1</ST>
<PN>Integrated Lights-Out 4 (iLO 4)</PN>
<FWRI>1.01</FWRI>
<BBLK>08/30/2011</BBLK>
<HWRI>ASIC: 16</HWRI>
<SN>ILOABC12345678</SN>
<UUID>ILOBL4608ABC12345678</UUID>
<IPM>1</IPM>
```

```
<SSO>0</SSO>
<PWRM>3.0</PWRM>
<ERS>0</ERS>
<EALERT>1</EALERT>
</MP>
<BLADESYSTEM>
<BAY>1</BAY>
<MANAGER>
<TYPE>Onboard Administrator</TYPE>
<MGMTIPADDR>123.456.78.90</MGMTIPADDR>
<RACK>TestRACK</RACK>
<ENCL>TestRACKEnc-C</ENCL>
<ST>2</ST>
</MANAGER>
</BLADESYSTEM>
</RIMP>
```

Creating a system collection in HP SIM

To quickly see all system management processors, login to SIM and in the **System and Event Collections** panel, scroll down to and select **All Management Processors**. The **All Management Processors** page appears.

To create a custom group of all iLO devices (or by iLO version), create a system collection.

1. In the **System and Event Collections** panel, click **Customize**. The **Customize Collections** page appears.
2. In the **Show collections of** dropdown list, select **Systems**. All available system or cluster collections appear.
3. Click **New**. The New Collection section appears.
4. Select **Choose members by attributes**.
5. In the **Search for** dropdown list, select **systems** .
6. In the **where** dropdown, select **system sub type**, and select **is** from the inclusion/exclusion dropdown.
7. Select an Integrated Lights-Out choice from the system sub type dropdown at the right.
8. Click one of the following:
   - **View** — to run the search and display results immediately.
   - **Save as Collection** — to save the collection.
   - **Cancel** — to close the New Collection section without saving any changes.

Launch applications with HP SIM custom tools

Use custom tools in HP SIM to combine RIBCL, HPQLOCFG, and system collection to manage Group Administration of iLO devices. Custom tools are executed on the CMS and on target systems. You can create a remote tool that runs on selected target systems, and even schedule its execution.

For more information about custom tools, see the HP SIM help.

Batch processing using HPQLOCFG

Group Administration is also delivered to iLO through batch processing. The components needed for batch processing are HPQLOCFG, an RIBCL file, and a batch file.

The following example shows a sample batch file used to perform the Group Administration for iLO:

```
REM Updating the HP Integrated Lights-Out 3 board
REM Repeat line for each board to be updated
REM
```

```
HPQLOCFG -S RIB1 -F C:\...SCRIPT.XML -L RIB1LOG.TXT -V
HPQLOCFG -S RIB2 -F C:\...SCRIPT.XML -L RIB2LOG.TXT -V
HPQLOCFG -S RIB3 -F C:\...SCRIPT.XML -L RIB3LOG.TXT -V
.
.
.
RIBNLOG -S RIBN -F C:\...SCRIPT.XML -L LOGFILE.TXT -V
```

HPQLOCFG overwrites any existing log files.

HPQLOCFG command line parameters

For information on the syntax of the XML data files, see "RIBCL XML Scripting Language" (page 60).

Sample XML scripts are available on the HP website at www.hp.com/go/iLO3.

. Click **HP iLO Sample Scripts for Windows** or **HP Lights-Out XML Scripting Sample for Linux** under **Helpful Downloads**.

Using quote characters

The restrictions for using single and double-quote characters are based on whether they are passed to HPQLOCFG inside an XML scripts or on the command line.

Quotes inside XML scripts

When using an XML script to enter the user name and password use the double-quote (") as delimiters. However, if you must use " inside the user name or password in the XML file (if the user name or password has double quotes in it), change the outside double-quote delimeters to single quotes (').

For example, consider a username with quotes in it:

```
Sample"simple"name
```

This must be in an XML script as:

```
'Sample"simple"name'
```

NOTE: Support for Windows-specific smart-quotes (“ ” and ‘ ’) as content delimiters in XML is being phased out. Be sure to replace any smart-quote characters in your script with normal double or single quotes (`"` and `'`).

Quotes on the command line

When using HPQLOCFG or LOCFG and entering the password or command on the command line with the `-p` option, you cannot normally use the double-quote special character ("), except when using an ampersand (&) or less-than (<) symbol. To enter a password or command that uses either of these special characters, use double-quotes.

For example:

- `"admin&admin"`
- `"admin<admin"`

When using LOCFG and entering the password or command on the command line with the `-i` option, do not include double-quotes around the password.

For example:

```
admin&admin
```

```
admin<admin
```

Passwords or commands delimited with double-quotes do not work on the LOCFG command line with the `-i` option.

Command line switches

The following command line switches are available to be used with HPQLOCFG.EXE:

Table 2 HPQLOCFG command line switches

Switch	Effect
`-S`	Determines the iLO that is to be updated. This switch is followed by either the DNS name or IP address of the target server. When using IPv6 addresses, you can optionally add the port number preceded by a colon (<IPv6_address:port>). **NOTE:** Do not use this switch if you are launching from HP SIM. HP SIM automatically provides the address of the iLO when you launch HPQLOCFG.
`-F`	Full path location and name of the RIBCL file that contains the actions to be performed.
`-U`	User login name. Entering this at the command line overrides the user login name from the script.
`-P`	Password. Entering this at the command line overrides the password from the script.
`-L`[1]	Defines the log file name and file location. If this switch is omitted, a default log file with the DNS name or the IP address is created in the same directory used to launch HPQLOCFG. Ensure that HPQLOCFG is in a directory referenced by the PATH environment variable. Any log files generated are placed in the same directory as the HPQLOCFG executable. This switch cannot designate an output log filename. The default filename is based on the DNS name or the IP address. **NOTE:** Do not use this switch if launching from HP SIM. The output values may need to be modified to match the RIBCL syntax.
`-V`[1]	Enables verbose message return. The resulting log file contains all commands sent, all responses received, and any errors. By default, only errors and responses from GET commands are logged without this switch.
`-t namevaluepairs`	The `-t namevaluepairs` switch substitutes variables (`%variable%`) in the input file with values specified in name-value pairs. Separate multiple name-value pairs with a comma. See "Using variables and name value pairs with HPQLOCFG" (page 19).

[1] The `-L` and `-V` switches might or might not be set depending on the IT administrator preferences.

Using variables and name value pairs with HPQLOCFG

In Script prepared for variables you can see a sample script prepared for use with the `-t namevaluepairs` switch.

Example 1 Script prepared for variables (`Get_Asset_Tag.xml`)

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="%user%" PASSWORD="%password%">
    <SERVER_INFO MODE="read">
      <GET_ASSET_TAG/>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

To execute this script correctly, use the `-t namevaluepairs` switch on the command line:

```
hpqlocfg -f get_asset_tag.xml -s <serverip> -t user=Admin,password=pass
```

If the parameter contains multiple words, you must enclose the phrase within double quotes (" "). Up to 25 variables are supported in an XML file. The maximum length of a variable name is 48 characters.

Example 2 Web agent example (`Mod_SNMP_IM_Settings.xml`):

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="write">
   <MOD_SNMP_IM_SETTINGS>
     <WEB_AGENT_IP_ADDRESS value=%WebAgent%/>
   </MOD_SNMP_IM_SETTINGS>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

To execute this script correctly, use the `-t namevaluepairs` switch on the command line:

`hpqlocfg -s <ipV4 addr> -f <filename> -u <username> -p <password> -t <web_agent_IP_address>`

- For IPv6, without specifying the port number, invoke the script using:

  `hpqlocfg -s [<ipV6 addr>] -f <filename> -u <username> -p <password> -t <web_agent_IP_address>`

  or

  `hpqlocfg -s <ipV6 addr> -f <filename> -u <username> -p <password> -t <web_agent_IP_address>`

- For IPv6, when specifying the port number, invoke the script using the following:

  `hpqlocfg -s [<ipV6 addr>]:<portnumber> -f <filename> -u <username> -p <password> -t <web_agent_IP_address>`

When replacing a token that requires double quotes, use single quotes around the token.

3 LOCFG.PL usage

LOCFG.PL Utility

To use the LOCFG.PL utility, you must have the following PERL modules:

- `Net::SSLeay`
- `IO::Socket::SSL`

You must also have a valid iLO user account and password for each XML script to use LOCFG.PL. To process the request, your account must have the appropriate iLO privileges.

The `LOCFG.PL` script connects to iLO using an SSL connection.

For example:

```
perl locfg.pl -s {servername|ipaddress}[:port] [-l logfilename]-f
input_filename [-u username -p password] [iLO 3]
```

LOCFG.PL command line switches

The following command line switches are available to be used with LOCFG.PL:

Table 3 LOCFG.PL command line switches

Switch	Effect
`-s servername`	DNS name of target server. Do not use this switch if launching from HP SIM.
`-s ipaddress`	IP address of the target server. Do not use this switch if launching from HP SIM.
`:port`	If a port is not specified, the port defaults to `:443`.
`-l logfilename`	Name of the file to log all output to. A default file with the server name and IP address is created if this option is not specified. Do not use this switch if launching from HP SIM.
`-f input_filename`	Filename containing the RIB commands.
`-u username`[1]	Command line user name. Entering this at the command line overrides the user login name from the script.
`-p password` [1]	Command line password. Entering this at the command line overrides the password from the script.
`-t namevaluepairs`	The `-t namevaluepairs` switch substitutes variables (`%variable%`) in the input file with values specified in name-value pairs. Separate multiple name-value pairs with a comma.
`-i`	Enables interactive input of username and password.
`-v`	Enables verbose message mode. The resulting log file contains all commands sent, all responses received, and any errors. By default, only errors and responses from GET commands are logged without this switch.
`iLO 3`	Specifies the type of targeted management processor. This flag is optional. Without this flag, LOCFG.PL detects the iLO type automatically. The iLO 3 firmware performs better when this flag is present.

[1] Use `-u` and `-p` with caution, because command line options are visible on Linux systems.

For more information, see "RIBCL XML Scripting Language" (page 60).

4 HPONCFG online configuration utility

HPONCFG

The HPONCFG utility is an online configuration tool used to set up and configure iLO from within Windows and Linux operating systems without requiring a reboot of the server operating system. HPONCFG runs in a command line mode and must be executed from an operating system command line using an account with administrator or root access. HPONCFG provides a limited graphical interface for servers that use Windows operating systems.

HPONCFG supported operating systems

- HPONCFG Windows (32 and 64 bit)
  - Windows Server 2003
  - Windows Server 2008
  - Windows Server 2008 R2
  - Windows Server 2012
  - Windows Server 2012 Essentials
- HPCONFG Linux (32 and 64 bit)
  - Red Hat Enterprise Linux 3
  - Red Hat Enterprise Linux 4
  - Red Hat Enterprise Linux 5 Server
  - Red Hat Enterprise Linux 6 Server
  - SUSE Linux Enterprise Server 9
  - SUSE Linux Enterprise Server 10
  - SUSE Linux Enterprise Server 11
- VMware
  - VMware 5

HPONCFG requirements

Windows-based servers—The iLO Management Interface Driver must be loaded on the server. The SmartStart operating system installation process normally installs this driver. During execution, HPONCFG issues a warning if it cannot locate the driver. If the driver is not installed, you must download and install the driver on the server. Download the driver from the HP website at:

http://www.hp.com/support/ilo3

Installing HPONCFG

The HPONCFG utility is delivered in separate packages for Windows and Linux operating systems. For Windows operating systems, it is included as a smart component. For Linux operating systems, it is included as an RPM package file. HPONCFG packages are included in the Service Pack for ProLiant (SPP).

Windows server installation

HPONCFG installs automatically when the Service Pack for ProLiant is installed. To install HPONCFG manually, run the self-extracting executable.

HPONCFG creates a directory at:

`%Program files%\HP\hponcfg`.

Linux server installation

HPONCFG is installed automatically when Service Pack for ProLiant is installed. Download the HPONCFG RPM package for Linux distributions from the HP website. Install the appropriate package using the RPM installation utility.

For example, for a package installation, install the HPONCFG RPM package on Red Hat Enterprise Linux 5 by entering the following command:

```
rpm -ivh hponcfg-3.5.0.linux.rpm
```

If you have an older version of the HPONCFG RPM package installed on the system, run the following command to remove the older version before installing the new version of HPONCFG:

```
rpm –e hponcfg
```

The `hp-ilo` rpm package and the `hp-health rpm` package must be installed on the system before installing the `hponcfg rpm` package.

After installation, the HPONCFG executable is located in the `/sbin` directory. Be sure that the appropriate Management Interface Driver is installed. For details about where to obtain this driver and file, see "HPONCFG requirements" (page 22).

HPONCFG utility

The HPONCFG configuration utility reads an XML input file, formatted according to the rules of the RIBCL language, and produces a log file containing the requested output. A few sample scripts are included in the HPONCFG delivery package.

A package containing various and comprehensive sample scripts is available for download on the HP website at: http://www.hp.com/go/iLO3.

Click **HP iLO Sample Scripts for Windows** or **HP Lights-Out XML Scripting Sample for Linux** under **Helpful Downloads**.

Typical usage is to select a script that is similar to the desired functionality and modify it for your exact requirements. Although no authentication to iLO is required, the XML syntax requires that the USER_LOGIN and PASSWORD tags are present in the LOGIN tag, and that these fields contain data. To successfully execute HPONCFG, the utility must be invoked as Administrator on Windows servers and as root on Linux servers. HPONCFG returns an error message if you do not possess sufficient privileges.

HPONCFG command line parameters

HPONCFG accepts the following command line parameters:

Table 4 HPONCFG command line parameters

Parameter	Effect
`/help` or `?`	Displays the help page
`/reset`	Resets the iLO to factory default values
`/f` *`filename`*	Sets and receives the iLO configuration from the information given in the XML input file that has name *`filename`*
`/i` *`filename`*	Sets and receives iLO configuration from XML input received through the standard input stream

Table 4 HPONCFG command line parameters *(continued)*

Parameter	Effect
`/w filename`	Writes the iLO configuration obtained from the device to the XML output file named `filename`
/a or /all	Capture the complete configuration of iLO to a file. Must be used with /w command line parameter.
`/l filename`	Logs replies to the text log file that has name `filename`
/v or /xmlverbose	Display all the responses from iLO.
`/s namevaluepairs` or `/substitute namevaluepairs`	Substitutes variables present in the input config file with values specified in `namevaluepairs`
`/get_hostinfo`	Receives the host information. Returns the server name and server serial number
`/m`	Indicates the minimum firmware level that should be present in the management device to execute the RIBCL script. If at least this level of firmware is not present, HPONCFG returns an error without performing any additional action
`/mouse`	Configures the server for optimized mouse handling to improve graphical remote console performance. By default, it optimizes for remote console single cursor mode for the current user. The `dualcursor` command line option, along with the mouse option, optimizes mouse handling as suited for remote console dual-cursor mode. The `allusers` command line option optimizes mouse handling for all users on the system. This option is available only for Windows
`/display`	Configures Windows display parameters to optimize graphical remote console display performance

These parameters must be preceded by a slash (/) for Windows and Linux as specified in the usage string.

For example:

```
hponcfg /f add_user.xml /l log.txt > output.txt
```

Using HPONCFG on Windows servers

Start the HPONCFG configuration utility from the command line. When using Windows, `cmd.exe` is available by selecting **Start→Run** and entering **`cmd`**. HPONCFG displays a usage page if HPONCFG is entered with no parameters. HPONCFG accepts a correctly formatted XML script. HPONCFG sample scripts are included in the HPONCFG package.

For more information about formatting XML scripts, see "RIBCL XML Scripting Language" (page 60).

The command line format is:

```
hponcfg [  /help  |  /?  |  /m firmwarelevel  | /reset [/m firmwarelevel]
          | /f filename [/l filename][/s namevaluepairs]
                       [/xmlverbose or /v][/m firmwarelevel]
          | /i [/l filename][/s namevaluepairs]
                       [/xmlverbose or /v][/m firmwarelevel]
          | [/a] /w filename [/m firmwarelevel]
          | /get_hostinfo [/m firmwarelevel]
          | /mouse [/dualcursor][/allusers]
          | /display [/allusers]
```

For more information on using these parameters, see "HPONCFG command line parameters" (page 23).

Using HPONCFG on Linux servers

Invoke the HPONCFG configuration utility from the command line. HPONCFG displays a usage page if it is entered with no command line parameters.

The command line format is:

```
hponcfg  -?
hponcfg  -h
hponcfg  -m minFw
hponcfg  -r  [-m minFw ]
hponcfg  -w filename  [-m minFw]
hponcfg  -g  [-m minFw]
hponcfg  -f filename [-l filename] [-s namevaluepairs] [-v]  [-m minFw]
hponcfg -i [-l filename] [-s namevaluepairs] [-v] [-m minFw]
```

For more information on using these parameters, see "HPONCFG command line parameters" (page 23).

Obtaining the basic configuration

Use HPONCFG to obtain a basic configuration from iLO 3 by executing the utility from the command line without specifying an input file. You must provide the name of the output file on the command line.

For example:

```
hponcfg /w config.xml
```

In this example, the utility indicates that it obtained the data successfully and wrote the data to the output file.

The following is an example of a typical output file:

```
<!-- HPONCFG VERSION = "4.2.0.0" -->
<!-- Generated 08/20/13 20:14:12 -->
<RIBCL VERSION="2.1">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <DIR_INFO MODE="write">
  <MOD_DIR_CONFIG>
    <DIR_AUTHENTICATION_ENABLED VALUE = "N"/>
    <DIR_LOCAL_USER_ACCT VALUE = "Y"/>
    <DIR_SERVER_ADDRESS VALUE = ""/>
    <DIR_SERVER_PORT VALUE = "636"/>
    <DIR_OBJECT_DN VALUE = ""/>
    <DIR_OBJECT_PASSWORD VALUE = ""/>
    <DIR_USER_CONTEXT_1 VALUE = ""/>
    <DIR_USER_CONTEXT_2 VALUE = ""/>
    <DIR_USER_CONTEXT_3 VALUE = ""/>
  </MOD_DIR_CONFIG>
  </DIR_INFO>
  <RIB_INFO MODE="write">
  <MOD_NETWORK_SETTINGS>
    <SPEED_AUTOSELECT VALUE = "Y"/>
    <NIC_SPEED VALUE = "10"/>
    <FULL_DUPLEX VALUE = "N"/>
    <DHCP_ENABLE VALUE = "Y"/>
    <DHCP_GATEWAY VALUE = "Y"/>
    <DHCP_DNS_SERVER VALUE = "Y"/>
    <DHCP_STATIC_ROUTE VALUE = "Y"/>
    <DHCP_WINS_SERVER VALUE = "Y"/>
    <REG_WINS_SERVER VALUE = "Y"/>
    <IP_ADDRESS VALUE = "192.168.1.3"/>
    <SUBNET_MASK VALUE = "255.255.255.0"/>
    <GATEWAY_IP_ADDRESS VALUE = "192.168.1.1"/>
    <DNS_NAME VALUE = "ILODNSNAME"/>
    <DOMAIN_NAME VALUE = "hp.com"/>
    <PRIM_DNS_SERVER value = "192.168.1.2"/>
    <SEC_DNS_SERVER value = "0.0.0.0"/>
```

```
    <TER_DNS_SERVER value = "0.0.0.0"/>
    <PRIM_WINS_SERVER value = "0.0.0.0"/>
    <SEC_WINS_SERVER value = "0.0.0.0"/>
    <STATIC_ROUTE_1 DEST = "0.0.0.0" GATEWAY = "0.0.0.0"/>
    <STATIC_ROUTE_2 DEST = "0.0.0.0" GATEWAY = "0.0.0.0"/>
    <STATIC_ROUTE_3 DEST = "0.0.0.0" GATEWAY = "0.0.0.0"/>
  </MOD_NETWORK_SETTINGS>
  </RIB_INFO>
  <USER_INFO MODE="write">
  <ADD_USER
    USER_NAME = "admin"
    USER_LOGIN = "admin"
    PASSWORD = "%user_password%">
    <ADMIN_PRIV value = "Y"/>
    <REMOTE_CONS_PRIV value = "Y"/>
    <RESET_SERVER_PRIV value = "Y"/>
    <VIRTUAL_MEDIA_PRIV value = "Y"/>
    <CONFIG_ILO_PRIV value = "Y"/>
  </ADD_USER>
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

NOTE: For security reasons, user passwords are not returned.

Obtaining a specific configuration

Obtain a specific configuration using the appropriate XML input file.

For example, the following is the contents of a typical XML input file:

```
get_global.xml
:
<!-- Sample file for Get Global command -->
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="x" PASSWORD="x">
<RIB_INFO MODE="read">
<GET_GLOBAL_SETTINGS />
</RIB_INFO>
</LOGIN>
</RIBCL>
```

The XML commands are read from the input file `get_global.xml` and are processed by the device:

```
hponcfg /f get_global.xml /l log.txt > output.txt
```

The requested information is returned in the log file, which, in this example, is named `log.txt`.

```
<GET_GLOBAL_SETTINGS>
<!-- A session timeout value of zero means that the timeout is set to infinite. -->
    <SESSION_TIMEOUT VALUE="0"/>
    <ILO_FUNCT_ENABLED VALUE="Y"/>
    <F8_PROMPT_ENABLED VALUE="Y"/>
    <F8_LOGIN_REQUIRED VALUE="N"/>
    <HTTPS_PORT VALUE="443"/>
    <HTTP_PORT VALUE="80"/>
    <REMOTE_CONSOLE_PORT VALUE="17990"/>
    <VIRTUAL_MEDIA_PORT VALUE="17988"/>
    <SSH_PORT VALUE="22"/>
    <SSH_STATUS VALUE="Y"/>
    <SERIAL_CLI_STATUS VALUE="Enabled-Authentication Required"/>
    <SERIAL_CLI_SPEED VALUE="9600"/>
    <MIN_PASSWORD VALUE="8"/>
    <AUTHENTICATION_FAILURE_LOGGING VALUE="Enabled-every 3rd failure"/>
    <RBSU_POST_IP VALUE="Y"/>
```

```
    <ENFORCE_AES VALUE="N"/>
    <IPMI_DCMI_OVER_LAN_ENABLED VALUE="Y"/>
    <PROPAGATE_TIME_TO_HOST VALUE="Y"/>
</GET_GLOBAL_SETTINGS>
```

Setting a configuration

Set a specific configuration by using the command format:

```
hponcfg /f add_user.xml /l log.txt
```

In this example, the input file has contents:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="x" PASSWORD="x">
<USER_INFO MODE="write">
<ADD_USER
USER_NAME="Landy9"
USER_LOGIN="mandy8"
PASSWORD="floppyshoes">
<ADMIN_PRIV value ="No"/>
<REMOTE_CONS_PRIV value ="Yes"/>
<RESET_SERVER_PRIV value ="No"/>
<VIRTUAL_MEDIA_PRIV value ="No"/>
<CONFIG_ILO_PRIV value="Yes"/>
</ADD_USER>
</USER_INFO>
</LOGIN>
</RIBCL>
```

The specified user is added to the device.

Using variable substitution

HPONCFG enables you to specify variables in the XML RIBCL script and to assign values to those variables when you run HPONCFG. This feature helps to avoid rewriting the XML script file every time with different values. Anything enclosed by two percent sign (%) characters in the XML file is considered a variable.

In this example, `%username%`, `%loginname%`, and `%password%` are variables:

```
<!-- Add user with minimal privileges to test default setting of
     assigned privileges to 'N' -->
<RIBCL version="1.2">
<LOGIN USER_LOGIN="x" PASSWORD="x">
<USER_INFO MODE="write">
<ADD_USER USER_NAME="%username%" USER_LOGIN="%loginname%"  PASSWORD="%password%">
<RESET_SERVER_PRIV value="Y" />
<ADMIN_PRIV value="Y" />
</ADD_USER>
</USER_INFO>
</LOGIN>
</RIBCL>
```

Specify values for the variables when you run HPONCFG by using the substitute option. The argument must be a string or variable name and value pairs must be separated by a comma (,). The variable name and its value must be separated by an equal sign (=). For example:

```
hponcfg /f add_user.xml /s username=testuser,loginname=testlogin,password=testpasswd
```

In this example, `%host_power%` is a variable:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<SERVER_INFO MODE="write">
<!-- Modify the HOST_POWER attribute to toggle power on the host server -->
```

```
<!-- HOST_POWER="No" (Turns host server power off) -->
<!-- A graceful shutdown will be attempted for ACPI-aware -->
<!-- operating systems configured to support graceful shutdown. -->
<!-- HOST_POWER="Yes" (Turns host server power on) -->
<SET_HOST_POWER HOST_POWER="%host_power%"/>
</SERVER_INFO>
</LOGIN>
</RIBCL>
```

- To power the system on, enter:

  ```
  hponcfg /f Set_Host_Power.xml /s host_power=YES
  ```

- To power the system off, enter:

  ```
  hponcfg /f Set_Host_Power.xml /s host_power=NO
  ```

Capturing and restoring a configuration

Use HPONCFG to capture basic configuration information in an XML readable file format. Use this file to set or restore the iLO configuration. This feature is available with HPONCFG version 1.2 and later. HPONCFG writes the configuration information in the HP RIBCL format.

- To capture a configuration, you must specify the name and location of the output file on the command line.

  For example:

  ```
  hponcfg /w config.xml
  ```

  HPONCFG displays a message when it successfully writes the configuration information to the output file as requested. The following is an example of the contents of the output file:

```
<!-- HPONCFG VERSION = "1.2" -->
<!-- Generated 07/06/05 09:06:51 -->
<RIBCL VERSION="2.1">
<LOGIN USER_LOGIN="Administrator" PASSWORD="password">
<DIR_INFO MODE="write">
<MOD_DIR_CONFIG>
<DIR_AUTHENTICATION_ENABLED VALUE = "N"/>
<DIR_LOCAL_USER_ACCT VALUE = "Y"/>
<DIR_SERVER_ADDRESS VALUE = ""/>
<DIR_SERVER_PORT VALUE = "636"/>
<DIR_OBJECT_DN VALUE = ""/>
<DIR_OBJECT_PASSWORD VALUE = ""/>
<DIR_USER_CONTEXT_1 VALUE = ""/>
<DIR_USER_CONTEXT_2 VALUE = ""/>
<DIR_USER_CONTEXT_3 VALUE = ""/>
</MOD_DIR_CONFIG>
</DIR_INFO>
<RIB_INFO MODE="write">
<MOD_NETWORK_SETTINGS>
<SPEED_AUTOSELECT VALUE = "Y"/>
<NIC_SPEED VALUE = "100"/>
<FULL_DUPLEX VALUE = "Y"/>
<DHCP_ENABLE VALUE = "Y"/>
<DHCP_GATEWAY VALUE = "Y"/>
<DHCP_DNS_SERVER VALUE = "Y"/>
<DHCP_STATIC_ROUTE VALUE = "Y"/>
<DHCP_WINS_SERVER VALUE = "Y"/>
<REG_WINS_SERVER VALUE = "N"/>
<IP_ADDRESS VALUE = "16.100.241.229"/>
<SUBNET_MASK VALUE = "255.255.252.0"/>
<GATEWAY_IP_ADDRESS VALUE = "16.100.240.1"/>
<DNS_NAME VALUE = "ILOD234KJ44D002"/>
<DOMAIN_NAME VALUE = "americas.cpqcorp.net"/>
```

```
<PRIM_DNS_SERVER value = "16.81.3.242"/>
<SEC_DNS_SERVER value = "0.0.0.0"/>
<TER_DNS_SERVER value = "0.0.0.0"/>
<PRIM_WINS_SERVER value = "16.81.3.247"/>
<SEC_WINS_SERVER value = "0.0.0.0"/>
<STATIC_ROUTE_1 DEST = "0.0.0.0" GATEWAY = "0.0.0.0"/>
<STATIC_ROUTE_2 DEST = "0.0.0.0" GATEWAY = "0.0.0.0"/>
<STATIC_ROUTE_3 DEST = "0.0.0.0" GATEWAY = "0.0.0.0"/>
</MOD_NETWORK_SETTINGS>
<USER_INFO MODE="write">
<ADD_USER
USER_NAME = "Username1"
USER_LOGIN = "User1"
PASSWORD = "%user_password%">
<ADMIN_PRIV value = "N"/>
<REMOTE_CONS_PRIV value = "Y"/>
<RESET_SERVER_PRIV value = "N"/>
<VIRTUAL_MEDIA_PRIV value = "N"/>
<CONFIG_ILO_PRIV value = "N"/>
</ADD_USER>
</USER_INFO>
</LOGIN>
</RIBCL>
```

For security reasons, the default user administrator and user passwords are not captured in the configuration file or returned in the response. A variable is provided in its place to use with the `substitute` option to provide a default password for all users when restoring a configuration. Manually change the password before using the file to restore the configuration.

- To restore a configuration, the file must be sent to HPONCFG as input using the `/f` or `-f` option. Add a default password for all users using the substitute or `s` option.

  For example:

  ```
  hponcfg /f config.xml /s user_password=password
  ```

5 SMASH CLP usage

SMASH CLP

The DMTF SMASH initiative is a suite of specifications that deliver architectural semantics, industry standard protocols and profiles to unify the management of the data center. The SMASH CLP specification enables simple and intuitive management of heterogeneous servers in the data center.

For more information, see "SMASH CLP Scripting Language" (page 33).

6 IPMI usage

The IPMI utility

Use the Linux IPMI tool and Windows IPMI util applications to test the IPMI interfaces on server platforms. The Linux IPMI tool is used in environments where scripting is used as the base for platform monitoring.

The Windows IPMI util has a dependency on the IPMI driver if using "in-band" (or from a command prompt). The Windows IPMI driver is delivered in Windows Server 2008 R2. IPMI support might be available in later updates of Windows Server 2003 R2.

The Linux IPMI tool also requires the IPMI drivers (delivered in the distribution) to be enabled if utilized in-band. The IPMI device drivers are not typically enabled to automatically start when the Linux operating system is started. If you are logged on to a Linux console (command prompt) as a root user, use the following command to initiate the IPMI device drivers for Linux:

```
service ipmi start
```

For more information, see the documentation provided by the specific Linux distribution.

The IPMI tool supports remote IPMI protocols that provide the capability to power the server on and off, and to remotely monitor the platform. The iLO firmware supports the IPMI 2.0 RMCP+ protocol for the highest level of authentication, encryption and integrity. The legacy IPMI 1.5 IPMI over LAN protocol is not supported.

Basic IPMI tool usage

The Linux IPMI tool is fully documented in the Linux MAN page. The `man ipmitool` command provides extended documentation beyond the scope of this guide. To use IPMI tool from the Linux operating system to locally monitor a system, the IPMI drivers must be enabled. Typical in-band commands include the following.

- To retrieve the iLO status, enter:

  `# ipmitool mc info`

- To retrieve the status of iLO monitored sensors, enter:

  `# ipmitool sensor list`

- To retrieve the contents of the IPMI SEL, enter:

  `# ipmitool sel list`

Advanced IPMI tool usage on Linux

The Linux IPMI tool has the capability to securely communicate with iLO using the IPMI 2.0 RMCP+ protocol. This is the `ipmitool lanplus` protocol feature. For most commands, a valid iLO user name and password is required. Typical out-of-band (or IPMI over LAN) commands include the following.

- To retrieve the general iLO status, enter:

  `# ipmitool -H IP Address or FQDN -I lanplus -U user name mc info`

- To power on the HP ProLiant Server, enter:

  `# ipmitool -H IP Address or FQDN -I lanplus -U user name chassis power on`

- To turn on the HP ProLiant Server UID, enter:

  `# ipmitool -H IP Address or FQDN -I lanplus -U user name chassis identify on`

Most Linux IPMI tool commands can be issued remotely, including retrieving the IML entries and current sensor readings. The following parameter is required to enable the IPMI 2.0 RMCP+ protocol:

```
-l lanplus
```

Advanced IPMIutil usage on Windows

Use the Windows `IPMIutil.exe` application for remote IPMI access to iLO. The commands, although different, provide similar functionality.

- To retrieve the general status of iLO, enter:

  `C:\>` **`ipmiutil.exe health -N`** ***`IP Address`*** **`-J 3 -U`** ***`user name`*** **`-P`** ***`Password`***

- To power the HP ProLiant server on, enter:

  `C:\>` **`ipmiutil.exe reset -u -N`** ***`IP Address`*** **`-J 3 -U`** ***`user name`*** **`-P`** ***`Password`***

- To power the HP ProLiant server off, enter:

  `C:\>` **`ipmiutil.exe reset -d -N`** ***`IP Address`*** **`-J 3 -U`** ***`user name`*****`-P`** ***`Password`***

- To turn on the HP ProLiant server UID, enter:

  `C:\>` **`ipmiutil.exe led -i5 -N`** ***`IP Address`*** **`-J 3 -U`** ***`user name`*** **`-P`** ***`Password`***

NOTE: The IPMIutil application only enables turning on the UID for five seconds. To keep the UID light on persistently, script the command in a loop with a four second delay.

7 SMASH CLP Scripting Language

SMASH CLP command line overview

SMASH CLP provides a standardized set of commands for the configuration and control of management processors (called Management Access Points) and host systems. On iLO, SMASH CLP is accessed through the SSH port.

SMASH CLP command line access

The iLO 3 firmware features enable you to execute the supported commands from a SMASH CLP command line. Access the command line option from the one of the following interfaces:

- A serial port using one connection
- A network using SSH. This enables three simultaneous connections (an IP address or DNS name, login name, and password are required to start a session using SSH)

Five network connections can be active simultaneously. After the serial CLI is enabled on the Global Settings screen, access the iLO CLI by entering:

```
ESC (
```

The SSH session starts after authentication.

Using the command line

After initiating a command line session, the iLO CLI prompt appears. Each time you execute a command (or you exit the Remote Console or VSP), you return to the CLI prompt as shown in the following example:

```
hpiLO->
```

Each time a CLI command executes, the returned output follows this general format:

```
hpiLO-> CLI command
status=0
status_tag=COMMAND COMPLETED
… output returned…
hpiLO->
```

If an invalid command is entered, then the `status` and `status_tag` values reflect the error as shown:

```
hpiLO-> boguscommand
status=2
status_tag=COMMAND PROCESSING FAILED
error_tag=COMMAND NOT RECOGNIZED
```

If an invalid parameter is given to a valid command, the response is slightly different:

```
hpiLO-> show /bad
status=2
status_tag=COMMAND PROCESSING FAILED
error_tag=COMMAND ERROR-UNSPECIFIED
Invalid property.
hpiLO->
```

The following commands are supported in this release of CLP. The same command set is supported through the serial port and SSH connections.

The privilege level of the logged in user is verified against the privilege required for the command. The command is only executed if the privilege levels match. If the serial command line session status is set to `Enabled-No Authentication`, then all the commands are executed without verifying the privilege level.

The general syntax of a CLP command is:

```
<verb> <target> <option> <property>
```

- **Verbs**—The supported verbs are:
  - `cd`
  - `create`
  - `delete`
  - `help`
  - `load`
  - `reset`
  - `set`
  - `show`
  - `start`
  - `stop`
  - `exit`
  - `version`
- **Target**—The default target is the `/`. Change the target using the `cd` command, or by specifying a target on the command line.
- **Options**—The valid options are:
  - `-help/-h`
  - `-all/-a`
- **Properties** — Are the attributes of the target that can be modified.
- **Output** — The output syntax is:
  - `status`
  - `status_tag`
  - `status_msg`

The valid Boolean values for any command are `yes`, `no`, `true`, `false`, `y`, `n`, `t`, `f`, `1`, and `0`.

NOTE: If a CLP command spans more than one line, you cannot navigate between different lines.

In the Windows PuTTy client, map the Backspace key to a value of 0x8 by changing the setting for Terminal Keyboard to **Ctrl+H**.

Escape commands

The escape key commands are shortcuts to popular tasks.

`ESC (`	Invokes the serial CLI connection. This is not necessary for SSH sessions because they automatically start a CLI session after a successful login.
`ESC R ESC r ESC R`	Resets the system.
`ESC ^`	Powers on the system.
`ESC ESC`	Erases the current line.

There is a one second timeout for entering any of the escape sequence characters.

Base commands

Following are the base commands for use on the command line:

`help`	Displays context-sensitive help and all supported commands
`command help/?`	Displays the help message specific to that command
`exit`	Terminates the CLP session
`cd`	The command sets the current default target. The context works like a directory path. The root context for the server is a forward slash (/) and is the starting point for a CLP system. Shorten commands by changing the context. For example, to find the current iLO firmware version, enter the following command: `show /map1/firmware1`

`show`	The command displays values of a property or contents of a collection target.
	For example:
	`hpiLO-> show`
	`status=0`
	`status_tag=COMMAND COMPLETED`
	`/`
	`Targets`
	`system1`
	`map1`
	`Properties`
	`Verbs`
	`cd version exit show`
	The first line of information returned by the `show` command is the current context. In the example, `/` is the current context. Following the context is a list of sub-targets (Targets) and properties (Properties) applicable to the current context. The verbs (Verbs) section shows which commands are applicable to this context.
	Specify the `show` command with an explicit or implicit context as well as a specific property. For example, an explicit context is `/map1/firmware1` and is not dependent on the current context, while an implicit context assumes that the context specified is a child of the current context. If the current context is `/map1` then a `show firmware` command displays the `/map1/firmware1` data.
	If you do not specify a property, then all properties are shown. In the case of the `/map1/firmware1` context, two properties are available: `version`, and `date`. If you execute `show /map1/firmware1 date`, only the date is shown.

`create`	Creates a new instance of the MAP in the name space.

`delete`	Removes instances of the MAP in the name space.
`load`	Moves a binary image from a URL to the MAP.
`reset`	Causes a target to cycle from enabled to disabled, and back to enabled.
`set`	Sets a property or set of properties to a specific value, and resets iLO to implement the changes.
`start`	Causes a target to change the state to a higher run level.
`stop`	Causes a target to change the state to a lower run level.

`version`	The command queries the version of the CLP implementation or other CLP elements.
	For example:
	`hpiLO-> version`
	`status=0`
	`status_tag=COMMAND COMPLETED`
	`SM-CLP Version 1.0`

`oemhp_ping`	The command determines if an IP address is reachable from the current iLO session. For example: `oemhp_ping 192.168.1.1` Where `192.168.1.1` is the IP address you are testing.

Specific commands

The following sections cover iLO 3-specific commands available when using the command line, including:

User commands

User commands enable you to view and modify user settings. Table 5 (page 37) shows the User Command properties. User settings are located at:

`/map1/accounts1`.

Targets

All local users are valid targets. For example, if three local users have the login names `Administrator`, `admin`, and `test`, then valid targets are:

- `Administrator`
- `admin`
- `test`

Table 5 User Command Properties

Property	Access	Description
`username`	read/write	Corresponds to the iLO 3 login name.
`password`	read/write	Corresponds to the password for the current user.
`name`	read/write	Displays the name of the user. If a name is not specified, the parameter uses the same value as the login name (username). This value corresponds to the iLO 3 user name property.
`group`	read/write	Specifies the privilege level. The valid values are as follows: • `admin` • `config` • `oemhp_power` • `oemhp_rc` • `oemhp_vm` If you do not specify a group, no privileges are assigned to the user.
`sshkeyhash`	read/write	Displays or modifies the user SSH key.

For example

The current path is:

`/map1/accounts1`.

- `create` *`username`*`=lname1 password=password`

  In this example, `username` corresponds to the login name.

- `create /map1/accounts1 username=<lname1> password=<pwd12345> name=<dname1> group=<admin,config,oemhp_vm,oemhp_rc,oemhp_power>`

  In this example, `lname1` is the login name of the user.

- `oemhp_loadsshkey -source http://192.168.100.1/pubkey.ppk /map1/accounts1/<1name1>`

  This example loads the SSH key to the specified user 1name1.

- `oemhp_deletesshkey /map1/accounts1/<1name1>`

  This example removes the SSH key from the account 1name1.

HP SSO settings

HP SSO settings commands are accessed using:

`/map1/oemhp_ssocfg1`.

You must have the Configure iLO Settings privilege to change these properties. SSO is only supported for browser access from trusted HP SIM servers. SSO is a licensed feature. Table 6 (page 38) shows the HP SSO properties. For more information, see the *HP iLO User Guide* on the HP website at http://www.hp.com/go/ilo3 and click More iLO Documentation.

Targets

None

Table 6 HP SSO Properties

Property	Access	Description
`oemhp_ssotrust`	Read/write	The Single Sign-On required trust level. Valid values are: • `disabled` • `all` • `name` • `certificate`
`oemhp_ssouser`	Read/write	The privileges associated with the user role. Valid values are: • `login` • `oemhp_rc` • `oemhp_power` • `oemhp_vm` • `config` • `admin`
`oemhp_ssooperator`	Read/write	The privileges associated with the operator role. Valid values are: • `login` • `oemhp_rc` • `oemhp_power` • `oemhp_vm` • `config` • `admin`
`oemhp_ssoadministrator`	Read/write	The privileges associated with the administrator role. Valid values are: • `login` • `oemhp_rc` • `oemhp_power` • `oemhp_vm` • `config` • `admin`
`oemhp_ssoserver`	Read	Contains 0 or more HP SIM Trusted Server records. Each record contains a server name or a server certificate.

For example

- To set the SSO trust level to trust by certificate:

```
</>hpiLO-> set /map1/oemhp_ssocfg1 oemhp_ssotrust=certificate
```

- To assign user roles the Login privilege:

```
</>hpiLO-> set /map1/oemhp_ssocfg1 oemhp_ssouser=login
```

- To assign the operator role Login, Remote Console, Virtual Power and Reset, and Virtual Media privileges:

  ```
  </>hpiLO-> set /map1/oemhp_ssocfg1
  oemhp_ssooperator=login,oemhp_rc,oemhp_power,oemhp_vm
  ```

- To Add an HP SIM Trusted Server name record:

  ```
  </>hpiLO-> cd map1/oemhp_ssocfg1
  </map1/oemhp_ssocfg1>hpiLO-> create hpsim1.corp.net
  ```

- To move a binary image from an URL to the MAP (URL limit of 80 characters):

  ```
  protocol://username:password@hostname:port/filename
  ```

  - The `protocol` field is mandatory and must be either HTTP or HTTPS.
  - The `username:password` field is optional.
  - The `hostname` field is mandatory.
  - The `port` field is optional.
  - The `filename` field is mandatory.

  For example:

  ```
  </map1/oemhp_ssocfg1>hpiLO-> load -source
  http://192.168.1.1/images/fw/iLO3_100.bin
  ```

  Add `-TPM_force` if a TPM is installed and enabled.

- To delete oemhp_ssoserver with index 5:

  ```
  </map1/oemhp_ssocfg1>hpiLO-> delete 5
  ```

- To display the complete iLO SSO configuration:

  ```
  </>hpiLO-> cd map1/oemhp_ssocfg1
  </map1/oemhp_ssocfg1>hpiLO->show
  ```

Network commands

The network subsystems are located at:

- `/map1/enetport1`
- `/map1/dhcpendpt1`
- `/map1/dnsendpt1`
- `/map1/gateway1`
- `/map1/dnsserver1`
- `/map1/dnsserver2`
- `/map1/dnsserver3`
- `/map1/settings1`
- `/map1/vlan1`

Properties, Targets, and Verbs:

- `enetport1`

  Targets

  - lanendpt1

  Properties

  - `EnabledState`
  - `OtherTypeDescription`
  - `Autosense`
  - `PermanentAddress`
  - `LinkTechnology`
  - `Speed`
  - `SystemName`
  - `Fullduplex`

  Verbs

  - `cd`
  - `version`
  - `exit`
  - `show`
  - `set`

  For example

  ```
  set /map1/enetport1 Speed=100
  set /map1/enetport1/lanendpt1/ipendpt1 IPv4Address=15.255.102.245
  SubnetMask=255.255.248.0
  ```

- `dhcpendpt1`

  Properties

  - `EnabledState`
  - `OtherTypeDescription`

- `dnsendpt1`

  Properties

  - `EnabledState`
  - `HostName`
  - `DomainName`
  - `OtherTypeDescription`

- gateway1
  Properties
  - AccessInfo
  - AccessContext
- dnsserver1
  Properties
  - AccessInfo
  - AccessContext

  Verbs
  - cd
  - version
  - exit
  - show
  - set
- dnsserver2
  Properties
  - AccessInfo
  - AccessContext
- dnsserver3
  Properties
  - AccessInfo
  - AccessContext
- settings1
  - Targets

    DNSSettings1

    Properties
    - DNSServerAddress
    - RegisterThisConnection
    - DomainName
    - DHCPOptionToUse

    WINSSettingData1

Properties

- WINSServerAddress
- RegisterThisConnection
- DHCPOptionToUse

- Verbs
  - cd
  - version
  - exit
  - show

- StaticIPSettings1

  Properties

  - oemhp_SRoute1Address
  - oemhp_Mask1Address
  - oemhp_Gateway1Address
  - oemhp_SRoute2Address
  - oemhp_Mask2Address
  - oemhp_Gateway2Address
  - oemhp_SRoute3Address
  - oemhp_Mask3Address
  - oemhp_Gateway3Address
  - DHCPOptionToUse

Specify one or more properties on the command line. If multiple properties are on the same command line, they must be separated by a space.

The iLO firmware resets after the network settings have been applied.

iLO 3 settings

The iLO 3 settings commands enable you to view or modify iLO 3 settings. Table 7 (page 42) shows the iLO 3 properties. The iLO 3 settings are located at:

`/map1/config1`

Targets

No targets

Properties

Table 7 iLO Properties

Property	Access	Description
oemhp_mapenable	Read/Write	Enables or disables iLO. Boolean values are accepted.
oemhp_timeout	Read/Write	Sets session timeout in minutes. Valid values are 15, 30, 60, and 120.

Table 7 iLO Properties *(continued)*

Property	Access	Description
oemhp_rbsuenable	Read/Write	Enables or disables RBSU prompt during POST. Boolean values are accepted.
oemhp_rbsulogin	Read/Write	Enables or disables login requirement for accessing RBSU. Boolean values are accepted.
oemhp_rbsushowip	Read/Write	Enables or disables iLO IP address display during POST. Boolean values are accepted.
oemhp_httpport	Read/Write	Sets the HTTP port value.
oemhp_sslport	Read/Write	Sets the SSL port value.
oemhp_rcport	Read/Write	Sets remote console port value.
oemhp_vmport	Read/Write	Sets virtual media port value.
oemhp_sshport	Read/Write	Sets the SSH port value.
oemhp_sshstatus	Read/Write	Enables or disables SSH. Boolean values are accepted.
oemhp_serialclistatus	Read/Write	Enables or disables CLP session through serial port. Boolean values are accepted.
oemhp_serialcliauth	Read/Write	Enables or disables authorization requirement for CLP session through serial port. Boolean values are accepted.
oemhp_serialclispeed	Read/Write	Sets the serial port speed for the CLP session. The valid values are 9600, 19200, 38400, 57600, and 115200.
oemhp_minpwdlen	Read/Write	Sets the minimum password length requirement.
oemhp_enforce_aes	Read/Write	Enable or disable enforcing AES/3DES encryption. **NOTE:** When enabling AES/3DES, manually close all other GUI, XML, and CLI connections since remaining sessions may continue to use the non-AES/3DES cipher.
oemhp_authfailurelogging	Read/Write	Sets the logging criteria for failed authentications.
oemhp_computer_lock	Read/Write	Enables or disables the Remote Console Computer Lock.
oemhp_hotkey_ctrl_t	Read/Write	Sets the value for hotkey **Ctrl+T**.
oemhp_hotkey_ctrl_u	Read/Write	Sets the value for hotkey **Ctrl+U**.
oemhp_hotkey_ctrl_v	Read/Write	Sets the value for hotkey **Ctrl+V**.
oemhp_hotkey_ctrl_w	Read/Write	Sets the value for hotkey **Ctrl+W**.
oemhp_hotkey_ctrl_x	Read/Write	Sets the value for hotkey **Ctrl+X**.
oemhp_hotkey_ctrl_y	Read/Write	Sets the value for hotkey **Ctrl+Y**.

Verbs

- cd
- version
- exit
- show
- set
- oemhp_loadSSHkey
- oemhp_resetHotkeys

For example

```
set /map1/config1 oemhp_mapenable=yes oemhp_timeout=30
```

Specify one or more properties in the command line. If multiple properties are on the same command line, they must be separated by a space.

For example:

```
set /map1/config1 oemhp_computer_lock=windows
set /map1/config1 oemhp_computer_lock=custom,1_gui,1
set /map1/config1 oemhp_computer_lock=disabled
```

For a complete list of `oemhp_computer_lock` custom keys, see the *HP iLO User Guide* on the HP website at: http://www.hp.com/go/ilo3 and click More iLO Documentation. Keys with a space must have the space replaced with an underscore.

For example:

```
set /map1/config1 oemhp_computer_lock=custom,SYS_RQ
```

iLO 3 embedded health settings

iLO 3 embedded health commands enable you to display system embedded health information for fans, temperature sensors, voltage sensors, and power supplies. Table 8 (page 44) shows the iLO 3 Embedded Health properties.

The iLO 3 embedded health CLP settings are:

- `/system1/fan*`
- `/system1/sensor*`
- `/system1/powersupply*`

Targets

- `Fan`
- `Sensor`
- `Powersupply`

Table 8 Embedded Health Properties

Property	Access	Description
`DeviceID`	Read	Displays fan, sensor, or power supply label number
`ElementName`	Read	Displays fan, sensor, or power supply location
`OperationalStatus`	Read	Displays fan, sensor, or power supply operational status
`VariableSpeed`	Read	Displays if fan is operating at variable speed
`DesiredSpeed`	Read	Displays the current fan speed
`HealthState`	Read	Displays the health status of the fan, sensor, or power supply
`RateUnits`	Read	Displays the reading units for temperature and voltage sensors
`CurrentReading`	Read	Displays the current reading of sensor
`SensorType`	Read	Displays the sensor type
`Oemhp_CautionValue`	Read	Displays temperature sensor caution value
`Oemhp_CriticalValue`	Read	Displays temperature sensor critical value

NOTE: All available embedded health properties from all targets are shown in Table 8 (page 44). The actual properties returned depend on the command.

For example

The following command displays the system fan1 properties:

```
</system1/fan1>hpiLO-> show
```

For example:

```
/system1/fan1
  Targets
  Properties
    DeviceID=Fan 1
    ElementName=System
    OperationalStatus=Ok
    VariableSpeed=Yes
    DesiredSpeed=14 percent
    HealthState=Ok
```

VRM power supplies are usually mapped to the sensor targets. The following command displays the VRM 1 properties:

```
show system1/sensor1
```

For example:

```
/system1/sensor1
Targets
Properties
DeviceID=VRM 1
ElementName=CPU 1
OperationalStatus=Ok
RateUnits=Volts
CurrentReading=0
SensorType=Voltage
HealthState=Ok
oemhp_CautionValue=0
oemhp_CriticalValue=0
```

When VRM power supplies are not mapped to sensor targets, the following command displays power supply properties:

```
</system1/powersupply1>hpiLO-> show
```

For example:

```
/system1/powersupply1
  Targets
  Properties
    ElementName=Power Supply
    OperationalStatus=Ok
    HealthState=Ok
```

Other sensor targets show system temperatures. The following command displays one of the temperature zone properties:

```
</system1/sensor1>hpiLO-> show
```

For example:

```
/system1/sensor1
  Targets
  Properties
    DeviceID=Temp 1
    ElementName=Ambient
    OperationalStatus=Ok
    RateUnits=Celsius
    CurrentReading=20
```

```
SensorType=Temperature
HealthState=Ok
oemhp_CautionValue=41
oemhp_CriticalValue=45
```

SNMP settings

SNMP settings commands enable you to view and modify SNMP settings. Table 9 (page 46) shows the SNMP command properties. SNMP settings are available at:

`/map1/snmp1`

Targets

None

Properties

Table 9 SNMP Command Properties

Property	Access	Description
`accessinfo<n>`	Read/Write	Sets the SNMP trap destination address, where `<n>` is **1**, **2**, or **3**.
`readcom<n>`	Read/Write	Displays or modifies SNMP read community address for when Agentless Management is enabled, where `<n>` is **1**, **2**, or **3**.
`oemhp_iloalert`	Read/Write	Enables or disables iLO SNMP alerts. Boolean values accepted.
`oemhp_agentalert`	Read/Write	Enables or disables host agent SNMP alerts. Boolean values accepted.
`oemhp_snmppassthru`	Read/Write	Enables or disables iLO SNMP pass-through. Boolean values accepted.
`oemhp_imagenturl`	Read/Write	Sets the Insight Manager Agent URL.
`oemhp_imdatalevel`	Read/Write	Determines if the LOM device responds to anonymous XML queries. Enable or disable valid selections.

- Verbs
  - cd
  - version
  - exit
  - show
  - set

For example

The following command displays the SNMP properties:

```
</map1/snmp1>hpiLO-> show
/map1/snmp1
  Targets
  Properties
    accessinfo1=0
    accessinfo2=0
    accessinfo3=0
    oemhp_iloalert=yes
    oemhp_agentalert=yes
    oemhp_snmppassthru=yes
    oemhp_imagenturl=SYSTEM_HOSTNAME
    oemhp_imdatalevel=enabled
```

License commands

License commands enable you to display and modify the iLO license. Table 10 (page 47) shows the License command properties. License commands are available at:

`/map1/`

Targets

None

Commands

Table 10 License Commands

Command	Description
`cd`	Changes the current directory
`show`	Displays license information
`set`	Changes the current license

For example

- `set /map1 license=1234500000678910000000001`
- `show /map1 license`

Directory commands

Directory commands enable you to view and modify directory settings. Table 12 (page 47) shows the Directory command properties. Directory command settings are available at:

`/map1/oemhp_dircfg1`

Targets

The Directory Command Targets are shown in Table 11 (page 47).

Table 11 Directory Command Targets

Target	Description
`/map1/oemhp_dircfg1/oemhp_keytab1`	Contains a load verb used to load the binary keytab file from a given URL. The keytab file may be up to 1024 bytes in length.

Properties

Table 12 Directory Command Properties

Property	Access	Description
`oemhp_dirauth`	Read/Write	Enables or disables directory authentication. Valid settings are as follows: • `extended_schema` Uses HP extended schema • `default_schema` Uses schema-free directories • `disabled` Directory-based authentication is disabled
`oemhp_localacct`	Read/Write	Enables or disables local account authentication. This property can be disabled only if directory authentication is enabled. Boolean values accepted.
`oemhp_dirsrvaddr`	Read/Write	Sets the directory server IP address or DNS name. The schema-free directory configuration requires a DNS name.

Table 12 Directory Command Properties *(continued)*

Property	Access	Description
`oemhp_ldapport`	Read/Write	Sets the directory server port.
`oemhp_dirdn`	Read/Write	Displays the LOM object distinguished name. This field is ignored when the schema-free directory configuration is used.
`oemhp_usercntxt1, 2 ...` (up to 15)	Read/Write	Displays the directory user login search context. This field is not necessary when the schema-free directory configuration is used.
`oemhp_group(n)_name` where *n* = 1..6	Read/Write	Displays security group distinguished name. Used within the schema-free directory configuration only.
`oemhp_group(n)_priv` where *n* = 1..6	Read/Write	The privileges associated with a group. Valid values are: • `login` • `oemhp_rc` • `oemhp_power` • `oemhp_vm` • `config` • `admin`
`oemhp_dir_kerberos_enabled`	Read/Write	Enables or disables Kerberos authentication. Boolean values are accepted.
`oemhp_dir_kerberos_kdc_port`	Read/Write	Specifies the port number used to connect to the domain controller. The Kerberos port number is 88, but the domain controller can be configured for a different port number.
`oemhp_dir_kerberos_kdc_address`	Read/Write	The location of the domain controller. The domain controller location is specified as an IP address or DNS name.
`oemhp_dir_kerberos_realm`	Read/Write	Specifies the Kerberos realm for which the domain controller is configured. By convention, the Kerberos realm name for a given domain is the domain name converted to uppercase.

For example

- `set /map1/oemhp_dircfg1`
- `set /map1/oemhp_dircfg1 oemhp_dirauth=default_schema oemhp_dirsrvaddr=adserv.demo.com`

Define additional groups using additional `set` commands.

Specify one or more properties on the command line. If multiple properties are on the same command line, they must be separated by a space.

Virtual Media commands

Access to the iLO virtual media is supported through the CLP. Table 13 (page 49) shows the Virtual Media command targets. Table 14 (page 49) shows the Virtual Media command properties. The virtual media subsystem is located at:

`/map1/oemhp_vm1`.

For more information, see the *HP iLO User Guide* on the HP website at: http://www.hp.com/go/ilo3 and click More iLO Documentation.

Targets

The virtual media targets are shown in Table 13 (page 49).

Table 13 Virtual Media Command Targets

Target	Description
/map1/oemhp_vm1/floppydr1	Virtual floppy or key drive device
/map1/oemhp_vm1/cddr1	Virtual CD-ROM device

Table 14 Virtual Media Command Properties

Property	Access	Description
oemhp_image	Read/Write	The image path and name for virtual media access. The value is a URL with a maximum length of 80 characters.
oemhp_connect	Read	Displays if a virtual media device is already connected through the CLP or scriptable virtual media.
oemhp_boot	Read/Write	Sets the boot flag. The valid values are: • Never Do not boot from the device. The value appears as No_Boot. • Once Boot from the device only once. The value appears as Once. • Always Boot from the device each time the server is rebooted. The value is displayed as Always. • Connect Connect the virtual media device. Sets oemhp_connect to Yes and oemhp_boot to Always. • Disconnect Disconnects the virtual media device and sets the oemhp_boot to No_Boot.
oemhp_wp	Read/Write	Enables or disables the write-protect flag. Boolean values accepted.
vm applet	Read	Displays if an iLO 3 virtual media device is connected via the IRC.

Image URL

The oemhp image value is a URL. The URL, which is limited to 80 characters, specifies the location of the virtual media image file on an HTTP server and is in the same format as the scriptable virtual media image location.

URL example:

```
protocol://username:password@hostname:port/filename
```

- protocol—Mandatory field that must be HTTP or HTTPS
- username:password—Optional field
- hostname—Mandatory field
- port—Optional field
- filename—Mandatory field

The CLP performs only a cursory syntax verification of the URL value. You must visually verify that the URL is valid.

For example

- `set oemhp_image=http://imgserver.company.com/image/dosboot.bin`
- `set oemhp_image=http://john:abc123@imgserver.company.com/VMimage/installDisk.iso`

Tasks

- To insert a floppy USB key image into the Virtual Floppy/USBKey, enter:

```
cd /map1/oemhp_vm1/floppydr1
show
set oemhp_image=http://my.imageserver.com/floppyimg.bin
set oemhp_boot=connect
show
```

  This example executes the following commands:

  - Changes the current context to the floppy or key drive
  - Shows the current status to verify that the media is not in use
  - Inserts the desired image into the drive
  - Connects the media. The boot setting always connects automatically

- To eject a floppy or USB key image from the Virtual Floppy/USBKey, enter:

```
cd /map1/oemhp_vm1/floppydr1
set oemhp_boot=disconnect
```

  This example executes the following commands:

  - Changes the current context to the floppy or key drive
  - Issues the disconnect command that disconnects the media and clears the `oemhp_image`

- To insert a CD-ROM image into the virtual CD-ROM, enter:

```
cd /map1/oemhp_vm1/cddr1
show
set oemhp_image=http://my.imageserver.com/ISO/install_disk1.iso
set oemhp_boot=connect
show
```

  This example executes the following commands:

  - Changes the current context to the CD-ROM drive
  - Shows the current status to verify that the media is not in use
  - Inserts the desired image into the drive
  - Connects the media. The boot setting always connects automatically

- To eject a CD-ROM image from the Virtual CD-ROM, enter:

```
cd /map1/oemhp_vm1/cddr1
set oemhp_boot=disconnect
```

  This example executes the following commands:

  - Changes the current context to the CD-ROM drive
  - Issues the disconnect command that disconnects the media and clears the `oemhp_image`

- To insert a CD-ROM image and set for single boot, enter:

```
cd /map1/oemhp_vm1/cddr1
set oemhp_image=http://my.imageserver.com/ISO/install_disk1.iso
set oemhp_boot=connect
set oemhp_boot=once
show
```

  This example executes the following commands:

  - Changes the current context to the CD-ROM drive
  - Shows the current status to verify that the media is not in use
  - Inserts the desired image into the drive
  - Connects the media. The boot setting always connects automatically
  - Overrides the boot setting to Once

- To eject a CD-ROM image from the virtual CD-ROM in a single command, enter:

  `set /map1/oemhp_vm1/cddr1 oemhp_boot=disconnect`

  If you attempt to disconnect when the drive is not connected, you receive an error.

Start and Reset commands

Start and reset commands enable you to power on and reboot the server containing iLO 3 or iLO 3 itself. Table 15 (page 51) shows the Start and Reset command properties.

Table 15 Start and Reset Commands

Command	Description
`start`	Turns server power on
`stop`	Turns server power off
`reset hard`	Power cycles the server
`reset soft`	Warm boots the server

Table 16 Manual Reset Command

Property	Access	Description
manual_iLO_reset	Read/Write	Allows a delay to iLO resets, which is useful when changing multiple properties. Valid values are **`yes`** (enabled) or **`no`** (disabled). When enabled, the iLO will reset only when a user logs out, is disconnected from iLO, or issues a 'reset/map1' command.

For example

The following commands are supported if the current target is:

`/system1`

- `start`
- `stop`

The following commands are supported if the current target is:

/map1

- reset

Set the status of the manual_iLO_reset property using the following commands:

- set /map1/ manual_ilo_reset=yes
- set /map1/ manual_ilo_reset=no

Firmware commands

Firmware commands enable you to display and modify the iLO 3 firmware version. Table 17 (page 52) shows the Firmware Update properties. Firmware settings are available at:

/map1/firmware1

Targets

No targets

Table 17 Firmware Update Properties

Property	Access	Description
version	read	Displays the current firmware version.
date	read	Displays the release date of the current firmware version.

Command format

load -source *URL* [target]

where *URL* is the URL of a firmware update image file on a web server. The URL is limited to 80 characters.

URL example:

protocol://username:password@hostname:port/filename

- protocol—Mandatory field that must be HTTP or HTTPS.
- username:password—Optional field
- hostname—Mandatory field
- port—Optional field
- filename—Mandatory field

The CLP only performs a cursory syntax verification of the URL value. You must visually ensure that the URL is valid.

For example

```
load -source http://imgserver.company.com/firmware/iloFWimage.bin
load -source http://john:abc123@imgserver.company.com/firmware/ilo.bin
load /map1/firmware1 -source
http://imgserver.company.com/firmware/iloFWimage.bin
```

The [target] field is:

/map1/firmware1—This field is optional if it is already the current target.

Eventlog commands

Eventlog commands enable you to display or delete the logs of both the system and iLO 3. Table 18 (page 53) shows the Eventlog command properties. Eventlog settings are available at:

- /system1/log1—IML
- /map1/log1—iLO event log

Targets

`record:1..n`

Where *n* is the total number of records.

Table 18 Eventlog Command Properties

Property	Access	Description
`number`	read	Displays the record number for the event.
`severity`	read	Displays the severity of the event. Severity levels are `informational`, `noncritical`, `critical`, or `unknown`.
`date`	read	Displays the event date.
`time`	read	Displays the event time.
`description`	read	Displays a description of the event.

For example

- `show /system1/log1`—Displays the IML.
- `show /map1/log1`—Displays the iLO event log.
- `show /system1/log1/record`*n*—Displays record *n* from the Integrated Management log.
- `show /map1/log1/record`*n*—Displays record *n* from the iLO event log.
- `delete /system1/log1`—Deletes the IML.
- `delete /map1/log1`—Deletes iLO event log.

Blade commands

Blade commands enable you to view and modify the values on a c-Class server. Table 19 (page 53) shows the Blade command targets. Table 20 (page 53) shows the Blade command properties. These values are available at:

`/system1/map1/blade1`

Table 19 Blade Command Targets

Target	Description
`/map1/blade1/rack`	Displays and modifies the blade rack settings.
`/map1/blade1/rack/enclosure`	Displays and modifies the blade enclosure settings.

Table 20 Blade Command Properties

Property	Access	Description
`bay_number`	Read	Displays the blade bay number.
`auto_power`	Read	Displays and modifies if the blade is enabled to automatically power up.

For example

Boot commands

Boot commands enable you to modify the boot order of the system. Table 21 (page 54) shows the Boot command properties. Boot settings are available at:

`/system1/bootconfig1`

Targets

`bootsource<n>`

Where *n* is the total number of boot sources.

The boot source targets and matching boot source values do not change. The values for bootsource are:

- `bootsource1: BootFmCd`
- `bootsource2: BootFmFloppy`
- `bootsource3: BootFmDrive`
- `bootsource4: BootFmUSBKey`
- `bootsource5: BootFmNetwork`

Table 21 Boot Command Properties

Property	Access	Description
`bootorder`	Read/write	Configures the boot order for a given boot source

For example

When configuring `bootorder`, first list the current boot order by entering `show -all /system1/bootconfig1`. The example output below shows `bootsource3` (BootfmDrive) is currently configured as the primary boot device, because it has a `bootorder=1`:

```
</system1/bootconfig1/bootsource1>hpiLO-> show -all /system1/bootconfig1
/system1/bootconfig1
  Targets
    bootsource1
    bootsource2
    bootsource3
    bootsource4
    bootsource5
  Properties
  Verbs
    cd version exit show set

/system1/bootconfig1/bootsource1
  Targets
  Properties
    bootorder=2
  Verbs
    cd version exit show set

/system1/bootconfig1/bootsource2
  Targets
  Properties
    bootorder=3
  Verbs
    cd version exit show set

/system1/bootconfig1/bootsource3
  Targets
  Properties
    bootorder=1
  Verbs
    cd version exit show set

/system1/bootconfig1/bootsource4
  Targets
  Properties
    bootorder=4
  Verbs
    cd version exit show set
```

```
/system1/bootconfig1/bootsource5
  Targets
  Properties
    bootorder=5
  Verbs
    cd version exit show set
```

To change the boot order, enter the following command:

`set /system1/bootconfig1/bootsource<n> bootorder=<num>.`

For example, to move `bootsource1` (BootfmCd) to be the primary boot device:

```
</system1/bootconfig1>hpiLO-> set bootsource1 bootorder=1
Bootorder being set.

bootsource1=BootFmCd          bootorder=1
bootsource3=BootFmDisk        bootorder=2
bootsource2=BootFmFloppy      bootorder=3
bootsource4=BootFmUSBKey      bootorder=4
bootsource5=BootFmNetwork     bootorder=5
```

To display the boot order for a specific device, enter the following command:

`show /system1/bootconfig1/bootsource<n>`

For example, to display the boot order for `bootsource1`:

```
</system1/bootconfig1>hpiLO-> show /system1/bootconfig1/bootsource1

/system1/bootconfig1/bootsource1
  Targets
  Properties
    bootorder=1
  Verbs
    cd version exit show set
```

LED commands

LED commands are used to change the state of the UID light on the server. Table 22 (page 55) shows the LED command properties. LED settings are available at:

`/system1/led1`

Table 22 LED Command Properties

Property	Description
`start`	Turns the LED on.
`stop`	Turns the LED off.
`show`	Displays the LED status.

For example

- `show /system1/led1`—Displays current LED status
- `start /system1/led1`—Turns LED on
- `stop /system1/led1`—Turns LED off

iLO 3 CLI support

Simple UID CLI commands are supported:

- `uid`—Displays the current UID state on the server.
- `uid on`—Turns the UID light on.
- `uid off`—Turns the UID light off.

The CLP format is supported as well:

- `show /system1/led1`—Verifies LED status
- `start /system1/led1`—Turns LED on
- `stop /system1/led1`—Turns LED off

System properties and targets

The properties and targets described in this section provide information about the server. Table 23 (page 56) shows the System targets. Table 24 (page 57) shows the System properties. System properties settings are available at:

`/system1/oemhp_power1`

Table 23 System Targets

Target	Description
`oemhp_PresentPower`	Displays the average power reading from the last sample
`oemhp_AvgPower`	Displays the average power reading from the past 24 hours
`oemhp_MaxPower`	Displays the greatest peak power reading from the past 24 hours
`oemhp_MinPower`	Displays the minimum average power reading from the past 24 hours
`warning_type`	Displays and modifies the warning type
`warning_threshold`	Displays and modifies the warning threshold for power consumption
`warning_duration`	Displays and modifies the duration the power threshold must be exceeded before a warning is generated
`oemhp_powerreg`	Displays and modifies the Power Regulator for ProLiant state. Valid values are **dynamic**, **max**, **min**, or **os**.
`oemhp_pwrcap`	Displays and modifies the power cap setting for the server in watts. A wattage of zero indicates that power capping is disabled. The value must be an integer cap value that is greater than or equal to oemhp_serverminpower, and must be less than or equal to oemhp_powersupplycapacity.
`oemhp_powersupplycapacity`	Displays the power supply's total capacity in Watts.
`oemhp_servermaxpower`	Displays the server's maximum power capacity in Watts.
`oemhp_serverminpower`	Displays the server's minimum power capacity in Watts.
`oemhp_power_micro_ver`	Displays the firmware version number for the Power Micro Controller.
`oemhp_auto_pwr`	Displays and modifies Server Automatic Power On setting. Valid values are on, restore, and off. **On** turns on automatic power on with minimum delay. **Restore** restores the last power state (ML/DL servers only). **Off** turns off automatic power on.

Verbs:

- cd
- version
- exit
- show
- set

For example:

- `show /system1/oemhp_power1 oemhp_powerreg`
- `set /system1/oemhp_power1 oemhp_powerreg=<dynamic|max|min|os>`

- `show /system1/oemhp_power1 oemhp_pwrcap`
- `set /system1/oemhp_power1 oemhp_pwrcap=0`
- `show /system1/oemhp_power1 oemhp_power_micro_ver`

The following command shows all the properties for oemhp_power1:

`show /system1/oemhp_power1`

Example output:

```
/system1/oemhp_power1
  Targets
  Properties
    oemhp_powerreg=os
    oemhp_pwrcap=0 Watts
    oemhp_PresentPower=147 Watts
    oemhp_AvgPower=146 Watts
    oemhp_MaxPower=180 Watts
    oemhp_MinPower=146 Watts
    oemhp_powersupplycapacity=750 Watts
    oemhp_servermaxpower=361 Watts
    oemhp_serverminpower=144 Watts
    warning_type=disabled
    warning_threshold=750 Watts
    warning_duration=240 Minutes
    oemhp_power_micro_ver=1.6
    oemhp_auto_pwr=OFF
```

The following properties are available in:

`/system1`

Table 24 System Properties

Property	Access	Description
`name`	Read	Displays the system name.
`number`	Read	Displays the system serial number.
`oemhp_server_name`	Read	Displays the host server name string. This string can be up to 50 characters in length, and requires the Configure iLO Settings privilege to change.
`enabledstate`	Read	Appears if the server is powered up.
`processor_number`	Read	Displays the number of logical processors in the system.

For example

- `show /system1`
- `show /system1 name`
- `set /system1 oemhp_powerreg=auto`

The CPU property is a target of `/system1` and displays information about the system processor. Table 25 (page 58) shows the System CPU properties. The properties are available at:

`/system1/cpu`*n*

Where *n* is the processor number.

Table 25 System CPU Properties

Property	Access	Description
number_cores	Read	Displays the number of processor cores.
active_cores	Read	Displays the number of active processor cores.
threads	Read	Displays the total number of threads on the active processor cores.
speed	Read	Displays the processor speed.
memory_technology	Read	Displays the bit level technology of the memory.
cachememory1	Read	Displays the size of the processor level-1 cache.
cachememory2	Read	Displays the size of the processor level-2 cache.
cachememory3	Read	Displays the size of the processor level-3 cache.

For example:

```
show /system1/cpu1

/system1/cpu1
  Targets
  Properties
    number_cores=12
    active_cores=12
    threads=12
    speed=1900MHz
    memory_technology=64-bit Capable
    cachememory1=1536KB
    cachememory2=6144KB
    cachememory3=10240KB
```

The `memory` property displays information about the system memory.

Table 26 (page 58) shows the System memory properties. The properties are available at:

`/system1/memory`*n*

Where *n* is the memory DIMM number.

Table 26 System Memory Properties

Property	Access	Description
size	Read	Displays the memory size.
speed	Read	Displays the memory speed.
location	Read	Displays the location of the memory.

The `Slot` property displays information about the system slots.

Table 27 (page 58) shows the System Slot properties. The properties are available at:

`/system1/slot`*n*

Where *n* is the slot number.

Table 27 System Slot Properties

Property	Access	Description
type	Read	Displays the slot type.
width	Read	Displays the slot width.

The `Firmware` property displays information about the system ROM.

Table 28 (page 59) shows the System Firmware properties. The properties are available at: `/system1/firmware1`

Table 28 System Firmware Properties

Property	Access	Description
`version`	Read	Displays the version of the system ROM.
`date`	Read	Displays the date the system ROM.

For example:

- `show /system1/cpu1`—Displays information on one CPU.
- `show /system1/memory1`—Displays information on one memory slot.
- `show /system1/slot1`—Displays information on one slot.
- `show /system1/firmware1`—Displays information about system ROM.

  For example:

```
/system1/firmware1
Targets
Properties
version=P56
date=01/05/2010
```

Other commands

Other commands include the following:

`start /system1/oemhp_vsp1`	Starts a virtual serial port session. Press **Esc (** to return to the CLI session. To send a System Request (SysRq), press **Esc**+**Ctrl**+**b**, and then press **h**.
`nmi server`	Generates and sends an NMI to the server. It is limited to users with the Virtual Power and Reset privilege.

8 RIBCL XML Scripting Language

Overview of the RIBCL

RIBCL enables you to write XML scripts to configure and manage iLO 3 configuration settings, user accounts, directory settings, server settings, and HP SSO settings. Download the sample scripts from the HP website at http://www.hp.com/go/iLO3. Click **HP iLO Sample Scripts for Windows** or **HP Lights-Out XML Scripting Sample for Linux** under **Helpful Downloads**.. Before using the XML sample scripts downloaded from the HP website, read the firmware support information in each sample script to tailor the script for the intended firmware and version.

When writing your XML scripts, write comments in the command as needed. If a comment falls in the command line, an error message is generated. Unless otherwise specified, examples in this guide are specifically for iLO 3 firmware version 1.61 and later.

This section describes the XML commands and their parameters common to most LOM products and servers. For more information about the ProLiant BL c-Class server and rack XML commands, see the *HP iLO User Guide* on the HP website at: http://www.hp.com/go/ilo3 and click More iLO Documentation.

XML headers

The following XML header must be present in every script, to ensure the connection is an XML connection, not an HTTP connection:

```
<?xml version="1.0"?>
```

Data types

The three data types allowed in the parameter are:

- String
- Specific string
- Boolean string

String

A string is any text enclosed in quotes. It can include spaces, numbers, or any printable character. A string must start with either a double or single quote, and it must end with the same type of quote. The string can contain a quote if it is different from the string delimiter quotes.

For example, if a string starts with a double quote, a single quote can be used within the string and the string must be closed with a double quote.

Unsupported Microsoft Windows quote characters:

Support for Windows-specific smart-quotes (“ ” and ‘ ’) as content delimiters in XML is being phased out. Be sure to replace any smart-quote characters in your script with normal double or single quotes (" and ').

Specific string

A specific string is one that is required to contain certain characters. In general, you have a choice of words that are accepted as correct syntax and all other words produce an error.

Boolean string

A Boolean string is a specific string that specifies a `yes` or `no` condition. Acceptable Boolean strings are `yes`, `no`, `true`, `false`, `y`, `n`, `t`, `f`, `1`, and `0`. These strings are not case sensitive.

Response definitions

Every command that is sent to iLO generates a response. The response indicates whether the command succeeded or failed. Some commands generate additional information. The additional information appears in execution sequence, provided no errors occurred.

For example:

```
<RESPONSE
STATUS="0x0001"
MSG="There has been a severe error."/>
```

- RESPONSE

  This tag name indicates that iLO is sending a response to the previous commands back to the client application to indicate the success or failure of the commands that have been sent to iLO.

- STATUS

  This parameter contains an error number. The number `0x0000` indicates that no error exists.

- MSG

  This element contains a message describing the error that happened. If there is no error, the `No error` message appears.

RIBCL

This command is used to start and end an RIBCL session. You can use it only once to start an RIBCL session, and it must be the first command to display in the script. The RIBCL tags are required to mark the beginning and the end of the RIBCL document.

For example:

```
<RIBCL VERSION="2.0">
</RIBCL>
```

RIBCL parameters

VERSION is a string that indicates the version of the RIBCL that the client application is expecting to use. The VERSION string is compared to the version of the RIBCL that is expected, and an error message is returned if the first number of the string and the version (major version) do not match. The preferred value for the VERSION parameter is 2.X. For example, if the string is 2.20 and the expected major version number is 2, no errors message is sent. However, if the VERSION string is 1.X and the expected version is 2, then the different versions may introduce compatibility issues. If there is a major version mismatch, the following inform message is sent:

`The RIBCL version is incorrect. The correct version is <X.XX> or later.`

Update the RIBCL script to be compatible with the current RIBCL version.

RIBCL runtime errors

The possible RIBCL error messages include:

- `Version must not be blank.`
- `The RIBCL version is incorrect. The correct version is X.XX or later.`

Combining multiple commands in one RIBCL script

To combine multiple commands in a single RIBCL script, enclose each command in a top level *_INFO tag. One of the following top level tags must enclose each command used, or accidental changes to your configuration can result:

- USER_INFO
- RIB_INFO
- DIR_INFO
- BLADESYSTEM_INFO
- SERVER_INFO
- SSO_INFO

See the examples below for contrasting script samples.

Example 3 Incorrectly combined script

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="write">
      <MOD_GLOBAL_SETTINGS>
        <MIN_PASSWORD value="5"/>
      </MOD_GLOBAL_SETTINGS>
      <MOD_NETWORK_SETTINGS>
        <DHCP_DNS_SERVER value="No"/>
        <DHCP_WINS_SERVER value="No"/>
        <DHCP_STATIC_ROUTE value="No"/>
      </MOD_NETWORK_SETTINGS>
    </RIB_INFO>
    <USER_INFO MODE="write">
      <ADD_USER USER_NAME="admin" USER_LOGIN="admin" PASSWORD="admin">
        <ADMIN_PRIV value="Yes" />
        <REMOTE_CONS_PRIV value="Yes" />
        <RESET_SERVER_PRIV value="Yes" />
        <VIRTUAL_MEDIA_PRIV value="Yes" />
        <CONFIG_ILO_PRIV value="Yes" />
      </ADD_USER>
      <DELETE_USER USER_LOGIN="Administrator" />
    </USER_INFO>
  </LOGIN>
</RIBCL>
```

Example 4 Correctly combined script

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="write">
      <MOD_GLOBAL_SETTINGS>
        <MIN_PASSWORD value="5"/>
      </MOD_GLOBAL_SETTINGS>
    </RIB_INFO>
    <RIB_INFO MODE="write">
      <MOD_NETWORK_SETTINGS>
        <DHCP_DNS_SERVER value="No"/>
        <DHCP_WINS_SERVER value="No"/>
        <DHCP_STATIC_ROUTE value="No"/>
      </MOD_NETWORK_SETTINGS>
    </RIB_INFO>
    <USER_INFO MODE="write">
      <ADD_USER USER_NAME="admin" USER_LOGIN="admin" PASSWORD="admin">
        <ADMIN_PRIV value="Yes" />
        <REMOTE_CONS_PRIV value="Yes" />
        <RESET_SERVER_PRIV value="Yes" />
        <VIRTUAL_MEDIA_PRIV value="Yes" />
        <CONFIG_ILO_PRIV value="Yes" />
      </ADD_USER>
    </USER_INFO>
    <USER_INFO MODE="write">
      <DELETE_USER USER_LOGIN="Administrator" />
    </USER_INFO>
  </LOGIN>
</RIBCL>
```

LOGIN

The LOGIN command provides the information that is used to authenticate the user whose permission level is used when performing RIBCL actions. The specified user must have a valid iLO account to

execute RIBCL commands. The user privileges are verified against the required privilege for a particular command, and an error is returned if the privilege level does not match.

For example:

```
<LOGIN USER_LOGIN="username" PASSWORD="password">
</LOGIN>
```

Alternatively, the HPQLOCFG utility allows you to specify the login information as parameters on the command line using switches:

```
hpqlocfg -u username -p password
```

LOGIN parameters

USER_LOGIN is the login name of the user account. This parameter is case sensitive and must not be blank.

PASSWORD is the password associated with the user. This parameter is case sensitive and can be a combination of any printable characters.

LOGIN runtime errors

Possible runtime error messages include:

- `User login name was not found.`
- `Password must not be blank.`
- `Logged-in user does not have required privilege for this command.`

USER_INFO

The USER_INFO command can only appear within a LOGIN command block. When the command is parsed, it reads the local user information database into memory and prepares to edit it. Only commands that are USER_INFO type commands are valid inside the USER_INFO command block. The USER_INFO command generates a response that indicates to the host application whether the database was successfully read or not. If the database is open for writing by another application, then this call fails.

USER_INFO requires the MODE parameter with a value of read or write. MODE is a specific string parameter with a maximum length of 10 characters that specifies what you intend to do with the information.

Write mode enables both reading and writing of iLO information. Read mode prevents modification of the iLO information.

For example:

```
<USER_INFO MODE="write">
…… USER_INFO commands ……
</USER_INFO>
```

ADD_USER

The ADD_USER command is used to add a local user account. The USER_NAME and USER_LOGIN parameters must not exist in the current user database. Use the MOD_USER command to change existing user information. For this command to parse correctly, the command must appear within a USER_INFO command block, and USER_INFO MODE must be set to write. The user must have the Administer User Accounts privilege.

All of the attributes that pertain to the user are set using the following parameters:

```
<RIBCL VERSION="2.0">
```

```
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
   <USER_INFO MODE="write">
      <ADD_USER
        USER_NAME="User"
        USER_LOGIN="username"
        PASSWORD="password">
         <ADMIN_PRIV value ="N"/>
         <REMOTE_CONS_PRIV value ="Y"/>
         <RESET_SERVER_PRIV value ="N"/>
         <VIRTUAL_MEDIA_PRIV value ="N"/>
         <CONFIG_ILO_PRIV value="Y"/>
      </ADD_USER>
   </USER_INFO>
</LOGIN>
</RIBCL>
```

ADD_USER parameters

USER_NAME is the actual name of the user. This parameter can be a combination of any printable characters up to a maximum length of 39 characters. This parameter is not case sensitive and must not be blank.

USER_LOGIN is the name used to gain access to the respective iLO. This parameter can be a combination of any printable characters up to a maximum length of 39 characters. This parameter is not case sensitive and must not be left blank.

PASSWORD is the password associated with the user. This parameter is case sensitive and can be a combination of any printable characters. The length is user defined and can be a minimum of zero characters and a maximum of 39 characters. The minimum length is defined in the iLO Global Settings and has a default value of eight characters.

ADMIN_PRIV is a Boolean parameter that enables the user to administer user accounts. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. The user can modify account settings, modify other user account settings, add users, and delete users. Omitting this parameter prevents the user from adding, deleting, or configuring user accounts.

REMOTE_CONS_PRIV is a Boolean parameter that gives permission for the user to access the Remote Console functionality. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter denies the user access to Remote Console functionality.

RESET_SERVER_PRIV is a Boolean parameter that gives the user permission to remotely manipulate the server power setting. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter prevents the user from manipulating the server power settings.

VIRTUAL_MEDIA_PRIV is a Boolean parameter that gives the user permission to access the virtual media functionality. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter denies the user the Virtual Media privilege.

CONFIG_ILO_PRIV is a Boolean parameter that enables the user to configure iLO settings. This privilege includes network settings, global settings, Insight Manager settings, and SNMP settings. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be blank. Omitting this parameter prevents the user from manipulating the current iLO configuration.

ADD_USER runtime errors

Possible ADD_USER error messages include:

- `Login name is too long.`
- `Password is too short.`

- `Password is too long.`
- `User table is full. No room for new user.`
- `Cannot add user. The user name already exists.`
- `User information is open for read-only access. Write access is required for this operation.`
- `User name cannot be blank.`
- `User login ID cannot be blank.`
- `Boolean value not specified.`
- `User does not have correct privilege for action. ADMIN_PRIV required.`

DELETE_USER

The DELETE_USER command is used to remove an existing local user account. The USER_LOGIN parameter must exist in the current user database. For this command to parse correctly, the command must appear within a USER_INFO command block, and USER_INFO MODE must be set to write. The user must have the Administer User Accounts privilege.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <USER_INFO MODE="write">
   <DELETE_USER USER_LOGIN="username"/>
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

DELETE_USER parameter

USER_LOGIN is the login name of the user account. This parameter is case sensitive and must not be blank.

DELETE_USER runtime errors

Possible DELETE_USER errors include:

- `User information is open for read-only access. Write access is required for this operation.`
- `Cannot delete user information for currently logged in user.`
- `User login name was not found.`
- `User login name must not be blank.`
- `User does not have correct privilege for action. ADMIN_PRIV required.`

DEL_USERS_SSH_KEY

Deletes any SSH keys associated with USER_LOGIN. The DEL_USERS_SSH_KEY command is implemented as a subcommand and must appear within a MOD_USER command block. This command requires HPQLOCFG.EXE version 1.00 or later.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="admin" PASSWORD="admin123">
      <USER_INFO MODE="write">
         <MOD_USER USER_LOGIN="admin">
            <DEL_USERS_SSH_KEY/>
```

```
        </MOD_USER>
      </USER_INFO>
   </LOGIN>
</RIBCL>
```

DEL_SSH_KEY parameters

None

DEL_SSH_KEY runtime errors

Possible DEL_SSH_KEY runtime errors include:

- `User login name must not be blank`
- `User does not have correct privilege for action. ADMIN_PRIV required.`
- `Unable to clear the SSH key.`

GET_USER

The GET_USER command returns local user information, excluding the password. The USER_LOGIN parameter must exist in the current user database. For this command to parse correctly, the command must appear within a USER_INFO command block, and USER_INFO MODE can be in read or write. The user must have the Administer User Accounts privilege to retrieve other user accounts. Otherwise, the user can only view their individual account information.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <USER_INFO MODE="read">
   <GET_USER USER_LOGIN="username"/>
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

GET_USER parameter

USER_LOGIN is the login name of the user account. This parameter is case sensitive and must not be blank.

GET_USER runtime errors

Possible GET_USER error messages include:

- `User login name must not be blank.`
- `User login name was not found.`
- `User does not have correct privilege for action. ADMIN_PRIV required.`

GET_USER return messages

A possible GET_USER return message includes:

```
<RESPONSE STATUS="0x0000" MSG="No Errors"/>
<GET_USER USER_NAME="Admin User" USER_LOGIN= "username"
ADMIN_PRIV="N"
REMOTE_CONS_PRIV="Y"
RESET_SERVER_PRIV="N"
VIRTUAL_MEDIA_PRIV="N"
CONFIG_ILO_PRIV value ="No"/>
```

MOD_USER

The MOD_USER command is used to modify an existing local user account. The USER_LOGIN parameter must exist in the current user database. For this command to parse correctly, the command must appear within a USER_INFO command block, and USER_INFO MODE must be set to write. The user must have the Administer User Accounts privilege. Otherwise, the user can only modify their individual account password.

To see a video demonstration of using the MOD_USER command to change a user password, see *How to use HP iLO's XML scripting interface, RIBCL, to change an user password.* at http://www.hp.com/go/ilo/videos.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <USER_INFO MODE="write">
         <MOD_USER USER_LOGIN="username">
            <USER_NAME value="displayname"/>
            <USER_LOGIN value="newusername"/>
            <PASSWORD value="newpassword"/>
            <ADMIN_PRIV value="Yes"/>
            <REMOTE_CONS_PRIV value="No"/>
            <RESET_SERVER_PRIV value="Yes"/>
            <VIRTUAL_MEDIA_PRIV value="Yes"/>
            <CONFIG_ILO_PRIV value="Yes"/>
         </MOD_USER>
      </USER_INFO>
   </LOGIN>
</RIBCL>
```

Reset administrator password example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <USER_INFO MODE="write">
   <MOD_USER USER_LOGIN="Administrator">
   <PASSWORD value="password"/>
   </MOD_USER>
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

Change password example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <USER_INFO MODE="write">
   <MOD_USER USER_LOGIN="username">
   <PASSWORD value="newpassword"/>
   </MOD_USER>
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

MOD_USER parameters

If the following parameters are not specified, then the parameter value for the specified user is preserved.

MOD_USER USER_LOGIN is the login name of the user to be changed. This parameter can be a combination of any printable characters up to a maximum length of 39 characters. This parameter is not case sensitive and must not be left blank.

USER_NAME is the actual name of the user to be modified. This parameter is not case sensitive, can be any valid string, and has a maximum length of 39 characters. This string is used for display only and must not be left blank.

PASSWORD is the password associated with the user. This parameter is case sensitive and can be a combination of any printable characters. The length is user defined and can be a minimum of zero characters and a maximum of 39 characters. The minimum length is defined in the iLO Global Settings and has a default value of eight characters.

ADMIN_PRIV is a Boolean parameter that enables the user to administer user accounts. The user can modify their account settings, modify other user account settings, add users, and delete users. Omitting this parameter prevents the user from adding, deleting, or configuring user accounts.

REMOTE_CONS_PRIV is a Boolean parameter that gives permission for the user to access the Remote Console functionality. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter denies the user access to Remote Console functionality.

RESET_SERVER_PRIV is a Boolean parameter that gives the user permission to remotely manipulate the server power setting. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter prevents the user from manipulating the server power settings.

VIRTUAL_MEDIA_PRIV is a Boolean parameter that gives the user permission to access the virtual media functionality. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter denies the user The Virtual Media privilege.

CONFIG_ILO_PRIV is a Boolean parameter that enables the user to configure iLO settings. This privilege includes network settings, global settings, Insight Manager settings, and SNMP settings. This parameter is optional, and the Boolean string must be set to `Yes` if the user is allowed this privilege. If this parameter is used, the Boolean string value must not be left blank. Omitting this parameter prevents the user from manipulating the current iLO configuration.

MOD_USER runtime errors

Possible MOD_USER error messages include:

- `Login name is too long.`
- `Password is too short.`
- `Password is too long.`
- `User information is open for read-only access. Write access is required for this operation.`
- `User login name must not be blank.`
- `Cannot modify user information for currently logged user.`
- `User does not have correct privilege for action. ADMIN_PRIV required.`

GET_ALL_USERS

The GET_ALL_USERS command returns all USER_LOGIN parameters in the user database. For this command to parse correctly, the command must appear within a USER_INFO command block, and USER_INFO MODE can be in read or write. The user must have the Administer User Accounts privilege to retrieve all user accounts.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <USER_INFO MODE="read">
```

```
   <GET_ALL_USERS />
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

GET_ALL_USERS parameters

None

GET_ALL_USERS runtime errors

The possible GET_ALL_USERS error messages include:

- `User does not have correct privilege for action. ADMIN_PRIV required.`

GET_ALL_USERS return messages

A possible GET_ALL_USERS return message is:

```
<RESPONSE STATUS="0x0000" MESSAGE='No Error'/>
<GET_ALL_USERS>
<USER_LOGIN VALUE="username"/>
<USER_LOGIN VALUE="user2"/>
<USER_LOGIN VALUE="user3"/>
<USER_LOGIN VALUE="user4"/>
<USER_LOGIN VALUE="user5"/>
<USER_LOGIN VALUE="user6"/>
<USER_LOGIN VALUE="user7"/>
<USER_LOGIN VALUE="user8"/>
<USER_LOGIN VALUE="user9"/>
<USER_LOGIN VALUE="user10"/>
<USER_LOGIN VALUE=""/>
<USER_LOGIN VALUE=""/>
</GET_ALL_USERS>
```

A possible unsuccessful request is:

```
<RESPONSE STATUS="0x0023" MESSAGE='User does NOT have correct
privilege for action.
ADMIN_PRIV required.'/>
```

GET_ALL_USER_INFO

The GET_ALL_USER_INFO command returns all local user information in the user database, excluding passwords. For this command to parse correctly, the command must appear within a USER_INFO command block, and USER_INFO MODE can be in read or write. The user must have the Administer User Accounts privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <USER_INFO MODE="read">
   <GET_ALL_USER_INFO />
  </USER_INFO>
 </LOGIN>
</RIBCL>
```

GET_ALL_USER_INFO parameters

None

GET_ALL_USER_INFO runtime errors

The possible GET_ALL_USER_INFO error messages include:

```
User does not have correct privilege for action. ADMIN_PRIV required.
```

GET_ALL_USER_INFO return messages

A possible GET_ALL_USER_INFO return message is:

```
<GET_ALL_USER_INFO/>
<GET_USER
USER_NAME="Admin"
USER_LOGIN="Admin"
ADMIN_PRIV="Y"
CONFIG_RILO_PRIV="Y"
LOGIN_PRIV="Y"
REMOTE_CONS_PRIV="Y"
RESET_SERVER_PRIV="Y"
VIRTUAL_MEDIA_PRIV="Y"
/> ......
The same information will be repeated for all the users.
</GET_ALL_USER_INFO>
```

A possible unsuccessful request is:

```
<RESPONSE STATUS="0x0023" MESSAGE='User does NOT have correct
privilege for action.
ADMIN_PRIV required.'/>
```

RIB_INFO

The RIB_INFO command can only appear within a LOGIN command block. When the command is parsed, it reads the iLO configuration information database into memory and prepares to edit it. Only commands that are RIB_INFO type commands are valid inside the RIB_INFO command block. The RIB_INFO command generates a response that indicates to the host application whether the database was successfully read or not. If the database is open for writing by another application, then this call fails.

RIB_INFO requires the MODE parameter with a value of read or write. MODE is a specific string parameter with a maximum length of 10 characters that specifies what you intend to do with the information.

Write mode enables both reading and writing of iLO information. Read mode prevents modification of the iLO information.

For example:

```
<RIB_INFO MODE="write">
…… RIB_INFO commands ……
</RIB_INFO>
```

Clear iLO event log example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="write">
   <CLEAR_EVENTLOG/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

RESET_RIB

The RESET_RIB command is used to reset iLO. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE can be set to read or write. The user must have the Configure iLO Settings privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Admin" PASSWORD="Password">
  <RIB_INFO MODE = "write">
   <RESET_RIB/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

RESET_RIB parameters

None

RESET_RIB runtime errors

The possible RESET_RIB error message include:

```
User does not have correct privilege for action. CONFIG_ILO_PRIV
required.
```

GET_EVENT_LOG

The GET_EVENT_LOG command retrieves the iLO Event Log or the Integrated Management log, depending on the context of the command. For this command to parse correctly, the command must appear within a RIB_INFO or SERVER_INFO command block. To retrieve the iLO Event Log, use the RIB_INFO command block. To retrieve the Integrated Management log use, the SERVER_INFO command block.

For example:

- iLO Event Log example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="READ">
   <GET_EVENT_LOG />
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

- Integrated Management log example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="READ">
   <GET_EVENT_LOG />
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_EVENT_LOG parameters

None

GET_EVENT_LOG runtime errors

GET_EVENT_LOG returns a runtime error if it is not called from within the RIB_INFO or SERVER_INFO block.

For example:

```
<RIBCL VERSION="2.0">
<RESPONSE STATUS="0x0001" MESSAGE='Syntax error: Line #3: syntax error near ">"
in the line: " GET_EVENT_LOG >"'/>
</RIBCL>
```

GET_EVENT_LOG return messages

The response includes all of the events recorded, in the order that they occurred. Events are not sorted by severity or other criteria. Each event includes a common set of attributes:

- SEVERITY indicates the importance of the error and how it might impact server or iLO availability:
  - FAILED indicates a problem or component failure that might impact operational time if it is not addressed.
  - CAUTION indicates an event that is not expected during normal system operation. This might not indicate a platform issue.
  - DEGRADED indicates the device or subsystem is operating at a reduced capacity.
  - REPAIRED indicates that an event or component failure has been addressed.
  - INFORMATIONAL indicates that something noteworthy occurred, but operational time is not impacted.
- CLASS indicates the subsystem that generated the event, and can include iLO, environment, power, system error, rack infrastructure, and more.
- LAST_UPDATE indicates the most recent time this event was modified.
- INITIAL_UPDATE indicates when this event first occurred.
- COUNT indicates the number of times a duplicate event happened.
- DESCRIPTION indicates the nature of the event and all recorded details.

The following response is typical of the data returned from the iLO Event Log:

```
<EVENT_LOG DESCRIPTION="iLO Event Log">
<EVENT
SEVERITY="Caution"
CLASS="iLO"
LAST_UPDATE="04/04/2004 12:34"
INITIAL_UPDATE="04/04/2004 12:34"
COUNT="1"
DESCRIPTION="Server reset."/>
...
</EVENT_LOG>
```

The following response is typical of the data returned from the Integrated Management Log:

```
<EVENT_LOG DESCRIPTION="Integrated Management Log">
<EVENT
SEVERITY="Caution"
CLASS="POST Message"
LAST_UPDATE="04/04/2004 12:34"
INITIAL_UPDATE="04/04/2004 12:34"
```

```
COUNT="1"
DESCRIPTION="POST Error: 1775-Drive Array -
ProLiant Storage System not Responding" />
...
</EVENT_LOG>
```

CLEAR_EVENTLOG

The CLEAR_EVENTLOG command clears the iLO Event Log. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="write">
   <CLEAR_EVENTLOG/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

CLEAR_EVENTLOG parameters

None

CLEAR_EVENTLOG runtime errors

The possible CLEAR_EVENTLOG error messages are:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

COMPUTER_LOCK_CONFIG

The COMPUTER_LOCK_CONFIG command is used to configure the Remote Console Computer Lock feature. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

Uppercase letters are not supported, and are converted automatically to lowercase. If either a double quote or a single quote is used, it must be different from the delimiter. For a complete list of the supported custom keys, see the *HP iLO User Guide* on the HP website at: http://www.hp.com/go/ilo3 and click More iLO Documentation.

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <COMPUTER_LOCK_CONFIG>

            <!-- To set default Windows Computer Lock keys combination:      -->
            <COMPUTER_LOCK value="windows"/>

            <!-- To configure custom Computer Lock keys combination:         -->
            <!--
            <COMPUTER_LOCK value="custom"/>
            <COMPUTER_LOCK_KEY value="L_GUI,l"/>
            -->

            <!-- To disable Computer Lock feature:                           -->
            <!--
```

```
            <COMPUTER_LOCK value="disabled"/>
            -->

         </COMPUTER_LOCK_CONFIG>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

COMPUTER_LOCK_CONFIG parameters

COMPUTER_LOCK value— You can customize Windows, Linux and other operating systems by setting the value:

- `windows`—Sets the command to define the computer lock for a Windows based operating system. The computer lock on Windows based operating systems defaults to the **Windows logo** + **L** keys.
- `custom`—Sets the command to define the computer lock for a non-Windows based operating system.
- `disabled`—Disables the computer lock feature.

COMPUTER_LOCK key—Sets the key combination to lock an operating system.

For example:

```
<COMPUTER_LOCK key="l_gui,l"/>
```

COMPUTER_LOCK_CONFIG runtime errors

Possible COMPUTER_LOCK_CONFIG error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `Invalid number of parameters. The maximum allowed is five.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`
- `Invalid COMPUTER_LOCK option; value must be windows, custom, or disabled.`
- `COMPUTER_LOCK value must be set to custom to use the COMPUTER_LOCK_KEY tag.`
- `The COMPUTER_LOCK key command was used without a preceding COMPUTER_LOCK value command equal to custom.`
- `The key parameter specified is not valid.`

GET_NETWORK_SETTINGS

The GET_NETWORK_SETTINGS command requests the respective iLO network settings. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE can be set to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="read">
   <GET_NETWORK_SETTINGS/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

GET_NETWORK_SETTINGS parameters

None

GET_NETWORK_SETTINGS runtime errors

None

GET_NETWORK_SETTINGS return messages

A possible GET_NETWORK_SETTINGS return message is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
    />
<GET_NETWORK_SETTINGS>
    <ENABLE_NIC VALUE="Y"/>
    <SHARED_NETWORK_PORT VALUE="N"/>
    <VLAN_ENABLED VALUE="N"/>
    <VLAN_ID VALUE="0"/>
    <SPEED_AUTOSELECT VALUE="Y"/>
    <NIC_SPEED VALUE="Automatic"/>
    <FULL_DUPLEX VALUE="Automatic"/>
    <DHCP_ENABLE VALUE="Y"/>
    <DHCP_GATEWAY VALUE="N"/>
    <DHCP_DNS_SERVER VALUE="Y"/>
    <DHCP_WINS_SERVER VALUE="N"/>
    <DHCP_STATIC_ROUTE VALUE="N"/>
    <DHCP_DOMAIN_NAME VALUE="N"/>
    <DHCP_SNTP_SETTINGS VALUE="Y"/>
    <REG_WINS_SERVER VALUE="N"/>
    <REG_DDNS_SERVER VALUE="N"/>
    <PING_GATEWAY VALUE="N"/>
    <MAC_ADDRESS VALUE="1c:c1:de:17:b3:90"/>
    <IP_ADDRESS VALUE="192.168.1.13"/>
    <SUBNET_MASK VALUE="255.255.255.0"/>
    <GATEWAY_IP_ADDRESS VALUE="0.0.0.0"/>
    <DNS_NAME VALUE="weezer"/>
    <DOMAIN_NAME VALUE="ilotest.com."/>
    <PRIM_DNS_SERVER VALUE="0.0.0.0"/>
    <SEC_DNS_SERVER VALUE="0.0.0.0"/>
    <TER_DNS_SERVER VALUE="0.0.0.0"/>
    <PRIM_WINS_SERVER VALUE="0.0.0.0"/>
    <SEC_WINS_SERVER VALUE="0.0.0.0"/>
    <SNTP_SERVER1 VALUE="192.168.1.5"/>
    <SNTP_SERVER2 VALUE=""/>
    <TIMEZONE VALUE="CST6CDT"/>
    <STATIC_ROUTE_1 DEST="0.0.0.0"
                    MASK="0.0.0.0"
                    GATEWAY="0.0.0.0"/>
    <STATIC_ROUTE_2 DEST="0.0.0.0"
                    MASK="0.0.0.0"
                    GATEWAY="0.0.0.0"/>
    <STATIC_ROUTE_3 DEST="0.0.0.0"
                    MASK="0.0.0.0"
                    GATEWAY="0.0.0.0"/>
    <IPV6_ADDRESS   VALUE="2001:2:1::15"
                    PREFIXLEN="64"
                    ADDR_SOURCE="STATIC"
                    ADDR_STATUS="ACTIVE"/>
    <IPV6_ADDRESS   VALUE="2001:db8:1::50"
                    PREFIXLEN="64"
                    ADDR_SOURCE="STATIC"
```

```
                    ADDR_STATUS="ACTIVE"/>
    <IPV6_ADDRESS   VALUE="fe80::1ec1:deff:fe17:b390"
                    PREFIXLEN="64"
                    ADDR_SOURCE="SLAAC"
                    ADDR_STATUS="ACTIVE"/>
    <IPV6_ADDRESS   VALUE="2001:2:1:0:1ec1:deff:fe17:b390"
                    PREFIXLEN="64"
                    ADDR_SOURCE="SLAAC"
                    ADDR_STATUS="ACTIVE"/>
    <IPV6_STATIC_ROUTE_1
                    IPV6_DEST="2001:2:2::20"
                    PREFIXLEN="64"
                    IPV6_GATEWAY="fe80::1:2:3"
                    ADDR_STATUS="ACTIVE"/>
    <IPV6_STATIC_ROUTE_2
                    IPV6_DEST="::"
                    PREFIXLEN="0"
                    IPV6_GATEWAY="::"
                    ADDR_STATUS="INACTIVE"/>
    <IPV6_STATIC_ROUTE_3
                    IPV6_DEST="2001:1001:2002:3003::"
                    PREFIXLEN="64"
                    IPV6_GATEWAY="2001:db8:1::40"
                    ADDR_STATUS="ACTIVE"/>
    <IPV6_PRIM_DNS_SERVER VALUE="2001:1:2::5"/>
    <IPV6_SEC_DNS_SERVER VALUE="2001:1:2::6"/>
    <IPV6_TER_DNS_SERVER VALUE="::"/>
    <IPV6_DEFAULT_GATEWAY VALUE="fe80::21c:c4ff:fe18:9cbd"/>
    <IPV6_PREFERRED_PROTOCOL VALUE="Y"/>
    <IPV6_ADDR_AUTOCFG VALUE="Y"/>
    <IPV6_REG_DDNS_SERVER VALUE="Y"/>
    <DHCPV6_STATELESS_ENABLE VALUE="Y"/>
    <DHCPV6_STATEFUL_ENABLE VALUE="Y"/>
    <DHCPV6_RAPID_COMMIT VALUE="N"/>
    <DHCPV6_SNTP_SETTINGS VALUE="Y"/>
    <DHCPV6_DNS_SERVER VALUE="Y"/>
</GET_NETWORK_SETTINGS>
</RIBCL>
```

If the request is unsuccessful, you might receive the following message:

```
<RESPONSE
STATUS = "0x0001"
MSG = "Error Message"/>
```

- For IPV6_ADDRESS the ADDR_STATUS=”string”, will report status of “Pending”, “Active”, or “Failed” for each address. Pending indicates the Duplicate Address Detection (DAD) test is still in progress, Failed indicates that a duplicate address was found on the network and the address is not currently in use by iLO, and Active indicates that DAD passed and the address is in use by iLO.
- For IPV6_ADDRESS the ADDR_SOURCE=”string” will report status of “Static” or “SLAAC” indicating the configuration source for that address. SLAAC indicates RFC 4862 Stateless Address Auto Configuration.
- For IPV6_STATIC_ROUTE_[1:3] the ADDR_STATUS=”string” will report status of “Active” or “Failed” for each static route configured. Active indicates the route was accepted by the networking stack and is in use. Failed indicates the route was rejected by the networking stack, typically this is due to a “No route to source” error for the specified gateway. In this case, iLO will periodically retry setting the static route as long as it remains configured (a route to the gateway may be discovered in the future through router advertisements or further iLO address configuration.)

MOD_NETWORK_SETTINGS

Use MOD_NETWORK_SETTINGS to modify network settings. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

The iLO scripting firmware does not attempt to decipher if the network modifications are appropriate for the network environment. When modifying network settings, be aware of the network commands provided to the management processor. In some cases, the management processor ignores commands and no error is returned.

For example, when a script includes the command to enable DHCP and a command to modify the IP address, the IP address is ignored. Changing the network settings to values that are not correct for the network environment might cause a loss of connectivity to iLO.

Once the script has successfully completed, the iLO management processor reboots to apply the changes. If connectivity to iLO is lost, use the RBSU to reconfigure the network settings to values that are compatible with the network environment.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <MOD_NETWORK_SETTINGS>
            <ENABLE_NIC value="Yes"/>
            <REG_DDNS_SERVER value="Yes"/>
            <PING_GATEWAY value="No"/>
            <DHCP_DOMAIN_NAME value="Yes"/>
            <SPEED_AUTOSELECT value="YES"/>
            <NIC_SPEED value="100"/>
            <FULL_DUPLEX value="Yes"/>
            <DHCP_ENABLE value="No"/>
            <IP_ADDRESS value="172.20.60.152"/>
            <SUBNET_MASK value="255.255.255.0"/>
            <GATEWAY_IP_ADDRESS value="172.20.60.1"/>
            <DNS_NAME value="demoilo"/>
            <DOMAIN_NAME value="internal.com"/>
            <DHCP_GATEWAY value="Yes"/>
            <DHCP_DNS_SERVER value="Yes"/>
            <DHCP_WINS_SERVER value="Yes"/>
            <DHCP_STATIC_ROUTE value="Yes"/>
            <REG_WINS_SERVER value="Yes"/>
            <PRIM_DNS_SERVER value="0.0.0.0"/>
            <SEC_DNS_SERVER value="0.0.0.0"/>
            <TER_DNS_SERVER value="0.0.0.0"/>
            <PRIM_WINS_SERVER value="0.0.0.0"/>
            <SEC_WINS_SERVER value="0.0.0.0"/>
            <STATIC_ROUTE_1 DEST="0.0.0.0" GATEWAY="0.0.0.0"/>
            <STATIC_ROUTE_2 DEST="0.0.0.0" GATEWAY="0.0.0.0"/>
            <STATIC_ROUTE_3 DEST="0.0.0.0" GATEWAY="0.0.0.0"/>
            <DHCP_SNTP_SETTINGS value="Yes"/>
            <SNTP_SERVER1 value="0.0.0.0"/>
            <SNTP_SERVER2 value="0.0.0.0"/>
            <TIMEZONE value="America/Anchorage"/>
            <!-- This tag can be used on an iLO blade server to force iLO  -->
            <!-- to attempt to get an IP address from the signal backplane -->
            <!-- in a server enclosure.  The IP address must be set prior  -->
            <!-- with Mod_Enc_Bay_IP_Settings.xml                          -->
            <!-- <ENCLOSURE_IP_ENABLE VALUE="Yes"/>                        -->

         </MOD_NETWORK_SETTINGS>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

Modify VLAN example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="WRITE" >
   <MOD_NETWORK_SETTINGS>
     <ENABLE_NIC value=”Yes”/>
     <SHARED_NETWORK_PORT VALUE="Yes"/>
     <VLAN_ENABLED VALUE="Yes" />
     <VLAN_ID VALUE="1"/>
   </MOD_NETWORK_SETTINGS>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

RBSU POST IP example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="write" >
   <MOD_GLOBAL_SETTINGS>
    <RBSU_POST_IP VALUE="Y"/>
   </MOD_GLOBAL_SETTINGS>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

Shared network port example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="WRITE" >
   <MOD_NETWORK_SETTINGS>
    <SHARED_NETWORK_PORT VALUE="N"/>
   </MOD_NETWORK_SETTINGS>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

IPv6_ADDRESS support

MOD_NETWORK_SETTINGS supports IPv6. This section of the sample script (shown below) is commented out by default. Uncomment the parameters as needed to enable them, and disable (comment out) the equivalent IPv4 parameters. See IPv6 MOD_NETWORK_SETTINGS parameters for information on the parameters and their values.

```
<IPV6_ADDRESS VALUE="2001:DB8:2:1::15" PREFIXLEN="64"/>
<IPV6_ADDRESS VALUE="2001:DB8:2:2::15" PREFIXLEN="64"/>
<IPV6_ADDRESS VALUE="FC00:DB8:2:3::15" PREFIXLEN="64"/>
<IPV6_ADDRESS VALUE="FC00:DB8:2:2::15"
              PREFIXLEN="64"
              ADDR_SOURCE="STATIC"
              ADDR_STATUS="ACTIVE"/>
<IPV6_STATIC_ROUTE_1
              IPV6_DEST="::"
              PREFIXLEN="0"
              IPV6_GATEWAY="::"
              ADDR_STATUS="INACTIVE"/>
<IPV6_STATIC_ROUTE_2
              IPV6_DEST="::"
              PREFIXLEN="0"
              IPV6_GATEWAY="::"
              ADDR_STATUS="INACTIVE"/>
<IPV6_STATIC_ROUTE_3
```

```
                IPV6_DEST="2001:DB8:2002:3003::"
                PREFIXLEN="64"
                IPV6_GATEWAY="2001:DB8:1::40"
                ADDR_STATUS="ACTIVE"/>
<IPV6_PRIM_DNS_SERVER VALUE="2001:DB8:2:1::13"/>
<IPV6_SEC_DNS_SERVER VALUE="::"/>
<IPV6_TER_DNS_SERVER VALUE="::"/>
<IPV6_DEFAULT_GATEWAY VALUE="::"/>
<IPV6_PREFERRED_PROTOCOL VALUE="Y"/>
<IPV6_ADDR_AUTOCFG VALUE="Y"/>
<IPV6_REG_DDNS_SERVER VALUE="Y"/>
<SNTP_SERVER1 VALUE="2001:DB8:2:1::13"/>
<SNTP_SERVER2 VALUE="2001:DB8:1::13"/>
<!--             Support for the following 5 tags:             -->
<!--             iLO 4 - Version 1.30 and later.               -->
<!--             iLO 3 - Version 1.60 and later.               -->
<!--             iLO 2 - None                                  -->
<DHCPV6_STATELESS_ENABLE VALUE="Y"/>
<DHCPV6_STATEFUL_ENABLE VALUE="Y"/>
<DHCPV6_RAPID_COMMIT VALUE="N"/>
<DHCPV6_SNTP_SETTINGS VALUE="N"/>
<DHCPV6_DNS_SERVER VALUE="Y"/>
```

MOD_NETWORK_SETTINGS runtime errors

Possible MOD_NETWORK_SETTINGS error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`
- `Invalid DNS name, IPv4 address, or IPv6 address.` This indicates an invalid SNTP_SERVERx value address or FQDN string.
- `Invalid IPv6 Address.` This indicates an invalid IPv6 address and/or prefix length was entered.
- `Duplicate IPv6 Address.` An address was duplicated in the script, or also possibly an address specified in the script is already in use by iLO.
- `IPv6 Addresses and Static Routes are in conflict.` Indicates you tried to use an address prefix as a static route destination when it is already in use for a static address. Static addresses are assumed to be on-link by default, and therefore cannot also require routing.
- `iLO may not be disabled on this server.` This message is sent if ENABLE_NIC is set to No and the system is a blade.

MOD_NETWORK_SETTINGS parameters

If the following parameters are not specified, then the parameter value for the specified setting is preserved. Zero values are not permitted in some fields. Consequently, an empty string deletes the current value in some fields.

ENABLE_NIC enables the NIC to reflect the state of iLO. The values are `Yes` or `No`. It is case insensitive.

SHARED_NETWORK_PORT sets the Shared Network Port value. The values are `Yes` or `No`. The Shared Network Port feature is only available on servers with hardware, NIC firmware, and iLO firmware that support this feature. For iLO, the Shared Network Port is supported on all firmware versions, and the feature is available if the hardware is supported. This command is supported on all 300, 500, and 700 ML/DL servers. A value of `Yes` enables a NIC that is built into the server (a shared network port). The NIC handles server network traffic and can, if ILO is configured to do so, handle iLO traffic at the same time. A value of `No` enables a NIC with a jack on the back of the server (a dedicated network port).

When using the iLO Shared Network Port, flashing the iLO firmware through the XML interface takes approximately 7 minutes to complete. Flashing the firmware using Shared Network Port with iLO does not take any longer to complete than using the dedicated iLO management port.

REG_DDNS_SERVER VALUE instructs iLO to register the management port with a DDNS server. The possible values are `Yes` or `No`.

SPEED_AUTOSELECT is a Boolean parameter to enable or disable the iLO transceiver to auto-detect the speed (NIC_SPEED) and duplex (FULL_DUPLEX) of the network. This parameter is optional, and the Boolean string must be set to `Yes` to enable the speed auto-detect. If this parameter is used, the Boolean string value must not be left blank. The possible values are `Yes` or `No`. The parameter value is case insensitive.

NIC_SPEED is used to set the transceiver speed if SPEED_AUTOSELECT is set to No. The possible values are `10`, `100`, or `Automatic`. If SPEED_AUTOSELECT is set to `N`, and NIC_SPEED is set to `Automatic`, the current value is retained. In other words, if SPEED_AUTOSELECT is set to `N`, then `Automatic` is not an applicable value for NIC_SPEED.

FULL_DUPLEX is used to decide if iLO is to support full-duplex or half-duplex mode. It is only applicable if SPEED_AUTOSELECT was set to `No`. The possible values are `Yes`, `No`, or `Automatic`. If SPEED_AUTOSELECT is set to `N`, and FULL_DUPLEX is set to `Automatic`, the current value is retained. In other words, if SPEED_AUTOSELECT is set to `N`, then `Automatic` is not an applicable value for FULL_DUPLEX. The parameter value is case insensitive.

DHCP_ENABLE is used to enable DHCP. The possible values are `Yes` or `No`. The parameter value is case insensitive.

IP_ADDRESS is used to select the IP address for iLO if DHCP is not enabled. If an empty string is entered, the current value is deleted.

SUBNET_MASK is used to select the subnet mask for iLO if DHCP is not enabled. If an empty string is entered, the current value is deleted.

GATEWAY_IP_ADDRESS is used to select the default gateway IP address for iLO if DHCP is not enabled. If an empty string is entered, the current value is deleted.

DNS_NAME is used to specify the DNS name for iLO. If an empty string is entered, the current value is deleted.

DOMAIN_NAME is used to specify the domain name for the network where iLO resides. If an empty string is entered, the current value is deleted.

DHCP_GATEWAY specifies if the DHCP-assigned gateway address is to be used. The possible values are `Yes` or `No`. The parameter value is case sensitive. This selection is only valid if DHCP is enabled.

DHCP_DNS_SERVER specifies if the DHCP-assigned DNS server is to be used. The possible values are `Yes` or `No`. The parameter value is case sensitive. This selection is only valid if DHCP is enabled.

DHCP_WINS_SERVER specifies if the DHCP-assigned WINS server is to be used. The possible values are `Yes` or `No`. The parameter value is case sensitive. This selection is only valid if DHCP is enabled.

DHCP_STATIC_ROUTE specifies if the DHCP-assigned static routes are to be used. The possible values are `Yes` or `No`. The parameter value is case sensitive. This selection is only valid if DHCP is enabled.

REG_WINS_SERVER specifies if iLO must be registered with the WINS server. The possible values are `Yes` or `No`. The parameter value is case sensitive. This selection is only valid if DHCP is enabled.

PRIM_DNS_SERVER specifies the IP address of the primary DNS server. This parameter is only relevant if the DHCP-assigned DNS server address feature is disabled. If an empty string is entered, the current value is deleted.

SEC_DNS_SERVER specifies the IP address of the secondary DNS server. This parameter is only relevant if the DHCP-assigned DNS server address feature is disabled. If an empty string is entered, the current value is deleted.

TER_DNS_SERVER specifies the IP address of the tertiary DNS server. This parameter is only relevant if the DHCP-assigned DNS server address feature is disabled. If an empty string is entered, the current value is deleted.

PRIM_WINS_SERVER specifies the IP address of the primary WINS server. This parameter is only relevant if the DHCP-assigned WINS server address feature is disabled. If an empty string is entered, the current value is deleted.

SEC_WINS_SERVER specifies the IP address of the secondary WINS server. This parameter is only relevant if the DHCP-assigned WINS server address feature is disabled. If an empty string is entered, the current value is deleted.

STATIC_ROUTE_1, STATIC_ROUTE_2, and STATIC_ROUTE_3 are used to specify the destination and gateway IP addresses of the static routes. The following two parameters are used within the static route commands. If an empty string is entered, the current value is deleted.

- DEST specifies the destination IP addresses of the static route. This parameter is only relevant if the DHCP-assigned static route feature is disabled. If an empty string is entered, the current value is deleted.
- GATEWAY specifies the gateway IP addresses of the static route. This parameter is only relevant if the DHCP-assigned static route feature is disabled. If an empty string is entered, the current value is deleted.

DHCP_SNTP_SETTINGS is used to determine whether iLO is to get the SNTP time servers and timezone from the DHCP server or whether the user enters that information manually.

SNTP_SERVER1 specifies the IP address of an IPv4 or IPv6 SNTP server or the FQDN of an SNTP server. The FQDN must adhere to the DNS standard, for example time.nist.gov. The iLO firmware contacts this server for the UTC time. If iLO is unable to contact this server, it attempts to contact the Secondary Time Server. This parameter is only relevant if DHCP_SNTP_SETTINGS is set to `No`. If an empty string is entered, the current value is deleted.

SNTP_SERVER2 specifies the IP address of an IPv4 or IPv6 SNTP server or the FQDN of an SNTP server. The FQDN must adhere to the DNS standard, for example time.nist.gov. The iLO firmware contacts this server for the UTC time. If iLO cannot contact the Primary Time Server, it contacts this server. This parameter is only relevant if DHCP_SNTP_SETTINGS is set to `No`. If an empty string is entered, the current value is deleted.

TIMEZONE specifies the current time zone from the Olson database. Using a web browser, in iLO 3 v1.40 or earlier, go to **Administration→Network→SNTP Settings** and select the correct time zone from the Timezone list box. The text of the time zone name must be entered exactly as it appears in the SNTP Settings time zone list box, (minus the GMT offset). **America/Anchorage** or **Europe/Zurich** are two examples of a valid time zone.

For iLO 3 v1.50 and later, depending on which NIC is presently in use, navigate to **Network+iLO Dedicated Network Port** and then select the **SNTP** tab, or navigate to **Network+Shared Network Port** and then select the **SNTP** tab.

IPv6 MOD_NETWORK_SETTINGS parameters

If the following parameters are not specified, then the parameter value for the specified setting is preserved. Zero values are not permitted in some fields. Consequently, an empty string deletes the current value in some fields.

IPV6_ADDRESS is used to configure a static IPv6 address on iLO. When IPV6_ADDRESS entries are included in a script, all previously configured IPv6 static addresses are deleted. Only the

addresses specified in the script will be in use by iLO after the script successfully completes. All static address entries on iLO can be cleared by specifying a single blank IPV6_ADDRESS entry.

- ADDR_SOURCE may be included for ease in turning around GET_NETWORK_SETTINGS output as input to MOD_NETWORK_SETTINGS. However, if the value is not **STATIC** the entire entry is ignored.
- ADDR_STATUS may be included for ease in turning using GET_NETWORK_SETTINGS output as input to MOD_NETWORK_SETTINGS. The value is always ignored as input.

IPV6_STATIC_ROUTE_[1:3] is used to configure static routes for IPv6 on iLO.

- IPV6_DEST specifies the destination address prefix, limited by PREFIXLEN. Must be a valid literal IPv6 address in string form.
- IPV6_GATEWAY specifies the IPv6 address to which the prefixes should be routed. Must be a valid literal IPv6 address in string form.
- ADDR_STATUS is used for ease in turning GET_NETWORK_SETTINGS output around as input to MOD_NETWORK_SETTINGS, but is always ignored as input.

NOTE: To clear a single static route, enter blank addresses ("::") for IPV6_DEST and IPV6_GATEWAY, with "0" (zero) PREFIXLEN.

IPV6_PRIM_DNS_SERVER, IPV6_SEC_DNS_SERVER, and IPV6_TER_DNS_SERVER are used to specify primary, secondary, and tertiary IPv6 DNS server addresses. Values must be valid literal IPv6 addresses in string form. These addresses are used in addition to the IPv4 DNS server addresses. Clear address entries by specifying blank IPv6 addresses ("::"). When iLO Client applications are configured to prefer IPv6 (see IPV6_PREFFERED_PROTOCOL) the order of use will be:

1. IPV6_PRIM_DNS_SERVER
2. PRIM_DNS_SERVER
3. IPV6_SEC_DNS_SERVER
4. SEC_DNS_SERVER
5. IPV6_TER_DNS_SERVER
6. TER_DNS_SERVER

When IPv4 protocol is preferred by iLO clients, the order of IPv6 and IPv4 is reversed for each of primary, secondary, and then tertiary settings respectively.

IPV6_DEFAULT_GATEWAY allows you to add an IPv6 address to the default gateway address list maintained by the ILO network stack. This is primarily for environments when no RA (router advertised) messages are present on the network. The value must be a valid literal IPv6 address in string form. Clear address entry by specifying a blank IPv6 address ("::").

IPV6_ADDR_AUTOCFG enables or disables RFC 4862 SLAAC (Stateless Address Auto Configuration). Value must be either **Y** (enabled) or **N** (disabled). When enabled, iLO creates IPv6 addresses for itself from RA prefixes as appropriate. When disabled, only the link-local address is automatically configured. Router advertisements are still monitored but not used for SLAAC address creation.

IPV6_REG_DDNS_SERVER enables or disables automatic DNS server IPv6 address registration. Value must be either **Y** (enabled) or **N** (disabled). When enabled, iLO attempts to register AAAA and PTR records for its IPv6 addresses with the DNS server.

IPV6_PREFERRED_PROTOCOL enables or disables using IPv6 addresses as preferred. Value must be either **Y** (enabled) or **N** (disabled). When enabled, iLO client applications use IPv6 service addresses before IPv4 service addresses when both are configured. Client applications affected by this setting currently are the DNS name resolver and SNTP. In SNTP, if FQDNs are configured, and the DNS name resolver returns both A (IPv4) and AAAA (IPv6) records, the addresses are tried in order specified by this setting. For the DNS name resolver, if both IPv4 and IPv6 DNS

addresses are configured, this setting determines the order of use for the primary addresses, then the secondary addresses, and finally the tertiary addresses.

DHCPV6_STATELESS_ENABLE and DHCPV6_STATEFUL_ENABLE modifies the operational mode of DHCPv6. The values for both of these parameters can be either **Y** (enabled) or **N** (disabled).

- DHCPV6_STATEFUL_ENABLE is analagous to DHCPv4, and enables the configuration of a node address and additional parameters such as NTP server location and time zone.
- DHCPV6_STATELESS_ENABLE enables the configuration of parameters such as NTP server location but does not provide for the configuration of a node address. This mode may be used with IPv6 Stateless Address Auto-Configuration (SLAAC) to provide configuration data that cannot otherwise be provided.

DHCPV6_STATELESS_ENABLE and DHCPV6_STATEFUL_ENABLE work together in a DHCPv6 environment. In most environments, if DHCPV6_STATEFULL_ENABLE is enabled (which provides a subset of information available via DHCPV6_STATEFUL_ENABLE) this implies that DHCPV6_STATELESS_ENABLE should also be enabled. Value must be either **Y** (enabled) or **N** (disabled).

DHCPV6_RAPID_COMMIT is used when DHCPV6_STATEFUL_ENABLE is enabled. It provides a reduction in the amount of DHCPv6 network traffic needed to assign addresses, but should not be used if more than one DHCPv6 server is present in the network for the purpose of assigning addresses. DHCPv6 database errors may result if more than one server can assign iLO an IPv6 address and Rapid Commit mode is enabled. Value must be either **Y** (enabled) or **N** (disabled).

DHCPV6_SNTP_SETTINGS specifies whether DHCPv6 Stateless-assigned NTP server addresses are used or whether the user enters that information manually. Value must be either **Y** (enabled) or **N** (disabled).

DHCPV6_DNS_SERVER specifies whether the DHCPv6 Stateless-assigned DNS server adresses are used. Value must be either **Y** (enabled) or **N** (disabled).

GET_GLOBAL_SETTINGS

The GET_GLOBAL_SETTINGS command requests the respective iLO global settings. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE can be set to `read` or `write`.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="read">
   <GET_GLOBAL_SETTINGS/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

GET_GLOBAL_SETTINGS parameters

None

GET_GLOBAL_SETTINGS runtime errors

None

GET_GLOBAL_SETTINGS return messages

A possible GET_GLOBAL_SETTINGS return message is as follows:

```
<GET_GLOBAL_SETTINGS>
    <SESSION_TIMEOUT VALUE="30"/>
```

```
    <F8_PROMPT_ENABLED VALUE="Y"/>
    <F8_LOGIN_REQUIRED VALUE="N"/>
    <HTTPS_PORT VALUE="443"/>
    <HTTP_PORT VALUE="80"/>
    <REMOTE_CONSOLE_PORT VALUE="17990"/>
    <VIRTUAL_MEDIA_PORT VALUE="17988"/>
                <SSH_PORT VALUE="22"/>
    <SSH_STATUS VALUE="Y"/>
    <SERIAL_CLI_STATUS VALUE="Enabled-Authentication Required"/>
    <SERIAL_CLI_SPEED VALUE="9600"/>

    <MIN_PASSWORD VALUE="8"/>
    <AUTHENTICATION_FAILURE_LOGGING VALUE="Enabled-every 3rd failure"/>
    <RBSU_POST_IP VALUE="Y"/>
    <ENFORCE_AES VALUE="N"/>
</GET_GLOBAL_SETTINGS>
```

MOD_GLOBAL_SETTINGS

The MOD_GLOBAL_SETTINGS command modifies global settings. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

The iLO device (not the server) resets automatically to make changes to port settings effective. Setting the ILO_FUNCT_ENABLED to `No` disables the iLO management functions. If disabled, you must use the iLO Security Override Switch on the server system board and the iLO RBSU (F8 key) to re-enable iLO.

Example 1: Use `HPQLOCFG.EXE` version 1.00 or later with the following scripts.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <MOD_GLOBAL_SETTINGS>
            <SESSION_TIMEOUT value="0"/>
            <F8_PROMPT_ENABLED value="Yes"/>
            <HTTP_PORT value="80"/>
            <HTTPS_PORT value="443"/>
            <REMOTE_CONSOLE_PORT value="17990"/>
            <MIN_PASSWORD value="8"/>
            <ILO_FUNCT_ENABLED value="Yes"/>
            <VIRTUAL_MEDIA_PORT value="17988"/>
            <F8_LOGIN_REQUIRED value="No"/>
            <SSH_PORT value="22"/>
            <SSH_STATUS value="Yes"/>
            <SERIAL_CLI_STATUS value="3"/>
            <SERIAL_CLI_SPEED value="1"/>
            <RBSU_POST_IP value="Y"/>
            <ENFORCE_AES value="N"/>
            <AUTHENTICATION_FAILURE_LOGGING value="3"/>
            <!--  Firmware support information for next tag:       -->
            <!--       iLO 4 - 1.30 or later.                      -->
            <!--       iLO 3 - 1.60 or later.                      -->
            <!--       iLO 2 - None.                               -->
            <PROPAGATE_TIME_TO_HOST VALUE="Y" />
          </MOD_GLOBAL_SETTINGS>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

As of release iLO 3 version 1.05, the Virtual Serial Port supports automatically enabling and disabling software flow control. By default, this behavior is disabled. You can enable this configuration option using the RIBCL only. To enable this option, execute the following script:

Example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <RIB_INFO MODE="write">
   <MOD_GLOBAL_SETTINGS>
    <VSP_SOFTWARE_FLOW_CONTROL value="Yes"/>
    </MOD_GLOBAL_SETTINGS>
   <RESET_RIB />
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

The VSP_SOFTWARE_FLOW_CONTROL feature is not supported in iLO 3.

MOD_GLOBAL_SETTINGS parameters

The following parameters are optional. If you do not specify a parameter, then the parameter value for the specified setting is preserved.

NOTE: If any port changes are detected, iLO reboots to apply the changes after the script has completed successfully.

SESSION_TIMEOUT—Determines the maximum session timeout value in minutes. The accepted values are 0, 15, 30, 60, and 120. A value of 0 specifies infinite timeout.

F8_PROMPT_ENABLED—Determines if the F8 prompt for ROM-based configuration appears during POST. The possible values are `Yes` or `No`.

HTTP_PORT—Specifies the HTTP port number.

HTTPS_PORT—Specifies the HTTPS (SSL) port number.

REMOTE_CONSOLE_PORT—Specifies the port used for remote console.

MIN_PASSWORD—Specifies how many characters are required in all user passwords. The value can be from zero to 39 characters.

ILO_FUNCT_ENABLED—Determines if the Lights-Out functionality is enabled or disabled for iLO. The possible values are `Yes` or `No`. This parameter is case insensitive.

VIRTUAL_MEDIA_PORT—Specifies the port used for virtual media.

F8_LOGIN_REQUIRED—Determines if login credentials are required to access the RBSU for iLO. The possible values are `Yes` or `No`.

ENFORCE_AES—Determines if iLO enforces the use of AES/3DES encryption ciphers over the iLO interface, SSH, and XML connections. The possible values are `Yes` or `No`.

NOTE: When enabling AES/3DES, manually close all other GUI, XML, and CLI connections since remaining sessions may continue to use the non-AES/3DES cipher.

AUTHENTICATION_FAILURE_LOGGING—Specifies logging criteria for failed authentications.

Possible values include:

- **0**—Disabled
- **1**—Enabled (records every authentication failure)
- **2**—Enabled (records every second authentication failure)

- **3**—Enabled (records every third authentication failure: this is the default value.)
- **5**—Enabled (records every fifth authentication failure)

SSH_STATUS—Determines if SSH is enabled. The valid values are `Yes` or `No`, which enable or disable SSH functionality.

SSH_PORT—Specifies the port used for SSH connection on iLO 3. The processor must be reset if this value is changed.

SERIAL_CLI_STATUS—Specifies the status of the CLI. The possible values include:

- **0**—No change
- **1**—Disabled
- **2**—Enabled (no authentication required)
- **3**—Enabled (authentication required)

SERIAL_CLI_SPEED—Specifies the CLI port speed.

NOTE: The serial port speed set using this parameter must match the speed of the serial port set in the RBSU.

The possible values include:

- **0**—No change
- **1**—9,600 bps
- **2**—19,200 bps
- **3**—38,400 bps
- **4**—57,600 bps
- **5**—115,200 bps

RBSU_POST_IP—Determines whether the iLO 4 IP address is displayed during server POST process. The valid values are **`Y`** (enabled) or **`N`** (disabled).

REMOTE_SYSLOG_ENABLE—Determines whether iLO should send event notification messages to a Syslog server. Valid values are **`Y`** (enabled) or **`N`** (disabled)

REMOTE_SYSLOG_PORT—Sets the port number through which the Syslog server listens.

REMOTE_SYSLOG_SERVER_ADDRESS—Sets the IP address, FQDN, IPv6 name, or short name of the server running the Syslog service.

ALERTMAIL_ENABLE—Determines whether ILO should send alert conditions detected independently of the host operating system via email. The valid values are **`Y`** (enabled) or **`N`** (disabled).

ALERTMAIL_EMAIL_ADDRESS—Sets the destination email address for iLO email alerts. Value must be a single email address no longer than 63 characters, and must be in standard email address format.

ALERTMAIL_SENDER_DOMAIN—Sets the domain name to be used in the sender (From) email address. Value is formed by using the iLO name as the hostname and the subject string as the domain name. If this value is left blank or not specified, the iLO domain name is used (which may not be accepted by all SMTP servers.) The maximum string length is 63 characters.

ALERTMAIL_SMTP_SERVER—Sets the IP address or DNS name of the SMTP server or the MSA. This server cooperates with the MTA to deliver the email. The maximum string length is 63 characters. Note that the SMTP server specified must support unauthenticated SMTP connections on port 25.

IPMI_DCMI_OVER_LAN_ENABLED—Determines whether you can send industry-standard IPMI and DCMI commands over the LAN using a client-side application. Server-side IPMI/DCMI applications are still functional even when this setting is disabled. The valid values are **`Y`** (enabled) or **`N`** (disabled).

VSP_LOG_ENABLE—Determines whether the virtual serial port output from the server is captured. Valid values are **Y** (enabled) or **N** (disabled). The parameter is not case sensitive.

PROPAGATE_TIME_TO_HOST—Determines whether iLO sets the system host time to match the iLO time. Valid values are **Y** (enabled) or **N** (disabled). If enabled, the propagation time set occurs whenever the iLO is cold-booted. The parameter is not case sensitive.

MOD_GLOBAL_SETTINGS runtime errors

Possible MOD_GLOBAL_SETTINGS error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`
- `Unrecognized keyboard model.`
- `iLO may not be disabled on this server.` This message is sent if ILO_FUNCT_ENABLED is set to No and the system is a blade.

BROWNOUT_RECOVERY

The BROWNOUT_RECOVERY command turns the brownout recovery feature on or off. For this command to parse correctly, it must appear within a RIB_INFO command block, and must appear within a MOD_GLOBAL_SETTINGS command block. RIB_INFO MODE must be set to write. This command requires `HPQLOCFG.EXE` version 1.00 or later. This command requires the iLO 3 firmware version to be v1.25 or later. The user must have the Configure iLO Settings privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <RIB_INFO MODE="write">
   <MOD_GLOBAL_SETTINGS>
     <BROWNOUT_RECOVERY VALUE="Yes"/>
   </MOD_GLOBAL_SETTINGS>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

BROWNOUT_RECOVERY parameters

`<BROWNOUT_RECOVERY VALUE="No"/>`—Disables brownout recovery

`<BROWNOUT_RECOVERY VALUE="Yes"/>`—Enables brownout recovery

BROWNOUT_RECOVERY runtime errors

None

GET_SNMP_IM_SETTINGS

The GET_SNMP_IM_SETTINGS command requests the respective iLO SNMP IM settings. For this command to parse correctly, the GET_SNMP_IM_SETTINGS command must appear within a RIB_INFO command block, and RIB_INFO MODE can be set to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="read">
   <GET_SNMP_IM_SETTINGS/>
```

```
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

GET_SNMP_IM_SETTINGS parameters

None

GET_SNMP_IM_SETTINGS runtime errors

None

GET_SNMP_IM_SETTINGS return messages

A possible GET_SNMP_IM_SETTINGS return message is:

```
<GET_SNMP_IM_SETTINGS>
     <SNMP_ADDRESS_1 VALUE=""/>
     <SNMP_ADDRESS_2 VALUE=""/>
     <SNMP_ADDRESS_3 VALUE=""/>
     <RIB_TRAPS VALUE="Y"/>
     <OS_TRAPS VALUE="Y"/>
     <SNMP_PASSTHROUGH_STATUS VALUE="N"/>
     <WEB_AGENT_IP_ADDRESS VALUE="WIN-DPOHJLI9DO8"/>
     <CIM_SECURITY_MASK VALUE="3"/>
</GET_SNMP_IM_SETTINGS>
```

MOD_SNMP_IM_SETTINGS

MOD_SNMP_IM_SETTINGS is used to modify SNMP and Insight Manager settings. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

For example:

MOD_SNMP_IM_SETTINGS parameters

All of the following parameters are optional. If a parameter is not specified, then the parameter value for the specified setting is preserved.

SNMP_ADDRESS_1, SNMP_ADDRESS_2, and SNMP_ADDRESS_3 are the addresses that receive traps sent to the user. Each of these parameters can be any valid IP address.

OS_TRAPS determines if the user is allowed to receive SNMP traps that are generated by the operating system. The possible values are `Yes` and `No`. By default, the value is set to `No`.

RIB_TRAPS determines if the user is allowed to receive SNMP traps that are generated by the RIB. The possible values are `Yes` and `No`. By default, the value is set to `No`.

WEB_AGENT_IP_ADDRESS is the address for the Web-enabled agents. The value for this element has a maximum length of 50 characters. It can be any valid IP address. If an empty string is entered, the current value is deleted.

SNMP_PASSTHROUGH_STATUS determines if iLO can receive and send SNMP requests to and from the host OS. By default, the value is set to `Yes`.

CIM_SECURITY_MASK accepts the integers 0, 1, or 3. The possible values are:

- **0**—No change
- **1**—None (no data is returned)
- **3**—Enabled

MOD_SNMP_IM_SETTINGS runtime errors

Possible MOD_SNMP_IM_SETTINGS error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

UPDATE_RIB_FIRMWARE

The UPDATE_FIRMWARE command copies a specified file to iLO, starts the upgrade process, and reboots the board after the image has been successfully flashed.

For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

Example 1:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <!--    Firmware support information for next tag:             -->
         <!--    iLO 4 - All versions. For servers with TPM enabled.    -->
         <!--    iLO 3 - All versions. For servers with TPM enabled.    -->
         <!--    iLO 2 - 1.70 and later. For servers with TPM enabled.  -->
         <TPM_ENABLED VALUE="Yes"/>
         <UPDATE_RIB_FIRMWARE IMAGE_LOCATION="C:\xl170\ilo3_100_p90_checked.bin"/>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

When you send an XML script to update firmware, it verifies the trusted platform module (TPM) configuration status of option ROM measuring. If it is enabled, the iLO firmware returns the same warning message as stated in the web interface. You can add the TPM_ENABLE command to the script file. HP recommends using XML script syntax to execute firmware updates. To enable the firmware update to continue, you must set TPM_ENABLE to a value of `Y` or `Yes`.

Example 2:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <RIB_INFO MODE="write">
   <TPM_ENABLE ="Yes"/>
   <UPDATE_FIRMWARE IMAGE_LOCATION="<path>\<firmware filename>"/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

UPDATE_FIRMWARE parameters

IMAGE_LOCATION is the full path file name of the firmware upgrade file.

TPM_ENABLE enables the firmware to continue updating when the option ROM measuring is enabled. To enable the firmware update to continue, you must set TPM_ENABLE to a value of `Y` or `Yes`.

UPDATE_FIRMWARE runtime errors

Possible UPDATE_FIRMWARE error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `Unable to open the firmware image update file.`

- `Unable to read the firmware image update file.`
- `The firmware upgrade file size is too big.`
- `The firmware image file is not valid.`
- `A valid firmware image has not been loaded.`
- `The flash process could not be started.`
- `IMAGE_LOCATION must not be blank.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

GET_FW_VERSION

The GET_FW_VERSION command requests the respective iLO firmware information. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to read. The user must have the Configure iLO Settings privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="read">
   <GET_FW_VERSION/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

GET_FW_VERSION parameters

None

GET_FW_VERSION runtime errors

None

GET_FW_VERSION return messages

The following information is returned within the response:

```
<GET_FW_VERSION
FIRMWARE_VERSION = firmware version
FIRMWARE_DATE = firmware date
MANAGEMENT_PROCESSOR = management processor type
/>
```

LICENSE

The LICENSE command activates or deactivates iLO advanced features. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

To see a video demonstration of LICENSE command, see *Installing an iLO License Key through scripting* at:

http://www.hp.com/go/ilo/videos

You do not have to use a licensing key on a ProLiant BL Class server. Advanced features are automatically activated.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="write">
   <LICENSE>
    <ACTIVATE="11111222223333344444455555"/>
   </LICENSE>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

LICENSE parameters

ACTIVATE followed by a valid KEY value signals the activation of the iLO 3 advanced pack licensing.

KEY specifies the license key value. The key must be entered as one continuous string. Commas, periods, or other characters must not separate the key value. The key only accepts 25 characters; other characters entered to separate key values are interpreted as a part of the key, and results in the wrong key being entered.

LICENSE runtime errors

Possible LICENSE error messages include:

- `License key error.`
- `License is already active.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

INSERT_VIRTUAL_MEDIA

This command notifies iLO of the location of a diskette image. The INSERT_VIRTUAL_MEDIA command must display within a RIB_INFO element, and RIB_INFO must be in write mode. You must purchase the iLO Advanced license to enable this feature.

For example:

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
   <RIB_INFO MODE="write">
    <!--         Firmware support information for next tag:              -->
    <!--             iLO 3 - All versions.                               -->
    <!--             iLO 2 - All versions.                               -->
    <INSERT_VIRTUAL_MEDIA DEVICE="FLOPPY" IMAGE_URL="http://188.188.188.33/
     images/Floppy/dos.bin" />
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

INSERT_VIRTUAL_MEDIA parameters

DEVICE specifies the Virtual Media device target. The possible values are FLOPPY or CDROM. If the DEVICE is not specified, FLOPPY is assumed. This value is case-sensitive.

IMAGE_URL specifies the URL for the diskette image. The URL format is as follows:

`protocol://username:password@hostname:port/filename,cgi-helper`

- `protocol` is mandatory and must be either `http` or `https`.
- `username:password` is optional.
- `hostname` is mandatory.
- `port` is optional.

- `filename` is mandatory.
- `cgi-helper` is optional. This enables the virtual floppy to be writable.

In addition, the filename field can contain tokens that expand to host-specific strings:

- `%m` expands to the iLO 3 MAC address.
- `%i` expands to the iLO 3 IP address in dotted-quad form.
- `%h` expands to the iLO 3 hostname.

For example:

```
http://john:abc123@imgserver.company.com/disk/win98dos.bin,/cgi-bin/
hpvfhelp.pl
```

```
http://imgserver.company.com/disk/boot%m.bin
```

This command specifies only the location of the image to be used. For the image to be connected to the server, the appropriate BOOT_OPTION must be specified using the SET_VM_STATUS command. If BOOT_OPTION is set to BOOT_ONCE and the server is rebooted, any subsequent server reboots eject the image.

INSERT_VIRTUAL_MEDIA runtime errors

The possible INSERT_VIRTUAL_MEDIA error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `IMAGE_URL must not be blank.`
- `User does not have correct privilege for action. VIRTUAL_MEDIA_PRIV required.`
- `Unable to parse Virtual Media URL`
- `An invalid Virtual Media option has been given.`
- `Virtual Media already connected through a script. You must eject or disconnect before inserting new media.`

EJECT_VIRTUAL_MEDIA

EJECT_VIRTUAL_MEDIA ejects the Virtual Media image if one is inserted. The EJECT_VIRTUAL_MEDIA command must display within a RIB_INFO element and RIB_INFO must be in write mode. You must purchase the iLO Advanced license to enable this feature.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <!--        Firmware support information for next tag:       -->
         <!--            iLO 4 - All versions.                        -->
         <!--            iLO 3 - All versions.                        -->
         <!--            iLO 2 - All versions.                        -->
         <EJECT_VIRTUAL_MEDIA DEVICE="FLOPPY"/>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

EJECT_VIRTUAL_MEDIA parameters

DEVICE specifies the Virtual Media device target. The possible values are FLOPPY or CDROM. If the DEVICE is not specified, FLOPPY is assumed. This value is case-sensitive.

EJECT_VIRTUAL_MEDIA runtime errors

Possible EJECT_VIRTUAL_MEDIA errors are:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. VIRTUAL_MEDIA_PRIV required.`
- `No image present in the Virtual Media drive.`
- `An invalid Virtual Media option has been given.`

GET_VM_STATUS

GET_VM_STATUS returns the Virtual Media drive status. This command must display within a RIB_INFO element.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="read">
         <!--        Firmware support information for next tag:          -->
         <!--            iLO 4 - All versions.                           -->
         <!--            iLO 3 - All versions.                           -->
         <!--            iLO 2 - All versions.                           -->
         <GET_VM_STATUS DEVICE="FLOPPY"/>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

GET_VM_STATUS parameters

DEVICE specifies the Virtual Media device target. The possible values are FLOPPY or CDROM. If the DEVICE is not specified, FLOPPY is assumed. These values are not case-sensitive.

GET_VM_STATUS runtime errors

The possible GET_VM_STATUS error is:

`An invalid Virtual Media option has been given.`

GET_VM_STATUS return messages

The return message displays the current state of the Virtual Media. The VM_APPLET parameter shows if a virtual media device is already connected through the Integrated Remote Console, Java Integrated Remote Console, or the iLO 3 graphical interface. If the VM_APPLET = CONNECTED, then the (non-URL based) Virtual Media is already in use and cannot be connected through scriptable Virtual Media or Virtual Media XML commands.

NOTE: Only URL-based Virtual Media can be connected through scriptable Virtual Media or Virtual Media XML. However, URL-based Virtual Media will display as DISCONNECTED through VM_APPLET even if an URL-based VM is configured via the iLO, Integrated Remote Console, Java Integrated Remote Console, CLI, or RIBCL.

The DEVICE parameter tells which device this return message is for. The BOOT_OPTION shows the current setting; BOOT_ALWAYS means that the server always use the Virtual Media device for booting, BOOT_ONCE means that the server boots to the Virtual Device once and then disconnects the Virtual Media on the subsequent server reboot, and NO_BOOT means that the Virtual Media does not connect during a server reboot. The WRITE_PROTECT_FLAG parameter shows if the Virtual Media image can be written to. The IMAGE_INSERTED parameter tells if the Virtual Media device is connected via the scriptable Virtual Media or the Virtual Media XML command.

A possible GET_VM_STATUS return message is:

```
VM_APPLET = CONNECTED | DISCONNECTED
DEVICE = FLOPPY | CDROM
BOOT_OPTION = BOOT_ALWAYS | BOOT_ONCE | NO_BOOT
WRITE_PROTECT_FLAG = YES | NO
IMAGE_INSERTED = YES | NO
```

NOTE: If the BOOT_ONCE boot option is selected, all scriptable virtual media parameters are reset to default settings after the server boots. Specifically BOOT_OPTION = NO_BOOT, WRITE_PROTECT = NO, and IMAGE_INSERTED = NO.

SET_VM_STATUS

The SET_VM_STATUS command sets the Virtual Media drive status. This command must appear within a RIB_INFO element, and RIB_INFO must be set to write. All the parameters in the command are optional. You must purchase the iLO Advanced license to enable this feature.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">

         <!--        Firmware support information for next tag:         -->
         <!--            iLO 4 - All versions.                          -->
         <!--            iLO 3 - All versions.                          -->
         <!--            iLO 2 - All versions.                          -->
         <SET_VM_STATUS DEVICE="FLOPPY">
            <VM_BOOT_OPTION VALUE="BOOT_ONCE"/>
            <VM_WRITE_PROTECT VALUE="YES" />
         </SET_VM_STATUS>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

SET_VM_STATUS parameters

DEVICE specifies the Virtual Media device target. The possible values are FLOPPY or CDROM. If the DEVICE is not specified, FLOPPY is assumed. The value is not case-sensitive.

VM_BOOT_OPTION specifies the boot option parameter for the Virtual Media. The possible values are BOOT_ALWAYS, BOOT_ONCE, or NO_BOOT. These values control how the Virtual Media device behaves during the boot phase of the server. Setting these values does not affect the current state of the Virtual Media device. These settings only take affect if the Virtual Media device is connected at server boot.

- BOOT_ALWAYS sets the VM_BOOT_OPTION to BOOT_ALWAYS. The Virtual Media device is always connected during server boot. The Virtual Media device is not connected immediately when the VM_BOOT_OPTION is set. The Virtual Media device is connected on the next server boot after setting of the VM_BOOT_OPTION.
- BOOT_ONCE sets the VM_BOOT_OPTION to BOOT_ONCE. The Virtual Media device is connected during the next server boot, but on any subsequent server boots, it does not connect. The BOOT_ONCE option is intended to boot one time to the Virtual Media device, use that device while the server is running, and then not have the Virtual Media device available on subsequent server reboots. The Virtual Media device is not connected immediately when the VM_BOOT_OPTION is set. The Virtual Media device is connected on the next server boot following the setting of the VM_BOOT_OPTION. After the server has booted once with the

Virtual Media device connected, on the subsequent server reboot, the Virtual Media device does not connect and the following Virtual Media device settings reset to their default values:

  - `BOOT_OPTION=NO_BOOT`
  - `IMAGE_INSERTED = NO`

- NO_BOOT sets the VM_BOOT_OPTION to NO_BOOT. The Virtual Media device is not connected during the next server boot. The Virtual Media device is not disconnected immediately when the VM_BOOT_OPTION is set. The Virtual Media device is disconnected on the next server boot following the setting of the VM_BOOT_OPTION. After the server has booted, the Virtual Media device does not connect and the following Virtual Media device settings reset to their default values:

  - `BOOT_OPTION = NO_BOOT`
  - `IMAGE_INSERTED = NO`

In addition to the VM_BOOT_OPTIONS, CONNECT and DISCONNECT are also possible values. The CONNECT and DISCONNECT settings can be used to control the Virtual Media devices in the same way that they are controlled in the Virtual Media applet. Whenever the CONNECT or DISCONNECT parameters are set, the Virtual Media device immediately connects or disconnects, respectively, to the server.

- CONNECT sets the VM_BOOT_OPTION to CONNECT. The Virtual Media device is immediately connected to the server. Setting the VM_BOOT_OPTION to CONNECT is equivalent to clicking the device **Connect** button on the Virtual Media Applet. After setting the VM_BOOT_OPTION to `CONNECT`, the VM_GET_STATUS command shows the VM_BOOT_OPTION as BOOT_ALWAYS. This is by design and shows that the Virtual Media device is connected like the Virtual Media device in the applet which is always connected during all server boots.
- DISCONNECT sets the VM_BOOT_OPTION to DISCONNECT. The Virtual Media device is immediately disconnected from the server. Setting the VM_BOOT_OPTION to DISCONNECT is equivalent to clicking the device **Disconnect** button on the Virtual Media Applet. Additionally, setting the VM_BOOT_OPTION to `DISCONNECT` is equivalent to issuing the EJECT_VIRTUAL_MEDIA command. When the VM_BOOT_OPTION is set to `DISCONNECT`, the Virtual Media device does not connect and the following Virtual Media device settings are reset to their default values:

  - `BOOT_OPTION = NO_BOOT`
  - `IMAGE_INSERTED = NO`

VM_WRITE_PROTECT sets the write protect flag value for the Virtual Floppy. This value is not significant for the Virtual Media CD-ROM. The possible values are `Y` or `N`.

SET_VM_STATUS runtime errors

The possible runtime errors are:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. VIRTUAL_MEDIA_PRIV required.`
- `An invalid Virtual Media option has been given.`

CERTIFICATE_SIGNING_REQUEST

This command requests a certificate from iLO. When this command is received, iLO generates a certificate signing request. The request is returned to the user enclosed in a CERTIFICATE_SIGNING_REQUEST tag. This command requires `HPQLOCFG.EXE` version 1.00 or later.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN = "adminname" PASSWORD = "password">
  <RIB_INFO MODE = "write">
   <CERTIFICATE_SIGNING_REQUEST/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

For the custom CERTIFICATE_SIGNING_REQUEST script, you must specify all tags, except for CSR_ORGANIZATIONAL_UNIT. If you run the script with any missing tags, then the default is used for the missing tag. If a required tag is left blank, an error message appears.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="write">
     <CERTIFICATE_SIGNING_REQUEST>
         <CSR_STATE VALUE =""/>
         <CSR_COUNTRY VALUE ="US"/>
         <CSR_LOCALITY VALUE ="Houston"/>
         <CSR_ORGANIZATION VALUE ="Hewlett-Packard Company"/>
         <CSR_ORGANIZATIONAL_UNIT VALUE =""/>
         <CSR_COMMON_NAME VALUE ="test.com"/>
     </CERTIFICATE_SIGNING_REQUEST>
    </RIB_INFO>
  </LOGIN>
</RIBCL>
```

CERTIFICATE_SIGNING_REQUEST parameters (for custom CSR)

CSR_STATE - Specifies state in which the company or organization that owns the iLO subsystem is located.

CSR_COUNTRY - Specifies the two-character country code for the country in which the company or organization that owns the iLO subsystem is located.

CSR_LOCALITY - Specifies the city or locality in which the company or organization that owns the iLO subsystem is located.

CSR_ORGANIZATION - Specifies the name of the company or organization that owns the iLO subsystem.

CSR_ORGANIZATIONAL_UNIT - The unit within the company or organization that owns the iLO subsystem

CSR_COMMON_NAME - The FQDN of the iLO subsystem.

CERTIFICATE_SIGNING_REQUEST errors

Possible error messages for CERTIFICATE_SIGNING_REQUEST for custom CSR scripts include:

- `CSR_STATE is too long.`
- `Need a value for the CSR_STATE tag.`
- `CSR_COUNTRY is too long.`
- `Need a value for the CSR_COUNTRY tag.`

- `CSR_LOCALITY is too long.`
- `Need a value for the CSR_LOCALITY tag.`
- `CSR_ORGANIZATION is too long.`
- `Need a value for the CSR_ORGANIZATION tag.`
- `CSR_ORGANIZATIONAL_UNIT is too long.`
- `CSR_COMMON_NAME is too long.`
- `Need a value for the CSR_COMMON_NAME tag.`
- `User does NOT have correct privilege for action. CONFIG_ILO_PRIV required.`

When you first request a new CSR, or if the system is already working on another CSR, you will see this message:

```
The iLO subsystem is currently generating a Certificate Signing
Request(CSR), run script after 10 minutes or more to receive the CSR.
```

IMPORT_CERTIFICATE

The IMPORT_CERTIFICATE command imports a signed certificate into iLO. The signed certificate must be a signed version of a certificate signing request. This command requires `HPQLOCFG.EXE` version 1.00 or later.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN = "adminname" PASSWORD = "password">
  <RIB_INFO MODE = "write">
   <IMPORT_CERTIFICATE>
    <!--  Replace the following text and comments with the certificate    -->
    <!--  INCLUDE the full header and full footer of the certificate      -->
    <!--  For example:    -->
      -----BEGIN CERTIFICATE-----
    <!--  Ceritificate Data         -->
      -----END CERTIFICATE-----
   </IMPORT_CERTIFICATE>
   <!--  The iLO will be reset after the certificate has been imported.   -->
   <RESET_RIB/>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

IMPORT_CERTIFICATE parameters

None

IMPORT_CERTIFICATE errors

The possible IMPORT_CERTIFICATE error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `Error reading certificate: The imported certificate is invalid.`
- `Invalid certificate common name: The common name in the certificate does not match iLO 3 hostname.`
- `Certificate signature does not match private key: The certificate does not correspond to the private key stored in iLO 3.`

SET_LANGUAGE

Use this command to set the default language on iLO. Use this command with iLO 3 v1.20 or later. Use HPQLOCFG.EXE version 1.00 or later with this command.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="write">
      <SET_LANGUAGE LANG_ID="EN"/>
    </RIB_INFO>
  </LOGIN>
</RIBCL>
```

SET_LANGUAGE parameters

LANG_ID is the two letter designation for a language. This parameter is case sensitive, and must not be blank.

Possible values for LANG_ID are:

- EN (English)
- JA (Japanese)
- ZH (Simplified Chinese)

SET_LANGUAGE runtime errors

None

GET_LANGUAGE

Use this command to read the default language on iLO. Use this command with iLO 3 v1.20 or later. Use HPQLOCFG.EXE version 1.00 or later with this command.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="read">
      <GET_LANGUAGE/>
    </RIB_INFO>
  </LOGIN>
</RIBCL>
```

GET_LANGUAGE parameters

None

GET_LANGUAGE runtime errors

None

GET_ALL_LANGUAGES

Use this command to read all languages on iLO. Use this command with iLO 3 v1.20 or later. Use HPQLOCFG.EXE version 1.00 or later with this command.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="read">
      <GET_ALL_LANGUAGES/>
    </RIB_INFO>
  </LOGIN>
```

```
</RIBCL>
```

GET_ALL_LANGUAGES parameters

None

GET_ALL_LANGUAGES runtime errors

None

SET_ASSET_TAG

Use this command to set or clear the asset tag. Use this command with iLO 3 v1.50 or later. Use HPQLOCFG.EXE version 1.00 or later with this command.

You must have the following privileges to execute this command: Virtual Media, Virtual Power and Reset, Remote Console.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <SERVER_INFO MODE="write">
      <!-- Enter a string to set the asset tag, or an empty string   -->
      <!-- to clear the asset tag. -->
      <SET_ASSET_TAG VALUE ="Asset Tag"/>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

SET_ASSET_TAG parameters

SET_ASSET_TAG sets or clears the asset tag. Enter a string to add or modify the asset tag, or enter an empty string to clear the asset tag.

SET_ASSET_TAG runtime errors

A possible SET_ASSET_TAG error message is:

```
Problem manipulating EV
```

This message means that the asset tag was not set. Retry the procedure later.

Other possible error message for SET_ASSET_TAG include:

- `Post in progress, EV unavailable.`
- `EV name too large.`
- `EV data too large.`
- `There is no such EV.`
- `EV is not supported.`
- `EV is not initialized.`
- `ROM is busy, EV unavailable.`
- `User does NOT have correct privilege for action. VIRTUAL_MEDIA_PRIV required.`
- `User does NOT have correct privilege for action. RESET_SERVER_PRIV required.`
- `User does NOT have correct privilege for action. REMOTE_CONS_PRIV required.`
- `String too long, maximum string length is 32 characters.`

GET_SECURITY_MSG

Use this command to retrieve the security message for the iLO login screen. Use this command with iLO 3 v1.50 or later.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="read">
      <GET_SECURITY_MSG/>
    </RIB_INFO>
  </LOGIN>
</RIBCL>
```

GET_SECURITY_MSG parameters

None

GET_SECURITY_MSG return messages

The following information is returned with the response:

- SECURITY_MSG value=”Enabled” or “Disabled”
- SECURITY_MSG_TEXT:

```
<SECURITY_MSG_TEXT>
  <![CDATA[The security message appears here, set using SET_SECURITY_MESSAGE.]]>
</SECURITY_MSG_TEXT>
```

GET_SECURITY_MSG runtime errors

None

SET_SECURITY_MSG

Use this command to configure the security text message in the iLO Login Banner. The Login Security Banner feature allows you to configure the security banner displayed on the iLO login screen. You need to have configure iLO Setting privileges to make changes to the banner.Use this command with iLO 3 v1.50 or later.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="write">
      <SET_SECURITY_MSG>
        <SECURITY_MSG value="y"/>
        <SECURITY_MSG_TEXT>
             <![CDATA[ message ]]>
       </SECURITY_MSG_TEXT>
      </SET_SECURITY_MSG>
    </RIB_INFO>
  </LOGIN>
</RIBCL>
```

SET_SECURITY_MSG parameters

SECURITY_MSG—Boolean value, must be either **Yes** (enabled) or **No** (disabled). When the value is No, the security message is removed.

SECURITY_MSG_TEXT—CDATA text message to appear when SECURITY_MSG is set to Yes. Enter the text of the message between `<![CDATA[` and `]]>`.

SET_SECURITY_MSG runtime errors

The value for the SECURITY_MESSAGE parameter must a **Y** or an **N**, otherwise the command reports an error. You may also see this error:

```
User does NOT have correct privilege for action. CONFIG_ILO_PRIV
required.
```

HOTKEY_CONFIG

The HOTKEY_CONFIG command configures the remote console hot key settings in iLO. For this command to parse correctly, the command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. The user must have the configure iLO privilege to execute this command.

Upper or lower case values are automatically changed to the proper case as needed (lower case is changed to upper case if needed, and upper case is changed to lower case if needed.) If you use double or single quotes, it must be different from the delimiter. Specifying a blank string removes the current value.

NOTE: Each hot key can have up to five selections (for example, CTRL_T="CTRL,ALT,ESC,F2,F4"). Do not use spaces (" ") in the values; to set a space in a value type SPACE.

Use this command to configure hotkeys in iLO 3 v1.50 or later. Use HPQLOCFG.EXE version 1.00 or later with this command. Replace USER_LOGIN and PASSWORD values with values that are appropriate for your environment.

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <HOTKEY_CONFIG>
            <CTRL_T value="CTRL,ALT,ESC"/>
            <CTRL_U value="L_SHIFT,F10,F12"/>
            <CTRL_V value=""/>
            <CTRL_W value=""/>
            <CTRL_X value=""/>
            <CTRL_Y value=""/>
         </HOTKEY_CONFIG>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

HOTKEY_CONFIG parameters

The following parameters are optional. If a parameter is not specified, then the parameter value remains as previously set. Separated multiple setting values with commas (see example script above.) Up to five keystrokes can be configured for each hot key.

- CTRL+T
- CTRL+U
- CTRL+V
- CTRL+W
- CTRL+X
- CTRL+Y

Supported hot keys

The Program Remote Console Hot Keys page allows you to define up to six different sets of hot keys for use during a Remote Console session. Each hot key represents a combination of up to five different keys which are sent to the host machine whenever the hot key is pressed during a Remote Console session. The selected key combination (all keys pressed at the same time) are transmitted

in its place. The following table lists keys available to combine in a Remote Console hot key sequence.

ESC	F1	–	d	s	BACKSPACE
L_ALT	F2	(	e	t	SYS RQ
R_ALT	F3	)	f	u	1
L_SHIFT	F4	*	g	v	2
R_SHIFT	F5	+	h	w	3
INS	F6	:	I	x	4
DEL	F7	<	j	y	5
HOME	F8	>	k	z	6
END	F9	=	l	;	7
PG UP	F10	[	m	‘	8
PG DN	F11	]	n	L_CTRL	9
ENTER	F12	\	o	R_CTRL	0
TAB	SPACE	a	p	NUM PLUS	NONE
BREAK	/	b	q	NUM MINUS	L_GUI
COMMA	.	c	r	SCRL LCK	R_GUI

HOTKEY_CONFIG runtime errors

The possible HOTKEY_CONFIG error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `The hot key parameter specified is not valid.`
- `Invalid number of hot keys. The maximum allowed is five.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`
- `Failed to update the hot key.`

GET_HOTKEY_CONFIG

Use this command to retrieve hotkeys available for use in remote console sessions. Use HPQLOCFG.EXE version 1.00 or later with this command. Replace USER_LOGIN and PASSWORD values with values that are appropriate for your environment.

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="read">
         <GET_HOTKEY_CONFIG/>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

GET_HOTKEY_CONFIG parameters

None

GET_HOTKEY_CONFIG runtime errors

A possible GET_HOTKEY_CONFIG error message is:

```
Unable to get the hot keys.
```

GET_HOTKEY_CONFIG return messages

An example of the information returned with the response:

```
<GET_HOTKEY_CONFIG>
    <CTRL_T VALUE="L_CTRL,L_ALT,ESC,NONE,NONE"/>
    <CTRL_U VALUE="L_SHIFT,F10,F12,NONE,NONE"/>
    <CTRL_V VALUE="NONE,NONE,NONE,NONE,NONE"/>
    <CTRL_W VALUE="NONE,NONE,NONE,NONE,NONE"/>
    <CTRL_X VALUE="NONE,NONE,NONE,NONE,NONE"/>
    <CTRL_Y VALUE="NONE,NONE,NONE,NONE,NONE"/>
</GET_HOTKEY_CONFIG>
```

FIPS_ENABLE

Use this script to enable the Federal Information Processing Standard **Enforce AES/3DES Encryption** setting, in iLO 3 v1.50 or later. Use HPQLOCFG.EXE version 1.00 or later with this command. Replace USER_LOGIN and PASSWORD values with values that are appropriate for your environment.

⚠ **WARNING!** All active connections (including Remote Console and Virtual Media sessions) to the iLO device are dropped immediately when this script executes.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
     <RIB_INFO MODE="write">
        <FIPS_ENABLE/>
     </RIB_INFO>
  </LOGIN>
</RIBCL>
```

Disabling FIPS:

To disable FIPS, use the FACTORY_DEFAULTS command.

FIPS_ENABLE parameters

None

FIPS_ENABLE runtime errors

When running the FIPS_ENABLE command, FIPS status is checked. If FIPS is already enabled, the following message appears:

```
FIPS is already enabled.
```

GET_FIPS_STATUS

Use this script to retrieve the current **Enforce AES/3DES Encryption** status, in iLO 3 v1.50 or later. Use HPQLOCFG.EXE version 1.00 or later with this command. Replace USER_LOGIN and PASSWORD values with values that are appropriate for your environment.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
     <RIB_INFO MODE="write">
        <GET_FIPS_STATUS/>
     </RIB_INFO>
  </LOGIN>
</RIBCL>
```

GET_FIPS_STATUS parameters

None

GET_FIPS_STATUS runtime errors

None

GET_FIPS_STATUS return messages

A possible GET_FIPS_STATUS return message is:

```
<GET_FIPS_STATUS>
    <FIPS_MODE VALUE="Disabled"/>
</GET_FIPS_STATUS>
```

The value for FIPS_MODE can be “Enabled” or “Disabled”.

GET_ALL_LICENSES

Use the GET_ALL_LICENSES command to retrieve license type, key, installation date, and class in iLO 3 v1.60 or later. Use HPQLOCFG.EXE version 1.00 or later with this command. Replace USER_LOGIN and PASSWORD values with values that are appropriate for your environment.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <RIB_INFO MODE="read">
      <GET_ALL_LICENSES/>
    </RIB_INFO>
  </LOGIN>
</RIBCL>
```

GET_ALL_LICENSES parameters

None

GET_ALL_LICENSES runtime errors

None

GET_ALL_LICENSES return messages

A possible GET_ALL_LICENSES return message is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
 />
<GET_ALL_LICENSES>
    <LICENSE>
         <LICENSE_TYPE VALUE= "iLO 3 Advanced"/>
         <LICENSE_KEY VALUE= "<advanced license key value>"/>
     <LICENSE_INSTALL_DATE VALUE="Thu Mar 21 18:47:53 2013"/>
         <LICENSE_CLASS VALUE="FQL"/>
    </LICENSE>
</GET_ALL_LICENSES>
</RIBCL>
```

FACTORY_DEFAULTS

Use this command to set the iLO device to factory default settings. Use HPQLOCFG.EXE version 1.00 or later with this command. Replace USER_LOGIN and PASSWORD values with values that are appropriate for your environment.

⚠ **WARNING!** Resetting an iLO device to factory defaults changes the the DNS name to the default, and the iLO device can be accessed using only the default Administrator user account and default password. Without these defaults, iLO access must be reconfigured using the RBSU.

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <FACTORY_DEFAULTS/>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
```

FACTORY_DEFAULTS parameters

None

FACTORY_DEFAULTS runtime errors

None

IMPORT_SSH_KEY

The IMPORT_SSH_KEY command imports a SSH_KEY and associated iLO user name into iLO. This command requires `HPQLOCFG.EXE` version 1.00 or later.

After generating an SSH key using `ssh-keygen`, `puttygen.exe`, or another SSH key generating utility to produce a 1024 bit DSA key, and creating the `key.pub` file, perform the following:

1. Locate the `key.pub` file and insert the contents between

   `-----BEGIN SSH KEY----`

   and

   `-----END SSH KEY-----.`

   The file begins with the text:

   `ssh-dss .`

2. At the end of the key, append a space and the name of a valid iLO 3 user name as displayed on the Modify User page. For example:

   `xxx_some text_xxx ASmith.`

The user name is case-sensitive and must match the case of the iLO 3 user name to associate the SSH key with the correct user.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="write">
   <IMPORT_SSH_KEY>
  -----BEGIN SSH KEY-----
   ssh-dss
  ASampleKeyAAALftnNE12JR8T8XQqyzqc1tt6FLFRXLRM5PJpOf/IG4hN45
   +x+JbaqkhH+aKqFjlfO1NjszHrFN26H1AhWOjY2bEwj2wlJzBMAhXwnPQelQsCnJDf+
   zCzbDn+5Va86+qWxm0lsDEChvZPM6wpjkXvHwuInjxTzOGQTq++vmYlo1/AAAAFQC1M
   FaZjE995QhX9H1DaDzpsVTXvwAAAIA6ec/hAkas2N762jtlHvSuvZaQRzu49DOtjXVI
   pNdJAhTC8O2505PzkGLf5qhrbDnusclCvoH7DuxyHjeOUVxbC5wFQBcGF4VnpYZ8nGQ
   Gt9TQ0iUV+NRwn4CR5ESoi63zTJIvKIYZDT2ISeXhF2iU6txjZzdeEm7vQz3slaY3dg
   AAAIAQ46i6FBzJAYXziF/qmWMt4y6SlylOQDAsxPKk7rpxegv8RlTeon/aeL7ojb9GQ
   2xnEN5gobaNZxKz2d4/jwg3+qgTDT6V1G+b7+nEI/XHIc717/7oqgiOv4VE3WxN+HE9
   JWsv2jwUpAzRGqJOoojRG/CCru0K+jgTOf/di1o0sw== ASmith
   -----END SSH KEY-----
   </IMPORT_SSH_KEY>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

IMPORT_SSH_KEY parameters

None

IMPORT_SSH_KEY runtime errors

The possible IMPORT_SSH_KEY error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `Duplicate of existing SSH key.`
- `Invalid SSH key data.`
- `There is no user name or the user name appended to SSH key does not exist.`
- `SSH key is too large for storage space.`

DIR_INFO

The DIR_INFO command can only appear within a LOGIN command block. When the command is parsed, it reads the local directory information database into memory and prepares to edit it. Only commands that are DIR_INFO type commands are valid inside the DIR_INFO command block. The DIR_INFO command generates a response that indicates to the host application whether the database was successfully read or not. If the database is open for writing by another application, then this call fails.

DIR_INFO requires the MODE parameter with a value of read or write. MODE is a specific string parameter with a maximum length of 10 characters that specifies what you intend to do with the information.

Write mode enables both reading and writing of iLO information. Read mode prevents modification of the iLO information.

For example:

```
<DIR_INFO MODE="read">
…… DIR_INFO commands ……
</DIR_INFO>
```

GET_DIR_CONFIG

The GET_DIR_CONFIG command requests the respective iLO directory settings. For this command to parse correctly, the GET_DIR_CONFIG command must appear within a DIR_INFO command block, and DIR_INFO MODE can be set to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <DIR_INFO MODE="read">
   <GET_DIR_CONFIG/>
  </DIR_INFO>
 </LOGIN>
</RIBCL>
```

GET_DIR_CONFIG parameters

None

GET_DIR_CONFIG runtime errors

None

GET_DIR_CONFIG return messages

Starting with iLO 3 1.05, directory integration can work with HP Lights-Out schema with or without extensions (schema-free). Depending on your directory configuration, the response to GET_DIR_CONFIG contains different data.

Possible GET_DIR_CONFIG return messages are:

- A directory services (with schema extension) return message:

```
<GET_DIR_CONFIG>
<DIR_AUTHENTICATION_ENABLED VALUE="Y"/>
<DIR_LOCAL_USER_ACCT VALUE="Y"/>
<DIR_SERVER_ADDRESS VALUE= "adserv.demo.com"/>
<DIR_SERVER_PORT VALUE= "636"/>
<DIR_OBJECT_DN VALUE="CN=SERVER1_RIB,OU=RIB,DC=HPRIB, DC=LABS"/>
<DIR_USER_CONTEXT_1 VALUE="CN=Users0,DC=HPRIB0, DC=LABS"/>
<DIR_USER_CONTEXT_2 VALUE="CN=Users1,DC=HPRIB1, DC=LABS"/>
<DIR_USER_CONTEXT_3 VALUE= ""/>
<DIR_USER_CONTEXT_4 VALUE= ""/>
<DIR_USER_CONTEXT_5 VALUE= ""/>
<DIR_USER_CONTEXT_6 VALUE= ""/>
<DIR_USER_CONTEXT_7 VALUE= ""/>
<DIR_USER_CONTEXT_8 VALUE= ""/>
<DIR_USER_CONTEXT_9 VALUE= ""/>
<DIR_USER_CONTEXT_10 VALUE= ""/>
<DIR_USER_CONTEXT_11 VALUE= ""/>
<DIR_USER_CONTEXT_12 VALUE= ""/>
<DIR_USER_CONTEXT_13 VALUE= ""/>
<DIR_USER_CONTEXT_14 VALUE= ""/>
<DIR_USER_CONTEXT_15 VALUE= ""/>
<DIR_ENABLE_GRP_ACCT VALUE= "N"/>
<DIR_GRPACCT1_NAME VALUE= "Administrators"/>
<DIR_GRPACCT1_PRIV VALUE= "1,2,3,4,5,6"/>
<DIR_GRPACCT1_SID VALUE= ""/>
<DIR_GRPACCT2_NAME VALUE= "Authenticated Users"/>
<DIR_GRPACCT2_PRIV VALUE= "6"/>
<DIR_GRPACCT2_SID VALUE= "S-1-5-11"/>
<DIR_KERBEROS_ENABLED VALUE="N"/>
<DIR_KERBEROS_REALM VALUE=""/>
<DIR_KERBEROS_KDC_ADDRESS VALUE= ""/>
<DIR_KERBEROS_KDC_PORT VALUE= "88"/>
</GET_DIR_CONFIG>
```

- A schema-free directory (without schema extension) return message:

```
<GET_DIR_CONFIG>
<DIR_AUTHENTICATION_ENABLED VALUE="Y"/>
<DIR_LOCAL_USER_ACCT VALUE="Y"/>
<DIR_SERVER_ADDRESS VALUE="adserv.demo.com"/>
<DIR_SERVER_PORT VALUE= "636"/>
<DIR_OBJECT_DN VALUE= ""/>
<DIR_USER_CONTEXT_1 VALUE="CN=Users,DC=demo,DC=com"/>
<DIR_USER_CONTEXT_2 VALUE= ""/>
<DIR_USER_CONTEXT_3 VALUE= ""/>
<DIR_USER_CONTEXT_4 VALUE= ""/>
<DIR_USER_CONTEXT_5 VALUE= ""/>
<DIR_USER_CONTEXT_6 VALUE= ""/>
<DIR_USER_CONTEXT_7 VALUE= ""/>
<DIR_USER_CONTEXT_8 VALUE= ""/>
<DIR_USER_CONTEXT_9 VALUE= ""/>
<DIR_USER_CONTEXT_10 VALUE= ""/>
<DIR_USER_CONTEXT_11 VALUE= ""/>
<DIR_USER_CONTEXT_12 VALUE= ""/>
```

```
<DIR_USER_CONTEXT_13 VALUE= ""/>
<DIR_USER_CONTEXT_14 VALUE= ""/>
<DIR_USER_CONTEXT_15 VALUE= ""/>
<DIR_ENABLE_GRP_ACCT VALUE= "Y"/>
<DIR_GRPACCT1_NAME VALUE="CN=iLOAdmins,CN=Users,DC=demo,DC=com"/>
<DIR_GRPACCT1_PRIV VALUE="1,2,3,4,5"/>
<DIR_GRPACCT1_SID VALUE= "S-1-0"/>
<DIR_KERBEROS_ENABLED VALUE="N"/>
<DIR_KERBEROS_REALM VALUE=""/>
<DIR_KERBEROS_KDC_ADDRESS VALUE= ""/>
<DIR_KERBEROS_KDC_PORT VALUE= "88"/>
</GET_DIR_CONFIG>
```

- A Kerberos-enabled directory return message:

```
<GET_DIR_CONFIG>
<DIR_AUTHENTICATION_ENABLED VALUE="N"/>
<DIR_LOCAL_USER_ACCT VALUE="Y"/>
<DIR_SERVER_ADDRESS VALUE= ""/>
<DIR_SERVER_PORT VALUE= "636"/>
<DIR_OBJECT_DN VALUE= ""/>
<DIR_USER_CONTEXT_1 VALUE= ""/>
<DIR_USER_CONTEXT_2 VALUE= ""/>
<DIR_USER_CONTEXT_3 VALUE= ""/>
<DIR_USER_CONTEXT_4 VALUE= ""/>
<DIR_USER_CONTEXT_5 VALUE= ""/>
<DIR_USER_CONTEXT_6 VALUE= ""/>
<DIR_USER_CONTEXT_7 VALUE= ""/>
<DIR_USER_CONTEXT_8 VALUE= ""/>
<DIR_USER_CONTEXT_9 VALUE= ""/>
<DIR_USER_CONTEXT_10 VALUE= ""/>
<DIR_USER_CONTEXT_11 VALUE= ""/>
<DIR_USER_CONTEXT_12 VALUE= ""/>
<DIR_USER_CONTEXT_13 VALUE= ""/>
<DIR_USER_CONTEXT_14 VALUE= ""/>
<DIR_USER_CONTEXT_15 VALUE= ""/>
<DIR_ENABLE_GRP_ACCT VALUE= "N"/>
<DIR_GRPACCT1_NAME VALUE= "Administrators"/>
<DIR_GRPACCT1_PRIV VALUE= "1,2,3,4,5,6"/>
<DIR_GRPACCT1_SID VALUE= ""/>
<DIR_GRPACCT2_NAME VALUE= "Authenticated Users"/>
<DIR_GRPACCT2_PRIV VALUE= "6"/>
<DIR_GRPACCT2_SID VALUE= "S-1-5-11"/>
<DIR_GRPACCT3_NAME VALUE= "user0"/>
<DIR_GRPACCT3_PRIV VALUE= "1,2,3,4,5,6"/>
<DIR_GRPACCT3_SID VALUE= "S-1-5-21-123456789-123456789-
1234567890-1234"/>
<DIR_KERBEROS_ENABLED VALUE="Y"/>
<DIR_KERBEROS_REALM VALUE="EXAMPLE.NET"/>
<DIR_KERBEROS_KDC_ADDRESS VALUE= "kdc.example.net"/>
<DIR_KERBEROS_KDC_PORT VALUE= "88"/>
</GET_DIR_CONFIG>
```

MOD_DIR_CONFIG

The MOD_DIR_CONFIG command modifies the directory settings on iLO. For this command to parse correctly, the MOD_DIR_CONFIG command must appear within a DIR_INFO command block, and DIR_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

The MOD_DIR_CONFIG is used in different ways depending on the environment. See MOD_DIRECTORY.XML (example below) for an example suitable for use in an environment with

directory integration and existing schemas. See MOD_SCHEMALESS_DIRECTORY.XML for an example suitable for use in a schemaless directory configuration.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <DIR_INFO MODE="write">
         <MOD_DIR_CONFIG>
            <DIR_AUTHENTICATION_ENABLED value="Yes"/>
            <DIR_LOCAL_USER_ACCT value="Yes"/>
            <!--  NOTE:  For schemaless Directory configuration, please   -->
            <!--  ensure  that the following settings are modified as     -->
            <!--  required so that user can logon with Email format and   -->
            <!--  Netbios formats successfully:                           -->
            <!--    1. DIR_SERVER_ADDRESS value need  to be set to        -->
            <!--       directory server DNS Name or FQDN(Full qualified   -->
            <!--       Domain Name)                                       -->
            <!--  Please check and update the following iLO Network       -->
            <!--  Settings .                                              -->
            <!--    1. The domain name of iLO should match the domain of  -->
            <!--       the directory server.                              -->
            <!--    2. One of the primary, secondary or Tertiary DNS      -->
            <!--       server must have the same IP address as the        -->
            <!--       Directory server.                                  -->
            <DIR_SERVER_ADDRESS value="dlilo1.mycompu.com"/>
            <DIR_SERVER_PORT value="636"/>
            <DIR_OBJECT_DN value="CN=server1_rib,OU=RIB, DC=mycompu,DC=com"/>
            <DIR_OBJECT_PASSWORD value="password"/>
            <DIR_USER_CONTEXT_1 value="CN=Users,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_2 value="CN=Users2,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_3 value="CN=Users3,DC=mycompu, DC=com"/>
            <!--        Firmware support information for next 12 tags:    -->
            <!--            iLO 4 - All versions.                         -->
            <!--            iLO 3 - All versions.                         -->
            <!--            iLO 2 - 1.77 and later.                       -->
            <DIR_USER_CONTEXT_4 value="CN=Users4,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_5 value="CN=Users5,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_6 value="CN=Users6,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_7 value="CN=Users7,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_8 value="CN=Users8,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_9 value="CN=Users9,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_10 value="CN=Users10,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_11 value="CN=Users11,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_12 value="CN=Users12,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_13 value="CN=Users13,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_14 value="CN=Users14,DC=mycompu, DC=com"/>
            <DIR_USER_CONTEXT_15 value="CN=Users15,DC=mycompu, DC=com"/>
            <!--NOTE: Set the value to "NO" to enable the HP Extended     -->
            <!--      Schema and Value "YES" to enable Default Directory  -->
            <!--      Login. To set Group Accounts and privileges for     -->
            <!--      Default Schema run Mod_Schemaless_Directory.xml.    -->
            <DIR_ENABLE_GRP_ACCT value = "yes"/>
    <!-- Firmware support information for next 5 tags: -->
    <!-- iLO 4 - All versions.                         -->
    <!-- iLO 3 - 1.20 and later.                       -->
    <!-- iLO 2 - None.                                 -->
    <DIR_KERBEROS_ENABLED value="Yes"/>
    <DIR_KERBEROS_REALM VALUE="realmname.domain.dom"/>
    <DIR_KERBEROS_KDC_ADDRESS VALUE="realmkdc.domain.dom"/>
    <DIR_KERBEROS_KDC_PORT VALUE="88"/>
    <DIR_KERBEROS_KEYTAB>
    -----BEGIN KEYTAB-----
    VGhpcyBpcyBhIHRlc3Qgb2YgdGhlIEJhc2U2NCBlbmNvZGVyLiAgVGhpcy
    BpcyBvbmx5IGEgdGVz
    dC4=
    -----END KEYTAB-----
    </DIR_KERBEROS_KEYTAB>
    </MOD_DIR_CONFIG>
   </DIR_INFO>
  </LOGIN>
```

```
</RIBCL>
```

NOTE: To modify only the kerberos authentication, start with the sample script `Mod_Kerberos_Config.xml`.

NOTE: Do not use the following tags when using directory integration with schema extension:

- DIR_ENABLE_GRP_ACCT
- DIR_GRPACCT1_NAME
- DIR_GRPACCT1_PRIV

Do not use the following tags when using schema-free directories:

- DIR_OBJECT_DN
- DIR_OBJECT_PASSWORD

Schemaless directory example (MOD_SCHEMALESS_DIR.XML)

```
<!--         RIBCL Sample Script for HP Lights-Out Products          -->
<!--Copyright (c) 2003,2011 Hewlett-Packard Development Company, L.P.-->

<!-- Description:  This is a sample XML script to modify the current -->
<!--               schemaless directory configuration on following   -->
<!--               device:                                           -->
<!--                 Integrated Lights-Out 4 (iLO 4)                 -->
<!--                 Integrated Lights-Out 3 (iLO 3)                 -->
<!--                 Integrated Lights-Out 2 (iLO 2)                 -->

<!-- NOTE:  You will need to replace the USER_LOGIN and PASSWORD     -->
<!--        values with values that are appropriate for your         -->
<!--        environment.                                             -->

<!-- NOTE:  Run Mod_directory.xml to enable Directory login,         -->
<!--        And to set the directory server address.                 -->

<!--               The Privilege values are:                         -->
<!--                   1 = Administer User Accounts                  -->
<!--                   2 = Remote Console Access                     -->
<!--                   3 = Virtual Power and Reset                   -->
<!--                   4 = Virtual Media                             -->
<!--                   5 = Configure iLO settings                    -->
<!--                   6 = Login Privilege                           -->
<!--               Values "6" is supported by iLO 3 and iLO 4        -->
<!--               firmware only.                                    -->

<!--        This script was written for iLO 3 firmware version 1.20  -->
<!--        release.                                                 -->

<!--        See "HP Integrated Lights-Out Management Processor       -->
<!--        Scripting and Command Line Resource Guide" for more      -->
<!--        information on scripting and the syntax of the RIBCL     -->
<!--        XML.                                                     -->

<!--        Firmware support information for this script:            -->
<!--            iLO 4 - All versions.                                -->
<!--            iLO 3 - All versions.                                -->
<!--            iLO 2 - Version 1.10 or later.                       -->

<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="admin" PASSWORD="admin123">
      <DIR_INFO MODE = "write">
         <MOD_DIR_CONFIG>
            <DIR_ENABLE_GRP_ACCT value = "Yes"/>

            <DIR_GRPACCT1_NAME value = "test1"/>
            <DIR_GRPACCT1_PRIV value = "3,4,5"/>
            <!--      Firmware support information for next tag:         -->
            <!--       iLO 4 - All versions.                             -->
            <!--       iLO 3 - Version 1.20 or later only                -->
            <DIR_GRPACCT1_SID value= "S-1-0"/>

            <DIR_GRPACCT2_NAME value = "test2"/>
            <DIR_GRPACCT2_PRIV value = "2,3,5"/>
            <!--      Firmware support information for next tag:         -->
            <!--       iLO 4 - All versions.                             -->
```

```
            <!--       iLO 3 - Version 1.20 or later only               -->
            <DIR_GRPACCT2_SID value= "S-2-0"/>

            <DIR_GRPACCT3_NAME value = "test3"/>
            <DIR_GRPACCT3_PRIV value = "1,3,4"/>
            <!--      Firmware support information for next tag:        -->
            <!--       iLO 4 - All versions.                            -->
            <!--       iLO 3 - Version 1.20 or later only               -->

            <DIR_GRPACCT3_SID value= "S-3-0"/>

            <DIR_GRPACCT4_NAME value = "test4"/>
            <DIR_GRPACCT4_PRIV value = "3,6"/>
            <!--      Firmware support information for next tag:        -->
            <!--       iLO 4 - All versions.                            -->
            <!--       iLO 3 - Version 1.20 or later only               -->

            <DIR_GRPACCT4_SID value= "S-4-0"/>

            <DIR_GRPACCT5_NAME value = "test5"/>
            <DIR_GRPACCT5_PRIV value = "2,3"/>
            <!--      Firmware support information for next tag:        -->
            <!--       iLO 4 - All versions.                            -->
            <!--       iLO 3 - Version 1.20 or later only               -->

            <DIR_GRPACCT5_SID value= "S-5-0"/>

            <DIR_GRPACCT6_NAME value = "test6"/>
            <DIR_GRPACCT6_PRIV value = "1,3,4,6"/>
            <!--      Firmware support information for next tag:        -->
            <!--       iLO 4 - All versions.                            -->
            <!--       iLO 3 - Version 1.20 or later only               -->

            <DIR_GRPACCT6_SID value= "S-6-0"/>

            <!-- alternative method for ilo3/4 only -->
            <!-- <DIR_GRPACCT INDEX="1">     -->
            <!--       <NAME VALUE="string"/>     -->
            <!--       <SID VALUE="S-1-0"/>     -->
            <!--       <LOGIN_PRIV VALUE="Y"/>     -->
            <!-- </DIR_GRPACCT>       -->

         </MOD_DIR_CONFIG>
      </DIR_INFO>
   </LOGIN>
</RIBCL>
```

MOD_DIR_CONFIG parameters

All of the following parameters are optional. If a parameter is not specified, then the parameter value for the specified setting is preserved.

DIR_AUTHENTICATION_ENABLED enables or disables directory authentication. The possible values are `Yes` and `No`.

DIR_ENABLE_GRP_ACCT causes iLO to use schema-less directory integration. The possible values are `Yes` and `No`.

When using schema-free directory integration, iLO supports variable privileges associated with different directory groups. These groups are contained in the directory, and the corresponding member iLO privileges are stored in iLO.

DIR_KERBEROS_ENABLED enables or disables Kerberos authentication. The possible values are `Yes` and `No`.

DIR_KERBEROS_REALM specifies the Kerberos realm for which the domain controller is configured. By convention, the Kerberos realm name for a given domain is the domain name converted to uppercase.

DIR_KERBEROS_KDC_ADDRESS specifies the location of the domain controller. The domain controller location is specified as an IP address or DNS name.

DIR_KERBEROS_KDC_PORT specifies the port number used to connect to the domain controller. The Kerberos port number is 88, but the domain controller can be configured for a different port number.

DIR_KERBEROS_KEYTAB specifies the contents of the keytab file which is a binary file containing pairs of principals and encrypted passwords. In the Windows environment, the keytab file is generated with a ktpass utility. After generating a binary keytab file using the appropriate utility, use a Base64 encoder to convert the binary file to ASCII format.

Place the Base64 contents between:

```
-----BEGIN KEYTAB-----
```

and

```
-----END KEYTAB-----
```

- DIR_GRPACCT1_NAME identifies a group container in the directory, such as Administrators, Users, or Power Users.
- DIR_GRPACCT1_PRIV numerically identifies iLO privileges for members of the group. You can mix and match privileges by including more than one value. These privileges are expressed as a comma separated list of numbers (1,2,3,4,5,6) which correlate to:

  1—Administer Group Accounts

  2—Remote Console Access

  3—Virtual Power and Reset

  4—Virtual Media

  5—Configure iLO 3 Settings

  6—Login Privilege

  NOTE: Do not use the following tags when using directory integration with schema extension:

  - DIR_ENABLE_GRP_ACCT
  - DIR_GRPACCT1_NAME
  - DIR_GRPACCT1_PRIV

  Do not use the following tags when using schema-free directories

  - DIR_OBJECT_DN
  - DIR_OBJECT_PASSWORD

DIR_LOCAL_USER_ACCT enables or disables local user accounts. The possible values are `Yes` and `No`.

DIR_SERVER_ADDRESS specifies the location of the directory server. The directory server location is specified as an IP address or DNS name.

DIR_SERVER_PORT specifies the port number used to connect to the directory server. This value is obtained from the directory administrator. The secure LDAP port is 636, but the directory server can be configured for a different port number.

DIR_OBJECT_DN specifies the unique name of iLO 3 in the directory server. This value is obtained from the directory administrator. Distinguished names are limited to 256 characters.

DIR_OBJECT_PASSWORD specifies the password associated with the iLO 3 object in the directory server. Passwords are limited to 39 characters.

DIR_USER_CONTEXT_1, DIR_USER_CONTEXT_2, and DIR_USER_CONTEXT_15 specify searchable contexts used to locate the user when the user is trying to authenticate using directories. If the user is not located using the first path, then the parameters specified in the second and third paths are

used. The values for these parameters are obtained from the directory administrator. Directory User Contexts are limited to 128 characters each.

MOD_DIR_CONFIG runtime errors

Possible MOD_DIR_CONFIG error messages include:

- `Directory information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

MOD_KERBEROS

The MOD_KERBEROS command modifies the directory settings in iLO. For this command to parse correctly, the MOD_KERBEROS command must appear within a MOD_DIR_CONFIG command block, and DIR_INFO MODE must be set to `write`. The user must be running iLO 3 1.20 or later to run Kerberos. The user must have the Configure iLO Settings privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <DIR_INFO MODE="write">
      <MOD_DIR_CONFIG>
        <DIR_KERBEROS_ENABLED value="Yes"/>
        <DIR_KERBEROS_REALM VALUE="realmname.domain.dom"/>
        <DIR_KERBEROS_KDC_ADDRESS VALUE="realmkdc.domain.dom"/>
        <DIR_KERBEROS_KDC_PORT VALUE="88"/>
        <DIR_KERBEROS_KEYTAB>
-----BEGIN KEYTAB-----
VGhpcyBpcyBhIHRlc3Qgb2YgdGhlIEJhc2U2NCBlbmNvZGVyLiAgVGhpcy
BpcyBvbmx5IGEgdGVz
dC4=
-----END KEYTAB-----
         </DIR_KERBEROS_KEYTAB>
      </MOD_DIR_CONFIG>
    </DIR_INFO>
  </LOGIN>
</RIBCL>
```

BLADESYSTEM_INFO

The BLADESYSTEM_INFO command only appears within a LOGIN command block. Only commands that are BLADESYSTEM_INFO type commands are valid inside the BLADESYSTEM_INFO command block.

This command block is only valid on ProLiant BL c-Class blade servers. BLADESYSTEM_INFO requires the MODE parameter with a value of read or write. MODE is a specific string parameter with a maximum length of 10 characters that specifies what you intend to do with the information.

Write mode enables both reading and writing of information to the blade system. Read mode prevents modification of the blade system information.

The possible BLADESYSTEM_INFO error messages include:

- `Invalid Mode`
- `Server is not a rack server; rack commands do not apply`

For example:

```
<BLADESYSTEM_INFO MODE="read">
…… BLADESYSTEM_INFO commands ……
</BLADESYSTEM_INFO>
```

GET_OA_INFO

The GET_OA_INFO command requests the Onboard Administrator information from the enclosure where iLO 3 is located. For this command to parse correctly, the GET_OA_INFO command must appear within a BLADESYSTEM_INFO command block, and BLADESYSTEM_INFO MODE can be set to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <BLADESYSTEM_INFO MODE="read">
   <GET_OA_INFO/>
  </BLADESYSTEM_INFO>
 </LOGIN>
</RIBCL>
```

GET_OA_INFO parameters

None

GET_OA_INFO runtime errors

None

GET_OA_INFO return messages

A possible GET_OA_INFO return message is:

```
<GET_OA_INFO>
<ipAddress>192.168.1.105</ipAddress/>
<macAddress>00:22:44:55:33:77</macAddress/>
<System_Health>1</System_Health>
<uidStatus>On</uidStatus>
<RACK>South Park</RACK>
<ENCL>Kenny</ENCL>
<Location>7</Location>
</GET_OA_INFO>
```

SERVER_INFO

The SERVER_INFO command can only appear within a LOGIN command block. Only commands that are SERVER_INFO type commands are valid inside the SERVER_INFO command block.

SERVER_INFO requires the MODE parameter with a value of read or write. MODE is a specific string parameter with a maximum length of 10 characters that specifies what you intend to do with the information.

Write mode enables both the reading and writing of iLO information. Read mode prevents modification of iLO information.

For example:

```
<SERVER_INFO MODE="read">
…… SERVER_INFO commands ……
</SERVER_INFO>
```

Reset server example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <RESET_SERVER/>
  </SERVER_INFO>
```

```
 </LOGIN>
</RIBCL>
```

Set host power example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
    <!-- Modify the HOST_POWER attribute to toggle power on the host server -->
    <!-- HOST_POWER="No"  (Turns host server power off)                      -->
    <!-- A graceful shutdown will be attempted for ACPI-aware               -->
    <!-- operating systems configured to support graceful shutdown.         -->
    <!-- HOST_POWER="Yes" (Turns host server power on)                       -->
   <SET_HOST_POWER HOST_POWER="No"/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_PERSISTENT_BOOT

The GET_PERSISTENT_BOOT command returns the current boot order. The specified user must have a valid iLO account to execute RIBCL commands. For this command to parse correctly, the command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to read.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET_PERSISTENT_BOOT/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_PERSISTENT_BOOT return messages

A possible GET_PERSISTENT_BOOT return message includes:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.23">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
<PERSISTENT_BOOT>
  <DEVICE value="CDROM"/>
  <DEVICE value="HDD"/>
  <DEVICE value="FLOPPY"/>
  <DEVICE value="USB"/>
  <DEVICE value="NETWORK"/>
</PERSISTENT_BOOT>
</RIBCL>
```

SET_PERSISTENT_BOOT

The SET_PERSISTENT_BOOT command takes one or more boot parameters and sets the normal boot order. If you do not list every option, the remaining options are shifted toward the bottom of the list. The specified user must have a valid iLO account to execute RIBCL commands. For this command to parse correctly, the command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write.

NOTE: This code modifies EVs. The one time boot EV is:

`CQTBT1.`

This was modified to set the one-time boot and to display the current status.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
   <SERVER_INFO MODE="write">
     <SET_PERSISTENT_BOOT>
      <DEVICE value = "FLOPPY" />
      <DEVICE value = "CDROM" />
     </SET_PERSISTENT_BOOT>
   </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_PERSISTENT_BOOT parameters

The `value` sets the default boot order. Valid values are:

- CDROM
- FLOPPY
- HDD
- USB
- NETWORK

SET_PERSISTENT_BOOT runtime errors

Some possible error messages you may see when running this command:

- `Post in progress, EV unavailable.`
- `EV name too large.`
- `EV data too large.`
- `There is no such EV.`
- `EV is not supported.`
- `EV is not initialized.`
- `ROM is busy, EV unavailable.`

GET_ONE_TIME_BOOT

The GET_ONE_TIME_BOOT command retrieves the current setting for the one time boot. The specified user must have a valid iLO account to execute RIBCL commands. For this command to parse correctly, the command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to read.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
    <GET_ONE_TIME_BOOT/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_ONE_TIME_BOOT return messages

A possible GET_ONE_TIME_BOOT return message includes:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.23">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
<ONE_TIME_BOOT>
 <BOOT_TYPE VALUE="USB"/>
</ONE_TIME_BOOT>
</RIBCL>
```

Possible BOOT_TYPE values include:

- NORMAL
- FLOPPY
- CDROM
- HDD
- USB
- RBSU
- NETWORK

SET_ONE_TIME_BOOT

The SET_ONE_TIME_BOOT command configures a single boot from a specific device. The specified user must have a valid iLO account to execute RIBCL commands. For this command to parse correctly, the command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write.

NOTE: This code modifies EVs.

The persistent boot is accomplished by reading and modifying `CQHIPL`, and reading `CQHNIPL` to determine the number of valid boot devices.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
   <SERVER_INFO MODE="write">
    <SET_ONE_TIME_BOOT value = "NORMAL"/>
   </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_ONE_TIME_BOOT parameters

The `value` sets a specified device as the source for a single boot. Valid values include the following:

- NORMAL
- FLOPPY
- CDROM
- HDD
- USB

- RBSU
- NETWORK

SET_ONE_TIME_BOOT runtime errors

Some possible error messages you may see when running this command:

- Post in progress, EV unavailable.
- EV name too large.
- EV data too large.
- There is no such EV.
- EV is not supported.
- EV is not initialized.
- ROM is busy, EV unavailable.

GET_SERVER_NAME

The GET_SERVER_NAME command is used to retrieve the host server name used by iLO.

For example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SERVER_INFO MODE="READ" >
   <GET_SERVER_NAME />
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

The iLO firmware maintains consistency between the various places the server name is used. The host RBSU has a two-line limitation of 14 characters each, or 28 characters of total server name text length.

Normally, HP ProLiant Management Agents are used to forward the server name attribute to iLO. This command can be used in instances where management agents are not used. However, the host operating system remains unaffected.

GET_SERVER_NAME return message

GET_SERVER_NAME returns the currently stored server name, operating system name, and the operating system version, if available. The server name is a quoted ASCII string and cannot be a network name.

For example:

```
<SERVER_NAME VALUE="WIN-DPOHJLI9DO8" />
<SERVER_OSNAME VALUE="Windows Server 2008 R2, x64 Enterprise Edition
Service Pack 1"/>
<SERVER_OSVERSION VALUE="6.1"/>
```

GET_SERVER_NAME runtime errors

None

SERVER_NAME

The SERVER_NAME command is used to assign the Server Name attribute shown in the user interface and host RBSU. This setting is not forwarded to the host operating system and does not affect the host operating system.

You must have the Configure iLO Settings privilege to change this attribute using the scripting interface. The SERVER_INFO section must be set to WRITE mode or an error is returned.

For example:

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SERVER_INFO MODE="write" >
  <SERVER_NAME VALUE = "Exchange05" />
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SERVER_NAME parameters

VALUE is a quoted ASCII string less than 50 characters in total length.

SERVER_NAME return message

If this attribute is successfully set, no specific message returns.

SERVER_NAME runtime errors

- If the configure iLO settings privilege is absent, a runtime error is returned.
- If SERVER_INFO is not opened for write, a runtime error is returned.

GET_PRODUCT_NAME

The GET_PRODUCT_NAME command returns the name and model of the queried server. The specified user must have a valid iLO account to execute RIBCL commands. For this command to parse correctly, the command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to read.

For example:

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <SERVER_INFO MODE="read">
     <GET_PRODUCT_NAME/>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

GET_PRODUCT_NAME parameters

USER_LOGIN is the login name of the user account. This parameter is case sensitive and must not be blank.

GET_PRODUCT_NAME runtime errors

Possible GET_PRODUCT_NAME error messages include:

- `User login name must not be blank.`
- `User login name was not found.`
- `Record not found or bad input.`

GET_PRODUCT_NAME return messages

A possible GET_PRODUCT_NAME return message includes:

```
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
```

```
    MESSAGE='No error'
     />
  <GET_PRODUCT_NAME>
    <PRODUCT_NAME VALUE ="ProLiant BL420c Gen8"/>
  </GET_PRODUCT_NAME>
</RIBCL>
```

GET_HOST_DATA

The GET_HOST_DATA command is used to retrieve base64 encoded SMBIOS records (from record 0 up to, potentially, 255). For this command to parse correctly, the command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to read.

For example:

```
<RIBCL version="2.21">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="READ" >
   <GET_HOST_DATA />
  </SERVER_INFO>
</LOGIN>
</RIBCL>
```

GET_HOST_DATA parameters

None

GET_HOST_DATA return messages

An example GET_HOST_DATA might include the following:

```
<GET_HOST_DATA>
<SMBIOS_RECORD TYPE="0" B64_DATA="ABgAAAECAPADf4DayX0AAAAAAwf//wEeSFAAUDcxADA4L
zI2LzIwMTMAAA==">
  <FIELD NAME="Family" VALUE="P71"/>
  <FIELD NAME="Date" VALUE="08/26/2013"/>
</SMBIOS_RECORD>
<SMBIOS_RECORD TYPE="1" B64_DATA="ARsAAQQFAAE2NzA2MzNNWFEzMTIwMlhQBgIDTVhRMzEyMDJYU
CAgICAgIAA2NzA2MzMtUzAxICAgICAgAFByb0xpYW50AEhQAFByb0xpYW50IERMMzYwcCBHZW44ACAgICAg
ICAgICAgICAAUHJvTGlhbnQgREwzNjBwI
EdlbjggU0UAAA==">
  <FIELD NAME="Product Name" VALUE="ProLiant DL360p Gen8"/>
  <FIELD NAME="Serial Number" VALUE="XXXXXXXXXX      "/>
  <FIELD NAME="UUID" VALUE="XXXXXXXXXXXXXXXP"/>
  <FIELD NAME="cUUID" VALUE="XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX"/>
</SMBIOS_RECORD>
<SMBIOS_RECORD TYPE="3" B64_DATA="AxUAAwEXAAIDAwMDAgAAAAABAgAASFAATVhRMzEyMDJYUCAg
ICAgIAAgICAgICAgICAgICAgICAgICAgICAgICAgIAAA" />
<SMBIOS_RECORD TYPE="4" B64_DATA="BCoABAEDswLXBgIA//vrvwOOZADAEtAHQSYQByAHMAcAAAAG
BgwEALMAUHJvYyAxAEludGVsACBJbnRlbChSKSBYZW9uKFIpIENQVSBFNS0yNjIwIDAgQCAyLjAwR0h6IC
AgICAgIAAA">
  <FIELD NAME="Label" VALUE="Proc 1"/>
  <FIELD NAME="Speed" VALUE="2000 MHz"/>
  <FIELD NAME="Execution Technology" VALUE="6 of 6 cores; 12 threads"/>
  <FIELD NAME="Memory Technology" VALUE="64-bit Capable"/>
</SMBIOS_RECORD>
<SMBIOS_RECORD TYPE="4" B64_DATA="BCoBBAEDswIAAAAAAAAAAAOOyADAEgAAACYWByYHNgcAAAAA
AAAEALMAUHJvYyAyAEludGVsACAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgICAgIC
AgICAgIAAA">
  <FIELD NAME="Label" VALUE="Proc 2"/>
  <FIELD NAME="Speed" VALUE="0 MHz"/>
 <FIELD NAME="Execution Technology" VALUE="0 of 0 cores; 0 threads"/>
  <FIELD NAME="Memory Technology" VALUE="64-bit Capable"/>
</SMBIOS_RECORD>
.
.
.
<SMBIOS_RECORD TYPE="232" B64_DATA="6A4W6BYRAAAAAAAAAAAAAA==" />
```

```
<SMBIOS_RECORD TYPE="232" B64_DATA="6A4X6BcRAAAAAAAAAAAAAA==" />
</GET_HOST_DATA>
```

GET_EMBEDDED_HEALTH

The GET_EMBEDDED_HEALTH command is used to retrieve server health information. For this command to parse correctly, the GET_EMBEDDED_HEALTH command must appear within a SERVER_INFO command block. You can set SERVER_INFO MODE to read.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET_EMBEDDED_HEALTH />
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

An expanded version is also available (see example below). Not all tags are required, however if no tags are specified then the command operates as if all the tags are listed and outputs all of the embedded health data:

```
<RIBCL VERSION="2.22">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <SERVER_INFO MODE="read">
      <GET_EMBEDDED_HEALTH>
        <GET_ALL_FANS/>
        <GET_ALL_TEMPERATURES/>
        <GET_ALL_POWER_SUPPLIES/>
        <GET_ALL_VRM/>
        <GET_ALL_PROCESSORS/>
        <GET_ALL_MEMORY/>
        <GET_ALL_NICS/>
        <GET_ALL_STORAGE/>
        <GET_ALL_HEALTH_STATUS/>
      </GET_EMBEDDED_HEALTH>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

GET_EMBEDDED_HEALTH parameters

None

GET_EMBEDDED_HEALTH return messages

NOTE: PART NUMBER (for MEMORY_DETAILS) is only returned for HP Smart Memory.

A possible GET_EMBEDDED_HEALTH return message is:

```
<GET_EMBEDDED_HEALTH>
     <FANS>
      <FAN>
           <ZONE VALUE = "System"/>
           <LABEL VALUE = "Virtual Fan"/>
           <STATUS VALUE = "OK"/>
           <SPEED VALUE = "20" UNIT="Percentage"/>
      </FAN>
     </FANS>
     <TEMPERATURE>
      <TEMP>
           <LABEL VALUE = "01-Inlet Ambient"/>
           <LOCATION VALUE = "Ambient"/>
           <STATUS VALUE = "OK"/>
           <CURRENTREADING VALUE = "16" UNIT="Celsius"/>
           <CAUTION VALUE = "42" UNIT="Celsius"/>
           <CRITICAL VALUE = "46" UNIT="Celsius"/>
```

```
</TEMP>
<TEMP>
     <LABEL VALUE = "02-CPU 1"/>
     <LOCATION VALUE = "CPU"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "40" UNIT="Celsius"/>
     <CAUTION VALUE = "70" UNIT="Celsius"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "03-CPU 2"/>
     <LOCATION VALUE = "CPU"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "40" UNIT="Celsius"/>
     <CAUTION VALUE = "70" UNIT="Celsius"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "04-P1 DIMM 1-6"/>
     <LOCATION VALUE = "Memory"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "24" UNIT="Celsius"/>
     <CAUTION VALUE = "87" UNIT="Celsius"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "05-P2 DIMM 1-6"/>
     <LOCATION VALUE = "Memory"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "23" UNIT="Celsius"/>
     <CAUTION VALUE = "87" UNIT="Celsius"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "06-P1 Mem Zone"/>
     <LOCATION VALUE = "Memory"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "24" UNIT="Celsius"/>
     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "07-P1 Mem Zone"/>
     <LOCATION VALUE = "Memory"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "24" UNIT="Celsius"/>
     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "08-P2 Mem Zone"/>
     <LOCATION VALUE = "Memory"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "22" UNIT="Celsius"/>
     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "09-P2 Mem Zone"/>
     <LOCATION VALUE = "Memory"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "22" UNIT="Celsius"/>
     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "10-HD Max"/>
     <LOCATION VALUE = "System"/>
     <STATUS VALUE = "Not Installed"/>
     <CURRENTREADING VALUE = "N/A"/>
     <CAUTION VALUE = "N/A"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "11-Chipset"/>
     <LOCATION VALUE = "System"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "44" UNIT="Celsius"/>
     <CAUTION VALUE = "105" UNIT="Celsius"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
```

```
<TEMP>
     <LABEL VALUE = "12-VR P1"/>
     <LOCATION VALUE = "Power Supply"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "25" UNIT="Celsius"/>
     <CAUTION VALUE = "115" UNIT="Celsius"/>
     <CRITICAL VALUE = "120" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "13-VR P2"/>
     <LOCATION VALUE = "Power Supply"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "23" UNIT="Celsius"/>
     <CAUTION VALUE = "115" UNIT="Celsius"/>
     <CRITICAL VALUE = "120" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "14-VR P1 Zone"/>
     <LOCATION VALUE = "Power Supply"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "28" UNIT="Celsius"/>
     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "15-VR P1 Mem"/>
     <LOCATION VALUE = "Power Supply"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "25" UNIT="Celsius"/>
     <CAUTION VALUE = "115" UNIT="Celsius"/>
     <CRITICAL VALUE = "120" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "16-VR P2 Mem"/>
     <LOCATION VALUE = "Power Supply"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "21" UNIT="Celsius"/>
     <CAUTION VALUE = "115" UNIT="Celsius"/>
     <CRITICAL VALUE = "120" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "17-SuperCap Max"/>
     <LOCATION VALUE = "System"/>
     <STATUS VALUE = "Not Installed"/>
     <CURRENTREADING VALUE = "N/A"/>
     <CAUTION VALUE = "N/A"/>
     <CRITICAL VALUE = "N/A"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "18-HD controller"/>
     <LOCATION VALUE = "I/O Board"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "40" UNIT="Celsius"/>
     <CAUTION VALUE = "100" UNIT="Celsius"/>
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</TEMP>
<TEMP>
     <LABEL VALUE = "19-HDcntlr Inlet"/>
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     <LABEL VALUE = "20-Mezz 1"/>
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</TEMP>
<TEMP>
     <LABEL VALUE = "21-Mezz 1 Inlet"/>
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```

```
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</TEMP>
<TEMP>
     <LABEL VALUE = "26-I/O Zone"/>
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     <STATUS VALUE = "OK"/>
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     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
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<TEMP>
     <LABEL VALUE = "28-I/O Zone"/>
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<TEMP>
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     <STATUS VALUE = "OK"/>
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     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
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     <LOCATION VALUE = "System"/>
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     <CURRENTREADING VALUE = "27" UNIT="Celsius"/>
     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "31-System Board"/>
     <LOCATION VALUE = "System"/>
     <STATUS VALUE = "OK"/>
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     <CAUTION VALUE = "90" UNIT="Celsius"/>
     <CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
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     <LABEL VALUE = "32-Sys Exhaust"/>
     <LOCATION VALUE = "Chassis"/>
     <STATUS VALUE = "OK"/>
     <CURRENTREADING VALUE = "26" UNIT="Celsius"/>
     <CAUTION VALUE = "80" UNIT="Celsius"/>
     <CRITICAL VALUE = "85" UNIT="Celsius"/>
</TEMP>
<TEMP>
     <LABEL VALUE = "33-Sys Exhaust"/>
```

```
      <LOCATION VALUE = "Chassis"/>
      <STATUS VALUE = "OK"/>
      <CURRENTREADING VALUE = "29" UNIT="Celsius"/>
      <CAUTION VALUE = "80" UNIT="Celsius"/>
      <CRITICAL VALUE = "85" UNIT="Celsius"/>
 </TEMP>
</TEMPERATURE>
<POWER_SUPPLIES>
     <POWER_SUPPLY_SUMMARY>
           <PRESENT_POWER_READING VALUE = "117 Watts"/>
           <POWER_MANAGEMENT_CONTROLLER_FIRMWARE_VERSION VALUE = "3.1"/>
           <POWER_SYSTEM_REDUNDANCY VALUE = "Not Redundant"/>
           <HP_POWER_DISCOVERY_SERVICES_REDUNDANCY_STATUS VALUE = "Not Redundant"/>
           <HIGH_EFFICIENCY_MODE VALUE = "Balanced"/>
     </POWER_SUPPLY_SUMMARY>
     <SUPPLY>
          <LABEL VALUE = "Power Supply 1"/>
          <PRESENT VALUE = "Yes"/>
          <STATUS VALUE = "Input Voltage Lost"/>
          <PDS VALUE = "Yes"/>
          <HOTPLUG_CAPABLE VALUE = "Yes"/>
          <MODEL VALUE = "656364-B21"/>
          <SPARE VALUE = "660185-001"/>
          <SERIAL_NUMBER VALUE = "5BXRK0BLL2C0CK"/>
          <CAPACITY VALUE = "1200 Watts"/>
          <FIRMWARE_VERSION VALUE = "1.00"/>
     </SUPPLY>
     <SUPPLY>
         <LABEL VALUE = "Power Supply 2"/>
          <PRESENT VALUE = "Yes"/>
          <STATUS VALUE = "Good, In Use"/>
          <PDS VALUE = "Yes"/>
          <HOTPLUG_CAPABLE VALUE = "Yes"/>
          <MODEL VALUE = "656364-B21"/>
          <SPARE VALUE = "660185-001"/>
          <SERIAL_NUMBER VALUE = "5BXRCX34D0N0FL"/>
          <CAPACITY VALUE = "1200 Watts"/>
          <FIRMWARE_VERSION VALUE = "1.00"/>
     </SUPPLY>
     <POWER_DISCOVERY_SERVICES_IPDU_SUMMARY>
          <IPDU>
               <BAY VALUE = "2"/>
               <STATUS VALUE = "iPDU Not Redundant"/>
               <PART_NUMBER VALUE = "AF522A"/>
               <SERIAL_NUMBER VALUE = "2CJ0221672"/>
               <MAC_ADDRESS VALUE = "d8:d3:85:6d:36:9c"/>
               <IPDU_LINK VALUE = "http://16.85.177.189"/>
          </IPDU>
</POWER_SUPPLIES>
<VRM>
</VRM>
<PROCESSORS>
     <PROCESSOR>
          <LABEL VALUE = "Proc 1"/>
          <NAME VALUE = " Intel(R) Xeon(R) CPU E5-2470 0 @ 2.30GHz "/>
          <STATUS VALUE = "OK"/>
          <SPEED VALUE = "2300 MHz"/>
          <EXECUTION_TECHNOLOGY VALUE = "8/8 cores; 16 threads"/>
          <MEMORY_TECHNOLOGY VALUE = "64-bit Capable"/>
          <INTERNAL_L1_CACHE VALUE = "256 KB"/>
          <INTERNAL_L2_CACHE VALUE = "2048 KB"/>
          <INTERNAL_L3_CACHE VALUE = "20480 KB"/>
     </PROCESSOR>
     <PROCESSOR>
          <LABEL VALUE = "Proc 2"/>
          <NAME VALUE = " Intel(R) Xeon(R) CPU E5-2470 0 @ 2.30GHz "/>
          <STATUS VALUE = "OK"/>
          <SPEED VALUE = "2300 MHz"/>
          <EXECUTION_TECHNOLOGY VALUE = "8/8 cores; 16 threads"/>
          <MEMORY_TECHNOLOGY VALUE = "64-bit Capable"/>
          <INTERNAL_L1_CACHE VALUE = "256 KB"/>
          <INTERNAL_L2_CACHE VALUE = "2048 KB"/>
          <INTERNAL_L3_CACHE VALUE = "20480 KB"/>
     </PROCESSOR>
</PROCESSORS>
<MEMORY>
     <ADVANCED_MEMORY_PROTECTION>
          <AMP_MODE_STATUS VALUE = "Advanced ECC"/>
          <CONFIGURED_AMP_MODE VALUE = "Advanced ECC"/>
          <AVAILABLE_AMP_MODES VALUE = "On-line Spare, Advanced ECC"/>
     </ADVANCED_MEMORY_PROTECTION>
```

```
<MEMORY_DETAILS_SUMMARY>
     <CPU_1>
          <NUMBER_OF_SOCKETS VALUE = "6"/>
          <TOTAL_MEMORY_SIZE VALUE = "2 GB"/>
          <OPERATING_FREQUENCY VALUE = "1333 MHz"/>
          <OPERATING_VOLTAGE VALUE = "N/A"/>
     </CPU_1>
     <CPU_2>
          <NUMBER_OF_SOCKETS VALUE = "6"/>
          <TOTAL_MEMORY_SIZE VALUE = "2 GB"/>
          <OPERATING_FREQUENCY VALUE = "1333 MHz"/>
          <OPERATING_VOLTAGE VALUE = "N/A"/>
     </CPU_2>
</MEMORY_DETAILS_SUMMARY>
<MEMORY_DETAILS>
     <CPU_1>
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          <STATUS VALUE = "Good, In Use"/>
          <HP_SMART_MEMORY VALUE = "Yes"/>
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          <TYPE VALUE = "DIMM DDR3"/>
          <SIZE VALUE = "2048 MB"/>
          <FREQUENCY VALUE = "1333 MHz"/>
          <MINIMUM_VOLTAGE VALUE = "1.50 v"/>
          <RANKS VALUE = "2"/>
          <TECHNOLOGY VALUE = "RDIMM"/>
     </CPU_1>
     <CPU_1>
          <SOCKET VALUE = "2"/>
          <STATUS VALUE = "Good, In Use"/>
          <HP_SMART_MEMORY VALUE = "Yes"/>
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          <TYPE VALUE = "DIMM DDR3"/>
          <SIZE VALUE = "4096 MB"/>
          <FREQUENCY VALUE = "1333 MHz"/>
          <MINIMUM_VOLTAGE VALUE = "1.35 v"/>
          <RANKS VALUE = "1"/>
          <TECHNOLOGY VALUE = "RDIMM"/>
     </CPU_1>
     <CPU_1>
          <SOCKET VALUE = "3"/>
          <STATUS VALUE = "Good, In Use"/>
          <HP_SMART_MEMORY VALUE = "No"/>
          <PART NUMBER = "N/A"/>
          <TYPE VALUE = "DIMM DDR3"/>
          <SIZE VALUE = "4096 MB"/>
          <FREQUENCY VALUE = "1600 MHz"/>
          <MINIMUM_VOLTAGE VALUE = "1.50 v"/>
          <RANKS VALUE = "1"/>
          <TECHNOLOGY VALUE = "RDIMM"/>
     </CPU_1>
     <CPU_1>
          <SOCKET VALUE = "4"/>
          <STATUS VALUE = "Not Present"/>
          <HP_SMART_MEMORY VALUE = "No"/>
          <TYPE VALUE = "N/A"/>
          <SIZE VALUE = "N/A"/>
          <FREQUENCY VALUE = "N/A"/>
          <MINIMUM_VOLTAGE VALUE = "N/A"/>
          <RANKS VALUE = "1"/>
          <TECHNOLOGY VALUE = "N/A"/>
     </CPU_1>
     <CPU_1>
          <SOCKET VALUE = "5"/>
          <STATUS VALUE = "Not Present"/>
          <HP_SMART_MEMORY VALUE = "No"/>
          <TYPE VALUE = "N/A"/>
          <SIZE VALUE = "N/A"/>
          <FREQUENCY VALUE = "N/A"/>
          <MINIMUM_VOLTAGE VALUE = "N/A"/>
          <RANKS VALUE = "1"/>
          <TECHNOLOGY VALUE = "N/A"/>
     </CPU_1>
     <CPU_1>
          <SOCKET VALUE = "6"/>
          <STATUS VALUE = "Not Present"/>
          <HP_SMART_MEMORY VALUE = "No"/>
          <TYPE VALUE = "N/A"/>
          <SIZE VALUE = "N/A"/>
          <FREQUENCY VALUE = "N/A"/>
          <MINIMUM_VOLTAGE VALUE = "N/A"/>
```

```
                <RANKS VALUE = "1"/>
                <TECHNOLOGY VALUE = "N/A"/>
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            <CPU_2>
                <SOCKET VALUE = "1"/>
                <STATUS VALUE = "Good, In Use"/>
                <HP_SMART_MEMORY VALUE = "Yes"/>
                <TYPE VALUE = "DIMM DDR3"/>
                <SIZE VALUE = "2048 MB"/>
                <FREQUENCY VALUE = "1333 MHz"/>
                <MINIMUM_VOLTAGE VALUE = "1.50 v"/>
                <RANKS VALUE = "2"/>
                <TECHNOLOGY VALUE = "RDIMM"/>
            </CPU_2>
            <CPU_2>
                <SOCKET VALUE = "2"/>
                <STATUS VALUE = "Not Present"/>
                <HP_SMART_MEMORY VALUE = "No"/>
                <TYPE VALUE = "N/A"/>
                <SIZE VALUE = "N/A"/>
                <FREQUENCY VALUE = "N/A"/>
                <MINIMUM_VOLTAGE VALUE = "N/A"/>
                <RANKS VALUE = "1"/>
                <TECHNOLOGY VALUE = "N/A"/>
            </CPU_2>
            <CPU_2>
                <SOCKET VALUE = "3"/>
                <STATUS VALUE = "Not Present"/>
                <HP_SMART_MEMORY VALUE = "No"/>
                <TYPE VALUE = "N/A"/>
                <SIZE VALUE = "N/A"/>
                <FREQUENCY VALUE = "N/A"/>
                <MINIMUM_VOLTAGE VALUE = "N/A"/>
                <RANKS VALUE = "1"/>
                <TECHNOLOGY VALUE = "N/A"/>
            </CPU_2>
            <CPU_2>
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                <STATUS VALUE = "Not Present"/>
                <HP_SMART_MEMORY VALUE = "No"/>
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                <SIZE VALUE = "N/A"/>
                <FREQUENCY VALUE = "N/A"/>
                <MINIMUM_VOLTAGE VALUE = "N/A"/>
                <RANKS VALUE = "1"/>
                <TECHNOLOGY VALUE = "N/A"/>
            </CPU_2>
            <CPU_2>
                <SOCKET VALUE = "5"/>
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                <HP_SMART_MEMORY VALUE = "No"/>
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                <SIZE VALUE = "N/A"/>
                <FREQUENCY VALUE = "N/A"/>
                <MINIMUM_VOLTAGE VALUE = "N/A"/>
                <RANKS VALUE = "1"/>
                <TECHNOLOGY VALUE = "N/A"/>
            </CPU_2>
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                <HP_SMART_MEMORY VALUE = "No"/>
                <TYPE VALUE = "N/A"/>
                <SIZE VALUE = "N/A"/>
                <FREQUENCY VALUE = "N/A"/>
                <MINIMUM_VOLTAGE VALUE = "N/A"/>
                <RANKS VALUE = "1"/>
                <TECHNOLOGY VALUE = "N/A"/>
            </CPU_2>
        </MEMORY_DETAILS>
    </MEMORY>
    <NIC_INFORMATION>
        <NIC>
            <NETWORK_PORT VALUE = "Port 1"/>
            <PORT_DESCRIPTION VALUE = "N/A"/>
            <MAC_ADDRESS VALUE = "a0:36:9f:01:4e:bc"/>
            <IP_ADDRESS VALUE = "N/A"/>
            <STATUS VALUE = "Other"/>
        </NIC>
        <iLO_4>
            <NETWORK_PORT VALUE = "iLO Dedicated Network Port"/>
```

```
          <PORT_DESCRIPTION VALUE = "iLO Dedicated Network Port"/>
          <MAC_ADDRESS VALUE = "9c:8e:99:0a:1d:96"/>
          <IP_ADDRESS VALUE = "16.85.177.5"/>
          <STATUS VALUE = "OK"/>
     </iLO_4>
</NIC_INFORMATION>
<STORAGE>
     <CONTROLLER>
          <LABEL VALUE = "Controller on System Board"/>
          <STATUS VALUE = "OK"/>
          <CONTROLLER_STATUS VALUE = "OK"/>
          <SERIAL_NUMBER VALUE = "50014380215F0070"/>
          <MODEL VALUE = "HP Smart Array P420i Controller"/>
          <FW_VERSION VALUE = "3.41"/>
          <DRIVE_ENCLOSURE>
               <LABEL VALUE = "Port 1I Box 1"/>
               <STATUS VALUE = "OK"/>
               <DRIVE_BAY VALUE = "04"/>
          </DRIVE_ENCLOSURE>
          <DRIVE_ENCLOSURE>
               <LABEL VALUE = "Port 2I Box 0"/>
               <STATUS VALUE = "OK"/>
               <DRIVE_BAY VALUE = "01"/>
          </DRIVE_ENCLOSURE>
          <LOGICAL_DRIVE>
               <LABEL VALUE = "01"/>
               <STATUS VALUE = "OK"/>
               <CAPACITY VALUE = "68 GB"/>
               <FAULT_TOLERANCE VALUE = "RAID 0"/>
               <PHYSICAL_DRIVE>
                    <LABEL VALUE = "Port 1I Box 1 Bay 3"/>
                    <STATUS VALUE = "OK"/>
                    <SERIAL_NUMBER VALUE = "6TA0N3SZ0000B231CYDT"/>
                    <MODEL VALUE = "EH0072FAWJA"/>
                    <CAPACITY VALUE = "68 GB"/>
                    <LOCATION VALUE = "Port 1I Box 1 Bay 3"/>
                    <FW_VERSION VALUE = "HPDH"/>
                    <DRIVE_CONFIGURATION VALUE = "Configured"/>
               </PHYSICAL_DRIVE>
          </LOGICAL_DRIVE>
     </CONTROLLER>
</STORAGE>
<FIRMWARE_INFORMATION>
     <INDEX_1>
          <FIRMWARE_NAME VALUE = "HP ProLiant System ROM"/>
          <FIRMWARE_VERSION VALUE = "02/09/2012"/>
     </INDEX_1>
     <INDEX_2>
          <FIRMWARE_NAME VALUE = "HP ProLiant System ROM - Backup"/>
          <FIRMWARE_VERSION VALUE = "02/09/2012"/>
     </INDEX_2>
     <INDEX_3>
          <FIRMWARE_NAME VALUE = "HP ProLiant System ROM Bootblock"/>
          <FIRMWARE_VERSION VALUE = "10/18/2011"/>
     </INDEX_3>
     <INDEX_4>
          <FIRMWARE_NAME VALUE = "iLO"/>
          <FIRMWARE_VERSION VALUE = "1.05 Feb 22 2012"/>
     </INDEX_4>
     <INDEX_5>
          <FIRMWARE_NAME VALUE = "Power Management Controller Firmware"/>
          <FIRMWARE_VERSION VALUE = "3.0"/>
     </INDEX_5>
     <INDEX_6>
          <FIRMWARE_NAME VALUE = "Power Management Controller Firmware Bootloader"/>
          <FIRMWARE_VERSION VALUE = "2.7"/>
     </INDEX_6>
     <INDEX_7>
          <FIRMWARE_NAME VALUE = "System Programmable Logic Device"/>
          <FIRMWARE_VERSION VALUE = "Version 0x15"/>
     </INDEX_7>
     <INDEX_8>
          <FIRMWARE_NAME VALUE = "Server Platform Services (SPS) Firmware"/>
          <FIRMWARE_VERSION VALUE = "2.1.5.2B.4"/>
     </INDEX_8>
</FIRMWARE_INFORMATION>
<HEALTH_AT_A_GLANCE>
     <BIOS_HARDWARE STATUS= "OK"/>
     <FANS STATUS= "OK"/>
     <FANS REDUNDANCY= "Redundant"/>
     <TEMPERATURE STATUS= "OK"/>
```

```
          <POWER_SUPPLIES STATUS= "Failed"/>
          <POWER_SUPPLIES REDUNDANCY= "Not Redundant"/>
          <PROCESSOR STATUS= "OK"/>
          <MEMORY STATUS= "OK"/>
          <NETWORK STATUS= "Link Down"/>
          <STORAGE STATUS= "OK"/>
     </HEALTH_AT_A_GLANCE>
</GET_EMBEDDED_HEALTH_DATA>
```

Variable POWER_SUPPLIES tags:

- The POWER_SUPPLIES tags HP_POWER_DISCOVERY_SERVICES_REDUNDANCY_STATUS and HIGH_EFFICIENCY_MODE appear only for blade servers.
- The following POWER_SUPPLIES tags appear only when SNMP is available, otherwise they are replaced by the tags SUPPLY_LABEL AND SUPPLY_STATUS:
  - PRESENT
  - PDS
  - HOTPLUG_CAPABLE
  - MODEL
  - SPARE
  - SERIAL_NUMBER
  - CAPACITY
  - FIRMWARE_VERSION
- The following POWER_SUPPLIES tags appear only when an iPDU is present:
  - POWER_DISCOVERY_SERVICES_IPDU_SUMMARY
  - IPDU
  - BAY
  - STATUS
  - PART_NUMBER
  - SERIAL_NUMBER
  - MAC_ADDRESS
  - IPDU_LINK

GET_POWER_READINGS

The GET_POWER_READINGS command is used to get the power readings from the server power supply.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <SERVER_INFO MODE="read">
         <GET_POWER_READINGS/>
      </SERVER_INFO>
   </LOGIN>
</RIBCL>
```

GET_POWER_READINGS parameters

None

GET_POWER_READINGS return messages

Two types of responses are available from the GET_POWER_READINGS command, depending on whether or not an advanced license is applied.

If an advanced license is not applied, a typical response is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0000"
MESSAGE='No error'
/>
<GET_POWER_READINGS>
<PRESENT_POWER_READING VALUE="275" UNIT="Watts"/>
</GET_POWER_READINGS>
</RIBCL>
```

If an advanced license is applied, a typical response is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0000"
MESSAGE='No error'
/>
<GET_POWER_READINGS>
<PRESENT_POWER_READING VALUE="275" UNIT="Watts"/>
<AVERAGE_POWER_READING VALUE="278" UNIT="Watts"/>
<MAXIMUM_POWER_READING VALUE="283" UNIT="Watts"/>
<MINIMUM_POWER_READING VALUE="270" UNIT="Watts"/>
</GET_POWER_READINGS>
</RIBCL>
```

GET_PWREG

The GET_PWREG command gets the power alert threshold for iLO 3 devices. For this command to parse correctly, the GET_PWREG command must appear within a SERVER_INFO command block, and SERVER_INFO MODE can be set to read. You must purchase the iLO Advanced license to enable this feature.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <SERVER_INFO MODE="read">
         <GET_PWREG/>
      </SERVER_INFO>
   </LOGIN>
</RIBCL>
```

GET_PWREG parameters

None

GET_PWREG return messages

A GET_PWREG return message includes:

```
<RESPONSE STATUS="0x0000" MSG="No Errors"/>
<GET_PWREG USER_NAME="Admin User" USER_LOGIN= "username"
```

```
PCAP MODE="OFF"
EFFICIENCY_MODE="1"
PWRALERT TYPE="PEAK" THRESHOLD="250" DURATION=”5”
GET_HOST_POWER HOST_POWER="ON"/>
```

Where:

- PCAP mode is either set to MAN followed by a positive integer, or set to OFF.
- EFFICIENCY_MODE is a number between 1 and 4:
  - 1 — PWRREGMODE_OS_CONTROL
  - 2 — PWRREGMODE_STATIC_LOW
  - 3 — PWRREGMODE_DYNAMIC
  - 4 — PWRREGMODE_STATIC_HIGH
- GET_HOST_POWER reports whether the virtual power button is enabled.

GET_PWREG runtime errors

Possible GET_PWREG runtime errors:

- `Feature not supported.`
- `This feature requires an installed license key.`

SET_PWREG

The SET_PWREG command sets the power alert threshold for iLO 3 devices. For this command to parse correctly, the SET_PWREG command must appear within a SERVER_INFO command block, and SERVER_INFO MODE can be set to write. You must purchase the iLO Advanced license to enable this feature.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminame" PASSWORD="password">
      <SERVER_INFO MODE="write">
         <SET_PWREG>
            <PWRALERT TYPE="PEAK"/>
            <PWRALERT_SETTINGS THRESHOLD="200" DURATION="35"/>
         </SET_PWREG>
      </SERVER_INFO>
   </LOGIN>
</RIBCL>
```

SET_PWREG parameters

PWRALERT TYPE—Valid values are:

- DISABLED—No power alerts are set.
- PEAK—Represents the half-second average power reading during the sample.
- AVERAGE—Represents the mean power reading during the sample.

PWRALERT_SETTINGS

- THRESHOLD—Sets the alert threshold, in watts.
- DURATION—Sets the length of the sample time, in minutes, starting at 5. Duration will always be in 5 minute intervals up to 240 minutes maximum. Any positive integer can be used, but it will be rounded off to the nearest 5.

SET_PWREG runtime errors

Possible SET_PWREG error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Internal error.`
- `The value specified is invalid.`
- `This feature requires an installed license key.`
- `User does NOT have correct privilege for action. CONFIG_ILO_PRIV required.`
- `The PWRALERT value is invalid.`
- `The THRESHOLD value is invalid.`
- `The DURATION value is invalid. Values supported are between 1 and 240.`
- `Invalid integer.`

GET_POWER_CAP

The GET_POWER_CAP command is used to get the power cap of the server. For this command to parse correctly, the GET_POWER_CAP command must appear within a SERVER_INFO command block, and SERVER_INFO MODE can be set to read. You must purchase the iLO Advanced license to enable this feature.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET_POWER_CAP/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_POWER_CAP parameters

None

GET_POWER_CAP return messages

A cap value of zero indicates a power cap is not currently set on the server.

SET_POWER_CAP

The SET_POWER_CAP command is used to set a power cap on the server. For this command to parse correctly, the SET_POWER_CAP command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. You must have the Configure iLO Settings privilege to execute this command.

You cannot set this property if a dynamic power cap is set for the server. Dynamic power capping is set and modified using either Onboard Administrator or Insight Power Manager. You must purchase the iLO Advanced license to enable this feature.

For example, enabling the power cap:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
```

```
   <SET_POWER_CAP POWER_CAP="300"/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_POWER_CAP parameters

SET_POWER_CAP POWER_CAP is the power cap on the server. Valid power cap values are determined using a power test run on the server at boot. The possible values are 0 to disable the power cap, or a numeric value in watts (as determined in the power test.)

SET_POWER_CAP runtime errors

The possible SET_POWER_CAP error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Power Regulator feature is not supported on this server.`
- `User does not have correct privilege for action.`
- `The power cap value is invalid.`

GET_HOST_POWER_SAVER_STATUS

The GET_HOST_POWER_SAVER_STATUS command requests the state of the processor power regulator feature of the server. For this command to parse correctly, the GET_HOST_POWER_SAVER_STATUS command must appear within a SERVER_INFO command block. You can set SERVER_INFO MODE to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET_HOST_POWER_SAVER_STATUS/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_HOST_POWER_SAVER_STATUS parameters

None

GET_HOST_POWER_SAVER_STATUS runtime errors

The possible GET_HOST_POWER_SAVER_STATUS error messages include:

`Feature not supported`

GET_HOST_POWER_SAVER_STATUS return messages

The following information is returned within one of the following responses:

- `<GET_HOST_POWER_SAVER HOST POWER_SAVER= "OFF"/>`
- `<GET_HOST_POWER_SAVER HOST POWER_SAVER= "MIN"/>`
- `<GET_HOST_POWER_SAVER HOST POWER_SAVER= "AUTO"/>`
- `<GET_HOST_POWER_SAVER HOST POWER_SAVER= "MAX"/>`

SET_HOST_POWER_SAVER

The SET_HOST_POWER_SAVER command is used to set the Power Regulator Setting for the server processor. For this command to parse correctly, the SET_HOST_POWER_SAVER command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <!-- Modify the HOST_POWER_SAVER attribute to modify
        power saver on the host server -->
   <SET_HOST_POWER_SAVER HOST_POWER_SAVER="1"/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_HOST_POWER_SAVER parameters

The HOST_POWER_SAVER command controls the Dynamic Power Saver feature of the server processor if the feature is supported. The possible values are:

- **1**—Operating system control mode
- **2**—HP Static Low Power mode
- **3**—HP Dynamic Power Savings mode
- **4**—HP Static High Performance mode

SET_HOST_POWER_SAVER runtime errors

The possible SET_HOST_POWER error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Power Regulator feature is not supported on this server.`
- `User does not have correct privilege for action. RESET_SERVER_PRIV required.`

GET_HOST_POWER_STATUS

The GET_HOST_POWER_STATUS command requests the power state of the server. For this command to parse correctly, the GET_HOST_POWER_STATUS command must appear within a SERVER_INFO command block. You can set SERVER_INFO MODE to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET_HOST_POWER_STATUS/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_HOST_POWER_STATUS parameters

None

GET_HOST_POWER_STATUS runtime errors

The possible GET_HOST_POWER_STATUS error messages include:

- `Host power is OFF.`
- `Host power is ON.`

GET_HOST_POWER_STATUS Return Messages

The following information is returned within the response:

```
<GET_HOST_POWER
HOST POWER="OFF"/>
```

SET_HOST_POWER

The SET_HOST_POWER command is used to toggle the power button of server. For this command to parse correctly, the SET_HOST_POWER command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <!--  Modify the HOST_POWER attribute to toggle power on the host server  -->
   <!--  HOST_POWER="No"  (Turns host server power off)                       -->
   <!--  A graceful shutdown will be attempted for ACPI-aware                 -->
   <!--  operating systems configured to support graceful shutdown.           -->
   <!--  HOST_POWER="Yes" (Turns host server power on)                        -->
   <SET_HOST_POWER HOST_POWER="No"/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_HOST_POWER Parameters

HOST_POWER enables or disables the Virtual Power Button. The possible values are `Yes` or `No`.

SET_HOST_POWER Runtime Errors

The possible SET_HOST_POWER error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Virtual Power Button feature is not supported on this server.`
- `Host power is already ON.`
- `Host power is already OFF.`
- `User does not have correct privilege for action. RESET_SERVER_PRIV required.`

GET_HOST_PWR_MICRO_VER

The GET_HOST_PWR_MICRO_VER command provides the power micro version number. The GET_HOST_PWR_MICRO_VER command must appear within a SERVER_INFO command block to parse correctly. SERVER_INFO must be set to read.

For example:

```
<RIBCL VERSION="2.0">
```

```
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
 <SERVER_INFO MODE="read">
  <GET_HOST_PWR_MICRO_VER/>
 </SERVER_INFO>
</LOGIN>
</RIBCL>
```

GET_HOST_PWR_MICRO_VER parameters

None

GET_HOST_PWR_MICRO_VER runtime errors

The possible GET_HOST_PWR_MICRO_VER error messages include:

- `Error`—if the power micro cannot be read (hardware problem).
- `Power Off`—if the server is powered off.
- `N/A`—if the server does not support a power micro.

GET_HOST_PWR_MICRO_VER return messages

- No errors and displays version information:

```
<GET_HOST_PWR_MICRO_VER>
<PWR_MICRO VERSION="2.3"/>
</GET_HOST_PWR_MICRO_VER>
```

- Server powered off:

```
<GET_HOST_PWR_MICRO_VER>
<PWR_MICRO VERSION="OFF"/>
</GET_HOST_PWR_MICRO_VER>
```

- Power micro not supported on the server:

```
<GET_HOST_PWR_MICRO_VER>
<PWR_MICRO VERSION="N/A"/>
</GET_HOST_PWR_MICRO_VER>
```

- Failed to read power micro version:

```
<GET_HOST_PWR_MICRO_VER>
<PWR_MICRO VERSION="Error"/>
</GET_HOST_PWR_MICRO_VER>
```

RESET_SERVER

The RESET_SERVER command forces a warm boot of the server if the server is currently on. For this command to parse correctly, the RESET_SERVER command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <RESET_SERVER/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

RESET_SERVER error messages

The possible RESET_SERVER error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Server is currently powered off.`
- `User does NOT have correct privilege for action. RESET_SERVER_PRIV required.`

RESET_SERVER parameters

None

PRESS_PWR_BTN

The PRESS_PWR_BTN command is used to simulate a physical press (or press and hold) of the server power button. For this command to parse correctly, the PRESS_PWR_BTN command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <SERVER_INFO MODE="write">
         <PRESS_PWR_BTN/>
      </SERVER_INFO>
   </LOGIN>
</RIBCL>
```

PRESS_PWR_BTN parameters

None

PRESS_PWR_BTN runtime errors

The possible error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. RESET_SERVER_PRIV required.`

HOLD_PWR_BTN

The HOLD_PWR_BTN command is used to simulate a physical press and hold of the server power button. For this command to parse correctly, the HOLD_PWR_BTN command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
    <HOLD_PWR_BTN TOGGLE="YES"/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

HOLD_PWR_BTN parameters

TOGGLE—Defines the action to take based on the current power state of the server. The following will occur based on the value of TOGGLE:

- When the server power is on, a `Yes` value for TOGGLE will turn the power off.
- When the server power is off, the server will remain off regardless of the value of TOGGLE.

HOLD_PWR_BTN runtime errors

The possible error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `User does not have correct privilege for action. RESET_SERVER_PRIV required.`

COLD_BOOT_SERVER

The COLD_BOOT_SERVER command forces a cold boot of the server, if the server is currently on. For this command to parse correctly, the COLD_BOOT_SERVER command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <COLD_BOOT_SERVER/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

COLD_BOOT_SERVER parameters

None

COLD_BOOT_SERVER runtime errors

The possible error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Host power is already OFF.`
- `User does not have correct privilege for action. RESET_SERVER_PRIV required.`

WARM_BOOT_SERVER

The WARM_BOOT_SERVER command forces a warm boot of the server, if the server is currently on. For this command to parse correctly, the WARM_BOOT_SERVER command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write. The user must have the Virtual Power and Reset privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <WARM_BOOT_SERVER/>
```

```
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

WARM_BOOT_SERVER parameters

None

WARM_BOOT_SERVER runtime errors

Possible error messages include:

- `Server information is open for read-only access. Write access is required for this operation.`
- `Host power is already OFF.`
- `User does not have correct privilege for action. RESET_SERVER_PRIV required.`

SERVER_AUTO_PWR

The SERVER_AUTO_PWR command is used to set the automatic power on and power on delay settings. Any power delays set using this command are invoked after iLO is running.

For example:

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
    <SERVER_INFO MODE="write">
      <!-- Enable automatic power on -->
      <SERVER_AUTO_PWR VALUE="On"/>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

NOTE: Enabling a power on delay using the SERVER_AUTO_PWR command requires you to run the script twice. First, run the script and set the SERVER_AUTO_PWR value to **On**. Next, run the script with a value of **15**, **30**, **45**, **60** to set up the power on delay.

SERVER_AUTO_PWR parameters

The available values for the VALUE parameter are:

- `Yes`—Enables automatic power on (APO) with a minimum delay.
- `No`—APO restores last power state.
- `15, 30, 45, 60`—Sets APO delay time in seconds.
- `Random`—Sets an APO random delay of up to 2 minutes.
- `On`—APO always powers on.
- `Off`—APO restores last power state.
- `Restore`—APO restores last power state.

SERVER_AUTO_PWR runtime errors

The possible errors include:

- `User does not have correct privilege for action. Configure iLO privilege is required`
- `SERVER_INFO mode is not WRITE`
- `The value specified for SERVER_AUTO_PWR is invalid or not accepted on blades`

GET_SERVER_AUTO_PWR

The GET_SERVER_AUTO_PWR command is used to get the automatic power on and power on delay settings of the server.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET_SERVER_AUTO_PWR />
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_SERVER_AUTO_PWR parameters

None

GET_SERVER_AUTO_PWR return message

Possible GET_SERVER_AUTO_PWR return is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
<GET_SERVER_AUTO_PWR>
<!--
    Automatically Power On Server is enabled to power-on.
    Power On Delay is random.
-->
<SERVER_AUTO_PWR VALUE="ON" />
</GET_SERVER_AUTO_PWR>
</RIBCL>
```

GET_UID_STATUS

The GET_UID_STATUS command requests the state of the server UID. For this command to parse correctly, the GET_UID_STATUS command must appear within a SERVER_INFO command block. You can set SERVER_INFO MODE to read.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="read">
   <GET UID_STATUS />
```

```
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

GET_UID_STATUS parameters

None

GET_UID_STATUS response

The following information is returned within the response:

```
<GET_UID_STATUS UID="OFF"/>
```

UID_CONTROL

The UID_CONTROL command toggles the server UID. For this command to parse correctly, the UID_CONTROL command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <SERVER_INFO MODE="write">
   <!--  Modify the UID attribute to toggle UID on the host server   -->
   <!--  UID="No"   (Turns host server UID off)                      -->
   <!--  UID="Yes"  (Turns host server UID on)                       -->
   <UID_CONTROL UID="Yes"/>
  </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

UID_CONTROL parameters

UID determines the state of the UID. A value of `Yes` turns the UID light on, and a value of `No` turns the UID light off.

UID_CONTROL errors

The possible UID_CONTROL error messages include:

- `UID is already ON.`
- `UID is already OFF.`

SET_PERS_MOUSE_KEYBOARD_ENABLED

The SET_PERS_MOUSE_KEYBOARD_ENABLED command sets the persistent mouse and keyboard setting. The possible values are `Y` (enabled) or `N` (disabled). For this command to parse correctly, the command must appear within a SERVER_INFO command block. You must set SERVER_INFO MODE to write.

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <SERVER_INFO MODE="write">
      <SET_PERS_MOUSE_KEYBOARD_ENABLED VALUE="y"/>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

SET_PERS_MOUSE_KEYBOARD_ENABLED parameters

SET_PERS_MOUSE_KEYBOARD_ENABLED—Configures persistent keyboard and mouse. Valid values are **Y** (enabled) and **N** (disabled).

SET_PERS_MOUSE_KEYBOARD_ENABLED runtime errors

The possible runtime errors are:

- `There was an error on setting the persistent mouse and keyboard.`
- `iLO information is open for read-only access. Write access is required for this operation.`
- `User does NOT have correct privilege for action. CONFIG_ILO_PRIV required.`

GET_PERS_MOUSE_KEYBOARD_ENABLED

GET_PERS_MOUSE_KEYBOARD_ENABLED returns the persistent mouse and keyboard status. A return value of `Y` indicates that persistent mouse and keyboard is enabled. A return value of `N` indicates it is disabled.

For example:

```
<RIBCL VERSION="2.0">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
    <SERVER_INFO MODE="read">
      <GET_PERS_MOUSE_KEYBOARD_ENABLED/>
    </SERVER_INFO>
  </LOGIN>
</RIBCL>
```

GET_PERS_MOUSE_KEYBOARD_ENABLED parameters

None

GET_PERS_MOUSE_KEYBOARD_ENABLED return messages

A possible GET_PERS_MOUSE_KEYBOARD_ENABLED message is:

```
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
<GET_PERS_MOUSE_KEYBOARD_ENABLED>
    <PERSMOUSE_ENABLED VALUE="Y"/>
</GET_PERS_MOUSE_KEYBOARD_ENABLED>
</RIBCL>
```

GET_SERVER_POWER_ON_TIME

The GET_SERVER_POWER_ON_TIME command is used to retrieve the virtual clock value, in minutes, since the server was last powered on. For this command to parse correctly, the GET_SERVER_POWER_ON_TIME command must appear within a SERVER_INFO command block. You can set SERVER_INFO MODE to read.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <SERVER_INFO MODE="read">
         <GET_SERVER_POWER_ON_TIME />
      </SERVER_INFO>
   </LOGIN>
</RIBCL>
```

GET_SERVER_POWER_ON_TIME parameters

None.

GET_SERVER_POWER_ON_TIME return message

A possible GET_SERVER_POWER_ON_TIME return is:

```
<SERVER_POWER_ON_MINUTES VALUE="33815" />
```

CLEAR_SERVER_POWER_ON_TIME

The CLEAR_SERVER_POWER_ON_TIME command is used to clear the virtual clock counter without power-cycling the server. For this command to parse correctly, the CLEAR_SERVER_POWER_ON_TIME command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to write.

For example:

```
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
      <SERVER_INFO MODE="write">
         <CLEAR_SERVER_POWER_ON_TIME />
      </SERVER_INFO>
   </LOGIN>
</RIBCL>
```

CLEAR_SERVER_POWER_ON_TIME parameters

None.

CLEAR_SERVER_POWER_ON_TIME return message

None.

NOTE: To verify the command, use the GET_SERVER_POWER_ON_TIME comand and verify it returns the following message:

```
<SERVER_POWER_ON_MINUTES VALUE="0" />
```

SSO_INFO

The SSO_INFO MODE command can only appear within a LOGIN command block. Only commands that are SSO_INFO MODE-type commands are valid inside the SSO_INFO MODE command block.

SSO_INFO MODE requires the MODE parameter with a value of read or write. MODE is a specific string parameter with a maximum length of 10 characters that specifies what you intend to do with the information.

Write mode enables both reading and writing of iLO information. Read mode prevents modification of the iLO information. You must have the Configure iLO Settings privilege to execute this command.

For example:

```
<SSO_INFO MODE="write">

…… SSO_INFO commands ……

</SSO_INFO>
```

Deleting a SSO HP SIM Server Record by index number example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SSO_INFO MODE="write">
   <DELETE_SERVER INDEX="6" />
```

```
  </SSO_INFO>
 </LOGIN>
</RIBCL>
```

SSO_INFO is only supported on licensed, iLO 3 v1.05 and later firmware. If iLO 3 is not licensed, you can still modify these settings. iLO 3 does not return an error. However, any SSO attempt is rejected if a license is not present. For more information, see the *HP iLO User Guide* on the HP website at: http://www.hp.com/go/ilo3 and click More iLO Documentation.

GET_SSO_SETTINGS

The GET_SSO_SETTINGS command is used to retrieve SSO settings for iLO. For this command to parse correctly, the GET_SSO_SETTINGS command must appear within a SSO_INFO command block, and SSO_INFO MODE can be set to read or write.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SSO_INFO MODE="read">
   <GET_SSO_SETTINGS/>
  </SSO_INFO>
 </LOGIN>
</RIBCL>
```

GET_SSO_SETTINGS parameters

None

GET_SSO_SETTINGS return messages

The following is an example of an SSO settings response from a configured iLO device. There are 0 or more SSO_SERVER records reflecting the number of stored server records in each.

```
<GET_SSO_SETTINGS>
<TRUST_MODE VALUE="CERTIFICATE" />
<USER_ROLE LOGIN_PRIV="Y" />
<USER_ROLE REMOTE_CONS_PRIV="N" />
<USER_ROLE RESET_SERVER_PRIV="N" />
<USER_ROLE VIRTUAL_MEDIA_PRIV="N" />
<USER_ROLE CONFIG_ILO_PRIV="N" />
<USER_ROLE ADMIN_PRIV="N" />
<OPERATOR_ROLE LOGIN_PRIV="Y" />
<OPERATOR_ROLE REMOTE_CONS_PRIV="Y" />
<OPERATOR_ROLE RESET_SERVER_PRIV="Y" />
<OPERATOR_ROLE VIRTUAL_MEDIA_PRIV="Y" />
<OPERATOR_ROLE CONFIG_ILO_PRIV="N" />
<OPERATOR_ROLE ADMIN_PRIV="N" />
<ADMINISTRATOR_ROLE LOGIN_PRIV="Y" />
<ADMINISTRATOR_ROLE REMOTE_CONS_PRIV="Y" />
<ADMINISTRATOR_ROLE RESET_SERVER_PRIV="Y" />
<ADMINISTRATOR_ROLE VIRTUAL_MEDIA_PRIV="Y" />
<ADMINISTRATOR_ROLE CONFIG_ILO_PRIV="Y" />
<ADMINISTRATOR_ROLE ADMIN_PRIV="Y" />
<SSO_SERVER INDEX="0"
      ISSUED_TO="viv.hp.com"
      ISSUED_BY="viv.hp.com"
      VALID_FROM="061108192059Z"
      VALID_UNTIL="161108192059Z">
-----BEGIN CERTIFICATE-----
.
.
```

```
.
-----END CERTIFICATE-----
</SSO_SERVER>
<SSO_SERVER INDEX="1">
ant.hp.com
</SSO_SERVER>
</GET_SSO_SETTINGS>
```

MOD_SSO_SETTINGS

The MOD_SSO_SETTINGS command is used to modify the HP SSO settings for iLO 3. For this command to parse correctly, the MOD_SSO_SETTINGS command must appear within a SSO_INFO command block, and SSO_INFO MODE must be set to write. The user must have the Configure iLO Settings privilege to execute this command.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SSO_INFO MODE="write">
   <MOD_SSO_SETTINGS>
    <!-- Specify the desired trust mode Options: DISABLED(default),
      CERTIFICATE (recommended), NAME, or ALL                        -->
    <TRUST_MODE="CERTIFICATE" />
    <!-- Specify the privileges assigned to the user role           -->
    <USER_ROLE LOGIN_PRIV="Y" />
    <USER_ROLE REMOTE_CONS_PRIV="N" />
    <USER_ROLE RESET_SERVER_PRIV="N" />
    <USER_ROLE VIRTUAL_MEDIA_PRIV="N" />
    <USER_ROLE CONFIG_ILO_PRIV="N" />
    <USER_ROLE ADMIN_PRIV="N" />
    <!-- Specify the privileges assigned to the operator role       -->
    <OPERATOR_ROLE LOGIN_PRIV="Y" />
    <OPERATOR_ROLE REMOTE_CONS_PRIV="Y" />
    <OPERATOR_ROLE RESET_SERVER_PRIV="Y" />
    <OPERATOR_ROLE VIRTUAL_MEDIA_PRIV="Y" />
    <OPERATOR_ROLE CONFIG_ILO_PRIV="N" />
    <OPERATOR_ROLE ADMIN_PRIV="N" />
    <!-- Specify the privileges assigned to the administrator role -->
    <ADMINISTRATOR_ROLE LOGIN_PRIV="Y" />
    <ADMINISTRATOR_ROLE REMOTE_CONS_PRIV="Y" />
    <ADMINISTRATOR_ROLE RESET_SERVER_PRIV="Y" />
    <ADMINISTRATOR_ROLE VIRTUAL_MEDIA_PRIV="Y" />
    <ADMINISTRATOR_ROLE CONFIG_ILO_PRIV="Y" />
    <ADMINISTRATOR_ROLE ADMIN_PRIV="Y" />
    <ADMINISTRATOR_ROLE ADMIN_PRIV="Y" />
   </MOD_SSO_SETTINGS>
  </SSO_INFO>
 </LOGIN>
</RIBCL>
```

MOD_SSO_SETTINGS parameters

TRUST_MODE sets the Single Sign-On trust mode. The current setting is unchanged if this setting is omitted from the script. Accepted values are:

- `Disabled`—Disables HP SSO on this processor.
- `Certificate`—Accepts only SSO requests authenticated using a certificate.
- `Name`—Trusts SSO requests from the named HP SIM Server.
- `All`—Accepts any SSO request from the network.

Role names are used to associate iLO privileges. The specified privileges are set accordingly for that role, and a privilege that is omitted is unchanged. Enable a privilege for the role using the argument `Y` and disable the privilege for the role using the argument `N`.

There are three roles for privilege assignment. Omitting a role leaves the current assignment unchanged:

- `USER_ROLE`—Privileges associated with User
- `OPERATOR_ROLE`—Privileges associated with Operator
- `ADMINISTRATOR_ROLE`—Privileges associated with Administrator

For each role, you can manipulate multiple privileges. The privilege is specified within the role tag. If a privilege is omitted, the current value is unchanged. Each privilege assignment is Boolean and can be set to `Y` (privilege granted) or `N` (privilege denied). For more details on account privileges, see the **User Administration** section of the *HP iLO User Guide* on the HP website at http://www.hp.com/go/ilo3 and click More iLO Documentation.

- `LOGIN_PRIV`—Allows login for this role.
- `REMOTE_CONS_PRIV`—Grants access to remote console resources.
- `RESET_SERVER_PRIV`—Grants access to power and reset controls.
- `VIRTUAL_MEDIA_PRIV`—Grants access to virtual media resources.
- `CONFIG_ILO_PRIV`—Allows settings modification.
- `ADMIN_PRIV`—Allows local user account modification.

MOD_SSO_SETTINGS runtime errors

Possible MOD_SSO_SETTINGS error messages include:

- `Incorrect firmware version. SSO is only supported on iLO 3 v1.05 firmware or later.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`
- `SSO_INFO must be in write mode.`

SSO_SERVER

The SSO_SERVER command is used to create HP SIM Trusted SSO Server records. For this command to parse correctly, it must appear within an SSO_INFO command block, and SSO_INFO MODE must be set to write. You must have the Configure iLO Settings privilege to execute this command. This command can be combined with MOD_SSO_SETTINGS.

You can specify multiple SSO server records by using multiple instances of this command. The servers are added in the order that the records are specified. Duplicate records might be rejected and generate an error. The number of records stored by the lights-out processor depends on the size of the entries because certificates do not have a fixed size. Multiple certificates can normally be stored.

There are three ways to add an HP SIM Trusted Server record using the SSO_SERVER command:

- The server can be specified by network name (requires SSO trust level set to trust by name or trust all, but is not supported for trust by certificate). Use the fully qualified network name.
- The server certificate can be imported by iLO 3 (the LOM processor requests the certificate from the specified HP SIM server using anonymous HTTP request). The iLO 3 processor must be able to contact the HP SIM server on the network at the time this command is processed for this method to work.
- The server certificate can be directly installed on iLO 3. However, you must obtain the x.509 certificate in advance. This method enables you to configure the iLO 3 in advance of placing

it on the network with the HP SIM server. The method also enables you to verify the contents of the HP SIM server certificate. For additional methods of obtaining the certificate from the HP SIM server, see the *HP iLO User Guide* on the HP website at: http://www.hp.com/go/ilo3 and click More iLO Documentation, or the *HP SIM User Guide* on the HP website at: http://h18000.www1.hp.com/products/servers/management/hpsim/infolibrary.html.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SSO_INFO MODE="write">
   <!-- Add an SSO server record using the network name
    (works for TRUST_MODE NAME or ALL) -->
   <SSO_SERVER NAME="hpsim1.hp.net" />
   <!-- Add an SSO server record using indirect iLO import
    from the network name     -->
   <SSO_SERVER IMPORT_FROM="hpsim2.hp.net" />
   <!-- Add an SSO server certificate record using direct
    import of certificate data -->
   <IMPORT_CERTIFICATE>
     -----BEGIN CERTIFICATE-----
     .
     .
     .
     -----END CERTIFICATE-----
   </IMPORT_CERTIFICATE>
  </SSO_INFO>
 </LOGIN>
</RIBCL>
```

SSO_SERVER parameters

NAME indicates that the server is being specified by network name. It receives a quoted string containing the fully qualified network name of the HP SIM Trusted Server. The name is not validated by iLO until an SSO login is attempted. For example, the syntax to add an HP SIM Trusted Server name:

```
<SSO_SERVER NAME="hpsim1.hp.net" />
```

IMPORT_FROM indicates that iLO must request the HP SIM Trusted Server certificate from HP SIM. This request is implemented using an anonymous HTTP request similar to:

```
http://<sim network address>:280/GetCertificate
```

The iLO firmware requests the certificate when this command is processed. If the HP SIM server is unreachable, then an error occurs.

For example, the syntax to have iLO import a server certificate resembles:

```
<SSO_SERVER IMPORT_FROM="hpsim2.hp.net" />
```

IMPORT_CERTIFICATE indicates that iLO must import the literal .PEM encoded x.509 certificate data that follows. The data is encoded in a block of text that includes:

```
-----BEGIN CERTIFICATE-----
```

and

```
-----END CERTIFICATE-----
```

For example, the syntax to import an HP SIM Trusted Server certificate resembles the following:

```
<SSO_SERVER>
 -----BEGIN CERTIFICATE-----
 MIIC3TCCAkYCBESzwFUwDQYJKoZIhvcNAQEFBQAwgbUxCzAJBgNVBAYTAlVTMRMwE...
```

```
 kXzhuVzPfWzQ+a2E9tGAE/YgNGTfS9vKkVLUf6QoP/RQpYpkl5BxrsN3gM/PeT3zrxyTleE=
 -----END CERTIFICATE-----
</SSO_SERVER>
```

The certificate is validated by iLO to ensure that it can be decoded before it is stored. An error results if the certificate is a duplicate or corrupt.

The iLO firmware does not support certificate revocation and does not honor certificates that appear expired. You must remove revoked or expired certificates.

SSO_SERVER runtime errors

A runtime error is generated if the:

- Certificate is a duplicate.
- Certificate is corrupt.
- HP SIM server cannot be contacted using IMPORT_FROM.
- HP SIM Trusted Server database is full (you must delete other records to make sufficient room to add a new entry).
- Trust mode is set incorrectly.

DELETE_SERVER

The DELETE_SERVER command is used to remove an HP SIM Trusted SSO Server record. For this command to parse correctly, it must appear within an SSO_INFO command block, and SSO_INFO MODE must be set to write. You must have the Configure iLO Settings privilege to execute this command.

You can specify multiple SSO server records by using multiple instances of this command. The servers are deleted in the order that the records are specified, and the records are renumbered by each deletion. Delete records in the highest-to-lowest order if you want to delete multiple records at the same time.

For example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <SSO_INFO MODE="write">
   <DELETE_SERVER INDEX="6" />
  </SSO_INFO>
 </LOGIN>
</RIBCL>
```

DELETE_SERVER parameters

INDEX indicates the record number to delete. This number is consistent with the index returned using a GET_SSO_SETTINGS command. The index is 0-based; that is the first record is index 0, the second record is index 1, and so on.

DELETE_SERVER runtime errors

A runtime error is generated if the index is invalid.

9 Secure Shell

SSH overview

SSH is a Telnet-like program for logging into and executing commands on a remote machine, which includes security with authentication, encryption, and data integrity features. The iLO firmware can support simultaneous access from five SSH clients. After SSH is connected and authenticated, the command line interface is available.

iLO3 supports:

- SSH protocol version 2
- PuTTY is a free version of the SSH protocol, and is available for download on the Internet. When using PuTTY, versions before 0.54 might display 2 line feeds instead of a single line feed when the ENTER key is pressed. To avoid this issue, and for best results, HP recommends using version 0.54 or later.
- OpenSSH, which is a free version of the SSH protocol available for download on the Internet.

When upgrading the firmware, a one-time 25-second delay occurs before SSH functionality is available. During this time, iLO generates the 1024-bitDSA keys. These keys are saved by iLO for future use. If iLO is reset to factory defaults, the DSA keys are erased and are regenerated on the next boot.

Supported SSH features

The library supports only version 2 (SSH-2) of the protocol. Table 29 (page 150) shows the SSH features supported by iLO.

Table 29 Supported SSH Features

Feature	Supported Algorithm
Server host key algorithms	ssh-dsa
Encryption (same set supported both ways)	3des-cbc, aes128-cbc
Hashing algorithms	hmac-sha1, hmac-md5
Public key algorithms	ssh-dsa
Key exchange	Diffie-hellman-group1-sha1
Compression	None
Language	English
Client/User authentication method	Password
Authentication timeout	2 minutes
Authentication attempts	3
Default SSH port	22

Using Secure Shell

Using SSH

1. Open an SSH window.
2. When prompted, enter the IP address or DNS name, login name, and password.

Using OpenSSH

To start an OpenSSH client in Linux, use:

```
ssh -l loginname ipaddress/dns name
```

Using PuTTY

- To start a PuTTY session, double-click the PuTTY icon in the directory where PuTTY is installed.
- To start a PuTTY session from the command line, do the following:
  - Start a connection to a server called *host* by entering:

    ```
    putty.exe [-ssh | -rlogin | -raw] [user@]host
    ```

  - Start an existing saved session called *sessionname* by entering:

    ```
    putty.exe -load session name
    ```

SSH key authorization

SSH key-based authentication enables HP SIM to connect to LOM devices through SSH and be authenticated and authorized to perform administrative-level tasks. The CLP is utilized to perform tasks. HP SIM can perform these tasks on multiple LOM devices nearly simultaneously, at scheduled times. HP SIM provides a menu-driven interface to manage and configure multiple targets. Enhancements to HP SIM are provided by tool definition files.

HP SIM can perform actions on target devices utilizing an SSH interface that requires private key-based authentication. If HP SIM is enabled to integrate more fully with LOM devices, SSH key-based authentication is implemented in iLO.

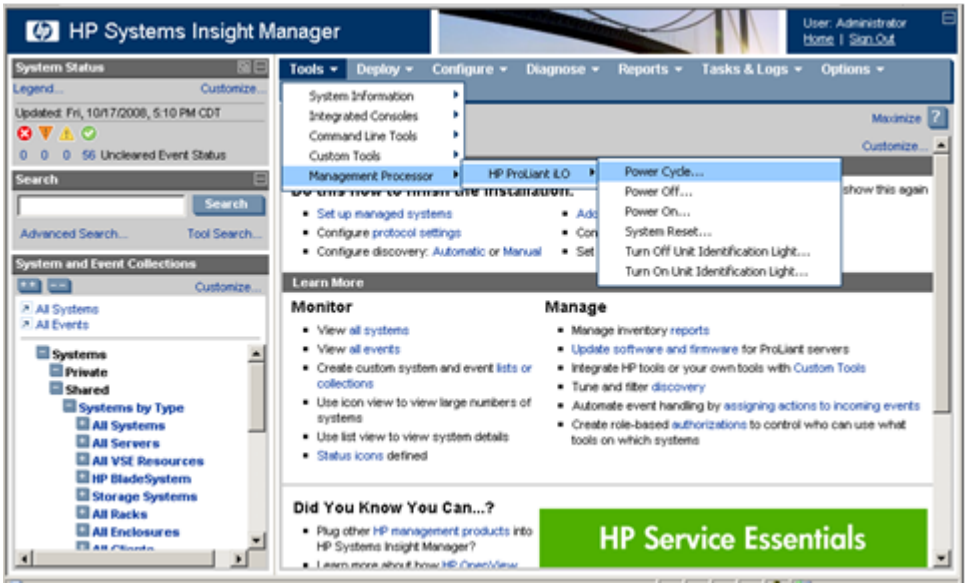
An HP SIM instance is established as a trusted SSH client by installing the public key in iLO. This is completed either manually through a Web-based GUI, or automatically with the `mxagentconfig` utility.

SSH keys do not need to be created to use SSH in interactive mode. For information about using SSH in interactive mode, see "SSH overview" (page 150).

Tool definition files

TDEF files extend the menu system of HP SIM to provide the CLP commands that HP SIM transmits to iLO 3 through an SSH connection.

Figure 1 HP Systems Insight Manager menus



`Mxagentconfig` utility

`Mxagentconfig` is a utility used to export and install HP SIM public SSH keys into other systems. This utility simplifies the process and can install the public key on many systems simultaneously.

`Mxagentconfig` makes an SSH connection to iLO, authenticates with a user name and password, and transmits the necessary public key. The iLO firmware stores this key as a trusted SSH client key.

Importing SSH keys from PuTTY

The public key file format generated by PuTTY is not compatible with iLO 3. The following example illustrates, a PuTTY generated public key file:

```
---- BEGIN SSH2 PUBLIC KEY ----
 Comment: "Administrator"
 AAAAB3NzaC1yc2EAAAABJQAAAIB0x0wVO9itQB11o+tHnY3VvmsGgwghCyLOVzJl
 3A9F5yzKj+RXJVPxOGusAhmJwF8PBQ9wV5E0Rumm6gNOaPyvAMJCG/l0PW7Fhac1
 VLt8i5F3Lossw+/LWa+6H0da13TF2vq3ZoYFUT4esC6YbAACM7kLuGwxF5XMNR2E
 Foup3w==
---- END SSH2 PUBLIC KEY ----
```

Note that this sample key conforms to RFC 4716 (SSH Public Key File Format). The iLO interface supports two key formats, OpenSSH 2 and RFC 4716. A third format is supported only in scripting (see "IMPORT_SSH_KEY" (page 106)).

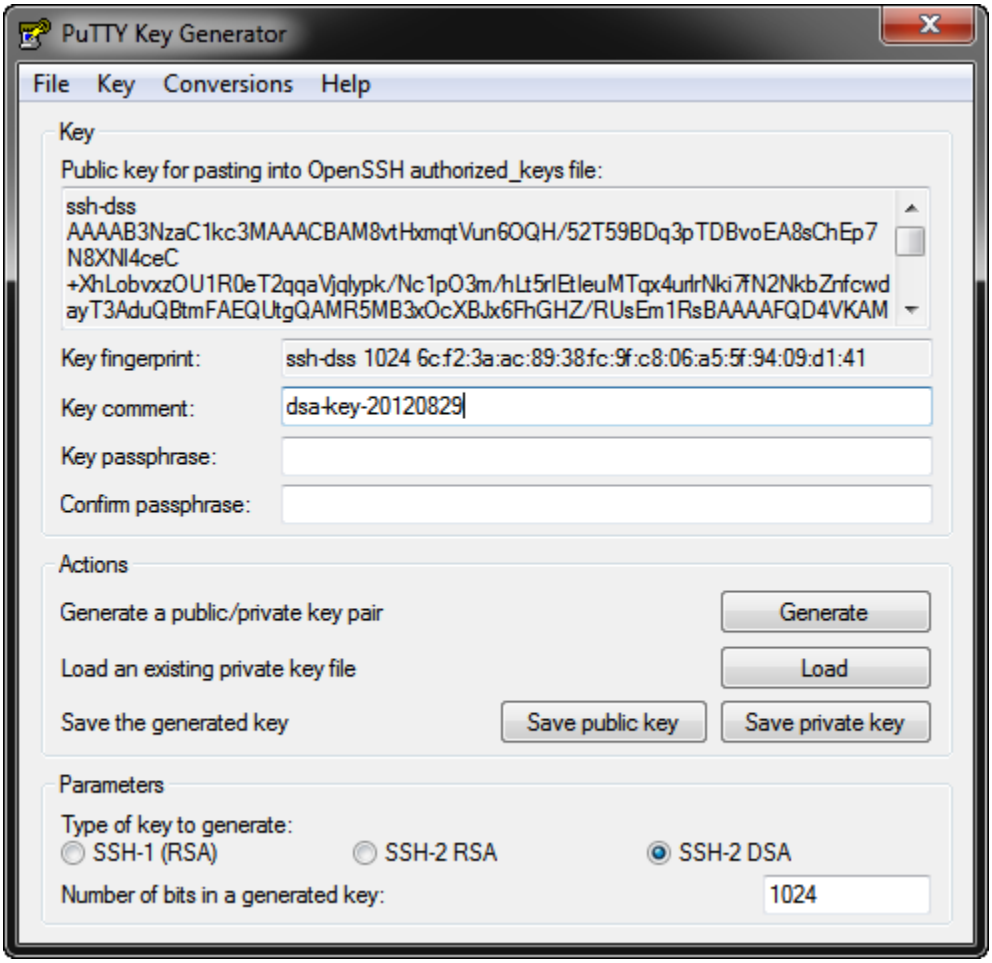
The iLO firmware expects public key file information on a single line. You can use the PuTTY Key Generator utility (`puttygen.exe`) to generate and properly format a key file for import into iLO.

To import SSH keys to iLO from PuTTY:

1. Double-click the PuTTY Key Generator icon to launch the utility.
2. Select **SSH-2 DSA**.
3. Click **Generate**.

   On the key area, move the mouse around to generate the key. You must keep moving the mouse until the key generation process completes.

Figure 2 PuTTY Key Generator

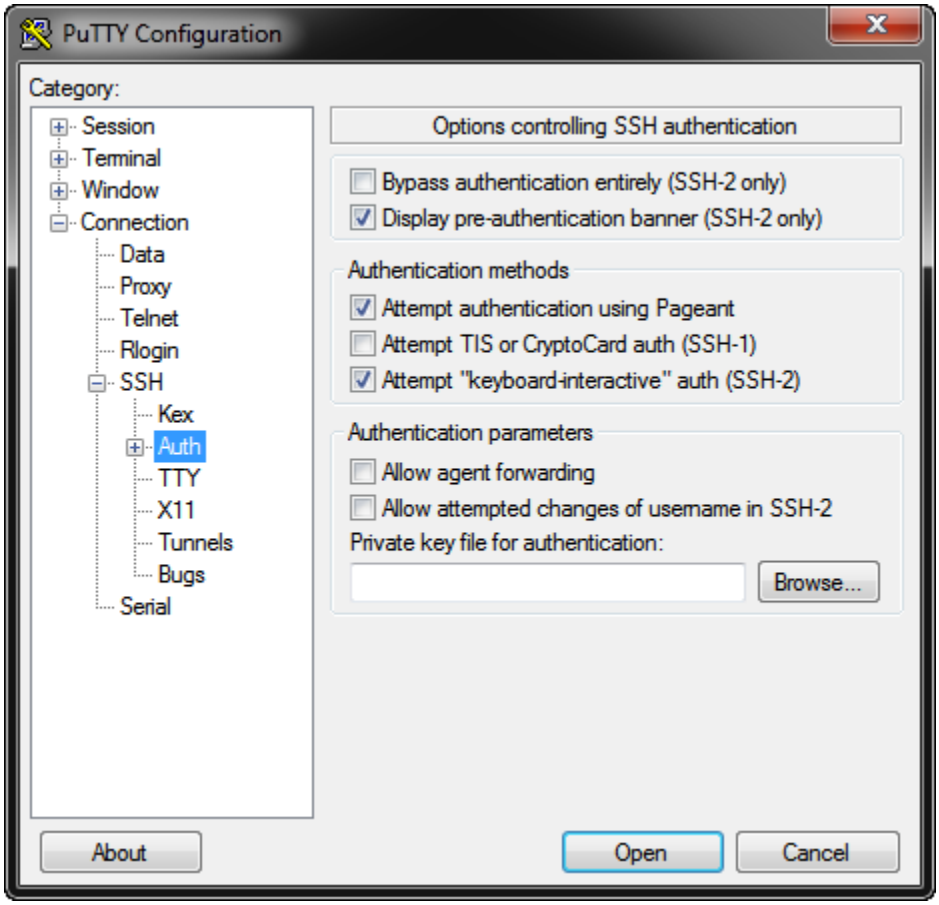


4. Click **Save public key** and then enter a file name when prompted.
5. Click **Save private key** and then enter a file name when prompted. Note that you have the option to enter and confirm a Key passphrase.
6. Open your public key in a text editor, and copy the contents to the clipboard.
7. Log in to iLO (if not already open).
8. On the iLO SSH Key Adminstration page, select a user from the Authorized SSH Keys list, and then click **Authorize New Key**.

   A DSA Public Key Import Data box appears.
9. Paste the PEM encoded DSA public key in the box, and then click **Import Public Key**.

   A new Public Key Hash appears for the user in the list of authorized SSH keys.
10. Launch PuTTY.
11. Select **Session**, and then configure your iLO 3 IP address.
12. Select **Connection**+**SSH**→**Auth**.
13. Click **Browse**, and then locate the private key file.

Figure 3 PuTTY Configuration window



14. Click **Open**.

    The iLO firmware prompts for a user name.

15. Enter the logon name associated with the public key.

    The public key in iLO authenticates with the private key in PuTTY. If the keys match, you are logged in to iLO without using a password.

    Keys can be created with a key passphrase. If a key passphrase was used to generate the public key, you are prompted for the key passphrase before you log in to iLO.

Importing SSH keys generated using ssh-keygen

After generating an SSH key using `ssh-keygen` and creating the *`key`*`.pub` file, perform the following steps:

1. Locate and open the `key.pub` file with a text editor. The file begins with the text `ssh-dsa`.
2. Save and close the file.

The key file is ready to import and authorize.

10 PERL scripting

Using PERL with the XML scripting interface

The scripting interface provided enables administrators to manage virtually every aspect of the device in an automated fashion. Primarily, administrators use tools like HPQLOCFG to assist deployment efforts. Administrators using a non-Windows client can use PERL scripts to send XML scripts to the iLO devices. Administrators can also use PERL to perform more complex tasks than HPQLOCFG can perform.

This section discusses how to use PERL scripting in conjunction with the Lights-Out XML scripting language. PERL scripts require a valid user ID and password with appropriate privileges.

Download the sample scripts from the HP website at http://www.hp.com/go/iLO3. Click **HP iLO Sample Scripts for Windows** or **HP Lights-Out XML Scripting Sample for Linux** under **Helpful Downloads**.

XML enhancements

If the iLO 3 firmware determines the client utility does not support the return of properly formatted XML syntax, the following message appears:

```
<INFORM>Scripting utility should be updated to the latest
version.</INFORM>
```

This message informs you to update to a later version of the HPQLOCFG scripting utility.

If you are using a utility other than HPQLOCFG (such as PERL), the following steps help ensure that the iLO 3 firmware returns properly formatted XML. You must incorporate the following tag into the script sent to iLO 3:

```
<LOCFG version="2.0">
```

You can place this tag in either the PERL script or the XML script. Placement of this tag is important. If you place this tag in the PERL script, the tag must be sent after `<?xml version="1.0"?>` and before the XML script is sent. If you place the tag in the XML script, the tag must be placed before `<RIBCL version="2.0">`. If you are using the PERL script provided by HP, you can add the bold line in the following example to return properly formatted XML syntax.

For example:

- PERL script modification

```
…
# Open the SSL connection and the input file
my $client = new IO::Socket::SSL->new(PeerAddr => $host);
open(F, "<$file") || die "Can't open $file\n";
# Send the XML header and begin processing the file
print $client '<?xml version="1.0"?>' . "\r\n";
#Send tag to iLO firmware to insure properly formatted XML is returned.
print $client '<LOCFG version="2.0">' . "\r\n";
…
```

- XML script modification

```
<!-- The bold line could be added for the return of properly
 formatted XML. -->
<LOCFG version="2.0"/>
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="Adminname" PASSWORD = "password">
  <!--Add XML script here-->
 </LOGIN>
</RIBCL>
```

```
</LOCFG>
```

Opening an SSL connection

Perl scripts must open an SSL connection to the device HTTPS port, by default port 443.

For example:

```
use Socket;
use Net::SSLeay qw(die_now die_if_ssl_error);
Net::SSLeay::load_error_strings();
Net::SSLeay::SSLeay_add_ssl_algorithms();
Net::SSLeay::randomize();

#
# opens an ssl connection to port 443 of the passed host

#
sub openSSLconnection($)
{
my $host = shift;
my ($ctx, $ssl, $sin, $ip, $nip);
if (not $ip = inet_aton($host))
{
print "$host is a DNS Name, performing lookup\n" if $debug;
$ip = gethostbyname($host) or die "ERROR: Host $hostname not found.\n";
}
$nip = inet_ntoa($ip);
print STDERR "Connecting to $nip:443\n";
$sin = sockaddr_in(443, $ip);
socket  (S, &AF_INET, &SOCK_STREAM, 0) or die "ERROR: socket: $!";
connect (S, $sin) or die "connect: $!";
$ctx = Net::SSLeay::CTX_new() or die_now("ERROR: Failed to create SSL_CTX $! ");
Net::SSLeay::CTX_set_options($ctx, &Net::SSLeay::OP_ALL);
die_if_ssl_error("ERROR: ssl ctx set options");
$ssl = Net::SSLeay::new($ctx) or die_now("ERROR: Failed to create SSL $!");
Net::SSLeay::set_fd($ssl, fileno(S));
Net::SSLeay::connect($ssl) and die_if_ssl_error("ERROR: ssl connect");
print STDERR 'SSL Connected ';
print 'Using Cipher: ' . Net::SSLeay::get_cipher($ssl) if $debug;
print STDERR "\n\n";

return $ssl;
}
```

Sending the XML header and script body

After the connection is established, the first line of script sent must be an XML document header, which tells the device HTTPS web server that the following content is an XML script. The header must match the header used in the example exactly. After the header has been completely sent, the remainder of the script can be sent. In this example, the script is sent all at once.

For example:

```
# usage: sendscript(host, script)
# sends the xmlscript script to host, returns reply
sub sendscript($$)
{
my $host = shift;
my $script = shift;
my ($ssl, $reply, $lastreply, $res, $n);
$ssl = openSSLconnection($host);

# write header
$n = Net::SSLeay::ssl_write_all($ssl, '<?xml version="1.0"?>'."\r\n");
print "Wrote $n\n" if $debug;
```

```
# write script

$n = Net::SSLeay::ssl_write_all($ssl, $script);
print "Wrote $n\n$script\n" if $debug;
$reply = "";
$lastreply = "";
READLOOP:
while(1)
{
$n++;
$reply .= $lastreply;
$lastreply = Net::SSLeay::read($ssl);
die_if_ssl_error("ERROR: ssl read");
if($lastreply eq "")
{
sleep(2); # wait 2 sec for more text.
$lastreply = Net::SSLeay::read($ssl);
last READLOOP if($lastreply eq "");
}
sleep(2); # wait 2 sec for more text.
$lastreply = Net::SSLeay::read($ssl);
last READLOOP if($lastreply eq "");
}
print "READ: $lastreply\n" if $debug;
if($lastreply =~ m/STATUS="(0x[0-9A-F]+)"[\s]+MESSAGE='(.*)
'[\s]+\/>[\s]*(([\s]|.)*?)<\/RIBCL>/)
{
if($1 eq "0x0000")
{
print STDERR "$3\n" if $3;
}
else
print STDERR "ERROR: STATUS: $1, MESSAGE: $2\n";
{

}
}
}
$reply .= $lastreply;
closeSSLconnection($ssl);
return $reply;
}
```

PERL scripts can also send a portion of the XML script, wait for the reply, and send more XML later. Using this technique, it is possible to use the reply produced by an earlier command as input to a later command. However, the PERL script must send data within a few seconds or the device times out and disconnects.

When using the XML scripting interface with PERL scripts, the following restrictions apply:

- PERL scripts must send the XML header before sending the body of the script.
- PERL scripts must provide script data fast enough to prevent the device from timing out.
- Only one XML document is allowed per connection, which means one pair of RIBCL tags.
- The device does not accept additional XML tags after a syntax error occurs. To send additional XML, a new connection must be established.

11 iLO 3 ports

Enabling the Shared Network Port feature through XML scripting

For information on how to use the SHARED_NETWORK_PORT command to enable the iLO 3 Shared Network Port through XML scripting, see "RIBCL XML Scripting Language" (page 60).

The following sample script configures the iLO 3 to select the Shared Network Port. You can customize this script to your needs. All non-blade platforms support some variation of this script.

```
<RIBCL version="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="WRITE">
   <MOD_NETWORK_SETTINGS>
   <!--  Desired NIC:   Substitute:                                  -->
   <!--  iLO NIC        <SHARED_NETWORK_PORT VALUE="N"/>             -->
   <!--  Host NIC       <SHARED_NETWORK_PORT VALUE="Y"/>             -->
   <SHARED_NETWORK_PORT VALUE="Y" />
   </MOD_NETWORK_SETTINGS>
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

Re-enabling the dedicated NIC management port

You can re-enable the iLO-dedicated NIC management port using the User Interface, RBSU, CLP, or XML scripting.

For information about how to use the SHARED_NETWORK_PORT command, see "RIBCL XML Scripting Language" (page 60)

To re-enable the dedicated management port using RBSU:

1. Connect the dedicated NIC management port to a LAN from which the server is managed.
2. Reboot the server.
3. When prompted during POST, press the **F8** key to enter iLO RBSU.
4. Select **Network→NIC→TCP/IP**, and press **Enter**.
5. In the Network Configuration menu, press the spacebar to change the Network Interface Adapter Field to On.
6. Press the **F10** key to save the configuration.
7. Select **File→Exit**, and press **Enter**.

After iLO resets, the dedicated NIC management port is active.

To re-enable the dedicated iLO port using XML, use the following sample RIBCL script. The sample script configures iLO to select the iLO Network Port. You can modify the script for your specific needs. Using this script on platforms that do not support the Shared Network Port causes an error.

For example:

```
<RIBCL version="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="WRITE">
<MOD_NETWORK_SETTINGS>
<SHARED_NETWORK_PORT VALUE="N" />
</MOD_NETWORK_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

12 Support and other resources

Information to collect before contacting HP

Be sure to have the following information available before you contact HP:

- Software product name
- Hardware product model number
- Operating system type and version
- Applicable error message
- Third-party hardware or software
- Technical support registration number (if applicable)

How to contact HP

Use the following methods to contact HP technical support:

- In the United States, see the Customer Service / Contact HP United States website for contact options:

  http://welcome.hp.com/country/us/en/contact_us.html

- In the United States, call 1-800-HP-INVENT (1-800-474-6836) to contact HP by telephone. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, conversations might be recorded or monitored.
- In other locations, see the Contact HP Worldwide website for contact options:

  http://welcome.hp.com/country/us/en/wwcontact.html

Security bulletin and alert policy for non-HP owned software components

Open source software (such as OpenSSL) or third-party software (such as Java) are sometimes included in HP products. HP discloses that the non-HP owned software components listed in the Insight Management end user license agreement (EULA) are included with Insight Management. The EULA is included with the Insight Management Installer on Insight Management DVD #1.

HP addresses security bulletins for the software components listed in the EULA with the same level of support afforded HP products. HP is committed to reducing security defects and helping you mitigate the risks associated with security defects when they do occur.

When a security defect is found, HP has a well defined process that culminates with the publication of a security bulletin. The security bulletin provides you with a high level description of the problem and explains how to mitigate the security defect.

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

http://www.hp.com/country/us/en/contact_us.html

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Registering for software technical support and update service

Insight Management includes one year of 24 x 7 HP Software Technical Support and Update Service. This service provides access to HP technical resources for assistance in resolving software implementation or operations problems.

The service also provides access to software updates and reference manuals in electronic form as they are made available from HP. Customers who purchase an electronic license are eligible for electronic updates.

With this service, Insight Management customers benefit from expedited problem resolution as well as proactive notification and delivery of software updates. For more information about this service, see the following website:

http://www.hp.com/services/insight

Registration for this service takes place following online redemption of the license certificate.

How to use your software technical support and update service

As HP releases updates to software, the latest versions of the software and documentation are made available to you. The Software Updates and Licensing portal gives you access to software, documentation, and license updates for products on your HP software support agreement.

You can access this portal from the HP Support Center:

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

After creating your profile and linking your support agreements to your profile, see the Software Updates and Licensing portal at http://www.hp.com/go/hpsoftwareupdatesupport to obtain software, documentation, and license updates.

HP authorized resellers

For the name of the nearest HP authorized reseller, see the following sources:

- In the United States, see the HP U.S. service locator web site:
  http://www.hp.com/service_locator
- In other locations, see the Contact HP worldwide web site:
  http://welcome.hp.com/country/us/en/wwcontact.html

Related information

Documents

- *HP iLO User Guide*
- *HP iLO Release Notes*

These documents are on the HP website at:

http://www.hp.com/go/ilo/docs

Websites

- iLO website:
  http://www.hp.com/go/ilo
- iLO 3 website:
  http://www.hp.com/go/iLO3
- iLO 3 downloads website:
  http://www.hp.com/support/ilo3
- Insight Control website:
  http://www.hp.com/go/insightcontrol

- Intel IPMI specification website:
  http://www.intel.com/design/servers/ipmi/tools.htm
- Timezone information:
  ftp://ftp.iana.org/tz/
- HP iLO videos:
  http://www.hp.com/go/ilo/videos

13 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

Glossary

AHS	Active Health System
ARP	Address Resolution Protocol
ASCII	American Standard Code for Information Interchange.
CGI	Common Gateway Interface.
CLI	Command-line interface. An interface comprised of various commands which are used to control operating system responses.
CLP	Command Line Protocol.
CPQLOCFG	Compaq Lights-Out Configuration Utility
DAD	Duplicate Address Detection
DDNS	Dynamic Domain Name System.
DHCP	Dynamic Host Configuration Protocol.
DMTF	Desktop Management Task Force
DNS	Domain Name System.
EV	Environment Variable
FQDN	Fully Qualified Domain Name
GUI	Graphical user interface.
HPONCFG	HP Lights-Out Online Configuration Utility.
HPQLOCFG	HP Lights-Out Configuration Utility.
HPQLOMGC	HP Lights-Out Migration Command Line.
ICMP	Internet Control Message Protocol.
iLO	Integrated Lights-Out.
IML	Integrated Management Log.
IP	Internet Protocol.
IPMI	Intelligent Platform Management Interface.
LAN	Local area network. A communications infrastructure designed to use dedicated wiring over a limited distance (typically a diameter of less than five kilometers) to connect to a large number of intercommunicating nodes. Ethernet and token ring are the two most popular LAN technologies. (SNIA)
LDAP	Lightweight Directory Access Protocol.
LED	Light-emitting diode.
LOCFG.PL	The Lights-Out Configuration Utility is a PERL script that runs on any client that has a compatible PERL environment installed.
LOM	Lights-Out Management.
MAC	Media Access Control.
NIC	Network interface card. A device that handles communication between a device and other devices on a network.
NMI	Non-maskable interrupt.
PERL	Practical Extraction and Report Language.
POST	Power-on self test.
RA	Router Advertisement
RBSU	ROM-Based Setup Utility.
RDP	HP Rapid Deployment Pack.
RIB	Remote Insight Board.
RIBCL	Remote Insight Board Command Language.

RILOE	Remote Insight Lights-Out Edition.
RILOE II	Remote Insight Lights-Out Edition II.
RMCP	Remote Management and Control Protocol
RSA	An algorithm for public-key cryptography.
RSM	Remote Server Management.
SAID	Service Agreement Identifier
SLAAC	Stateless Address Auto Configuration
SMASH	Systems Management Architecture for Server Hardware.
SNMP	Simple Network Management Protocol.
SSH	Secure Shell.
SSL	Secure Sockets Layer.
SUM	Software Update Manager
TCP/IP	Transmission Control Protocol/Internet Protocol.
UID	Unit identification.
USB	Universal serial bus. A serial bus standard used to interface devices.
VM	Virtual Machine.
VSP	Virtual Serial Port
WINS	Windows Internet Name Service.
XML	eXtensible markup language.

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