HP iLO 2 Scripting and Command Line Guide

HP Part Number: 382328-009
Published: June 2012
Edition: 1

Notices

Intended audience

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.

Contents

1 Introduction.....10
Overview.....10
New in this version.....10
HP Insight Control server deployment.....10
Server management through IPMI version 2.0–compliant applications.....10
WS-Management compatibility overview.....11
2 Command line.....13
Command line interface overview.....13
Command line access.....13
Using the command line.....13
Escape commands.....15
Base commands.....15
Specific commands.....16
User commands.....17
HP SIM SSO settings.....18
Network commands.....19
iLO 2 settings.....21
iLO 2 embedded health settings.....23
SNMP settings.....25
License commands.....25
Directory commands.....26
Virtual media commands.....26
Start and reset commands.....29
Firmware update.....30
Eventlog commands.....31
Blade commands.....32
p-Class Blades.....32
c-Class Blades.....33
Boot commands.....33
LED commands.....34
System properties and targets.....34
Other commands.....37
3 Telnet.....38
Telnet support.....38
Using Telnet.....38
Telnet simple command set.....38
Telnet security.....39
Supported key sequences.....39
iLO 2 VT100+ key map.....39
VT100+ codes for the F-keys.....41
Linux codes for the F-keys.....41
4 Secure Shell.....43
SSH overview.....43
SSH features supported by iLO 2.....43
Using Secure Shell.....43
SSH key authorization.....44
Tool definition files.....44
Mxagentconfig.....45
Importing SSH keys from PuTTY.....45
Importing SSH keys generated using ssh-keygen.....47

5 Group administration and iLO 2 scripting....48
CPQLOCFG Utility....48
Unauthenticated XML query....48
Query definition in HP SIM....50
Application Launch using HP SIM....51
Batch processing using CPQLOCFG....52
CPQLOCFG parameters....52
6 Perl scripting....55
Using Perl with the XML scripting interface....55
XML enhancements....55
Opening an SSL connection....56
Sending the XML header and script body....56
7 Virtual Media scripting....59
Scripting Web server requirements....59
Using virtual media scripting 59
Using Virtual Media on Linux servers through an SSH connection....60
Virtual media image files....61
CGI helper application....61
Setting up IIS for scripted virtual media....62
8 HPONCFG online configuration utility....65
HPONCFG....65
HPONCFG supported operating systems....65
HPONCFG requirements....65
Installing HPONCFG....66
Windows server installation....66
Linux server installation 66
HPONCFG utility....66
HPONCFG command line parameters....67
Using HPONCFG on Windows servers....67
Using HPONCFG on Linux servers....68
Obtaining the basic configuration....68
Obtaining a specific configuration....69
Setting a configuration....70
Using variable substitution....71
Capturing and restoring a configuration....72
User commands....73
9 Using RIBCL....75
Overview of the RIBCL....75
XML header....75
Data types....75
String....75
Specific string....75
Boolean string....75
Response definitions....75
RIBCL....76
RIBCL parameters....76
RIBCL runtime errors....76
LOGIN....76
LOGIN parameters....77
LOGIN runtime errors....77
USER_INFO....77
ADD_USER....77
ADD_USER parameters....78

ADD_USER runtime errors.....79
DELETE_USER.....79
DELETE_USER parameter.....79
DELETE_USER runtime errors.....80
DELETE_CURRENT_USER.....80
DELETE_CURRENT_USER parameters.....80
DELETE_CURRENT_USER runtime errors.....80
DELETE_SSH_KEY.....80
DELETE_SSH_KEY parameters.....80
DELETE_SSH_KEY runtime errors.....81
GET_USER.....81
GET_USER parameter.....81
GET_USER runtime errors.....81
GET_USER return messages.....81
MOD_USER.....82
MOD_USER parameters.....82
MOD_USER runtime errors.....83
GET_ALL_USERS.....83
GET_ALL_USERS parameters.....84
GET_ALL_USERS runtime errors.....84
GET_ALL_USERS return messages.....84
GET_ALL_USER_INFO.....84
GET_ALL_USER_INFO parameters.....85
GET_ALL_USER_INFO runtime errors.....85
GET_ALL_USER_INFO return messages.....85
RIB_INFO.....85
CERT_SIGNATURE_ALGORITHM.....86
CERT_SIGNATURE_ALGORITHM parameters.....86
CERT_SIGNATURE_ALGORITHM runtime errors.....86
RESET_RIB.....87
RESET_RIB parameters.....87
RESET_RIB runtime errors.....87
GET_EVENT_LOG.....87
GET_EVENT_LOG parameters.....87
GET_EVENT_LOG runtime errors.....88
GET_EVENT_LOG return messages.....88
CLEAR_EVENTLOG.....89
CLEAR_EVENTLOG parameters.....89
CLEAR_EVENTLOG runtime errors.....89
COMPUTER_LOCK_CONFIG.....89
COMPUTER_LOCK_CONFIG parameters.....90
COMPUTER_LOCK_CONFIG runtime errors.....90
GET_NETWORK_SETTINGS.....90
GET_NETWORK_SETTINGS parameters.....91
GET_NETWORK_SETTINGS runtime errors.....91
GET_NETWORK_SETTINGS return messages.....91
MOD_NETWORK_SETTINGS.....92
MOD_NETWORK_SETTINGS parameters.....93
MOD_NETWORK_SETTINGS runtime errors.....95
GET_GLOBAL_SETTINGS.....95
GET_GLOBAL_SETTINGS parameters.....96
GET_GLOBAL_SETTINGS runtime errors.....96
GET_GLOBAL_SETTINGS return messages.....96
MOD_GLOBAL_SETTINGS.....97
MOD_GLOBAL_SETTINGS parameters.....100

MOD_GLOBAL_SETTINGS runtime errors....102
GET_SNMP_IM_SETTINGS....102
GET_SNMP_IM_SETTINGS parameters....103
GET_SNMP_IM_SETTINGS runtime errors....103
GET_SNMP_IM_SETTINGS return messages....103
MOD_SNMP_IM_SETTINGS....103
MOD_SNMP_IM_SETTINGS parameters....104
MOD_SNMP_IM_SETTINGS runtime errors....104
UPDATE_RIB_FIRMWARE....104
UPDATE_RIB_FIRMWARE parameters....105
UPDATE_RIB_FIRMWARE runtime errors....105
GET_FW_VERSION....105
GET_FW_VERSION parameters....106
GET_FW_VERSION runtime errors....106
GET_FW_VERSION return messages....106
HOTKEY_CONFIG....106
HOTKEY_CONFIG parameters....106
HOTKEY_CONFIG runtime errors....107
Supported hot keys....107
LICENSE....108
LICENSE parameters....108
LICENSE runtime errors....109
INSERT_VIRTUAL_MEDIA....109
INSERT_VIRTUAL_MEDIA parameters....109
INSERT_VIRTUAL_FLOPPY runtime errors....110
EJECT_VIRTUAL_MEDIA....110
EJECT_VIRTUAL_MEDIA parameters....110
EJECT_VIRTUAL_MEDIA runtime errors....110
GET_VM_STATUS....110
GET_VM_STATUS parameters....111
GET_VM_STATUS runtime errors....111
GET_VM_STATUS return messages....111
SET_VM_STATUS....111
SET_VM_STATUS parameters....112
SET_VM_STATUS runtime errors....113
CERTIFICATE_SIGNING_REQUEST....113
CERTIFICATE_SIGNING_REQUEST parameters....113
CERTIFICATE_SIGNING_REQUEST errors....113
CSR_CERT_SETTINGS....113
CSR_CERT_SETTINGS parameters....114
CSR_CERT_SETTINGS errors....115
GET_CERT_SUBJECT_INFO....115
GET_CERT_SUBJECT_INFO parameters 115
GET_CERT_SUBJECT_INFO errors 115
IMPORT_CERTIFICATE....115
IMPORT_CERTIFICATE parameters....116
IMPORT_CERTIFICATE errors....116
GET_TWOFACTOR_SETTINGS....116
GET_TWOFACTOR_SETTINGS parameters....116
GET_TWOFACTOR_SETTINGS runtime errors....116
GET_TWOFACTOR_SETTINGS return messages....116
MOD_TWOFACTOR_SETTINGS....117
MOD_TWOFACTOR_SETTINGS parameters....118
MOD_TWOFACTOR_SETTINGS runtime errors....119
DIR_INFO....119

GET_DIR_CONFIG....120
GET_DIR_CONFIG parameters....120
GET_DIR_CONFIG runtime errors....120
GET_DIR_CONFIG return messages....120
IMPORT_SSH_KEY....121
IMPORT_SSH_KEY parameters....121
IMPORT_SSH_KEY runtime errors....122
MOD_DIR_CONFIG....122
MOD_DIR_CONFIG parameters....123
MOD_DIR_CONFIG runtime errors....124
RACK_INFO....124
GET_RACK_SETTINGS....125
GET_RACK_SETTINGS parameters....125
GET_RACK_SETTINGS runtime errors....125
GET_RACK_SETTINGS return messages....125
GET_DIAGPORT_SETTINGS....125
GET_DIAGPORT_SETTINGS parameters....126
GET_DIAGPORT_SETTINGS runtime errors....126
GET_DIAGPORT_SETTINGS return messages....126
MOD_DIAGPORT_SETTINGS....126
MOD_DIAGPORT_SETTINGS parameters....126
MOD_DIAGPORT_SETTINGS runtime errors....127
GET_ENCLOSURE_IP_SETTINGS....127
GET_ENCLOSURE_IP_SETTINGS parameters....127
GET_ENCLOSURE_IP_SETTINGS return messages....127
MOD_ENCLOSURE_IP_SETTINGS....128
MOD_ENCLOSURE_IP_SETTINGS parameters....129
MOD_ENCLOSURE_IP_SETTINGS runtime errors....129
GET_TOPOLOGY....129
GET_TOPOLOGY parameters....129
GET_TOPOLOGY return message....129
MOD_BLADE_RACK....130
MOD_BLADE_RACK parameters....130
MOD_BLADE_RACK runtime errors....131
SERVER_INFO....131
GET_SERVER_NAME....132
GET_SERVER_NAME return message....132
GET_SERVER_NAME runtime errors....132
SERVER_NAME....132
SERVER_NAME parameters....132
SERVER_NAME return message....132
SERVER_NAME runtime errors....133
GET_EMBEDDED_HEALTH....133
GET_EMBEDDED_HEALTH parameters....133
GET_EMBEDDED_HEALTH return messages....133
GET_POWER_READINGS....135
GET_POWER_READINGS parameters....135
GET_POWER_READINGS return messages....135
GET_POWER_CAP....136
GET_POWER_CAP parameters....136
GET_POWER_CAP return messages....136
SET_POWER_CAP....136
SET_POWER_CAP parameters....137
SET_POWER_CAP runtime errors....137
GET_HOST_POWER_SAVER_STATUS....137

GET_HOST_POWER_SAVER_STATUS parameters....137
GET_HOST_POWER_SAVER_STATUS runtime errors....137
GET_HOST_POWER_SAVER_STATUS return messages....137
SET_HOST_POWER_SAVER....138
SET_HOST_POWER_SAVER parameters....138
SET_HOST_POWER_SAVER runtime errors....138
GET_HOST_POWER_REG_INFO....138
GET_HOST_POWER_REG_INFO parameters....139
GET_HOST_POWER_REG_INFO runtime errors....139
GET_HOST_POWER_REG_INFO return messages....139
GET_HOST_POWER_STATUS....140
GET_HOST_POWER_STATUS Parameters....140
GET_HOST_POWER_STATUS Runtime Errors....140
GET_HOST_POWER_STATUS Return Messages....140
SET_HOST_POWER....140
SET_HOST_POWER Parameters....141
SET_HOST_POWER Runtime Errors....141
GET_HOST_PWR_MICRO_VER....141
GET_HOST_PWR_MICRO_VER parameters....141
GET_HOST_PWR_MICRO_VER runtime errors....141
GET_HOST_PWR_MICRO_VER return messages....142
GET_ONE_TIME_BOOT....142
GET_ONE_TIME_BOOT parameters....142
GET_ONE_TIME_BOOT runtime errors....142
GET_ONE_TIME_BOOT return messages....142
SET_ONE_TIME_BOOT....143
SET_ONE_TIME_BOOT parameters....143
SET_ONE_TIME_BOOT runtime errors....143
SET_ONE_TIME_BOOT return messages....143
GET_PERSISTENT_BOOT....143
GET_PERSISTENT_BOOT parameters....144
GET_PERSISTENT_BOOT runtime errors....144
GET_PERSISTENT_BOOT return messages....144
SET_PERSISTENT_BOOT....144
SET_PERSISTENT_BOOT parameters....144
SET_PERSISTENT_BOOT runtime errors....144
SET_PERSISTENT_BOOT return messages....145
GET_PWREG_CAPABILITIES....145
GET_PWREG_CAPABILITIES parameters....145
GET_PWREG_CAPABILITIES runtime errors....145
GET_PWREG_CAPABILITIES return messages....145
RESET_SERVER....147
RESET_SERVER errors....147
RESET_SERVER parameters....147
PRESS_PWR_BTN....147
PRESS_PWR_BTN parameters....147
PRESS_PWR_BTN runtime errors....147
HOLD_PWR_BTN....147
HOLD_PWR_BTN parameters....148
HOLD_PWR_BTN runtime errors....148
COLD_BOOT_SERVER....148
COLD_BOOT_SERVER parameters....148
COLD_BOOT_SERVER runtime errors....148
WARM_BOOT_SERVER....148
WARM_BOOT_SERVER parameters....149

WARM_BOOT_SERVER runtime errors....149
SERVER_AUTO_PWR....149
SERVER_AUTO_PWR parameters....149
SERVER_AUTO_PWR runtime errors....149
GET_SERVER_AUTO_PWR....150
GET_SERVER_AUTO_PWR parameters....150
GET_SERVER_AUTO_PWR return message....150
GET_UID_STATUS....150
GET_UID_STATUS parameters....150
GET_UID_STATUS response....151
UID_CONTROL....151
UID_CONTROL parameters....151
UID_CONTROL errors....151
GET_VPB_CABLE_STATUS (RILOE II only)....151
GET_VPB_CABLE_STATUS parameters....151
GET_VPB_CABLE_STATUS Runtime Errors....151
GET_VPB_CABLE_STATUS return messages....152
SSO_INFO....152
GET_SSO_SETTINGS....152
GET_SSO_SETTINGS parameters....153
GET_SSO_SETTINGS return messages....153
MOD_SSO_SETTINGS....153
MOD_SSO_SETTINGS parameters....154
MOD_SSO_SETTINGS runtime errors....155
SSO_SERVER....155
SSO_SERVER parameters....156
SSO_SERVER runtime errors....157
DELETE_SERVER....157
DELETE_SERVER parameters....157
DELETE_SERVER runtime errors....157
10 HPQLOMGC command language....158
Using HPQLOMGC....158
ILO_CONFIG....158
11 iLO 2 ports....160
Enabling the iLO 2 Shared Network Port feature through XML scripting....160
Re-enabling the dedicated NIC management port....160
12 iLO 2 parameters....161
Status Summary parameters....161
User Administration parameters....162
Global Settings parameters....163
Network parameters....165
Network DHCP/DNS parameters....166
SNMP/Insight Manager settings parameters....168
Directory settings parameters....168
BL p-Class parameters....169
iLO Advanced Pack License Key....170
13 Technical support....171
HP contact information....171
Before you contact HP....171
Acronyms and abbreviations....172
Index....174

1 Introduction

Overview

HP iLO 2 provides multiple ways to configure, update, and operate HP ProLiant servers remotely. The *HP Integrated Lights-Out 2 User Guide* describes each feature and explains how to use these features with the browser-based interface and RBSU.

The *HP Integrated Lights-Out Management Processor Scripting and Command Line Resource Guide* describes the syntax and tools available to use iLO 2 through a command line or scripted interface.

Sample XML scripts downloaded from the HP website contain commands for all iLO, iLO 2, and RILOE II firmware. Unless otherwise specified, examples in this guide are specifically for iLO 2 firmware version 2.09 and later. Before using the XML sample scripts downloaded from the HP website at http://www.hp.com/servers/lights-out, read the firmware support information in each sample script to tailor the script for the intended firmware and version.

New in this version

This guide reflects changes in the iLO 2 firmware. This guide covers iLO 2 version 2.09.

The following features were added/updated:

- Enhanced CLI prompt
- Virtual Serial Port log

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.

Server management through IPMI version 2.0–compliant applications

Server management through the IPMI is a standardized method for controlling and monitoring the server. iLO 2 provides server management based on the IPMI version 2.0 specification.

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

- Monitoring 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 communications are dependent on the BMC and the SMS. The BMC manages the interface between the SMS and the platform management hardware. iLO 2 emulates the BMC functionality and the SMS functionality can be provided by various industry-standard tools. For additional information, see the IPMI specification on the Intel website at http://www.intel.com/design/servers/ipmi/tools.htm.

iLO 2 provides the KCS interface, or open interface, for SMS communications. The KCS interface provides a set of I/O mapped communications registers. The default system base address for the I/O mapped SMS Interface is 0xCA2 and is byte-aligned at this system address.

The KCS interface is accessible to SMS software that is running on the local system. Examples of compatible SMS software applications are as follows:

- IPMI version 2.0 Command Test Tool is a low-level MS-DOS command line tool that enables hex-formatted IPMI commands to be sent to an IPMI BMC that implements the KCS interface. You can locate this tool on the Intel website at http://www.intel.com/design/servers/ipmi/tools.htm.
- IPMItool is a utility for managing and configuring devices that support the IPMI version 1.5 and version 2.0 specifications and can be used in a Linux environment. You can locate this tool on the IPMItool website at http://ipmitool.sourceforge.net/index.html.

IPMI functionality provided by iLO 2

When emulating a BMC for the IPMI interface, iLO 2 supports all mandatory commands listed in the IPMI version 2.0 specification. See the IPMI version 2.0 specification for a listing of these commands. Also, the SMS must use the methods described in the specification for determining which IPMI features are enabled or disabled in the BMC (for example, using the `Get Device ID` command).

If the server operating system is running and the health driver is enabled, any IPMI traffic through the KCS interface can affect the performance of the health driver and overall health performance of the system. Do not issue any IPMI commands through the KCS interface that might negatively affect the monitoring performed by the health driver. These commands include any commands that sets or changes IPMI parameters, such as `Set Watchdog Timer` and `Set BMC Global Enabled`. Any IPMI command that simply returns data is safe to use, such as `Get Device ID` and `Get Sensor Reading`.

WS-Management compatibility overview

The iLO 2 firmware implementation of WS-Management is in accordance with the DTMF *Web Services for Management* 1.0.0a specification.

Authentication

- iLO 2 uses basic authentication over SSL, compliant with profile:

  ```
  wsman:secprofile/https/basic
  ```

- Authenticated users are authorized to execute WS-Management commands in accordance with designated privileges in their local or directory accounts.
- To enable basic authentication on Windows Vista, at the command prompt, enter `gpedit.msc` to launch the Group Policy Object Editor. Select **Computer Configuration> Administrative Templates> Windows Components> Windows Remote Management (WinRM)> WinRM Client.** Set Allow Basic authentication to **Enabled**.

Compatibility

- WS-Management in iLO 2 is compatible with the Windows Vista WinRM utility, Microsoft Operations Manager 3, and the Management Pack provided by HP.
- The full set of WS-Management commands is available on iLO 2 servers that support embedded system health. A greatly reduced subset of these commands is available on servers without embedded systems health support.

Commands are available for remote invocation of the following devices:

- Server power
- UID

Status

The WS-Management in iLO 2 returns status information for fans, temperatures, power supplies, and VRMs.

2 Command line

Command line interface overview

HP has worked with key industry partners within Distributed Management Task Force (DMTF), Inc. to define an industry-standard set of commands. DMTF is working on a suite of specifications, Systems Management Architecture for Server, to standardize manageability interfaces for servers. The iLO 2 uses the command set defined in the *Server Management Command Line Protocol Specification, 1.00 Draft*. The CLP is intended to replace the simple CLI.

Command line access

The iLO 2 features enable you to execute the supported commands from a command line. There are two interfaces through which the command line option can be accessed:

- Serial port using one connection.
- Network using:
  - SSH enabling three simultaneous connections. IP address or DNS name, login name, and password are required to start a session using SSH.
  - Telnet protocol using three simultaneous connections.

Any four network connections can be active simultaneously. After serial CLI is enabled on the Global Settings screen, the iLO 2 CLI is invoked by pressing the `ESC` and the `ESC` key. The SSH and Telnet sessions start the 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, SSH, and Telnet connections.

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.

Windows 2000 Telnet client does not support the Functions keys F1,.., F12, Insert, Home, and End keys. These keys do not work in an iLO 2 command-line session.

The **Backspace** key in the iLO 2 CLP implementation is mapped to the value 0x8. Some client operating systems such as, Novell Linux Desktop and Red Hat Enterprise Linux 4 Desktop map the Backspace key to the value 0x7f, which is used for the Delete key in Windows Telnet client. The Backspace key does not work from a client where it has value of 0x7f. For the Linux clients, using the Home or the End key enables the iLO 2 CLP service to remap the Backspace key to use the value 0x7f, making the key functional.

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 Q` Stops the CLI session and terminates the SSH and Telnet connection.

`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 subtargets (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 2 specific commands available when using the command line, including:

- "User commands" (page 17)
- "HP SIM SSO settings" (page 18)
- "Network commands" (page 19)
- "iLO 2 settings" (page 21)
- "iLO 2 embedded health settings" (page 23)
- "SNMP settings" (page 25)

- "License commands" (page 25)
- "Directory commands" (page 26)
- "Virtual media commands" (page 26)
- "Start and reset commands" (page 29)
- "Firmware update" (page 30)
- "Eventlog commands" (page 31)
- "Blade commands" (page 32)
- "Boot commands" (page 33)
- "LED commands" (page 34)
- "System properties and targets" (page 34)
- "Other commands" (page 37)

User commands

User commands enable you to view and modify user settings. User settings are located at /map1/accounts1.

Targets

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

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

Properties

Property	Access	Description
`username`	read/write	Corresponds to the iLO 2 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 2 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 a group is not specified, no privileges are assigned to the user.

Examples

The current path is `/map1/accounts1`.

- `create username=lname1 password=password`

In the example, *username* corresponds to the login name.

-
  ```
  set lname1 username=lname2 password=password1 name=name2
  group=admin,configure,oemhp_power,oemhp_vm,oemhp_rc
  ```

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

HP SIM SSO settings

HP SIM SSO settings commands are accessed using `/map1/oemhp_ssocfg1`. You must have the Configure iLO 2 Settings privilege to change these properties. SSO is only supported for browser access from trusted HP SIM servers. SSO is a licensed feature. For more information, see the *HP Integrated Lights-Out 2 User Guide*.

Targets

None

Properties

Property	Access	Description
`oemhp_ssotrust`	Read/write	The Single Sign-On required trust level. Valid values are `disabled`, `all`, `name`, and `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 can contain a server name or a server certificate.

Examples

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

  ```
  set oemhp_ssocfg/ oemhp_ssotrust = certificate
  ```

- To assign user roles the login privilege:

  ```
  set oemhp_ssocfg/ oemhp_ssouser = login
  ```

- To assign the operator role login, remote console, virtual power control, and virtual media privileges:

  ```
  set oemhp_ssocfg/ oemhp_ssooperator = login,oemhp_rc,oemhp_power,oemhp_vm
  ```

- To Add an HP SIM Trusted Server name record:

  ```
  cd map1/oemhp_ssocfg
  ```

  ```
  </map1/oemhp_ssocfg>hpiLO-> create = hpsim1.corp.net
  ```

- To dynamically import a certificate from the specified server (`hpsim2.corp.net`):

  ```
  </map1/oemhp_ssocfg>hpiLO-> load = hpsim2.corp.net
  ```

- To delete `oemhp_ssoserver` with index 5.

  ```
  </map1/oemhp_ssocfg>hpiLO-> delete = 5
  ```

- To display the complete iLO 2 SSO configuration:

  ```
  cd map1/oemhp_ssocfg
  ```

```
</map1/oemhp_ssocfg>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/dhcpserver1`
- `/map1/settings1`
- `/map1/vlan1`

Properties, Targets, and Verbs:

- `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
- dhcpserver1

  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_Gateway1Address
  - oemhp_SRoute2Address
  - oemhp_Gateway2Address
  - oemhp_SRoute3Address
  - oemhp_
    Gateway3Address
  - DHCPOptionToUse

Examples

```
set /map1/enetport1 speed=100
```

```
set /map1/enetport1/lanendpt1 ipv4address=192.168.0.13
subnetmask=255.255.252
```

You can specify one or more properties on the command line. If multiple properties are given on the same command line, they must to be separated by a space.

iLO 2 is reset after network settings have been applied.

iLO 2 settings

The iLO 2 settings commands enable you to view or modify iLO 2 settings. iLO 2 settings are located at /map1/config1.

Targets

No targets

Properties

- oemhp_rawvspport=3002
- oemhp_console_capture_port=17990
- oemhp_console_capture_enable=yes
- oemhp_interactive_console_replay_enable=yes
- oemhp_capture_auto_export_enable=no
- oemhp_capture_auto_export_location=http://192.168.1.1/folder/capture%t.ilo
- oemhp_capture_auto_export_username=0
- oemhp_capture_auto_export_password=0
- oemhp_console_capture_boot_buffer_enable=no
- oemhp_console_capture_fault_buffer_enable=no
- emhp_shared_console_enable=yes

- `oemhp_shared_console_port=0`
- `oemhp_key_up_key_down_enable=yes`

Property	Access	Description
`oemhp_mapenable`	Read/Write	Enables or disables the iLO 2. Boolean values are accepted.
`oemhp_timeout`	Read/Write	Sets session timeout in minutes. Valid values are 15, 30, 60, and 120.
`oemhp_passthrough`	Read/Write	Enables or disables Terminal Services Passthrough. Boolean values are accepted.
`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 2 IP address display during POST. Boolean values are accepted.
`oemhp_telnetenable`	Read/Write	Enables or disables Telnet.
`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_tsport`	Read/Write	Sets Terminal Services 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_authfailurelogging`	Read/Write	Sets the logging criteria for failed authentications.
`oemhp_hotkey_t`	Read/Write	Sets the value for hotkey Ctrl+T.
`oemhp_hotkey_u`	Read/Write	Sets the value for hotkey Ctrl+U.
`oemhp_hotkey_v`	Read/Write	Sets the value for hotkey Ctrl+V.
`oemhp_hotkey_w`	Read/Write	Sets the value for hotkey Ctrl+W.
`oemhp_hotkey_x`	Read/Write	Sets the value for hotkey Ctrl+X.
`oemhp_hotkey_y`	Read/Write	Sets the value for hotkey Ctrl+Y.
`oemhp_high_perf_mouse`	Read/Write	Enables or disables high performance mouse.
`oemhp_computer_lock`	Read/Write	Enables or disables the Remote Console Computer Lock.

Property	Access	Description
oemhp_enforce_aes	Read/Write	Enable or disable enforcing AES/3DES encryption
oemhp_enhanced_cliprompt_enable	Read/Write	Enable or disable the enhanced CLI prompt. By default, the feature is disabled.
oemhp_vsp_log_enable	Read/Write	Enable or disable the Virtual Serial Port Log Feature. By default, the feature is disabled.

Examples

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

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

```
oemhp_computer_lock
```

command examples:

```
set /map1/config1 oemhp_computer_lock = windows
set /map1/config1 oemhp_computer_lock = custom,l_gui,l
set /map1/config1 oemhp_computer_lock = disabled
```

For a complete list of `oemhp_computer_lock` custom keys, see the *HP Integrated Lights-Out 2 User Guide*. Any keys with a space must have the space replaced with an underscore. For example:

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

iLO 2 embedded health settings

iLO 2 embedded health commands enable you to display system embedded health information for fans, temperature sensors, voltage sensors, and the power supply.

iLO 2 embedded health CLP settings are located at `/system1/fan*`, `/system1/sensor*`, and `/system1/powersupply*`.

Targets

- Fan
- Sensor
- Power supply

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
Desired Speed	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

Property	Access	Description
`Oemhp_CautionValue`	Read	Displays temperature sensor caution value
`Oemhp_CriticalValue`	Read	Displays temperature sensor critical value

Examples

The command `show system1/fan1` displays the system fan1 properties. For example:

```
/system1/fan1
Targets
Properties
DeviceID=Fan 1
ElementName=I/O Board
OperationalStatus=Ok
VariableSpeed=Yes
DesiredSpeed=40
HealthState=Ok.
```

VRM power supplies are usually mapped to the sensor targets. The command `show system1/sensor1` displays the VRM 1 properties. 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
```

Other sensor targets show system temperatures. The command `show system1/sensor3` displays one of the temperature zone properties. For example:

```
/system1/sensor3
Targets
Properties
DeviceID=Temp 1
ElementName=I/O Board Zone
OperationalStatus=Ok
RateUnits=Celsius
CurrentReading=32
SensorType=Temperature
HealthState=Ok
oemhp_CautionValue=68
oemhp_CriticalValue=73
```

SNMP settings

SNMP settings commands enable you to view and modify SNMP settings. SNMP settings are available at

```
/map1/snmp1
```

.

Targets

None

Properties

Property	Access	Description
`accessinfo1`	Read/Write	Sets the first SNMP trap destination address.
`accessinfo2`	Read/Write	Sets the second SNMP trap destination address.
`accessinfo3`	Read/Write	Sets the third SNMP trap destination address.
`oemhp_iloalert`	Read/Write	Enables or disables iLO 2 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 2 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. Valid selections can be enabled and disabled.

Examples

You can specify one or more properties on the command line. If there are multiple properties on the same command line, they must be separated by a space. For example:

```
set /map1/snmp1 accessinfo1=192.168.0.50 oemhp_imdatalevel=Enabled
```

License commands

License commands enable you to display and modify the iLO 2 license. License commands are available at:

```
/map1/
```

Targets

None

Commands

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

Examples

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

Directory commands

Directory commands enable you to view and modify directory settings. Directory settings are available at:

```
/map1/oemhp_dircfg1
```

Targets

None

Properties

Property	Access	Description
`oemhp_dirauth`	Read/Write	Enables or disables directory authentication. Valid settings are as follows: • extended_schemaUses HP extended schema • default_schemaUses schema-free directories • disabledDirectory-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.
`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_dirpassword`	Read/Write	Sets the LOM object password. This field is ignored when the default schema 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.

Examples

You can define additional groups using additional set commands.

You can specify one or more properties on the command line. If multiple properties are on the same command line, then they must be separated by a space. For example:

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

Virtual media commands

Access to the iLO 2 virtual media is supported through the CLP. The virtual media subsystem is located at:

```
/map1/oemhp_vm1
```

Targets

You can access the following sub-components of the virtual media.

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

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 is displayed as `No_Boot`. • Once – Boot from the device only once. The value is displayed 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.
`oemhp_applet_connected`	Read	Indicates if the Java applet is connected.

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
```

- 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.

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

Examples

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

iLO 2.00 CLI support

The `vm` simple CLI commands are still supported for virtual media:

- `vm` *device* `insert` *path* – Inserts an image
- `vm` *device* `eject` – Ejects an image

- `vm` *device* `get` – Gets the status of the virtual media
- `vm` *device* `set boot` *access* – Sets the status of the virtual media

  Command options:

  - Valid device names are `floppy` or `cdrom`

    NOTE: USB key drives must be used with the floppy keyword syntax.

  - The path is the URL to the media image
  - Boot options are `boot_once`, `boot_always`, `no_boot`, `connect`, or `disconnect`
  - Access options are `write_protect` or `write_allow`.

  For more information about how to use these commands, see the commands INSERT_VIRTUAL_MEDIA, EJECT_VIRTUAL_MEDIA, GET_VM_STATUS, and SET_VM_STATUS in "Using RIBCL" (page 75).

Tasks

- Insert a floppy USB key image into the Virtual Floppy/USBKey:

  ```
  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.

- Eject a floppy or USB key image from the Virtual Floppy/USBKey:

  ```
  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.

- Insert a CDROM image into the virtual CD-ROM:

  ```
  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.

- Eject a CD-ROM image from the Virtual CD-ROM:

  ```
  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.

- Insert a CD-ROM image and set for single boot:

  ```
  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.

- Eject a CD-ROM image from the virtual CD-ROM in a single command:

  ```
  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 2 or the iLO 2 itself.

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

Examples

If the current target is `/system1`, the following commands are supported:

- `start`
- `stop`
- `reset hard`
- `reset soft`

If the current target is `/map1`, the following commands are supported:

- `reset`
- `reset`

soft

iLO 2.00 CLI support

- **power**

  The power command is used to change the power state of the server and is limited to users with the Power and Reset privilege.

  - `power` – Displays the current server power state
  - `power on` – Turns the server on
  - `power off` – Turns the server off
  - `power reset` – Resets the server (server power off followed by server power on)
  - `power warm` – Warm boots the server

  Instead of using the simple commands, the following examples show the new CLP format:

  - `start /system1` – Turns the server on
  - `stop /system1` – Turns the server off
  - `reset /system1` – Resets the server
  - `reset /system1 hard` – Performs a coldstart reboot of the server
  - `reset /system1 soft` – Performs a warmstart reboot of the server
  - `show /system1 enabledstate` – Shows the current power state, for which enabled is powered on and disabled is powered off.

- **vsp**

  The vsp command invokes a virtual serial port session. When in virtual serial port session, press `Esc(` to return to the CLI.

  Instead of using the simple commands, the following example shows the new CLP format:

  ```
  start /system1/oemhp vsp1
  ```

- **textcons**

  The `textcons` command starts a Remote Console session and is limited to users with the Remote Console privilege. Only a text-based remote console is supported, similar to a Telnet session. When in Remote Console session, enter `Esc(` to return to the CLI.

  Instead of using the simple commands, the following example shows the new CLP format:

  ```
  start /system1/console1
  ```

Firmware update

Firmware commands enable you to display and modify the iLO 2 firmware version. Firmware settings are available at `/map1/firmware1`.

Targets

No targets

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 firmware update image file on web server. The URL is limited to 80 characters in the iLO 2.00 release of the firmware.

URL example:

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

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

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

Examples

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

The [<target>] field is `/map1/firmware`, and is optional if it is already the default target.

Eventlog commands

Eventlog commands enable you to display or delete the logs of both the system and iLO 2. Eventlog settings are available at:

- `/system1/log1 for the system event log`
- `/map1/log1 for the iLO 2 event log`

Targets

`record:1..`*n*

where *n* is the total number of records

Properties

Property	Access	Description
`number`	read	Displays the record number for the event.
`severity`	read	Displays the severity of the event. It can be 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.

Examples

- `show /system1/log1` – Displays system event log.
- `show /map1/log1` – Displays the iLO 2 event log.
- `show /system1/log1/recordn` – Displays record n from the system event default text.
- `show /map1/log1/recordn` – Displays record n from the iLO 2 event log.

- `delete /system1/log1` – Deletes system event log.
- `delete /map1/log1` – Deletes iLO 2 event log.

Blade commands

Blade commands enable you to view and modify the values on a p-Class or c-Class server. These values are available at:

`/system1/map1/blade1`

p-Class Blades

These commands are only supported in iLO 2 firmware version 1.82 or earlier.

Targets

You can access the following subcomponents of the blade:

Target	Description
`/map1/blade1/diagport`	Displays and modifies the front diagnostic port settings.
`/map1/blade1/rack`	Displays and modifies the blade rack settings.
`/map1/blade1/rack1/enclosure1`	Displays and modifies the blade enclosure settings.

Properties

Property	Access	Description
`bay_name`	Read	Displays and modifies the blade bay name.
`bay_number`	Read	Displays the blade bay number.
`facility_power`	Read	Displays and modifies if the blade 48 V power is provided by the facility.
`auto_power`	Read/write	Displays and modifies if the blade is enabled to automatically power up.
`log_alerts`	Read/write	Displays and modifies if rack alert logging is enabled.
`autoselect`	Read/write	Displays and modifies the diagnostic port autoselect setting.
`speed`	Read/write	Displays and modifies the diagnostic port speed setting.
`fullduplex`	Read/write	Displays and modifies if the diagnostic port supports full-duplex or half-duplex mode.
`ipaddress`	Read/write	Displays and modifies the IP address for the diagnostic port.
`mask`	Read/write	Displays and modifies the subnet mask for the diagnostic port.
`rack_name`	Read/write	Displays and modifies the rack name.
`rack_sn`	Read	Displays the rack serial number.
`encl_name`	Read/write	Displays and modifies the enclosure name.
`ser`	Read	Displays the enclosure serial number.
`encl_type`	Read	Displays the enclosure type.

Examples

- `set /map1/blade1/bay_name=BayOne` – Sets the blade bay name to BayOne.
- `show /map1/blade1/diagport1/ipaddress` – Displays the IP address of the front diagnostic port.
- `show /map1/blade1/rack1/enclosure1(`*`n`*`)/encl_type` – Displays the enclosure type for blade enclosure *n*.

c-Class Blades

These commands are only supported in iLO 2 firmware version 2.09 or later.

Targets

You can access the following subcomponents of the blade:

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

Properties

You can access the following subcomponents of the blade:

Property	Access	Description
`bay_number`	Read	Displays the blade bay number
`autopower`	Read/write	Displays and modifies if the blade 48 V power is provided by the facility
`rack_name`	Read/write	Displays and modifies thew rack name
`rack_sn`	Read	Displays the rack serial number

Examples

- `set /map1/blade1/auto_power=yes` – Enables the blade to automatically power on when inserted into an enclosure
- `show map1/blade1/rack` – Displays the rack name and serial number

Boot commands

Boot commands enable you to modify the boot source and boot order of the system. Boot settings are available at:

`/system1/bootconfig1`

Targets

`bootsource1..`*n*,

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

Sets the boot source for the system. The possible values are:

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

  or

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

Properties

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

Examples

- `set /system1/bootconfig1/bootsource(n) bootorder=(num)`
- `show /system/bootconfig1` – Displays the complete boot configuration
- `show /system1/bootconfig1/bootsource1` – Displays the boot order for `bootsource1`

LED commands

LED commands are used to change the state of the UID light on the server. LED settings are available at:

`/system1/led1`

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

Examples

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

iLO 2.00 CLI support

Simple UID CLI commands introduced in iLO 1.60 are still supported.

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

Instead of using the simple commands, the following examples show the new CLP format:

- `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.

Targets

Target	Description
`oemhp_PresentPower`	Displays the average power reading from the last sample.
`oemhp_AveragePower`	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.

The following properties are available in `/system1`.

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 2 privilege to change.
`enabledstate`	Read	Appears if the server is powered up.
`oemhp_powerreg`	Read/write	Displays the setting for dynamic power saver mode. Valid values are dynamic, min, max, and os.
`processor_number`	Read	Displays the number of logical processors in the system.
`pstate_number`	Read	Displays the number of p-states supported by the server.
`oemhp_pwrcap`	Read/write	Displays the current power cap of the server. The value is shown in watts. You cannot set this property when a dynamic power cap is set for the Enclosure. Enclosure Dynamic Power Caps is set and modified using either Onboard Administrator or Insight Power Manager.
`oemhp_power_micro_ver`	Read	Displays the version and current state of the power micro option.

Examples

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

The `cpu` property is a target of `/system1` and displays information about the system processor. The following properties are available in `/system1/cpu<n>`:

Property	Access	Description
`speed`	Read	Displays the processor speed.
`cachememory1`	Read	Displays the size of the processor level-1 cache.
`cachememory2`	Read	Displays the size of the processor level-2 cache.
`logical_processor<n>`	Read	Displays the logical processor.

`CPU power state` – Enables you to examine the CPU power states. CPU power state values are shown as a part of the cpu target and use an additional property of `logical_processor<n>`.

Example:

The `show cpu1/logical_processor1` command displays the p-states of the processor: For example:

```
/system1/cpu1/logical_processor1
Targets
Properties
current_pstate=1
pstate0_avg=0.0
pstate1_avg=100.0
pstate2_avg=0.0
pstate3_avg=0.0
pstate4_avg=0.0
pstate5_avg=0.0
pstate6_avg=0.0
pstate7_avg=0.0
```

`Memory`

Displays information about the system memory.

The following properties are available in `/system1/memory<n>`:

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

`Slot`

Displays information about the system slots.

The following properties are available in `/system1/slot<n>`:

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

`Firmware` – Displays information about the system ROM.

The following properties are available in `/system1/firmware`:

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

Examples:

- `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=01/05/2006
  ```

  NOTE: `system1/cpu`, `system1/memory`, and `system1/slot` are not supported in iLO 1.81.

Other commands

- `start /system1/oemhp vsp1` – Starts virtual serial port session. Press `ESC(` to return to the CLI session
- `nmi server` – Generates and sends an NMI to the server and is limited to users with the Power and Reset privilege

3 Telnet

Telnet support

iLO 2 supports the use of Telnet to access the iLO 2 command line interface. Telnet access to iLO 2 supports the CLI, which can invoke a Remote Console connection as well as a Virtual Serial Port connection. For more information, see "Command line" (page 13).

Using Telnet

To use Telnet, the iLO 2 Remote Console Port Configuration and Remote Console Data Encryption on the Global Settings screen must be configured as follows:

1. Set the Remote Console Port Configuration to `Enabled`.
2. Set the Remote Console Data Encryption to `No`.

You can open either a Telnet based Remote Console session or a browser-based Remote Console session. You cannot open both at the same time. An error message is generated if both sessions are opened simultaneously.

To access iLO 2 using Telnet:

1. Open a Telnet window.
2. When prompted, enter the IP address or DNS name, login name, and password.

   NOTE: Access through Telnet will be disabled, if the remote console port configuration on the Global Settings tab is set to Disabled or Automatic, or if remote console data encryption is enabled.

To terminate a Telnet session:

1. Press the **Ctrl+]** keys and press the **Enter** key at the prompt.
2. If you see an extra carriage return each time the Enter key is pressed, press the **Ctrl+]** keys and enter `set crlf off` at the prompt.

   For a complete list of key sequences, see "iLO 2 VT100+ key map" (page 39).

Telnet simple command set

The following key sequences for simple command set are available for use during Telnet sessions. These commands are available only when in a Telnet-based Remote Console or Virtual Serial Port session.

Action	Key sequence	Comment
POWER ON	CTRL P 1	CTRL P is the prefix for the Power commands. The 1 indicates an ON selection.
POWER OFF	CTRL P 0	CTRL P is the prefix for the Power commands. The 0 indicates an OFF selection.
ACPI PRESS	CTRL P 6	CTRL P is the prefix for the Power commands. The 6 indicates an ACPI power press. The ACPI power press is equivalent to holding the power button for approximately 6 seconds.
SYSTEM REBOOT	CTRL P !	CTRL P is the prefix for the Power commands. The ! indicates an immediate emergency reboot.
UID ON	CTRL U 1	CTRL U is the prefix for the UID commands. The 1 indicates an ON selection.
UID OFF	CTRL U 0	CTRL U is the prefix for the UID commands. The 0 indicates an OFF selection.

The keys do not work before authentication. The power control requests are correctly ignored when you do not have the correct power control privileges.

Telnet security

Telnet is an unsecured network protocol. To reduce any security risks:

- Use SSH instead of Telnet. SSH is essentially secure or encrypted Telnet. CLI is supported through Telnet as well as SSH.
- Use a segregated management network. Preventing unauthorized access to the network segment prevents unauthorized activity.

Supported key sequences

iLO 2 supports the VT100+ protocol. The following tables define the supported key sequences.

iLO 2 VT100+ key map

The following are VT100+ key sequences.

- Many terminal programs send `CR-LF` when they mean **Enter**.

  Sequence `"\r\n" = '\r'`
- Some terminals send `ASCII 127` (DEL) when they mean backspace. The Delete key never sends DEL. It sends `"\e[3~"`.
- Some programs use the following mapping for HOME and END:

  sequence `"\e[H" = HOME_KEY`

  sequence `"\e[F" = END_KEY`
- `ALT_CAPITAL_O` and `ALT_LEFT_SQBRACKET` are ambiguous.
- Terminate longer sequences that start with `\eO and \e[)`, with `\?`.

Key	Sequence	Key	Sequence
\010	\177	**ALT_AMPER**	\e&
UP_KEY	\e[A	**ALT_APOS**	\e'
DOWN_KEY	\e[B	**ALT_OPAREN**	\e(
RIGHT_KEY	\e[C	**ALT_CPAREN**	\e)
LEFT_KEY	\e[D	**ALT_STAR**	\e*
ALT_A	\eA	**ALT_PLUS**	\e+
ALT_B	\eB	**ALT_COMMA**	\e,
ALT_C	\eC	**ALT_MINUS**	\e-
ALT_D	\eD	**ALT_PERIOD**	\e.
ALT_E	\eE	**ALT_SLASH**	\e/
ALT_F	\eF	**ALT_COLON**	\e:
ALT_G	\eG	**ALT_SEMICO**	\e;
ALT_H	\eH	**ALT_LESS**	\e<
ALT_I	\eI	**ALT_EQUAL**	\e=
ALT_J	\eJ	**ALT_MORE**	\e>
ALT_K	\eK	**ALT_QUES**	\e?

Key	Sequence	Key	Sequence
ALT_L	\eL	**ALT_AT**	\e@
ALT_M	\eM	**ALT_OPENSQ**	\e[\?
ALT_N	\eN	**ALT_BSLASH**	\e\\
ALT_O	\eO\?	**ALT_CLOSESQ**	\e]
ALT_P	\eP	**ALT_CARAT**	\e^
ALT_Q	\eQ	**ALT_USCORE**	\e_
ALT_R	\eR	**ALT_ACCENT**	\e`
ALT_T	\eT	**ALT_PIPE**	\e|
ALT_U	\eU	**ALT_CBRACK**	\e}
ALT_V	\eV	**ALT_TILDE**	\e~
ALT_W	\eW	**ALT_TAB**	\e\t
ALT_X	\eX	**ALT_BS**	\e\010
ALT_Y	\eY	**ALT_CR**	\e\r
ALT_Z	\eZ	**ALT_ESC**	\e\e\?
ALT_LOWER_A	\ea	**ALT_F1**	\e\eOP
ALT_LOWER_B	\eb	**ALT_F2**	\e\eOQ
ALT_LOWER_C	\ec	**ALT_F3**	\e\eOR
ALT_LOWER_D	\ed	**ALT_F4**	\e\eOS
ALT_LOWER_E	\ee	**ALT_F5**	\e\eOT
ALT_LOWER_F	\ef	**ALT_F6**	\e\eOU
ALT_LOWER_G	\eg	**ALT_F7**	\e\eOV
ALT_LOWER_H	\eh	**ALT_F8**	\e\eOW
ALT_LOWER_I	\ei	**ALT_F9**	\e\eOX
ALT_LOWER_J	\ej	**ALT_F10**	\e\eOY
ALT_LOWER_K	\ek	**ALT_F11**	\e\eOZ
ALT_LOWER_L	\el	**ALT_F12**	\e\eO[
ALT_LOWER_M	\em	**ALT_F5**	\e\e[15~
ALT_LOWER_N	\en	**ALT_F6**	\e\e[17~
ALT_LOWER_O	\eo	**ALT_F7**	\e\e[18~
ALT_LOWER_P	\ep	**ALT_F8**	\e\e[19~
ALT_LOWER_Q	\eq	**ALT_F9**	\e\e[20~
ALT_LOWER_R	\er	**ALT_F10**	\e\e[21~
ALT_LOWER_S	\es	**ALT_F11**	\e\e[23~
ALT_LOWER_T	\et	**ALT_F12**	\e\e[24~
ALT_LOWER_U	\eu	**ALT_HOME**	\e\e[1~
ALT_LOWER_V	\ev	**ALT_INS**	\e\e[2~
ALT_LOWER_W	\ew	**ALT_DEL**	\e\e[3~

Key	Sequence	Key	Sequence
ALT_LOWER_X	\ex	**ALT_END**	\e\e[4~
ALT_LOWER_Y	\ey	**ALT_PGUP**	\e\e[5~
ALT_LOWER_Z	\ez	**ALT_PGDN**	\e\e[6~
ALT_SPACE	\e\040	**ALT_HOME**	\e\e[H
ALT_EXCL	\e!	**ALT_END**	\e\e[F
ALT_QUOTE	\e\"	**ALT_UP**	\e\e[A
ALT_POUND	\e#	**ALT_DOWN**	\e\e[B
ALT_DOLLAR	\e$	**ALT_RIGHT**	\e\e[C
ALT_PERCENT	\e%	**ALT_LEFT**	\e\e[D

VT100+ codes for the F-keys

Key	Sequence
F1_KEY	\eOP
F2_KEY	\eOQ
F3_KEY	\eOR
F4_KEY	\eOS
F5_KEY	\eOT
F6_KEY	\eOU
F7_KEY	\eOV
F8_KEY	\eOW
F9_KEY	\eOX
F10_KEY	\eOY
F11_KEY	eOZ
F12_KEY	\eO[

Linux codes for the F-keys

Key	Sequence
F5_KEY	\e[15~
F6_KEY	\e[17~
F7_KEY	\e[18~
F8_KEY	\e[19~
F9_KEY	\e[20~
F10_KEY	\e[21~
F11_KEY	\e[23~
F12_KEY	\e[24~
HOME_KEY	\e[1~

Key	Sequence
INSERT_KEY	\e[2~
DELETE_KEY	\e[3~
END_KEY	\e[4~
PG_UP	\e[5~
PG_DOWN	\e[6~

4 Secure Shell

SSH overview

SSH is a Telnet-like program for logging into and for executing commands on a remote machine, which includes security with authentication, encryption, and data integrity features. The iLO 2 firmware can support simultaneous access from two SSH clients. After SSH is connected and authenticated, the command line interface is available.

iLO 2 supports:

- SSH protocol version 2
- PuTTY 0.58, which is a free version of Telnet and SSH protocol available for download on the Internet. When using PuTTY, versions before 0.54 might display 2 line feeds instead on 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, there is a one-time 25-minute delay before SSH functionality is available. During this time, iLO 2 generates the 1024-bit RSA and DSA keys. These keys are saved by iLO 2 for future use. If iLO 2 is reset to factory defaults, the RSA and DSA keys are erased and are regenerated on the next boot.

SSH features supported by iLO 2

The iLO 2 library supports only version 2 (SSH-2) of the protocol. The features that are supported are listed in the following table.

Feature	Supported algorithm
Server host key algorithms	ssh-dsa , ssh-rsa
Encryption (same set supported both ways)	3des-cbc, aes128-cbc
Hashing algorithms	hmac-sha1, hmac-md5
Public key algorithms	ssh-dss, ssh-rsa
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

To access iLO 2 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 directory where PuTTY is installed.
- To Start a PuTTY session from the command line:
  - To start a connection to a server called *host:*

    ```
    putty.exe [-ssh | -telnet | -rlogin | -raw] [user@]host
    ```

  - For Telnet sessions, the following alternative syntax is supported:

    ```
    putty.exe telnet://host[:port]/
    ```

  - To start an existing saved session called *sessionname:*

    ```
    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.

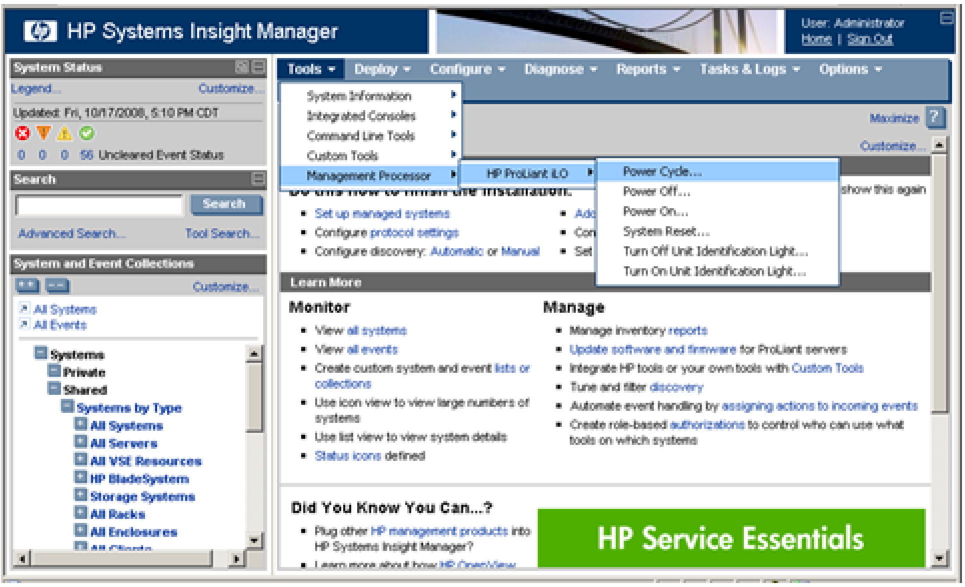
HP SIM can perform actions on target devices utilizing an SSH interface that requires private key-based authentication. If HP SIM is enabled to integrate more fully with LOM devices, SSH key-based authentication is implemented in iLO 2.

An HP SIM instance will be established as a trusted SSH client by installing its public key in iLO 2. This is completed either manually through a Web-based GUI, or automatically with the `mxagentconfig` utility. For more information, see “Mxagentconfig” (page 45).

SSH keys do not need to be created to use SSH in interactive mode. To use SSH in interactive mode, see “SSH overview” (page 43).

Tool definition files

TDEF files extend the menu system of HP SIM to provide the CLP commands that HPSIM transmits to iLO 2 through an SSH connection.



- Set up managed systems
- Configure protocol settings
- Configure discovery: Automatic or Manual

Learn More

Monitor

- View all systems
- View all events
- Create custom system and event lists or collections
- Use icon view to view large numbers of systems
- Use list view to view system details
- Status icons defined

Manage

- Manage inventory reports
- Update software and firmware for ProLiant servers
- Integrate HP tools or your own tools with Custom Tools
- Tune and filter discovery
- Automate event handling by assigning actions to incoming events
- Create role-based authorizations to control who can use what tools on which systems

Did You Know You Can...?

- Plug other HP management products into HP Systems Insight Manager?

Mxagentconfig

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 will make an SSH connection to iLO 2, authenticate with a user name and password, and transmit the necessary public key. iLO 2 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 2. The following example illustrates, a PuTTY generated public key file:

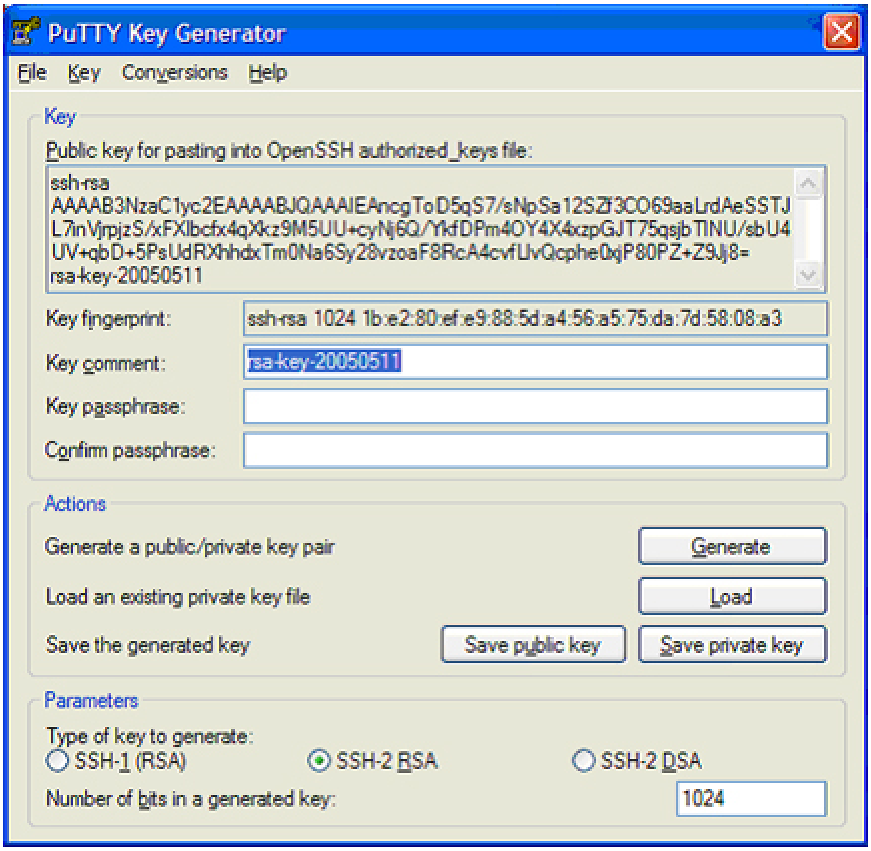
```
---- BEGIN SSH2 PUBLIC KEY ----
Comment: "Administrator"
AAAAB3NzaC1yc2EAAAABJQAAAIB0x0wVO9itQB11o+tHnY3VvmsGgwghCyLOVzJl
3A9F5yzKj+RXJVPxOGusAhmJwF8PBQ9wV5E0Rumm6gNOaPyvAMJCG/l0PW7Fhac1
VLt8i5F3Lossw+/LWa+6H0da13TF2vq3ZoYFUT4esC6YbAACM7kLuGwxF5XMNR2E
Foup3w==
---- END SSH2 PUBLIC KEY ----
```

iLO 2 expects public key file information on a single line. You must use the PuTTY Key Generator (puttygen.exe) utility to import a correctly formatted SSH key for use with iLO 2.

To import SSH keys to iLO 2 from PuTTY:

1. Double-click the PuTTY Key Generator icon to launch the utility.
2. Select **SSH-2 RSA**, and then 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 is complete.



Public key for pasting into OpenSSH authorized_keys file:

```
ssh-rsa
AAAAB3NzaC1yc2EAAAABJQAAAIEAncgToD5qS7/sNpSa12SZf3CO69aaLrdAeSSTJ
L7inVjrpjzS/xFXlbcfx4qXkz9M5UU+cyNj6Q/YkfDPm4OY4X4xzpGJT75qsjbTINU/sbU4
UV+qbD+5PsUdRXhhdxTm0Na6Sy28vzoaF8RcA4cvfUvQcphe0xjP80PZ+Z9Jj8=
rsa-key-20050511
```

Key fingerprint: ssh-rsa 1024 1b:e2:80:ef:e9:88:5d:a4:56:a5:75:da:7d:58:08:a3

Key comment: rsa-key-20050511

Key passphrase:

Confirm passphrase:

Generate a public/private key pair

Load an existing private key file

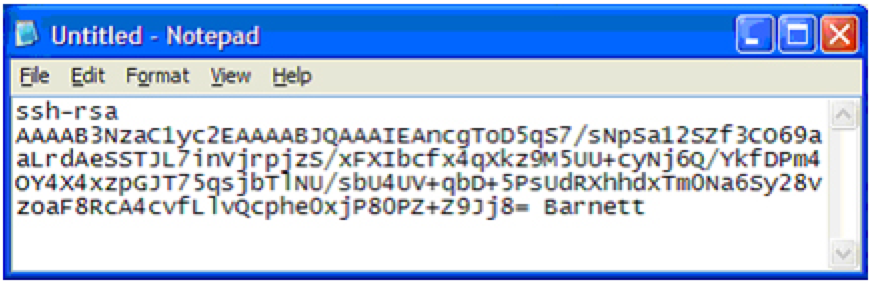
Save the generated key

Type of key to generate:
○ SSH-1 (RSA) ● SSH-2 RSA ○ SSH-2 DSA

Number of bits in a generated key: 1024

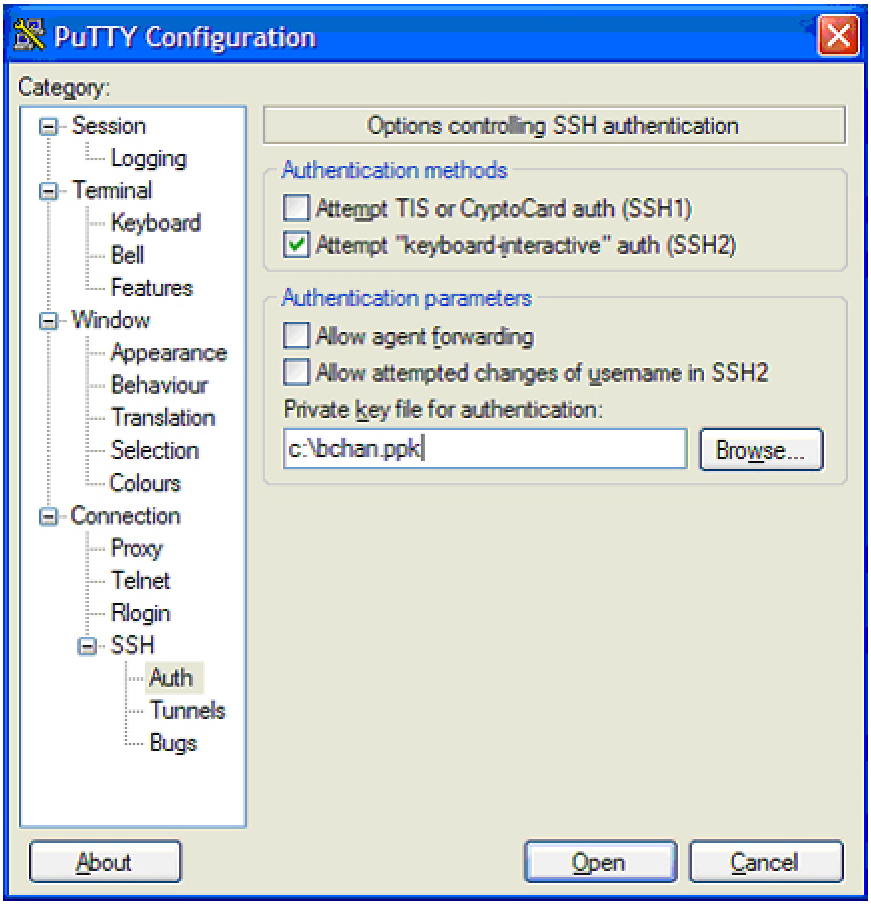
3. After the key is generated, replace the key comment with your iLO 2 user name (the user name is case-sensitive).

4. Select all the text in the public key area. Copy the key and paste it into a Notepad session.
5. Return to the PuTTY Key Generator utility.
6. Click **Save private key** to save, and then enter a file name when prompted, for example, c:\bchan.ppk.
7. Return to Notepad.
8. Save the public key file. Click **File>Save As**, and then enter a file name when prompted, for example, c:\bchan.pub.



```
ssh-rsa
AAAAB3NzaC1yc2EAAAABJQAAAIEAncgToD5qS7/sNpSa12SZf3CO69a
aLrdAeSSTJL7inVjrpjzS/xFXIbcfx4qXkz9M5UU+cyNj6Q/YkfDPm4
OY4X4xzpGJT75qsjbT1NU/sbU4UV+qbD+5PsUdRXhhdxTm0Na6Sy28v
zoaF8RCA4cvfLlvQcphe0xjP80PZ+Z9Jj8= Barnett
```

9. Log into iLO 2 (if not already open).
10. On the iLO 2 SSH Key Administration page, click **Browse**, and then locate the public key file.
11. Click **Authorize Key**. A new Authorized SSH key appears in the list.
12. Launch PuTTY.
13. Select **SSH>Auth**.
14. Click **Browse,** and locate the private key file.
15. Configure your iLO 2 IP, and then click **Open**. iLO 2 prompts for a user name.



Authentication methods

□ Attempt TIS or CryptoCard auth (SSH1)

☑ Attempt "keyboard-interactive" auth (SSH2)

Authentication parameters

□ Allow agent forwarding

□ Allow attempted changes of username in SSH2

Private key file for authentication: c:\bchan.ppk

16. Enter the logon name associated with the public key. The public key in iLO 2 authenticates with the private key in PuTTY. If the keys match, you are logged into iLO 2 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 into iLO 2.

Importing SSH keys generated using ssh-keygen

After generating an SSH key using ssh-keygen and creating the key.pub file, you must do the following:

1. Locate and open the key.pub file with a text editor. The file must begin with the text `ssh-dss` or `ssh-rsa`.
2. At the end of the line, append a " " (space) and the name of a valid iLO 2 user name as shown 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 2 user name to associate the SSH key with the correct user.
3. Save and close the file.

The key file is ready to import and authorize.

5 Group administration and iLO 2 scripting

CPQLOCFG Utility

The CPQLOCFG.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 CPQLOCFG. This utility requires a valid user ID and password with the appropriate privileges. Launch the CPQLOCFG 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://h20000.www2.hp.com/bizsupport/TechSupport/SoftwareDescription.jsp?lang=en&cc=US&swItem=MTX-UNITY-I16117&mode=4&idx=1&prodTypeId=329290&prodSeriesId=397206.

Version 4.0 or later of CPQLOCFG is required to support all features of iLO 3 v1.20 and iLO 4 v1.05 and later.

HP SIM discovers iLO devices as management processors. CPQLOCFG 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 CPQLOCFG to execute RIBCL scripts on iLO. CPQLOCFG must reside on the same server as HP SIM. CPQLOCFG 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\INSIGHT MANAGER\HP\SYSTEMS
  ```

- Syntax errors occur when an invalid XML tag is encountered. When a syntax error occurs, CPQLOCFG 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
  ```

For a complete listing of errors, see “Using RIBCL” (page 75).

Unauthenticated XML query

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 webpage:

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

   The **Management** webpage 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, submit the following command to the iLO web server port (or select option 1) Enabled (iLO+Server Association Data) from iLO):

`https://`*`iloaddress`*`/xmldata?item=all`

A typical response is:

```
<?xml version="1.0" ?>
<RIMP>
<HSI>
<SBSN>0004PBM158</SBSN>
<SPN>ProLiant DL380 G5</SPN>
<UUID>1226570004PBM158</UUID>
<SP>1</SP>
</HSI>
<MP>
<ST>1</ST>
<PN>Integrated Lights-Out 2 (iLO 2)</PN>
<FWRI>1.10</FWRI>
<HWRI>ASIC: 5</HWRI>
<SN>ILO0004PBM158</SN>
<UUID>ILO1226570004PBM158</UUID>
</MP>
</RIMP>



<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>
```

Query definition in HP SIM

To group all of the iLO devices, log in to HP SIM and create a query.

To create the query:

1. Log in to HP SIM.
2. Click **Device** in the navigation bar on the top left side of the screen.
3. Click **Queries→Device**.
4. Locate the **Personal Queries** section in the main window. If a query category exists, proceed to Step 8, otherwise proceed to Step 5.
5. Click **New** to create a new category. For this example, the name of the new category is `RIB Cards`.
6. Click **Create Category**.
7. Click **Queries** to return to the **Device Queries** screen.
8. Click **New** in the appropriate query category to open the **Create/Edit Query** screen where the query definition is created.

9. Enter the query name, for example, `Mgmt Processors`.
10. Select **Device(s) of type**, and then select **Devices by product name**.

    In the criteria window, set the product name to **HP iLO 3**.
11. Select **Device(s) of type**, and then select **Devices by product name**.

    In the criteria windows, set the product name to `HP iLO 2`.
12. Click **type** in the **Query Description** box.

    The **Device Types** window opens.
13. Select **Management Processor** and click **OK**.
14. Click **Save** to return to the **Device Query** screen.
15. Find the newly created query in the appropriate query category, and click the query name to run it for verification.
16. Click **Overview** on the left side of the screen after the verification has taken place.

    The initial page for devices opens.

Application Launch using HP SIM

The Application Launch combines the RIBCL, CPQLOCFG, and the query definition to manage Group Administration of iLO devices.

To create an Application Launch task:

1. Click **Device** in the navigation bar on the top left side of the screen.
2. Click **Tasks** to open the Tasks screen.
3. Click **New Control Task** and select **Application Launch** from the menu to open the **Create/Edit Task** screen.
4. Enter the full path and name for the Lights-Out Configuration Utility in the area provided. If the CPQLOCFG.EXE file is in the root directory of the `C:\` drive, then the path is:

    `C:\cpqlocfg.exe`.
5. Enter the parameters in the area provided. HP SIM requires the following parameters for CPQLOCFG:

    `-F` Full path of the RIBCL file name

    `-V` Verbose message (optional)

    If the RIBCL file is in the root directory of the `C:\` drive, then the parameters are:

    ```
    -F C:\MANAGEUSERS.xml -V
    ```

    NOTE: The `-L` parameter cannot designate an output log file. A default log file named with the DNS name, or the IP address is created in the same directory where CPQLOCFG is launched.
6. Click **Next**.

    A screen displays the options for naming the task, defining the query association, and setting a schedule for the task.
7. Enter a task name in the **Enter a name for this task** box.
8. Select the query that had been created earlier, for example, **Mgmt Processors**.
9. Click **Schedule** to define when the Application Launch task runs.

    A schedule configuration window appears.
10. Click **OK** to set the schedule.

    NOTE: The default schedule for a control task is **Now**.

11. Click **Finish** to save the Application Launch task.
12. Click the **Execute a Task** icon (the green triangle) to execute the Group Administration.

Batch processing using CPQLOCFG

Group Administration is also delivered to iLO through batch processing. The components used by batch processing are CPQLOCFG, 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 2 board
REM Repeat line for each board to be updated
REM
CPQLOCFG -S RIB1 -F C:\...SCRIPT.XML -L RIB1LOG.TXT -V
CPQLOCFG -S RIB2 -F C:\...SCRIPT.XML -L RIB2LOG.TXT -V
CPQLOCFG -S RIB3 -F C:\...SCRIPT.XML -L RIB3LOG.TXT -V
.
.
.
RIBNLOG -S RIBN -F C:\...SCRIPT.XML -L LOGFILE.TXT -V


REM Updating the HP Integrated Lights-Out 3 board
REM Repeat line for each board to be updated
REM
CPQLOCFG -S RIB1 -F C:\...SCRIPT.XML -L RIB1LOG.TXT -V
CPQLOCFG -S RIB2 -F C:\...SCRIPT.XML -L RIB2LOG.TXT -V
CPQLOCFG -S RIB3 -F C:\...SCRIPT.XML -L RIB3LOG.TXT -V
.
.
.
RIBNLOG -S RIBN -F C:\...SCRIPT.XML -L LOGFILE.TXT -V
```

CPQLOCFG overwrites any existing log files.

CPQLOCFG parameters

- The `-S` switch determines the iLO that is to be updated. This switch is either the DNS name or IP address of the target server.

  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 CPQLOCFG.

- The `-F` switch gives the full path location and name of the RIBCL file that contains the actions to be performed on the board.
- The `-U` and `-P` switches specify the user login name and password. These options enable the login information within the script file to be overridden.

Ensure that CPQLOCFG is in a directory referenced by the PATH environment variable. Any log files generated are placed in the same directory as the CPQLOCFG executable.

NOTE:

- If you are not using the command line to enter the user name and password, and are using the XML file, use the double-quotes special character ("). However, if you use " in the password in the XML file, you must change the outside double quotes to single quotes.

  For example:

  `'admin"admin'`

  If you use CPQLOCFG or LOCFG, and enter the password or command on the command line with the `-p` option, you cannot use the double-quotes special character ("). There are two other special characters, the ampersand `(&)` and the less-than sign `(<)` that need to be treated differently. To enter a password or command that uses either of these special characters requires the user to put double-quotes around the password.

  For example:

  `"admin&admin"` or `"admin<admin"`

- If you use LOCFG and enter the password or command on the command line with the `-i` option, you do not need double-quotes around the password.

  For example:

  `admin&admin` or `admin<admin`

  The password or command does not work with the double-quotes if you use the `-i` option.

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

- The `-L` switch 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 CPQLOCFG.

  NOTE: Do not use this switch if launching from HP SIM.

  The output values may need to be modified to match the RIBCL syntax.

  The `–L` switch cannot designate an output log file. A default log file named with the DNS name or the IP address is created in the same directory where CPQLOCFG is launched.

- The optional `-V` switch turns on the verbose message return. The resulting log file contains all commands sent to the Remote Insight board, all responses from the Remote Insight board, and any errors. By default, only errors and responses from GET commands are logged without this switch.
- 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.

  For example:

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

  From the command line, enter:

  ```
  cpqlocfg -f filename -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 variable name is 48 characters.

Web agent example:

```
<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>
```

Invoke the script using:

```
cpqlocfg -s iLO-ip-name -f mod_snmp_im_settings.xml -t
WebAgent='"Your_Value_Here"'
```

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

For information on the syntax of the XML data files, see "Using RIBCL" (page 75)).

Sample XML scripts are available on the HP website at http://www.hp.com/servers/lights-out.

For information on the syntax of the XML data files, see "Using RIBCL" (page 75).

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

For information on the syntax of the XML data files, see "Using RIBCL" (page 75). Download sample XML scripts from the HP website at http://www.hp.com/go/ilo. Click **iLO Sample Scripts** under **iLO Support and Downloads**.

6 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 the `cpqlocfg.exe` to assist deployment efforts. Administrators using a non-Windows client can use Perl scripts to send XML scripts to the Lights-Out devices. Administrators can also use Perl to perform more complex tasks than `cpqlocfg.exe` 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. Sample XML scripts for Lights-Out devices and a sample Perl script are available on the HP website at http://www.hp.com/servers/lights-out in the Best Practices section.

XML enhancements

Previous versions of iLO 2 firmware do not return properly formatted XML syntax. If the iLO 2 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 CPQLOCFG scripting utility. The latest version of CPQLOCFG is 2.28.

If you are using a utility other than `cpqlocfg.exe` (such as Perl), the following steps might help ensure that the iLO 2 firmware returns properly formatted XML. You must incorporate `<LOCFG version="2.21">` into the script sent to iLO 2. 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.

- 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="2.21">' . "\r\n";
  …
  ```

- XML script modification

  ```
  <!-- The bold line could be added for the return of properly formatted XML. -->
  <LOCFG version="2.21"/>
  <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");
 rint "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 will time out and disconnect.

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 will not accept additional XML tags after a syntax error occurs. To send additional XML, a new connection must be established.

7 Virtual Media scripting

Scripting Web server requirements

Virtual Media scripting uses a media image that is stored and retrieved from a Web server accessible from the management network. The web server must be a HTTP 1.1 compliant server that supports the Range header. Furthermore, for write access to the file, the Web server must support DAV and must support the Content-Range header for DAV transactions. If the Web server does not meet the requirements for DAV, a helper CGI program may be used. The Web server may optionally be configured for basic HTTP authentication SSL support, or both.

Web Server	Read Support	Write Support	Authorization	SSL Support
Microsoft IIS 5.0	Yes	Yes*	Not tested	Not Tested
Apache	Yes	Yes	Yes	Yes
Apache/Win32	Yes	Yes	Yes	Yes

*IIS does not support Content-Range for DAV transactions. A CGI helper program must be used for write support.

Using virtual media scripting

Virtual media scripting is a method for controlling virtual media devices without going through the browser. Scriptable virtual media supports insert, eject, and status commands for floppy, USB key, and CD/DVD-ROM images.

Virtual media scripting enables you to use methods other than a browser to configure iLO 2 for virtual media use. iLO 2 can be configured remotely using `CPQLOCFG` XML commands, locally using `HPONCFG` XML commands, or locally using the `HPLOVM` utility that replaces the `VFLOP` utility from the SmartStart Scripting toolkit.

NOTE: Virtual media scripting does not operate Virtual Media using the browser. Likewise, the browser does not support scripting capabilities. For example, a floppy disk mounted using the browser cannot later be dismounted using the scripting interface.

The XML commands enable you to configure virtual media in the same manner as the virtual media applet. However, the actual image is located on a Web server on the same network as iLO 2. After the image location is configured, iLO 2 retrieves the virtual media data directly from the web server.

NOTE: USB key drives must be used with the floppy keyword syntax.

`HPLOVM.EXE` is a new scripting utility that enables you to script insert, eject, and set boot options for virtual media devices. `HPLOVM` is intended to be used in place of the `VFLOP.exe` utility, which is part of the SmartStart Scripting Toolkit.

Command line syntax:

```
HPLOVM [-device <floppy | cdrom>] [-insert <url>] [-eject] [-wp <y | n>]
[-boot <once | always | never>] [-mgmt <ilo | riloe>] [-ver] [-?]
```

Command Line Input	Result
`[-device <floppy	cdrom>]`	Defines which virtual media device is active.
`[-insert <url>]`	Defines the location of the virtual media image to connect.

Command Line Input	Result
`[-eject]`	Ejects the media that is currently connected through the virtual media drive. The virtual media drive is still connected, but no media is present in the drive.
`[-wp <y | n>]`	Defines the write-protected status of the Virtual Floppy/USB key drive. This argument has no effect on the Virtual CD-ROM drive.
`[-boot <once | always | never>]`	Defines how the virtual media drive is used to boot the target server.
`[-mgmt <ilo | riloe>]`	Defines which management processor is being used with LOVM utility. If RILOE is specified, the VFLOP.EXE utility is used. The default setting of this argument is iLO 2.
`[-ver]`	Displays the HPLOVM utility version.
`[-?]`	Displays help information.

Using Virtual Media on Linux servers through an SSH connection

1. Log in to the iLO 2 through SSH (SSH connection from another Linux system, using PuTTY from a Windows operating system).
2. Enter `vm` to display a list of commands available for Virtual Media.
3. Enter `vm floppy insert http://<address>/<image-name>`.

   The image is available to boot from, but is not seen by the operating system. Boot options can be configured with `vm floppy set <`*option*`>`, the options are `boot_once`, `boot_always`, and `no_boot`). Boot options from a USB key drive are only valid on servers with ProLiant USB key drive support.
4. Enter `vm floppy set connect` to make the floppy or key drive available to the operating system.
5. Enter `vm floppy get` to display the current status. For example:

   ```
   VM Applet = Disconnected
   Boot Option = BOOT_ONCE
   Write Protect = Yes
   Image Inserted = Connected
   ```

   The status of the Virtual Media applet is always disconnected, unless a Virtual Floppy/USBKey or CD-ROM is connected through the graphical iLO 2 interface.

   The Virtual Floppy/USBKey can be disconnected using the `vm floppy set disconnect` or `vm floppy eject` commands. To connect or disconnect a Virtual CD-ROM, use `cdrom` instead of `floppy`.

The link to the Virtual Floppy/USBKey or CD-ROM image must be a URL. You cannot specify a drive letter. The CD-ROM image must be in the `.iso` format. The floppy image can be created from a physical floppy by using `rawrite` or the image creation tool included with the Virtual Media applet in the graphical iLO 2 interface.

Mounting Virtual Media on the Linux server:

1. Use `lsmod` to check that the following modules are loaded:
   - `usbcore`
   - `usb-storage`
   - `usb-ohci`
   - `sd_mod`

If any of the modules are missing, use `modprobe` *<module>* to load them.

2. Mount the drive using one of following:
   - `mount /dev/sda /mnt/floppy -t vfat` – Mounts a virtual floppy.
   - `mount /dev/sda1 /mnt/keydrive` – Mounts a virtual USB key drive.
   - `mount /dev/cdrom1 /mnt/cdrom` – Mounts a virtual CD-ROM on a Red Hat system. Use `/dev/cdrom` if the server does not have a locally attached CD-ROM drive.
   - `mount /dev/scd0 /mnt/cdrom` – Mounts a virtual CD-ROM on a SUSE system.

Virtual media image files

Valid diskette images may be raw disk images, produced by the iLO 2 Virtual Media applet, the UNIX utility dd, the DOS utility rawrite, or images created by the `CPQIMAGE` utility. CD-ROM images must be ISO-9660 file system images. No other type of CD-ROM images are supported.

The images created by the Virtual Media applet are raw disk images in the case of diskettes and ISO-9660 images in the case of CD-ROMs. Many CD-ROM burning utilities can create ISO-9660 images. Refer to the documentation of your utility for additional information.

CGI helper application

The following perl script is an example of a CGI helper application that allows diskette writes on Web servers that cannot perform partial writes. When using the helper application, the iLO 2 firmware posts a request to this application with three parameters:

- The file parameter contains the name of the file provided in the original URL.
- The range parameter contains an inclusive range (in hexadecimal) designating where to write the data.
- The data parameter contains a hexadecimal string representing the data to be written.

The helper script must transform the file parameter into a path relative to its working directory. This function might involve prefixing it with "../," or it might involve transforming an aliased URL path into the true path on the file system. The helper script requires write access to the target file. Diskette image files must have the appropriate permissions.

Example:

```
#!/usr/bin/perl
use CGI;
use Fcntl;
#
# The prefix is used to get from the current working
# directory to the location of the image file#
my ($prefix) = "..";
my ($start, $end, $len, $decode);
# Get CGI data
my $q = new CGI();
# Get file to be written
my $file =  $q->param('file');
# Byte range
$range = $q->param('range');
# And the data
my $data =  $q->param('data');
#
# Change the filename appropriately
```

```
#
$file = $prefix . "/" . $file;
#
# Decode the range
#
if ($range =~ m/([0-9A-Fa-f]+)-([0-9A-Fa-f]+)/) {
 $start = hex($1);
 $end = hex($2);
 $len = $end - $start + 1;
}
#
# Decode the data (it's a big hex string)
#
$decode = pack("H*", $data);
#
# Write it to the target file
#
sysopen(F, $file, O_RDWR);
binmode(F);
sysseek(F, $start, SEEK_SET);
syswrite(F, $decode, $len);
close(F);
```

Setting up IIS for scripted virtual media

Before setting up IIS for scripted media, make sure IIS is operational. Use Internet Information Services (IIS) Manager to set up a simple website and verify that it is working correctly by browsing to the site.

1. Configure IIS to serve diskette or ISO-9660 CD-ROM images for read-only access.
   a. Add a directory to your website and place your images in the directory.
   b. Verify that IIS can access the MIME type for the files you are serving. For example, if you name your diskette images with the extension .img, you must add a MIME type for that extension. Use the IIS manager to access the Properties dialog of your website. On the HTTP Headers tab, click **MIME Types** to add additional MIME types.

      HP recommends you add the following types:

      `.imgapplication/octet-stream`

      `.isoapplication/octet-stream`
2. Configure IIS for read/write access.
   a. Install Perl (if necessary).
   b. Create a directory on your web site to hold the virtual media helper script, and copy the script to that location.
   c. Using the properties page for your directory, under Application Settings, click **Create** to create an application directory.

      The icon for you directory in IIS manager must change from a folder to a gear.
   d. Set Execute Permissions to **Scripts Only.**
   e. Verify that Perl is set up as a script interpreter. Click **Configuration** on the properties page to view the application associations. Perl must be configured as

      `pl c:\perl\bin\perl.exe "%s" %s GET,HEAD,POST.`

f. Verify your Web Service Extensions allows Perl scripts to execute. If not, click **Web Service Extensions** and set Perl CGI Extension to **Allowed.**

g. Verify the prefix variable in the helper script is set correctly.

Additional information:

The basic format for the XML insert command is:

```
<INSERT_VIRTUAL_MEDIA DEVICE="device" IMAGE_URL="http://servername/path/to/file"/>
```

- The device field can be either FLOPPY or CDROM.
- The IMAGE_URL can be either an http or https URL to a diskette or CD_ROM image.

The basic format of the URL is:

```
protocol://user:password@servername:port/path,helper-script
```

where:

- `protocol` – Mandatory. Can be either http or https.
- `user:password` – Optional. When present, http basic authorization is used.
- `servername` – Mandatory Either the hostname or IP address of the web server.
- `port` – Optional. Specifies a web server on a non-standard port.
- `path` – Mandatory. Refers to the image file being accessed.
- `helper-script` – Optional. Refers to the location of the helper script on IIS web servers.

Helper script:

The following Perl script is a sample CGI helper script:

```
#!/usr/bin/perl
use CGI;
use Fcntl;
#
# The prefix is used to get from the current working directory
# to the location of the image file you are writing
#
my ($prefix) = "c:/inetpub/wwwroot";
my ($start, $end, $len, $decode);
my $q = new CGI();      # Get CGI data
my $file =  $q->param('file'); # File to be written
my $range = $q->param('range'); # Byte range to be written
my $data =  $q->param('data'); # Data to be written
#
# Merges the filename correctly
#
$file = $prefix . "/" . $file;
#
# Decode the range
#
if ($range =~ m/([0-9A-Fa-f]+)-([0-9A-Fa-f]+)/) {
$start = hex($1);
$end = hex($2);
$len = $end - $start + 1;
}
#
```

```
# Decode the data (a large hex string)
#
$decode = pack("H*", $data);
#
# Write it to the target file
#
sysopen(F, $file, O_RDWR);
binmode(F);
sysseek(F, $start, SEEK_SET);
syswrite(F, $decode, $len);
close(F);
print "Content-Length: 0\r\n";
print "\r\n";
```

8 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

- Windows
  - Windows Server 2008 R1 and R2
  - Windows Server 2011
  - Windows Vista (for blade servers)
  - Windows 7 (for blade servers)
- Red Hat Linux
  - Red Hat Linux Enterprise Linux 3
  - Red Hat Linux Enterprise Linux 4
  - Red Hat Linux Enterprise Linux 5
  - Red Hat Linux Enterprise Linux 6
- SUSE Linux
  - 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://h20000.www2.hp.com/bizsupport/TechSupport/DriverDownload.jsp?prodNameId=1135772&lang=en&cc=us&taskId=135&prodTypeId=18964&prodSeriesId=1146658.

http://h20000.www2.hp.com/bizsupport/TechSupport/DriverDownload.jsp?prodNameId=4154847&lang=en&cc=us&taskId=135&prodSeriesId=4154735&prodTypeId=18964

- Windows-based servers—The iLO Management Interface Driver must be loaded on the server.
- Linux-based servers—The iLO Management interface driver (`hpilo`) must be loaded on the server and the health driver package (`hp-health rpm`) must be installed. The Intelligent Provisioning operating system installation process normally installs this 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://h20000.www2.hp.com/bizsupport/TechSupport/DriverDownload.jsp?prodNameId=4154847&lang=en&cc=us&taskId=135&prodSeriesId=4154735&prodTypeId=18964

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 ProLiant Support Pack.

Windows server installation

HPONCFG installs automatically when the ProLiant Support Pack 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 ProLiant Support Pack 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-4.0.0-2.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 65).

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/ilo. Click **iLO Sample Scripts** under **iLO Support and 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. Any data is accepted in these fields. 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:

`/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
`/w` *`filename`*	Writes the iLO configuration obtained from the device to the XML output file named *`filename`*
`/l` *`filename`*	Logs replies to the text log file that has name *`filename`*
`/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 options 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**→**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 “Using RIBCL” (page 75).

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]
| /w filename [/m firmwarelevel]
| /get_hostinfo [/m firmwarelevel]
| /mouse [/dualcursor][/allusers]  ]
```

For more information on using these parameters, see "HPONCFG command line parameters" (page 67).

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 67).

Obtaining the basic configuration

Use HPONCFG to obtain a basic configuration from iLO 2,iLO 3, and iLO 4 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 = "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>
```

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>
<SESSION_TIMEOUT VALUE="15"/>
<ILO_FUNCT_ENABLED VALUE="Y"/>
<F8_PROMPT_ENABLED VALUE="Y"/>
<F8_LOGIN_REQUIRED VALUE="N"/>
<TELNET_ENABLE VALUE="N"/>
<PASSTHROUGH_CONFIG VALUE="1"/>
<HTTPS_PORT VALUE="443"/>
<HTTP_PORT VALUE="80"/>
<REMOTE_CONSOLE_PORT VALUE="23"/>
<TERMINAL_SERVICES_PORT VALUE="3389"/>
<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"/>
<REMOTE_KEYBOARD_MODEL VALUE="US"/>
<RBSU_POST_IP VALUE="Y"/>
<HIGH_PERFORMANCE_MOUSE VALUE="Automatic">
<REMOTE_CONSOLE_ACQUIRE VALUE="N"/>
</GET_GLOBAL_SETTINGS>
```

```
<GET_GLOBAL_SETTINGS>
<SESSION_TIMEOUT VALUE="15"/>
<ILO_FUNCT_ENABLED VALUE="Y"/>
<F8_PROMPT_ENABLED VALUE="Y"/>
<F8_LOGIN_REQUIRED VALUE="N"/>
<TELNET_ENABLE VALUE="N"/>
<PASSTHROUGH_CONFIG VALUE="1"/>
<HTTPS_PORT VALUE="443"/>
<HTTP_PORT VALUE="80"/>
<REMOTE_CONSOLE_PORT VALUE="17990"/>
<TERMINAL_SERVICES_PORT VALUE="3389"/>
<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"/>
<REMOTE_KEYBOARD_MODEL VALUE="US"/>
<RBSU_POST_IP VALUE="Y"/>
<HIGH_PERFORMANCE_MOUSE VALUE="Automatic">
<REMOTE_CONSOLE_ACQUIRE VALUE="N"/>
</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 version 1.2 and later 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 these variables when you run HPONCFG by using the substitute option. The argument must be a string or variable name and value pairs separated by a comma (,). The variable name and its value must be separated by an equal sign (=):

```
hponcfg /f add_user.xml /s username=test
user,login=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
  ```

User commands

User commands enable you to view and modify user settings. Table 1 (page 73) 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 1 User Command Properties

Property	Access	Description
username	read/write	Corresponds to the iLO 2, iLO 3, andiLO 4 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 2iLO 3iLO 4 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.

For example

The current path is:

`/map1/accounts1`.

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

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

- `set` *`lname1`* `username=lname2 password=password1 name=name2 group=admin,configure,oemhp_power,oemhp_vm,oemhp_rc`

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

9 Using RIBCL

Overview of the RIBCL

RIBCL enables you to write XML scripts to configure and manage iLO 2 configuration settings, user accounts, directory settings, server settings, and HP SIM SSO settings. You can download sample scripts for all iLO 2 commands described in this section from the HP website at http://www.hp.com/servers/lights-out. 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, do write comments in the command. If a comment falls in the command line, an error message is generated. Unless otherwise specified, examples in this guide are specifically for iLO 2 firmware version 1.10 and later.

The "Using RIBCL" section describes the XML commands and their parameters common to most LOM products and servers. For more information about the ProLiant BL p-class server and rack XML commands, see the *HP Integrated Lights-Out 2 User Guide*.

XML header

The XML header ensures the connection is an XML connection, not an HTTP connection. The XML header is built into the cpqlocfg utility and has the following format:

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

Data types

The three data types that are 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 may start with either a double or single quote and it must end with the same type of quote. The string may contain a quote if it is different from the string delimiter quotes.

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

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`, `y`, `no`, `n`, `true`, `t`, `false`, and `f`. These strings are not case sensitive.

Response definitions

Every command that is sent to the iLO 2 generates a response. The response indicates whether the command succeeded or failed. Some commands generate additional information. The additional information is displayed in execution sequence, provided no errors occurred.

Example:

```
<RESPONSE
```

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

- RESPONSE

  This tag name indicates that the iLO 2 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 the iLO 2.

- STATUS

  This parameter contains an error number. The number 0x0000 indicates that there is no error.

- MSG

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

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 is returned if the string and the version do not match. The preferred value for the VERSION parameter is "2.0." The VERSION parameter is no longer checked for an exact match; however, this parameter can never be blank.

RIBCL runtime errors

A possible RIBCL error message is:

```
Version must not be blank.
```

LOGIN

The LOGIN command provides the information that is used to authenticate the user whose permission level will be used when performing RIBCL actions. The specified user must have a valid account on the respective iLO 2 to execute RIBCL commands. The user's privileges are checked against the required privilege for a particular command, and an error is returned if the privilege level does not match.

Example:

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

Alternatively, the CPQLOCFG utility can specify the login information as parameters on its command line:

```
cpqlocfg  -u <username> -p <password>
```

When using this format, the utility returns an `Overriding credentials` warning message but still shows the error log message entry as `Login name must not be blank.`

LOGIN parameters

USER_LOGIN is the login name of the user account. This parameter is case sensitive and must never 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

The 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 database is open for writing by another application, then this call will fail.

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 2 information. Read mode prevents modification of the iLO 2 information.

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 an existing user's 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 administrative privilege.

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

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="loginname" PASSWORD="password">
<USER_INFO MODE="write">
<ADD_USER
USER_NAME="User"
USER_LOGIN="username" PASSWORD="password">
<ADMIN_PRIV value ="No"/>
<REMOTE_CONS_PRIV value ="Yes"/>
<RESET_SERVER_PRIV value ="No"/>
<VIRTUAL_MEDIA_PRIV value ="No"/>
<CONFIG_ILO_PRIV value ="No"/>
</ADD_USER>
```

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

ADD_USER parameters

USER_NAME – 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 case sensitive and must never be blank.

USER_LOGIN – The name used to gain access to the respective iLO 2. This parameter can be a combination of any printable characters up to a maximum length of 39 characters. This parameter is case sensitive and must never be blank.

PASSWORD – 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 2 Global Settings and has a default value of eight characters.

ADMIN_PRIV – A Boolean parameter that allows 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 – 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 must have this privilege. If this parameter is used, the Boolean string value must never be left blank. Omitting this parameter denies the user access to Remote Console functionality.

RESET_SERVER_PRIV – 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 must have this privilege. If this parameter is used, the Boolean string value must never be left blank. Omitting this parameter prevents the user from manipulating the server power settings.

VIRTUAL_MEDIA_PRIV – 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 must have this privilege. If this parameter is used, the Boolean string value must never be left blank. Omitting this parameter denies the user virtual media privileges.

CONFIG_ILO_PRIV – A Boolean parameter that allows 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 must have this privilege. If this parameter is used, the Boolean string value must never be blank. Omitting this parameter prevents the user from manipulating the current iLO 2 configuration.

The following parameters are not applicable to a user's privileges in the iLO firmware versions 1.40 and higher and iLO 2 firmware versions 1.1x and higher. The parameters will parse correctly, but user privileges will not be affected.

VIEW_LOGS_PRIV – A Boolean parameter that gives the user permission to view the iLO 2 system logs. This parameter is optional, and the Boolean string must be set to `yes` if the user must be allowed to view logs. If this parameter is used, the Boolean string value must never be blank.

CLEAR_LOGS_PRIV – A Boolean parameter that gives the user permission to clear the event log. This parameter is optional, and the Boolean string must be set to `yes` if the user must be allowed to clear the iLO 2 event log. If this parameter is used, the Boolean string value must never be blank.

EMS_PRIV – A Boolean parameter that gives the user permission to use the Windows Server 2003 EMS service. This parameter is optional, and the Boolean string must be set to `yes` if the user must be allowed to use EMS services. If this parameter is used, the Boolean string value must never be blank.

UPDATE_ILO_PRIV – A Boolean parameter that allows the user to copy a new firmware image into the iLO 2 system ROM. This parameter is optional, and the Boolean string must be set to `Yes` if the user must be allowed to configure iLO 2. If this parameter is used, the Boolean string value must never be blank.

CONFIG_RACK_PRIV – A Boolean parameter that gives the user permission to configure and manage the server rack resources. This parameter is applicable to ProLiant BL p-Class servers only. This parameter is optional, and the Boolean string must be set to `Yes` if the user must be allowed to manage or configure rack resources. If this parameter is used, the Boolean string value must never be blank.

DIAG_PRIV – A Boolean parameter that gives the user permission to view diagnostic information about iLO 2. This parameter is optional, and the Boolean string must be set to `Yes` if the user must have diagnostic privileges. If this parameter is used, the Boolean string value must never be blank.

ADD_USER runtime errors

The 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's 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 administrative privilege.

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 never be blank.

DELETE_USER runtime errors

The 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.

DELETE_CURRENT_USER

The DELETE_CURRENT_USER command is used to remove the user account defined by the USER_LOGIN attribute. 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 administrative privilege.

This command is intended for customers who desire to delete all user accounts on iLO 2.

Example:

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

DELETE_CURRENT_USER parameters

None

DELETE_CURRENT_USER runtime errors

The possible DELETE_CURRENT_USER errors include:

User information is open for read-only access. Write access is required for this operation.

DELETE_SSH_KEY

The DELETE_SSH_KEY command deletes any SSH keys that are associated with the USER_LOGIN from iLO 2. The DELETE_SSH_KEY command is implemented as a subcommand and must appear within a MOD_USER command block.

This command requires CPQLOCFG.EXE version 2.27 or later.

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>
```

DELETE_SSH_KEY parameters

This command does not have parameters.

DELETE_SSH_KEY runtime errors

Possible DELETE_SSH_KEY runtime errors include:

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

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 administrative privilege to retrieve other user accounts; else the user can only view their individual account information.

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 never be blank.

GET_USER runtime errors

The 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's 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 administrative privilege. A user without the administrative privilege can only modify their individual account password.

Example:

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

USER_LOGIN – The login name of the user account. This parameter is case sensitive and must never be blank.

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

USER_NAME – The actual name of the user to be added. This parameter is case sensitive, can be any valid string, and has a maximum length of 39 characters. This string is used for display only and must never be blank.

USER_LOGIN – The name used to gain access to the respective iLO 2. This parameter can be a combination of any printable characters up to a maximum length of 39 characters. This parameter is case sensitive and must never be blank.

PASSWORD – 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 2 Global Settings and has a default value of eight characters.

ADMIN_PRIV – A Boolean parameter that allows 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 – 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 must have this privilege. If this parameter is used, the Boolean string value must never be left blank. Omitting this parameter denies the user access to Remote Console functionality.

RESET_SERVER_PRIV – 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 must have this privilege. If this parameter is used, the Boolean string value must never be left blank. Omitting this parameter prevents the user from manipulating the server power settings.

VIRTUAL_MEDIA_PRIV – 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 must have this privilege. If this parameter is used, the Boolean string value must never be left blank. Omitting this parameter denies the user virtual media privileges.

CONFIG_ILO_PRIV – A Boolean parameter that allows 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 must have this privilege. If this parameter is used, the Boolean string value must never be blank. Omitting this parameter prevents the user from manipulating the current iLO 2 configuration.

MOD_USER runtime errors

The 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 will return 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 administrative privilege to retrieve all user accounts.

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 will return all local users 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 administrative privilege to execute this command.

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 message 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 2 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 will fail.

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 2 information. Read mode prevents modification of the iLO 2 information.

Example:

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

Clear iLO 2 event log example:

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

CERT_SIGNATURE_ALGORITHM

Currently, iLO 2 firmware defaults to the MD5 message digest algorithm when generating a self signed SSL certificate. The MD5 message digest is no longer considered a secure message digest algorithm by security experts because of its vulnerability to collisions. As a result, some customers have requested that iLO 2 use the stronger message digest algorithm named SHA1 instead of MD5 when it creates a self signed certificate. The CERT_SIGNATURE_ALGORITHM command was introduced in iLO 2 2.00 firmware to allow customers to configure iLO 2 to generate a MD5 or SHA1 self signed certificate.

NOTE: iLO 2 firmware will reset after the CERT_SIGNATURE_ALGORITHM command successfully completes.

Examples:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE = "write">
<CERT_SIGNATURE_ALGORITHM ="SHA1"/>
</RIB_INFO>
</LOGIN>
</RIBCL>
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE = "write">
<CERT_SIGNATURE_ALGORITHM ="MD5"/>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

CERT_SIGNATURE_ALGORITHM parameters

CERT_SIGNATURE_ALGORITHM – “MD5” to generate an MD5 self signed certificate. “SHA1” to generate a SHA1 self signed certificate.

CERT_SIGNATURE_ALGORITHM runtime errors

- RIB information is open for read-only access. Write access is required for this operation.
- You must have a “Configure iLO 2 Settings” privilege level in order to change the signature algorithm.
- The certificate signing algorithm parameter must be "MD5" or "SHA1".

RESET_RIB

The RESET_RIB command is used to reset iLO 2. 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 2 privilege to execute this command.

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 2 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 2 Event Log, use the RIB_INFO command block. To retrieve the Integrated Management log use, the SERVER_INFO command block.

Examples:

- iLO 2 Event Log example:

  ```
  <RIBCL version="2.21">
  <LOGIN USER_LOGIN="adminname" PASSWORD="password">
  <RIB_INFO MODE="READ">
  <GET_EVENT_LOG />
  </RIB_INFO>
  </LOGIN>
  </RIBCL>
  ```

- Integrated Management log example:

  ```
  <RIBCL version="2.21">
  <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="2.21">
<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 2 availability.
  - FAILED – Iindicates an issue 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.
  - 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 2, 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 2 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 2 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 2 privilege to execute this command.

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. You must have the Configure iLO 2 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 Integrated Lights-Out 2 User Guide*.

Windows example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO_MODE="write">
<COMPUTER_LOCK_CONFIG>
<COMPUTER_LOCK value="windows"/>
</COMPUTER_LOCK_CONFIG>
</RIB_INFO_MODE="write">
</LOGIN>
</RIBCL>
```

Custom example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO_MODE="write">
<COMPUTER_LOCK_CONFIG>
<COMPUTER_LOCK value="custom"/>
<COMPUTER_LOCK key="l_gui,l"/>
</COMPUTER_LOCK_CONFIG>
</RIB_INFO_MODE="write">
</LOGIN>
</RIBCL>
```

Disabled example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO_MODE="write">
<COMPUTER_LOCK_CONFIG>
<COMPUTER_LOCK value="disabled"/>
</COMPUTER_LOCK_CONFIG>
</RIB_INFO_MODE="write">
</LOGIN>
</RIBCL>
```

COMPUTER_LOCK_CONFIG parameters

The computer lock on Windows-based operating systems defaults to the Windows logo + **L** keys. You can customize Linux and other operating systems by setting the `<COMPUTER_LOCK value="custom"/>` parameter. For example:

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

COMPUTER_LOCK_CONFIG runtime errors

The 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 2 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.

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:

```
<ENABLE_NIC VALUE="Y"/>
<SHARED_NETWORK_PORT VALUE="N"/>
<VLAN ENABLED="N"/>
<VLAN_ID VALUE="0"/>
<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_WINS_SERVER VALUE="Y"/>
<DHCP_STATIC_ROUTE VALUE="Y"/>
<DHCP_DOMAIN_NAME VALUE="Y"/>
<REG_WINS_SERVER VALUE="Y"/>
<REG_DDNS_SERVER VALUE="Y"/>
<PING_GATEWAY VALUE="N"/>
<MAC_ADDRESS VALUE="00:12:79:a5:25:42"/>
<IP_ADDRESS VALUE="170.100.8.10"/>
<SUBNET_MASK VALUE="255.255.255.0"/>
<GATEWAY_IP_ADDRESS VALUE="170.100.8.254"/>
<DNS_NAME VALUE="ILO000FWDC451"/>
<DOMAIN_NAME VALUE="ferrari.com"/>
<PRIM_DNS_SERVER VALUE="172.25.163.199"/>
<SEC_DNS_SERVER VALUE="0.0.0.0"/>
<TER_DNS_SERVER VALUE="0.0.0.0"/>
<PRIM_WINS_SERVER VALUE="172.25.163.199"/>
<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"/>
</GET_NETWORK_SETTINGS>
```

A possible unsuccessful request is:

```
<RESPONSE
```

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

MOD_NETWORK_SETTINGS

MOD_NETWORK_SETTINGS is used 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 2 privilege to execute this command.

The iLO 2 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 2.

The iLO 2 management processor reboots to apply the changes after the script has successfully completed. If connectivity to iLO 2 is lost, use RBSU to reconfigure the network settings to values that are compatible with the network environment.

Example:

```
<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"/>
<!-- 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>
```

Modify VLAN example:

```
<RIBCL version="2.21">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="WRITE" >
<MOD_NETWORK_SETTINGS>
<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="2.21">
<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="2.21">
<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="N"/>
</MOD_NETWORK_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

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 2. 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. For iLO, the Shared Network Port feature is only available on servers with hardware, NIC firmware, and iLO firmware that supports this feature. For iLO 2, the Shared Network Port is supported on all firmware versions, and the feature is available if the hardware is supported.

ProLiant server	Minimum iLO firmware version
DL320G3	1.64
DL360 G4	1.60
DL360 G4	1.64
DL380 G4	1.60
DL385 G1	1.64
DL580 G3	1.64
ML370 G4	1.60
ML570 G3	1.64

When using the iLO 2 Shared Network Port, flashing the iLO 2 firmware through the XML interface takes approximately 7 minutes to complete. Flashing the firmware using Shared Network Port with iLO 2 does not take any longer to complete than using the dedicated iLO 2 management port.

VLAN_ENABLED VALUE – Enables iLO 2 Shared Network Port VLAN ID tagging. The possible values are yes or No.

VLAN_ID VALUE – Sets the VLAN ID value. Values must be between 1 and 4094.

REG_DDNS_SERVER VALUE – Instructs iLO 2 to register the management port with a DDNS server. The possible values are Yes or No.

SPEED_AUTOSELECT – A Boolean parameter to enable or disable the iLO 2 transceiver to auto-detect the speed and duplex of the network. This parameter is optional, and the Boolean string must be set to Yes if this behavior is desired. If this parameter is used, the Boolean string value must never be left blank. The possible values are Yes or No. It is case insensitive.

FULL_DUPLEX – Used to decide if the iLO 2 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 or No. It is case insensitive.

NIC_SPEED – Used to set the transceiver speed if SPEED_AUTOSELECT was set to No. The possible values are 10 or 100. Any other values results in a syntax error.

DHCP_ENABLE – Used to enable DHCP. The possible values are Yes or No. It is case insensitive.

IP_ADDRESS – Used to select the IP address for the iLO 2 if DHCP is not enabled. If an empty string is entered, the current value is deleted.

SUBNET_MASK – Used to select the subnet mask for the iLO 2 if DHCP is not enabled. If an empty string is entered, the current value is deleted.

GATEWAY_IP_ADDRESS – Used to select the default gateway IP address for the iLO 2 if DHCP is not enabled. If an empty string is entered, the current value is deleted.

DNS_NAME – Used to specify the DNS name for the iLO 2. If an empty string is entered, the current value is deleted.

DOMAIN_NAME – Used to specify the domain name for the network where the iLO 2 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. It 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`. It 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`. It 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`. It is case sensitive. This selection is only valid if DHCP is enabled.

REG_WINS_SERVER – Specifies if the iLO 2 must be register with the WINS server. The possible values are `Yes` or `No`. It 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 – 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.

WEB_AGENT_IP_ADDRESS – Specifies the address for the Web-enabled agents. If an empty string is entered, the current value is deleted.

MOD_NETWORK_SETTINGS runtime errors

The 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.

GET_GLOBAL_SETTINGS

The GET_GLOBAL_SETTINGS command requests the respective iLO 2 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`.

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="120">
<ILO_FUNCT_ENABLED VALUE="Y"/>
<F8_PROMPT_ENABLED="Y"/>
<F8_LOGIN_REQUIRED="Y"/>
<REMOTE_CONSOLE_PORT_STATUS VALUE="2"/>
<REMOTE_CONSOLE_ENCRYPTION VALUE="Y"/>
<REMOTE_CONSOLE_ACQUIRE VALUE="Y"/>
<PASSTHROUGH_CONFIG VALUE="3"/>
<HTTPS_PORT VALUE="443"/>
<HTTP_PORT VALUE="80"/>
<REMOTE_CONSOLE_PORT VALUE="23"/>
<TERMINAL_SERVICES_PORT VALUE="3389"/>
<VIRTUAL_MEDIA_PORT VALUE="17988"/>
<MIN_PASSWORD VALUE="8"/>
<AUTHENTICATION_FAILURE_LOGGING VALUE="Enabled-every 3rd failure"/>
<REMOTE_KEYBOARD_MODEL VALUE="US"/>
<SSH_PORT value="22"/>
<SSH_STATUS value="YES"/>
<SERIAL_CLI_STATUS value="3"/>
<SERIAL_CLI_SPEED value="1"/>
</GET_GLOBAL_SETTINGS>
```

A possible `GET_GLOBAL_SETTINGS` return message from iLO 2 1.30 firmware:

```
<GET_GLOBAL_SETTINGS>
<SESSION_TIMEOUT VALUE="0"/>
<ILO_FUNCT_ENABLED VALUE="Y"/>
<F8_PROMPT_ENABLED VALUE="Y"/>
<F8_LOGIN_REQUIRED VALUE="N"/>
<TELNET_ENABLE VALUE="Y"/>
<PASSTHROUGH_CONFIG VALUE="3"/>
<HTTPS_PORT VALUE="443"/>
<HTTP_PORT VALUE="80"/>
<REMOTE_CONSOLE_PORT VALUE="23"/>
<TERMINAL_SERVICES_PORT VALUE="3389"/>
<VIRTUAL_MEDIA_PORT VALUE="17988"/>
```

```
<SSH_PORT VALUE="22"/>
<CONSOLE_CAPTURE_PORT VALUE="17990"/>
<SHARED_CONSOLE_PORT VALUE="9300"/>
<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"/>
<REMOTE_KEYBOARD_MODEL VALUE="US"/>
<RBSU_POST_IP VALUE="Y"/>
<HIGH_PERFORMANCE_MOUSE VALUE="Enabled"/>
<REMOTE_CONSOLE_ACQUIRE VALUE="Y"/>
<CONSOLE_CAPTURE_ENABLE VALUE="Disabled"/>
<CONSOLE_CAPTURE_BOOT_BUFFER_ENABLE VALUE="Disabled"/>
<CONSOLE_CAPTURE_FAULT_BUFFER_ENABLE VALUE="Disabled"/>
<INTERACTIVE_CONSOLE_REPLAY_ENABLE VALUE="Disabled"/>
<CAPTURE_AUTO_EXPORT_ENABLE VALUE="Disabled"/>
<CAPTURE_AUTO_EXPORT_LOCATION VALUE="http://192.168.1.1/folder/capture%h%t.ilo"/>
<CAPTURE_AUTO_EXPORT_USERNAME VALUE=""/>
<CAPTURE_AUTO_EXPORT_PASSWORD VALUE=""/>
<SHARED_CONSOLE_ENABLE VALUE="Enabled"/>
<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 2 privilege to execute this command.

The Lights-Out device (not the server) resets automatically to make changes to port settings effective. Setting the ILO_FUNCT_ENABLED to No disables the management functions of iLO 2 and iLO. If disabled, you must use the iLO Security Override Switch on the server system board and the iLO 2/iLO RBSU (F8 key) to re-enable iLO 2/iLO.

Use CPQLOCFG.EXE version 2.26 or greater with the following scripts.

Example 1:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="write">
<MOD_GLOBAL_SETTINGS>
<SESSION_TIMEOUT value="60"/>
<F8_PROMPT_ENABLED value="Yes"/>
<HTTP_PORT value="80"/>
<HTTPS_PORT value="443"/>
<REMOTE_CONSOLE_PORT value="23"/>
<REMOTE_CONSOLE_PORT_STATUS value="2"/>
<!-- Firmware support information for next 6 tags: -->
<!-- iLO 2 - All versions. -->
<!-- iLO - Version 1.50 and later. -->
<!-- RILOE II - None.   -->
```

```
<REMOTE_CONSOLE_ENCRYPTION value="Yes"/>
<MIN_PASSWORD value="8"/>
<ILO_FUNCT_ENABLED value="Yes"/>
<VIRTUAL_MEDIA_PORT value="17988"/>
<F8_LOGIN_REQUIRED value="No"/>
<REMOTE_KEYBOARD_MODEL value="US"/>
<!-- Firmware support information for next 2 tags: -->
<!-- iLO 2 - All versions. -->
<!-- iLO - Version 1.50 and later. -->
<!-- RILOE II - Version 1.20 and later. -->
<PASSTHROUGH_CONFIG value="1"/>
<TERMINAL_SERVICES_PORT value="3389"/>
<!-- Firmware support information for next 5 tags: -->
<!-- iLO 2 - All versions. -->
<!-- iLO - Version 1.60 and later. -->
<!-- RILOE II - None. -->
<SSH_PORT value="22"/>
<SSH_STATUS value="Yes"/>
<SERIAL_CLI_STATUS value="3"/>
<SERIAL_CLI_SPEED value="1"/>
<RBSU_POST_IP value="Y"/>
<!-- Firmware support information for next tag: -->
<!-- iLO 2 - All versions. -->
<!-- iLO - None. -->
<!-- RILOE II - None. -->
<TELNET_ENABLE value="yes"/>
<!-- Firmware support information for next tag: -->
<!-- iLO 2 - All versions. -->
<!-- iLO - Version 1.75 and later. -->
<!-- RILOE II - None. -->
<!-- It can have the following three values -->
<!-- Disabled: Value = "No" -->
<!-- the mouse uses "relative" coordinates mode, -->
<!-- compatible with most host operating systems. -->
<!-- Enabled: Value = "Yes" -->
<!-- the mouse uses "absolute" coordinates mode, -->
<!-- eliminating synchronization issues -->
<!-- on supported operating systems -->
<!-- Automatic: Value = "Automatic" -->
<!-- iLO picks the appropriate mouse mode when -->
<!-- the iLO 2 driver is loaded on the host operating system.-->
<!-- The selected mode is persistent unless a different -->
<!-- mode is indicated when the OS driver is loaded or -->
<!-- if you choose another setting. -->
<HIGH_PERFORMANCE_MOUSE value="Automatic" />
<!-- Firmware support information for next 13 tags: -->
<!-- iLO 2 - Version 1.30 and later. -->
<!-- iLO - None.  -->
```

```
<!-- RILOE II - None. -->
<ENFORCE_AES value="Y"/>
<AUTHENTICATION_FAILURE_LOGGING value="3"/>
<CONSOLE_CAPTURE_ENABLE value="Yes" />
<CONSOLE_CAPTURE_BOOT_BUFFER_ENABLE value="Yes" />
<CONSOLE_CAPTURE_FAULT_BUFFER_ENABLE value="Yes" />
<INTERACTIVE_CONSOLE_REPLAY_ENABLE value="Yes" />
<CONSOLE_CAPTURE_PORT value="17990" />
<CAPTURE_AUTO_EXPORT_ENABLE value="No" />
<CAPTURE_AUTO_EXPORT_LOCATION value="HTTP://1.1.1.1/folder/capture%h%t.ilo" />
<CAPTURE_AUTO_EXPORT_USERNAME value="username" />
<CAPTURE_AUTO_EXPORT_PASSWORD value="password" />
<SHARED_CONSOLE_ENABLE value="No" />
<SHARED_CONSOLE_PORT value="9300" />
<!-- Firmware support information for next two tags:-->
<!-- iLO 2 - Version 1.75 and later.-->
<!-- iLO - None. -->
<!-- RILOE II - None. -->
<KEY_UP_KEY_DOWN value="Yes"/>
<CAPTURE_MANUAL_EXPORT value="Yes"/>
<!-- Firmware support information for next tag: -->
<!-- iLO 2 - Version 1.10 and later. -->
<!-- iLO - Version 1.80 and later. -->
<!-- RILOE II - None. -->
<REMOTE_CONSOLE_ACQUIRE value="Yes" />
<!-- Firmware support information for next 13 tags: -->
<!-- iLO 2 - None. -->
<!-- iLO - None.  -->
<!-- RILOE II - All versions. -->
<!--
<HOST_KEYBOARD_ENABLED value ="YES"/>
<REMOTE_KEYBOARD_MODEL value = "US"/>
<POCKETPC_ACCESS value = "YES"/>
<CIPHER_STRENGTH value = "128"/>
<SNMP_ADDRESS_1 value = "123.124.125.126"/>
<SNMP_ADDRESS_2 value = "test"/>
<SNMP_ADDRESS_3 value = "dest"/>
<OS_TRAPS value = "Y"/>
<RIB_TRAPS value = "N"/>
<CIM_SECURITY_MASK value = "3"/>
<EMS_STATUS value = "Y" />
<BYPASS_POWER_CABLE_REPORTING value = "N" />
<SNMP_PASSTHROUGH_STATUS value = "Y" />
-->
</MOD_GLOBAL_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

As of release iLO 2 version 1.50, 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 2:

```
<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>
```

As of release iLO 2 version 2.06, the Virtual Media port can be enabled or disabled through RIBCL. By default, this port is enabled. To disable the port, execute the following script:

Example 3:

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

As of release iLO 2 version 2.09, SMASH CLP can be enhanced by including the server name in the hpiLO prompt. This enhanced prompt is enabled or disabled through RIBCL. By default, this feature is disabled. To enable the enhanced prompt, execute the following script.

Example 4:

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

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.

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.

ILO_FUNCT_ENABLED – Determines if the Lights-Out functionality is enabled or disabled for iLO 2. The possible values are yes or No. This parameter is case insensitive.

F8_PROMPT_ENABLED – determines if the F8 prompt for ROM-based configuration is displayed during POST. The possible values are Yes or No.

F8_LOGIN_REQUIRED – Determines if login credentials are required to access the RBSU for iLO 2. The possible values are Yes or No.

REMOTE_CONSOLE_PORT_STATUS – Determines the behavior of remote console service. The possible values include:

- 0 – No change
- 1 – Disabled (The remote console port is disabled. This prevents remote console and Telnet sessions from being used.)
- 2 – Automatic (This is the default setting. The remote console port remains closed unless a remote console session is started.)
- 3 – Enabled (The remote console port is always enabled. This enables remote console and Telnet sessions to be used.)

REMOTE_CONSOLE_ENCRYPTION – determines if remote console data encryption is enabled or disabled. The possible values are `Yes` and `No`.

REMOTE_CONSOLE_ACQUIRE – determines if the remote console acquire operation is enabled or disabled. The possible values are `Yes` and `No`.

PASSTHROUGH_CONFIG – determines the behavior of a Microsoft Terminal Services client. The possible values are as follows:

- 0 – No change
- 1 – Disabled (The Terminal Services feature is disabled.)
- 2 – Automatic (The Terminal Services client is launched when remote console is started.)
- 3 – Enabled (This is the default setting. The Terminal Services feature is enabled but does not automatically launch when the Remote Console start.)

HTTPS_PORT – Specifies the HTTPS (SSL) port number.

HTTP_PORT – Specifies the HTTP port number.

REMOTE_CONSOLE_PORT – Specifies the port used for remote console.

TERMINAL_SERVICES_PORT – Specifies the port used for terminal services.

VIRTUAL_MEDIA_PORT – Specifies the port used for virtual media.

NOTE: If port changes are detected, the iLO 2 management processor will be rebooted to apply the changes after the script has completed successfully.

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

`AUTHENTICATION_FAILURE_LOGGING` – Specifies logging criteria for failed authentications. The 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)

REMOTE_KEYBOARD_MODEL – Determines the remote keyboard language translation used during remote console operation. The possible values include:

US	Belgian	British
Danish	Finnish	French
French Canadian	German	Italian
Japanese	Latin American	Portuguese

Spanish	Swedish	Swiss French
Swiss German		

SSH_PORT – Specifies the port used for SSH connection on iLO 2. The processor must be reset if this value is changed.

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

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. 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

ENFORCE_AES – Determines if iLO 2 enforces the use of AES/3DES encryption ciphers over the iLO 2 interface, SSH, and XML connections. The possible values are `Yes` and `No`.

VSP_SOFTWARE_FLOW_CONTROL – Specifies if the Virtual Serial Port automatically enables and disables software flow control. The possible values are `Yes` or `No`.

VMEDIA_DISABLE – Specifies if the Virtual Media Port is disabled. The possible values are `Yes` or `No`. By default, the port is set to `No` (enabled). To disable the port, set the value to `Yes`.

ENHANCED_CLP_PROMPT_ENABLE – Specifies if the Enhanced CLI prompt has to be enabled or disabled. The possible values are `Yes` and `No`, By default, the feature is disabled. To enable the feature, set the value to `Yes`.

ENHANCED_CLI_PROMPT_ENABLE – Specifies if the Enhanced CLI prompt has to be enabled or disabled. The possible values are Yes or No. By default, the feature is disabled. To enable the feature set the value to `Yes`.

MOD_GLOBAL_SETTINGS runtime errors

The 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.

GET_SNMP_IM_SETTINGS

The GET_SNMP_IM_SETTINGS command requests the respective iLO 2 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.

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="192.168.125.121"/>
<SNMP_ADDRESS_2 VALUE="192.168.125.122"/>
<SNMP_ADDRESS_3 VALUE="192.168.125.123"/>
<OS_TRAPS VALUE="Yes"/>
<RIB_TRAPS VALUE="No"/>
<SNMP_PASSTHROUGH_STATUS VALUE="No"/>
<WEB_AGENT_IP_ADDRESS VALUE="192.168.125.120"/>
<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 2 privilege to execute this command.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="write">
<MOD_SNMP_IM_SETTINGS>
<WEB_AGENT_IP_ADDRESS value="192.168.125.120"/>
<SNMP_ADDRESS_1 value="192.168.125.121"/>
<SNMP_ADDRESS_2 value="192.168.125.122"/>
<SNMP_ADDRESS_3 value="192.168.125.123"/>
<OS_TRAPS value="Yes"/>
<RIB_TRAPS value="No"/>
<SNMP_PASSTHROUGH_STATUS value="No"/>
<CIM_SECURITY_MASK value="3"/>
</MOD_SNMP_IM_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

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.

WEB_AGENT_IP_ADDRESS – 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_ADDRESS_1, SNMP_ADDRESS_2, and `SNMP_ADDRESS_3` – The addresses that receive traps sent to the user. Each of these parameters can be any valid IP address and has a maximum value of 50 characters.

OS_TRAPS – Determines if the user must 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 must receive SNMP traps that are generated by the RIB. The possible values are `Yes` and `No`. By default, the value is set to `No`.

SNMP_PASSTHROUGH_STATUS – Determines if iLO can receive/ send SNMP request from/ to the host OS. By default, the value is set to `Yes`.

CIM_SECURITY_MASK – Accepts an integer between 0 and 4. The possible values are:

- 0 – No change
- 1 – None (No data is returned.)
- 2 – Low (Name and status data are returned. Associations are present if SNMP pass-through is supported. If not, the server and management processor are separate entities in the device list.)
- 3 – Medium (iLO 2 and server associations are present but the summary page contains less detail than at high security.)
- 4 – High (Associations are present and all data is present on the summary page.)

Each value indicates the level of data returned over the HTTP port.

MOD_SNMP_IM_SETTINGS runtime errors

The 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_RIB_FIRMWARE command copies a specified file to iLO 2, 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 2 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 2 - 1.70 and later. For servers with TPM enabled.-->
 <!-- iLO - None -->
 <!-- Riloe II - None -->
<TPM_ENABLED VALUE="Yes"/>
<UPDATE_RIB_FIRMWARE IMAGE_LOCATION="C:\firmware.bin"/>
</RIB_INFO>
```

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

When you send an XML script to update iLO 2 firmware, iLO 2 firmware verifies the TPM configuration status of option ROM measuring. If it is enabled, iLO 2 firmware returns the same warning message as stated in 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_RIB_FIRMWARE IMAGE_LOCATION="C:\xl170\iLO2_170D.bin"/>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

UPDATE_RIB_FIRMWARE parameters

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

TPM_ENABLE enables the firmware to continue updating when 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_RIB_FIRMWARE runtime errors

The possible UPDATE_RIB_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 2 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 or write. The user must have the configure iLO 2 privilege to execute this command.

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>
/>
```

HOTKEY_CONFIG

The HOTKEY_CONFIG command configures the remote console hot key settings in iLO 2. 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 2 privilege to execute this command.

Uppercase letters are not supported, and are converted automatically to lowercase. If you use double or single quotes, it must be different from the delimiter. Specifying a blank string removes the current value.

For a complete list of supported hotkeys, see "Supported hot keys" (page 107).

Example:

```
<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

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

CTRL_T – Specifies settings for the CTRL_T hot key. The settings must be separated by commas. For example, `CTRL_T="CTRL,ALT,ESC."` Up to five keystrokes can be configured for each hot key.

CTRL_U – Specifies settings for the CTRL_U hot key. The settings must be separated by commas. For example, `CTRL_U="CTRL,ALT,ESC."` Up to five keystrokes can be configured for each hot key.

CTRL_V – Specifies settings for the CTRL_V hot key. The settings must be separated by commas. For example, `CTRL_V="CTRL,ALT,ESC."` Up to five keystrokes can be configured for each hot key.

CTRL_W – Specifies settings for the CTRL_W hot key. The settings must be separated by commas. For example, `CTRL_W="CTRL,ALT,ESC."` Up to five keystrokes can be configured for each hot key.

CTRL_X – Specifies settings for the CTRL_X hot key. The settings must be separated by commas. For example, `CTRL_X="CTRL,ALT,ESC."` Up to five keystrokes can be configured for each hot key.

CTRL_Y – Specifies settings for the CTRL_Y hot key. The settings must be separated by commas. For example, `CTRL_Y="CTRL,ALT,ESC."` Up to five keystrokes can be configured for each hot key.

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.`

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. For a complete list of supported hotkeys, see "Supported hot keys" (page 107). The following table lists keys available to combine in a Remote Console hot key sequence.

ESC	F12	:	o
L_ALT	" " (Space)	<	p
R_ALT	!	>	q
L_SHIFT	#	=	r
R_SHIFT	$	?	s
INS	%	@	t
DEL	&	[	u
HOME	~	]	v
END	(	\	w
PG UP	)	^	x
PG DN	*	_	y
ENTER	+	a	z

TAB	-	b	{
BREAK	.	c	}
F1	/	d	|
F2	0	e	;
F3	1	f	'
F4	2	g	L_CTRL
F5	3	h	R_CTRL
F6	4	i	NUM PLUS
F7	5	j	NUM MINUS
F8	6	k	SCRL LCK
F9	7	l	BACKSPACE
F10	8	m	SYS RQ
F11	9	n	

LICENSE

The LICENSE command activates or deactivates the iLO's 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 2 privilege to execute this command.

On a ProLiant BL Class server, there is no need for a licensing key. Advanced features are automatically activated.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="write">
<LICENSE>
<ACTIVATE KEY="1111122222333334444455555"/>
</LICENSE>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

LICENSE parameters

ACTIVATE followed by a valid KEY value signals the activation of the iLO 2 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 result in the wrong key being entered.

LICENSE runtime errors

The 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 2 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.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN = "adminname" PASSWORD = "password">
<RIB_INFO MODE = "write">
<INSERT_VIRTUAL_MEDIA DEVICE="FLOPPY" IMAGE_URL= "http://servername/path/to/file"/>
</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
```

- 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.
- The cgi-helper field is optional.

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

- `%m` – Expands to the iLO 2 MAC address.
- `%i` – Expands to the iLO 2 IP address in dotted-quad form.
- `%h` – Expands to the iLO 2 hostname.

Examples:

```
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_FLOPPY runtime errors

The possible INSERT_VIRTUAL_FLOPPY 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.

Example:

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

The 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.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN = "adminname" PASSWORD = "password">
<RIB_INFO MODE = "read">
<GET_VM_STATUS DEVICE="CDROM"/>
</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. This value is 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 via the Virtual Media Applet. If the VM_APPLET = CONNECTED, then the Virtual Media is already in use and cannot be connected via scriptable Virtual Media or Virtual Media XML commands. The DEVICE parameter tells which device this return message is for. The BOOT_OPTION shows the current setting; BOOT_ALWAYS means that the server will always use the Virtual Media device for booting, BOOT_ONCE means that the server boots to the Virtual Device once and then disconnect 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.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN = "adminname" PASSWORD = "password">
<RIB_INFO MODE = "write">
<SET_VM_STATUS DEVICE = "CDROM">
<VM_BOOT_OPTION value = "BOOT_ONCE"/>
<VM_WRITE_PROTECT value = "Y"/>
</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. This value is 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 will always be 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 will not be connected. 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 will not be connected and the following Virtual Media device settings will be 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 will be disconnected on the next server boot following the setting of the VM_BOOT_OPTION. After the server has booted, the Virtual Media device will not be connected and the following Virtual Media device settings will be 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 will show 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 with always be 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 will not be connected and the following Virtual Media device settings will be 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. 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 2. When this command is received, iLO 2 generates a certificate signing request. The request is returned to the user enclosed in a CERTIFICATE_SIGNING_REQUEST tag. This command requires `CPQLOCFG` version 2.26 or later.

Example:

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

CERTIFICATE_SIGNING_REQUEST parameters

There are no parameters for this command.

CERTIFICATE_SIGNING_REQUEST errors

- `Certificate request generation will be available after iLO 2 completes generating SSL keys. Close all active Remote Console sessions and try again later (around 2 minutes for 1024 bit keys and 10 minutes for 2048 bit keys).`

CSR_CERT_SETTINGS

This command sets the certificate settings, which is used when iLO2 generates the CSR. Users can choose between a custom subject name, or request the iLO2 to use stored default values. Users can also set either to use 2048-bit or 1024-bit private key length. When this command is received, user issued certificate settings are stored in the NVRAM memory of iLO 2.This command requires CPQLOCFG version 2.26 or later.

Example 1 (set default CSR settings):

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

```
<CSR_USE_CERT_CUSTOM_SUBJECT VALUE = "No"/>
<CSR_USE_CERT_2048PKEY VALUE = "Yes" />
<CSR_USE_CERT_FQDN VALUE = "Yes" />
</CSR_CERT_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

Example 2 (set custom CSR settings):

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="write">
<CSR_CERT_SETTINGS>
<CSR_USE_CERT_CUSTOM_SUBJECT VALUE = "Yes"/>
<CSR_USE_CERT_2048PKEY VALUE = "Yes" />
<CSR_SUBJECT_COUNTRY VALUE ="US"/>
<CSR_SUBJECT_STATE VALUE ="California"/>
<CSR_SUBJECT_LOCATION VALUE ="San Diego"/>
<CSR_SUBJECT_ORG_NAME VALUE ="Hewlett-Packard LLC"/>
<CSR_SUBJECT_ORGUNIT_NAME VALUE ="Server Group"/>
<CSR_SUBJECT_COMMON_NAME VALUE ="hp.ilo.com"/>
</CSR_CERT_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

CSR_CERT_SETTINGS parameters

Some of the following parameters can be omitted depending on the setting of other parameters. When user opts for default subject settings, CSR_SUBJECT_xxxx tags are irrelevant. When user opts for custom subject settings, CSR_USE_CERT_FQDN tag is irrelevant. If the user does not apply any settings for CSR_USE_CERT_FQDN (with the Default subject selection), CSR_USE_CERT_2048PKEY, then system preserved values for these settings are used. Zero or Empty values are not permitted in some fields. Consequently, an empty string in some fields return with an error.

CSR_USE_CERT_CUSTOM_SUBJECT – This setting indicates whether custom or default subject information is to be used for generating the CSR. The values are Yes, No/ Default. It is case insensitive. When this field is set to Yes, script should contain all the 6 CSR_SUBJECT_xxxx fields with proper values. When this field is set to Default or No, the CSR_SUBJECT_xxxx fields are irrelevant and not needed. This is a mandatory field.

CSR_USE_CERT_FQDN – This setting indicates whether the Fully Qualified Domain Name (FQDN) or short name should be used as certificate common name when generating the CSR. The values are Yes or No. It is case insensitive. When CSR_USE_CERT_CUSTOM_SUBJECT is set to Yes, this field serves no purpose, as the certificate common name is set to value of user supplied CSR_SUBJECT_COMMON_NAME.

CSR_USE_CERT_2048PKEY – This setting indicates whether CSR should be using 2048-bit length private key or not. The values are `Yes` or `No`. It is case insensitive.

CSR_SUBJECT_COUNTRY – This field is 2 characters in length. The characters must be in uppercase. When you set CSR_USE_CERT_CUSTOM_SUBJECT to `Yes`, this field is mandatory.

CSR_SUBJECT_STATE – This field has a maximum length of 30 characters. It must use only alpha characters and blank spaces. When you set CSR_USE_CERT_CUSTOM_SUBJECT to `Yes`, this field is mandatory.

CSR_SUBJECT_LOCATION – This field has a maximum length of 60 characters. It must use only alphanumeric, punctuation, and blank space characters. When you set CSR_USE_CERT_CUSTOM_SUBJECT to `Yes`, this field is mandatory.

CSR_SUBJECT_ORG_NAME – This field has a maximum length of 60 characters. It must use only alphanumeric, punctuation, and blank space characters. When you set CSR_USE_CERT_CUSTOM_SUBJECT to `Yes`, this field is mandatory.

CSR_SUBJECT_ORGUNIT_NAME – This field has a maximum length of 60 characters. It must use only alphanumeric, punctuation, and blank space characters. When you set CSR_USE_CERT_CUSTOM_SUBJECT to `Yes`, this field is mandatory.

CSR_SUBJECT_COMMON_NAME – This field has a maximum length of 60 characters. It must use only alphanumeric, dot and hyphen characters. When you set CSR_USE_CERT_CUSTOM_SUBJECT to `Yes`, this field is mandatory.

CSR_CERT_SETTINGS errors

The possible CSR_CERT_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.`
- `User supplied invalid fields.`
- `User supplied incomplete fields.`

GET_CERT_SUBJECT_INFO

This command is used to read CSR settings stored in iLO2. If a custom setting is preserved already in iLO2, this command retrieves the details. The request is returned to the user enclosed in a CERTIFICATE_SUBJECT_INFO tag. This command requires CPQLOCFG version 2.26 or later.

Example:

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

GET_CERT_SUBJECT_INFO parameters

There are no parameters for this command.

GET_CERT_SUBJECT_INFO errors

There are no errors for this command.

IMPORT_CERTIFICATE

The IMPORT_CERTIFICATE command imports a signed certificate into iLO 2. The signed certificate must be a signed version of a certificate signing request. This command requires `CPQLOCFG` version 2.26 or later.

Example:

```
<RIBCL VERSION="2.0">

<LOGIN USER_LOGIN = "adminname" PASSWORD = "password">

<RIB_INFO MODE = "write">

<IMPORT_CERTIFICATE>

-----BEGIN CERTIFICATE-----

….
```

```
-----END CERTIFICATE-----
</IMPORT_CERTIFICATE>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

IMPORT_CERTIFICATE parameters

There are no parameters for this command.

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 2's hostname.`
- `Certificate signature does not match private key: The certificate does not correspond to the private key stored in iLO 2.`

GET_TWOFACTOR_SETTINGS

The GET_TWOFACTOR_SETTINGS command requests the respective iLO 2 Two-Factor Authentication settings. For this command to parse correctly, the GET_TWOFACTOR_SETTINGS command must appear within a RIB_INFO command block, and RIB_INFO MODE can be set to read or write.

Example:

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

GET_TWOFACTOR_SETTINGS parameters

None

GET_TWOFACTOR_SETTINGS runtime errors

None

GET_TWOFACTOR_SETTINGS return messages

Starting with iLO 2 1.20, users can be authenticated with a digital certificate. Depending on the iLO 2 Two-Factor Authentication settings, the response to GET_TWOFACTOR_SETTINGS contains different data.

Examples of GET_TWOFACTOR_SETTINGS return messages are:

Example of a Two-Factor Authentication settings return message with default settings:

```
<GET_TWOFACTOR_SETTINGS>
<AUTH_TWOFACTOR_ENABLE VALUE="N"/>
<CERT_REVOCATION_CHECK VALUE="N"/>
```

```
<CERT_OWNER_SUBJECT/>
</GET_TWOFACTOR_SETTINGS>
```

Example of a Two-Factor Authentication settings return message when SAN field in the certificate for directory authentication is enabled:

```
<GET_TWOFACTOR_SETTINGS>
<AUTH_TWOFACTOR_ENABLE VALUE="Y"/>
<CERT_REVOCATION_CHECK VALUE="N"/>
<CERT_OWNER_SAN/>
</GET_TWOFACTOR_SETTINGS>
```

MOD_TWOFACTOR_SETTINGS

The MOD_TWOFACTOR_SETTINGS command is used to modify the Two-Factor Authentication settings on the iLO 2. For this command to parse correctly, the MOD_TWOFACTOR_SETTINGs command must appear within a RIB_INFO command block, and RIB_INFO MODE must be set to write. You must have the configure RILOE II privilege to execute this command. Changing the value of AUTH_TWOFACTOR_ENABLE causes the iLO 2 to reset for the new setting to take effect.

NOTE: The GET_TWOFACTOR_SETTINGS and MOD_TWOFACTOR_SETTINGS commands are supported with iLO firmware version 1.80 and above and with iLO 2 firmware version 1.10 and above. iLO 1.80 requires `CPQLOCFG` version 2.24, and iLO 1.10 requires `CPQLOCFG` version 2.25.

A Trusted CA Certificate is required for Two-Factor Authentication to function. The iLO 2 will not allow the AUTH_TWOFACTOR_ENABLE setting to be set to `yes` if a Trusted CA certificate has not been configured. Also, a client certificate must be mapped to a local user account if local user accounts are being used. If the iLO 2 is using directory authentication, client certificate mapping to local user accounts is optional.

To provide the necessary security, the following configuration changes are made when Two-Factor Authentication is enabled:

- Remote Console Data Encryption: `Yes` (this disables Telnet access)
- Enable Secure Shell (SSH) Access: `No`
- Serial Command Line Interface Status: `Disabled`

If Telnet, SSH or Serial CLI access is required, re-enable these settings after Two-Factor Authentication is enabled. However, because these access methods do not provide a means of Two-Factor Authentication, only a single factor is required to access the iLO 2 with Telnet, SSH, or serial CLI.

When Two-Factor Authentication is enabled, access with the CPQLOCFG utility is disabled because CPQLOCFG does not supply all authentication requirements. However, the HPONCFG utility is functional, since administrator privileges on the host system are required to execute this utility.

- Example of enabling Two-Factor Authentication:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="write">
<MOD_TWOFACTOR_SETTINGS>
<AUTH_TWOFACTOR_ENABLE value="Yes"/>
<CERT_REVOCATION_CHECK value="No"/>
<CERT_OWNER_SAN/>
</MOD_TWOFACTOR_SETTINGS>
</RIB_INFO>
</LOGIN>
```

```
</RIBCL>
```

- Importing a CA and a user certificate example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="test" PASSWORD="password">
<RIB_INFO MODE="write">
<MOD_TWOFACTOR_SETTINGS>
<CERT_OWNER_SAN/>
<IMPORT_CA_CERTIFICATE>
-----BEGIN CERTIFICATE-----
MIIEtzCCA5+gAwIBAgIQBGg9C0d7B5pF/l4bVA44hjANBgkqhkiG9w0BAQUFADBM
MRMwEQYKCZImiZPyLGQBGRYDTEFCMRUwEwYKCZImiZPyLGQBGRYFSkpSSUIxHjAc
...
9gVCPSOQUGMMZUeNYOBkTE0e+MrPGL+TqQEyIakF3rjA2PbL1uSY6d4dlCx7izkO
buEpHTPDqs9gZ3U5ht9bjES93UHnDENLopkZ2JgGwH8Y50eBnjq4xml9psbYZn5Y
yWpONE/IjIjJyww=
-----END CERTIFICATE-----
</IMPORT_CA_CERTIFICATE>
<IMPORT_USER_CERTIFICATE USER_LOGIN="apollo">
-----BEGIN CERTIFICATE-----
CZImiZPyLGQBGRYDTEFCMRUwEwYKCZImiZPyLGQBGRYFSkpSSUIxHjAcBgNVBAMT
ODU5NDRaMFYxEzARBgoJkiaJk
...
sjbbpNGpxGsK9GZi5j6UeOYklePyau0TJ3KIm2RPlR2C6XAGz2PTWgsxGlUP9lNH
bfz0+TD0JsschjqK23/vr2GxQ9C/835zRxdu5Dn8JGm3/dFHR2VxgCetIxyR9TQC
ZKTfvIa8N9KvMLZdclSj94jUyMZjYYmCWULW8WySMV70nclvrsI2hi3nwMtt2Zvj
WnbeZujBX9LGz3HdmghgUw4GTwYl3ZG88snuTyXliLPFXVYXvNAhGeWqXtrh7A90
3NprjG7DM1uw
-----END CERTIFICATE-----
</IMPORT_USER_CERTIFICATE>
</MOD_TWOFACTOR_SETTINGS>
</RIB_INFO>
</LOGIN>
</RIBCL>
```

MOD_TWOFACTOR_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.

AUTH_TWOFACTOR_ENABLE – Enables or disables Two-Factor authentication. The possible values are `Yes` and `No`.

CERT_REVOCATION_CHECK – Causes iLO 2 to use the CRL distribution point attribute of the client certificate to download the CRL and check against revocation. The possible values are `Yes` and `No`. If this setting is set to Yes, and the CRL cannot be downloaded for any reason, authentication will be denied.

CERT_OWNER_SAN – Causes iLO 2 to extract the User Principle Name from the Subject Alternative Name, and use that for authentication with the directory, for example: `username@domain.extension`.

CERT_OWNER_SUBJECT – Causes iLO 2 to derive the user's distinguished name from the subject name. For example, if the subject name is "/DC=com/DC=domain/OU=organization/CN=user", iLO 2 derives: "CN=user,OU=organization,DC=domain,DC=com".

CERT_OWNER_SAN and CERT_OWNER_SUBJECT – These settings are only used if directory authentication is enabled.

IMPORT_CA_CERTIFICATE – Imports the certificate into iLO 2 as the trusted Certificate Authority. iLO 2 will only allow client certificates that are issued by this CA. A Trusted CA certificate must be configured in iLO 2 for Two-Factor authentication to function.

IMPORT_USER_CERTIFICATE – Imports the certificate into iLO 2 and maps it to the specified local user. Any client that authenticates with this certificate authenticates as the local user to which it is mapped. The SHA1 hash of this certificate displays on the **Modify User** website for the user to whom it is mapped. If iLO 2 is using directory authentication, client certificate mapping to local user accounts is optional and only necessary if authentication with local accounts is desired.

IMPORT_CA_CERTIFICATE and IMPORT_USER_CERTIFICATE – These settings require that base64-encoded certificate data be included between the BEGIN and END tags.

MOD_TWOFACTOR_SETTINGS runtime errors

The possible MOD_TWOFACTOR_SETTINGS error messages include:

- `RIB information is open for read-only access. Write access is required for this operation.`
- `This setting cannot be changed while Shared Network port is enabled.`

  `iLO 2 has been configured to use shared network port, which will not function if Two-factor authentication is enabled.`
- `This setting cannot be enabled unless a trusted CA certificate has been imported.`

  `A CA certificate must be imported before enabling Two-factor authentication.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

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 will fail.

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 2 information. Read mode prevents modification of the iLO 2 information.

Example:

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

GET_DIR_CONFIG

The GET_DIR_CONFIG command requests the respective iLO 2 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.

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 2 1.80, 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:

- Example of 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_CONTEXT1 VALUE="CN=Users0,DC=HPRIB0, DC=LABS"/>
  <DIR_USER_CONTEXT2 VALUE="CN=Users1,DC=HPRIB1, DC=LABS"/>
  <DIR_USER_CONTEXT3 VALUE=""/>
  <DIR_ENABLE_GRP_ACCT VALUE="N"/>
  </GET_DIR_CONFIG>
  ```

- Example of 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_CONTEXT1 VALUE="CN=Users,DC=demo,DC=com"/>
  <DIR_USER_CONTEXT2 VALUE=""/>
  <DIR_USER_CONTEXT3 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_GRPACCT2_NAME VALUE="" />
    <DIR_GRPACCT2_PRIV VALUE="" />
    <DIR_GRPACCT3_NAME VALUE="" />
    <DIR_GRPACCT3_PRIV VALUE="" />
    <DIR_GRPACCT4_NAME VALUE="" />
    <DIR_GRPACCT4_PRIV VALUE="" />
    <DIR_GRPACCT5_NAME VALUE="" />
    <DIR_GRPACCT5_PRIV VALUE="" />
    <DIR_GRPACCT6_NAME VALUE="" />
    <DIR_GRPACCT6_PRIV VALUE="" />
    </GET_DIR_CONFIG><GET_DIR_CONFIG>
```

IMPORT_SSH_KEY

The IMPORT_SSH_KEY command imports a SSH_KEY and associated iLO 2 user name into iLO 2. This command requires CPQLOCFG version 2.27 or later.

After generating an SSH key using `ssh-keygen` and creating the `key.pub` file, you must perform the following:

1. Locate the `key.pub` file and insert its contents between `"-----BEGIN SSH KEY----"` and `"-----END SSH KEY-----"`. The file begins with the text `ssh-dss` or `ssh-rsa`.
2. At the end of the key, append a space and the name of a valid iLO 2 user name as displayed on the **Modify User** page. For example:

   ```
    xxx. . .xxx ASmith.
   ```

   where *xxx. . .xxx* is the key information

The user name is case-sensitive and must match the case of the iLO 2 user name to associate the SSH key with the correct user.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="write">
<IMPORT_SSH_KEY>
   -----BEGIN SSH KEY-----

ssh-dss ContentOfYourSSHKeyBALftnNE12JR8T8XQqyzqc1tt6FLFRXLRM5PJpOf/
IG4hN45+x+JbaqkhH+aKqFjlfO1NjszHrFN26H1AhWOjY2bEwj2wlJzBMAhXwnPQelQs
CnJDf+zCzbDn+5Va86+qWxm0lsDEChvZPM6wpjkXvHwuInjxTzOGQTq++vmYlo1/AAAA
FQC1MFaZjE995QhX9H1DaDzpsVTXvwAAAIA6ec/hAkas2N762jtlHvSuvZaQRzu49DOt
jXVIpNdJAhTC8O2505PzkGLf5qhrbDnusclCvoH7DuxyHjeOUVxbC5wFQBcGF4VnpYZ8
nGQGt9TQ0iUV+NRwn4CR5ESoi63zTJIvKIYZDT2ISeXhF2iU6txjZzdeEm7vQz3slaY3
dgAAAIAQ46i6FBzJAYXziF/qmWMt4y6SlylOQDAsxPKk7rpxegv8RlTeon/aeL7ojb9G
Q2xnEN5gobaNZxKz2d4/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

There are no parameters for this command.

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.`
- `Error reading SSH Key: The imported SSH Key is invalid.`
- `Invalid iLO user name: The appended user name is not a valid iLO 2 user.`
- `No slots are available for storing additional SSH Key.`

MOD_DIR_CONFIG

The MOD_DIR_CONFIG command modifies the directory settings on iLO 2. 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 2 privilege to execute this command.

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"/>

<!-- For schemaless Directory configuration, 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 teritiary 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 -->
<!-- iLO2 1.75 and later -->
<!-- iLO - None -->
<!-- Riloe II - None -->
<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"/>
<!-- 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"/>
</MOD_DIR_CONFIG>
</DIR_INFO>
</LOGIN>
</RIBCL>
```

NOTE: When using directory integration with schema extension, the following tags must not be used:

- `DIR_ENABLE_GRP_ACCT`
- `DIR_GRPACCT1_NAME`
- `DIR_GRPACCT1_PRIV`

When using schema-free directories, the following tags must not be used:

- `DIR_OBJECT_DN`
- `DIR_OBJECT_PASSWORD`

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 2 to use schema-less directory integration. The possible values are `yes` and `No`.

When using schema-free directory integration, iLO 2 supports variable privileges associated with different directory groups. These groups are contained in the directory, and the corresponding member iLO 2 privileges are stored in iLO 2.

- DIR_GRPACCT1_NAME – Identifies a group container in the directory, such as Administrators, Users, or Power Users.
- DIR_GRPACCT1_PRIV – Numerically identifies iLO 2 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) which correlate to:
    - 1 – Administer Group Accounts
    - 2 – Remote Console Access
    - 3 – Virtual Power and Reset

    - 4 – Virtual Media
    - 5 – Configure iLO 2 Settings

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 2 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 2 object in the directory server. Passwords are limited to 39 characters.

DIR_USER_CONTEXT_1, DIR_USER_CONTEXT_2, and DIR_USER_CONTEXT_3 – Specifies searchable contexts used to locate the user when the user is trying to authenticate using directories. If the user could not be 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

The 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.

RACK_INFO

The RACK_INFO command can only appear within a LOGIN command block. When the command is parsed, it reads the rack infrastructure database into memory and prepares to edit it. Only commands that are RACK_INFO type commands are valid inside the RACK_INFO command block. The RACK_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 will fail.

This command block is only valid on ProLiant BL Class servers. RACK_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 2 information. Read mode prevents modification of the iLO 2 information.

The possible RACK_INFO error messages include:

- Invalid Mode.
- Server is not a rack server; rack commands do not apply.

Example:

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

GET_RACK_SETTINGS

The GET_RACK_SETTINGS command requests the respective iLO 2's rack settings. For this command to parse correctly, the GET_RACK_SETTINGS command must appear within a RACK_INFO command block, and RACK_INFO MODE can be set to read or write.

Example:

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

GET_RACK_SETTINGS parameters

None

GET_RACK_SETTINGS runtime errors

None

GET_RACK_SETTINGS return messages

A possible GET_RACK_SETTINGS return message is:

```
<GET_RACK_SETTINGS>
<RACK_NAME VALUE="HPspace"/>
<ENCLOSURE_NAME VALUE="Home"/>
<ENCLOSURE_SN VALUE="44XP0606XP33"/>
<BAY_NAME VALUE="Library"/>
<BAY VALUE="2"/>
<FACILITY_PWR_SOURCE VALUE="N"/>
<RACK_AUTO_PWR VALUE="Y"/>
<SNMP_RACK_ALERTS VALUE="Y"/>
<LOG_RACK_ALERTS VALUE="N"/>
</GET_RACK_SETTINGS >
```

GET_DIAGPORT_SETTINGS

The GET_DIAGPORT_SETTINGS command requests the respective iLO diagnostic port settings. For this command to parse correctly, the GET_DIAGPORT_SETTINGS command must appear within a RACK_INFO command block, and RACK_INFO MODE can be set to read or write.

Example:

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

```
<RACK_INFO MODE="read">
<GET_DIAGPORT_SETTINGS/>
</RACK_INFO>
</LOGIN>
</RIBCL>
```

GET_DIAGPORT_SETTINGS parameters

None

GET_DIAGPORT_SETTINGS runtime errors

None

GET_DIAGPORT_SETTINGS return messages

A possible GET_DIAGPORT_SETTINGS return message is:

```
<GET_DIAGPORT_SETTINGS>
<DP_SPEED_AUTOSELECT value="No"/>
<DP_NIC_SPEED value="100"/>
<DP_FULL_DUPLEX value="Yes"/>
<DP_IP_ADDRESS value="192.168.142.56"/>
<DP_SUBNET_MASK value="255.255.0.0"/>
</GET_DIAGPORT_SETTINGS >
```

MOD_DIAGPORT_SETTINGS

The MOD_DIAGPORT_SETTINGS command is used modify the diagnostic port network settings on iLO 2. For this command to parse correctly, the MOD_DIAGPORT_SETTINGS command must appear within a RACK_INFO command block, and RACK_INFO MODE must be set to write. The user must have the configure iLO 2 privilege to execute this command.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="username" PASSWORD="password">
<RACK_INFO MODE="write">
<MOD_DIAGPORT_SETTINGS>
<DP_SPEED_AUTOSELECT value="No"/>
<DP_NIC_SPEED value="100"/>
<DP_FULL_DUPLEX value="Yes"/>
<DP_IP_ADDRESS value="192.168.142.56"/>
<DP_SUBNET_MASK value="255.255.0.0"/>
</MOD_DIAGPORT_SETTINGS>
</RACK_INFO>
</LOGIN>
</RIBCL>
```

MOD_DIAGPORT_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.

DP_SPEED_AUTOSELECT is used to automatically select the transceiver speed. The possible values are `Yes` or `No`. It is case insensitive.

DP_NIC_SPEED is used to set the transceiver speed if DP_SPEED_AUTOSELECT was set to `No`. The possible values are 10 or 100. Any other value results in a syntax error.

DP_FULL_DUPLEX is used to decide if the iLO 2 diagnostic port is to support full-duplex or half-duplex mode. It is only applicable if DP_SPEED_AUTOSELECT was set to No. The possible values are Yes or No.It is case insensitive.

DP_IP_ADDRESS is used to select the IP address for the iLO 2 Diagnostic Port. If an empty string is entered, the current address is unchanged. The expected format is *XXX.XXX.XXX.XXX*.

DP_SUBNET_MASK is used to select the subnet mask for the iLO 2 Diagnostic Port. If an empty string is entered, the current address is unchanged. The expected format is *XXX.XXX.XXX.XXX*.

The iLO 2 management processor will be rebooted to apply the changes after the script has completed successfully.

MOD_DIAGPORT_SETTINGS runtime errors

Possible MOD_DIAGPORT_SETTINGS error messages include:

- iLO 2 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_ENCLOSURE_IP_SETTINGS

GET_ENCLOSURE_IP_SETTINGS requests iLO 2 Static IP Bay Configuration settings. This attribute must appear inside the RACK_INFO command block. The RACK_INFO command block can be set to read or write.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="Admin" PASSWORD="password">
<RACK_INFO MODE="write">
<GET_ENCLOSURE_IP_SETTINGS/>
</RACK_INFO>
</LOGIN>
</RIBCL>
```

GET_ENCLOSURE_IP_SETTINGS parameters

None

GET_ENCLOSURE_IP_SETTINGS return messages

A possible GET_ENCLOSURE_IP_SETTINGS return message is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0000"
MESSAGE='No error'
/>
<GET_ENCLOSURE_IP_SETTINGS>
<BAY_ENABLE MASK="0x0002"/>
<IP_ADDRESS VALUE="170.100.12.101"/>
<SUBNET_MASK VALUE="255.255.255.0"/>
<GATEWAY_IP_ADDRESS VALUE="170.100.12.254"/>
<DOMAIN_NAME VALUE=""/>
<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 DESTINATION="0.0.0.0"
GATEWAY="0.0.0.0"/>
<STATIC_ROUTE_2 DESTINATION="0.0.0.0"
GATEWAY="0.0.0.0"/>
<STATIC_ROUTE_3 DESTINATION="0.0.0.0"
GATEWAY="0.0.0.0"/>
</GET_ENCLOSURE_IP_SETTINGS>
</RIBCL>
```

MOD_ENCLOSURE_IP_SETTINGS

MOD_ENCLOSURE_IP_SETTINGS modifies the Static IP Bay Configuration settings. This command is only valid inside a RACK_INFO block. The logged-in user must have the configure iLO 2 privilege. This attribute must appear inside the RACK_INFO command block. The RACK_INFO command block can be set to write.

Modify settings example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="Admin" PASSWORD="password">
<RACK_INFO MODE="write">
<MOD_ENCLOSURE_IP_SETTINGS>
<BAY_ENABLE MASK="0x3FE"/>
<IP_ADDRESS VALUE="16.100.222.111"/>
<SUBNET_MASK VALUE="255.255.252.0"/>
<GATEWAY_IP_ADDRESS VALUE="16.100.222.1"/>
<DOMAIN_NAME VALUE="sum.one.here.now"/>
<PRIM_DNS_SERVER VALUE="16.11.1.111"/>
<SEC_DNS_SERVER VALUE=""/>
<TER_DNS_SERVER VALUE=""/>
<PRIM_WINS_SERVER VALUE="16.22.2.222"/>
<SEC_WINS_SERVER VALUE=""/>
<STATIC_ROUTE_1 DEST="16.33.3.33"
GATEWAY="16.100.11.11"/>
<STATIC_ROUTE_2 DEST="" GATEWAY=""/>
<STATIC_ROUTE_3 DEST="" GATEWAY=""/>
</MOD_ENCLOSURE_IP_SETTINGS>
</RACK_INFO>
</LOGIN>
</RIBCL>
```

Modify network settings to enable static IP bay configuration example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="Admin" PASSWORD="password">
<RIB_INFO MODE="write">
<MOD_NETWORK_SETTINGS>
<ENCLOSURE_IP_ENABLE VALUE="Yes"/>
</MOD_NETWORK_SETTINGS>
</RIB_INFO>
</LOGIN>
```

```
</RIBCL>
```

MOD_ENCLOSURE_IP_SETTINGS parameters

BAY_ENABLEMASK enables the use of Static IP Bay Configuration addressing. The attribute MASK is a 16-bit number. Each bit represents a slot in the enclosure. If the bit is set, that particular slot is assigned to use the Static IP Bay Configuration settings. The LSB represents slot 1. For example, the `MASK="0x0001"` only allows slot 1 to use Static IP Bay Configuration. This number can be either a hexadecimal number or a decimal number. This command must appear inside the MOD_ENCLOSURE_IP_SETTINGS block.

ENCLOSURE_IP_ENABLE enables or disables the use of Static IP Bay Configuration. This attribute must appear inside the MOD_NETWORK_SETTINGS command block. The possible values are `Y` or `N`. It is case insensitive. This attribute is only applicable on blade servers.

MOD_ENCLOSURE_IP_SETTINGS runtime errors

The possible MOD_ENCLOSURE_IP_SETTINGS error messages include:

- Rack 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 is required.

GET_TOPOLOGY

The GET_TOPOLOGY command requests the respective iLO 2 to return the current topology of the rack infrastructure. For this command to parse correctly, the GET_TOPOLOGY command must appear within a RACK_INFO command block, and RACK_INFO MODE can be set to read or write.

Example:

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

GET_TOPOLOGY parameters

None

GET_TOPOLOGY return message

An example of a successful request follows:

```
<RK_TPLGY CNT="3">
<RUID>xxxxxx</RUID>
<ICMB ADDR="0xAA55" MFG="232" PROD_ID="NNN" SER="123" NAME="Power_1">
<LEFT/>
<RIGHT ADDR="0xAB66" SER="123" NAME="Server_1"/>
</ICMB>
<ICMB ADDR="0xAB66" MFG="232" PROD_ID="NNN" SER="456" NAME="Server_1">
<LEFT ADDR="0xAA55" SER="123" NAME="Power_1"/>
<RIGHT ADDR="0xAC77" SER="123" NAME="Power_2"/>
</ICMB>
<ICMB ADDR="0xAC77" MFG="232" PROD_ID="NNN" SER="789" NAME="Power_2">
<RIGHT/>
```

```
</ICMB>
</RK_TPLGY>
```

MOD_BLADE_RACK

MOD_BLADE_RACK command is used to modify the rack infrastructure settings. For this command to parse properly, the MOD_BLADE_RACK command must appear within a RACK_INFO command block, and RACK_INFO MODE must be set to write. The user must have the configure iLO 2 privilege to execute this command.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RACK_INFO MODE="write">
<MOD_BLADE_RACK>
<RACK_NAME value="CPQ_Rack_1"/>
<ENCLOSURE_NAME value="CPQ_Enclosure_1"/>
<BAY_NAME value="CPQ_Bay_5"/>
<FACILITY_PWR_SOURCE value="Yes"/>
<RACK_AUTO_PWR value="Yes"/>
<SNMP_RACK_ALERTS value="Yes"/>
<LOG_RACK_ALERTS value="Yes"/>
</MOD_BLADE_RACK>
</RACK_INFO>
</LOGIN>
</RIBCL>
```

MOD_BLADE_RACK parameters

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

RACK_NAME – Name used to logically group together enclosures in a single rack infrastructure. This parameter can be a combination of any printable characters up to a maximum length of 31 characters.

ENCLOSURE_NAME – Name used to logically group together the ProLiant BL-Class servers that compose a single enclosure. This parameter can be a combination of any printable characters up to a maximum length of 31 characters.

BAY_NAME – Name used to identify a particular ProLiant BL-Class server. This parameter can be a combination of any printable characters up to a maximum length of 31 characters.

FACILITY_PWR_SOURCE – Determines the source of power for the blade servers. A value of `Yes` directs the server to use facility power and a value of `No` directs the server to use the server blade power supplies.

RACK_AUTO_PWR – Determines if the blade server must automatically power on when inserted into the enclosure. A value of `Yes` causes the blade server to automatically power up and begin normal booting process if power is available. A value of `No` requires the blade server to be manually powered on.

SNMP_RACK_ALERTS – Determines if alerts from the rack infrastructure must be forwarded to user-defined SNMP trap destinations. A value of `Yes` enables rack alerts to be forwarded. A value of `No` disables rack alerts from being forwarded.

LOG_RACK_ALERTS – Determines if alerts from the rack infrastructure must be logged. A value of `Yes` enables rack alerts to be logged in the IML log. A value of `No` disables the logging of rack alerts in the IML log.

MOD_BLADE_RACK runtime errors

The possible MOD_BLADE_RACK error messages include:

- `Rack information is open for read-only access. Write access is required for this operation.`
- `Rack Name too long.`
- `Enclosure Name too long.`
- `Bay Name too long.`
- `User does not have correct privilege for action. CONFIG_ILO_PRIV required.`

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 reading and writing of iLO 2 information. Read mode prevents modification of the iLO 2 information.

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_SERVER_NAME

The GET_SERVER_NAME command is used to retrieve the host server name used by the iLO 2. You can set this parameter using several methods, including the SERVER_NAME command, host RBSU, iLO 2 browser-based interface, and loading HP ProLiant Management Agents.

This command is supported by iLO 2 firmware version 1.30 or later. It is not supported by iLO or RILOE II.

Example:

```
<RIBCL version="2.21">
<LOGIN USER_LOGIN="Administrator" PASSWORD="password">
<SERVER_INFO MODE="READ" >
<GET_SERVER_NAME />
</SERVER_INFO>
</LOGIN>
</RIBCL>
```

iLO 2 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 2. 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, if available. The server name is a quoted ASCII string and cannot be a network name. For example:

```
<SERVER_NAME VALUE="Linux Development Host" />
```

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 2 privilege to alter this attribute using the scripting interface. The SERVER_INFO section must be set to WRITE mode or an error is returned.

Example:

```
<RIBCL version="2.21">
<LOGIN USER_LOGIN="Administrator" PASSWORD="password">
<SERVER_INFO MODE="write" >
<SERVER_NAME VALUE = "Exchange05" />
</SERVER_INFO>
</LOGIN
```

SERVER_NAME parameters

VALUE is a quoted ASCII string less than 50 characters in total length.

SERVER_NAME return message

There is no specific return message if this attribute is successfully set.

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_EMBEDDED_HEALTH

GET_EMBEDDED_HEALTH command is used to retrieve health information of the server. 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 or write.

Example:

```
<RIBCL VERSION="2.21">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<SERVER_INFO MODE="read">
<GET_EMBEDDED_HEALTH />
</SERVER_INFO>
</LOGIN>
</RIBCL>
```

GET_EMBEDDED_HEALTH parameters

None

GET_EMBEDDED_HEALTH return messages

A possible GET_EMBEDDED_HEALTH_DATA return message is:

```
IP Address is: 16.100.000.192
cpqlocfg.exe: Receiving (116):
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0000"
MESSAGE='No error'
/>
</RIBCL>
cpqlocfg.exe: Receiving (116):
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0000"
MESSAGE='No error'
/>
<GET_EMBEDDED_HEALTH_DATA>
<FANS>
<FAN>
<LABEL VALUE = "Fan Block 1"/>
<ZONE VALUE = "Power Supply"/>
<STATUS VALUE = "Ok"/>
<SPEED VALUE = "25" UNIT="Percentage"/>
</FAN>
<FAN>
```

```
<LABEL VALUE = "Fan Block 2"/>
<ZONE VALUE = "CPU 2"/>
<STATUS VALUE = "Ok"/>
<SPEED VALUE = "37" UNIT="Percentage"/>
</FAN>
</FANS>
<TEMPERATURE>
<TEMP>
<LABEL VALUE = "Temp 1"/>
<LOCATION VALUE = "I/O Board"/>
<STATUS VALUE = "Ok"/>
<CURRENTREADING VALUE = "29" UNIT="Celsius"/>
<CAUTION VALUE = "65" UNIT="Celsius"/>
<CRITICAL VALUE = "70" UNIT="Celsius"/>
</TEMP>
<TEMP>
<LABEL VALUE = "Temp 2"/>
<LOCATION VALUE = "Ambient"/>
<STATUS VALUE = "Failed"/>
<CURRENTREADING VALUE = "66" UNIT="Celsius"/>
<CAUTION VALUE = "40" UNIT="Celsius"/>
<CRITICAL VALUE = "45" UNIT="Celsius"/>
</TEMP>
<TEMP>
<LABEL VALUE = "Temp 3"/>
<LOCATION VALUE = "CPU 1"/>
<STATUS VALUE = "Ok"/>
<CURRENTREADING VALUE = "36" UNIT="Celsius"/>
<CAUTION VALUE = "90" UNIT="Celsius"/>
<CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
<LABEL VALUE = "Temp 4"/>
<LOCATION VALUE = "CPU 1"/>
<STATUS VALUE = "Ok"/>
<CURRENTREADING VALUE = "32" UNIT="Celsius"/>
<CAUTION VALUE = "90" UNIT="Celsius"/>
<CRITICAL VALUE = "95" UNIT="Celsius"/>
</TEMP>
<TEMP>
<LABEL VALUE = "Temp 5"/>
<LOCATION VALUE = "Power Supply"/>
<STATUS VALUE = "Ok"/>
<CURRENTREADING VALUE = "32" UNIT="Celsius"/>
<CAUTION VALUE = "51" UNIT="Celsius"/>
<CRITICAL VALUE = "56" UNIT="Celsius"/>
</TEMP>
</TEMPERATURE>
```

```
<VRM>
</VRM>
<POWER_SUPPLIES>
</POWER_SUPPLIES>
<HEALTH_AT_A_GLANCE>
<FANS STATUS= "Ok"/>
<FANS REDUNDANCY= "Fully Redundant"/>
<TEMPERATURE STATUS= "FAILED"/>
<VRM STATUS= "Ok"/>
<POWER_SUPPLIES STATUS= "Ok"/>
<POWER_SUPPLIES REDUNDANCY= "unknown"/>
</HEALTH_AT_A_GLANCE>
</GET_EMBEDDED_HEALTH_DATA>
</RIBCL>
cpqlocfg.exe: Script succeeded on "16.100.000.192:000"
```

GET_POWER_READINGS

The GET_POWER_READINGS command is used to get the power readings from the server power supply.

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, then 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"/>
<!--
Additional information is available with iLO 2 Advanced and iLO 2 Select licenses.
-->
</GET_POWER_READINGS>
</RIBCL>
cpqlocfg.exe: Script succeeded on "16.100.100.100:100"
```

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_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 or write.

Example:

```
<RIBCL VERSION="2.21">
<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 that a power cap is not currently set on the server. A typical response is:

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

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 2 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.

Example of disabling 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.

Example:

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

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.

Example:

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

The GET_HOST_POWER_REG_INFO command requests iLO 2 power regulator information. For this command to parse correctly, the GET_HOST_POWER_REG_INFO command must appear within a SERVER_INFO command block, and SERVER_INFO_MODE must be set to read.

Example:

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

```
</RIBCL>
```

GET_HOST_POWER_REG_INFO parameters

None

GET_HOST_POWER_REG_INFO runtime errors

GET_HOST_POWER_REG_INFO returns a runtime error if an iLO 2 Advanced License is not found. For example:

```
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0043"
MESSAGE='This feature requires an advanced license'
/>
</RIBCL>
```

GET_HOST_POWER_REG_INFO return messages

The GET_HOST_POWER_REG_INFO command returns all data available at the time of the request. If the request occurs within the first five minutes of a system or iLO 2 reset or power cycle, only a limited amount of data is available.

A possible GET_HOST_POWER_REG_INFO return message within the five minutes of a system or iLO 2 reset or power cycle is:

```
<GET_HOST_POWER_REG_INFO>
<NumberProcessors>0</NumberProcessors>
<NumberPstates>0</NumberPstates>
</GET_HOST_POWER_REG_INFO>
```

A possible GET_HOST_POWER_REG_INFO return message when all data is available is:

```
<GET_HOST_POWER_REG_INFO>
<NumberProcessors>2</NumberProcessors>
<NumberPstates>3</NumberPstates>
<Processor0>
<CurrentPstate>2</CurrentPstate>
<Pstate0>
<TotalAverage>34.3</TotalAverage>
</Pstate0>
<Pstate1>
<TotalAverage>0</TotalAverage>
</Pstate1>
<Pstate2>
<TotalAverage>65.7</TotalAverage>
</Pstate2>
<Pstate3>
<TotalAverage>0</TotalAverage>
</Pstate3>
......
<Pstate7>
<TotalAverage>0</TotalAverage>
</Pstate7>
</Processor0>
<Processor1>
```

```
<CurrentPstate>2</CurrentPstate>
<Pstate0>
<TotalAverage>34.3</TotalAverage>
</Pstate0>
<Pstate1>
<TotalAverage>0</TotalAverage>
</Pstate1>
<Pstate2>
<TotalAverage>65.7</TotalAverage>
</Pstate2>
<Pstate3>
.....
<Pstate7>
<TotalAverage>0</TotalAverage>
</Pstate7>
</Processor1>
</GET_HOST_POWER_REG_INFO>
```

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.

Example:

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

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<SERVER_INFO MODE="write">
<SET_HOST_POWER HOST_POWER="Yes"/>
</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 toggles the power button of server. For this command to parse correctly, the GET_HOST_PWR_MICRO_VER command must appear within a SERVER_INFO command block, and SERVER_INFO must be set to read.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="admin" PASSWORD="admin123">
<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 issue).
- `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>
  ```

GET_ONE_TIME_BOOT

The GET_ONE_TIME_BOOT command returns the one time boot status. This command must appear within a SERVER_INFO element and SERVER_INFO must be set to read.

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 parameters

There are no parameters for this command.

GET_ONE_TIME_BOOT runtime errors

None

GET_ONE_TIME_BOOT return messages

The return message displays the one time boot status of the host.

A possible GET_ONE_TIME_BOOT return is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
<GET_ONE_TIME_BOOT>
<BOOT_TYPE DEVICE="FLOPPY"/>
</GET_ONE_TIME_BOOT>
</RIBCL>
```

SET_ONE_TIME_BOOT

The SET_ONE_TIME_BOOT command temporarily adapts the boot process for one cycle. Once the script runs successfully, the host boots once to the device specified. This command must appear within a SERVER_INFO element, and SERVER_INFO must be set to write. The parameter in the command is mandatory.

Example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN=" adminname" PASSWORD=" password">
   <SERVER_INFO MODE="write">
    <SET_ONE_TIME_BOOT value = "FLOPPY"  />
   </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_ONE_TIME_BOOT parameters

This value specifies the boot option parameter. The possible values are CDROM, FLOPPY, HDD or NETWORK.

SET_ONE_TIME_BOOT runtime errors

The possible runtime errors are:

- `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.`
- `An invalid device option has been given.`

SET_ONE_TIME_BOOT return messages

The return message displays the one time boot status of the host.

A possible SET_ONE_TIME_BOOT return is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
</RIBCL>
```

GET_PERSISTENT_BOOT

The GET_PERSISTENT_BOOT command returns the current boot order settings. This command must appear within a SERVER_INFO element and SERVER_INFO must be set to read.

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 parameters

There are no parameters for this command.

GET_PERSISTENT_BOOT runtime errors

None

GET_PERSISTENT_BOOT return messages

The return message displays the current boot order settings.

A possible GET_PERSISTENT_BOOT return is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
<GET_PERSISTENT_BOOT
CDROM = "1" FLOPPY = "2" HDD = "3" USB = "4" NETWORK = "5"
    />
</RIBCL>
```

SET_PERSISTENT_BOOT

The SET_PERSISTENT_BOOT command reconfigures the boot order to the order specified in the xml. This command must appear within a SERVER_INFO element, and SERVER_INFO must be set to write. At least one parameter in the command is mandatory.

Example:

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="adminname" PASSWORD="password">
   <SERVER_INFO MODE="write">
     <SET_PERSISTENT_BOOT>
      <DEVICE value = "CDROM" />
      <DEVICE value = "FLOPPY" />
      <DEVICE value = "HDD" />
      <DEVICE value = "USB" />
      <DEVICE value = "NETWORK" />
     </SET_PERSISTENT_BOOT>
   </SERVER_INFO>
 </LOGIN>
</RIBCL>
```

SET_PERSISTENT_BOOT parameters

The command takes one or more boot devices as the parameter DEVICE. The possible values are CDROM, FLOPPY, HDD, USB, or NETWORK. If no device is specified the script fails. The devices has to be specified in the order you want to set the boot order. If you do not list every option, the remaining options are shifted to the bottom of the list.

SET_PERSISTENT_BOOT runtime errors

The possible runtime errors are:

- Server info 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.
- An invalid device option has been given.

- `Too many boot devices has been provided.`
- `Device has been repeated.`
- `Boot device not supported.`

SET_PERSISTENT_BOOT return messages

A possible SET_PERSISTENT_BOOT return is:

```
<?xml version="1.0"?>
<RIBCL VERSION="2.22">
<RESPONSE
    STATUS="0x0000"
    MESSAGE='No error'
     />
</RIBCL>
```

GET_PWREG_CAPABILITIES

The GET_PWREG_CAPABILITIES command requests iLO 2 power regulator information related to system power minimum and maximum values, power supply type and capacity, and power microprocessor firmware version. For this command to parse correctly, the GET_PWREG_CAPABILITIES command must appear within a SERVER_INFO command block, and SERVER_INFO MODE must be set to read.

Example:

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

GET_PWREG_CAPABILITIES parameters

None

GET_PWREG_CAPABILITIES runtime errors

The possible GET_PWREG_CAPABILITIES error messages include:

- `Error` if the power micro cannot be read (hardware issue).
- `Power Off` if the server is powered off.
- `N/A` if the server does not support a power micro.

GET_PWREG_CAPABILITIES return messages

```
<GET_PWREG_CAPABILITIES>
<FWVERSION>"1.77"</FWVERSION>
<THRD ID="0" SOCKET="1" CORE="0" THREAD="0"/>
<QS Q="0" P="0" L="100"/>
<QS Q="1" P="1" L="75"/>
<QS Q="2" P="1" L="75"/>
<QS Q="3" P="1" L="75"/>
<QS Q="4" P="1" L="75"/>
<QS Q="5" P="1" L="75"/>
```

```
<QS Q="6" P="1" L="75"/>
<QS Q="7" P="1" L="75"/>
<QS Q="8" P="1" L="75"/>
<THRD ID="1" SOCKET="1" CORE="1" THREAD="0"/>
<QS Q="0" P="0" L="100"/>
<QS Q="1" P="1" L="75"/>
<QS Q="2" P="1" L="75"/>
<QS Q="3" P="1" L="75"/>
<QS Q="4" P="1" L="75"/>
<QS Q="5" P="1" L="75"/>
<QS Q="6" P="1" L="75"/>
<QS Q="7" P="1" L="75"/>
<QS Q="8" P="1" L="75"/>
<THRD ID="2" SOCKET="1" CORE="2" THREAD="0"/>
<QS Q="0" P="0" L="100"/>
<QS Q="1" P="1" L="75"/>
<QS Q="2" P="1" L="75"/>
<QS Q="3" P="1" L="75"/>
<QS Q="4" P="1" L="75"/>
<QS Q="5" P="1" L="75"/>
<QS Q="6" P="1" L="75"/>
<QS Q="7" P="1" L="75"/>
<QS Q="8" P="1" L="75"/>
<THRD ID="3" SOCKET="1" CORE="3" THREAD="0"/>
<QS Q="0" P="0" L="100"/>
<QS Q="1" P="1" L="75"/>
<QS Q="2" P="1" L="75"/>
<QS Q="3" P="1" L="75"/>
<QS Q="4" P="1" L="75"/>
<QS Q="5" P="1" L="75"/>
<QS Q="6" P="1" L="75"/>
<QS Q="7" P="1" L="75"/>
<QS Q="8" P="1" L="75"/>
<EFFICIENCY_MODE INDEX="0" NAME="OSC">"OS_Control"</EFFICIENCY_MODE>
<EFFICIENCY_MODE INDEX="1" NAME="MIN">"Low_Power"</EFFICIENCY_MODE>
<EFFICIENCY_MODE INDEX="2" NAME="DYN">"Dynamic"</EFFICIENCY_MODE>
<EFFICIENCY_MODE INDEX="3" NAME="MAX">"Max_Power"</EFFICIENCY_MODE>
<HISTORY SIZE="288" INTERVAL="300" TRACE="10"/>
<BUSYMAXPWR>203</BUSYMAXPWR>
<IDLEMAXPWR>168</IDLEMAXPWR>
<ECAP/>
<TEMP/>
<CPU/>
<PWRSPLY TYPE="AC" CAPACITY="800"/>
<PWRALERT VERSION="0"/>
<PWR MICRO VERSION="3.3"/>
</GET_PWREG_CAPABILITIES>
```

RESET_SERVER

The RESET_SERVER command will force 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.

Example:

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

RESET_SERVER errors

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

This PRESS_PWR_BTN command is used to simulate a physical press 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.

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

There are no parameters for this command.

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

This 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.

Example:

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

HOLD_PWR_BTN parameters

There are no parameters for this command.

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

This COLD_BOOT_SERVER command will force 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.

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

There are no parameters for this command.

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

This WARM_BOOT_SERVER command will force 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.

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

There are no parameters for this command.

WARM_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.

SERVER_AUTO_PWR

The SERVER_AUTO_PWR command is used to set the automatic power on and power on delay settings of the server.

This command is supported by iLO 2 firmware version 1.20 or later. It is not supported by iLO firmware or RILOE II.

Example:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="Administrator" PASSWORD="password">
<SERVER_INFO MODE="write">
<!-- Enable automatic power on with 30 seconds delay -->
<SERVER_AUTO_PWR VALUE="30" />
</SERVER_INFO>
</LOGIN>
</RIBCL>
```

SERVER_AUTO_PWR parameters

The possible values are:

- `Yes` enables automatic power on with a minimum delay.
- `No` disables automatic power on.
- `15` enables automatic power on with 15-second delay.
- `30` enables automatic power on with 30-second delay.
- `45` enables automatic power on with 45-second delay.
- `60` enables automatic power on with 60-second delay.
- `Random` enables automatic power on with random delay up to 60-second.

SERVER_AUTO_PWR runtime errors

The possible error messages include:

- User does not have correct privilege for action. RESET_SERVER_PRIV required.
- The value specified for SERVER_AUTO_PWR is invalid.

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.

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

A 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
with 30 seconds power on delay.
-->
<SERVER_AUTO_PWR VALUE="30" />
</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 or write.

Example:

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

Example:

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

GET_VPB_CABLE_STATUS (RILOE II only)

The GET_VPB_CABLE_STATUS to return the status of the Virtual Power Button cable that may be connected to a RILOE II board. For this command to parse correctly, the GET_VPB_CABLE_STATUS command must appear within a SERVER_INFO command block. You can set SERVER_INFO MODE to read or write.

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

GET_VPB_CABLE_STATUS parameters

None

GET_VPB_CABLE_STATUS Runtime Errors

The possible GET_VPB_CABLE_STATUS error messages include:

- Virtual Power Button cable is attached.
- Virtual Power Button cable is not attached.

GET_VPB_CABLE_STATUS return messages

A possible GET_VPB_CABLE_STATUS return message is:

```
<RIBCL VERSION="2.22">
<RESPONSE
STATUS="0x0000"
MESSAGE='No error'
/>
<GET_VPB_CABLE>
<VIRTUAL POWER BUTTON CABLE="ATTACHED"/>
</GET_VPB_CABLE>
</RIBCL>
```

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 2 information. Read mode prevents modification of the iLO 2 information. You must have the Configure iLO 2 privilege to execute this command.

Example:

```
<SSO_INFO MODE="write">
……… SSO_INFOcommands ………
</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 2 v1.30 firmware. If iLO 2 is not licensed, you can still modify these settings. iLO 2 does not return an error. However, any SSO attempt is rejected if a license is not present. See the *HP Integrated Lights-Out 2 User Guide* for more information.

GET_SSO_SETTINGS

GET_SSO_SETTINGS command is used to retrieve SSO settings for iLO 2. 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.

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 2. 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 2. 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 2 privilege to execute this command.

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" />
</MOD_SSO_SETTINGS>
 </SSO_INFO>
 </LOGIN>
</RIBCL>
```

MOD_SSO_SETTINGS parameters

TRUST_MODE sets the Single Sign-On trust mode. The current setting is unaltered if this setting is omitted from the script. Accepted values:

- Disables HP SIM SSO on this processor.
- CertificateAccepts only SSO requests authenticated using a certificate.
- NameTrusts SSO requests from the named HP SIM Server.
- AllAccepts 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 unaltered. 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 unaltered:

- USER_ROLEPrivileges associated with User
- OPERATOR_ROLEPrivileges associated with Operator
- ADMINISTRATOR_ROLEPrivileges associated with Administrator

For each role, there are multiple privileges that can be manipulated. The privilege is specified within the role tag. If a privilege is omitted, the current value is unaltered. 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 User Guide.

- LOGIN_PRIVAllows login for this role.
- REMOTE_CONS_PRIVGrants access to remote console resources.
- RESET_SERVER_PRIVGrants access to power and reset controls.
- VIRTUAL_MEDIA_PRIVGrants access to virtual media resources.
- CONFIG_ILO_PRIVAllows settings modification.
- ADMIN_PRIVAllows local user account modification.

MOD_SSO_SETTINGS runtime errors

- Incorrect firmware version. SSO is only support on iLO 2 v1.30 firmware or later.
- User does not have correct privilege for action. CONFIG_ILO_PRIV required.
- SSO_INFO must be in write mode.

SSO_SERVER

SSO_SERVER command is used to create HP SIM Trusted SSO Server records. For this command to parse correctly, it must appear within a SSO_INFO command block, and SSO_INFO MODE must be set to write. You must have the Configure iLO 2 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 may 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 this 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 2 (the LOM processor requests the certificate from the specified HP SIM server using anonymous HTTP request). The iLO 2 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 2. However, you must obtain the x.509 certificate in advance. This method enables you to configure the iLO 2 in advance of placing it on the network with the HP SIM server. It also allows you to verify the contents of the HP SIM server certificate. See the *HP Integrated Lights-Out 2 User Guide* or the *HP SIM User Guide* for additional methods of obtaining the certificate from the HP SIM server.

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 2 until an SSO login is attempted. For example, the syntax to add an HP SIM Trusted Server name is `<SSO_SERVER NAME="hpsim1.hp.net" />`.

- IMPORT_FROM – Indicates that iLO 2 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
  ```

  iLO 2 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 2 import a server certificate resembles:

  ```
  <SSO_SERVER IMPORT_FROM="hpsim2.hp.net" />
  ```

- IMPORT_CERTIFICATE – Indicates that iLO 2 must import the literal .PEM encoded x.509 certificate data that follows. The data is encoded in a block of text that includes the `-----BEGIN CERTIFICATE-----` and `-----END CERTIFICATE-----` text. For example, the syntax to import an HP SIM Trusted Server certificate looks like the following:

  ```
  <SSO_SERVER>
  -----BEGIN CERTIFICATE-----
  MIIC3TCCAkYCBESzwFUwDQYJKoZIhvcNAQEFBQAwgbUxCzAJBgNVBAYTAlVTMRMwE................
  kXzhuVzPfWzQ+a2E9tGAE/YgNGTfS9vKkVLUf6QoP/RQpYpkl5BxrsN3gM/PeT3zrxyTleE=
  -----END CERTIFICATE-----
  </SSO_SERVER>
  ```

  The certificate is validated by iLO 2 to assure that it can be decoded before it is stored. An error results if the certificate is a duplicate or corrupt.

  iLO 2 does not support certificate revocation and does not honor certificates that appear expired. You must remove any revoked or expired certificates.

SSO_SERVER runtime errors

A runtime error is generated:

- If a certificate is a duplicate.
- If a certificate is corrupt.
- If the HP SIM server cannot be contacted using IMPORT_FROM.
- If the HP SIM Trusted Server database is full. You must delete other records to make sufficient room to add a new entry.
- If the 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 a SSO_INFO command block, and SSO_INFO MODE must be set to write. You must have the Configure iLO 2 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.

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.

10 HPQLOMGC command language

Using HPQLOMGC

HPQLOMGC reads directory settings for the management processor from an XML file. The script used is a subset of the RIBCL and has been extended to support multiple management processor firmware images. HPQLOMGC does not operate on iLO 2 devices.

The following is an example of an XML file:

```
<RIBCL VERSION="2.0">
<LOGIN USER_LOGIN="user" PASSWORD="password">
<DIR_INFO MODE="write">
<ILO_CONFIG>
<UPDATE_RIB_FIRMWARE IMAGE_LOCATION="C:\fw\ilo140.brk" />
</ILO_CONFIG>
<RILOE_CONFIG>
<UPDATE_RIB_FIRMWARE IMAGE_LOCATION="C:\fw\riloe.brk" />
</RILOE_CONFIG>
<RILOE2_CONFIG>
<UPDATE_RIB_FIRMWARE IMAGE_LOCATION="C:\fw\riloeii.brk" />
</RILOE2_CONFIG>
<MOD_DIR_CONFIG>
<DIR_AUTHENTICATION_ENABLED value="YES" />
<DIR_LOCAL_USER_ACCT value="YES" />
<DIR_SERVER_ADDRESS value="administration.wins.hp.com" />
<DIR_SERVER_PORT value="636" />
<DIR_OBJECT_DN value="CN=RILOP5,CN=Users,DC=RILOEGRP2,DC=HP" />
<DIR_OBJECT_PASSWORD value="aurora" />
<DIR_USER_CONTEXT_1 value="CN=Users,DC=RILOEGRP2,DC=HP" />
<DIR_USER_CONTEXT_2 value="" />
<DIR_USER_CONTEXT_3 value="" />
<DIR_ROLE value="CN=RILOEROLE,CN=Users,DC=RILOEGRP2,DC=HP" />
<DIR_LOGIN_NAME value="RILOEGRP2\Adminl" />
<DIR_LOGIN_PASSWORD value="aurora" />
</MOD_DIR_CONFIG>
</DIR_INFO>
</LOGIN>
</RIBCL>
```

ILO_CONFIG

RIBCL allows for only one firmware image per XML file. The command language for HPQLOMGC has been modified to allow for each management processor to have a specified firmware image within a single XML file. These commands must be displayed within a DIR_INFO block, and DIR_INFO must be in write mode. The management processor is reset after the firmware upgrade is complete. To update the firmware, the user must be logged in with the appropriate privilege.

This command line uses the following parameters:

- UPDATE_RIB_FIRMWARE IMAGE_LOCATION

  For more information, see "UPDATE_RIB_FIRMWARE parameters" (page 105).

- MOD_DIR_CONFIG

11 iLO 2 ports

Enabling the iLO 2 Shared Network Port feature through XML scripting

For information on how to use the SHARED_NETWORK_PORT command to enable the iLO 2 Shared Network Port through XML scripting, see "Using RIBCL" (page 75).

The following sample script configures the iLO 2 to select the Shared Network Port. You can customize this script to your needs. Using this script on platforms that do not support the Shared Network Port will cause an error.

```
<RIBCL version="2.21">
<LOGIN USER_LOGIN="adminname" PASSWORD="password">
<RIB_INFO MODE="WRITE">
<MOD_NETWORK_SETTINGS>
<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 2 dedicated NIC management port using the User Interface, RBSU, CLP, or XML. You can re-enable the iLO dedicated NIC management port using the iLO 2 RBSU or XML scripting. For information about how to use the SHARED_NETWORK_PORT command, see "Using RIBCL" (page 75).

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 the **Enter** key.
5. In the Network Configuration menu, press **Space Bar** to change the Network Interface Adapter Field to `ON`.
6. Press the **F10** key to save the configuration.
7. Select **File>Exit,** and press the **Enter** key.

After the iLO resets, the dedicated management NIC port is active.

To re-enable the dedicated iLO using XML, use the following sample RIBCL script. The sample script configures the 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.

```
<RIBCL version="2.21">
<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 iLO 2 parameters

Status Summary parameters

Parameter	Definition
Server name	Displays the server name. If the Insight Management Agents are being used with the host server operating system, they will provide the iLO 2 with the server name.
UUID	Identifies the host. Although the UUID is assigned when the system is manufactured, you can change this setting using the system RBSU during POST.
Server Serial Number / Product ID	Identifies the serial number of the server. Although the Serial Number is assigned when the system is manufactured, you can change this setting using the system RBSU during POST. The Product ID is used to distinguish between different systems with similar serial numbers. Although the Product ID is assigned when the system is manufactured, you can change this setting using the system RBSU during POST.
Virtual UUID	Appears when it is assigned by other software from HP. This value does not appear when it is not set.
Virtual Serial Number	The Virtual Serial Number is displayed when it is assigned by other software from HP. This value is not displayed when it is not set.
System Health	Represents the server internal health indicator, if supported. It summarizes issues with fans, temperature sensors, VRMs, and other monitored subsystems in the server. See the System Health page for details.
System ROM	The family and version of the active system ROM. If the system supports a backup system ROM, the backup date is also shown.
Internal Health LED	Represents the state of the Internal Health LED of the server when this page was loaded.
TPM Status	Represents the configuration status of Trusted Platform Module in the system.
Server Power	Displays if the host is powered ON, or in STANDBY (OFF) mode.
UID Light	Represents the state of the Unit Identification light when this page was loaded. You control the UID state using the button beside the UID icon in addition to the physical UID buttons on the server chassis. The UID helps you identify and locate a system and is used to indicate that a critical operation is in progress on the host, such as Remote console access or firmware update. The current state, ON or OFF, is the last state chosen using one of these methods. If a new state is chosen while the UID is blinking, this new state becomes the current state, and takes effect when the UID stops blinking. While the UID is blinking, the "current state" of the UID will be shown along with the tag (FLASHING). When the UID stops blinking, this tag is removed.
Last Used Remote Console	Displays the previously launched remote console and availability. This allows you to launch your preferred remote console quickly. You can use the remote console if it is available and you have user privileges. If the console is in use, launching the remote console provides access to the acquire button. You can choose a different console by following the Last Used Remote Console link.
Latest IML Entry	The most recent entry in the Integrated Management Log.
iLO 2 Name	Displays the name assigned to the Integrated Lights-Out 2 subsystem. By default, this is iLO prepended to the system serial number. This value is used for the network name, so it is unique.

Parameter	Definition
License Type	Displays whether the system has a feature license installed. Some features of iLO 2 cannot be accessed unless optionally licensed.
iLO 2 Firmware Version	Displays information about the version of iLO 2 firmware currently installed.
Active Sessions	Displays the users currently logged into iLO 2.
Latest iLO 2 Event Log Entry	Displays the most recent entry in the iLO 2 event log.
iLO 2 Date/Time	Displays the date (*MM/DD/YYYY*) as indicated by the Integrated Lights-Out 2 subsystem internal clock. The iLO 2 internal clock is synchronized with the host system at POST and when the Insight Agents run.

User Administration parameters

Parameter	Default value	Definition
User name	Administrator	This parameter is the user's real name as it is displayed in the user list and event log. It is not the name used to log in. The maximum length of the user name is 39 characters.
Login name	Administrator	This is a case-sensitive name that the user must provide to log in to iLO 2.
Password	A random, eight-character alphanumeric string that is factory assigned	This is a case-sensitive password that the user must provide to log in to iLO 2. In Security Options, the minimum password length can be assigned. The minimum password can be from 0 to 39 characters. The default minimum password length is eight characters. You must enter the password twice for verification.
Administer user accounts	Yes	This privilege allows a user to add, modify, and delete user accounts. It also allows the user to alter privileges for all users, including granting all permissions to a user.
Remote console access	Yes	This privilege allows a user to remotely manage the Remote Console of a managed system, including video, keyboard, and mouse controls.
Virtual power and reset	Yes	This privilege allows a user to power-cycle or reset the host platform.
Virtual media	Yes	This privilege allows a user to use virtual media on the host platform.
Configure iLO 2 settings	Yes	This privilege enables a user to configure most iLO 2 settings, including security settings. It does not include user account administration. After iLO 2 is correctly configured, revoking this privilege from all users prevents reconfiguration. A user with the Administer User Accounts privilege can enable or disable this privilege. iLO 2 can also be reconfigured if iLO 2 RBSU is enabled.

Global Settings parameters

Settings (parameters) found on the Access Options page of the iLO 2 user interface.

Parameter	Default value	Descriptions
Idle Connection Timeout (minutes)	30 minutes	This setting specifies the interval of user inactivity, in minutes, before the web server and Remote Console session automatically terminate. The following settings are valid: 15, 30, 60, 120 minutes, or 0 (infinite). The infinite timeout value does not log out inactive users.
Lights-Out Functionality	Enabled	This setting enables connection to iLO 2. If disabled, all connections to iLO 2 are prevented. The iLO 2 10/100 network and communications with operating system drivers are turned off if Lights-Out functionality is disabled. The iLO 2 Diagnostic Port for an HP ProLiant BL p Class server is also disabled. If iLO 2 functionality is disabled (including the iLO 2 Diagnostic Port), you must use the server's Security Override Switch to enable iLO 2. See your server documentation to locate the Security Override Switch and set it to override. Power up the server and use the iLO 2 RBSU to set Lights-Out Functionality to Enabled.
iLO 2 ROM-Based Setup Utility	Enabled	This setting enables or disables the iLO 2 ROM-Based Setup Utility. Normally, the iLO2 Option ROM prompts you to press **F8** to enter RBSU, but if iLO 2 is disabled or iLO 2 RBSU is disabled, the RBSU prompt is bypassed.
Require Login for iLO 2 RBSU	Disabled	This setting enables RBSU access with or without a user-credentials challenge. If this setting is Enabled, and you press **F8** during POST to enter iLO 2 RBSU, a login dialog box appears.
Show iLO 2 during POST	Disabled	This setting enables the display of the iLO 2 network IP address during the host server POST process.
Serial Command Line Interface Status	Enabled-Authentication Required	This setting enables you to change the login model of the CLI feature through the serial port. The following settings are valid: • Enabled – Authentication Required • Enabled – No Authentication • Disabled
Serial Command Line Interface Speed	9600	This setting enables you to use the serial port to change the speed of the serial port for the CLI feature. The following speeds (in bits/s) are valid: 9600, 19200, 38400, 57600, and 115200. The serial port configuration must be set to No parity, 8 data bits, and 1 stop bit (N/8/1) for proper operation. The serial port speed that is set by this parameter must match the speed of the serial port set in the System ROM RBSU setup.
Minimum Password Length	8	This setting specifies the minimum number of characters allowed when a user password is set or changed. The character length can be set at a value from 0 to 39.
Server Name		This setting enables you to specify the host server name. This value is assigned when using HP ProLiant Management Agents. If you do not use the agents and the host unnamed message appears, you can change it here. If the agents are running, the value you assign can be overwritten.

Parameter	Default value	Descriptions
		To force the browser to refresh, save this setting, and press **F5**.
Authentication Failure Logging	Enabled-Every 3rd Failure	This setting allows you to configure logging criteria for failed authentications. All login types are supported and every login type works independently. The following are valid settings: • Enabled-Every Failure – A failed login log entry is recorded after every failed login attempt. • Enabled-Every 2nd Failure – A failed login log entry is recorded after every second failed login attempt. • Enabled-Every 3rd Failure – A failed login log entry is recorded after every third failed login attempt. • Enabled-Every 5th Failure – A failed login log entry is recorded after every fifth failed login attempt. • Disabled – No failed login log entry is recorded.

Settings (parameters) found on the Services page of the iLO 2 user interface.

Parameter	Default value	Description
Secure Shell (SSH) Access	Enabled	This setting enables you to specify whether the SSH feature on the iLO 2 is enabled or disabled.
Secure shell (SSH) Port	22	This setting enables you to configure the iLO 2 SSH port to be used for SSH communications.
Telnet Access	Disabled	This setting enables you to connect a Telnet client to the Remote Console/Telnet port, providing access to the iLO 2 CLP. The following settings are valid: • EnablediLO 2 enables Telnet clients to connect to the Remote Console/Telnet port. Network port scanners can detect that iLO 2 is listening on this port. Unencrypted communication is allowed between the iLO 2 CLP and Telnet clients. • DisablediLO 2 does not allow Telnet clients to connect to the Remote Console/Telnet port. Network port scanners will not normally detect if this port is open on iLO 2. iLO 2 listens on this port for a few seconds when the Remote Console is opened, but Telnet connections are not accepted. Communication between the iLO 2 and Remote Console is always encrypted.
Remote Console/Telnet Port	23	This setting enables you to specify which port the iLO 2 Remote Console uses for remote console communications.
Web Server Non-SSL Port	80	This setting enables you to specify which port the embedded web server in iLO 2 uses for unencrypted communications.
Web Server SSL Port	443	This setting enables you to specify which port the embedded web server in iLO 2 uses for encrypted communications.
Terminal Services Passthrough	Disabled	This setting enables you to control the ability to support a connection through iLO 2 between a Microsoft

Parameter	Default value	Description
		Terminal Services client and Terminal Services server running on the host. The following settings are valid: • Automatic – When remote console is started, the Terminal Services client is launched. • Enabled – The pass-through feature is enabled and can connect the Terminal Services client directly to the iLO 2 without logging-into the iLO 2. • Disabled – The pass-through feature is off.
Terminal Services Port	3389	This setting enables you to specify the Terminal Services Port that the iLO 2 uses for encrypted communications with Terminal Services Pass-through software on the server. If the Terminal Services port is configured to anything other than the default, you must manually change the port number.
Virtual Media Port	17988	This setting enables you to specify the port for virtual media support in iLO 2 communications.
Shared Remote Console Port	9300	This setting enables you to specify the Shared Remote Console Port. The Shared Remote Console Port is opened on the client to allow additional users to connect to remote console in a peer-to-peer fashion. This port is only open when Shared Remote Console is in use.
Console Replay Port	17990	This setting enables you to specify the Console Replay Port. The Console Replay Port is opened on the client to enable the transfer of internal capture buffers to the client for replay. This port is only open when a capture buffer is being transferred to the client.
Raw Serial Data Port	3002	This setting specifies the Raw Serial Data port address. The Raw Serial Data port is only open while the `WiLODbg.exe` utility is being used to debug the host server remotely.

Settings (parameters) found on the Encryption page of the iLO 2 user interface.

Parameter	Default value	Description
Current cipher		Displays the current cipher for this web browser session. Upon logging into the iLO 2 using the web browser, the browser and the iLO 2 negotiate the cipher setting to be used for the session. This web page displays the negotiated cipher.
Enforce AES/3DES Encryption		This setting allows you to enable or disable AES/3DES encryption. • Disabled – AES/3DES encryption is not used. • Enabled – Cipher strength must be at least AES or 3DES to connect to iLO 2.

Network parameters

Parameter	Default value	Definition
NIC	Yes	This parameter enables the NIC to reflect the state of the iLO 2. The default setting for the NIC is `yes`, which is enabled. If DHCP is

Parameter	Default value	Definition
		disabled, you must assign a static IP address to the iLO 2. Assign the IP address using the iLO 2 IP address parameter.
DHCP	Yes	Enables you to select static IP (disabled) or Enables the use of a DHCP server to obtain an IP address for the iLO 2 subsystem. You cannot set the iLO 2 IP address and subnet mask if DHCP is enabled. Enabling DHCP allows you to configure the following DHCP options: • Use DHCP Supplied Gateway • Use DHCP Supplied DNS Servers • Use DHCP Supplied WINS Servers • Use DHCP Supplied Static Routes • Use DHCP Supplied Domain Name
IP address	N/A (DHCP)	Use this parameter to assign a static IP address to the iLO 2 on your network. By default, the IP address is assigned by DHCP.
Subnet mask	N/A (DHCP)	Use the subnet mask parameter to assign the subnet mask for the default gateway. By default, the subnet mask is assigned by DHCP.
Gateway IP address	N/A (DHCP)	Use the gateway parameter to assign the IP address of the network router that connects the iLO 2 subnet to another subnet where the management console resides. By default, the gateway is assigned by DHCP.
iLO 2 subsystem name	iLO 2*XXXXXXXXXXXX*, where the 12 *X*s are the server serial number (assigned at the factory)	The iLO 2 comes preset with a DNS/WINS name. The DNS/WINS name is "iLO 2" plus the serial number of the server. This name also is displayed on the tag attached to the bracket of iLO 2. You can change this value.
Domain name	N/A (DHCP)	Enter the name of the domain in which iLO 2 participates. By default, the domain name is assigned by DHCP.
Link	Automatic	Configures the duplex of the network transceiver.

Network DHCP/DNS parameters

Parameter	Default value	Definition
DHCP	Enabled	Enables you to select static IP (disabled) or enables the use of a DHCP server to obtain an IP address for iLO 2 subsystem. You cannot set the iLO 2 IP address and subnet mask if DHCP is enabled. Enabling DHCP allows you to configure the following DHCP options: • Use DHCP Supplied Gateway • Use DHCP Supplied DNS Servers • Use DHCP Supplied WINS Servers • Use DHCP Supplied Static Routes • Use DHCP Supplied Domain Name
IP Address	N/A (DHCP)	Use this parameter to assign a static IP address to iLO 2 on your network. By default, the IP address is assigned by DHCP.
Domain Name	N/A (DHCP)	Enter the name of the domain in which iLO 2 will participate. By default, the domain name is assigned by DHCP.
Use DHCP supplied gateway	Enabled	Toggles whether the iLO 2 will use the DHCP server-supplied gateway. If not, enter one in the Gateway IP Address box.

Parameter	Default value	Definition
Use DHCP supplied DNS servers	Enabled	Toggles whether iLO 2 will use the DHCP server-supplied DNS server list. If not, enter one in the Primary/Secondary/Tertiary DNS Server boxes.
Use DHCP supplied WINS servers	Enabled	Toggles whether iLO 2 will use the DHCP server-supplied WINS server list. If not, enter one in the Primary/Secondary WINS Server boxes.
Use DHCP supplied static routes	Enabled	Toggles whether iLO 2 will use the DHCP server-supplied static route. If not, enter one in the Static Route #1, #2, #3 boxes.
Use DHCP supplied domain name	Enabled	Toggles whether iLO 2 will use the DHCP server-supplied domain name. If not, enter one in the Domain Name box.
WINS Server Registration	Enabled	The iLO 2 automatically registers with a WINS server. By default, WINS server addresses are assigned by DHCP.
DDNS Server Registration	Enabled	The iLO 2 automatically registers with a DNS server. By default, DNS server addresses are assigned by DHCP.
Ping gateway on startup	Disabled	This option causes iLO 2 to send four ICMP echo request packets to the gateway when iLO 2 initializes. This option ensures that the ARP cache entry for iLO 2 is current on the router responsible for routing packets to and from iLO 2.
Domain name	N/A (DHCP)	Enter the name of the domain in which iLO 2 participates. By default, the domain name is assigned by DHCP.
DHCP server	N/A (DHCP)	This setting is automatically detected if DHCP is set to `yes`. You cannot change this setting.
Primary, secondary, and tertiary DNS server	N/A (DHCP)	Use this parameter to assign a unique DNS server IP address on the network. By default, the primary, secondary, and tertiary DNS servers are assigned by DHCP.
Primary and secondary WINS server	N/A (DHCP)	Use this parameter to assign a unique WINS server IP address on the network. By default, the primary and secondary WINS servers are assigned by DHCP.
Static routes #1, #2, #3	N/A for both the destination and gateway address (DHCP)	Use this parameter to assign a unique static route destination and gateway IP address pair on the network. Up to three static route pairs can be assigned. By default, the static routes are assigned by DHCP.
Blade server parameters		
Diagnostic port configuration parameters		
Transceiver speed autoselect	Yes	Toggles the ability of the Transceiver to auto-detect the speed and duplex of the network on the Diagnostic Port. Speed and Duplex are disabled if Autoselect is set to `yes`.
Speed	N/A (autoselect)	Configures the speed of the Diagnostic Port. This speed must match the speed of the Diagnostic Port network. If the Autoselect option is set to `yes`, the speed will be automatically configured by iLO 2.
Duplex	N/A (autoselect)	Configures the duplex of the Diagnostic Port. The duplex must match the duplex of the Diagnostic Port network. If the Autoselect option is set to `yes`, the duplex will be automatically configured by iLO 2.
IP address	192.168.1.1	The Diagnostic Port IP address. If DHCP is being used, the Diagnostic Port IP address is automatically supplied. If not, enter a static IP address here.
Subnet mask	255.255.255.0	The subnet mask for the Diagnostic Port IP network. If DHCP is being used, the Subnet Mask is automatically supplied. If not, enter the subnet mask for the network.

SNMP/Insight Manager settings parameters

Parameter	Default Value	Definition
SNMP alert destination(s)	No	Enter the IP address of the remote management PC that will receive SNMP trap alerts from the iLO 2. Up to three IP addresses can be designated to receive SNMP alerts.
Enable iLO 2 SNMP alerts	No	The iLO 2 alert conditions are detected by the iLO 2 and are independent of the host server operating system. These alerts can be Insight Manager SNMP traps. These alerts include major events, such as remote server power outages or server resets. They also include the iLO 2 events, such as security disabled or failed login attempt. The iLO 2 forwards the alerts to an HP SIMconsole using the destinations provided.
Forward Insight Manager Agent SNMP alerts	No	When set to `yes`, these alerts are generated by the Insight Management agents, which are provided for each supported network operating system. The agents must be installed on the host server to receive these alerts. These alerts are sent to HP SIM clients on the network and are forwarded asynchronously by the iLO 2 to the IP addresses that have been configured to receive them.
Enable SNMP pass-thru	Yes	The Enable SNMP pass-through option enables the system to pass SNMP packets from the Insight Management Agent. When set to `No`, all SNMP traffic is stopped and will not pass-through the iLO 2.
Insight Manager Web Agent URL		The Insight Manager Web Agent URL option enables you to enter the IP address or the DNS name of the host server on which the Insight Manager Web Agents are running. Entering this data in the field provided enables iLO 2 to create a link from the iLO 2 Web pages to the pages of the Web Agent.
Level of data returned	Medium	The Level of Data Returned option regulates how much data is returned to an anonymous request for the iLO 2 information from HP SIM. All settings, except the None Data Level, provide sufficient data to allow integration with HP SIM. The Medium and High settings enable HP SIM and Systems Insight Manager to associate the management processor with the host server. The None Data Level prevents the iLO 2 from responding to the HP SIM requests.

Directory settings parameters

Parameter	Default value	Definition
Disable directory authentication	No	This parameter enables or disables directory authentication. If directory support is properly configured, this enables user login to iLO 2 using directory credentials.
Schema-free directory	Yes	This parameter enables or disables the use of schema-free directories.
Use HP extended schema	No	This parameter enables or disables the use of extended schema directories.
Enable local user accounts	Yes	This option enables a user to log in using a local user account instead of a directory account. By default, this setting is Enabled.
Directory server address	0.0.0.0	This parameter specifies the Directory Server DNS name or IP address. HP recommends using a DNS name or multi-host DNS name. If an IP address is used, the directory will not be available if that server is down.

Parameter	Default value	Definition
Directory server LDAP port	636	This option sets the port number used to connect to the directory server. The SSL-secured LDAP port number is 636.
LOM object distinguished name		This option specifies the unique name for the iLO 2 in the directory. LOM Object Distinguished Names are limited to 256 characters.
LOM object password		This parameter specifies the password for the iLO 2 object to access the directory. LOM Object Passwords are limited to 39 characters. **NOTE:** At this time, the LOM Object Password field is not used. This field is to provide forward compatibility with future firmware releases.
LOM object password confirm		Prevents mistyped passwords. If you change the LOM Object Password, also enter the new password in this field.
Directory user context 1, directory user context 2, ... up to directory user context 15		This parameter enables you to specify up to 15 searchable contexts used to locate the user when the user is trying to authenticate using the directory. Directory User Contexts are limited to 128 characters each. Directory User Contexts enable you to specify directory user containers that are automatically searched when an iLO 2 login is attempted. This eliminates the requirement of entering a fully distinguished user name at the login screen. For example, the search context, "ou=lights out devices,o=corp" would allow the user "cn=manager,ou=lights out devices,o=corp" to login to iLO 2 using just "manager." Active Directory allows an additional search context format, "@hostname" for example, "@directory.corp."

BL p-Class parameters

Parameter	Default value	Definition
Rack name	Provided by rack	The rack name is used to logically group together the components that compose a single rack. When changed, the rack name is communicated to all other components connected in a rack. The name is used when logging and alerting to assist in identifying the component.
Enclosure name	Provided by rack	The enclosure name is used to logically group together the server blades that compose a single enclosure. When changed, the enclosure name is communicated to all other server blades connected in the same enclosure. The name is used when logging and alerting to assist in identifying the component.
Bay name		The bay name is used when logging and alerting to assist in identifying a component or its function.
Bay	Provided by rack	The ProLiant BL p-Class enclosure can support one to eight server blades. The bays are numbered from left to right starting with 1 and finishing with 8. The bay number is used to assist in physically identifying the faulty server blade or other error conditions. This information is for viewing only.
Rack serial number	Provided by rack	The rack serial number identifies the components in the rack as a logical grouping. The serial number is determined during power-up of the various components to create a unique rack serial number. Switching components (server blade enclosure or power supplies) alters the rack serial number.
Enclosure serial number	Provided by rack	The enclosure serial number identifies the particular server blade enclosure in which a server blade resides.

Parameter	Default value	Definition
Blade serial number	Provided by blade server	The blade serial number identifies the serial number for the server blade product.
Power source	Rack provides power	The server blade enclosure can be installed in a rack by using one of two configurations: • The server blade power supplies can be used to convert normal AC facility power to 48 V DC to power the rack. In this configuration, select the power source as **Rack Provides Power.** This setting enables each server blade, enclosure, and power supply to communicate power requirements to ensure proper power consumption without risking power failures. • If the facility can provide 48 V DC power directly, without the need for the provided power supplies, then select **Facility Provides 48V.** Each server blade will not be required to communicate with the infrastructure for power when powering on or off. **NOTE:** It is essential that proper power sizing requirements be performed to ensure sufficient power for all the server blades and other components of the rack.
Enable automatic power on	On	Each server blade can be configured to automatically power on when inserted into the enclosure. Depending on the Power Source setting, the server blade communicates with the rack to determine if enough power is available to power on. If the power is available, then the server blade automatically powers on and begins the normal server booting process.
Enable rack alert logging (IML)	On	As the server blade receives alerts, these events can be logged to the IML. You can view these events by using the iLO 2 System **StatusIML** tab. Additional IML viewing tools are available to allow viewing from the installed operating system on the server blade.

iLO Advanced Pack License Key

The iLO 2 Advanced Pack License Key option is used to enable the iLO 2 Advanced Features including Graphical Remote Console, virtual media (floppy and CD-ROM), and directory support. Enter the 25-character key in this field to enable the features.

13 Technical support

HP contact information

For the name of the nearest HP authorized reseller:

- See the Contact HP worldwide (in English) webpage at http://www.hp.com/go/assistance.

For HP technical support:

- To obtain HP contact information for any country, see the Contact HP worldwide web site at http://www.hp.com/go/assistance.

  To contact HP by phone:

  - Call 1 800 334 5144. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, see the HP website at http://h20559.www2.hp.com/portal/site/cpc?ac.admitted=1337622897556.2043657423.175170253.

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

Acronyms and abbreviations

ASCII	American Standard Code for Information Interchange
ASM	Advanced Server Management
ASR	Automatic Server Recovery
BMC	baseboard management controller
CA	certificate authority
CGI	Common Gateway Interface
CLI	Command Line Interface
CLP	command line protocol
CR	Certificate Request
DAV	Distributed Authoring and Versioning
DDNS	Dynamic Domain Name System
DHCP	Dynamic Host Configuration Protocol
DLL	dynamic link library
DNS	domain name system
DSA	Digital Signature Algorithm
EMS	Emergency Management Services
EULA	end user license agreement
FEH	fatal exception handler
FSMO	Flexible Single-Master Operation
GUI	graphical user interface
HB	heartbeat
HPONCFG	HP Lights-Out Online Configuration utility
HPQLOMGC	HP Lights-Out Migration Command Line
ICMP	Internet Control Message Protocol
IIS	Internet Information Services
iLO	Integrated Lights-Out
IML	Integrated Management Log
IP	Internet Protocol
IPMI	Intelligent Platform Management Interface
ISIP	Enclosure Bay Static IP
JVM	Java Virtual Machine
KCS	Keyboard Controller Style
LAN	local-area network
LDAP	Lightweight Directory Access Protocol
LED	light-emitting diode
LOM	Lights-Out Management
LSB	least significant bit
MAC	Media Access Control
MLA	Master License Agreement
MMC	Microsoft Management Console
MP	Multilink Point-to-Point Protocol
MTU	maximum transmission unit

NIC	network interface controller
NMI	non-maskable interrupt
NVRAM	non-volatile memory
PERL	Practical Extraction and Report Language
PKCS	Public-Key Cryptography Standards
POST	Power-On Self Test
PSP	ProLiant Support Pack
RAS	remote access service
RBSU	ROM-Based Setup Utility
RDP	Remote Desktop Protocol
RIB	Remote Insight Board
RIBCL	Remote Insight Board Command Language
RILOE	Remote Insight Lights-Out Edition
RILOE II	Remote Insight Lights-Out Edition II
RSA	Rivest, Shamir, and Adelman public encryption key
RSM	Remote Server Management
SLES	SUSE Linux Enterprise Server
SMASH	System Management Architecture for Server Hardware
SMS	System Management Server
SNMP	Simple Network Management Protocol
SSH	Secure Shell
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
UART	universal asynchronous receiver-transmitter
UID	unit identification
USB	universal serial bus
VM	Virtual Machine
VPN	virtual private networking
WINS	Windows Internet Naming Service
WS	web services
XML	extensible markup language

Index

A

ADD_USER
- ADD_USER parameters, 78
- ADD_USER runtime errors, 79
- obtaining the basic configuration, 68

administration
- Group administration and iLO 2 scripting, 48
- User Administration parameters, 162

authentication, WS-Management, 11

authorized reseller
- HP contact information, 171
- Technical support, 171

B

BL p-Class blade parameters, 169

blade commands
- c-Class, 33
- p-Class, 32

blade commands, CLP, 32

blade commands, RIBCL, 124

blade information, 32

boot commands, 33

boot commands, CLP, 33

boot commands, RIBCL
- COLD_BOOT_SERVER, 148
- WARM_BOOT_SERVER, 148

C

c-Class blade commands, 33

certificate signing request settings, 113

certificate subject information, 115

certificate, settings
- CERTIFICATE_SIGNING_REQUEST parameters, 113
- IMPORT_CERTIFICATE, 115

CERTIFICATE_SIGNING_REQUEST
- CERTIFICATE_SIGNING_REQUEST, 113
- CERTIFICATE_SIGNING_REQUEST errors, 113
- CERTIFICATE_SIGNING_REQUEST parameters, 113

CGI helper scripts, 61

CGI, software components, 61

CLEAR_EVENTLOG
- CLEAR_EVENTLOG, 89
- CLEAR_EVENTLOG parameters, 89
- CLEAR_EVENTLOG runtime errors, 89

CLI, commands
- Command line access, 13
- Command line interface overview, 13

CLP base commands, 15

CLP, blade commands, 32

CLP, boot commands, 33

CLP, connection options, 13

CLP, embbed health settings, 23

CLP, escape commands, 15

CLP, eventlog commands, 32

CLP, firmware updates, 30

CLP, iLO 2 commands, 21

CLP, LED commands, 34

CLP, license commands, 25

CLP, miscellaneous commands, 37

CLP, multi-user support, 13

CLP, network commands, 19

CLP, SNMP settings, 25

CLP, specific commands, 16

CLP, start and reset commands, 29

CLP, system target and properties settings, 34

CLP, user commands, 17, 73

CLP, using, 13

CLP, virtual media commands, 26

COLD_BOOT_SERVER
- COLD_BOOT_SERVER, 148
- COLD_BOOT_SERVER parameters, 148
- COLD_BOOT_SERVER runtime errors, 148

command block, , 152

command block, DIR_INFO, 119

command block, LOGIN, 76

command block, RACK_INFO, 124

command block, RIB_INFO, 85

command block, SERVER_INFO, 131

command block, USER_INFO, 77

command line mode, 13

command-line parameters, HPONCFG, 67

commands, base, 15

commands, blade, 32

commands, directory, 26

commands, network, 19

commands, user, 17, 73

commands, virtual media, 26

commands, WS-Management, 11

compatibility, WS-Management, 11

COMPUTER_LOCK_CONFIG
- COMPUTER_LOCK_CONFIG, 89
- COMPUTER_LOCK_CONFIG parameters, 90
- COMPUTER_LOCK_CONFIG runtime errors, 90

configuration procedures
- Obtaining a specific configuration, 69
- obtaining the basic configuration, 68
- Setting a configuration, 70

configuration utilities, 65

configuration, capturing, 71

configuration, obtaining specific information, 69

configuration, restoring, 72

configuration, setting a configuration, 70

contacting HP
- Before you contact HP, 171
- HP contact information, 171

CPQLOCFG, batch processing, 52

CPQLOCFG.EXE utility, 48

CPQLOCFG.EXE, parameters, 52

CSR_CERT_SETTINGS, 113

D
data types, 75
data types, RIBCL, 75
dedicated NIC, re-enabling, 160
DELETE_CURRENT_USER
  DELETE_CURRENT_USER, 80
  DELETE_CURRENT_USER parameters, 80
  DELETE_CURRENT_USER runtime errors, 80
DELETE_SERVER
  DELETE_SERVER, 157
  DELETE_SERVER parameters, 157
  DELETE_SERVER runtime errors, 157
DELETE_SSH_KEY, 80
DELETE_USER
  DELETE_USER, 79
  DELETE_USER parameter, 79
  DELETE_USER runtime errors, 80
DIR_INFO command block, 119
directory services, 168
directory settings, 168
directory settings, parameters, 168
directory settings, RIBCL
  DIR_INFO, 119
  GET_DIR_CONFIG, 120
  MOD_DIR_CONFIG, 122
domain name system (DNS)
  CPQLOCFG parameters, 52
  GET_NETWORK_SETTINGS return messages, 91
  MOD_DIR_CONFIG parameters, 123
  MOD_NETWORK_SETTINGS, 92
  obtaining the basic configuration, 68
  Opening an SSL connection, 56
Dynamic Host Configuration Protocol (DHCP)
  GET_NETWORK_SETTINGS return messages, 91
  MOD_NETWORK_SETTINGS, 92
  obtaining the basic configuration, 68

E
EJECT_VIRTUAL_MEDIA
  EJECT_VIRTUAL_MEDIA, 110
  EJECT_VIRTUAL_MEDIA parameters, 110
  EJECT_VIRTUAL_MEDIA runtime errors, 110
embedded health settings, CLP, 23
embedded health settings, RIBCL, 133
enclosure, IP settings
  GET_ENCLOSURE_IP_SETTINGS, 127
  MOD_ENCLOSURE_IP_SETTINGS, 128
eventlog commands, CLP, 31
eventlog commands, RIBCL
  CLEAR_EVENTLOG, 89
  GET_EVENT_LOG, 87
events, WS-Management, 11
examples, RIBCL, 75

F
F-keys
  Linux codes for the F-keys, 41
  VT100+ codes for the F-keys, 41
features, IPMI 2.0, 10
features, SSH, 43
firmware update, CLP, 30
firmware update, RIBCL
  GET_FW_VERSION, 105
  UPDATE_RIB_FIRMWARE, 104

G
GET_ALL_USERS
  GET_ALL_USERS, 83
  GET_ALL_USERS parameters, 84
  GET_ALL_USERS return messages, 84
  GET_ALL_USERS runtime errors, 84
GET_ALL_USERS_INFO
  GET_ALL_USER_INFO, 84
  GET_ALL_USER_INFO parameters, 85
  GET_ALL_USER_INFO return messages, 85
  GET_ALL_USER_INFO runtime errors, 85
GET_CERT_SUBJECT_INFO, 115
GET_DIAGPORT_SETTINGS
  GET_DIAGPORT_SETTINGS, 125
  GET_DIAGPORT_SETTINGS parameters, 126
  GET_DIAGPORT_SETTINGS return messages, 126
  GET_DIAGPORT_SETTINGS runtime errors, 126
GET_DIR_CONFIG
  GET_DIR_CONFIG, 120
  GET_DIR_CONFIG parameters, 120
  GET_DIR_CONFIG return messages, 120
  GET_DIR_CONFIG runtime errors, 120
GET_EMBEDDED_HEALTH
  GET_EMBEDDED_HEALTH, 133
  GET_EMBEDDED_HEALTH parameters, 133
  GET_EMBEDDED_HEALTH return messages, 133
GET_ENCLOSURE_IP_SETTINGS
  GET_ENCLOSURE_IP_SETTINGS, 127
  GET_ENCLOSURE_IP_SETTINGS parameters, 127
  GET_ENCLOSURE_IP_SETTINGS return messages, 127
GET_EVENT_LOG
  GET_EVENT_LOG, 87
  GET_EVENT_LOG parameters, 87
  GET_EVENT_LOG return messages, 88
  GET_EVENT_LOG runtime errors, 88
GET_FIRMWARE_VERSION
  GET_FW_VERSION, 105
  GET_FW_VERSION parameters, 106
  GET_FW_VERSION return messages, 106
  GET_FW_VERSION runtime errors, 106
GET_GLOBAL_SETTINGS
  GET_GLOBAL_SETTINGS, 95
  GET_GLOBAL_SETTINGS parameters, 96
  GET_GLOBAL_SETTINGS return messages, 96
  GET_GLOBAL_SETTINGS runtime errors, 96
GET_HOST_POWER_REG_INFO
  GET_HOST_POWER_REG_INFO, 138
  GET_HOST_POWER_REG_INFO parameters, 139
  GET_HOST_POWER_REG_INFO return messages, 139
  GET_HOST_POWER_REG_INFO runtime errors, 139
GET_HOST_POWER_SAVER_STATUS
  GET_HOST_POWER_SAVER_STATUS, 137
  GET_HOST_POWER_SAVER_STATUS parameters, 137

GET_HOST_POWER_SAVER_STATUS return messages, 137
GET_HOST_POWER_SAVER_STATUS runtime errors, 137
GET_HOST_POWER_STATUS
GET_HOST_POWER_SAVER_STATUS, 137
GET_HOST_POWER_STATUS, 140
GET_HOST_POWER_STATUS Parameters, 140
GET_HOST_POWER_STATUS Return Messages, 140
GET_HOST_POWER_STATUS Runtime Errors, 140
GET_HOST_PWR_MICRO_VER
GET_HOST_PWR_MICRO_VER, 141
GET_HOST_PWR_MICRO_VER parameters, 141
GET_HOST_PWR_MICRO_VER return messages, 142
GET_HOST_PWR_MICRO_VER runtime errors, 141
GET_NETWORK_SETTINGS
GET_NETWORK_SETTINGS, 90
GET_NETWORK_SETTINGS parameters, 91
GET_NETWORK_SETTINGS return messages, 91
GET_NETWORK_SETTINGS runtime errors, 91
GET_ONE_TIME_BOOT, 142
GET_PERSISTENT_BOOT, 143
GET_POWER_CAP, 136
GET_POWER_READINGS
GET_POWER_READINGS, 135
GET_POWER_READINGS parameters, 135
GET_POWER_READINGS return messages, 135
GET_PWREG_CAPABILITIES, 145
GET_PWREG_CAPABILITIES parameters, 145
GET_PWREG_CAPABILITIES return messages, 145
GET_PWREG_CAPABILITIES runtime errors, 145
GET_RACK_SETTINGS
GET_RACK_SETTINGS, 125
GET_RACK_SETTINGS parameters, 125
GET_RACK_SETTINGS return messages, 125
GET_RACK_SETTINGS runtime errors, 125
GET_SERVER_AUTO_PWR
GET_SERVER_AUTO_PWR, 150
GET_SERVER_AUTO_PWR parameters, 150
GET_SERVER_AUTO_PWR return message, 150
GET_SERVER_NAME, 132
GET_SNMP_IM_SETTINGS
GET_SNMP_IM_SETTINGS, 102
GET_SNMP_IM_SETTINGS parameters, 103
GET_SNMP_IM_SETTINGS return messages, 103
GET_SNMP_IM_SETTINGS runtime errors, 103
GET_SSO_SETTINGS, 152
GET_TOPOLOGY
GET_TOPOLOGY, 129
GET_TOPOLOGY parameters, 129
GET_TOPOLOGY return message, 129
GET_TWOFACTOR_SETTINGS
GET_TWOFACTOR_SETTINGS, 116
GET_TWOFACTOR_SETTINGS parameters, 116
GET_TWOFACTOR_SETTINGS return messages, 116
GET_TWOFACTOR_SETTINGS runtime errors, 116
GET_UID_CONTROL
GET_UID_STATUS, 150
UID_CONTROL errors, 151
UID_CONTROL parameters, 151
GET_UID_STATUS
GET_UID_STATUS, 150
GET_UID_STATUS parameters, 150
GET_UID_STATUS response, 151
GET_USER
GET_USER, 81
GET_USER parameter, 81
GET_USER return messages, 81
GET_USER runtime errors, 81
GET_VM_STATUS
GET_VM_STATUS, 110
GET_VM_STATUS parameters, 111
GET_VM_STATUS return messages, 111
GET_VM_STATUS runtime errors, 111
GET_VPB_CABLE_STATUS
GET_VPB_CABLE_STATUS (RILOE II only), 151
GET_VPB_CABLE_STATUS parameters, 151
GET_VPB_CABLE_STATUS return messages, 152
GET_VPB_CABLE_STATUS Runtime Errors, 151
global settings, 163
global settings parameters, 163
guidelines, RIBCL, 75

H
HOLD_PWR_BTN
HOLD_PWR_BTN, 147
HOLD_PWR_BTN parameters, 148
HOLD_PWR_BTN runtime errors, 148
HOTKEY_CONFIG
HOTKEY_CONFIG, 106
HOTKEY_CONFIG parameters, 106
HOTKEY_CONFIG runtime errors, 107
HP Insight Control server deployment, 10
HP Insight Control software, 10
HP Lights-Out Migration Command Line (HPQLOMGC)
HPQLOMGC command language, 158
HP SIM parameters, 168
HP SIM, application launch, 51
HP SIM, grouping LOM devices, 50
HP SIM, integration, 44
HP technical support, 171
HPONCFG (HP Lights-Out Online Configuration Utility), 65
HPONCFG, commands, 67
HPONCFG, configuration examples
obtaining the basic configuration, 68
Setting a configuration, 70
HPONCFG, iLO configuration examples
Capturing and restoring a configuration, 72
Obtaining a specific configuration, 69
HPONCFG, installation, 66
HPONCFG, installing on a Linux server, 66
HPONCFG, Linux
Using HPONCFG on Linux servers, 68
Using HPONCFG on Windows servers, 67
Windows server installation, 66
HPONCFG, online configuration untility, 65
HPONCFG, parameters, 67

HPONCFG, requirements, 65
   HPONCFG supported operating systems, 65
HPONCFG, using
   HPONCFG online configuration utility, 65
   Installing HPONCFG, 66
   Using HPONCFG on Windows servers, 67
HPONCFG, utility overview, 66
HPONCFG, variable substitution, 71
HPQLOMGC, using, 158

I
IIS, scripted media, 62
iLO 2 port, re-enabling, 160
iLO 2 settings
   iLO 2 settings, 21
   ILO_CONFIG, 158
iLO 2 settings, CLP, 21
iLO 2 settings, RIBCL, 85
iLO 2 status parameters, 161
iLO ports, 160
ILO_CONFIG, 158
IMPORT_CERTIFICATE
   IMPORT_CERTIFICATE, 115
   IMPORT_CERTIFICATE errors, 116
   IMPORT_CERTIFICATE parameters, 116
IMPORT_SSH_KEY
   IMPORT_SSH_KEY, 121
   IMPORT_SSH_KEY parameters, 121
   IMPORT_SSH_KEY runtime errors, 122
importing SSH keys, PuTTY, 45
INSERT_VIRTUAL_MEDIA
   INSERT_VIRTUAL_FLOPPY runtime errors, 110
   INSERT_VIRTUAL_MEDIA, 109
   INSERT_VIRTUAL_MEDIA parameters, 109
installation, Windows server, 66
integration, HP Insight Control Software, 10
Intelligent Platform Management Interface (IPMI), 10
Internet Information Services Manager, 62
introduction, 10
IP settings, enclosure
   GET_ENCLOSURE_IP_SETTINGS, 127
   LICENSE, 108
   LICENSE parameters, 108
   LICENSE runtime errors, 109
   MOD_ENCLOSURE_IP_SETTINGS, 128
IPMI (Intelligent Platform Management Interface), 10

K
KCS (Keyboard Controller Style), 10
key map, VT100, 39
Keyboard Controller Style (KCS), 10

L
LED commands, CLP, 34
license commands, CLP, 25
license commands, RIBCL, 108
license parameters, 170
Lights-Out Configuration Utility *see* CPQLOCFG
Linux, F-key codes, 41
LOGIN command block
   LOGIN, 76
   LOGIN parameters, 77
   LOGIN runtime errors, 77

M
management port, 160
MOD_BLADE_RACK
   MOD_BLADE_RACK, 130
   MOD_BLADE_RACK parameters, 130
   MOD_BLADE_RACK runtime errors, 131
MOD_DIAGPORT_SETTINGS
   MOD_DIAGPORT_SETTINGS, 126
   MOD_DIAGPORT_SETTINGS parameters, 126
   MOD_DIAGPORT_SETTINGS runtime errors, 127
MOD_DIR_CONFIG
   MOD_DIR_CONFIG, 122
   MOD_DIR_CONFIG parameters, 123
   MOD_DIR_CONFIG runtime errors, 124
MOD_ENCLOSURE_IP_SETTINGS
   MOD_ENCLOSURE_IP_SETTINGS, 128
   MOD_ENCLOSURE_IP_SETTINGS parameters, 129
   MOD_ENCLOSURE_IP_SETTINGS runtime errors, 129
MOD_GLOBAL_SETTINGS
   MOD_GLOBAL_SETTINGS, 97
   MOD_GLOBAL_SETTINGS parameters, 100
   MOD_GLOBAL_SETTINGS runtime errors, 102
MOD_NETWORK_SETTINGS
   MOD_NETWORK_SETTINGS, 92
   MOD_NETWORK_SETTINGS parameters, 93
   MOD_NETWORK_SETTINGS runtime errors, 95
   obtaining the basic configuration, 68
MOD_SNMP_IM_SETTINGS
   MOD_SNMP_IM_SETTINGS, 103
   MOD_SNMP_IM_SETTINGS parameters, 104
   MOD_SNMP_IM_SETTINGS runtime errors, 104
MOD_SSO_SETTINGS
   MOD_SSO_SETTINGS, 153
   MOD_SSO_SETTINGS parameters, 154
   MOD_SSO_SETTINGS runtime errors, 155
MOD_TWOFACTOR_SETTINGS
   MOD_TWOFACTOR_SETTINGS, 117
   MOD_TWOFACTOR_SETTINGS parameters, 118
   MOD_TWOFACTOR_SETTINGS runtime errors, 119
MOD_USER
   ADD_USER, 77
   MOD_USER, 82
   MOD_USER parameters, 82
   MOD_USER runtime errors, 83
Mxagentoconfig, 45

N
network settings parameters
   Network DHCP/DNS parameters, 166
   Network parameters, 165
network settings, CLP, 19
network settings, RIBCL
   GET_NETWORK_SETTINGS, 90
   MOD_NETWORK_SETTINGS, 92

O
online configuration untility, 65
OpenSSH utility, 43
operating systems supported, 65
operational overview, 75
overview, 10
overview, CLP, 13
overview, HPONCFG, 65
overview, IPMI, 10
overview, Perl scripting, 55
overview, RIBCL, 75
overview, Telnet, 38
overview, virtual media scripting, 59

P
p-Class blade commands, 32
parameter definitions, 161
Perl, sending XML scripts, 56
Perl, SSL connection, 56
Perl, using, 55
Perl, XML enhancements, 55
phone numbers, 171
power management
  HP Insight Control Software deployment, 10
properties, system, 34
PuTTY utility, 43
PuTTY, importing SSH keys, 45
PuTTY, starting a session, 44

R
RACK_INFO command block, 124
Remote Insight Board Command Language (RIBCL), 75
RESET_RIB
  RESET_RIB, 87
  RESET_RIB parameters, 87
  RESET_RIB runtime errors, 87
RESET_SERVER
  PRESS_PWR_BTN, 147
  PRESS_PWR_BTN parameters, 147
  PRESS_PWR_BTN runtime errors, 147
  RESET_SERVER, 147
  RESET_SERVER errors, 147
  RESET_SERVER parameters, 147
response definition, RIBCL, 75
RIB_INFO command block, 85
RIBCL command block
  RIBCL, 76
  RIBCL parameters, 76
  RIBCL runtime errors, 76
RIBCL, data types, 75
RIBCL, DIR_INFO commands, 119
RIBCL, examples, 75
RIBCL, LOGIN command, 76
RIBCL, RACK_INFO commands, 124
RIBCL, response definitions, 75
RIBCL, RIB_INFO commands, 85
RIBCL, SERVER_INFO commands, 131
RIBCL, SSO_, 152
RIBCL, string
  Boolean string, 75
  Specific string, 75
  String, 75
RIBCL, USER_INFO commands, 77

S
script body, XML, 55
scripting interface, perl, 55
scripting, virtual media, 59
scripts
  HPONCFG online configuration utility, 65
  Opening an SSL connection, 56
  Overview of the RIBCL, 75
  Sending the XML header and script body, 56
  Using HPONCFG on Windows servers, 67
  Using Perl with the XML scripting interface, 55
  Windows server installation, 66
  XML header, 75
Secure Shell (SSH), 43
Secure Sockets Layer (SSL)
  Opening an SSL connection, 56
  Sending the XML header and script body, 56
  WS-Management compatibility overview, 11
server identification, 161
server status, 161
server status parameters, 161
SERVER_AUTO_PWR
  SERVER_AUTO_PWR, 149
  SERVER_AUTO_PWR parameters, 149
  SERVER_AUTO_PWR runtime errors, 149
SERVER_INFO command block, 131
SERVER_NAME, 132
SET_HOST_POWER
  SET_HOST_POWER Parameters, 141
  SET_HOST_POWER Runtime Errors, 141
  SET_HOST_POWER_SAVER parameters, 138
  SET_HOST_POWER_SAVER runtime errors, 138
SET_ONE_TIME_BOOT, 143
SET_PERSISTENT_BOOT, 144
SET_POWER_CAP, 136
SET_VM_STATUS
  SET_VM_STATUS, 111
  SET_VM_STATUS parameters, 112
  SET_VM_STATUS runtime errors, 113
setup, scripted, 55
shared network port, enabling, 160
shared network port, features, 160
shared ports, 160
SNMP parameters, 168
SNMP settings, CLP, 25
SNMP settings, RIBCL
  GET_SNMP_IM_SETTINGS, 102
  MOD_SNMP_IM_SETTINGS, 103
specific CLP commands, 16
SSH key authorization, 44
SSH key authorization, tool definition files, 44
SSH keys, importing
  Importing SSH keys from PuTTY, 45
  Importing SSH keys generated using ssh-keygen, 47

SSH utility, 43
SSH, connection, 43
SSH, features, 43
ssh-keygen, 47
SSL connection, opening, 56
SSL, WS-Management, 11
SSO_INFO, 152
SSO_SERVER
  SSO_SERVER, 155
  SSO_SERVER parameters, 156
  SSO_SERVER runtime errors, 157
start and reset commands, CLP, 29
start and reset commands, RIBCL
  COLD_BOOT_SERVER, 148
  HOLD_PWR_BTN, 147
  PRESS_PWR_BTN, 147
  RESET_RIB, 87
  RESET_SERVER, 147
  WARM_BOOT_SERVER, 148
starting a PuTTY session, 44
status, WS-Management, 11
string, RIBCL
  Boolean string, 75
  Specific string, 75
  String, 75
support, 171
supported key sequences
  Supported hot keys, 107
  Supported key sequences, 39
supported operating systems, 65
system status, 161
system target information, CLP, 34
system target information, RIBCL, 131
system, targets, 34

T
technical support
  Before you contact HP, 171
  HP contact information, 171
  Technical support, 171
telephone numbers
  Before you contact HP, 171
  HP contact information, 171
  Technical support, 171
Telnet, 38
  Telnet support, 38
Telnet, command set, 38
Telnet, key sequences, 39
Telnet, security, 39
Telnet, using
  Telnet support, 38
  Using Telnet, 38
topology, RIBCL commands, 129
two-factor authentication, settings
  GET_TWOFACTOR_SETTINGS, 116
  MOD_TWOFACTOR_SETTINGS, 117

U
UID_CONTROL, 151
UPDATE_RIB_FIRMWARE
  UPDATE_RIB_FIRMWARE, 104
  UPDATE_RIB_FIRMWARE parameters, 105
  UPDATE_RIB_FIRMWARE runtime errors, 105
user account, adding, 75
user administration parameters, 162
user settings, CLP, 17, 73
user settings, RIBCL, 77
USER_INFO command block, 77

V
variable substitution, HPONCFG, 71
virtual media commands, CLP, 26
virtual media commands, RIBCL
  EJECT_VIRTUAL_MEDIA, 110
  GET_VM_STATUS, 110
  INSERT_VIRTUAL_MEDIA, 109
  SET_VM_STATUS, 111
virtual media image files, 61
virtual media scripting, CGI helper, 61
virtual media scripting, IIS requirements, 62
virtual media scripting, Linux, 60
virtual media scripting, using, 59
virtual media scripting, web server requirements, 59
VT100 key map, 39
VT100, F-key codes
  Linux codes for the F-keys, 41
  VT100+ codes for the F-keys, 41

W
WARM_BOOT_SERVER
  WARM_BOOT_SERVER, 148
  WARM_BOOT_SERVER parameters, 149
  WARM_BOOT_SERVER runtime errors, 149
Windows server installation, 66

X
XML (Extensible Markup Language)
  Using Perl with the XML scripting interface, 55
  XML enhancements, 55
  XML header, 75
XML header
  Sending the XML header and script body, 56
  XML header, 75
XML query, unauthenticated, 48
XML, general guidelines
  Overview of the RIBCL, 75
  Using Perl with the XML scripting interface, 55