Integrated Lights-Out Virtual Serial Port configuration and operation

HOWTO, 4th edition

Abstract

Both HP Integrated Lights-Out (iLO) and HP Integrated Lights-Out 2 (iLO 2) consist of an intelligent processor and firmware that provide capabilities for remote server management. The iLO Virtual Serial Port (VSP) feature is one iLO method of accessing a remote server. The VSP provides a bi-directional flow of data directed to or from a server serial port. Using the remote console paradigm, a remote user can operate as if a physical serial connection exists on the remote server serial port.

This HOWTO provides information about VSP configuration and operation. The intended audience for this paper is engineers and system administrators familiar with Lights-Out technology.

NOTE
Unless otherwise specified, all references to iLO in this document include iLO and iLO 2.

Conceptual overview

iLO VSP technology is a component of iLO remote management functionality. In iLO, VSP functions are accessed through either the iLO browser interface or the command-line interface. VSP was renamed Remote Serial Console in iLO 2; however, the functionality remains the same, including the text-based console. Table 1 provides an overview of iLO VSP technology by defining elements of the concept.

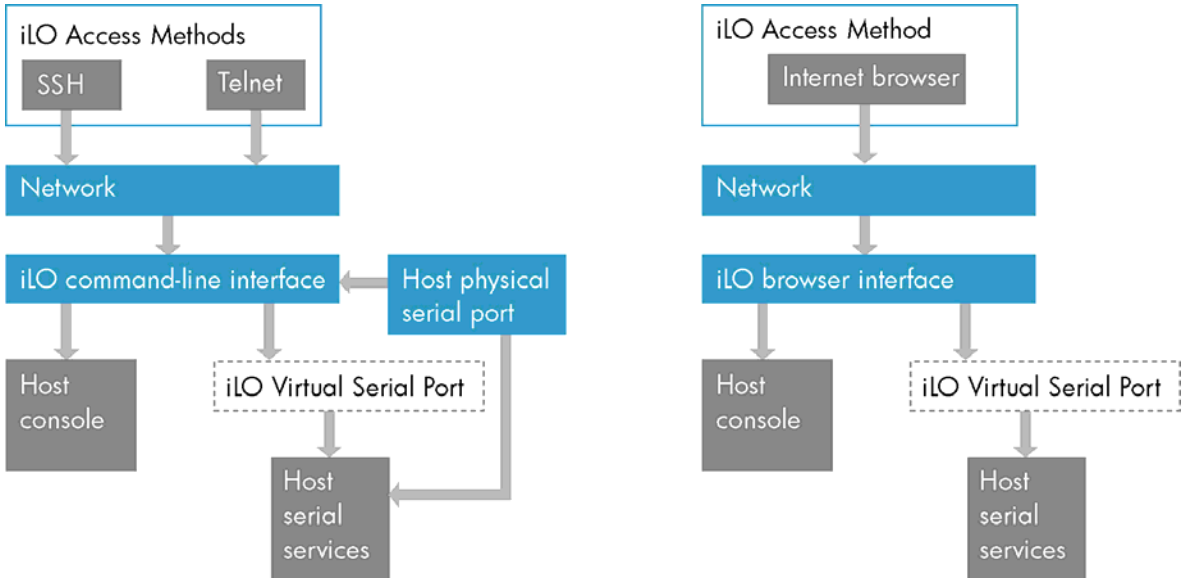
Table 1. Elements of iLO VSP technology

Elements	Description
iLO access methods	iLO is accessed using one of these methods: • Java applet within an Internet browser configured for VT320 terminal emulation—Using an Internet browser such as Internet Explorer or Mozilla, users can access iLO through a centralized Remote Management Center. • Telnet – Using Telnet, users access iLO through a command-line interface (CLI) over the network. Secure Shell (SSH) – Using SSH, users access iLO through a command-line interface over the network.
iLO management interfaces	There are two interfaces for remote management: the iLO browser interface and the iLO command-line interface.
Browser interface	Users can access the graphical Host Console and the iLO VSP through the iLO browser interface (accessed through an Internet browser or Terminal Services Client).
Command-line interface	Users can access the text-based Host Console and the iLO VSP through an iLO command-line interface.

Elements	Description
iLO virtual serial port (VSP)	Through either interface method, the iLO VSP can remotely access the following host serial services: • Microsoft® Windows® Server 2003 Operating System Emergency Management Services (EMS) Console (if enabled) • Linux user session through serial tty (ttyS0 or ttyS1, if enabled) • System POST dialog (if BIOS serial console redirection is enabled)
iLO host physical serial port	Users can access the following host serial services through the iLO command-line interface: • Microsoft® Windows® Server 2003 Operating System Emergency Management Services (EMS) Console (if enabled) • Linux user session through serial tty (ttyS0 or ttyS1, if enabled) • System POST dialog (if BIOS serial console redirection is enabled)

Figure 1 shows the relationship of the elements and how the two iLO interfaces work through their different access methods to enable the iLO Virtual Serial Port feature.

Figure 1. iLO Virtual Serial technology



Security

When using the provided Java applet, the VSP data stream is protected by encrypting the data as it passes between the iLO system and the viewing applet. The data stream is also encrypted when using an SSH connection. However, the data stream is not encrypted when using a normal Telnet connection.

Details about the security of the various methods of VSP connection can be found in the Integrated Lights-Out security technology brief available at http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00212796/c00212796.pdf.

Configuration

The VSP must be enabled and configured in several places:

- Host system ROM-Based Setup Utility (RBSU)
- Windows® Server 2003 operating system
- Linux operating system

How to enable and configure VSP in the host system RBSU

The VSP is enabled or disabled in the host system RBSU. Refer to the host system RBSU documentation for configuration details specific to that server model.

To configure VSP in the host system RBSU, follow the appropriate procedures for your HP ProLiant Server model. When VSP is enabled, certain parameters must be configured.
Table 2 lists the default VSP address for each ProLiant server model. If the default VSP address is shown as 0x0408, then the server operates in fixed I/O mode; otherwise, it operates in standard UART mode.

Table 2. ProLiant server default VSP address

ProLiant server model	Default VSP address
HP ProLiant BL460c server	COM1
HP ProLiant BL465c server	COM1
HP ProLiant BL480c server	COM1
HP ProLiant BL680c G5 server	COM1
HP ProLiant BL685c server	COM1
HP ProLiant BL20p server	0x0408
HP ProLiant BL20p G2 server	0x0408
HP ProLiant BL20p G3 server	COM1
HP ProLiant BL20p G4 server	COM1
HP ProLiant BL25p server	COM1
HP ProLiant BL25p G2 server	COM1
HP ProLiant BL30p server	COM1
HP ProLiant BL35p server	COM1
HP ProLiant BL40p server	0x0408
HP ProLiant BL45p server	COM1
HP ProLiant BL45p G2 server	COM1
HP ProLiant ML310 G3 server	COM2
HP ProLiant ML310 G4 server	COM2
HP ProLiant ML310 G5 server	COM2
HP ProLiant ML350 G4p server	COM2
HP ProLiant ML350 G5 server	COM2

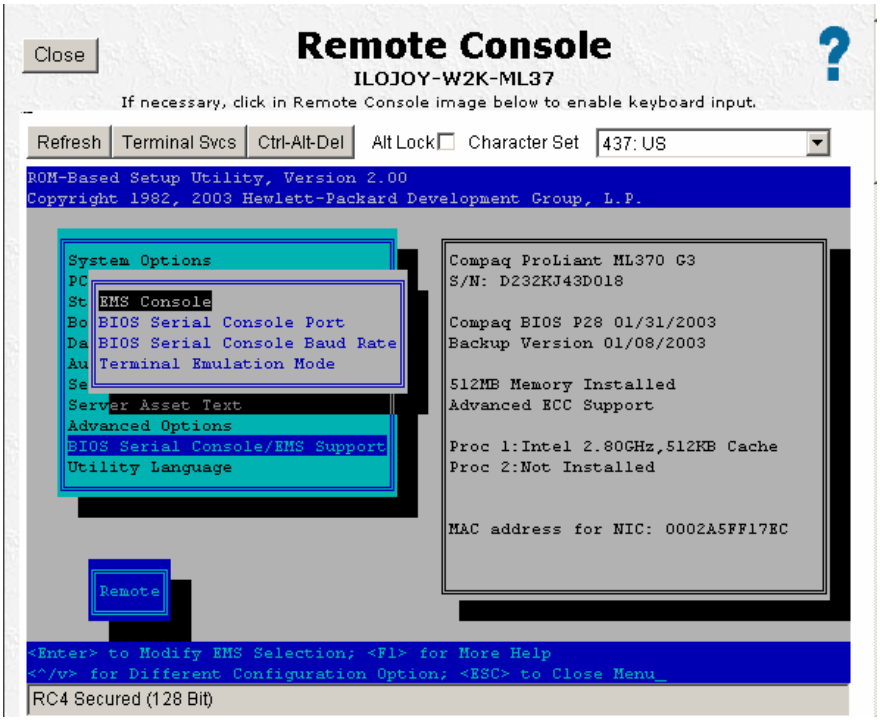
ProLiant server model	Default VSP address
HP ProLiant ML370 G3 server	0x0408
HP ProLiant ML370 G4 Server	COM3*
HP ProLiant ML370 G5 server	COM2
HP ProLiant ML570 G3 server	COM2
HP ProLiant ML570 G4 server	COM2
HP ProLiant DL320 G3 server	COM2
HP ProLiant DL320 G4 server	COM2
HP ProLiant DL320 G5 server	COM2
HP ProLiant DL320 G5p server	COM2
HP ProLiant DL320s server	COM2
HP ProLiant DL360 G2 server	0x0408
HP ProLiant DL360 G3 server	0x0408
HP ProLiant DL360 G4 server	COM2
HP ProLiant DL360 G5 server	COM2
HP ProLiant DL365 server	COM2
HP ProLiant DL380 G3 server	0x0408
HP ProLiant DL380 G4 server	COM2
HP ProLiant DL380 G5 server	COM2
HP ProLiant DL385 server	COM2
HP ProLiant DL385 G2 server	COM2
HP ProLiant DL560 server	0x0408
HP ProLiant DL580 G2 server	0x0408
HP ProLiant DL580 G3 server	COM2
HP ProLiant DL580 G4 server	COM2
HP ProLiant DL580 G5 server	COM2
HP ProLiant DL585 server	COM2
HP ProLiant DL585 G2 server	COM2
HP ProLiant DL740 server	0x0408

* There is no EMS option for COM3, so COM1 or COM2 must be used for VSP configuration.

HP ProLiant server models with fixed I/O mode

1. Start RBSU.
2. Highlight the **BIOS Serial Console/EMS Support** option in RBSU, and then press the **Enter** key.
3. Highlight **EMS Console**, and then press the **Enter** key (see Figure 2).

Figure 2. EMS Console setting

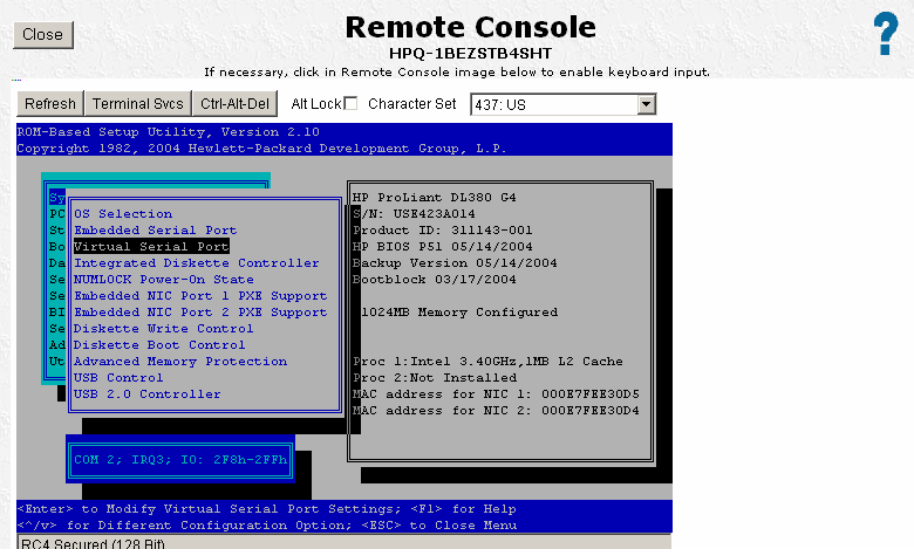


4. Select **Remote**, and then press the **Enter** key.
5. Highlight the **BIOS Serial Console Port** option, and then press the **Enter** key.
6. Select **Disabled**, and then press the **Enter** key.
7. Highlight the **BIOS Serial Console Baud Rate** option, and then press the **Enter** key.
8. Select **115200**, and then press the **Enter** key.
9. Highlight the **Terminal Emulation Mode** option, and then press the **Enter** key.
10. Select **VT100**, and then press the **Enter** key.

HP ProLiant server models with standard Universal Asynchronous Receiver/Transmitter (UART) mode

1. Start RBSU.
2. Highlight the **System Options** option in RBSU, and then press the **Enter** key.
3. Highlight the **Virtual Serial Port** option, and then press the **Enter** key (see Figure 3).

Figure 3. Virtual Serial Port option



4. Select the COM port you want to use, and then press the **Enter** key.
5. Highlight the **BIOS Serial Console & EMS** option, and then press the **Enter** key.
6. Highlight the **EMS Console** option, and then press the **Enter** key.
7. Select the COM port that matches the Virtual Serial Port value selected earlier, and then press the **Enter** key.

Configuration for Windows® Server 2003 operating system

The Windows® EMS Console is available in the Windows Server 2003 operating system and must be configured within the operating system. Refer to the Windows Server 2003 operating system documentation for information about how to enable Windows EMS Console, or visit the Microsoft website: http://download.microsoft.com/download/1/6/1/161ba512-40e2-4cc9-843a-923143f3456c/EMS.doc.

NOTE
iLO displays a message when opening VSP through the Internet browser if Windows EMS is not configured.

Configuration for Linux operating systems

iLO 2 configuration

Linux operating systems may not support hardware flow control which iLO 2 uses by default. To prevent loss of outbound data from Linux, iLO 2 can be configured to use software (xon/xoff) flow control. This configuration will stop the flow of serial data from an operating system that supports software flow control when iLO2 internal buffers become full. To configure the iLO 2 software flow control settings, use cpqlocfg or hponcfg with one of the following sample scripts:

Sample RIBCL script to enable software-based flow-control

NOTE
For the change to take effect, the following script resets the Lights-Out processor.

```
<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>
```

Sample RIBCL script to disable software-based flow-control (default)

NOTE
For the change to take effect, the following script resets the Lights-Out processor.

```
<RIBCL VERSION="2.0">
 <LOGIN USER_LOGIN="Administrator" PASSWORD="password">
  <RIB_INFO MODE="write">
   <MOD_GLOBAL_SETTINGS>
    <VSP_SOFTWARE_FLOW_CONTROL value="No"/>
   </MOD_GLOBAL_SETTINGS>
   <RESET_RIB />
  </RIB_INFO>
 </LOGIN>
</RIBCL>
```

Sample RIBCL script to retrieve software-based flow-control

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

Linux servers can be remotely managed using console redirection. To configure Linux to use console redirection, the following changes must be implemented in the Linux boot loader (GRUB):

- Turn off the splash image
- To display messages while Linux starts, configure the GRUB to redirect messages to the serial port.
- To display Linux console messages, configure the GRUB to enable the Linux kernel to redirect messages to the serial port.

The following is a sample GRUB configuration file for Red Hat Linux 7.2:

```
default=0
timeout=10
splashimage=(hd0,2)/grub/splash.zpm.gz
title Red Hat Linux (2.4.18-4smp)
   root (hd0,2)
   kernel /vmlinuz-2.4.18-4smp ro root=/dev/sda9
   initrd /initrd-2.4.18-4smp.img
```

GRUB configuration for other Linux versions will be very similar.

Turn off the splash image

Since the VSP is non-graphical, the splash image must be turned off. To turn off the splash image, comment out that line by inserting the pound (#) character at the beginning of the line, as follows:

```
default=0
timeout=10
#splashimage=(hd0,2)/grub/splash.zpm.gz
title Red Hat Linux (2.4.18-4smp)
   root (hd0,2)
   kernel /vmlinuz-2.4.18-4smp ro root=/dev/sda9
   initrd /initrd-2.4.18-4smp.img
```

Configure the GRUB to redirect messages to the serial port

Define the serial interface (ttyS0) as the default interface so that if no input is received from the local keyboard within 10 seconds (the timeout value), the output is redirected to the serial interface (VSP). To define the serial interface as the default interface, ensure that the first line in the GRUB file is as follows:

```
serial -unit=0 -speed=115200
terminal -timeout=10 serial console
default=0
timeout=10
#splashimage=(hd0,2)/grub/splash.zpm.gz
title Red Hat Linux (2.4.18-4smp)
   root (hd0,2)
   kernel /vmlinuz-2.4.18-4smp ro root=/dev/sda9
   initrd /initrd-2.4.18-4smp.img
```

Enable the Linux kernel to redirect messages to the serial port

Both the VGA console (tty0) and the serial port (ttyS0) are passed to the kernel as output interfaces. The last console that is declared in the GRUB is the master console (ttyS0 in this case) and is where both the kernel and user space messages will be sent. Only kernel space messages will go to the

secondary console (tty0 in this case). To enable the kernel and user space to log messages to be redirected to both the VGA console and the VSP, make the following modifications:

```
serial -unit=0 -speed=115200
terminal -timeout=10 serial console
default=0
timeout=10
#splashimage=(hd0,2)/grub/splash.zpm.gz
title Red Hat Linux (2.4.18-4smp)
   root (hd0,2)
   kernel /vmlinuz-2.4.18-4smp ro root=/dev/sda9 console=tty0
console=ttyS0,115200
   initrd /initrd-2.4.18-4smp.img
```

Redirect the login console to the serial port

After Linux is fully booted, a login console can be redirected to the serial port.

The /dev/ttyS0 and /dev/ttyS1 devices, if configured, provide the ability to obtain serial tty sessions through the VSP console. General configuration guidelines for Linux systems are as follows:

- To begin a shell session on a configured serial port, the appropriate Linux process must be started. This process can be started from the system administrator's shell, but it is usually configured in the /etc/inittab file to start the process automatically during system boot as follows:

  ```
  sx:2345:respawn:/sbin/agetty 115200 ttySx vt100
  ```

- Linux expects the serial port to appear at the standard UART I/O address (0x3F8); however, on certain ProLiant servers, iLO presents the port at the non-standard address of 0x408 (see Table 2. ProLiant server default VSP address). To inform Linux of the non-standard address, one of the following commands must be used:

  ```
  setserial /dev/ttyS0 uart 16550A port 0x0408 irq 4
  ```

  -Or-

  ```
  setserial /dev/ttyS1 uart 16550A port 0x0408 irq 4
  ```

  This command can be placed in the rc.serial file which is commonly called from /etc/rc.local at system startup.

NOTES
The setserial command is not required for ProLiant server models that support standard UART mode.

The setserial command will override the default Linux settings so any devices that are on the same serial terminal will not be seen. Another device, such as ttyS1, can be used in this case to prevent the problem.

iLO displays the VSP I/O address and Interrupt Request (IRQ) when opening VSP through the Internet browser

- Linux requires that the terminal be listed in the /etc/securetty file in order to logon as root. Depending on the server model, add one of the following lines at the end of this file: ttyS0 or ttyS1.
- The server must be rebooted before Linux will recognize the changes made in these files.
- A sample Perl script (vspconfig.pl) that automatically performs the changes to the /etc/inittab file and the /etc/securetty file can be found in the RIBCL sample scripts package located at http://h20000.www2.hp.com/bizsupport/TechSupport/SoftwareDescription.jsp?lang=en&cc=us&prodTypeId=18964&prodSeriesId=1146658&prodNameId=1135772&swEnvOID=2025&swLang=8&mode=2&taskId=135&swItem=MTX-3b426a21bf8d40df88f91ea960.

Linux SysRq command support

iLO firmware version 1.80 supports Linux SysRq commands using the VSP. For this feature to work, the following must be set on the Linux server:

- SysRq support must be turned on
- A console must be set up in the boot loader

  For example: kernel /vmlinuz-2.4.18-4smp ro root=/dev/sda9 console=ttyS0

- Agetty terminal must be enabled in /etc/inittab

  For example: sx:2345:respawn:/sbin/agetty 115200 ttySx vt100

NOTE
Refer to your Linux documentation for more information on the Linux SysRq commands.

Linux serial BREAK key support

When enabled in the Linux kernel, serial BREAK key sequences can be used to transmit certain Linux commands to the Linux kernel. iLO firmware version 1.80 supports the transmission of serial BREAK key sequences while in a VSP session. To send a serial BREAK key sequence while in a VSP session, quickly press the **Esc** + **Ctrl** + **B** keys plus the specific character key that completes the serial BREAK key command sequence.

NOTE
Refer to your Linux documentation for more information on serial BREAK key and command sequences.

Operation

Operation of the Virtual Serial Port is dependent upon the application being used.

Windows Emergency Management Services (EMS) Console

If enabled, the Windows EMS Console allows emergency management services in cases where video, device drivers, or other operating system features have prevented normal operation and normal corrective actions. The EMS Console lets you display running processes, change the priority of processes, and halt processes, among other things. The EMS Console is available in the Windows Server 2003 operating system through the physical serial port on the back of the server.

The iLO VSP allows you to use the EMS Console over the network. The EMS Console and the iLO Remote Console can be used at the same time. The Windows EMS serial port must be enabled through the host system RBSU. The iLO system automatically detects whether the EMS serial port is enabled or disabled.

After connecting to the EMS through the VSP, the EMS System Administration Console (SAC) will be available and you will see the SAC> prompt. You may need to press the **Enter** key in order to obtain the prompt. Once at the prompt, a number of commands are available. Refer to Microsoft EMS documentation for a complete description of the available commands.

To launch the VSP from the iLO web browser connection, highlight **Virtual Devices** and click on **Virtual Serial Port** (see Figure 4). To launch the VSP from the iLO 2 web browser connection, click the **Remote Console** tab and then click **Remote Serial Console** (see Figure 5).

Figure 4. Starting VSP from iLO web browser

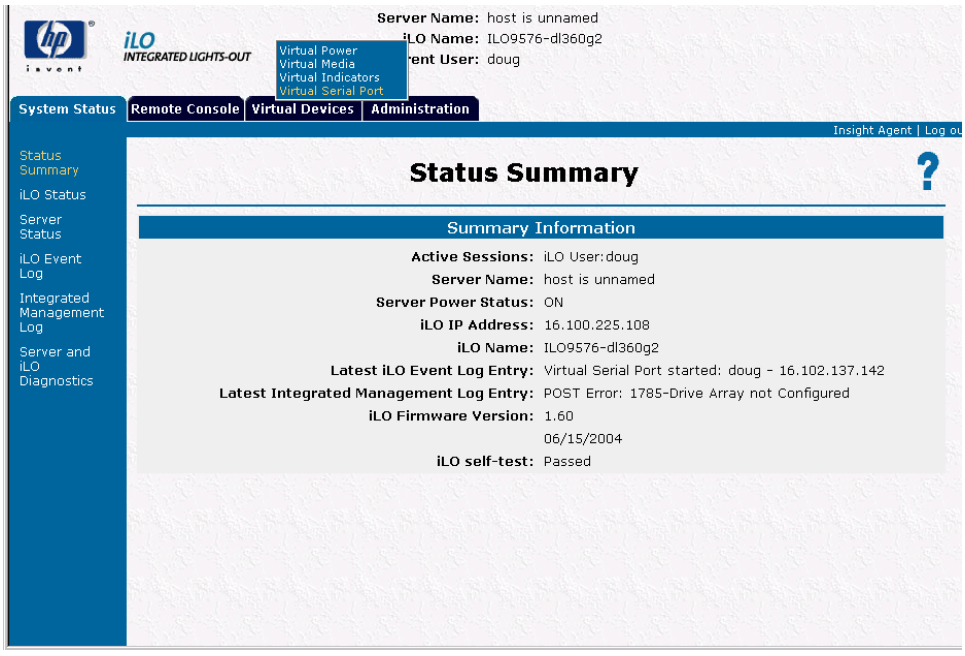
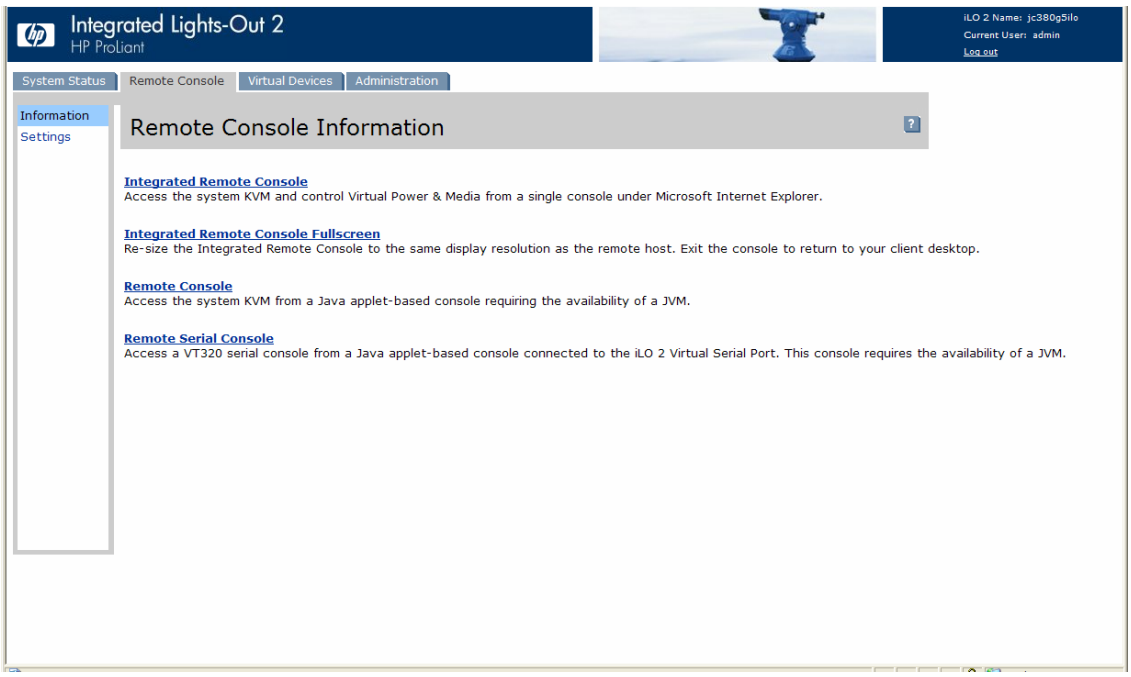
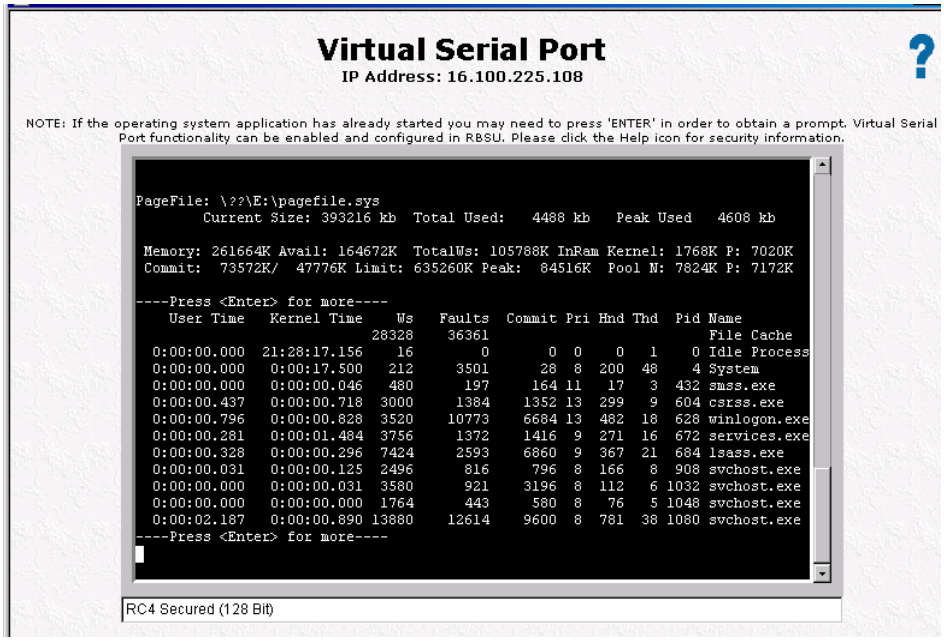


Figure 5. Starting VSP from iLO 2 web browser



To see a list of executing tasks, enter the EMS Console "t" command (see Figure 6).

Figure 6. EMS Console "t" command



Windows® 2003 EMS commands

Consult Microsoft documentation for full details of EMS operation. This section presents a command overview only.

After each command is entered at the EMS SAC prompt, press the **Enter** key to execute the command. Table 3 lists the commands that can be used in the EMS SAC.

Table 3. EMS SAC commands

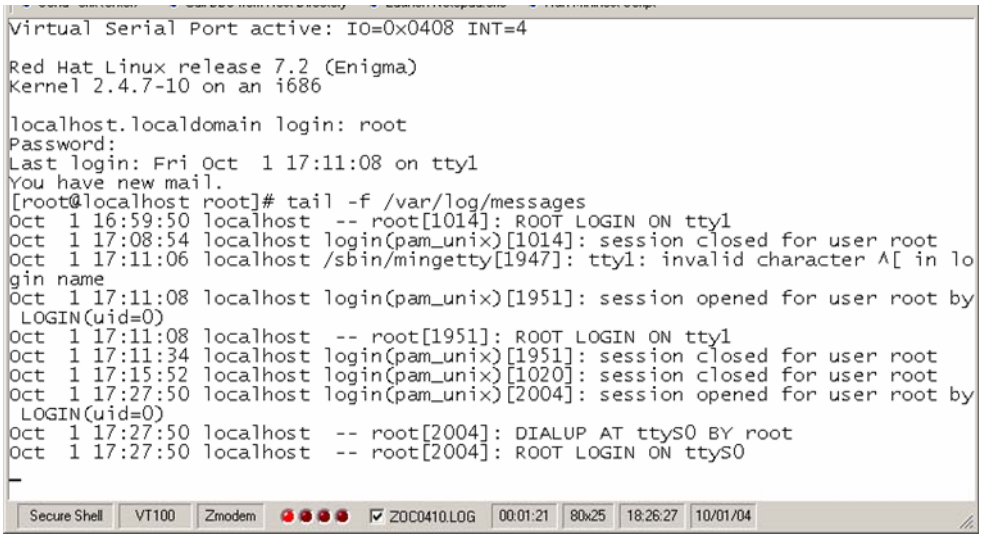
Command	Description
Help or ?	Lists all commands available in the VSP console.
Ch	Lists all channels: • ch –si <#> = Switch to a channel by its number. • ch –sn <name> = Switch to a channel by its name. • ch –ci <#> = Close a channel by its number. • ch –cn <name> = Close a channel by its name.
Esc + Tab	Selects a channel.
Esc + Tab + 0 (zero)	Returns to the EMS SAC channel.
Cmd	Creates a command prompt channel.
D	Dumps the current kernel log.
F	Toggles detailed or abbreviated task list information.
I	Lists all Internet Protocol (IP) network numbers and their IP addresses.
i <#> <ip> <subnet> <gateway>	Sets IP address, subnet, and gateway.
Id	Displays the identification information on the server: computer name, computer GUID, processor architecture, version number, build number, product operating system, applied service pack, and time since last reboot.
k <pid>	Stops the given process as defined by <pid>.
l <pid>	Lowers the priority of the process as defined by <pid> to the lowest possible priority.
Lock	Locks access to command prompt channels.
m <pid> <MB-allow>	Limits the memory usage of a process to <MB-allow>.
P	Toggles paging the display.
r <pid>	Raises the priority of a process as defined by <pid> by one.
S	Displays the current time and date in 24 hour clock notation.
s mm/dd/yyyy hh:mm	Sets the current time and date in 24-hour clock notation.
T	Displays the current operating system task list.
Restart	Restarts the system immediately.
Shutdown	Shuts down the system immediately.
Crashdump	Crashes the system. (Crash dump must be enabled.)

Linux user session

A Linux system that is configured to present a terminal session on the serial port can be operated from the iLO VSP. One of the uses of this feature is to provide a remote logging service. A user can remotely log on to the serial port and redirect output to a log file. Any system messages directed to the serial port will be logged remotely.

Refer to Figure 7 for an example of a remote Linux session on the serial port using the VSP.

Figure 7. Remote Linux session using the VSP



BIOS serial console redirection

If the server has been configured to use BIOS serial console redirection, system POST messages will be presented through the VSP during system boot. To enable this feature, enter the system RBSU and navigate to the tab called **BIOS Serial Console/EMS Support**. Select this tab and set **BIOS Serial Console Port** to **COM1:** (see Figures 8 and 9).

Figure 8. BIOS Serial Console Port setting

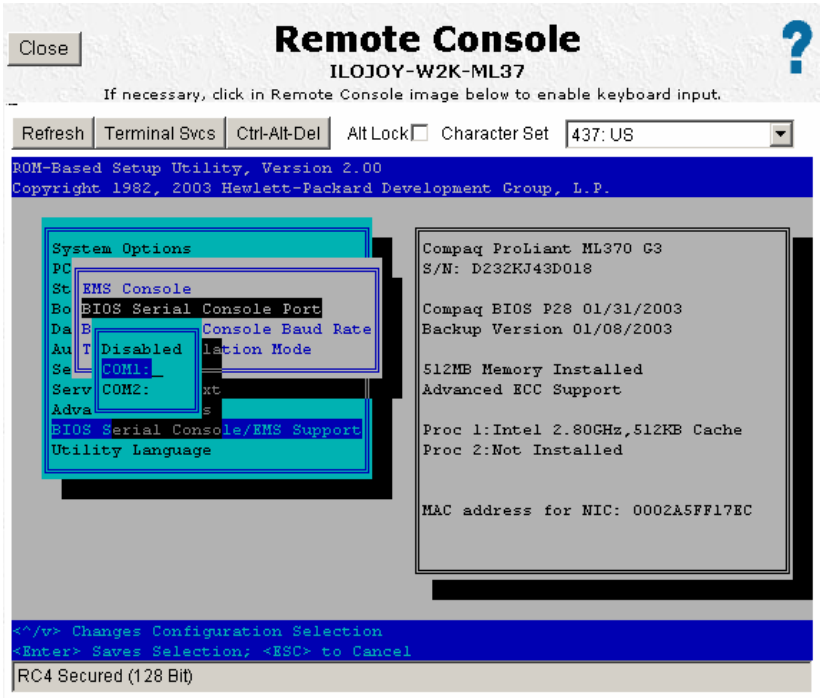
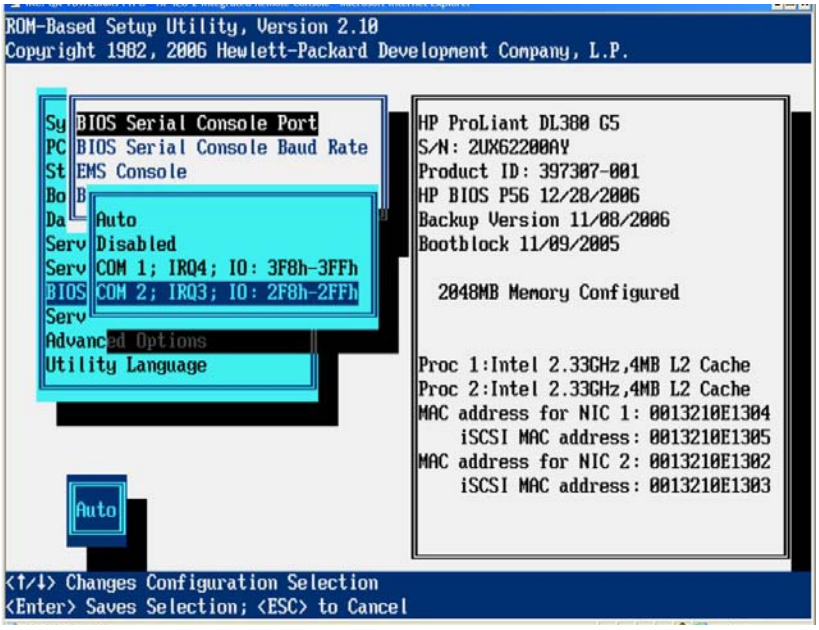


Figure 9. BIOS Serial Console Port setting for ProLiant G5 servers



Also, make sure that the BIOS Serial Console Baud Rate is set to 115200 (see Figures 10 and 11). The baud rate setting affects only the BIOS serial console redirection, not the Windows EMS or Linux login. Note that the baud rate setting affects the performance of the VSP during POST if BIOS serial console redirection is enabled. The baud rate should be set as high as possible.

Figure 10. BIOS Serial Console Baud Rate setting

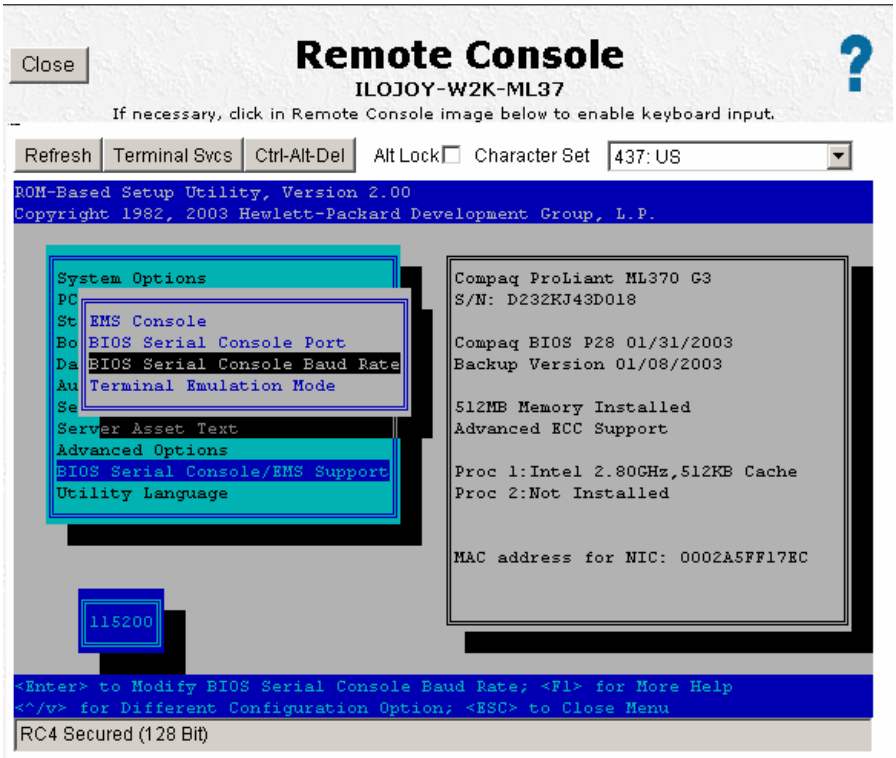
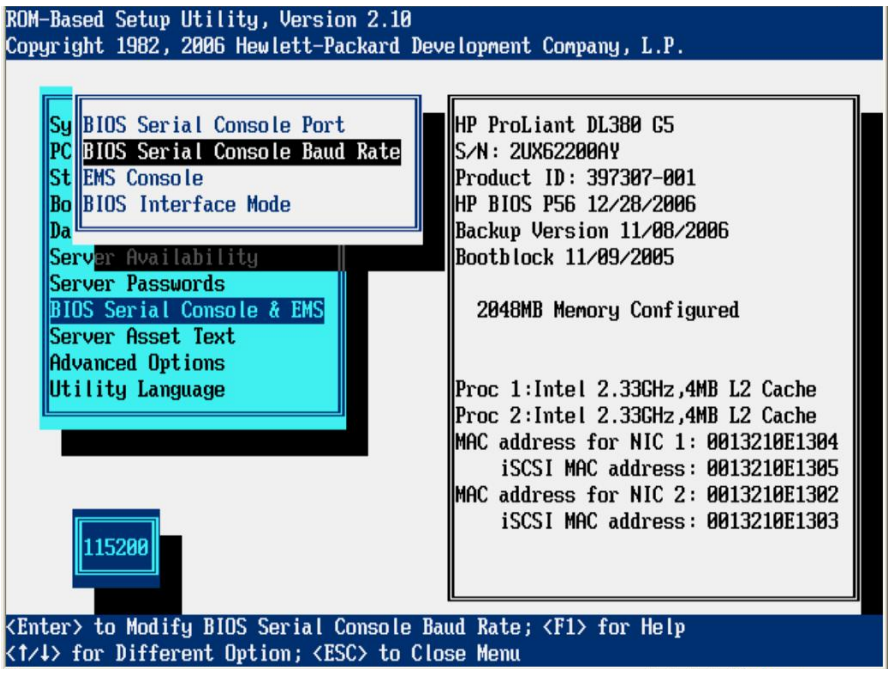


Figure 11. BIOS Serial Console Baud Rate setting for ProLiant G5 servers



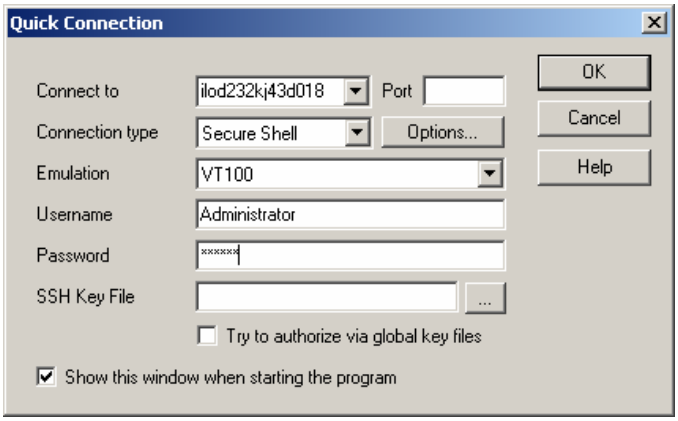
How to use VSP from a Secure Shell client

The VSP can be accessed using an ordinary Telnet client, but this is not a secure connection. To provide secure, non-browser access to the VSP, an SSH client can be used (see Figure 12).

Various SSH clients can be used to connect to iLO, and specific instructions for their use are application dependent.

Details about the security of the SSH connection can be found in the "Integrated Lights-Out security technology brief": http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00212796/c00212796.pdf.

Figure 12. SSH client connection to VSP



How to enter VSP from the command line protocol (CLP)

After logging into iLO through an SSH session, iLO displays the CLP prompt. The CLP can then be used to enter VSP (see Figure 13).

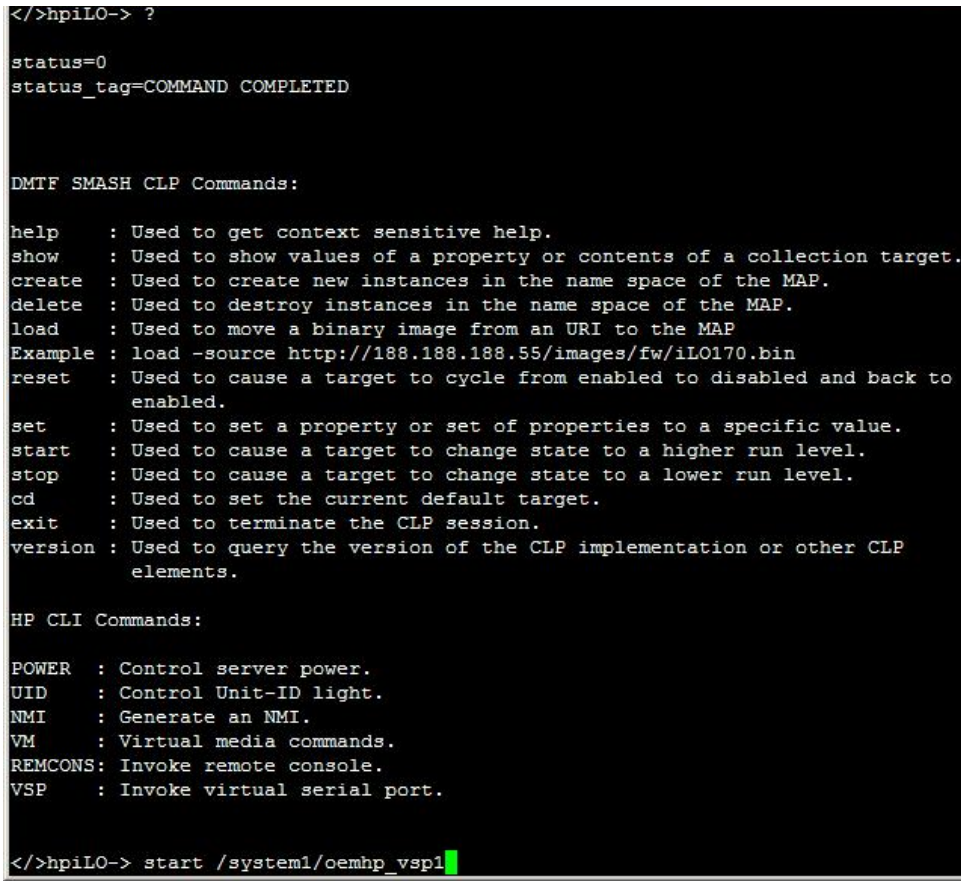
NOTE
Command line interface (CLI) commands can be used to start the VSP, but CLP commands are the new standard going forward and are the preferred commands.

To learn more about the command line interface, refer to the "Command Line" section of the "HP Integrated Lights-Out Management Processor Scripting and Command Line Resource Guide": http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00294268/c00294268.pdf.

To learn more about the DMTF CLP specification, go to www.dmtf.org/standards/smash.

IMPORTANT
While the VSP is active through the iLO CLP, the login timeout is suspended; therefore, all tty console data can be recorded while the host is running.

Figure 13. Entering VSP from the CLP



Command line interface key sequences for iLO

Table 4 lists key sequences that can be used to initiate certain iLO actions.

Table 4. iLO key sequence commands

Key sequence	Description
<ESC>(	Invokes the iLO command line interface
<ESC>Q	Exits the iLO command line interface
<ESC>Ctrl-B	Sends a break to allow Linux SysRq commands
<ESC>R<ESC>r<ESC>R	Resets the server
<ESC>^	Powers On the server

Command line interface keymap for iLO

If your terminal program supports custom keymaps, Table 5 lists information that can be used to create your own keymap. The backslash character (\) followed by a numeral indicates the octal value of the byte to be generated. For example, \033 is the octal code for character 27 (decimal), or the **ESCAPE** key.

Table 5. Keymap key sequences

Key	Normal	Shift + key	Ctrl + key	Alt + key
Up Arrow	\033[A	\033[3\033[A	\033[2\033[A	\033[1\033[A
Down Arrow	\033[B	\033[3\033[B	\033[2\033[B	\033[1\033[B
Right Arrow	\033[C	\033[3\033[C	\033[2\033[C	\033[1\033[C
Left Arrow	\033[D	\033[3\033[D	\033[2\033[D	\033[1\033[D
Insert	\033[L	\033[3\033[L	\033[2\033[L	\033[1\033[L
Delete	\177	\033[3\177	\033[2\177	\033[1\177
Home	\033[H	\033[3\033[H	\033[2\033[H	\033[1\033[H
End	\033[F	\033[3\033[F	\033[2\033[F	\033[1\033[F
Page Up	\033[I	\033[3\033[I	\033[2\033[I	\033[1\033[I
Page Down	\033[G	\033[3\033[G	\033[2\033[G	\033[1\033[G
F1	\033[M	\033[Y	\033[k	\033[w
F2	\033[N	\033[Z	\033[l	\033[x
F3	\033[O	\033[a	\033[m	\033[y
F4	\033[P	\033[b	\033[n	\033[z
F5	\033[Q	\033[c	\033[o	\033[@
F6	\033[R	\033[d	\033[p	\033[[
F7	\033[S	\033[e	\033[q	\033[\ (backslash)
F8	\033[T	\033[f	\033[r	\033[]
F9	\033[U	\033[g	\033[s	\033[^ (caret)
F10	\033[V	\033[h	\033[t	\033[_ (underbar)
F11	\033[W	\033[i	\033[u	\033[` (backtick)
F12	\033[X	\033[j	\033[v	\033[' (quote)
Enter	\015	\033[3\015	\012	\033[1\015
Backspace	\010	\033[3\010	\177	\033[1\010
Ctrl-Alt-Del	\033[2\033[\177	Not applicable	Not applicable	Not applicable
Refresh Display	\033[~	Not applicable	Not applicable	Not applicable

Known issues

Table 6. Known issues

Issue	Details	
Issue 1	Slow serial console response during BIOS redirection.	
	Description	The BIOS redirection sends ANSI control codes with text, which may slow the speed of the serial console during BIOS redirection process.
	Solution	HP engineers are working to resolve this issue.
Issue 2	Scrolling and text may appear irregular during BIOS redirection.	
	Description	During BIOS redirection the scrolling may not work properly. When commands are entered in RBSU, the text may rapidly overwrite itself on the bottom line of the terminal window.
	Workaround	The BIOS expects and controls a fixed 80x24 character window. When redirected to the serial port, the BIOS still expects and controls a fixed 80x24 character window. If the VSP client being used (SSH, Hyperterminal, or other terminal emulator) can resize the window to a size other than 80x24, scrolling will become confused and the screen output will appear garbled. To work around this issue, make sure that the terminal emulator is configured for a window size of exactly 80x24.
	Solution	HP engineers are working to resolve this issue.
Issue 3	VSP-driven selection during the serial timeout window sends output to BIOS redirect instead of the VSP.	
	Description	The /etc/grub.conf file includes an option for a serial timeout window (terminal –timeout=10 serial console). This setting provides a window of time to select a key stroke on the VSP or on the VGA console, and then, the menu is output to the corresponding device. If a VSP key is selected during this timeout window, the key stroke is intercepted by the BIOS serial redirect.
	Workaround	To work around this issue, do not to press a key for a VSP-driven selection during the 10-second timeout or turn off BIOS redirection to the VSP.
	Solution	HP engineers are working to resolve this issue.
Issue 4	Kudzu may display a message during the boot process to reconfigure ttyS1 (= the VSP).	
	Description	Kudzu may display a message during the boot process to reconfigure ttyS1 (= the VSP).
	Solution	HP engineers are working to resolve this issue.

For more information

For additional information, visit the Integrated Lights-Out website at www.hp.com/servers/lights-out.

Call to action

Send comments about this paper to: TechCom@HP.com.

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