

HP UEFI System Utilities User Guide for HP ProLiant DL580 Gen8 Servers

Abstract

This document details how to access and use the Unified Extensible Firmware Interface (UEFI) that is embedded in the system ROM of all UEFI-based HP ProLiant DL580 Gen8 servers. All options and available responses are defined. This document is for the person who installs, administers, and troubleshoots servers and storage systems.



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1 Introduction

Overview

HP ProLiant DL580 Gen8 servers include the HP UEFI (Unified Extensible Firmware Interface) System Utilities, which is embedded in the system ROM. The UEFI System Utilities lets you perform a wide range of configuration activities including:

- Configuring system devices and installed options.
- Enabling and disabling system features.
- Displaying system information.
- Selecting the primary boot controller or partition.
- Configuring memory options.
- Launching other pre-boot environments such as the Embedded UEFI Shell and Intelligent Provisioning.

The following are some of the features that UEFI enables and that the HP ProLiant DL580 Gen8 can support when configured for UEFI boot operation:

- Support for boot partitions larger than 2.2TB. Such configurations could previously only be used for boot drives when using RAID solutions such as HP Smart Array.
- PXE boot support for IPv6 networks.
- PXE Multicast Boot allowing for faster PXE deployments for large numbers of servers.
- Secure Boot that allows the system firmware, option card firmware, operating systems, and software collaborate to enhance platform security.
- UEFI Shell that provides a pre-boot environment for running scripts and tools.
- Operating system specific functionality, such as Microsoft Windows 2012, which supports several features only when installed in UEFI mode.
- Boot support for option cards that only support a UEFI option ROM.

The interface is available as the Embedded UEFI Shell, which is an embedded pre-boot environment that is separate from System Utilities. For more information, see the *HP UEFI Shell User Guide* for details on using the Shell environment.

NOTE: Throughout the menus, the interface attempts to display the proper marketing name for installed PCI devices. If the interface does not recognize a device, it assigns a generic label to the device, such as a non-HP name. This generic labeling does not affect the functionality or operation of the device.

What is UEFI?

Unified Extensible Firmware Interface (UEFI) is a specification that defines the model for the interface between the operating system and platform firmware during the boot, or start-up process. Compared to Legacy BIOS, UEFI provides a pre-boot graphical user interface that provides control of the system to an operating system (for example, as Windows or Linux). UEFI also provides enterprise management, pre-OS and network security, Secure Boot, and expanded storage. The HP ROM-Based Setup Utility (RBSU) functionality is available from the UEFI interface along with additional configuration options.

Why UEFI over Legacy BIOS?

ProLiant DL580 Gen8 servers transition to UEFI as the limitations of Legacy BIOS prevent the adoption of new technologies. [Table 1 \(page 8\)](#) provides details of how UEFI provides more functionality than Legacy BIOS.

Table 1 UEFI versus Legacy BIOS

Functionality	Description
BIOS limitation	BIOS cannot boot from hard disks with more than 2.1 TB.
Pre-boot security	UEFI provides an enhanced networking API that enables network authentication in a pre-boot environment. UEFI also supports Secure Boot.
IPv6 PXE boot support	UEFI supports PXE booting IPv6 addresses.
PXE Multi-cast boot	UEFI supports the multi-casting of a single image. A central image server in UEFI Boot Mode can send an image to multiple listeners at the same time.
Pre-boot manageability	UEFI provides functional pre-boot environment. You can remotely manage systems with UEFI without booting into Windows or other operating systems. UEFI provides a graphical interface that provides full access to the server hardware, NIC, graphics card, USB, audio, and full x86 and x64 support.
UEFI Shell	Includes an embedded UEFI Shell on the ROM. Based on the UEFI Shell Specification, Revision 2.0, the shell environment provides an API, a command prompt, and a set of commands.

[Table 2 \(page 8\)](#) lists major features with advantages of UEFI versus BIOS:

Table 2 Advantages of UEFI versus BIOS

Feature	UEFI	Legacy BIOS
Architecture	Agnostic	X86/X64 only
Mode	32/64 bit	16 bit (real mode)
Boot Partition	GPT (9.4 ZB limit)	MBR (2.2 TB limit)
Runtime Services	Yes	No
Driver Model	Yes	No
App Model	Yes	No
POST Graphics	Graphics Output Protocol (GOP)	VGA
Standard	Industry standard	PC-AT 'de-facto'
Modularity	GUID'd protocols	INTx extensions

Key Characteristics of UEFI

UEFI is adaptable to both complex instruction set computing (CISC) and reduced instruction set computing (RISC) architectures. Using standardized protocols, APIs, and drivers, UEFI has access to processor, storage, and video components providing a stand-alone capability that Legacy BIOS does not provide. [Table 3 \(page 8\)](#) compares key characteristics of UEFI with Legacy BIOS.

Table 3 Comparison of UEFI versus Legacy BIOS

Characteristic	UEFI	Legacy BIOS
Advanced Configuration and Power Interface (ACPI) support	ACPI specification 5.0a is incorporated into the UEFI portfolio.	With future ACPI specs under UEFI forum control, compliancy by future

Table 3 Comparison of UEFI versus Legacy BIOS *(continued)*

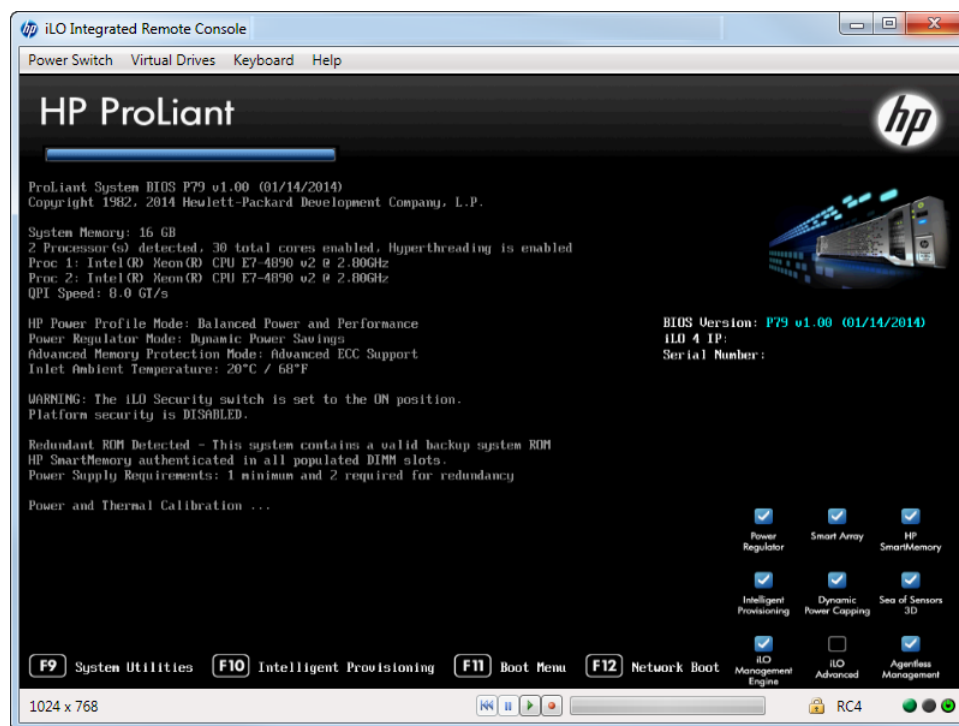
Characteristic	UEFI	Legacy BIOS
	The ACPI spec is maintained by the UEFI forum, ensuring that UEFI-compliant systems are ACPI-compliant.	Legacy BIOS-based systems is an OEM responsibility.
Video support	Pre-boot video functions available using Graphics Output Protocol (GOP). Video renders in full graphics mode.	Pre-boot video displays in text mode only. Requires INT10h and video BIOS after boot.
Storage support	Specified as a file/path name on a storage device. Multiple boot loader files can co-exist on a sector/device, letting you specify which loader through the Boot Device Selection service.	Specified in x86 real mode code located in the boot partition of master boot record (MBR). BIOS service INT 19h initiates the bootstrap loader sequence. Only one boot loader per device is allowed.

Accessing the HP UEFI System Utilities

To access the HP UEFI System Utilities:

1. Reboot the server. The server starts up and the HP ProLiant POST screen appears within a few minutes.
2. Press **F9** in the HP ProLiant POST screen. The System Utilities screen appears.

Figure 1 HP ProLiant POST screen



3. To navigate through and modify settings in the menu-driven interface, use the keys defined in the following table.

Key	Action
Up or down arrow	Press to change a selection.
Enter	Press to select an entry.
ESC	Press to go back to the previous screen.
F1	Press to view online help about a selected option.
F7	Press to load default RBSU configuration settings. You need to reboot the system for changes to take effect. Press Enter to apply defaults. Press ESC if you want to cancel.
F10	Press to save your changes.
POST screen keys	
F9	Press during server POST or system reboot to display the System Utilities screen in the iLO 4 Remote Console.
F11	Press during server POST to boot to the One-Time Boot Menu screen.

4. To exit the System Utilities screen and restart the server, press **Esc** until the main menu is displayed. Exit the utility by selecting **Exit and Resume Boot** in the main menu.

Rebooting the Server

To reboot the server:

1. From a server running the iLO Remote Console screen, at the top of the menu bar in the System Utilities screen, select **Power Switch**.
2. Select **Cold Boot** to reboot the server.

The screen displays the booting process and the HP ProLiant screen appears where the System Utilities screen can be accessed by pressing **F9**.

Towards the end of the boot process, the boot options screen is displayed. This screen is visible for several seconds before the system attempts to boot from a supported boot device. During this time, the System Utilities can be accessed by pressing **F9**.

3. From a server not running the iLO Remote Console, press the power button to shutdown the server. Press it again to reboot the server.

2 Getting Started: Overview of the System Utilities

Figure 2 (page 11) shows the **System Utilities** screen, the main screen in the UEFI System Utilities menu-driven interface.

The following functions can be accessed from the System Utilities screen:

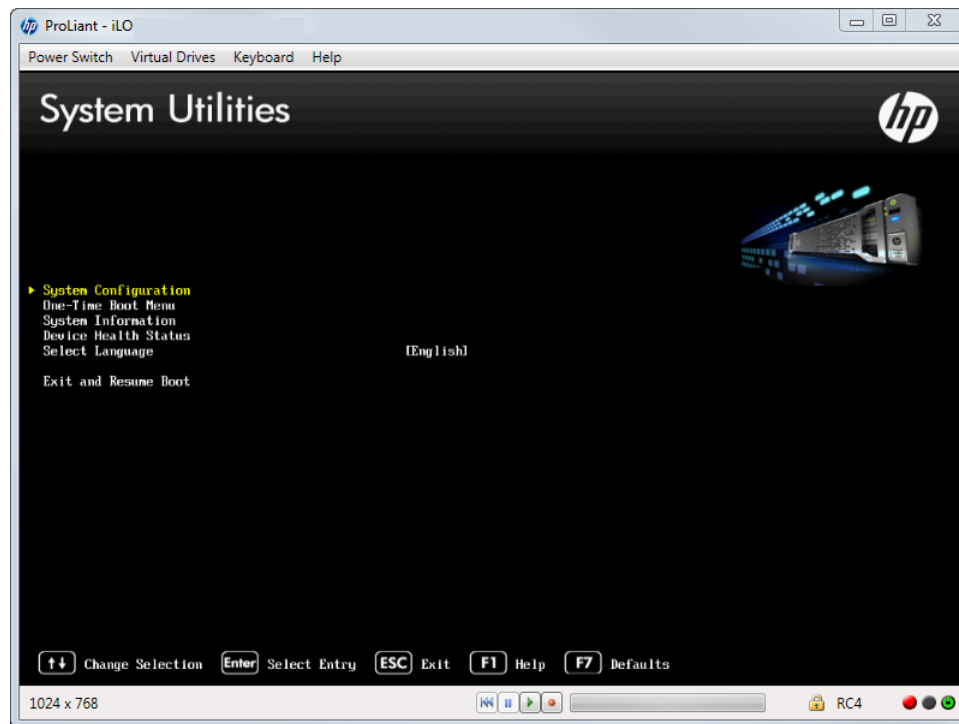
- System configuration
- One-Time Boot menu
- System information
- Other submenu options

To access **System Utilities** menu:

1. Reboot the server and press **F9** when prompted during the startup sequence.

The **System Utilities** screen appears (English is shown as the language for the system).

Figure 2 System Utilities screen



2. Use the keyboard up or down arrows to select an option, and then press **Enter** to display the submenu for that option.

NOTE: You might also see options for your system devices, such as an embedded NIC. For example, "Embedded FlexibleLOM Port 1." These items reflect installed PCIe cards. These devices vary based on the particular system. Configure the parameters for these devices as needed.

You can access the following options from this screen:

System Configuration

Displays the **System Configuration** menu, which includes options for accessing and configuring:

- **BIOS/Platform Configuration (RBSU)**

NOTE: This functionality is similar to the HP ROM Based Setup Utility, available in previous releases.

- **iLO 4 Configuration Utility**

A list of other devices might appear, such as NICs and Smart Arrays. Configure these devices as needed. For more information, see ["Accessing the System Configuration Menu" \(page 13\)](#).

One-Time Boot Menu

Lets you select a UEFI boot option for a one-time boot override. Select one of the following boot override options:

- **Embedded UEFI Shell**
- **Intelligent Provisioning**
- **Run a UEFI Application from a file system**
- **Legacy BIOS One-Time Boot Menu**

For more information, see ["Configuring a One-Time Boot Menu" \(page 139\)](#).

System Information

Displays the server name and generation, serial number, product ID, BIOS version and date, power management controller, backup BIOS version and date, system memory, and processors.

For more information, see ["Viewing System Information" \(page 143\)](#).

Device Health Status

Displays the current health status of the server.

For more information, see ["Viewing Device Health Status" \(page 144\)](#).

Select Language

Set the language to use in the user interface

For more information, see ["Selecting a Language" \(page 145\)](#).

Exit and Resume Boot

Continues to go through boot order list and launches the first bootable option in the system. For example, you can launch the UEFI Shell, if enabled and registered as first bootable option in the boot order list.

For more information, see ["Exiting and Resuming Boot" \(page 146\)](#).

3 Accessing the System Configuration Menu

The **System Configuration** menu options control a wide variety of server configurations.

Figure 3 (page 13) shows the **System Configuration** portion of the UEFI System Utilities.

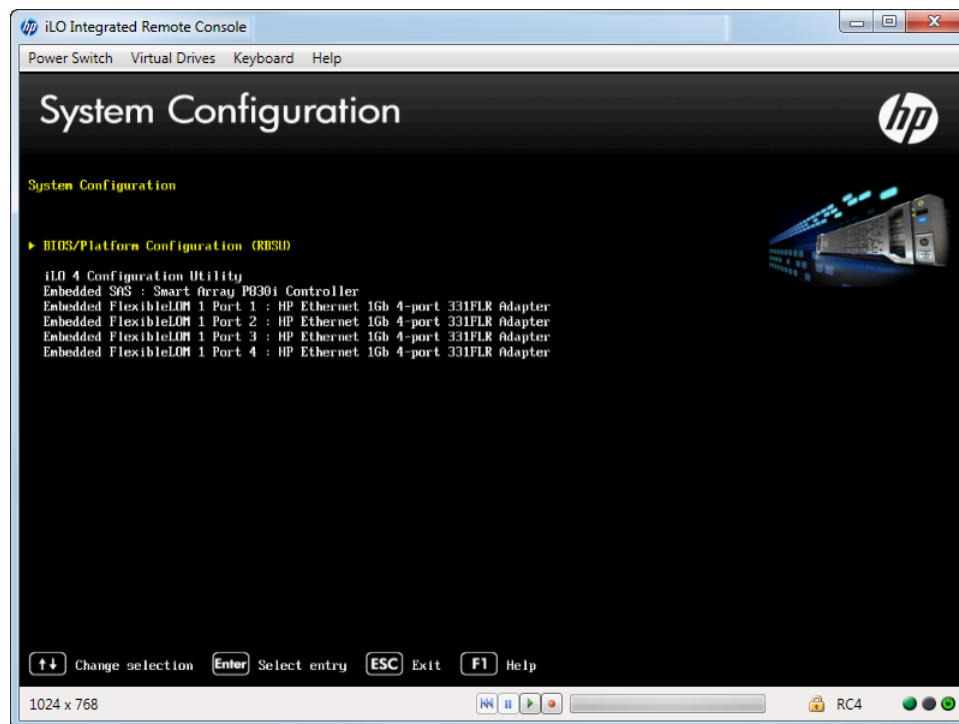
NOTE: You might also see options for your system devices such as embedded NIC. For example, “Embedded FlexibleLOM Port 1.” These devices vary based on the particular system. Configure the parameters for these devices as needed by selecting the device and pressing **Enter**.

To access the **System Configuration** menu:

1. From the **System Utilities** screen, select **System Configuration** and press **Enter**.

The **System Configuration** screen appears.

Figure 3 System Configuration screen



2. Select an option and then press **Enter**. Options are:
 - “Accessing the BIOS/Platform Configuration (RBSU) menu” (page 13)
 - “Accessing Smart Array Controllers” (page 121)
 - “Using the iLO 4 Configuration Utility” (page 123)

Accessing the BIOS/Platform Configuration (RBSU) menu

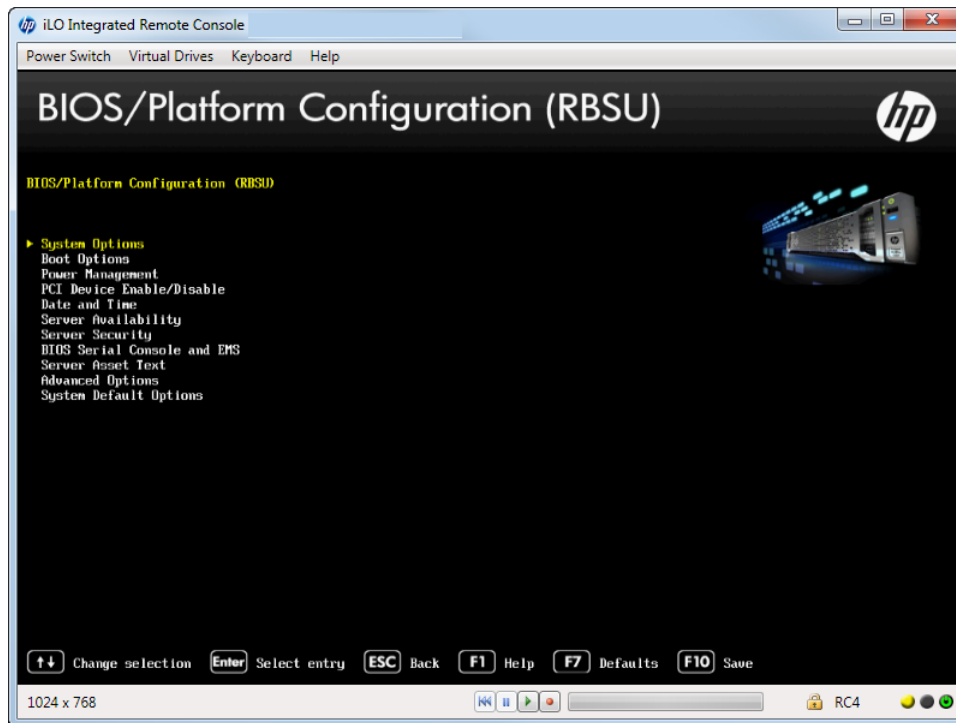
The BIOS/Platform Configuration, formerly known as ROM-Based Setup Utility (RBSU), is embedded in the system ROM of the HP ProLiant DL580 Gen8 servers. This menu lets you configure system BIOS configuration settings.

Figure 4 (page 14) shows the **BIOS/Platform Configuration (RBSU)** portion of the UEFI **System Utilities**.

To access the **BIOS/Platform Configuration** menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration**. The **BIOS/Platform Configuration (RBSU)** screen appears.

Figure 4 BIOS/Platform Configuration screen



2. Select an option, and then press **Enter**. Options are:
 - “Accessing the System Options menu” (page 14)
 - “Accessing Boot Options” (page 34)
 - “Accessing Power Management” (page 44)
 - “Setting Embedded and Add-in Devices” (page 55)
 - “Setting the System Date and Time” (page 56)
 - “Accessing the Server Availability menu” (page 57)
 - “Accessing the Server Security menu” (page 65)
 - “Accessing the BIOS Serial Console and EMS Console” (page 78)
 - “Accessing the Server Asset Text menu” (page 83)
 - “Accessing Advanced Options” (page 88)
 - “Accessing System Default Options” (page 116)

Accessing the System Options menu

Figure 5 (page 15) shows the **System Options** screen.

System settings can be configured from the System Options menu, such as:

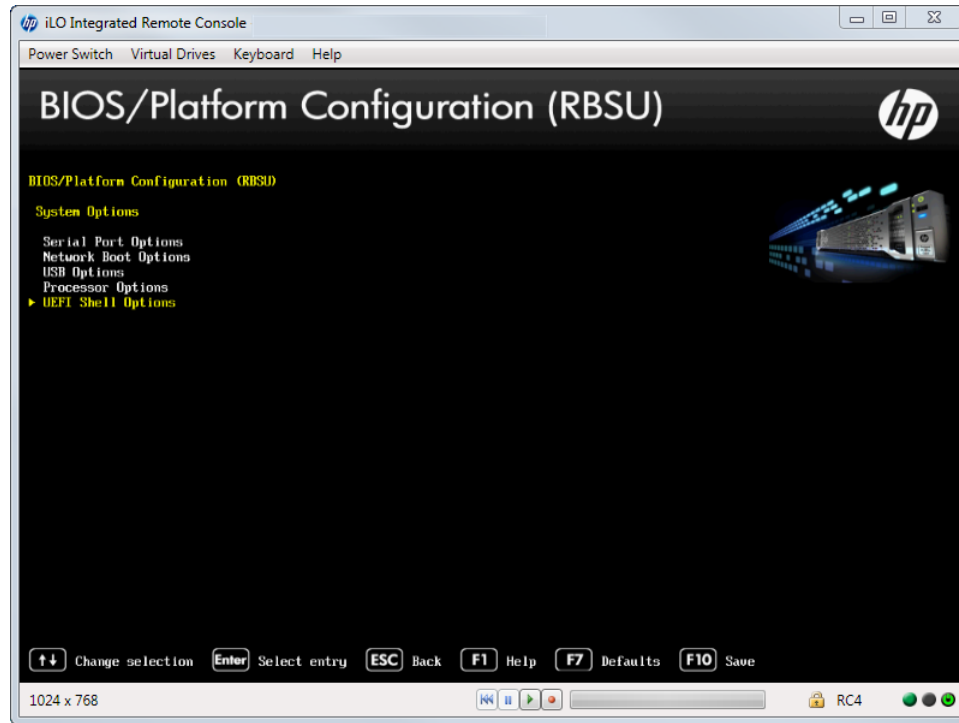
- Serial port options
- USB port options
- Processor options
- Network boot options

To access the **System Options** menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration**→**System Options**.

The **System Options** screen appears.

Figure 5 System Options screen



2. Select one of the following options and press **Enter**.
 - **Serial Port Options**—Assigns COM port number and associated resources to the selected physical serial port. Also, lets you assign the logical COM port address and associated default resources for the Virtual Serial Port (VSP).
 - **Network Boot Options**—Configures network boot policies, such as enabling or disabling a network boot for embedded NICs.
 - **USB Options**—Configures USB ports.
 - **Processor Options**—Configures processors.
 - **UEFI Shell Options**—Configures UEFI shell options.

Accessing Serial Port Options

This menu lets you configure the Embedded and Virtual Serial Port settings.

NOTE: For proper screen resolution, set the console resolution in the terminal software to 100x31.

To access serial port options:

- From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Serial Port Options**.

The Serial Port Options screen appears.

Options include:

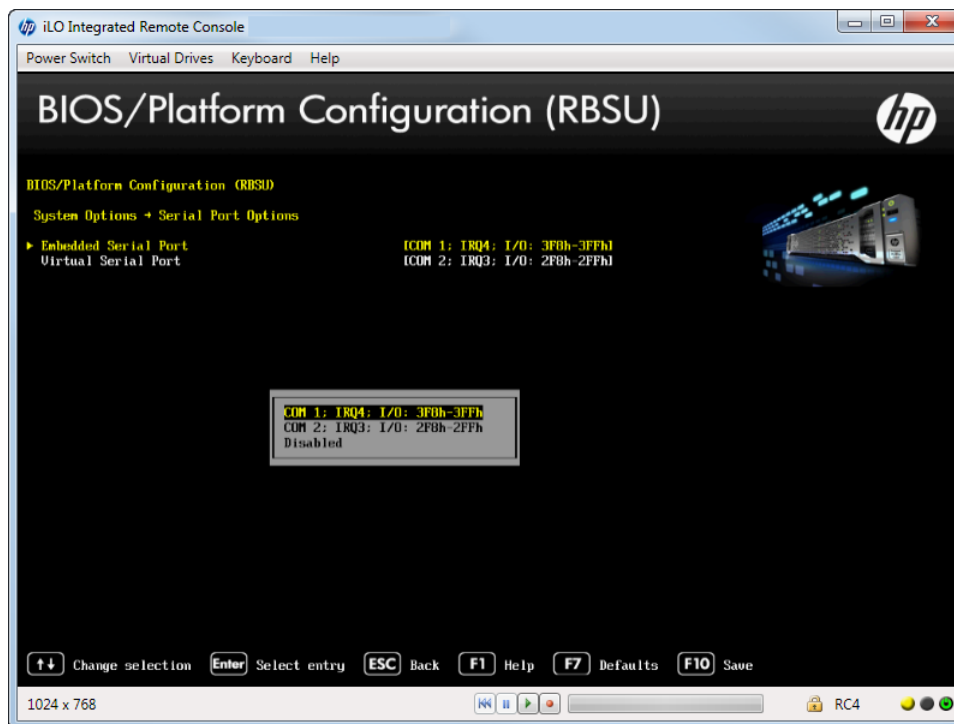
- “Setting the Embedded Serial Port” (page 16)
- “Setting the Virtual Serial Port” (page 16)

Setting the Embedded Serial Port

You can assign a logical COM port address and associated default resources to the selected physical serial port. The operating system can overwrite this setting.

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Serial Port Options**→**Embedded Serial Port** and press **Enter**.
2. Select one of the following options:
 - **COM 1: IRQ4: I/O: 3F8h-3FFh** (default)
 - **COM2: IRQ3: I/O: 2F8h-2FFh**
 - **Disabled**
3. Press **F10** to accept your selection.

Figure 6 Serial Port Options — Embedded Serial Port screen

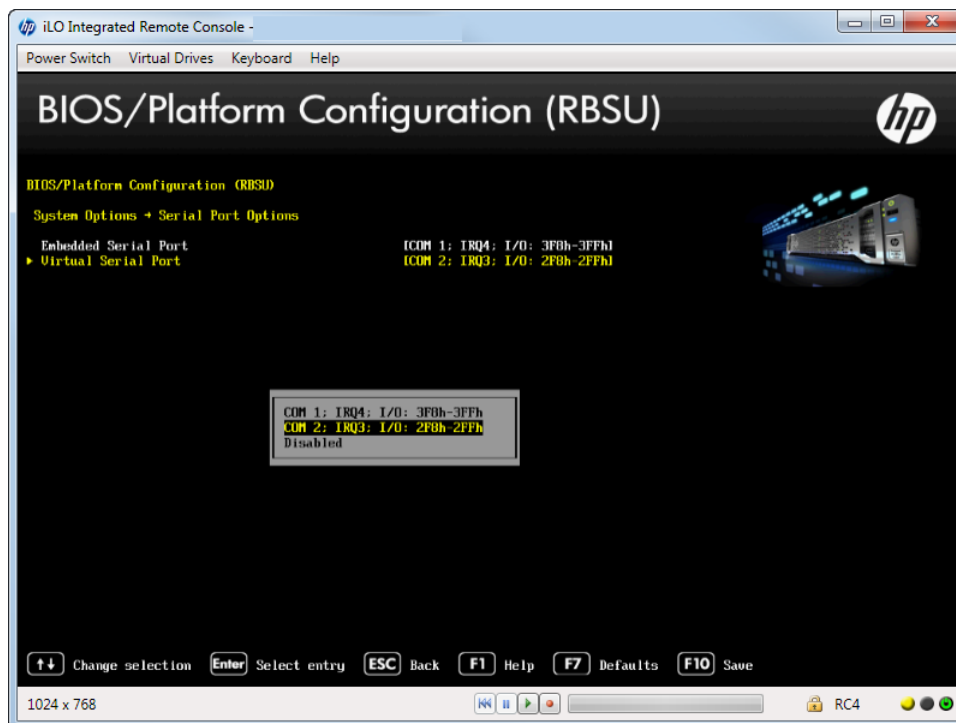


Setting the Virtual Serial Port

You can assign a logical COM port address and associated default resources used by the Virtual Serial Port (VSP). VSP lets the iLO Management Controller appear as a physical serial port to support the BIOS Serial Console and the operating system serial console.

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Serial Port Options**→**Virtual Serial Port** and press **Enter**.
2. Select one of the following options:
 - **COM 1: IRQ4: I/O: 3F8h-3FFh**
 - **COM2: IRQ3: I/O: 2F8h-2FFh** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 7 Serial Port Options — Virtual Serial Port screen



Accessing Network Boot Options

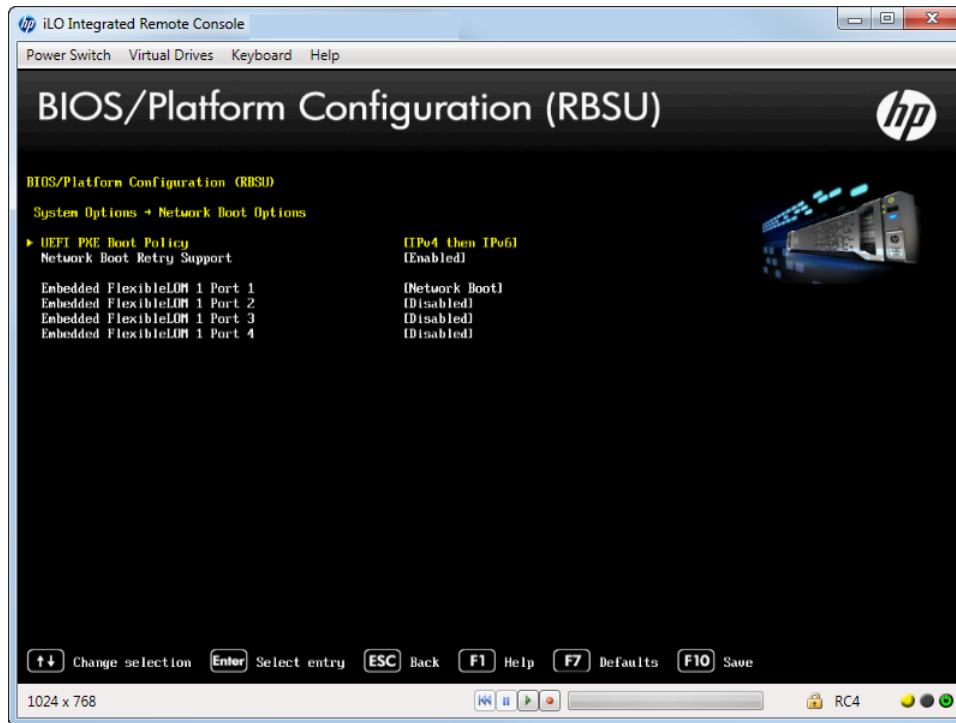
You can configure network boot settings, such as enabling or disabling network boot for Embedded NICs or setting the PXE boot policy.

To access Network Boot Options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Network Boot Options**.

2. Select one of the following options:
 - “Selecting a UEFI PXE Boot Policy” (page 18)
 - “Setting Network Boot Retry Support” (page 19)

Figure 8 Network Boot Options screen



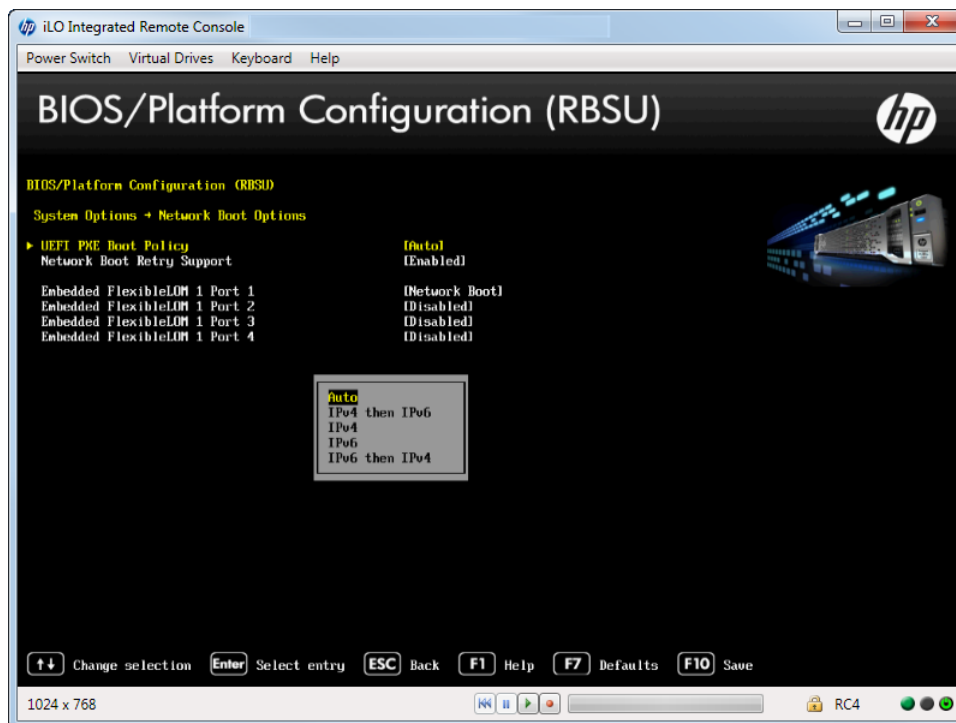
Selecting a UEFI PXE Boot Policy

You can select the UEFI PXE (Pre-Boot Execution Environment) network boot policy. If both IPv4 and IPv6 are enabled, each network boot target appears twice in the UEFI boot order list (one for IPv4 and the other for IPv6). You can only configure this option when Boot Mode is set to UEFI. For more information, see “Selecting a Boot Mode” (page 41).

To select a UEFI PXE boot order:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Network Boot Options**→**UEFI PXE Boot Policy** and press **Enter**.
2. Select one of the following options:
 - **IPv4 then IPv6**
 - **IPv4**
 - **IPv6**
 - **IPv6 then IPv4**
 - **Auto** (default)
3. Press **F10** to save your selection.

Figure 9 Network Boot Options —UEFI PXE Boot Policy screen



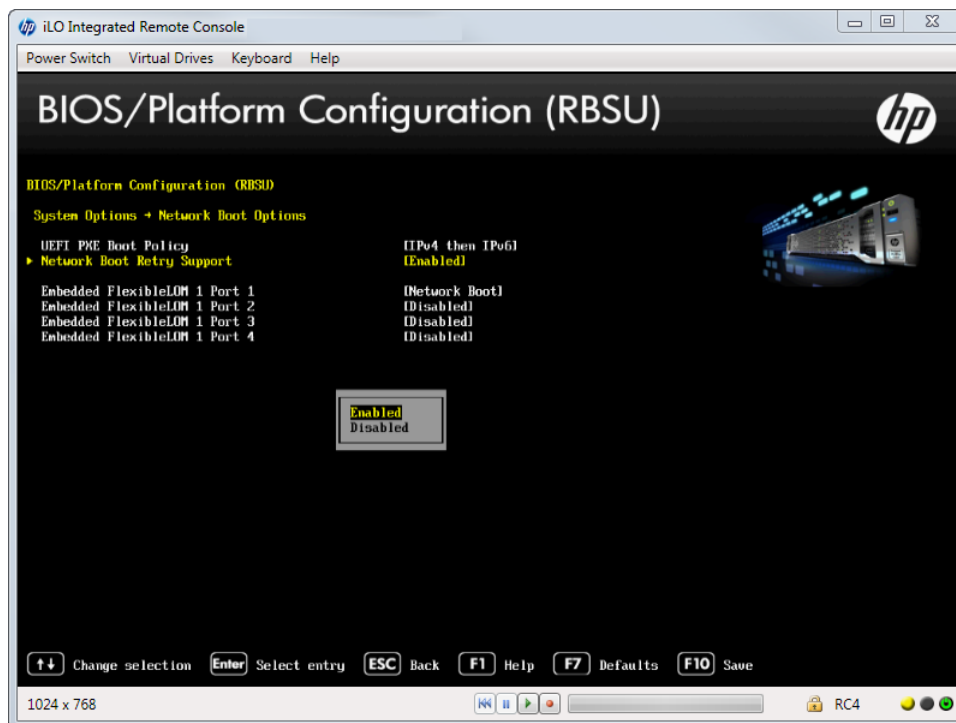
Setting Network Boot Retry Support

You can set the network boot retry setting. By default, the system BIOS attempts to boot the network device (for example, PXE device) up to 20 times before attempting to boot the next IPL device.

To set Network Boot Retry support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Network Boot Options** →**Network Boot Retry Support** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to accept your selection.

Figure 10 Network Boot Options — Network Boot Retry Support screen



Accessing USB Options

This menu lets you set USB control, USB boot support, and removable flash media boot sequence.

To access USB options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**USB Options**.
2. Select the following options:
 - “Setting USB Control” (page 20)
 - “Setting USB Boot Support” (page 21)
 - “Setting Removable Flash Media Boot Sequence” (page 22)

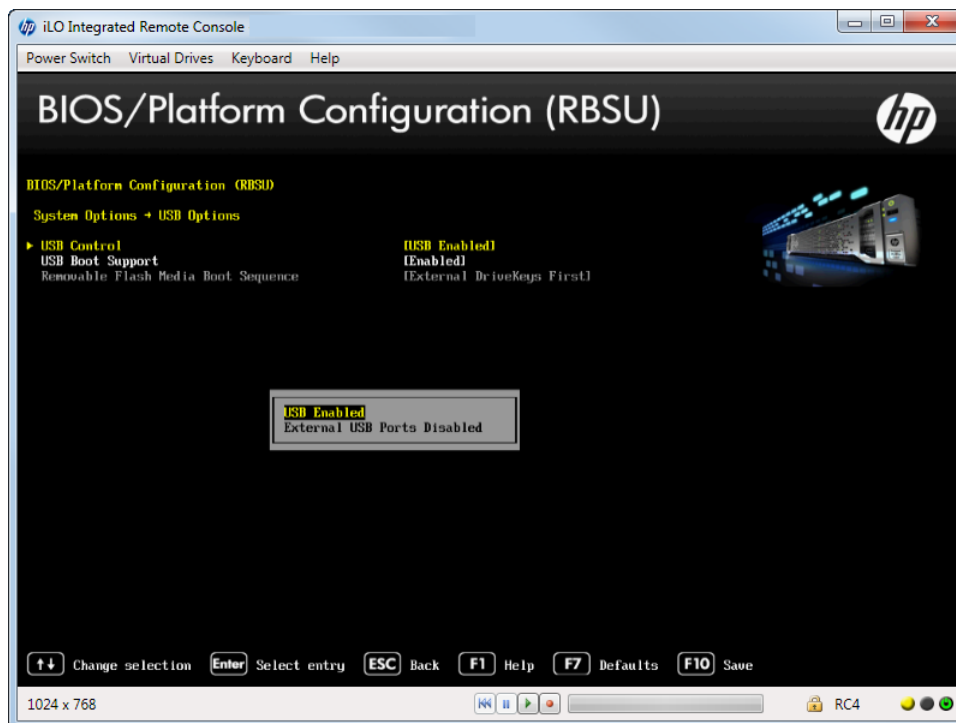
Setting USB Control

Use the USB Control option to configure how USB ports and embedded devices operate at startup.

To set USB controls:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**USB Options**→**USB Control** and press **Enter**.
2. Select one of the following options:
 - **USB Enabled** (default)—Enables all USB ports and embedded devices.
 - **External USB Port Disabled**—Only external USB ports are disabled; however, embedded USB devices have full support under the ROM and operating system.
3. Press **F10** to save your selection.

Figure 11 Network Boot Options —USB Control screen



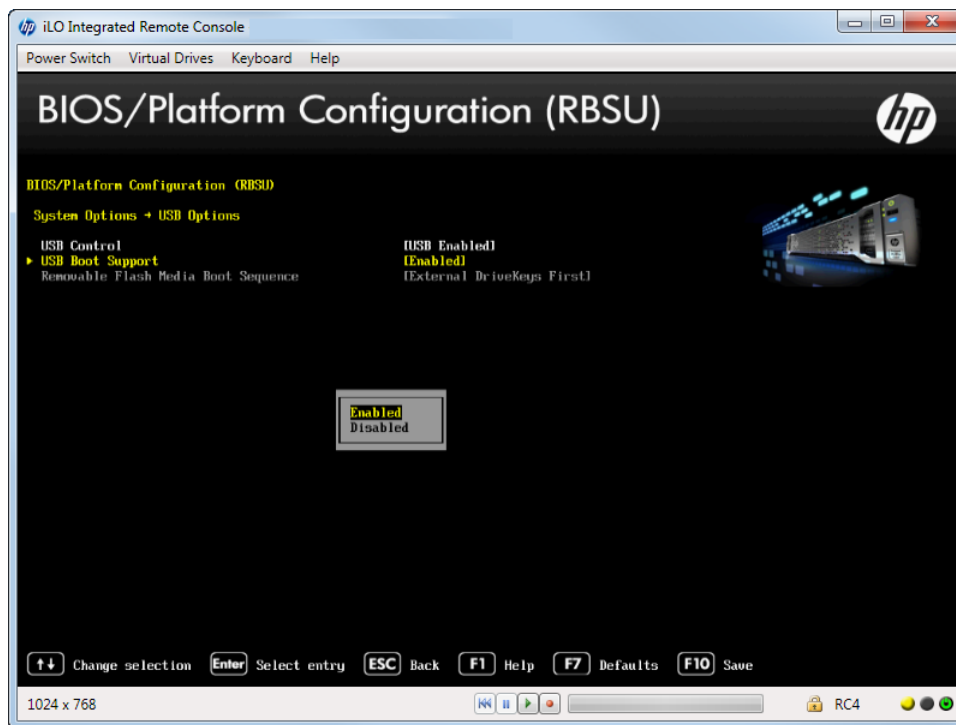
Setting USB Boot Support

Use this option to prevent the system from booting any USB devices connected to the server and to disable booting the iLO virtual media.

To set USB boot support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**USB Options**→**USB Boot Support** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 12 USB Options — USB Boot Support screen



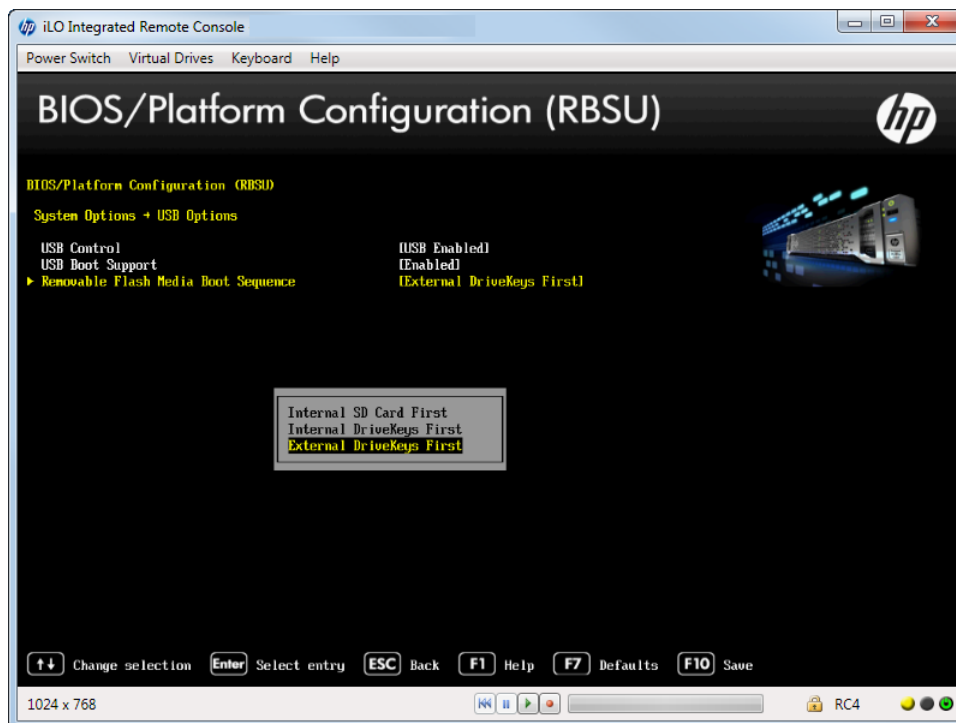
Setting Removable Flash Media Boot Sequence

Select which USB or SD Card devices you want to search first when enumerating boot devices. Select whether the system should attempt to boot external USB drive keys, internal USB drive keys, or the internal SD Card slot first. This option does not override the device boot order in the Standard Boot Order (IPL) option. Configure this option only when Boot Mode is set to Legacy BIOS. See [“Selecting a Boot Mode” \(page 41\)](#) for more information.

To select removable flash media boot sequence:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**USB Options**→**Removable Flash Media Boot Sequence** and press **Enter**.
2. Select one of the following options:
 - **Internal SD Card First**—Boot using the internal SD card slot.
 - **Internal Drive Keys First**—Boot using the internal USB drive keys.
 - **External Drive Keys First** (default)—Boot using external USB drive keys.
3. Press **F10** to save your selection.

Figure 13 Options — Removable Flash Media Boot Sequence screen



Configuring Processor Options

You can configure processor options, such as protecting a system from viruses, enabling virtualization technology, disabling Intel Hyperthreading, enabling processor cores, and enabling Intel Virtualization Technology.

To access processor options:

- From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**.

Depending on your server model, options can include:

- [“Protecting a System from Viruses”](#) (page 23)
- [“Enabling Virtualization Technology”](#) (page 24)
- [“Disabling Intel Hyper-Threading”](#) (page 25)
- [“Disabling Processor Cores”](#) (page 26)
- [“Setting Intel Turbo Boost Technology”](#) (page 27)
- [“Enabling Intel VT-d”](#) (page 28)

Protecting a System from Viruses

You can protect a system against malicious code and viruses. Memory is marked as non-executable unless the location contains executable code. Some viruses attempt to insert and execute code from non-executable memory locations; these are intercepted and an exception is generated. Your operating system needs to support this option.

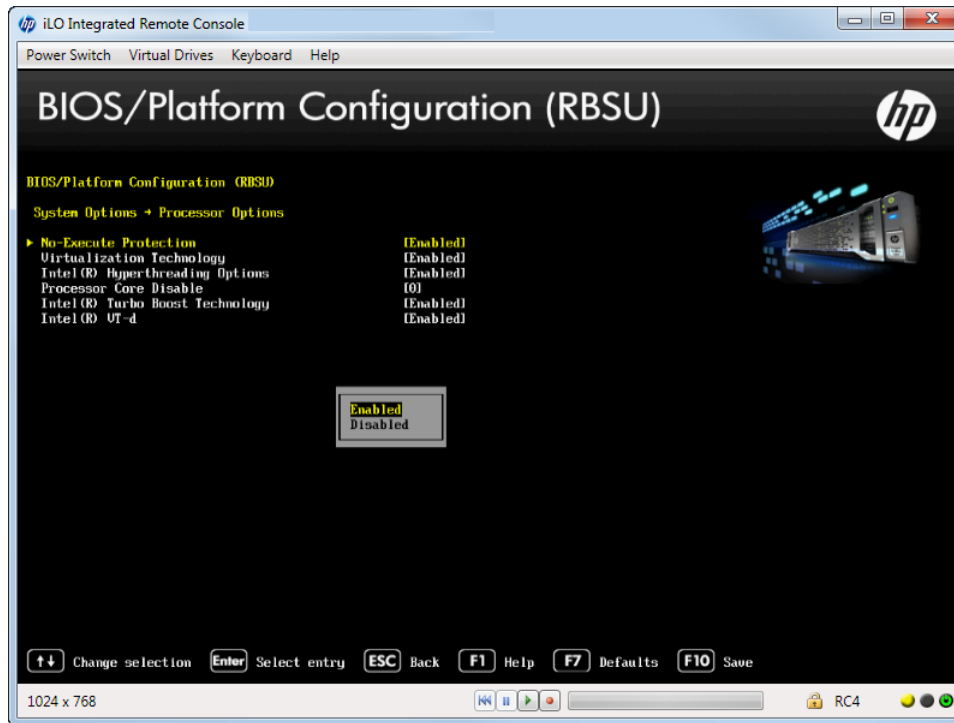
To protect a system from viruses:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**→**No-Execute Protection** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**

3. Press **F10** to save your selection.

NOTE: Ensure this option is enabled if using Virtual Machine Manager, such as VMware ESX/ESXi and Windows Hyper-V.

Figure 14 Processor Options — No-Execute Protection screen



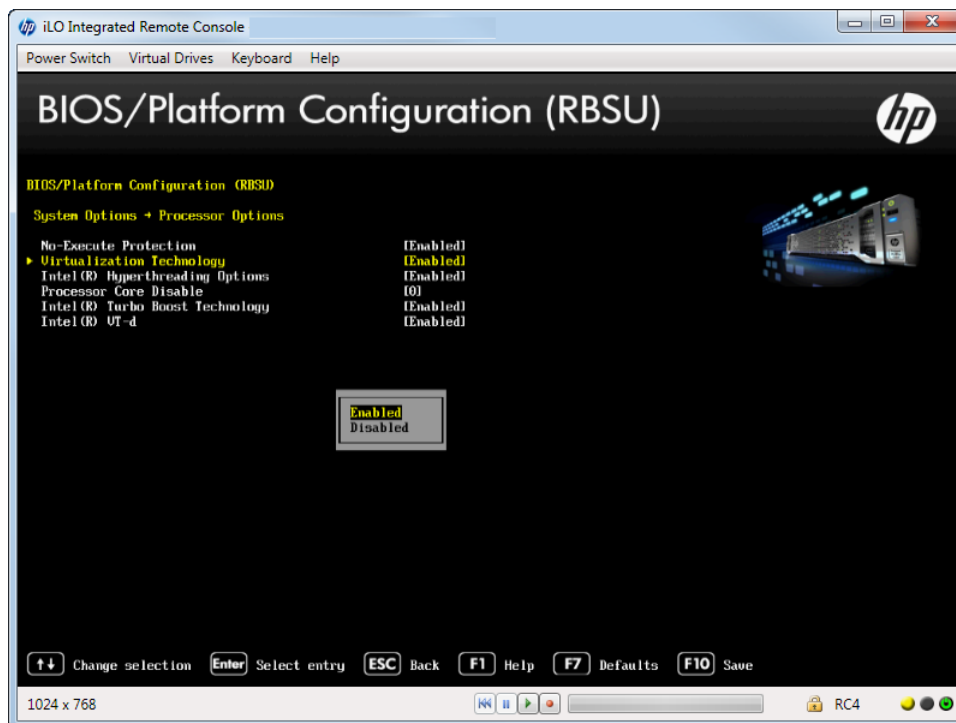
Enabling Virtualization Technology

You can configure a Virtual Machine Manager that supports this option to use hardware capabilities provided by Intel's virtualization technology.

To enable virtualization technology:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**→**Virtualization Technology** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)—When enabled, a Virtual Machine Manager (VMM) supporting this option can use hardware capabilities provided by UEFI Intel processors.
 - **Disabled** —It is not required to disable this option if using a VMM or an OS that does not support AMD V.
3. Press **F10** to save your selection.

Figure 15 Processor Options — Virtualization Technology screen



Disabling Intel Hyper-Threading

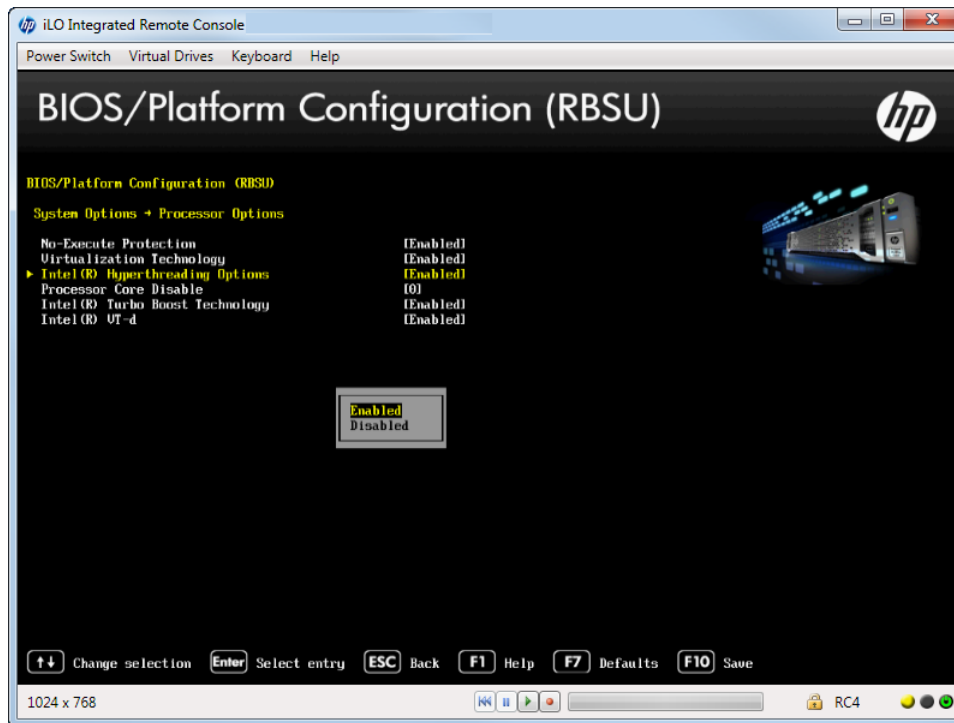
You can disable the logical processor cores on processors supporting Intel's Hyper-Threading Technology. This option improves overall performance for applications that benefit from a higher processor core count. The option is supported through the system BIOS.

NOTE: Hyper-Threading is not supported on all processors. For more information, see the documentation for your processor model.

To disable Intel Hyper-Threading:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**→**Intel Hyperthreading Options** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)—Enables the logical processor cores on processors supporting Intel Hyper-Threading technology.
 - **Disabled**—Disables the logical processor cores on processors supporting Intel Hyper-Threading technology.
3. Press **F10** to save your selection.

Figure 16 Processor Options — Intel Hyper-Threading Options screen



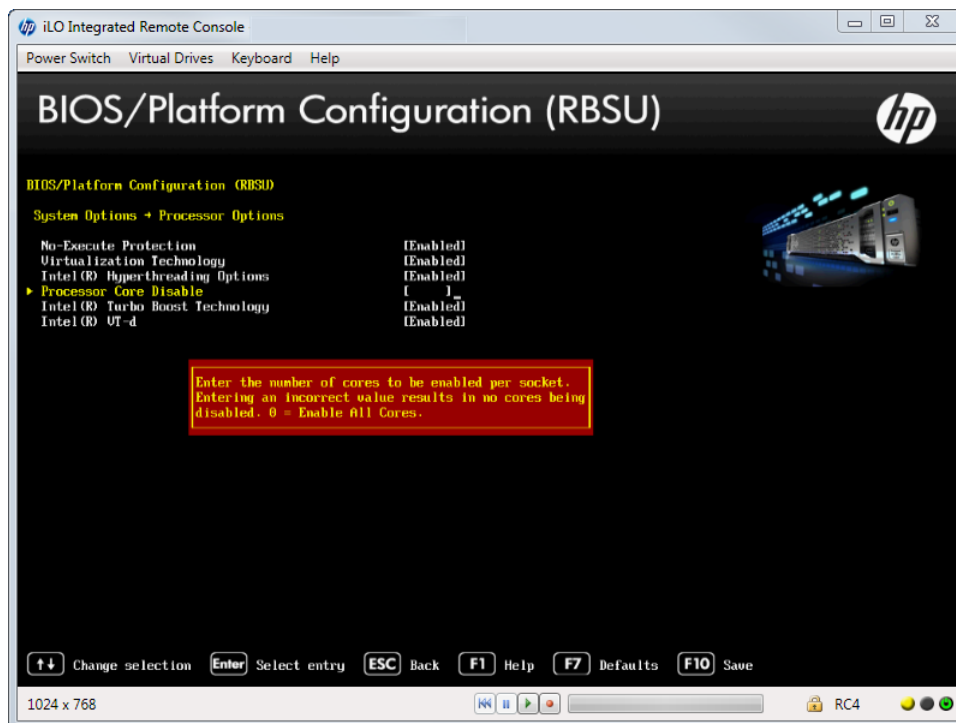
Disabling Processor Cores

You can disable processor cores that use Intel Core Multi-Processing (CMP) Technology. This option can reduce processor power usage and improve performance with some applications. It can improve overall performance for applications that benefit from higher performance cores rather than more processing cores. This option can also address issues with software that is licensed on a per-core basis. The value enter should be the number of enabled cores per socket.

To disable processor cores:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**→**Processor Core Disable** and press **Enter**.
2. Press any key to display the message box, which lets you enter the number of cores to enable per processor socket. Entering an incorrect value results in no cores being disabled. 0 = Enable All Cores.
3. Press **F10** to save your selection.

Figure 17 Processor Options — Processor Core Disable screen



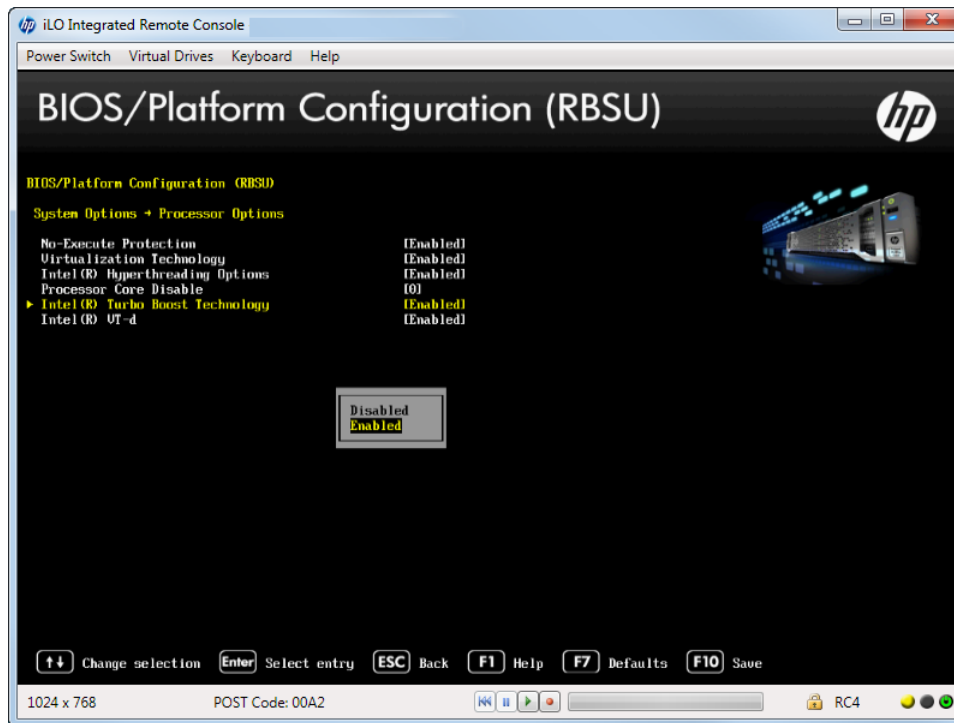
Setting Intel Turbo Boost Technology

Turbo Boost Technology lets the processor transition to a higher frequency than the processor's rated speed if the processor has available power and is within temperature specifications.

To set Intel Turbo Boost technology:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**→**Intel Hyperthreading Options** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)—Enables the logical processor cores on processor supporting hyperthreading technology.
 - **Disabled**—Disabling this option reduces power usage and also reduces the system's maximum achievable performance under some workloads.
3. Press **F10** to save your selection.

Figure 18 Intel Turbo Boost Technology screen



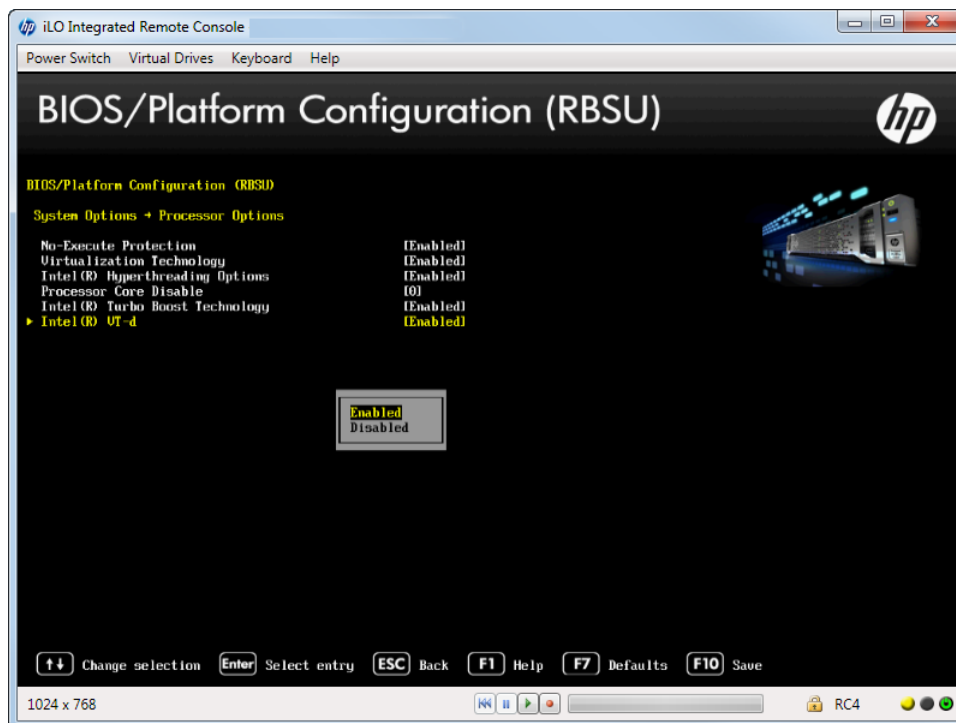
Enabling Intel VT-d

You can enable a Virtual Machine Manager (VM Manager must support this feature) to use hardware capabilities provided by the Intel Virtualization Technology for Directed I/O.

To enable Intel VT-d:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Processor Options**→**Intel VT-d** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 19 Processor Options — Intel VT-d screen



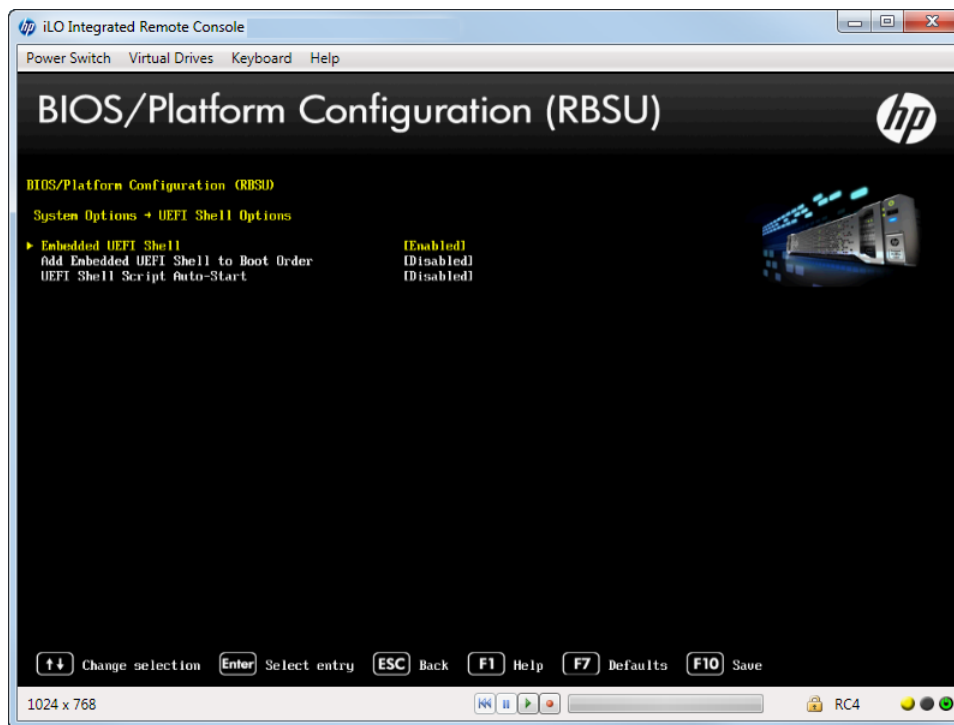
Accessing UEFI Shell Options

You can enable the UEFI Shell, add the Embedded UEFI Shell in the boot order, and enable automatic execution of the default startup script for the Embedded UEFI Shell.

To access UEFI Shell options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**UEFI Shell Options**.
2. Select any of the following options:
 - “Enabling the Embedded UEFI Shell” (page 30)
 - “Adding Embedded UEFI Shell to the boot order list” (page 31)
 - “Enabling the UEFI Shell Script Auto Start” (page 32)

Figure 20 UEFI Shell Options screen



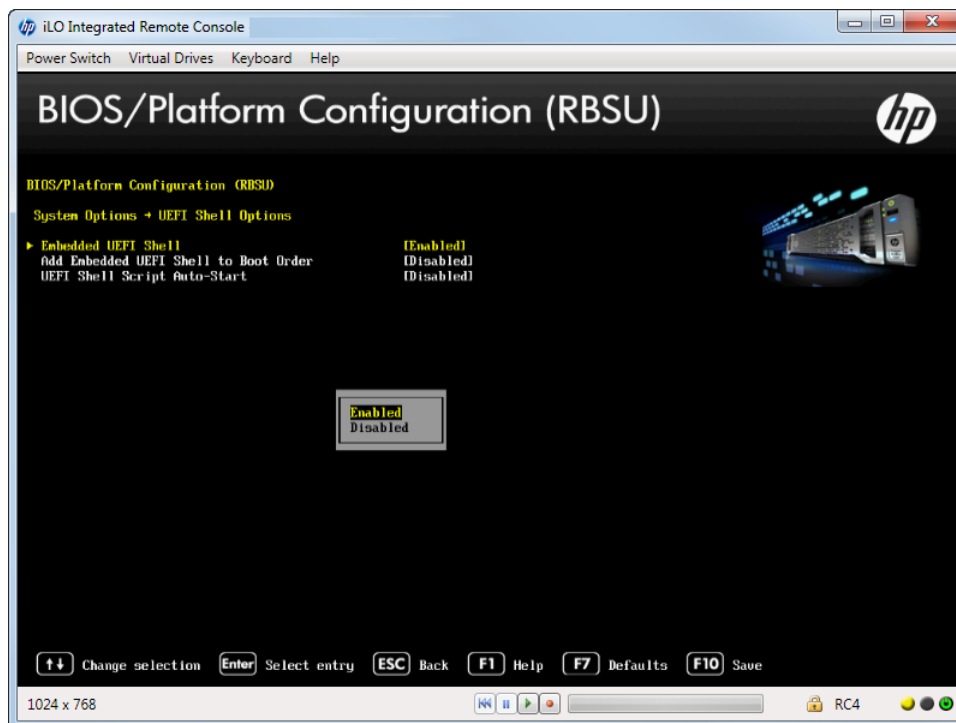
Enabling the Embedded UEFI Shell

You can enable or disable the Embedded UEFI Shell. The UEFI Shell is a pre-boot command line environment for scripting and running UEFI applications, including UEFI boot loaders. The UEFI Shell also provides CLI-based commands to obtain system information and configure and update the system BIOS. Enabling this option adds the Embedded UEFI Shell to the UEFI boot options. You can only configure this option if Boot Mode is set to UEFI. See [“Selecting a Boot Mode” \(page 41\)](#) for more information.

To set the Embedded UEFI Shell:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**UEFI Shell Options**→**Embedded UEFI Shell** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.
4. See the *HP UEFI Shell User Guide* details on running Shell scripts.

Figure 21 UEFI Shell Options — Embedded UEFI Shell screen



Adding Embedded UEFI Shell to the boot order list

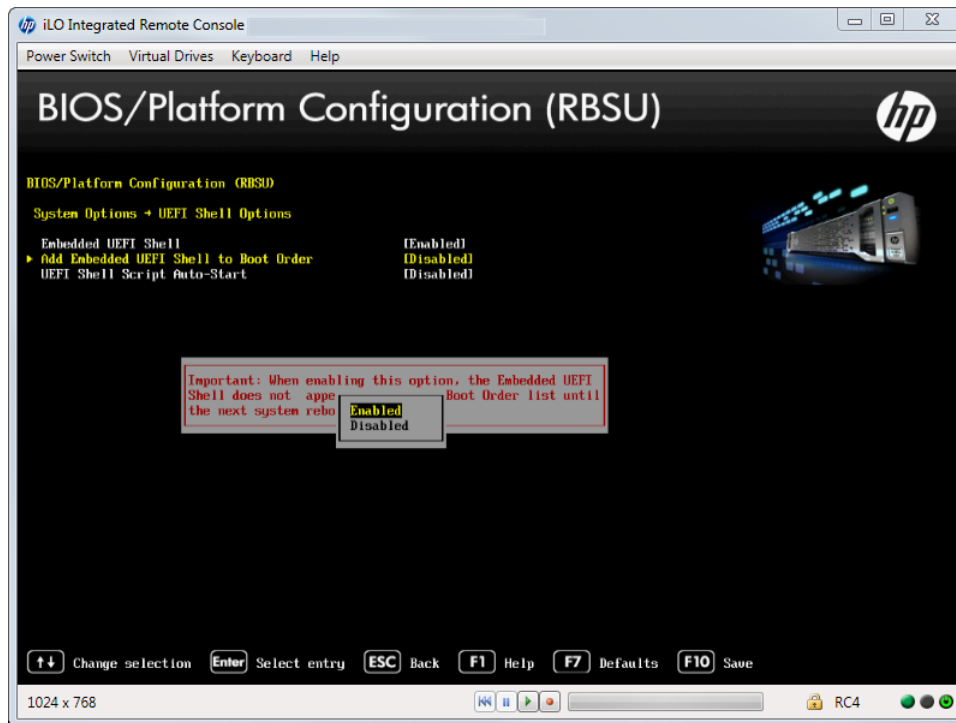
Adding the Embedded UEFI Shell as an entry in the Boot Order list is only applicable when the Embedded UEFI Shell is enabled and Boot Mode is set as UEFI. Otherwise, this option is grayed out.

NOTE: When enabling this option, the Embedded UEFI Shell does not appear in the UEFI Boot Order list until the next system reboot.

To add the Embedded UEFI Shell to the boot order list:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**UEFI Shell Options**→**Add Embedded UEFI Shell to Boot Order** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)—Adds the embedded UEFI Shell to the boot order.
 - **Disabled**
3. Press **F10** to save your selection.

Figure 22 UEFI Shell Options — Add Embedded UEFI Shell to the Boot Order screen



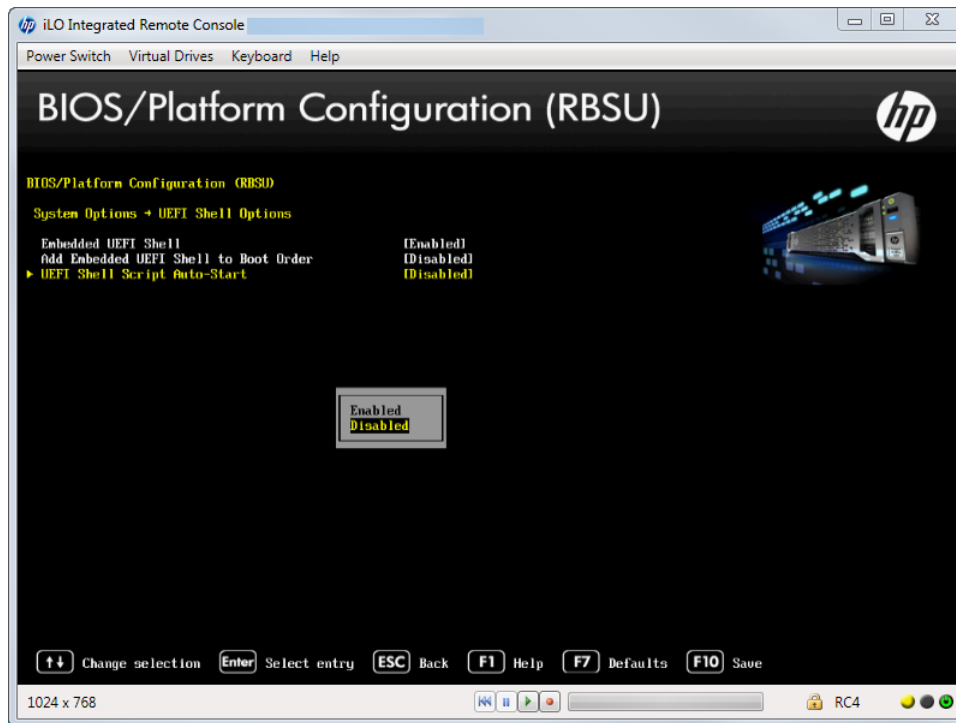
Enabling the UEFI Shell Script Auto Start

You can enable or disable automatic execution of the default UEFI Shell startup script during shell startup. When enabled, the shell looks for the `startup.nsh` file in any of the FAT16 or FAT32 file systems available. If you do not have the `startup.nsh` file, name the script file "startup.nsh" and place it in a UEFI accessible file system on a fixed or removable media. Configure this option only when Boot Mode is set to UEFI. HP recommends that you have only one `startup.nsh` file on one file system. See ["Selecting a Boot Mode" \(page 41\)](#) for more information.

To enable the UEFI Shell script auto start:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**UEFI Shell Options**→**UEFI Shell Script Auto-Start** and press **Enter**.
2. Select **Enabled** and press **Enter** to enable the UEFI Shell Script Auto Start.
3. Press **F10** to save your selection.
4. Reboot the server for the change to take effect.

Figure 23 Shell Options — UEFI Shell Script Auto Start screen



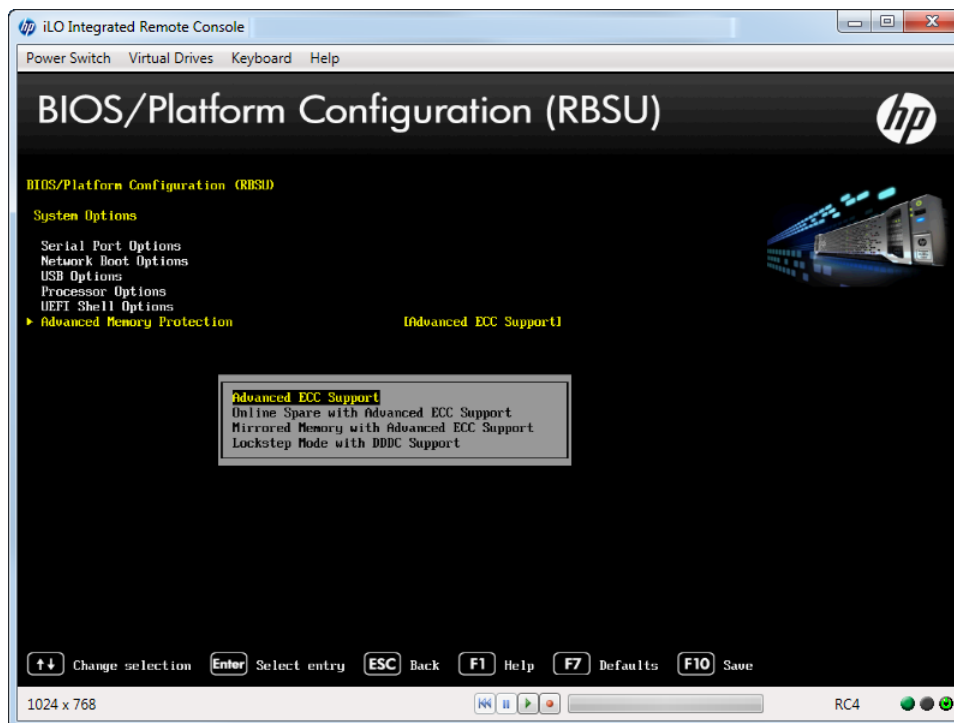
Configuring Advanced Memory Protection

You can configure additional memory protection with ECC (error checking and correcting). Advanced ECC provides the largest memory capacity to the operating system.

To configure advanced memory protection:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Options**→**Advanced Memory Protection** and press **Enter**.
2. Select one of the following options:
 - **Advanced ECC Support** (default) — Configures the largest memory capacity to the operation system while protecting the system against all single-bit failures and some multi-bit failures. This option provides up to 4-bit error correction and enhanced performance over Lockstep mode.
 - **Online Spare with Advanced ECC Support** — Configures a system to automatically map out a group of memory that is receiving excessive correctable memory errors. This memory is replaced by a spare group of memory.
 - **Mirrored Memory with Advanced ECC Support** — Configures maximum protection against uncorrectable memory errors that can otherwise result in a system failure.
 - **Lockstep Mode with Advanced DDDC Support** — Configures maximum data protection by correcting multiple-bit memory errors (using Double Data Device Correction (DDDC) support) that Advanced ECC mode cannot detect. Lockstep mode improves system reliability and availability.

Figure 24 Advanced Memory Protection screen



Accessing Boot Options

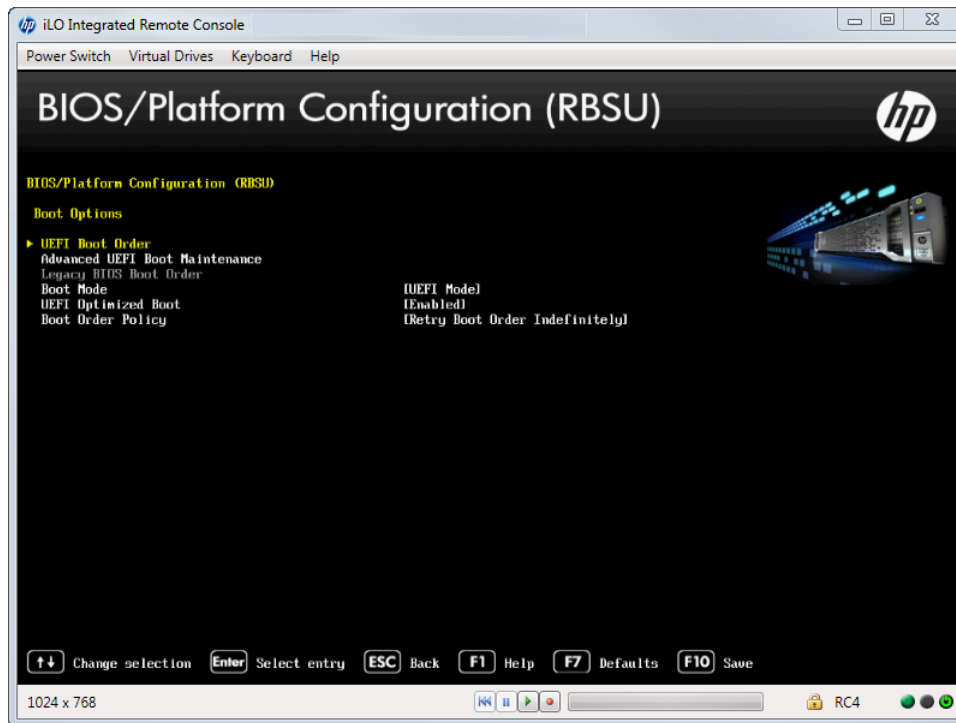
You can change the order of the UEFI boot order list, change the order of Legacy boot settings, select a boot mode, and set the UEFI optimized boot mode.

NOTE: The server needs to be rebooted when changes are made to the boot mode

To access the boot options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Boot Options** and press **Enter**.
2. Select an option, and then press **Enter**. Options are as follows:
 - “Changing the UEFI boot order list” (page 35)
 - “Accessing Advanced UEFI Boot Maintenance options” (page 36)
 - “Setting the Legacy Boot Mode order” (page 40)
 - “Selecting a Boot Mode” (page 41)
 - “Setting the Boot Order Policy” (page 43)
 - “Setting UEFI Optimized Boot” (page 42)

Figure 25 Boot Options screen

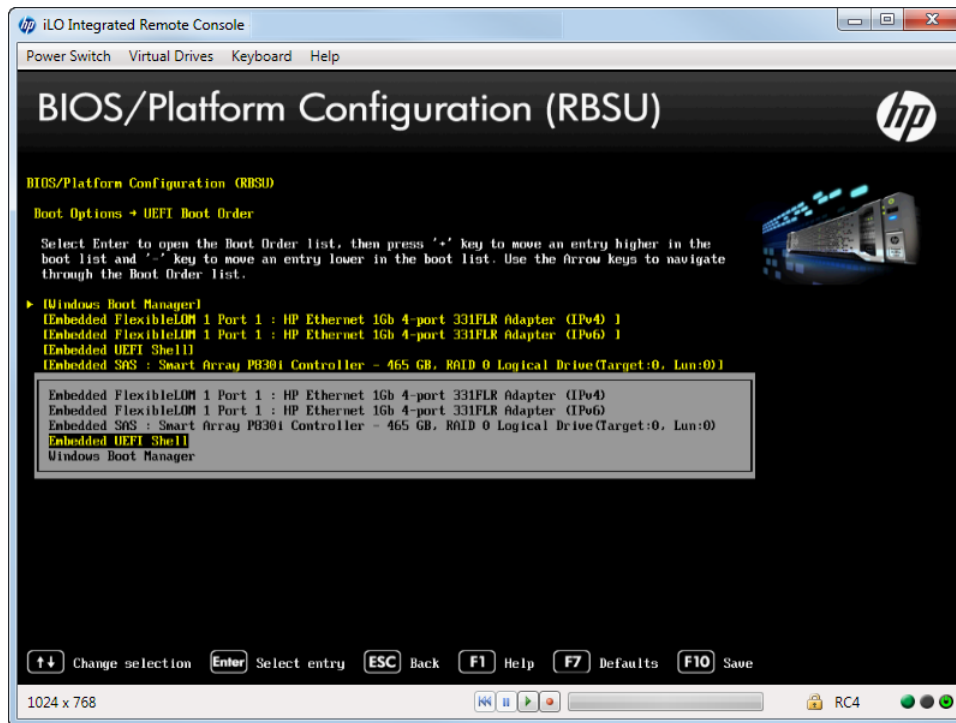


Changing the UEFI boot order list

To change the order of the UEFI boot list:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Boot Options**→**UEFI Boot Order** and press **Enter**. The UEFI Boot Order screen appears.
2. Select **Enter** to open the Boot Order list.
3. Use the arrow keys to navigate within the boot order list.
4. Press the + key (plus) to move an entry higher in the boot list.
5. Press the - key (minus) to move an entry lower in the list.
6. Press **F10** to save your selection.
7. From the System Utilities screen, select **Exit and Resume Boot**.
8. Reboot the server for the change to take effect.

Figure 26 Boot Options — UEFI Boot Order screen



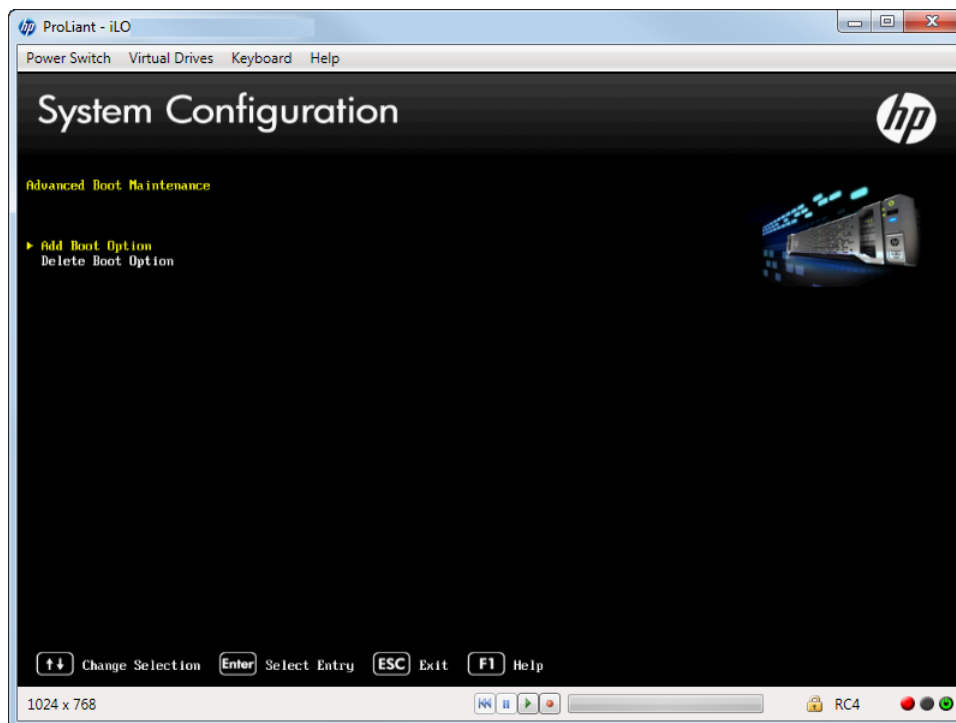
Accessing Advanced UEFI Boot Maintenance options

Advanced UEFI boot maintenance options let you add an OS boot loader or application file that is located on removable media either attached to the server or virtual media from the iLO console.

To access advanced UEFI boot maintenance options:

1. From the **System Utilities** screen, select **System Configuration**→**Advanced UEFI Boot Maintenance** and press **Enter**.
2. Select one of the following options:
 - "Adding a Boot Option" (page 37)
 - "Deleting a Boot Option" (page 39)

Figure 27 Advanced Boot Maintenance screen



Adding a Boot Option

You can browse all FAT16 and FAT32 file systems. You can then select an X64 UEFI application with an .EFI extension to add as a new UEFI boot option (such as an OS boot loader or other UEFI application). The new boot option is appended to the boot order list. Once you select a file, you are prompted to enter the boot option description (which is then displayed in the Boot menu), as well as any optional data to be passed to an .EFI application.

To add boot options:

1. Attach media with a FAT16 or FAT32 partition on it.
2. From the **System Utilities** screen, select **System Configuration**→**Advanced Boot Maintenance**→**Add Boot Option** and press **Enter**.
3. Browse for a .EFI application from the list and press **Enter** as shown in [Figure 28 \(page 38\)](#).
4. Press **Enter** to drill-down if necessary.
5. Input the boot option description and optional data as shown in [Figure 29 \(page 38\)](#). A new boot option appears in the UEFI boot order. For example as shown in [Figure 30 \(page 39\)](#).
6. Select **Commit changes and exit** to save your selection.

Figure 28 Add Boot Option screen

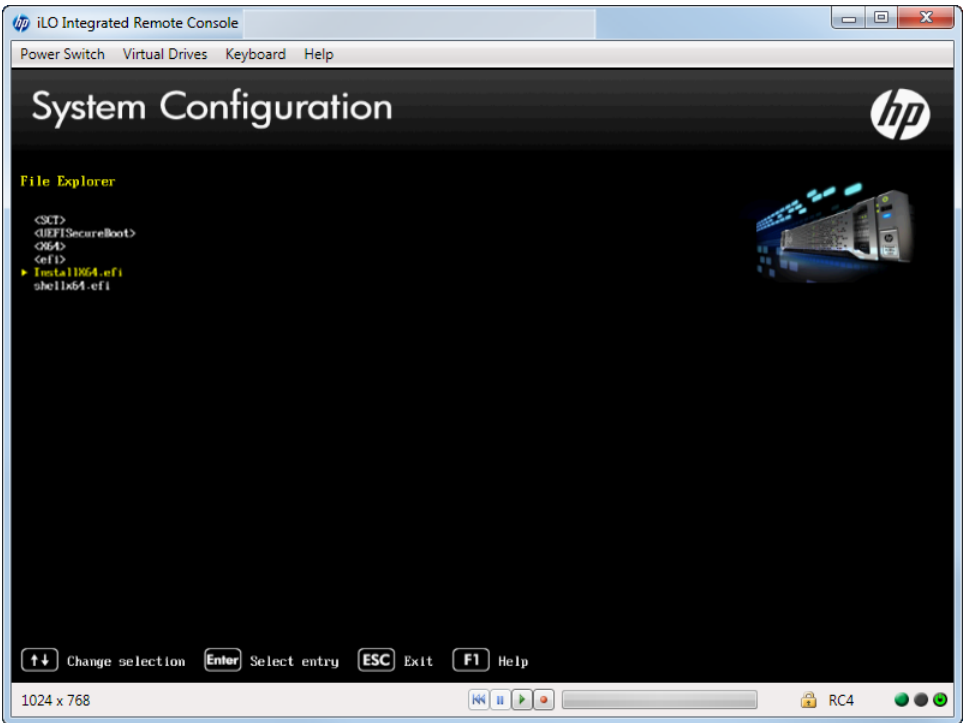
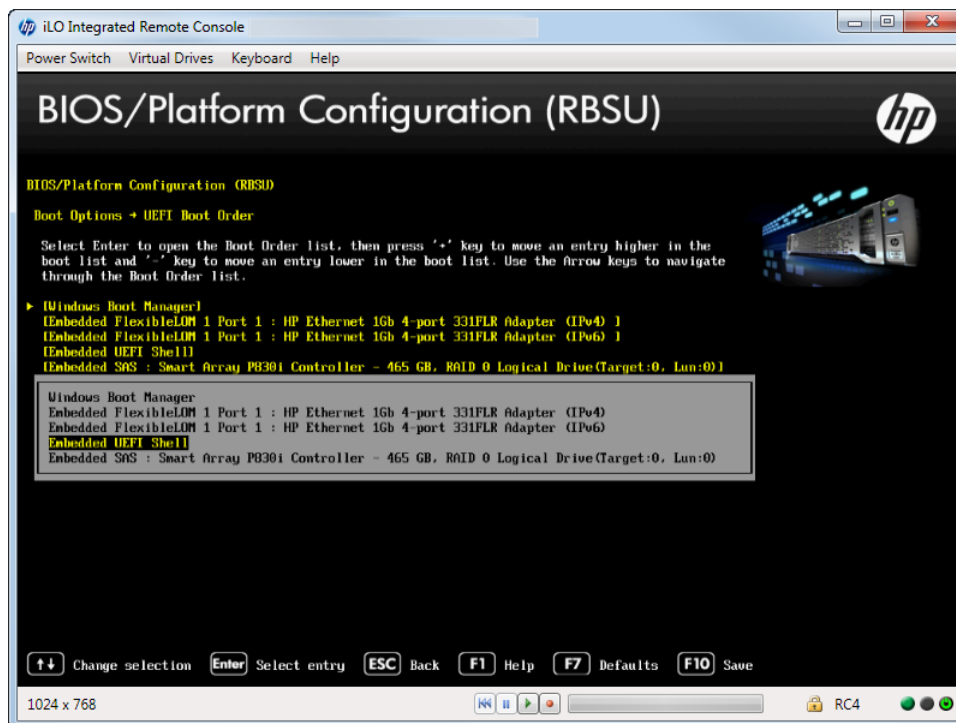


Figure 29 Modify Boot Option Description screen



Figure 30 UEFI Boot Order — Example



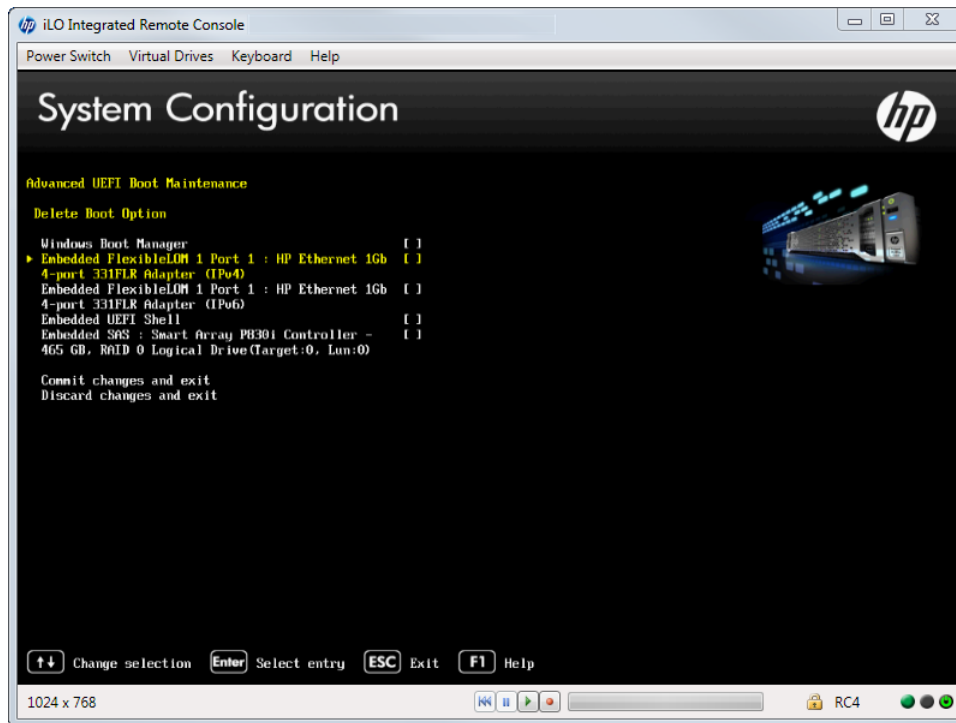
Deleting a Boot Option

You can delete a UEFI boot option from the boot order list. If the options points to a standard boot location (such as Network PXE boot or a removable media device), the system BIOS adds the option on the next system reboot.

To delete boot options:

1. From the **System Utilities** screen, select **System Configuration**→**Advanced UEFI Boot Maintenance**→**Delete Boot Option** and press **Enter**.
2. Select a port from the list.
3. Select one of the following options:
 - **Commit Changes and Exit**
 - **Discard Changes and Exit**
4. Select **Commit Changes and Exit** to save your selection.

Figure 31 Delete Boot Option screen



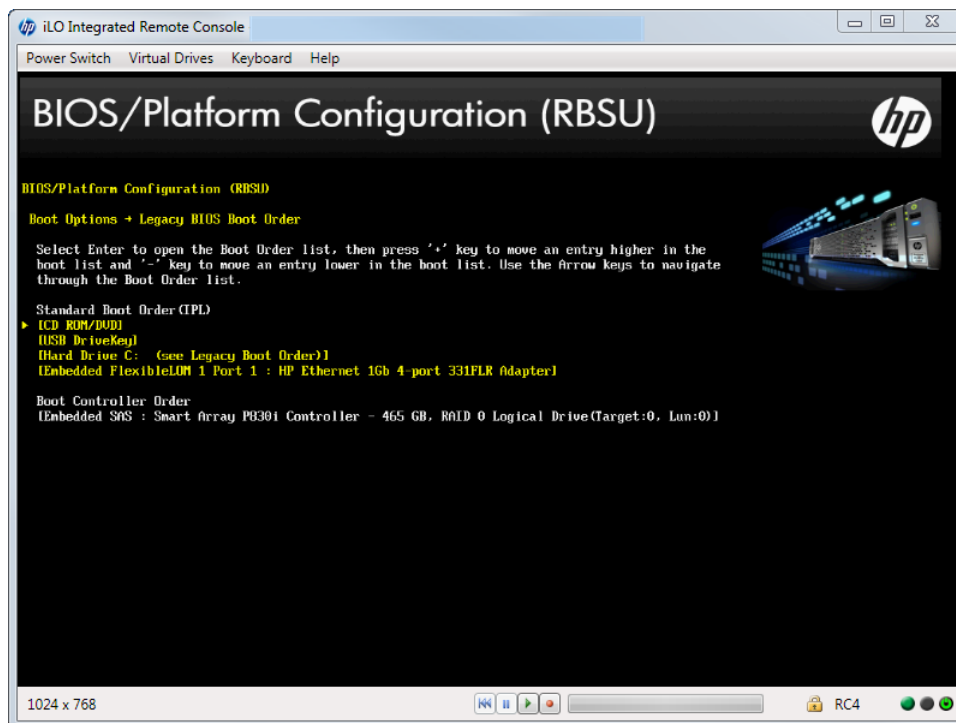
Setting the Legacy Boot Mode order

If your server is configured in Legacy mode, you can change the order for Legacy Boot Mode settings. This settings defines how the server looks for OS boot firmware.

To change Legacy boot settings:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Boot Options**→**Legacy BIOS Boot Order** and press **Enter**. The Legacy Boot Order screen appears.
2. Select an option from the Standard Boot Order list and use the up and down arrow keys to move the option to where you want it to appear in the list. Choose CD ROM/DVD, USB DriveKey, Hard Drive C, or an embedded device.
3. Press **F10** to save your selection.
4. Reboot the server for the change to take effect.

Figure 32 Legacy Boot Order screen



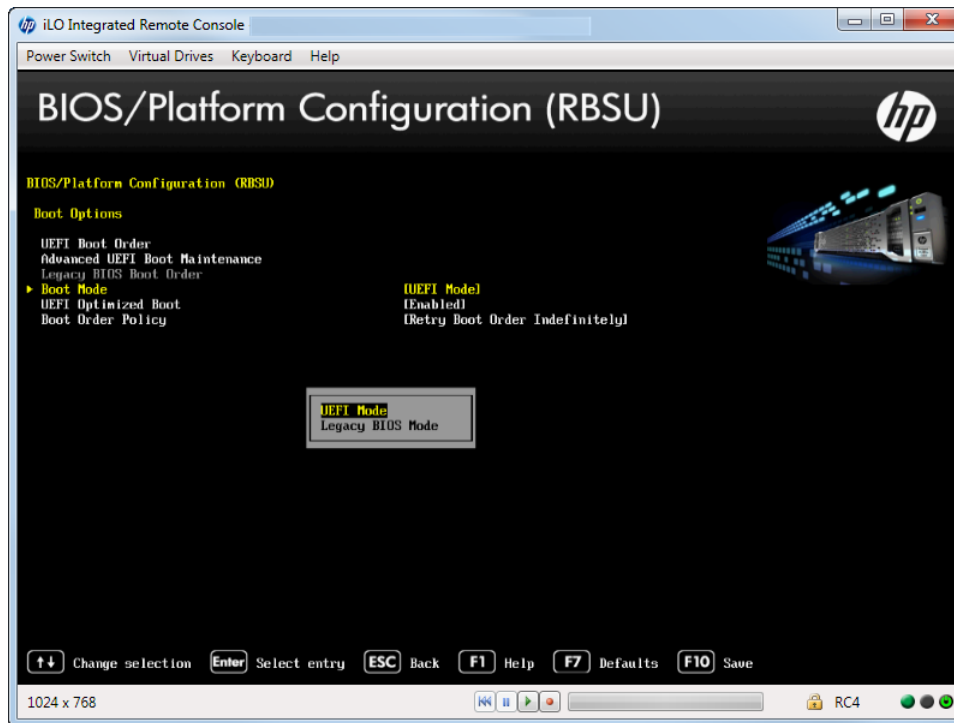
Selecting a Boot Mode

You can select the boot mode for the system to be either UEFI or Legacy BIOS.

To select a boot mode:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Boot Options**→**Boot Mode** and press **Enter**. The Boot Mode screen appears.
2. Select one of the following options:
 - **UEFI Mode**—Configures the system to boot to a UEFI compatible operating system.
 - **Legacy BIOS Mode**—Configures the system to boot to a traditional operating system in Legacy BIOS compatibility mode.
3. Press **F10** to save your selection.
4. From the System Utilities screen, select **Exit and Resume Boot**.
5. Reboot the server for the change to take effect.

Figure 33 Boot Mode screen



Setting UEFI Optimized Boot

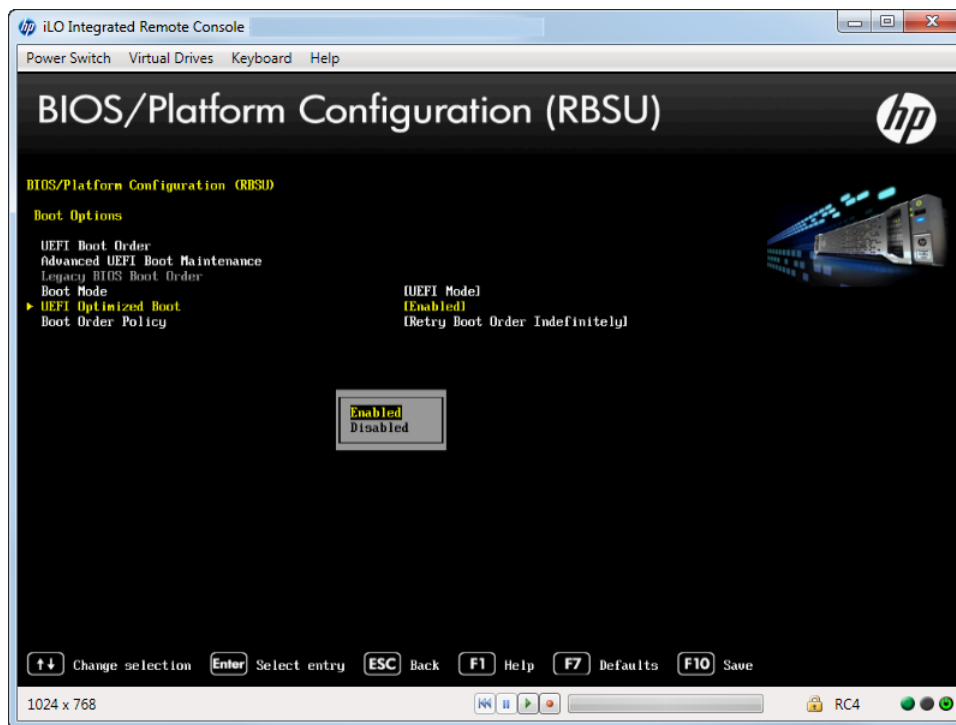
Configure the system to use native UEFI graphic drivers when booting to the UEFI Boot Mode. This option needs to be enabled to configure Secure Boot. For more information, see [“Configuring Secure Boot” \(page 69\)](#) for more information. Set the Boot Mode to UEFI before you can configure this option. See [“Selecting a Boot Mode” \(page 41\)](#) for detailed information.

NOTE: This option must be disabled, when using Microsoft Windows 2008 R2 in UEFI Boot Mode because Legacy BIOS components are needed for video operations in Windows.

To set the UEFI Optimized Boot:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Boot Options**→**UEFI Optimized Boot** and press **Enter**. The UEFI Optimized Boot screen appears.
2. Select one of the following options:
 - **Enabled**—Configures the system BIOS to boot using native UEFI graphic drivers.
 - **Disabled** (default)—Configures the system BIOS to boot using INT10 legacy video expansion ROM. This setting needs to be disabled to boot Windows Server 2008 R2 in UEFI Boot Mode. This option cannot be disabled if Secure Boot is enabled. Configure this option only if **Boot Mode** is set to **UEFI**. For more details, see [“Selecting a Boot Mode” \(page 41\)](#).
3. Press **F10** to save your selection.
4. Reboot the server for the change to take effect.

Figure 34 UEFI Optimized Boot screen



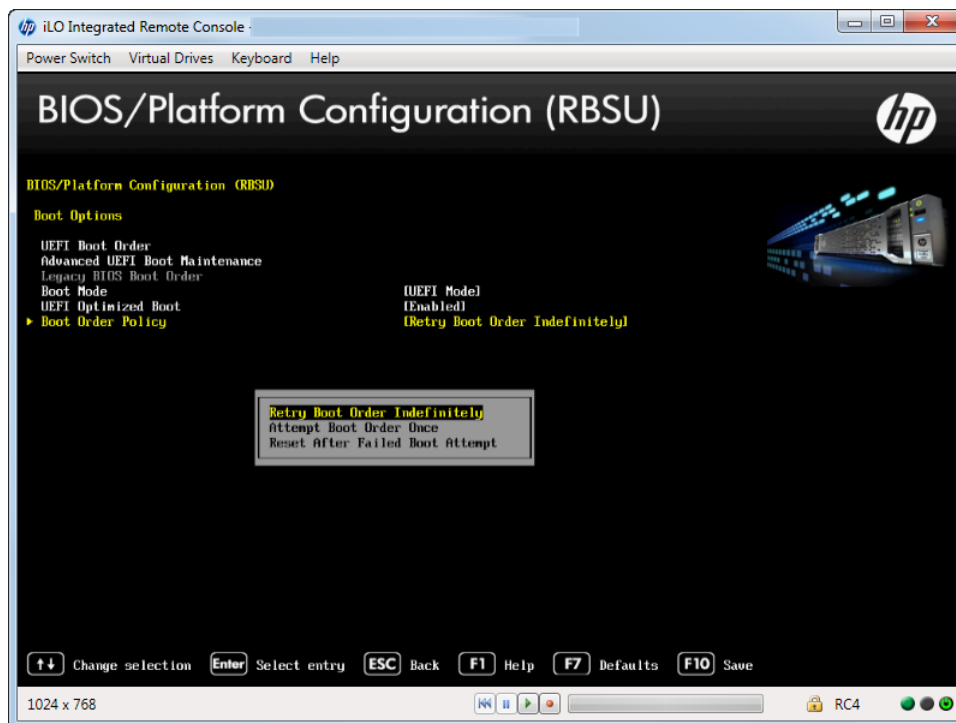
Setting the Boot Order Policy

You can control the platform behavior when booting through the boot order.

To set the Boot Order Policy:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Boot Options**→**Boot Order Policy** and press **Enter**. The Boot Order Policy screen appears.
2. Select one of the following options:
 - **Retry Boot Order Indefinitely** (default)—Configures the system to continuously attempt the boot order until a bootable device is found.
 - **Attempt Boot Order Once**—Configures the system to attempt to execute all items in the boot menu once and then halts.
 - **Reset After Failed Boot Attempt**—Configures the system to attempt to execute all items once and then the system is rebooted.
3. Press **F10** to save your selection.
4. Reboot the server for the change to take effect.

Figure 35 Boot Options — Boot Order Policy screen



Accessing Power Management

This menu lets you enable such features as channel interleaving and collaborative power control. You can also set the QPI link frequency to a lower speed and set the processor idle power state.

To access power management options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management** and press **Enter**. The Power Management screen appears.
2. Select one of the following options:
 - “Setting HP Power Profile” (page 44)
 - “Setting HP Power Regulator” (page 45)
 - “Configuring Advanced Power Management Options” (page 46)

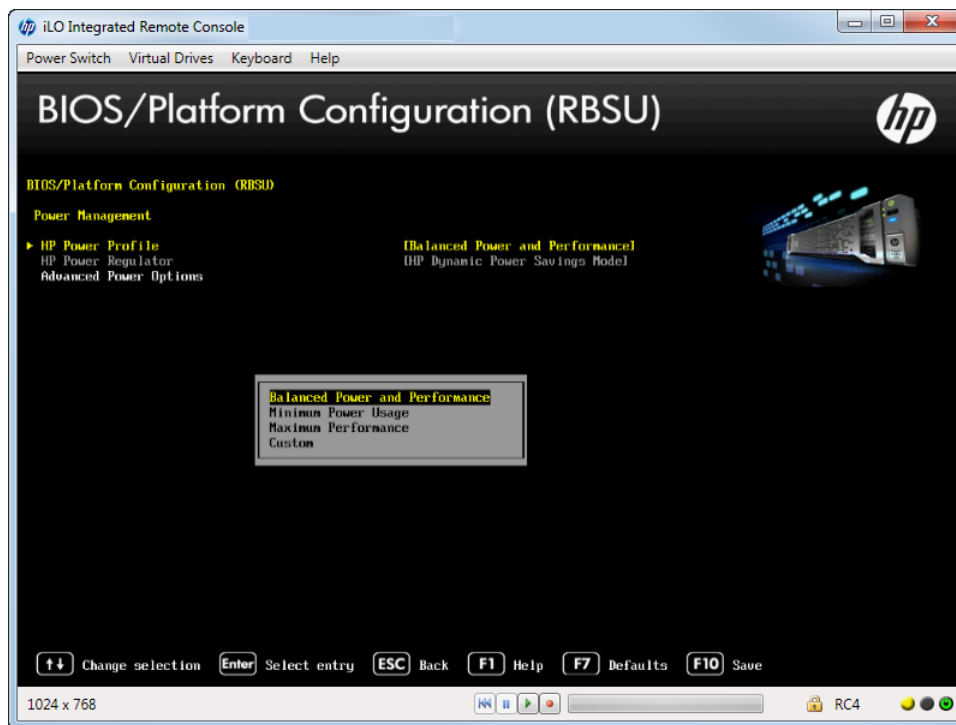
Setting HP Power Profile

Select a power profile based on power and performance characteristics.

To set the HP Power Profile:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**HP Power Profile** and press **Enter**. The HP Power Profile screen appears.
2. Select one of the following options:
 - **Balanced Power and Performance** (default)—Provides optimum settings to maximize power savings with minimal impact to performance for most operating systems and applications.
 - **Minimum Power Usage**—Enables power reduction mechanisms that can negatively affect performance. This mode guarantees a lower maximum power usage by the system.
 - **Maximum Performance**—Disables all power management options that can affect negatively affect performance.
 - **Custom**—Configure settings for your environment.
3. Press **F10** to save your selection.

Figure 36 Power Management — HP Power Profile screen



Setting HP Power Regulator

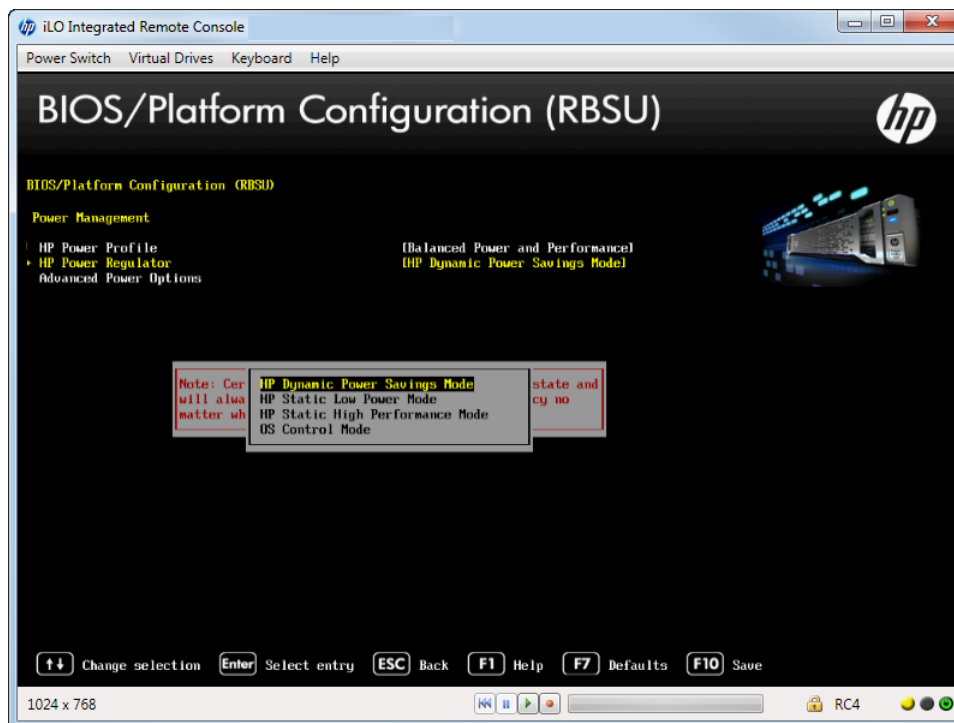
Configure the Power Regulator for ProLiant support. Configure this option only when the HP Power Profile is set to Custom. For more information, see [“Setting HP Power Profile” \(page 44\)](#).

To set the HP Power Regulator:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**HP Power Regulator** and press **Enter**. The Power Management screen appears.
2. Select one of the following options:
 - **HP Dynamic Power Savings Mode** (default)—Automatically varies processor speed and power usage based on processor utilization. Allows reducing overall power consumption with little or no impact to performance. This option does not require OS support.
 - **HP Static Low Power Mode**—Reduces processor speed and power usage. Guarantees a lower maximum power usage for the system. Performance is greater for environments with higher processor utilization.
 - **HP Static High Performance Mode**—Processors in the maximum power and performance state, regardless of the OS power management policy.
 - **OS Control Mode**—Processors run in their maximum power and performance state at all times, unless the OS enables a power management policy.
3. Press **F10** to save your selections.

NOTE: Certain processors support only one power state and operate at their initialized frequency, regardless of the selected Power Regulator mode.

Figure 37 Power Management — HP Power Regulator screen



Configuring Advanced Power Management Options

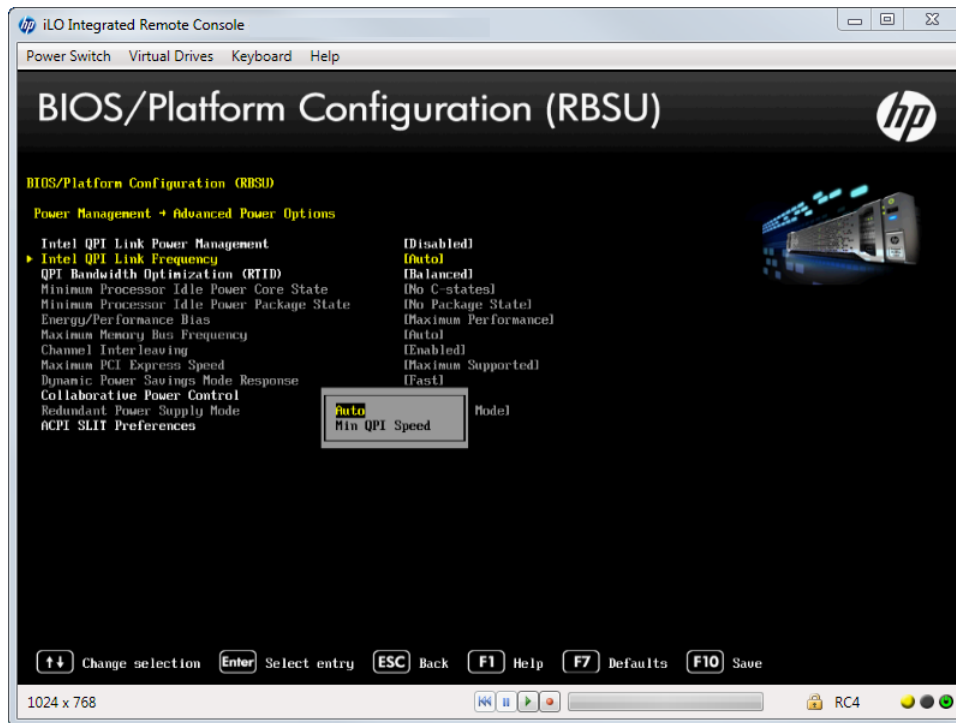
To configure advanced power options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Management Options** and press **Enter**. The Power Management screen appears.
2. Select one of the following options:
 - "Setting Intel QPI Link Power Management" (page 46)
 - "Setting Intel QPI Link Frequency" (page 47)
 - "Setting QPI Bandwidth Optimization (RTID)" (page 48)
 - "Setting Minimum Processor Idle Power Core State" (page 49)
 - "Setting Minimum Processor Idle Power Package State" (page 50)
 - "Setting Energy/Performance Bias" (page 51)
 - "Setting Maximum Memory Bus Frequency" (page 52)
 - "Setting Channel Interleaving" (page 52)
 - "Setting Maximum PCI Express Speed" (page 53)
 - "Setting Dynamic Power Savings Mode Response" (page 53)
 - "Setting Collaborative Power Control" (page 53)
 - "Setting Redundant Power Supply Mode" (page 54)
 - "Setting ACPI SLIT Preferences" (page 55)

Setting Intel QPI Link Power Management

NOTE: This option is available on servers with multiple Intel processors.

Figure 39 Intel QPI Link Frequency screen



Setting QPI Bandwidth Optimization (RTID)

NOTE: This option is available on Gen8 with Intel processors.

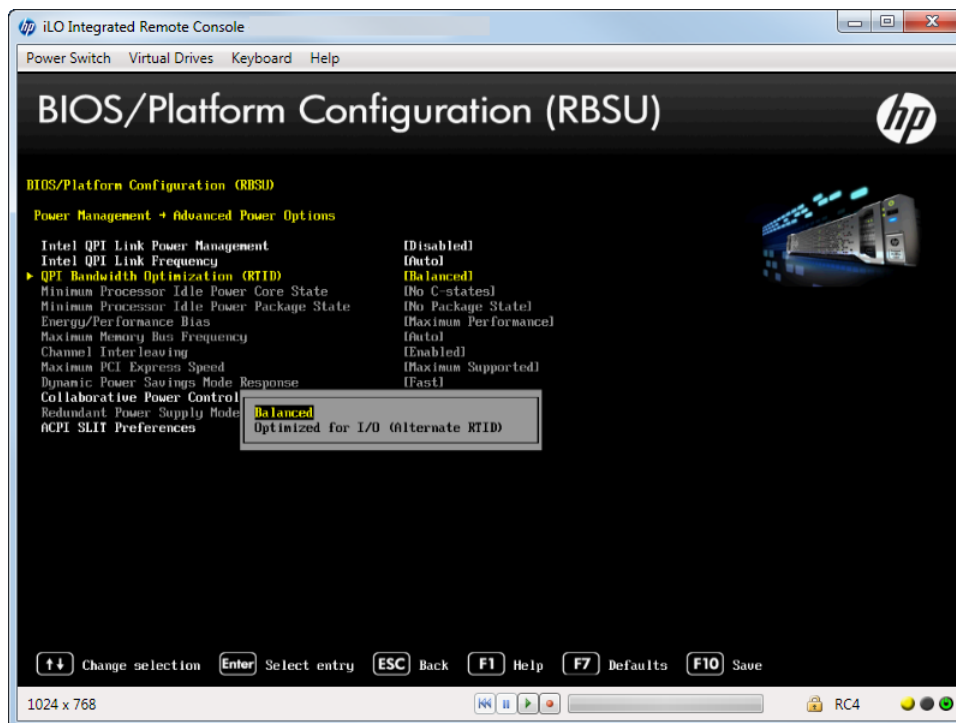
The QPI link between two processors provides the best performance for most applications.

To set QPI Bandwidth Optimization:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**QPI Bandwidth Optimization (RTID)** and press **Enter**.
2. Select one of the following options:
 - **Balanced** (default)—Provides the best performance for most applications and benchmarks.
 - **Optimized for I/O (Alternate RTID)**—Increases bandwidth from I/O devices, such as GPUs that rely on direct access to system memory. This option is only configurable if two or more CPUs are present.
3. Press **F10** to save your selection.

NOTE: Setting this option to **Optimized for I/O** can have a negative impact on memory and system performance.

Figure 40 QPI Bandwidth Optimization screen



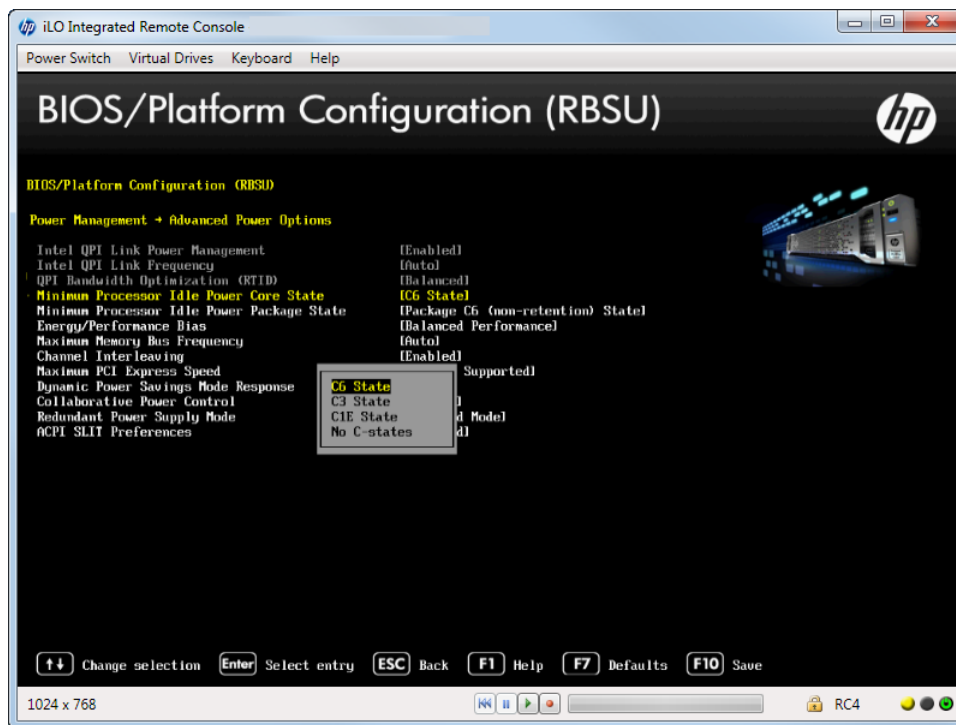
Setting Minimum Processor Idle Power Core State

Select the lowest processor idle power state (C-state) that the operating system uses. The higher the C-state, the lower the power usage of the idle power state. C6 is the lowest power idle state supported by the processor. Configure this option only when HP Power Profile is set to "Custom."

To set minimum processor idle power core state:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Minimum Processor Idle Power Core State** and press **Enter**.
2. Select one of the following options:
 - **C6 State** (default — lowest)
 - **C3 State**
 - **C1E State**
 - **No C-states**
3. Press **F10** to save your selection.

Figure 41 Advanced Power Management — Minimum Processor Idle Power Core State screen



Setting Minimum Processor Idle Power Package State

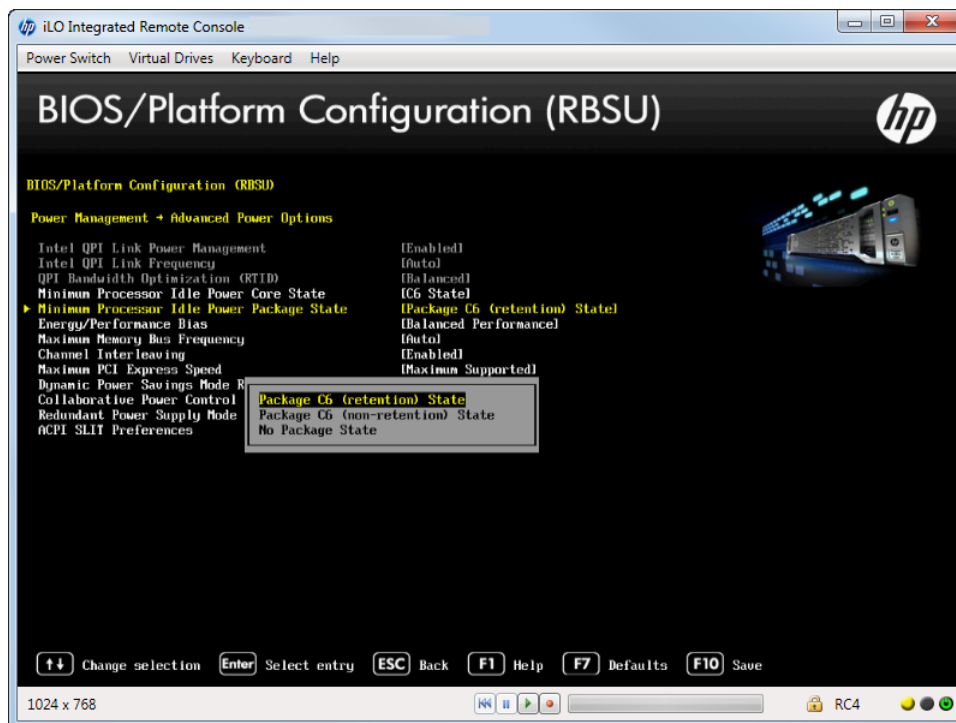
NOTE: This option is available on servers with Intel processors.

Configure the lowest processor idle power state (C-state). The processor automatically transitions into package C-states based on the Core C-states in which cores on the processor have transitioned. The higher the package C-state, the lower the power usage of that idle package state. Package C6 (non-retention) is the lowest power idle package state supported by the processor. Configure this option only when HP Power Profile is set to Custom.

To set minimum processor idle power package state:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Minimum Processor Idle Power Package State** and press **Enter**.
2. Select one of the following options:
 - **Package C6 (retention) State**
 - **Package C6 (non-retention) State**
 - **No Package State**
3. Press **F10** to save your selection.

Figure 42 Advanced Power Management — Minimum Processor Idle Power Package State screen



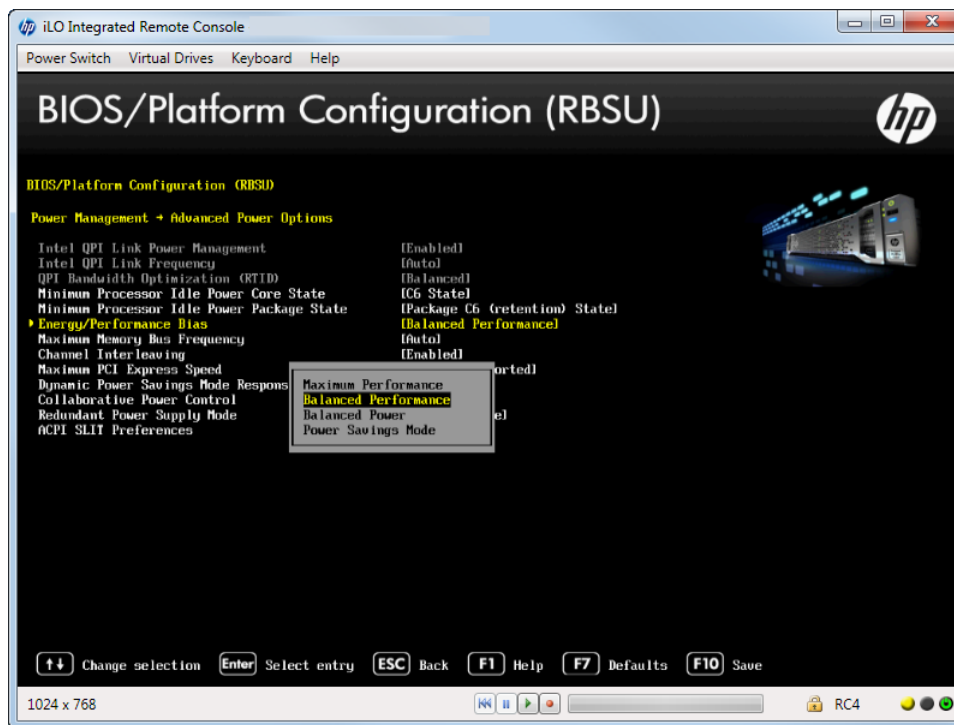
Setting Energy/Performance Bias

Configure several processor subsystems to optimize the processor's performance and power usage. Configure this option only if the HP Power Profile is set to "Custom."

To set energy/performance bias:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Energy/Performance Bias** and press **Enter**.
2. Select one of the following options:
 - **Maximum Performance**—Provides the highest performance and lowest latency. Only use this option for environments that are not sensitive to power consumption.
 - **Balanced Performance** (default)—Provides optimum power efficiency and is recommended for most environments.
 - **Balanced Power**—Provides optimum power efficiency based on server utilization.
 - **Power Savings Mode**—For environments that are power sensitive and can accept reduced performance.
3. Press **F10** to save your selection.

Figure 43 Advanced Power Management — Energy/Performance Bias screen



Setting Maximum Memory Bus Frequency

Configure the system to run memory at a lower maximum speed than that supported by the installed processor and DIMM configuration. Setting this option to **Auto** configures the system to run memory at the maximum speed supported by the system configuration. Configure this option only when HP Power Profile is set to Custom.

To set the maximum memory bus frequency:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Maximum Memory Bus Frequency** and press **Enter**.
2. Select one of the following options:
 - **Auto** (default)
 - **1333MHz**
 - **1066MHz**
 - **800MHz**
3. Press **F10** to save your selection.

NOTE: Options vary depending on the installed processor.

Setting Channel Interleaving

Modify the level of interleaving for which the memory system is configured. Typically, higher levels of memory interleaving result in maximum performance. However, reducing the level of interleaving can result in power savings. Configure this option only when HP Power Profile is set to "Custom."

To set channel interleaving:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Channel Interleaving** and press **Enter**.

2. Select one of the following options:

- **Enabled** (default)
- **Disabled**

3. Press **F10** to save your selection.

Setting Maximum PCI Express Speed

If a PCI-Express device does not run properly at its maximum speed, reducing the speed can address this issue. This option lets you lower the maximum PCI-express speed in which the server allows PCI-express devices to operate. It can be useful in addressing issues with problematic PCI-express devices. Setting this value to **Maximum Supported** configures the platform to run at the maximum speed supported by the platform or the PCIe device (whichever is lower). Configure this option only when HP Power Profile is set to Custom.

To set maximum PCI Express Speed:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Maximum PCI Express Speed** and press **Enter**.
2. Select one of the following options:
 - **Maximum Supported** (default)—Configures the platform to run at the maximum speed supported by the platform or the PCIe device (whichever is lower).
 - **PCIe Generation 1.0**—Configures the platform to run at the lowest speed possible in the PCIe links, which is PCIe Generation 1.0. When setting this option to PCIe Generation 1.0, performance of high-end cards such as 10GbE NIC Cards and I/O Accelerators may be affected.
3. Press **F10** to save your selection.

NOTE: This option works in conjunction with the PCIe Gen 3 Control setting. When setting the PCIe Gen 3 Control to **Enabled**, this Maximum PCI Express Speed option must be set to **Maximum Supported**.

Setting Dynamic Power Savings Mode Response

Enable the system ROM to control processor performance and power state depending on the processor workload. This option configures the response time for switching between these states. Configure this option only when HP Power Profile is set to Custom.

To set dynamic power savings mode response:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Dynamic Power Savings Mode Response** and press **Enter**.
2. Select one of the following options:
 - **Fast** (default)—Optimal for most workloads where low latency response to an increase in processor demand is a requirement.
 - **Slow**—Optimal for workloads where a longer latency response to an increase in processing demand is an acceptable tradeoff for reduced power consumption. Depending on the processor workload, selecting this option can negatively affect performance.
3. Press **F10** to save your selection.

Setting Collaborative Power Control

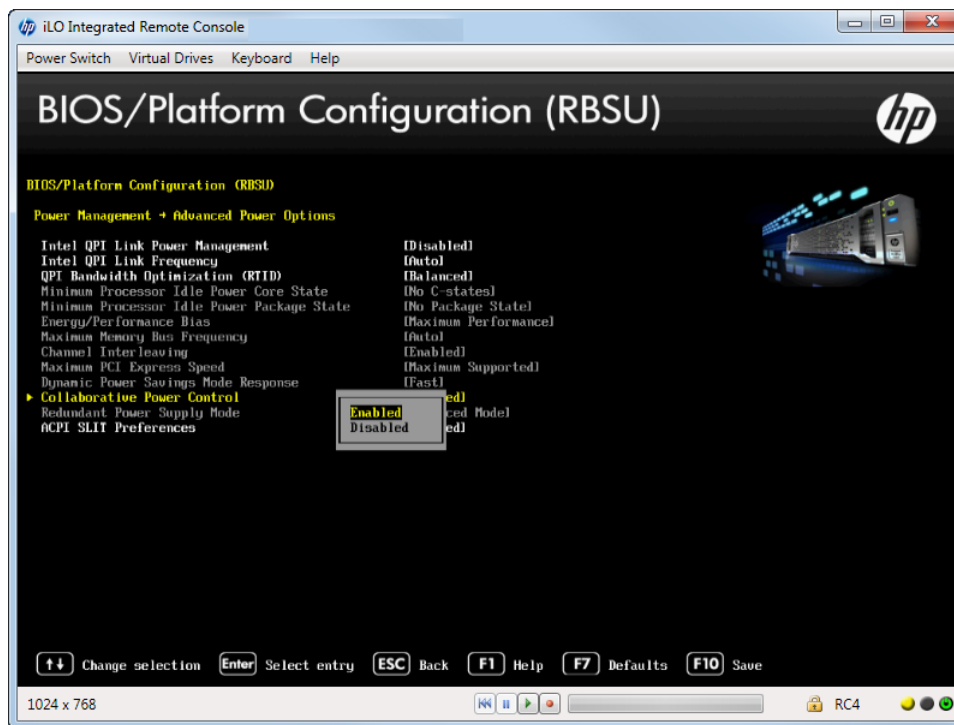
For operating systems that support the Processor Clocking Control (PCC) Interface, enabling this option allows the Operating System to request processor frequency changes (even if the server has the Power Regulator option configured for Dynamic Power Savings Mode). For Operating Systems that do not support the PCC Interface, or when the Power Regulator Mode is not configured

for Dynamic Power Savings Mode, this option has no impact to system operation. Configure this option only if the HP Power Profile is set to Custom.

To set the Collaborative Power Control:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Collaborative Power Control** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 44 Advanced Power Management — Collaborative Power Control screen



Setting Redundant Power Supply Mode

Configure how the system handles redundant power supply configurations.

To set redundant power supply mode:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**Redundant Power Supply Mode** and press **Enter**.
2. Select one of the following options:
 - **Balanced Mode** (default)—Shares the power delivery equally between all installed power supplies.
 - **All High Efficiency Mode**—Configures the most power-efficient operation with redundant power supplies by keeping half of the power supplies in standby mode at lower usage levels.
 - **High Efficiency Mode**—Selects which power supply is to be placed in standby. The system automatically chooses between the odd or even power supply based on the server's serial number to achieve a semi-random distribution within a group of systems.
3. Press **F10** to save your selection.

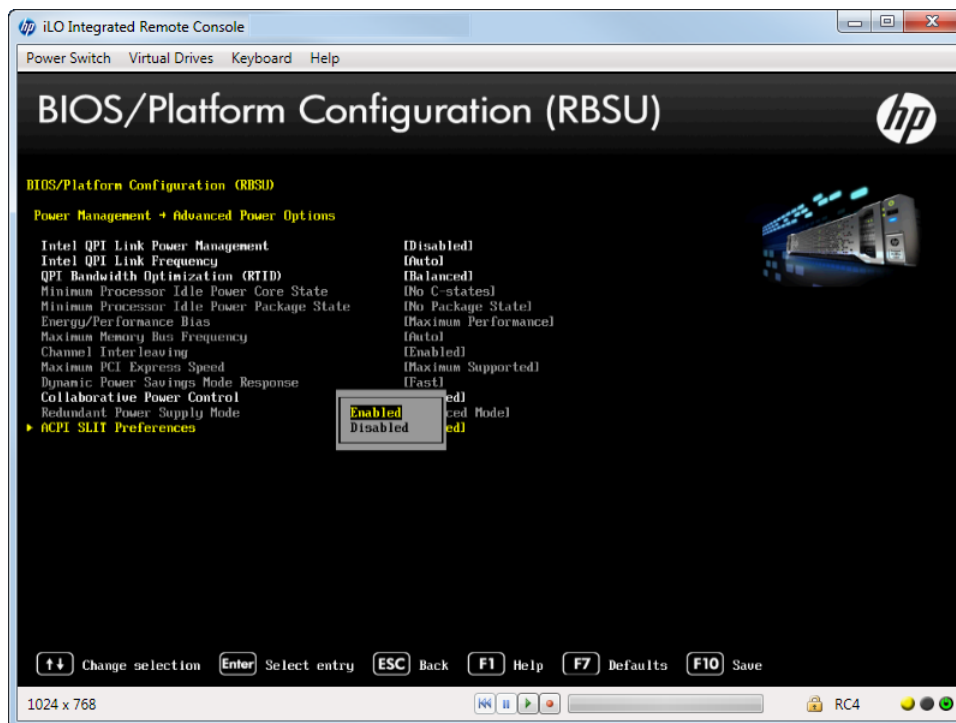
Setting ACPI SLIT Preferences

The ACPI SLIT (System Locality Information Table) describes the relative access times between processors, memory subsystems, and I/O subsystems. Operating systems that support the SLIT can use this information to improve performance by allocating resources and workloads more efficiently.

To set ACPI SLIT Preferences:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Power Management**→**Advanced Power Options**→**ACPI SLIT Preferences** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 45 Advanced Power Management — ACPI SLIT Preferences screen



Setting Embedded and Add-in Devices

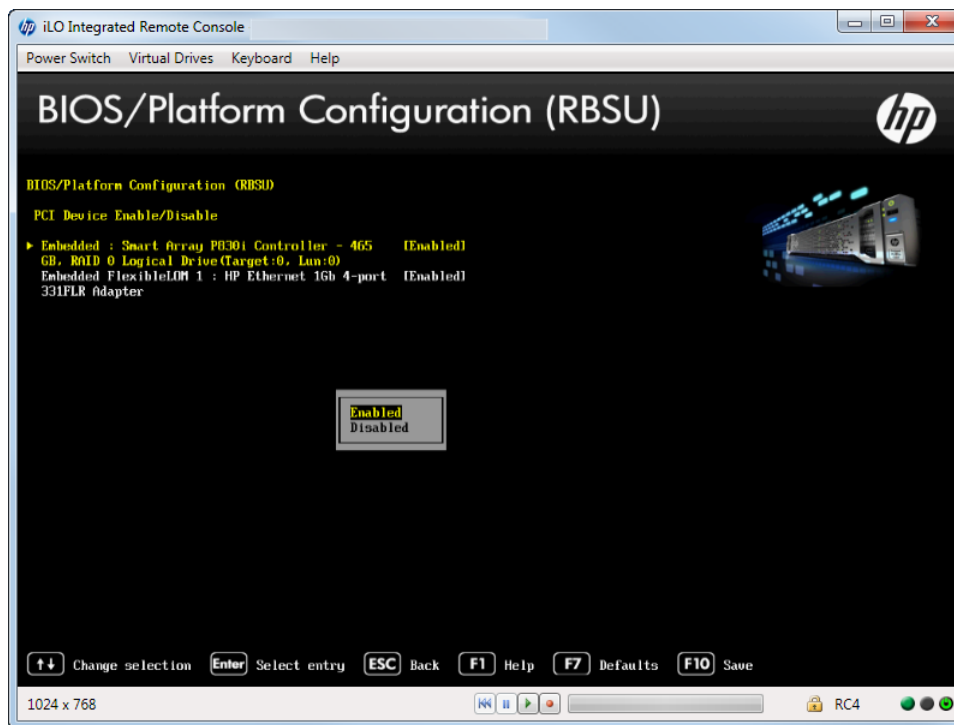
Enable or disable embedded and add-in devices. Disabling devices re-allocates the resources (memory, I/O, and ROM space and power) that are normally allocated to the device.

By default, all devices are enabled.

To set embedded and add-in devices:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**PCI Device Enabled/Disable** and press **Enter**.
2. Select a device on the system from the list and press **Enter**.
3. Select either **Enable** or **Disable** and press **Enter**.
4. Press **F10** to save your selection.

Figure 46 PCI Device Enable/Disable screen



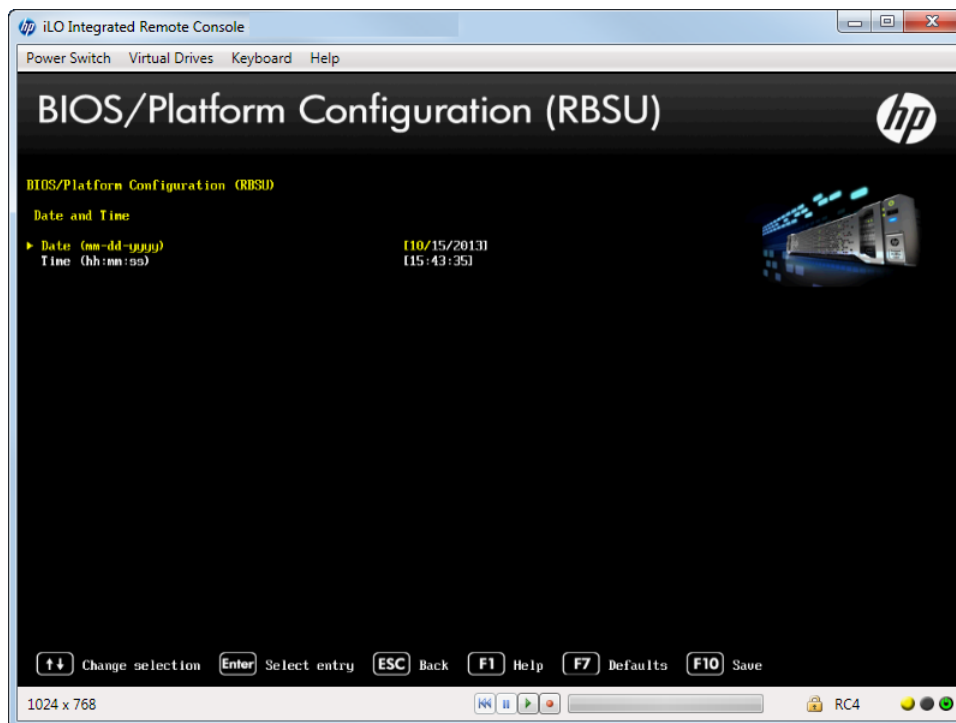
Setting the System Date and Time

Set the system time and date on the server.

To set the system date and time on the server:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Date and Time** and press **Enter**. The Date and Time screen appears.
2. Select a device on your system from the list and press **Enter**.
3. Select **Date (mm-dd-yyyy)** and press **Enter** to set the date. Enter the date in a month-day-year (mm-dd-yyyy) format.
4. Select **Time (hh:mm:ss)** and press **Enter** to the time. Enter the time in a 24-hour format (hh:mm:ss) format.
5. Press **F10** to save your selection.

Figure 47 Date and Time screen



Accessing the Server Availability menu

Enable the automatic server recovery status and timeout, set thermal shutdown, configure power-on-self-test, set the power button mode, and set the power-on delay.

To access the Server Availability menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and press **Enter**. The Server Availability screen appears.
2. Select any of the following options:
 - "Enabling the ASR (Automatic Server Recovery) Status" (page 57)
 - "Setting ASR (Automatic Server Recovery) Timeout" (page 58)
 - "Setting Thermal Shutdown" (page 59)
 - "Remotely Powering On the Server" (page 60)
 - "Configuring the POST (Power-On-Self-Test) F1 Prompt" (page 61)
 - "Setting Power Button Mode" (page 62)
 - "Setting Automatic Power-On" (page 63)
 - "Setting Power-On Delay" (page 64)

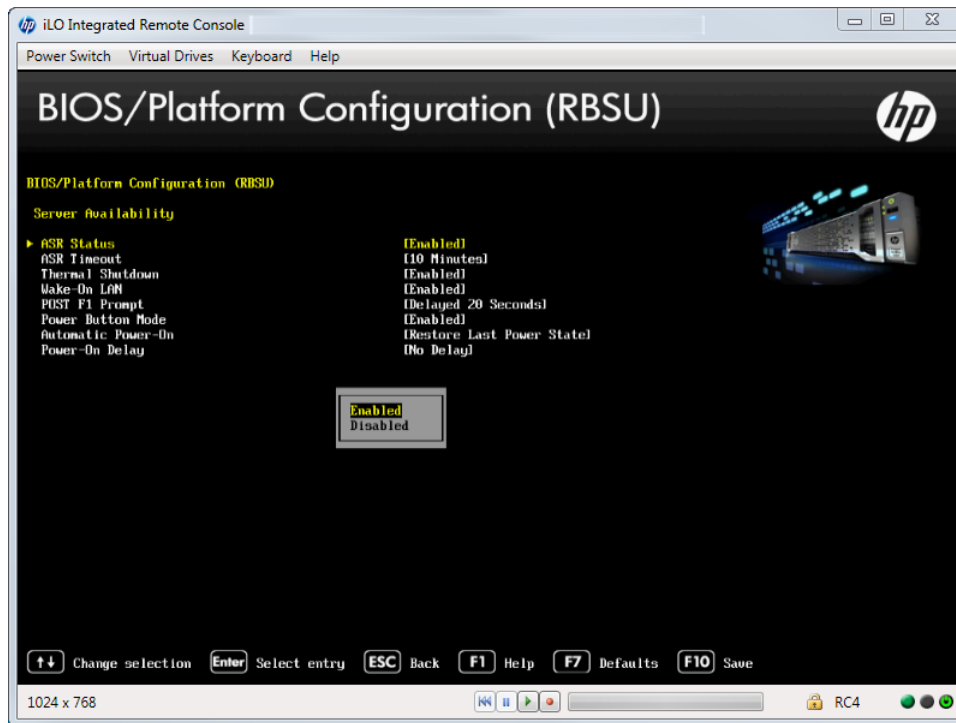
Enabling the ASR (Automatic Server Recovery) Status

Configure the system to automatically reboot if the server locks up. The ASR Status option is a toggle setting that enables or disables ASR. If you set this option to disabled, no ASR features function. The System Management driver must be loaded to use this option.

To set the ASR status:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **ASR Status** and press **Enter**.
2. Select **Enable** or **Disable**.
3. Press **F10** to save your selection.

Figure 48 Server Availability — ASR Status screen



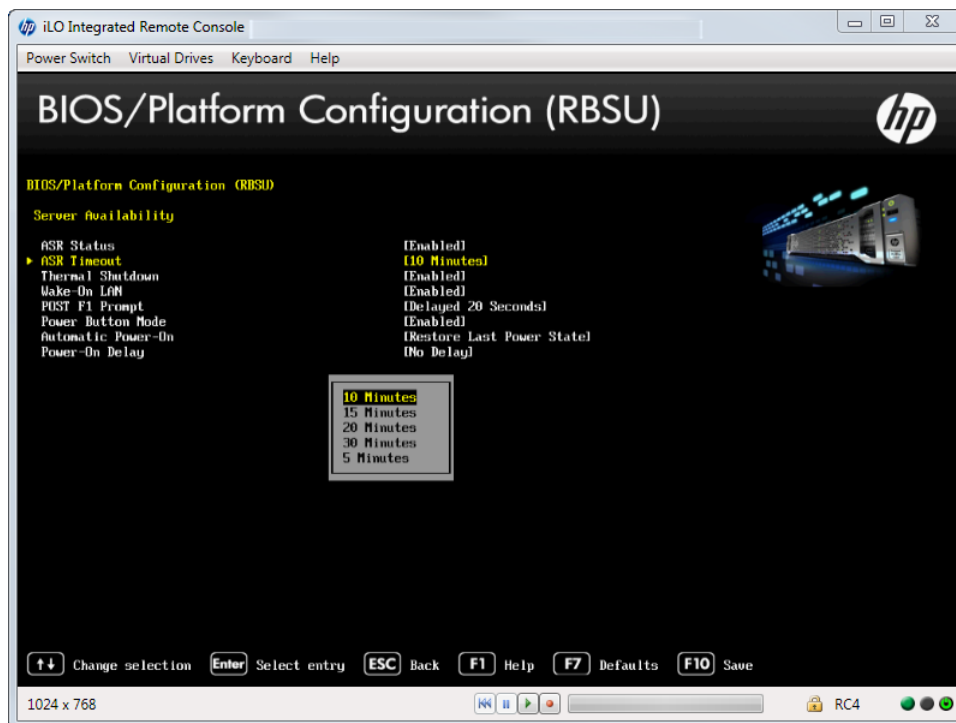
Setting ASR (Automatic Server Recovery) Timeout

If Automatic Server Recovery is enabled, this option lets you set the time to wait before rebooting the server in the event of an operating system crash or server lockup. When the server has not responded in the selected amount of time, the server automatically reboots.

To set ASR timeout:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **ASR Timeout** and press **Enter**.
2. Select one of the following time increments:
 - 5 minutes
 - 10 minutes (default)
 - 15 minutes
 - 20 minutes
 - 30 minutes
3. Press **F10** to save your selection.

Figure 49 Server Availability — ASR Timeout screen



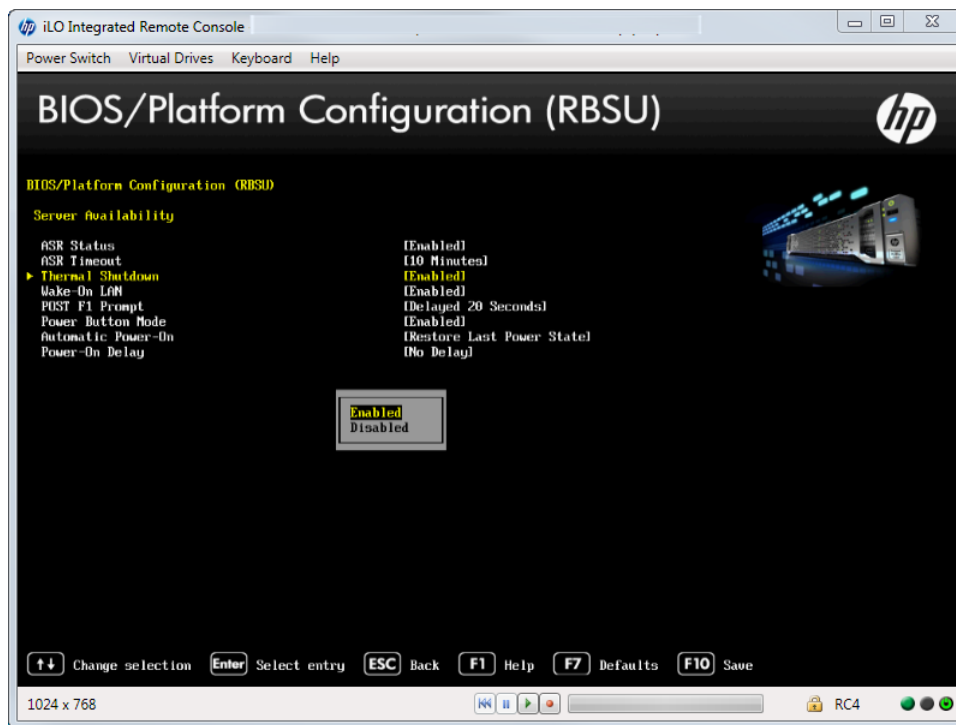
Setting Thermal Shutdown

Initiate a shutdown due to non-redundant fan failures or temperature increases beyond the pre-set threshold. If disabled, the System Management Driver ignores thermal events and the system immediately powers off in data-destructive situations.

To set thermal shutdown:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **Thermal Shutdown** and press **Enter**.
2. Select one of the following options:
 - **Enabled**—Allows the Advanced System Management Driver to initiate a system shutdown when the temperature reaches within 5 degrees of critical level.
 - **Disabled** (default)—Allows the Advanced System Management Driver to shut down the system at critical level.
3. Press **F10** to save your selection.

Figure 50 Server Availability — Thermal Shutdown screen



Remotely Powering On the Server

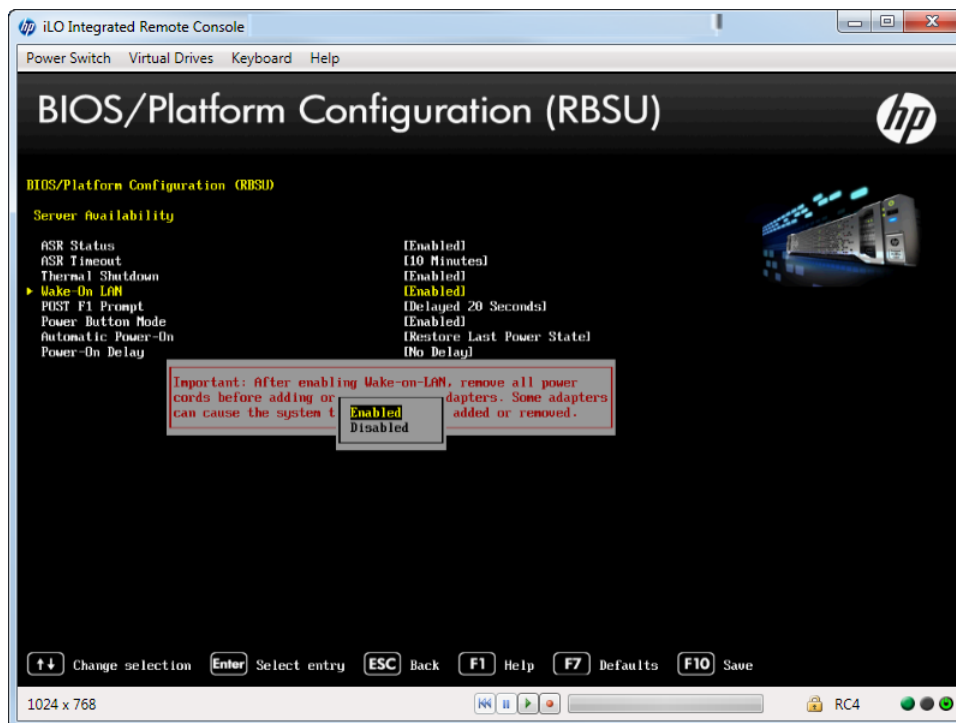
Configure the server to power on remotely when it receives a special packet. If you enable the Wake-On LAN option, the system can be powered up remotely using a WOL-capable NIC. This option requires a NIC, NIC driver, and operating system that are WOL-capable. If you choose the enabled option, the following caution appears:

When enabling Wake-on LAN, remove all power cords before adding or removing any adapters. Some adapters can cause the system to power on when added or removed.

To remotely power-on the server:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **Wake-On LAN** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 51 Server Availability — Wake On LAN screen



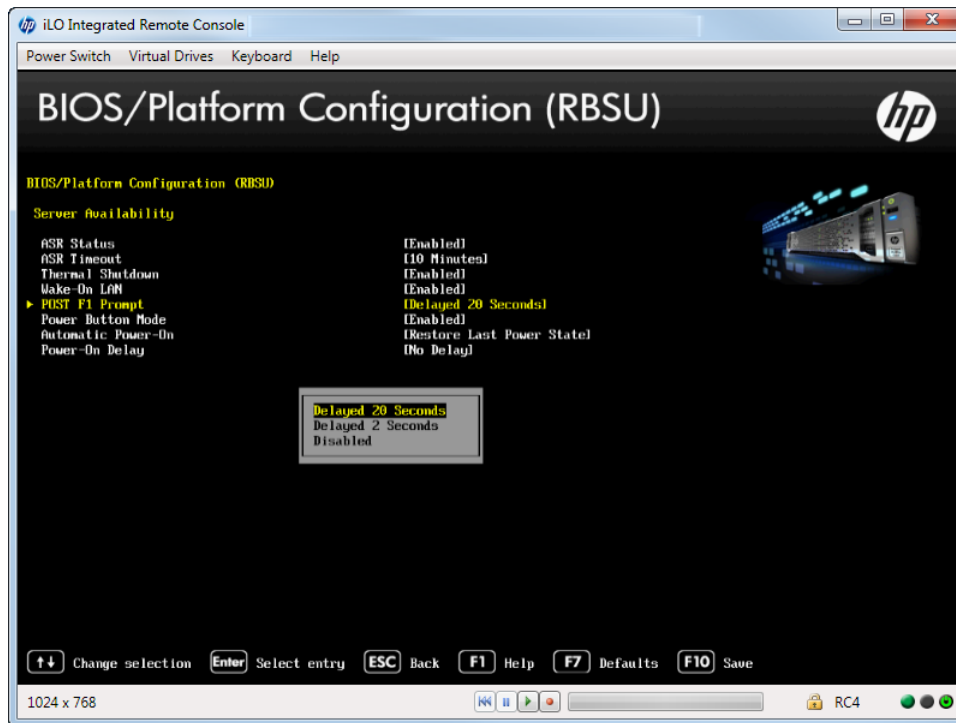
Configuring the POST (Power-On-Self-Test) F1 Prompt

Configure the system to display the F1 key in the server POST screen. If an error is encountered, press the F1 key to continue with the server power-up sequence.

To configure the POST F1 prompt:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **POST F1 Prompt** and press **Enter**.
2. The following options are available:
 - **Delayed 20 Seconds**— if an error occurs, the system pauses for 20 seconds at the F1 prompt, and then continues to boot the OS.
 - **Delayed 2 Seconds** — if an error occurs, the system pauses for 2 seconds at the F1 prompt, and then continues to boot the OS.
 - **Disabled** — if an error occurs, the system bypasses the F1 prompt and continues to boot.
3. A series of system tests executes during POST before continuing with the following:
 - If failures occur that allow the system to continue operating, the system continues to boot and then posts a message.
 - If critical components fail or are missing, the server attempts to boot. If it can boot, it posts a message and an F1 prompt.
 - If the system cannot run with the missing or failed components, it halts until those components are replaced.
4. Press **F10** to save your selection.

Figure 52 Server Availability — POST F1 Prompt screen



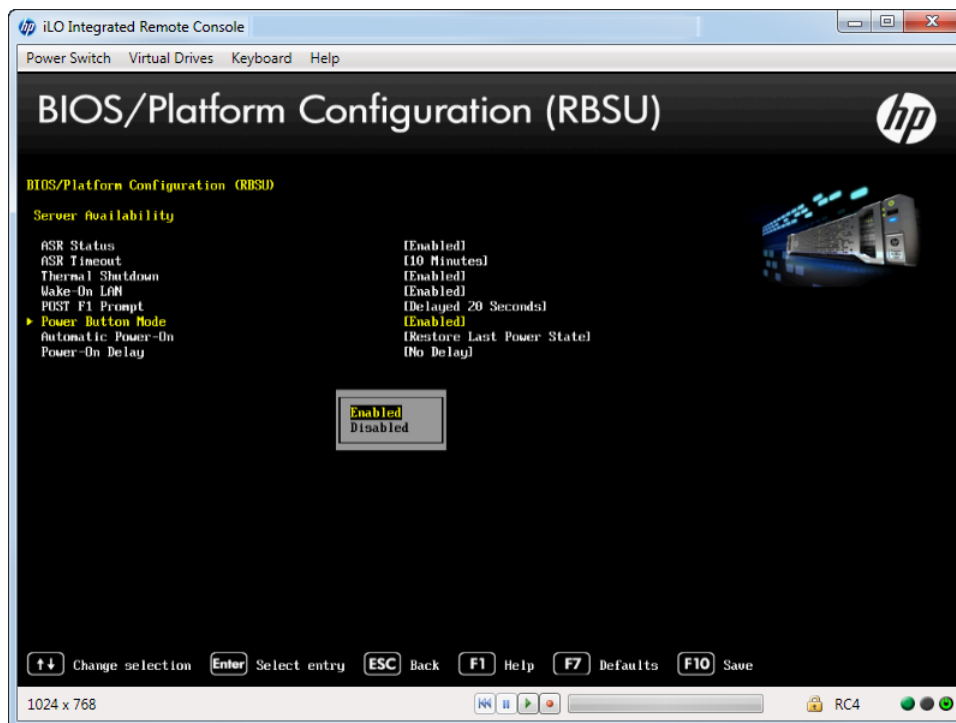
Setting Power Button Mode

Disabling this option disables the momentary power button functionality. This option does not effect the four-second power button override or the remote power control functionality.

To set power button mode:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **Power Button Mode** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)—Enables the momentary power button functionality.
 - **Disabled**—Disables the momentary power button functionality.
3. Press **F10** to save your selection.

Figure 53 Server Availability — Power Button Mode screen



Setting Automatic Power-On

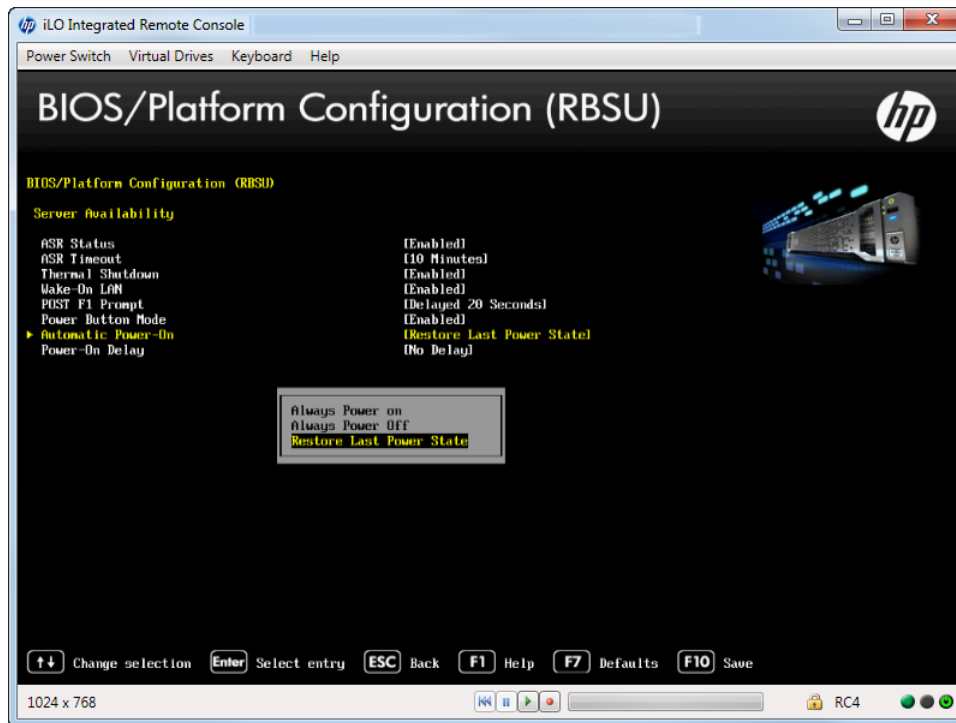
Configure the server to automatically power on when AC power is applied to the system. By default, the system returns to its previous power state when AC power is restored after an AC power loss. This option allows overriding this behavior such that the system always returns to the "on" state whenever power is applied (even if the system had been in the off state when power was lost).

To set automatic power-on:

From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **Automatic Power-On** and press **Enter**.

1. Select one of the following options:
 - **Always Power On**—Configures the system to return to the "on" state when AC power is restored, even if the system had been in the "off" state when power was lost.
 - **Always Power Off**—Configures the system to return to the "off" state when AC power is restored, even if the system had been in the "on" state when power was lost.
 - **Restore Last Power State** (default)—Configures the system to return to the previous power state (on or off) when AC power is restored.
2. Press **F10** to save your selection.

Figure 54 Server Availability — Automatic Power-On screen



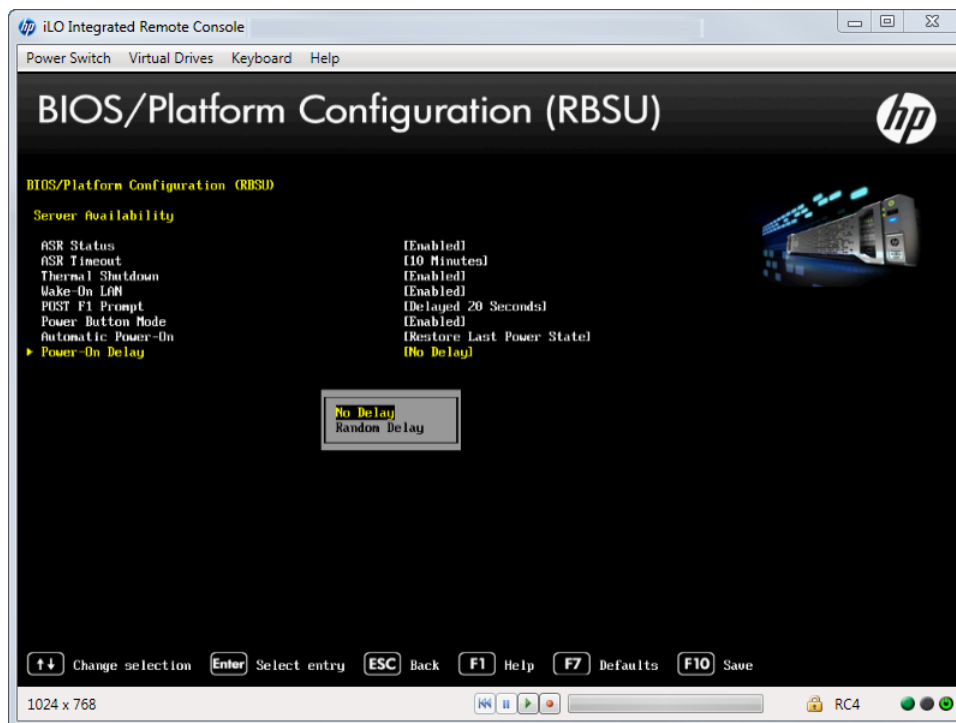
Setting Power-On Delay

Delay the server from turning on for the desired time. Pressing the power button (using the iLO Virtual Power Button) Wake-ON LAN events and RTC (Real-Time Clock) wake-up events overrides the delay and immediately turns on the server. This allows staggering when servers power-up after a power loss to prevent power usage spikes.

To set Power-On Delay:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Availability** and select **Power-On Delay** and press **Enter**.
2. Select one of the following options:
 - **No Delay** (default)
 - **Random Delay**
3. Press **F10** to save your selection.

Figure 55 Server Availability — Power-On Delay



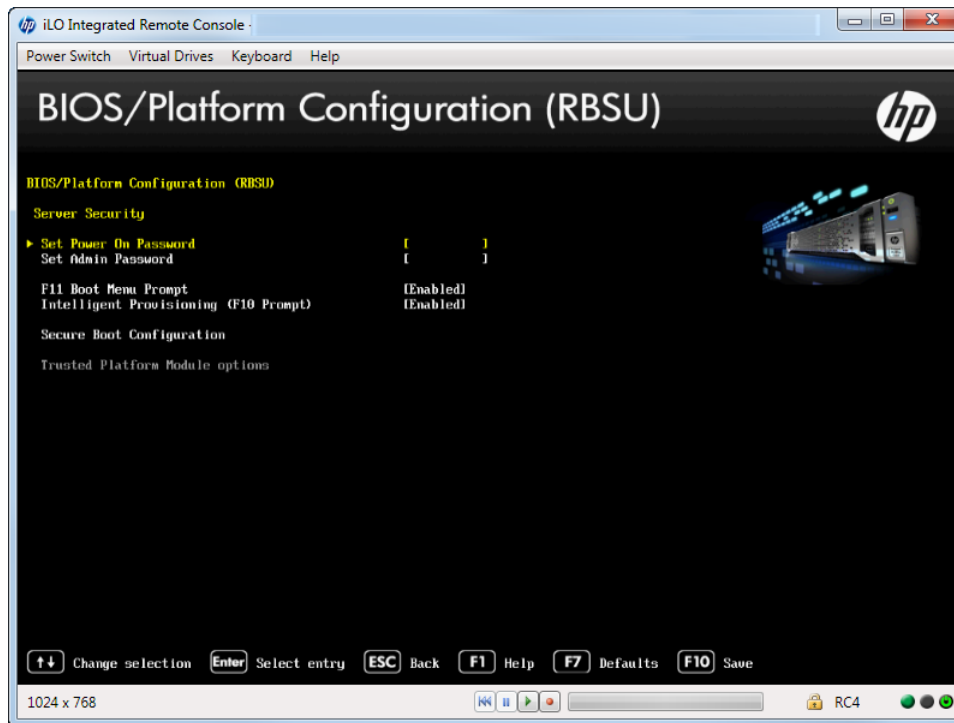
Accessing the Server Security menu

Control access to the server and its utilities. This menu sets the power-on and administrator passwords, set Intelligent Provisioning, and access the Trusted Platform Module.

To access the Server Security menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security** and press **Enter**.
2. The following options are available:
 - “Setting a Power On Password” (page 66)
 - “Setting an Administrator Password” (page 67)
 - “Disabling Intelligent Provisioning (F10 Prompt)” (page 69)
 - “Configuring Secure Boot” (page 69)
 - “Accessing the Trusted Platform Module (TPM)” (page 77)

Figure 56 Server Security screen



Setting a Power On Password

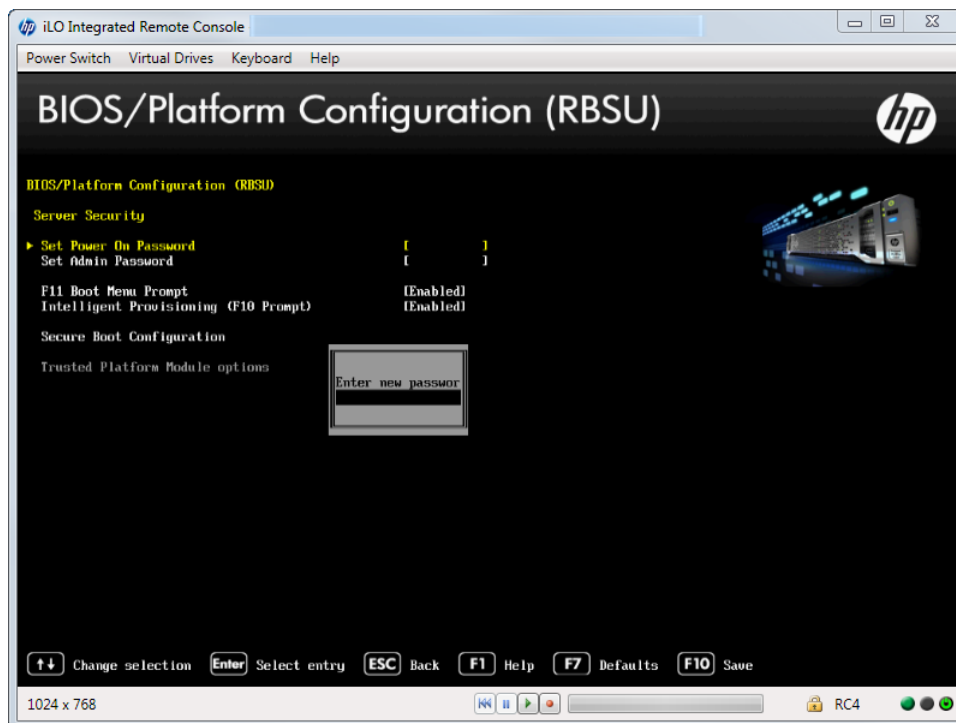
Set a password for accessing the server during the boot process. When powering-on the server, a prompt appears where you enter the password to continue. To disable or clear the password, enter the password followed by a / (slash) when prompted to enter the password.

NOTE: In the event of an Automatic Server Recovery (ASR) reboot, the power-on password is bypassed and the server boots normally.

To set a power-on password:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security** and select **Set Power On Password** and press **Enter**.
2. Enter your password and press **Enter**.
A message appears telling you the password setting was successful.
3. Follow these password requirements:
 - Seven characters maximum.
 - Can be any combination of numbers, letters, and special characters.
4. Press **F10** to save your entry.

Figure 57 Server Security — Set Power On Password screen



Setting an Administrator Password

Set an administrator password to protect the server configuration. If enabled, you are prompted for this password before being allowed to modify the configuration.

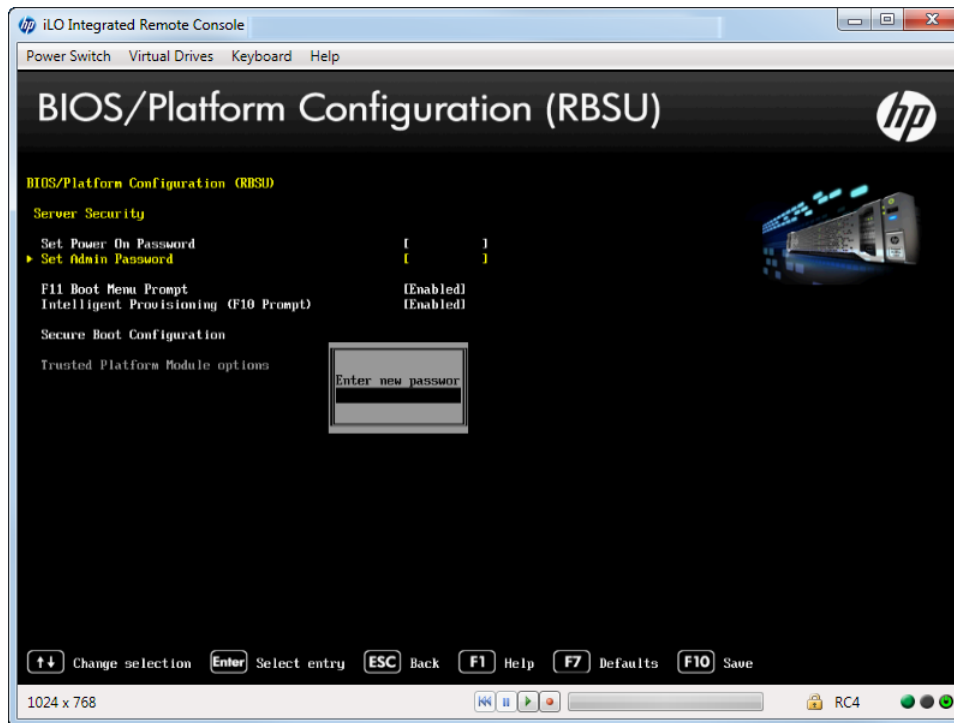
To set the administrator password:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security** and select **Set Admin Password** and press **Enter**.
2. Enter the password and press **Enter**.
3. Confirm the password and press **Enter**.

A message appears confirming the password setting was successful.

4. Press **F10** to save your entry.

Figure 58 Server Security — Set Admin Password screen



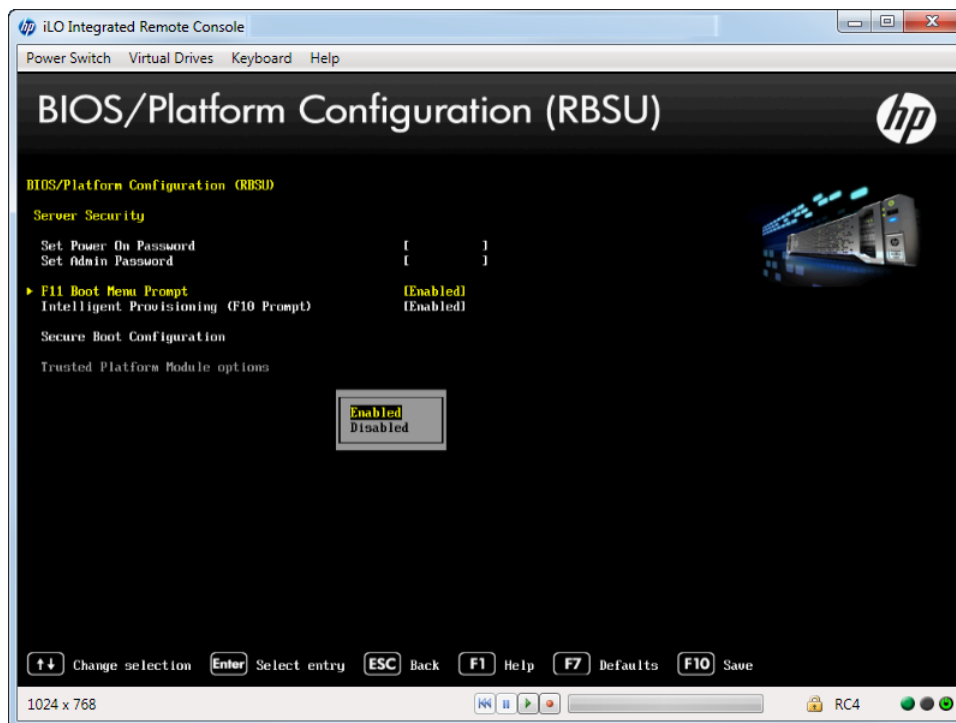
Disabling the F11 One-Time Boot Menu

This menu specifies a specific boot override option for this boot only. This option does not modify the normal boot order settings. By default, you can boot directly into the One-Time Boot menu in the System Utilities by pressing **F11** in the HP ProLiant main screen after a server reboot. See [“Configuring a One-Time Boot Menu” \(page 139\)](#) for more details about options in the One-Time Boot menu. Disable this option if needed.

To disable the F11 One-Time Boot menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security**→**F11 Boot Menu Prompt** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.
4. During the next server reboot, **F11** is disabled.

Figure 59 Server Security — F11 Boot Menu Prompt



Disabling Intelligent Provisioning (F10 Prompt)

This option disables the Intelligent Provisioning functionality. If this option is disabled, you are prevented from entering the Intelligent Provisioning environment by pressing **F10** during server boot. Set this option to “Enabled” use the Intelligent Provisioning functionality.

To disable Intelligent Provisioning (F10 Prompt):

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security**→**Intelligent Provisioning (F10 Prompt)** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.
4. The next time you reboot the server, **F10** is disabled.

Configuring Secure Boot

Secure Boot is integrated in the UEFI specification on which the HP implementation of UEFI is based. Secure Boot is completely implemented in the BIOS and does not require special hardware. It ensures that each component launched during the boot process is digitally signed and that the signature is validated against a set of trusted certificates embedded in the UEFI BIOS. Secure Boot validates the software identity of the following components in the boot process:

- UEFI drivers loaded from PCIe cards
- UEFI drivers loaded from mass storage devices
- Pre-boot UEFI shell applications
- OS UEFI boot loaders

Once enabled, only firmware components and operating systems with boot loaders that have an appropriate digital signature can execute during the boot process. Only operating systems that support Secure Boot and have an EFI boot loader signed with one of the authorized keys can boot when Secure Boot is enabled. For more information about supported operating systems, see the

HP UEFI System Utilities and Shell Release Notes on the HP website (<http://www.hp.com/go/ProLiantUEFI/docs>).

A physically present user can customize the certificates embedded in the UEFI BIOS by adding/removing their own certificates.

Before configuring Secure Boot, select the UEFI Boot Mode. See “[Selecting a Boot Mode](#)” (page 41). Also enable the UEFI Optimized Boot option. See “[Setting UEFI Optimized Boot](#)” (page 42) for details.

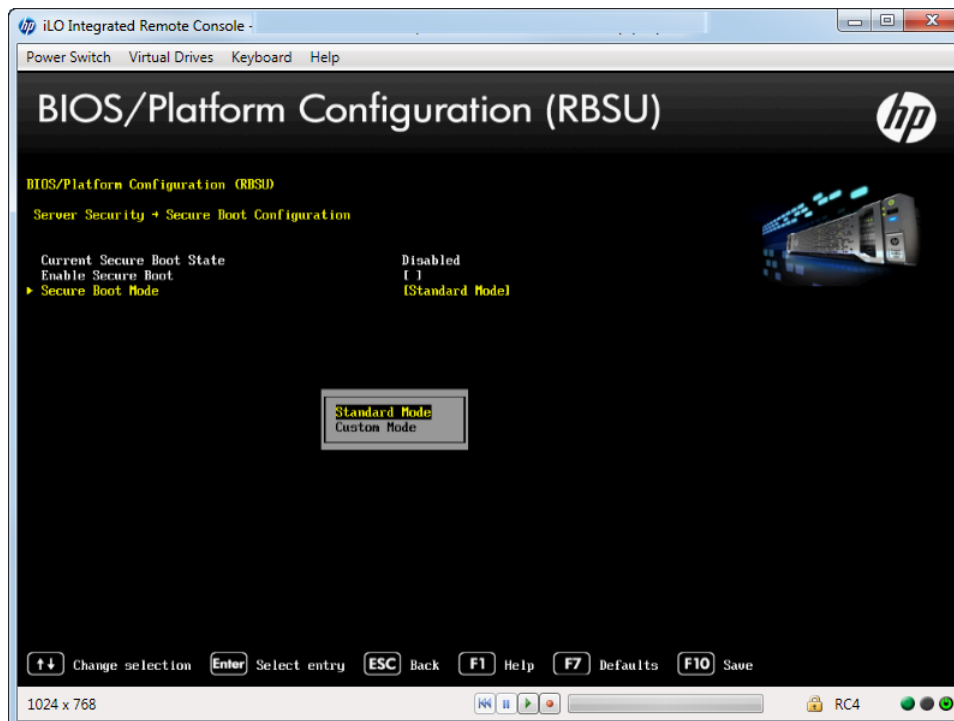
To configure Secure Boot:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security** and select **Secure Boot Configuration** and press **Enter**. The Secure Boot Configuration screen appears. **Current Secure Boot State** displays the current secure boot state (Enabled or Disabled).
2. Select **Enable Secure Boot** and press **Enter** to enable the Secure Boot option. A message appears indicating that a server reboot is needed the new configuration to take effect.
3. Select **Secure Boot Mode** and press **Enter**.
4. Select one of the following options:
 - **Standard Mode**—Use the default security certificates that are embedded in the system BIOS.
 - **Custom Mode**—Customize the secure boot certificates (must be executed by physically present user). If you select this option, the Secure Boot Custom Mode Options menu appears. For more information, see “[Setting the Secure Boot Custom Mode](#)” (page 71).

NOTE: Changing the default security certificates can cause the system to fail booting from some devices. It can also cause the system to fail launching certain system software such as Intelligent Provisioning.

5. Press **F10** to save your selection.

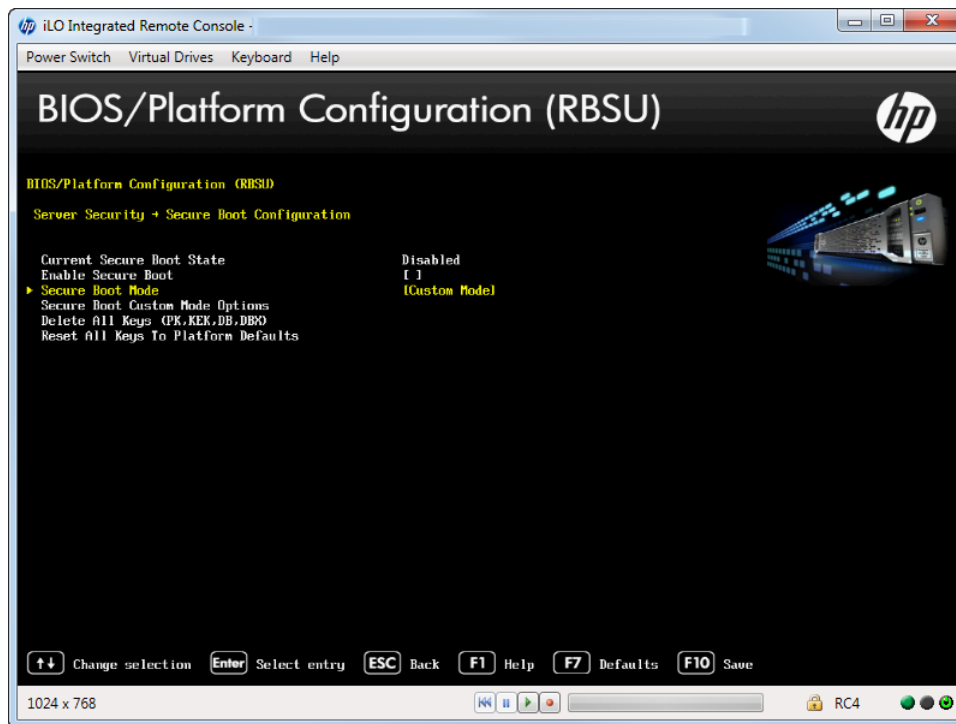
Figure 60 Server Security — Secure Boot Mode screen



Setting the Secure Boot Custom Mode

If you select the “Custom Mode” for Secure Boot mode, the **Secure Boot Custom Mode Options** menu appears. From this menu, select the Platform Key (PK) Options, Key Exchange Key (KEK) Options, Allowed Signatures Database (DB) Options, and Forbidden Signatures Database (DBX) Options.

Figure 61 Server Security — Secure Boot Custom Mode Options screen



1. Select **Secure Boot Mode Options** and press **Enter**.
2. Select one of the following options:
 - **Platform Key (PK) Options**—Select this option to enroll a Platform Key (PK). The file must be in DER-encoded certificate format. See [“Enrolling a Platform Key \(PK\)” \(page 72\)](#) to proceed.
 - **Key Exchange Key (KEK) Options**—Select this option to enroll a Key Exchange Key (KEK). The file must be in DER-encoded certificate format. For more information, see [“Enrolling a Key Exchange Key \(KEK\)” \(page 73\)](#) to proceed.
 - **Allowed Signatures Database (DB) Options**—Select this option to enroll an Allowed Signatures (DB). For more information, see [“Allowed Signatures Database \(DB\) Options” \(page 75\)](#) to proceed.
 - **Forbidden Signatures Database (DBX) Options**—Select this option to enroll a Forbidden Signatures (DBX). For more information, see [“Forbidden Signatures Database \(DBX\) Options” \(page 76\)](#) to proceed.

Figure 62 Server Security — Custom Secure Boot Options screen



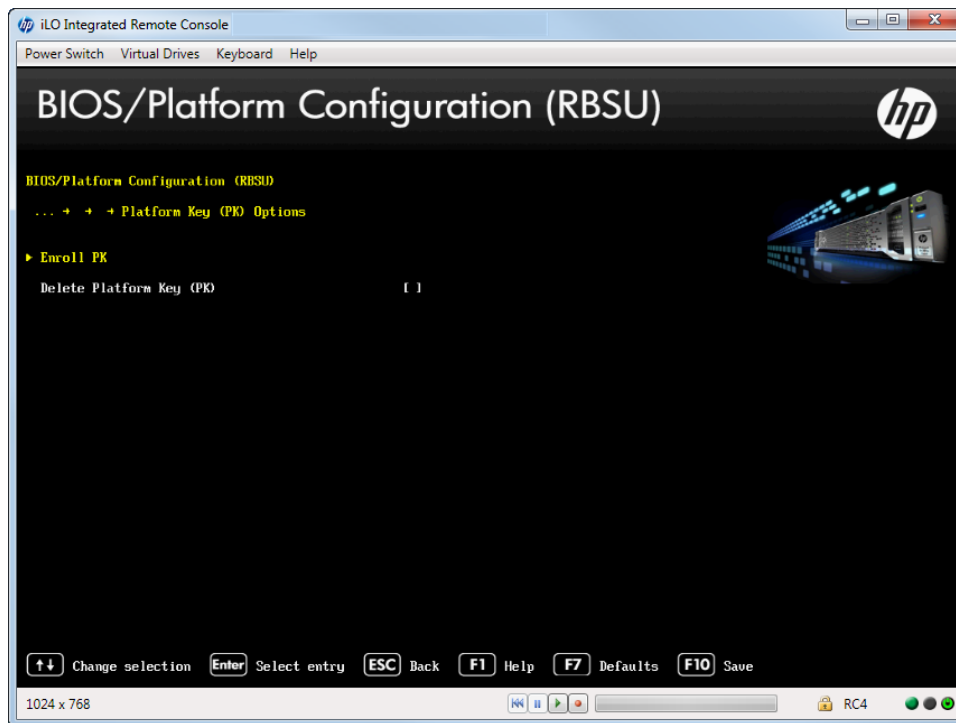
Enrolling a Platform Key (PK)

A Platform Key protects the next key from uncontrolled modification. Select this option to enter the Platform Key (PK) options menu. You can enroll or delete the PK certificate. The file must be in DER-encoded certificate format.

To enroll a Platform Key:

1. Select **Platform Key (PK) Options**→**Enroll PK** and press **Enter**.
2. Select **Enroll PK using File** and press **Enter**. You can read the PK certificate from a file on an attached media device. Supported formats include .der, .cer, and .crt.
3. Select **Commit changes and exit** to save your changes.

Figure 63 Server Security—Enroll PK screen



Deleting a Platform Key

You can delete a Platform Key. This requires an immediate system reboot. Deleting the PK forces Secure Boot to be disabled until you enroll a new PK.

To delete a Platform Key:

1. Select **Platform Key (PK) Options**→**Delete Platform Key (PK)** and press **Enter**
2. Select a key from the list.
3. Press **Enter (Yes)** in the message prompt to delete the Key or **ESC** to cancel.

Enrolling a Key Exchange Key (KEK)

The Key Exchange Key protects the signature database from unauthorized modifications. No changes can be made to the signature database without the private portion of this key. Select this option to enter the Key Exchange Key (KEK) Options menu. You can enroll or delete the KEK certificates. The file must be in DER-encoded certificate format.

To enroll a Key Exchange Key:

1. Select **Key Exchange Key (KEK) Options**→**Enroll KEK Entry** and press **Enter**.
2. Select **Enroll KEK using File** and press **Enter**. You can read the KEK certificate from a file on an attached media device. Supported formats include .der, .cer, and .crt.
3. Select **Commit changes and exit** to save your changes.

Figure 64 Server Security—Enroll KEK Entry screen

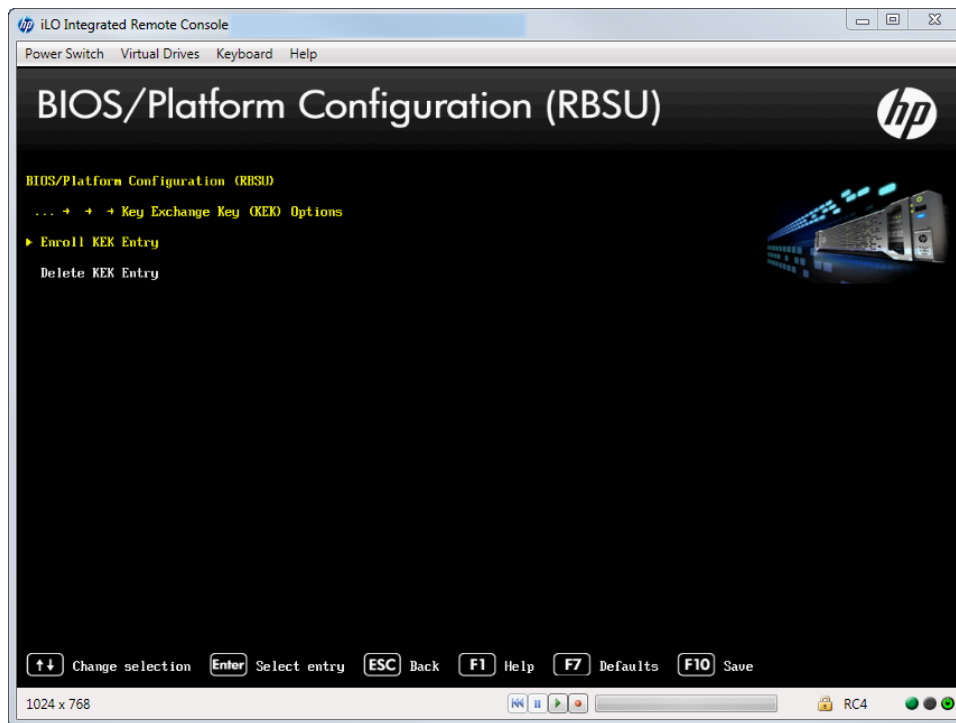
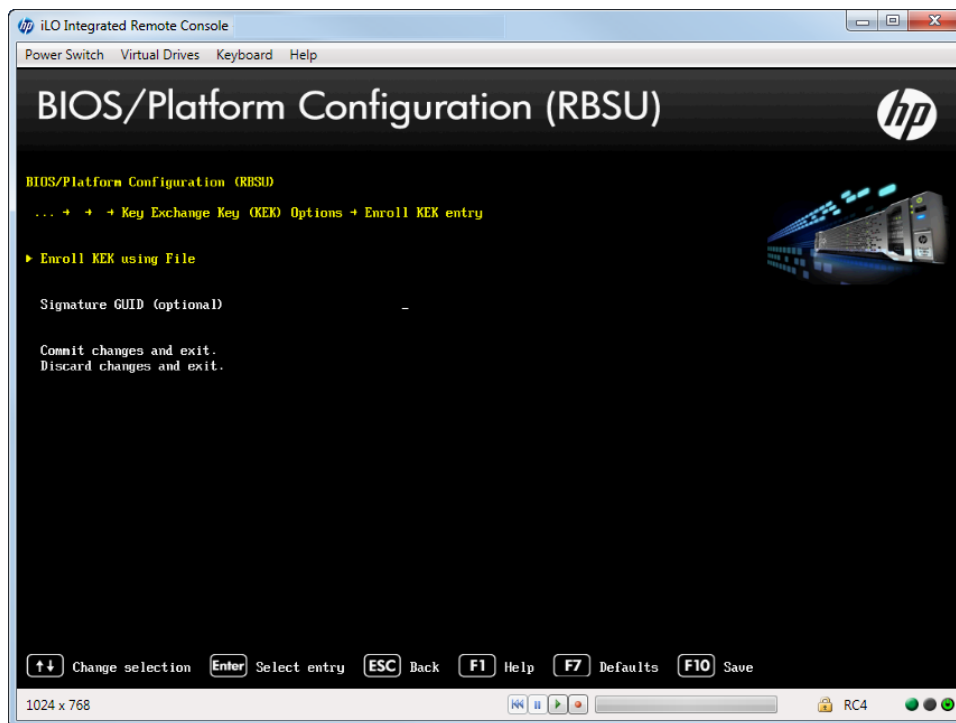


Figure 65 Server Security—Enroll KEK using File screen



Enrolling a Key or Signature using a Signature GUID

You can optionally enroll a Key or Signature using a GUID.

To enroll a Key or Signature using a Signature GUID:

1. Select **Key Exchange Key (KEK) Options**→**Signature GUID (optional)** and press **Enter**.

2. Enter the optional security certificate Signature GUID and press **Enter**. Enter the data in the following GUID format (36 characters): 11111111-2222-3333-4444-1234567890ab.
 - For Hewlett Packard certificates, enter F5A96B31-DBA0-4faa-A42A-7A0C9832768E
 - For Microsoft certificates, enter 77fa9abd-0359-4d32-bd60-28f4e78f784b
 - For SUSE certificates, enter 2879c886-57ee-45cc-b126-f92f24f906b9
3. Select **Commit changes and exit** to save your changes.

Deleting a Key Exchange Key

Select this option to delete a new entry in the Key Exchange Key (KEK) security database. Important: Changing the default security certificates can cause the system to fail booting from some devices, or to fail launching certain software such as Intelligent Provisioning.

To delete a Key Exchange Key:

1. Select **Platform Key (PK) Options**→**Delete Key Exchange Key (KEK)** and press **Enter**
2. Select a key to delete from the list.
3. Press **Enter (Yes)** in the message prompt to delete the Key or **ESC** to cancel.

Allowed Signatures Database (DB) Options

The database maintains signatures of codes that are authorized to run on the platform. Select this option to enter the Allowed Signatures (DB) Options menu. You can enroll or delete the DB signatures.

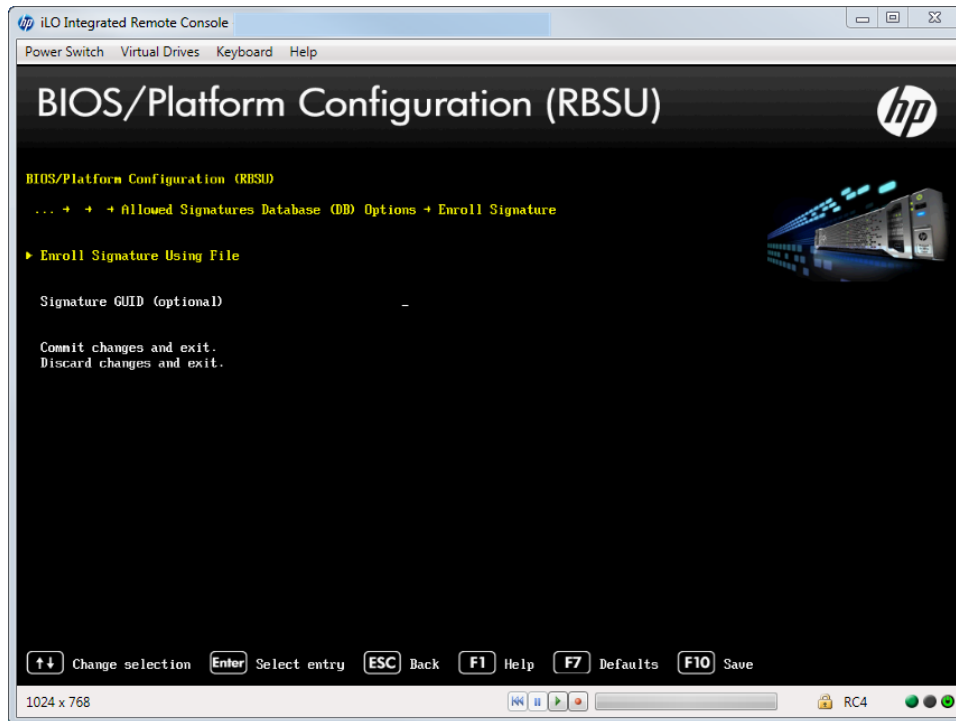
To enroll a Signature Database.

1. Select **Allowed Signatures Database (DB) Options**→**Enroll Signature** and press **Enter**.
2. Select **Enroll Signature using File** and press **Enter**.
3. Select **Commit changes and exit** to save your changes.

Figure 66 Server Security—Enroll Signature screen



Figure 67 Server Security—Enroll DB Signature using File screen



Forbidden Signatures Database (DBX) Options

The database maintains signatures of codes that are forbidden to run on the platform. Select this option to enter the Forbidden Signatures (DBX) Options menu. You can enroll or delete the DBX signatures.

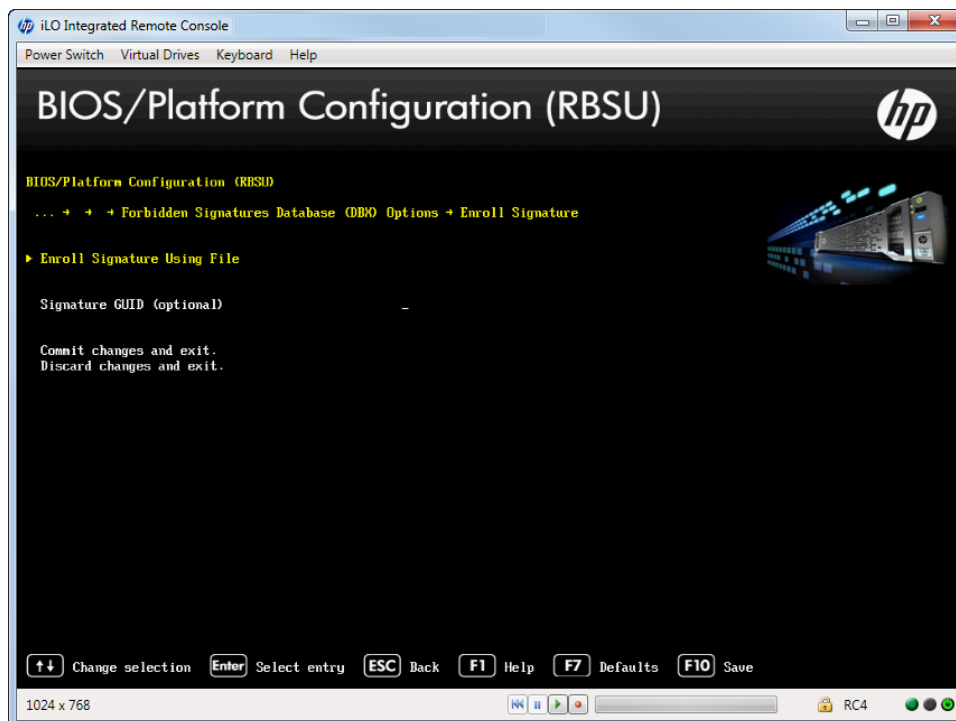
To enroll a Forbidden Signature Database (DBX):

1. Select **Forbidden Signatures Database (DB) Options**→**Enroll Signature** and press **Enter**.
2. Select **Enroll Signature using File** and press **Enter**.
3. Select **Commit changes and exit** to save your changes.

Figure 68 Server Security—Enroll DBX Signature screen



Figure 69 Server Security—Enroll DBX Signature using File screen



Accessing the Trusted Platform Module (TPM)

Trusted Platform Module (TPM) allows the firmware and operating system to take measurements of all phases of the booting process. For information on installing and enabling the TPM module option, see the user documentation for your server model and the *Data security in HP ProLiant servers using the Trusted Platform Module and Microsoft Windows BitLocker Drive Encryption* white paper: <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c01681891/c01681891.pdf>.

To access the Trusted Platform Module:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Security** and select **Trusted Platform Module Options** and press **Enter**.
2. For servers configured with an optional TPM, the following configuration option is available:
 - “Setting TPM Functionality” (page 78)

ⓘ **IMPORTANT:** TPM menus appear only if the TPM kit is installed.

Setting TPM Functionality

This option controls Trusted Platform Module functionality at startup. Options include:

- **Enabled**—Enables the TPM and BIOS secure startup. The TPM is fully functional in this mode.
- **Disabled** (default)—Disables the BIOS secure startup, but still allows the TPM to be visible to the operating system. The TPM functionality is limited, but can respond to most commands in this mode. Selecting **Disabled** might prevent the server from booting to a TPM-aware operating system.

⚠ **CAUTION:** A TPM locks all data access if proper procedures are not followed for modifying the server, including: updating system or option firmware, replacing hardware such as the system board and hard drive, or modifying TPM OS settings.

Intelligent Provisioning Quick Configs settings and corresponding RBSU settings

Intelligent Provisioning Quick Configs options provide the capability to select a basic policy for performance versus power usage, without having to configure individual settings through RBSU menus.

For more information about the Intelligent Provisioning Quick Configs profiles and their corresponding option settings, see the *HP Intelligent Provisioning User Guide*.

Accessing the BIOS Serial Console and EMS Console

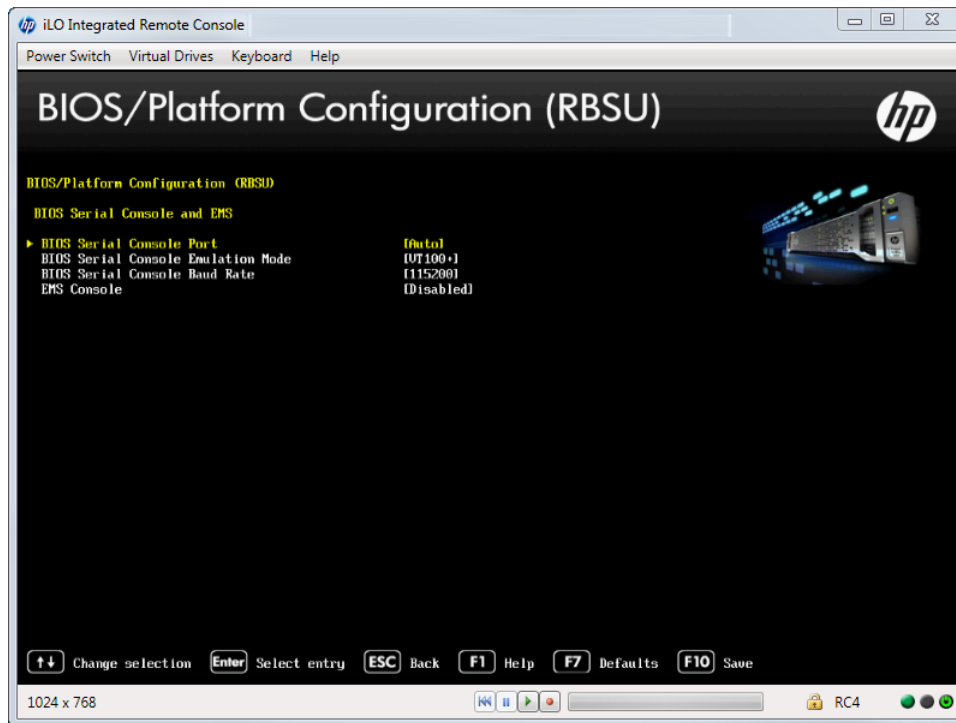
Through BIOS Serial Console and EMS console redirection, you can view POST error messages and run RBSU remotely through a serial connection to the server COM port or iLO Virtual Serial port. The remote server does not require a keyboard or mouse.

NOTE: Some languages or characters can require a specific emulation mode.

To access BIOS Serial Console and EMS menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**BIOS Serial Console and EMS** and press **Enter**.
2. The following configuration options are available:
 - “Setting BIOS Serial Console Port” (page 79)
 - “Setting BIOS Serial Console Emulation Mode” (page 80)
 - “Setting BIOS Serial Console Baud Rate” (page 81)
 - “Setting the EMS Console” (page 82)

Figure 70 BIOS Serial Console and EMS screen



Setting BIOS Serial Console Port

You can re-direct video and keystrokes through the serial port to OS boot. This option can interfere with non-terminal devices attached to the serial port. In this case, set this option to "Disabled."

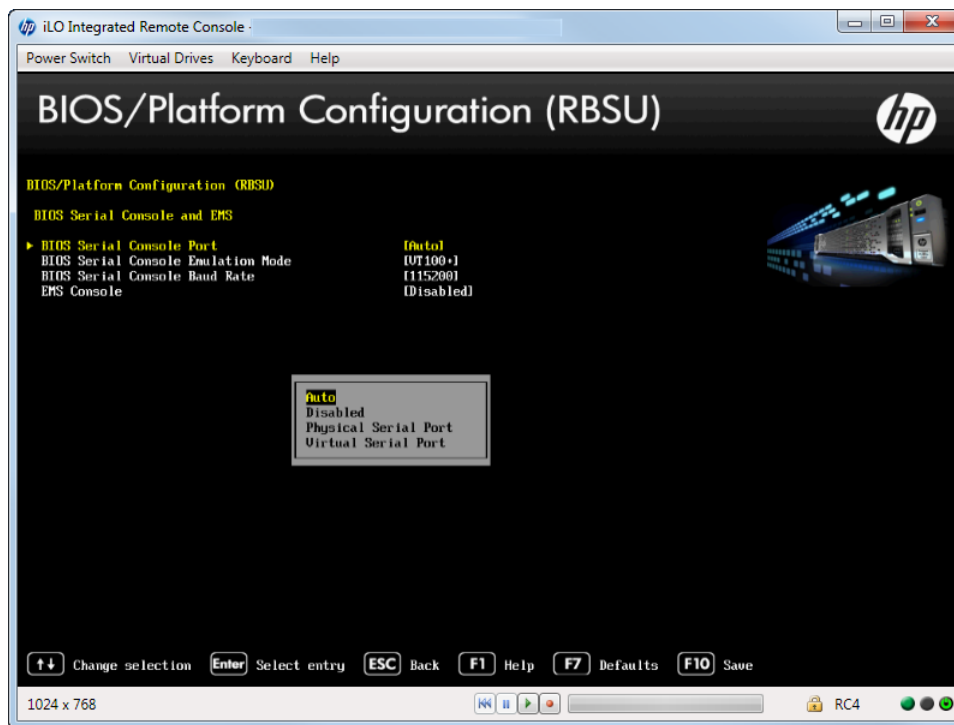
ⓘ **IMPORTANT:** This option is not supported under RBSU on Japanese or Simplified Chinese systems.

To set the BIOS serial console port:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**BIOS Serial Console and EMS** and select **BIOS Serial Console Port** and press **Enter**.
2. Select one of the following options:
 - **Auto**
 - **Disabled** (default for older servers)
 - **Physical Serial Port**
 - **Virtual Serial Port**
3. Press **F10** to save your selection.

NOTE: Connect a null modem cable to the serial port/COM port on which BIOS Serial Console is enabled.

Figure 71 BIOS Serial Console and EMS — BIOS Serial Console Port screen



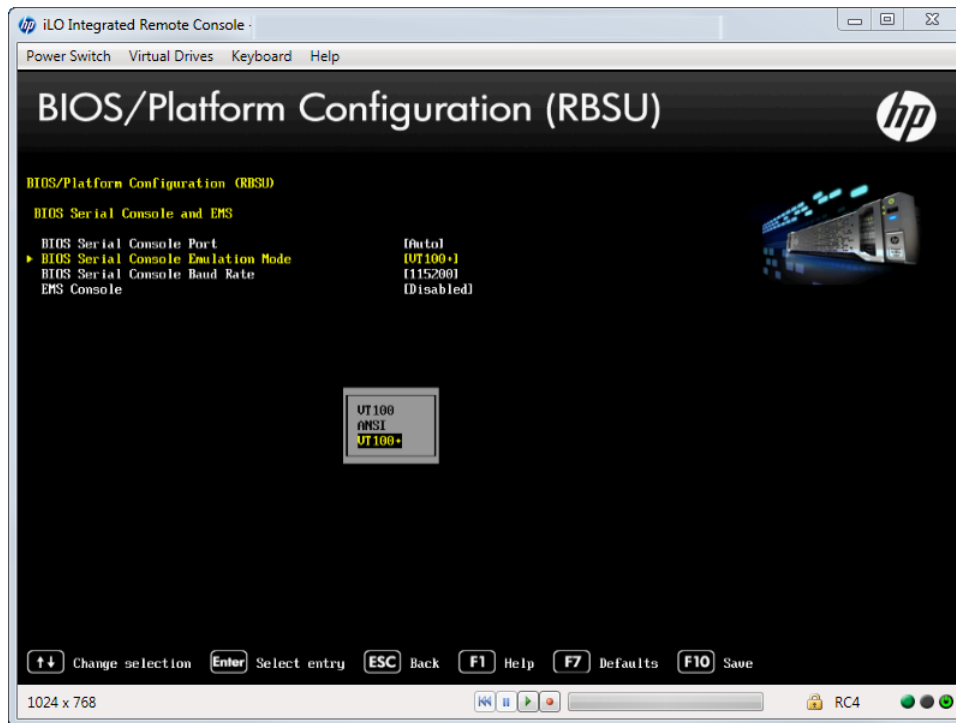
Setting BIOS Serial Console Emulation Mode

You can select an emulation mode type. The selected option depends on the emulation you want to use in your serial terminal program (for example, HyperTerminal or PuTTY). The BIOS emulation mode must match the selected mode in the terminal program.

To set the BIOS Serial Console Emulation Mode:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**BIOS Serial Console and EMS** and select **BIOS Serial Console Emulation Mode** and press **Enter**.
2. Select one of the following options:
 - **VT100** (default)
 - **ANSI**
 - **VT100+**
3. Press **F10** to save your selection.

Figure 72 BIOS Serial Console and EMS — BIOS Serial Console Emulation Mode screen



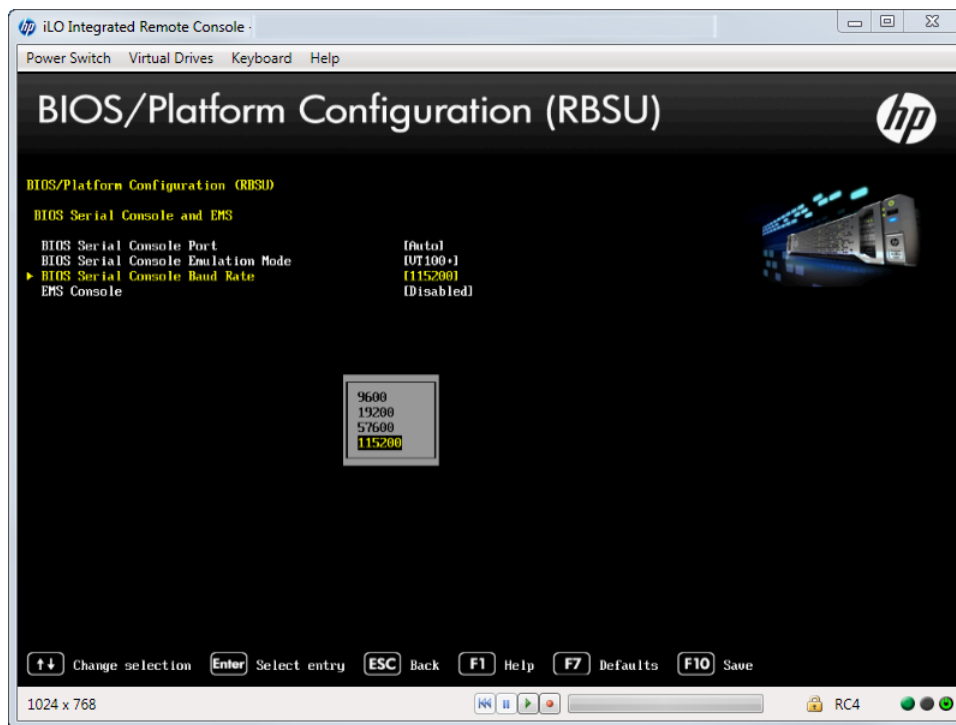
Setting BIOS Serial Console Baud Rate

You can set the transfer rate at which data is transmitted through the serial port.

To set the BIOS Serial Console Emulation Port:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**BIOS Serial Console and EMS** and select **BIOS Serial Console Baud Rate** and press **Enter**.
2. Select one of the following baud rates:
 - **9600**
 - **19200**
 - **57600**
 - **115200** (default)
3. Press **F10** to save your selection.

Figure 73 BIOS Serial Console and EMS — BIOS Serial Console Baud Rate screen



Setting the EMS Console

You can configure the ACPI serial port settings, which can be used to configure the Windows Server Emergency Management (EMS) console to be redirected through a serial port.

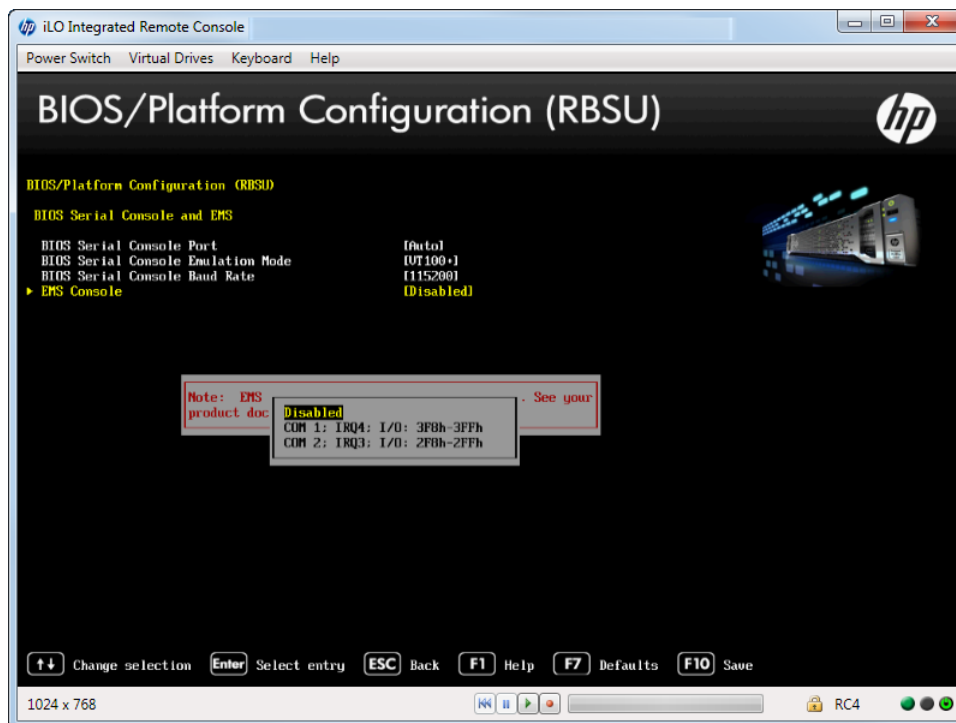
When making this selection for redirecting EMS through a network connection, there are two options:

- If using iLO 4, select the value (COM 1 or COM2) that corresponds to the resources assigned to the Virtual Serial Port in the Systems option menu.
- If redirecting EMS through a physical serial port, select the value (COM1 or COM2) that corresponds to the resources assigned to the Embedded Serial Ports in the System Options menu.

To set the EMS Console:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**BIOS Serial Console and EMS** and select **EMS Console** and press **Enter**.
2. Select one of the following options:
 - **Disabled** (default)
 - **COM1**
 - **COM2**
3. Press **F10** to save your selection.

Figure 74 BIOS Serial Console and EMS — EMS Console screen



EMS provides input/output support for all Microsoft Windows kernel components: the loader, setup, recovery console, OS kernel, blue screens, and the Special Administration Console. The Special Administration Console is a text mode management console available after Windows Server 2008 or 2012 OS has initialized.

Microsoft enables EMS in the OS, but EMS must also be enabled in the ROM. When enabled, EMS assumes the serial port for redirection and can cause interference with other devices attached to the serial port. To avoid interference, EMS is disabled in the system ROM by default on HP ProLiant ML and DL servers. If EMS is disabled in Windows Server 2008 or 2012, perform the following steps to update the `boot.ini` file:

1. Enable the EMS console on a COM port.
2. Press **F10** to save your selection.
3. Reboot the server.

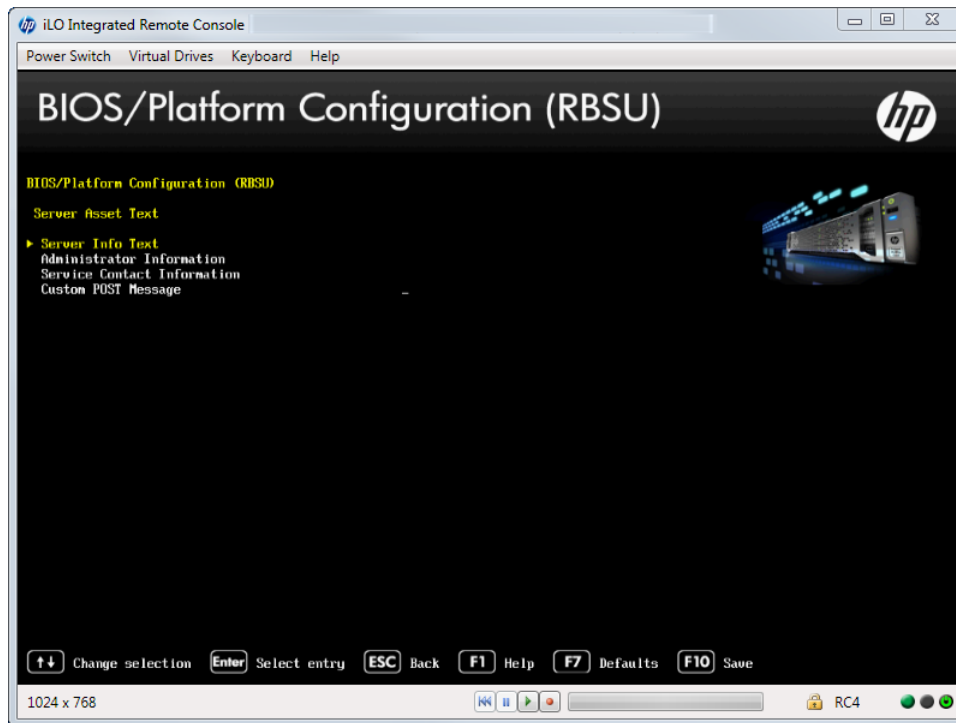
Accessing the Server Asset Text menu

You can modify server information, administrator contact information, service contact information, and the system startup message.

To access the Server Asset Text menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Asset Text** and press **Enter**.
2. The following configuration options are available:
 - “Entering Server Info Text menu” (page 84)
 - “Entering Administrator Information” (page 85)
 - “Entering Service Contact Text” (page 86)
 - “Entering a Custom POST Message ” (page 87)

Figure 75 Server Asset Text menu screen



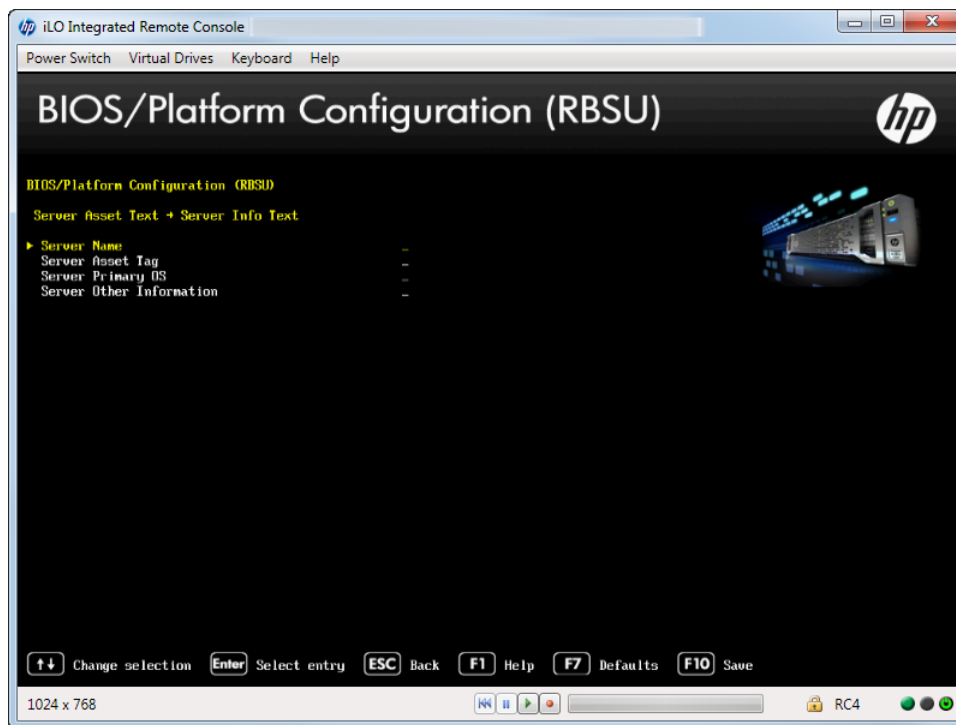
Entering Server Info Text menu

These options define reference information for the server administrator.

To enter server information text:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Asset Text** and select **Server Info Text** and press **Enter**.
2. Select one of the following options:
 - **Server Name**—Identifies the server.
 - **Server Asset Tag**—Identifies the server asset number.
 - **Server Primary OS**—Describes the primary OS of the server.
 - **Server Other Information**—Additional text describing the server.
3. Press **F10** to save your selection.

Figure 76 Server Asset Text — Server Info Text screen



NOTE: Each of these options can display a maximum of 14 characters. By default, all values are blank.

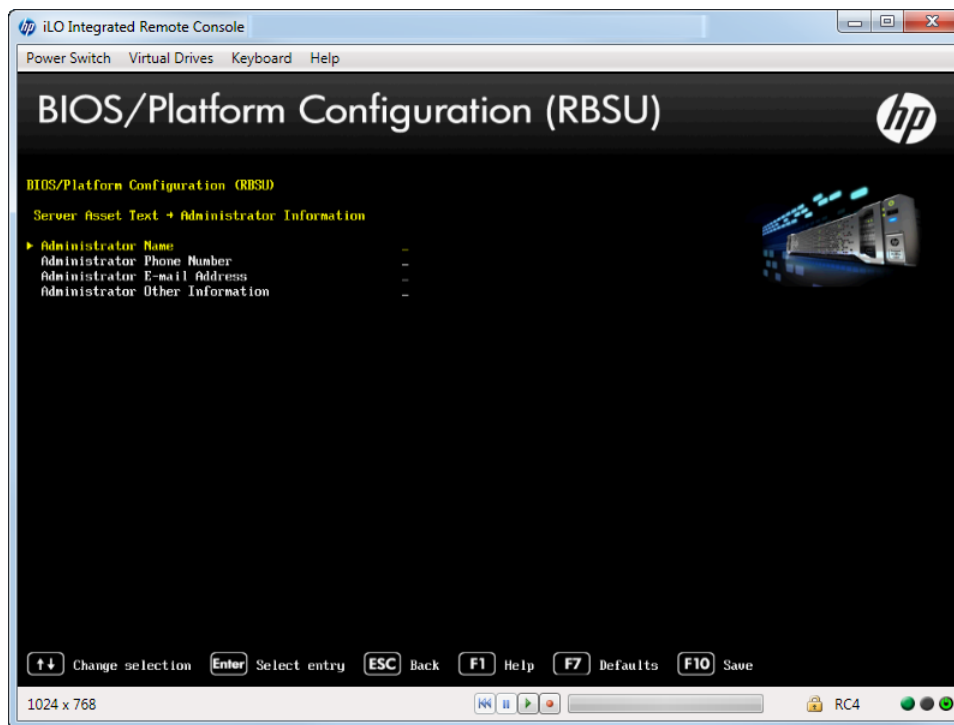
Entering Administrator Information

You can define contact information for the server administrator.

To enter administrator information:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Asset Text** and select **Administrator Information** and press **Enter**.
2. Enter an administrator name, phone number, secondary phone number and other information as follows:
 - **Administrator Name**—Defines the server administrator's name.
 - **Administrator Phone Number**—Defines the server administrator's phone number.
 - **Administrator E-mail Address**—Defines the server administrator's e-mail address.
 - **Administrator Other Information**—Defines additional text relating to the server administrator.
3. Press **F10** to save your selection.

Figure 77 Server Asset Text — Administrator Information screen



NOTE: The number of characters allowed for each entry varies depending on server model. By default, all values are blank.

Entering Service Contact Text

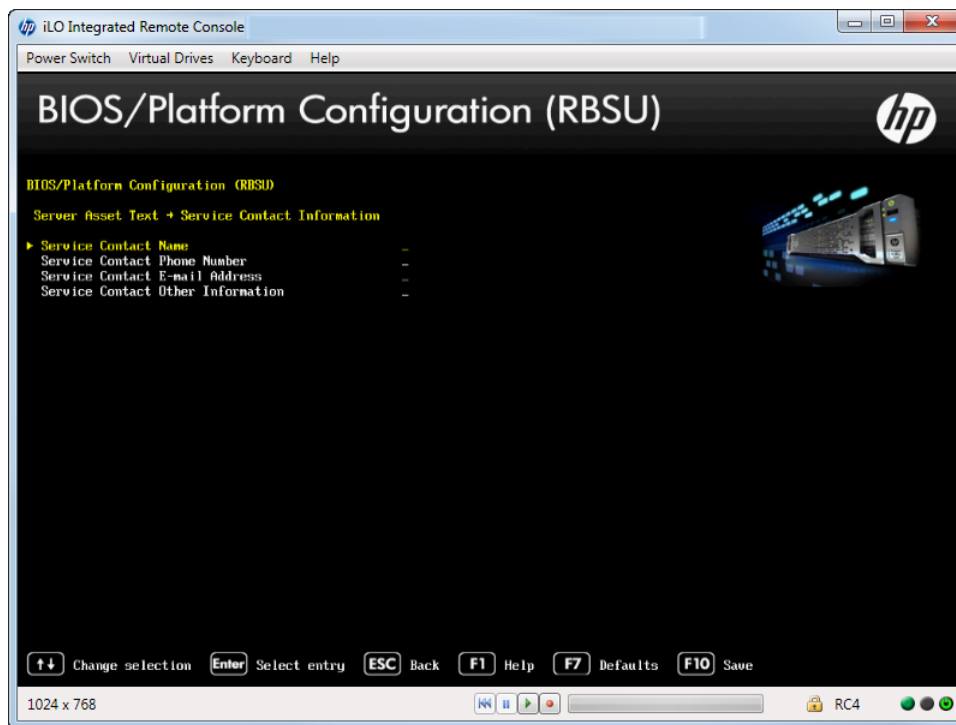
You can define reference information for the server administrator.

To enter service contact text:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Asset Text** and select **Service Contact Information** and press **Enter**.
2. Enter an administrator name, phone number, secondary phone number and other information as follows:
 - **Service Contact Name**—Defines the service contact's name.
 - **Service Phone Number**—Defines the service contact's phone number.
 - **Service Contact E-mail Address**—Defines the service contact's e-mail address.
 - **Service Contact Other Information**—Defines additional text relating to the service contact.
3. Press **F10** to save your selection.

NOTE: The number of characters allowed for each entry varies depending on server model. By default, all values are blank.

Figure 78 Server Asset Text — Service Contact Information screen



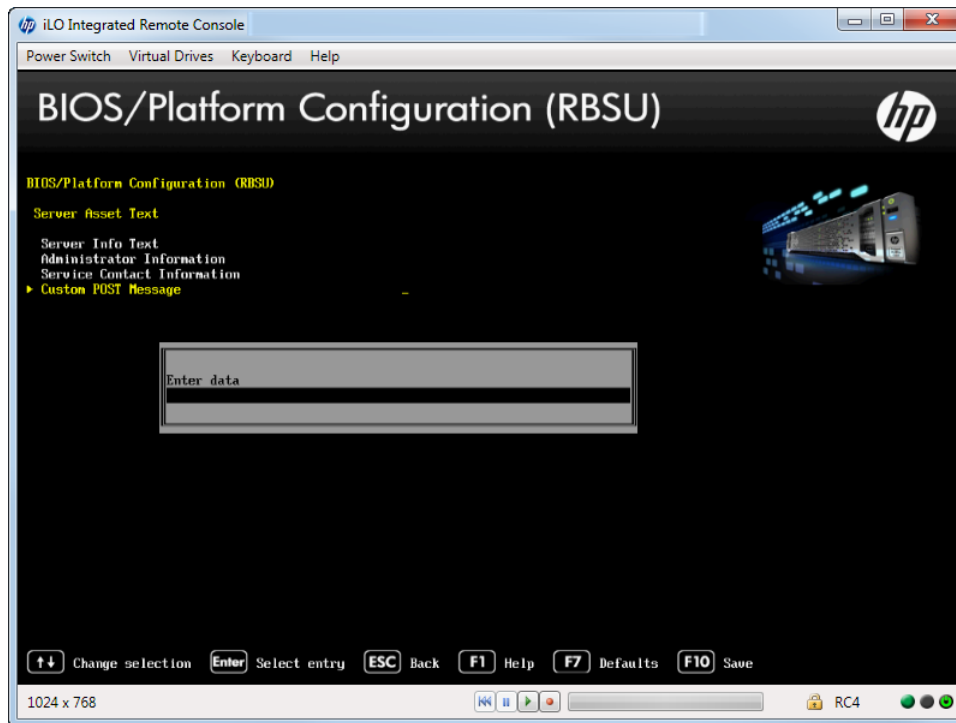
Entering a Custom POST Message

You can enter a custom message to display during server POST in the HP ProLiant POST screen.

To enter a custom POST message:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Server Asset Text** and select **Custom POST Message** and press **Enter**.
2. Enter a custom POST message as needed. A maximum of 60 characters is supported. By default, this value is blank.
3. Press **F10** to save your selection.

Figure 79 Server Asset Text — Custom POST Message screen



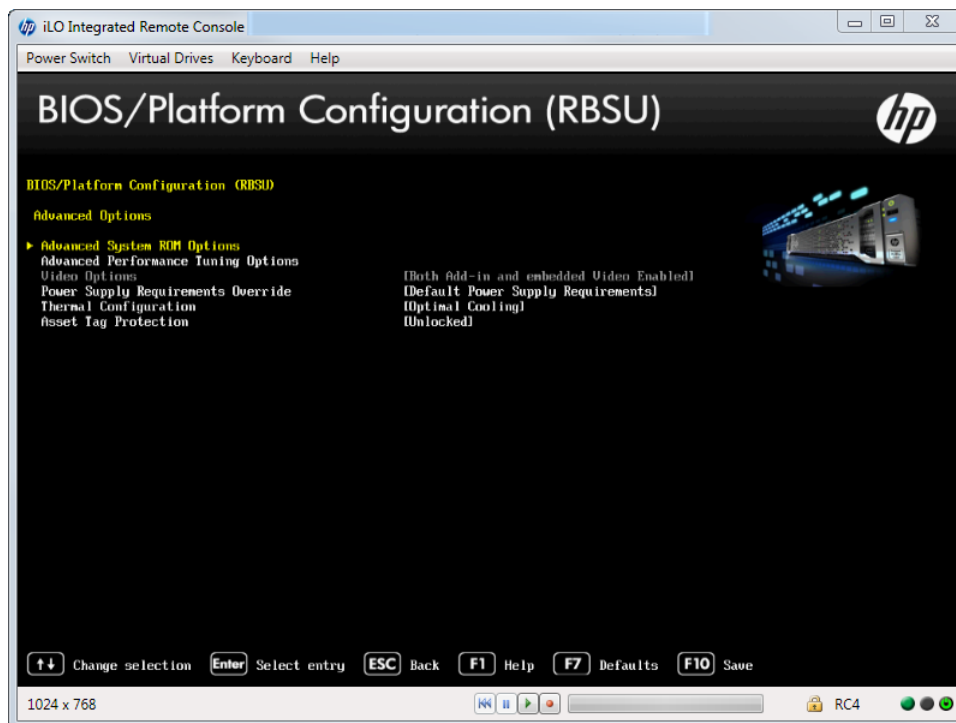
Accessing Advanced Options

You can display advanced system ROM options, advanced performance tuning options, enable the embedded video controller for iLO remote video and dual-head video support to functions properly, override the system power supply requirements, select the fan cooling system, and lock asset tag information.

To access the Advanced Options menu

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options** and press **Enter**.
2. The following configuration options are available:
 - [“Accessing Advanced System ROM Options” \(page 89\)](#)
 - [“Accessing Advanced Performance Tuning” \(page 103\)](#)
 - [“Setting Video Options” \(page 112\)](#)
 - [“Setting Power Supply Requirements Override” \(page 113\)](#)
 - [“Setting Thermal Configuration” \(page 114\)](#)

Figure 80 Advanced Options screen



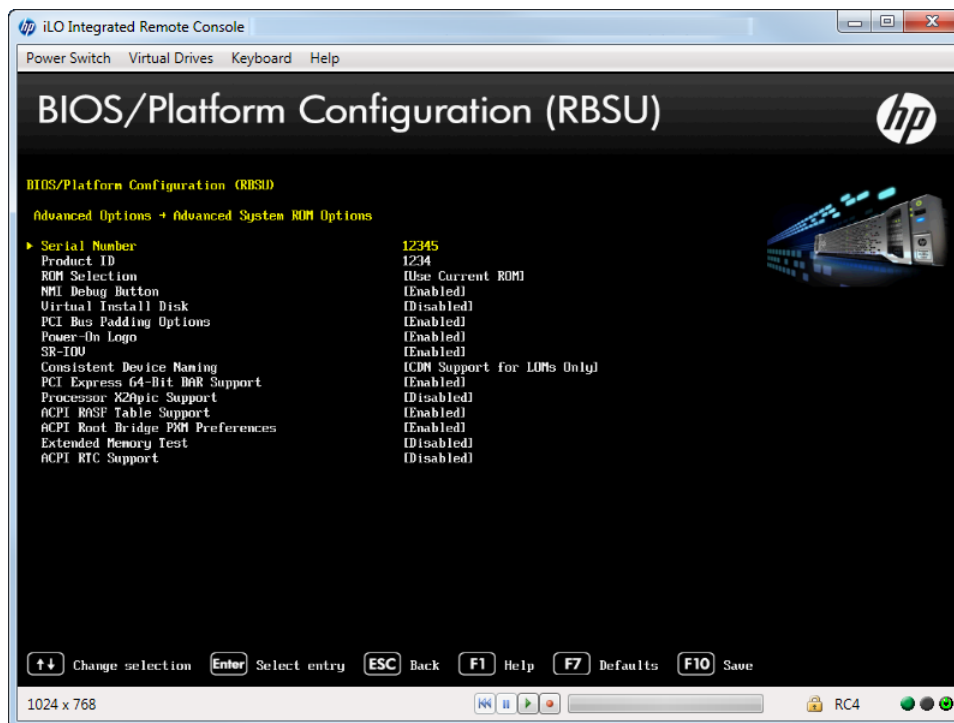
Accessing Advanced System ROM Options

This menu lets you enter a chassis serial number and product ID, set ROM selection, NMI debug button, virtual install disk, PCI bus padding, and power-on logo, and consistent device naming. You can also enable SR-IOV support.

To access advanced system ROM options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options** and press **Enter**.
2. The following configuration options are available:
 - “Entering a Chassis Serial Number” (page 90)
 - “Entering a Product ID” (page 90)
 - “Setting ROM Selection” (page 90)
 - “Setting NMI Debug Button” (page 91)
 - “Setting Virtual Install Disk” (page 92)
 - “Setting PCI Bus Padding Options” (page 93)
 - “Setting Power-On Logo” (page 94)
 - “Enabling SR-IOV Support” (page 95)
 - “Setting Consistent Device Naming” (page 96)
 - “Setting PCI Express 64-Bit BAR Support” (page 97)
 - “Setting PCI Express 64-Bit BAR Support” (page 97)
 - “Setting ACPI RASF Table Support” (page 99)
 - “Setting ACPI Root Bridge PXM Preferences” (page 100)
 - “Configuring Extended Memory Test” (page 101)
 - “ACPI RTC Support” (page 102)

Figure 81 Advanced Options — Advanced System ROM options screen



Entering a Chassis Serial Number

After replacing the system board, re-enter the server serial number. Consult a qualified IT service specialist for assistance in modifying this value.

To enter a chassis serial number:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Serial Number** and press **Enter**.
2. Enter the serial number and press **Enter**.
3. Press **F10** to save your entry.
4. Press **Enter** to confirm your change.

Entering a Product ID

After replacing the system board, re-enter the server product ID. This ID should match the sticker located on the chassis.

To enter a product ID:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Product ID** and press **Enter**.
2. Enter the product ID and press **Enter**.
3. Press **F10** to save your entry.
4. Press **Enter** to confirm your change.

Setting ROM Selection

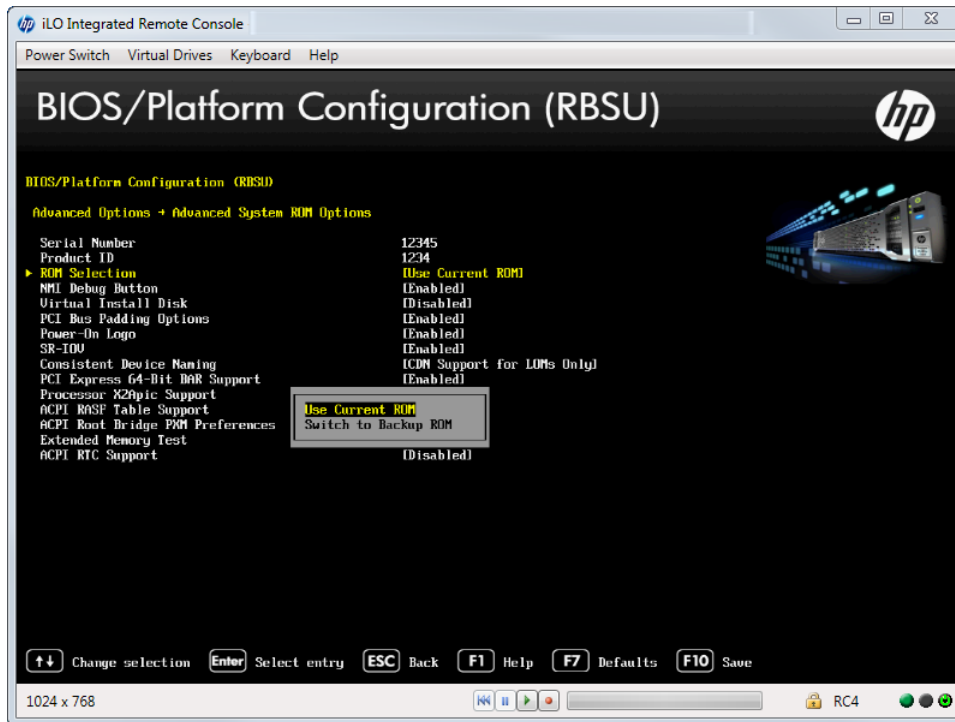
You can revert the server to a previous BIOS ROM image. The backup image is the BIOS ROM image that was used prior to the last flash event. This option is supported only on servers with redundant ROMs.

To set the ROM selection:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**ROM Selection** and press **Enter**.

- The following configuration options are available:
 - **Use Current ROM** (default)
 - **Switch to Backup ROM**
- Press **F10** to save your selection.

Figure 82 Advanced Options — ROM Selection screen



Setting NMI Debug Button

You can enable debug functionality when the system has experienced a software lock-up. The NMI Debug Button generates an NMI to enable the use of the operating system debugger.

NOTE: When enabled, pressing the NMI Debug Button on the system board during normal operation halts the system.

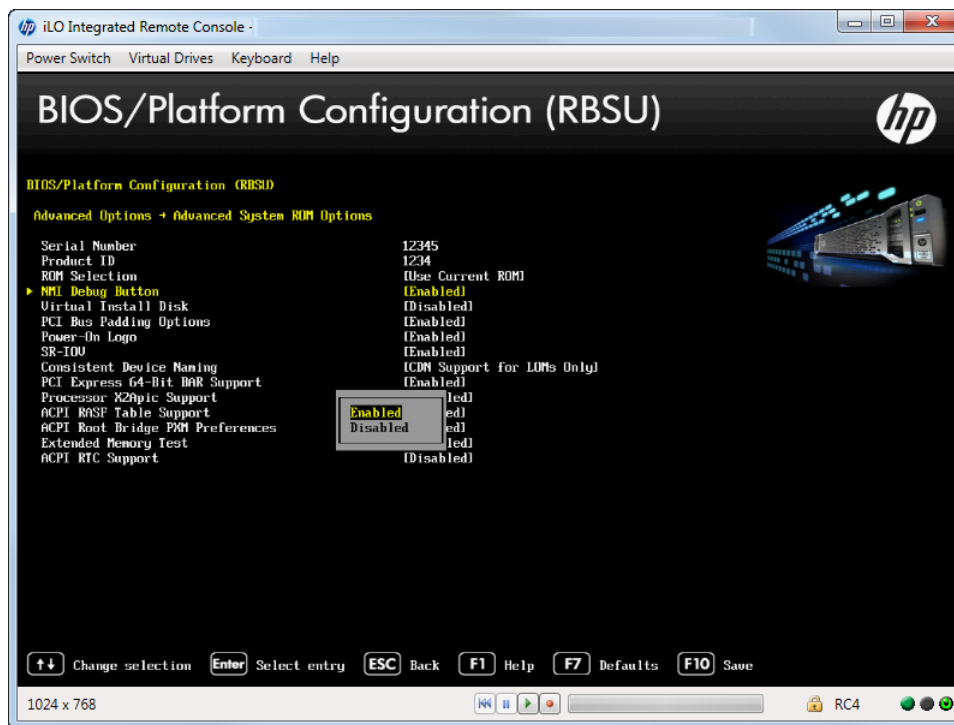
To set the NMI debug button:

- From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**NMI Debug Button** and press **Enter**.
- Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
- Press **F10** to save your selection.

Options include:

- **Enabled** (default)
- **Disabled**

Figure 83 Advanced Options —NMI Debug Option screen



Setting Virtual Install Disk

You can control the Virtual Install Disk. The Virtual Install Disk can contain drivers specific to the server that an operating system can use during installation. If this option is enabled, Microsoft Windows Server automatically locates required drivers and installs them, eliminating the need for user intervention and the requirement that a driver be present on external media during operating system installation. In some cases, the Virtual Install Disk remains visible from the installed operating system as a read-only drive. During manual installations using Intelligent Provisioning, this option is automatically enabled.

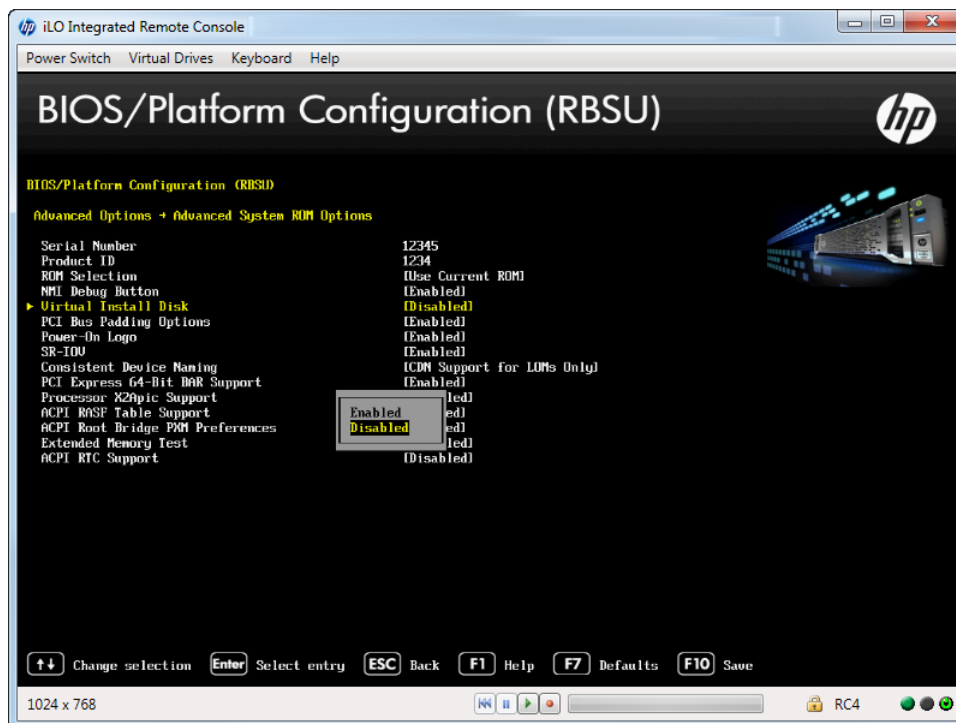
To further optimize the system, HP recommends updating boot drivers to the latest versions after the OS installation.

To set the virtual install disk:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Virtual Install Disk** and press **Enter**.
2. Select one of the following options:
 - **Enabled**—Creates a visible read-only virtual disk (256MB)
 - **Disabled** (default)
3. Press **F10** to save your selection.

NOTE: When Intelligent Provisioning software is updated, this Virtual Install Disk is automatically updated.

Figure 84 Advanced Options —Virtual Install Disk screen



Setting PCI Bus Padding Options

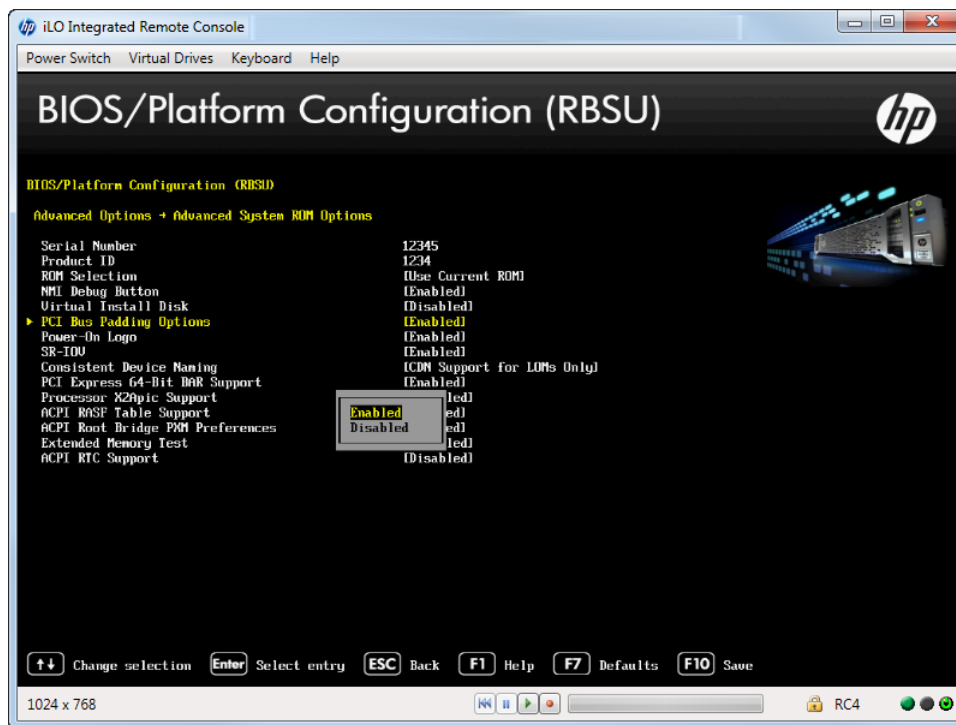
You can disable the default PCI Bus padding where each expansion slot is provided with an extra PCI Bus number. By default, the System BIOS pads one PCI bus per expansion slot to allow expansion cards with PCI-PCI bridges to not effect current bus numbering schemes. Disabling this option works around issues with certain expansion cards. It is not recommended to disable this option unless a specific issue is encountered.

HP recommends disabling this option only when encountering a specific issue.

To set PCI Bus padding options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**PCI Bus Padding Options** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 85 Advanced Options — PCI Bus Padding Options



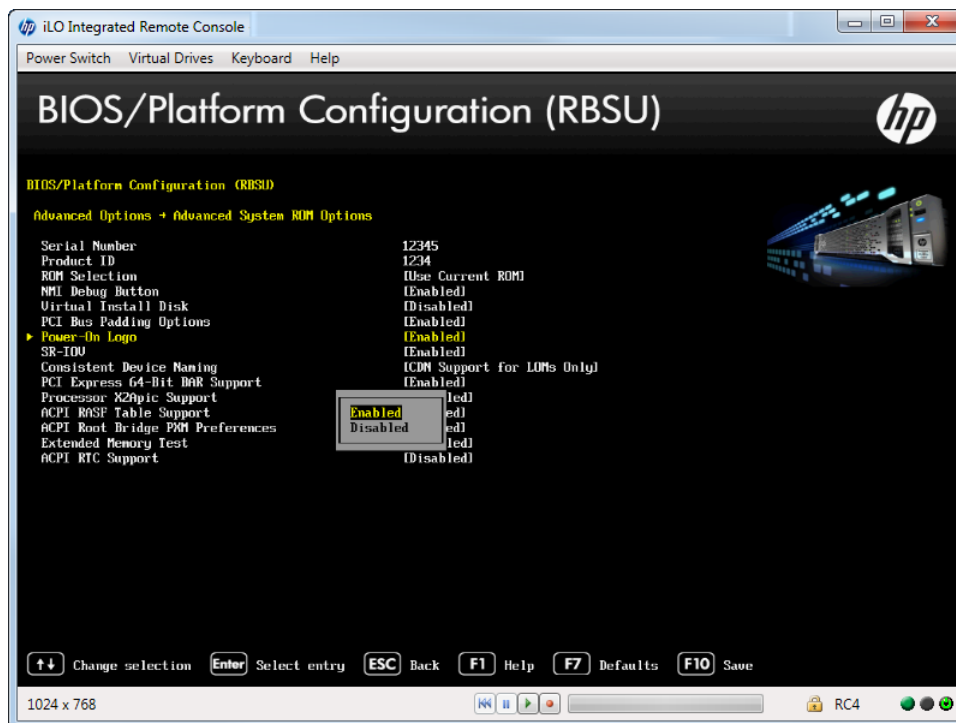
Setting Power-On Logo

This option controls the display of the logo during system boot. This is an aesthetic modification only and does not affect the system boot times.

To set power-on logo:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Power-On Logo** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 86 Advanced Options — Power-On Logo screen



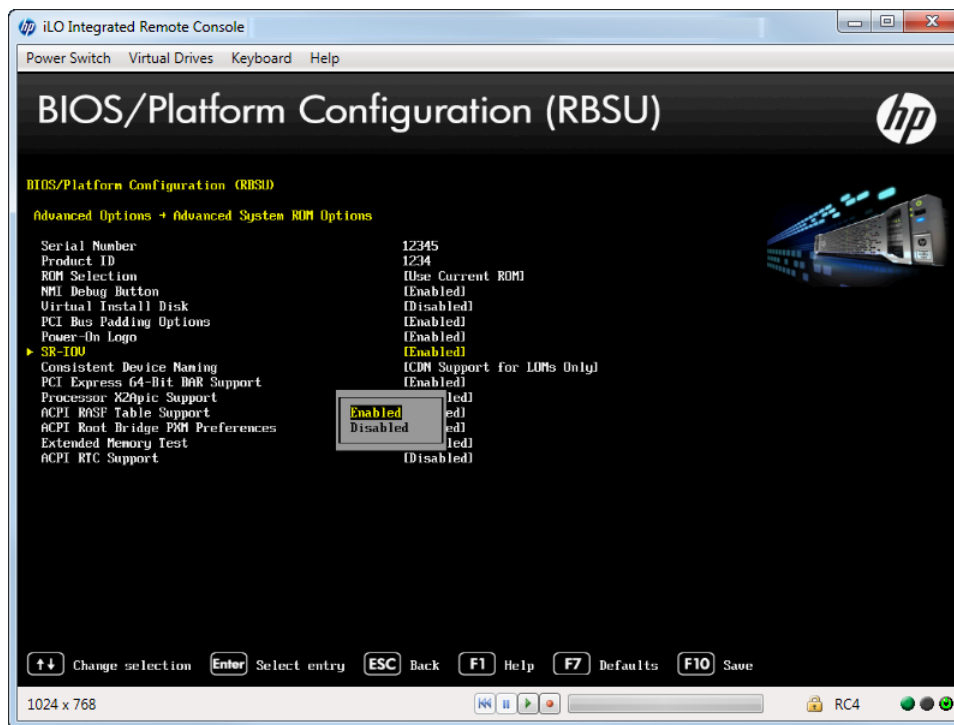
Enabling SR-IOV Support

You can create virtual instances of a PCI device for use under a Hypervisor-based operating system. When you create virtual instances, the BIOS allocates more PCI resources to the PCI devices. Enable this option for a PCIe device or operating system that supports SR-IOV.

To enable SR-IOV support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**SR-IOV** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 87 Advanced Options — SR-IOV screen



Setting Consistent Device Naming

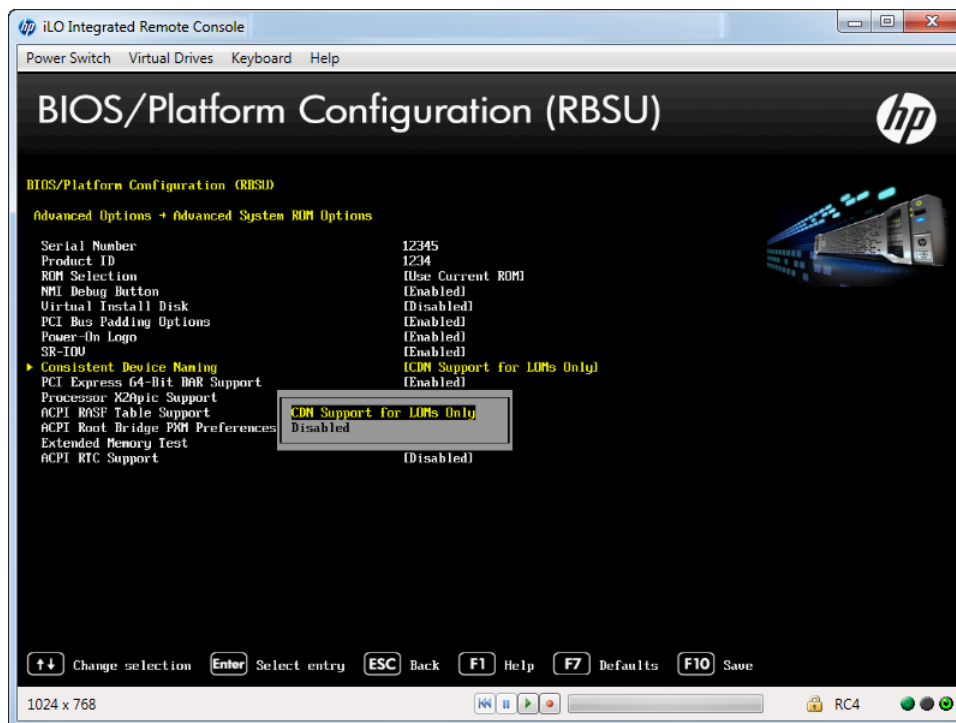
You can select the level of Consistent Device Naming. On supported operating systems, NIC ports are named based on their location in the system.

To set device naming:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Consistent Device Naming** and press **Enter**.
2. Select one of the following options:
 - **CDN Support for LOMs only**—Embedded NICs and FlexibleLOM (not NICs installed in expansion slots) are named based on their location in the system.
 - **Disabled** (default)—All NIC ports are named based on their location in the system.
3. Press **F10** to save your selection.

NOTE: Existing NIC connections retain their names until reinstalled under the OS environment.

Figure 88 Advanced Options — Consistent Device Naming screen



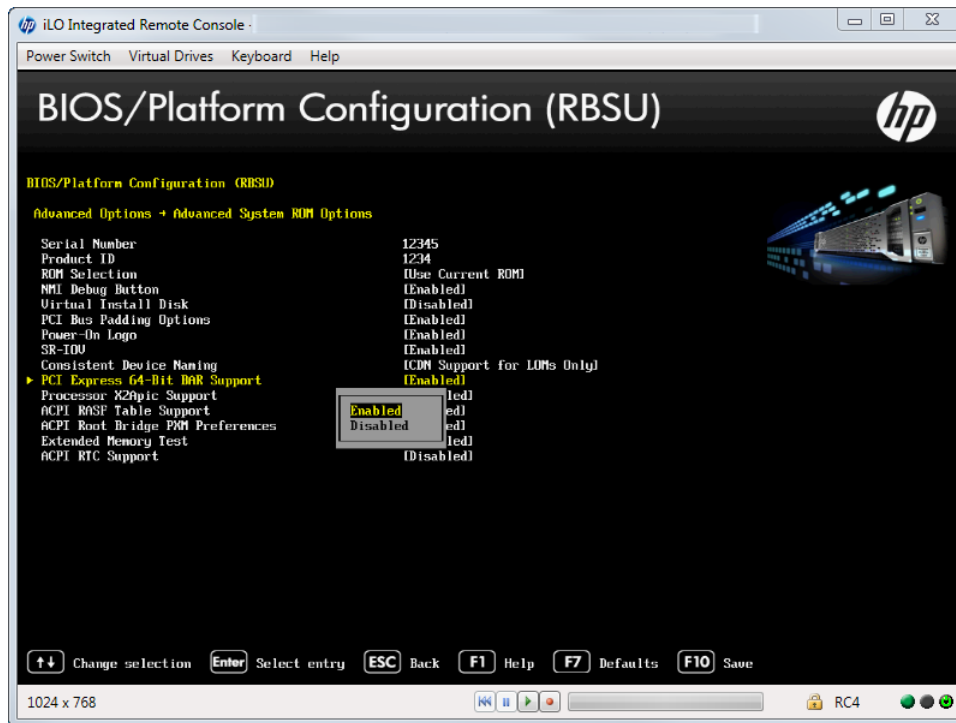
Setting PCI Express 64-Bit BAR Support

Force PCIe resources to use 32-bit MMIO addressing. Disabling 64-bit BAR support might be necessary for certain legacy option card device to function properly when Boot Mode is set to "Legacy Boot."

To set PCI express 64-bit BAR support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**PCI Express 64-Bit BAR Support** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 89 PCI Express 64-Bit BAR Support screen



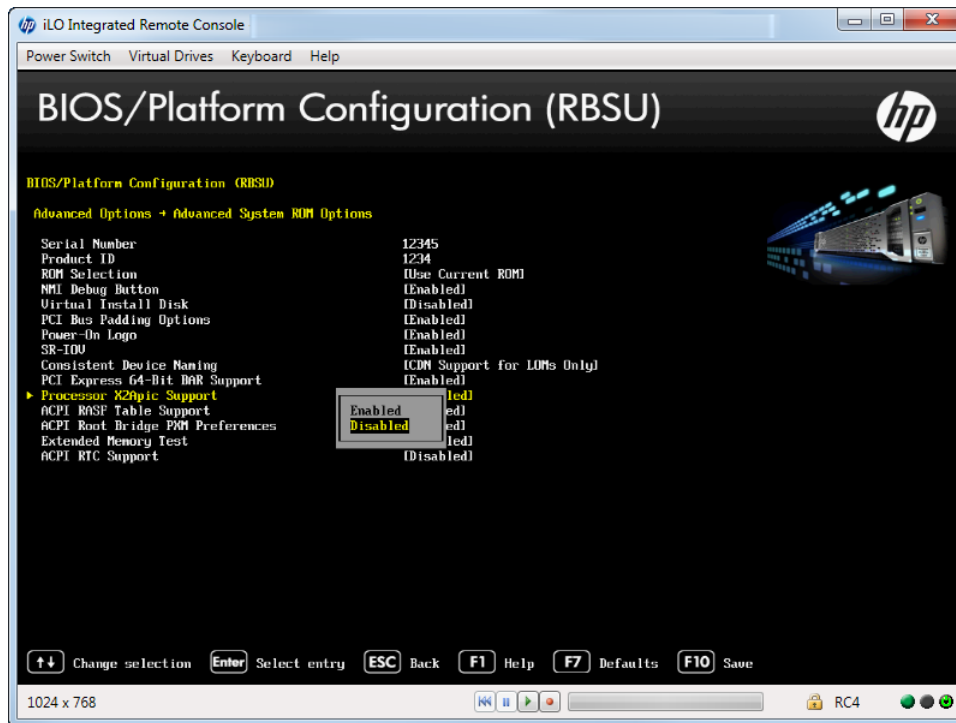
Setting Processor X2Apic Support

This option enables support for processor X2Apic devices. Enabling this option generates ACPI X2Apic structures.

To set processor X2Apic support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Processor X2Apic Support** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 90 Processor X2Apic Support



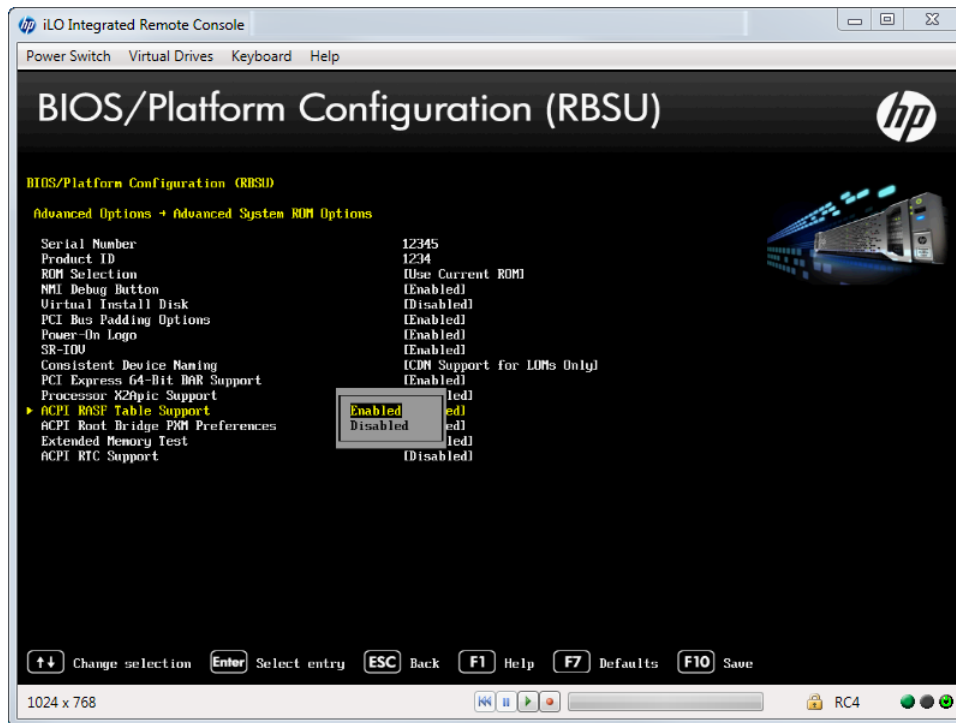
Setting ACPI RASF Table Support

This option enables the ACPI RASF table. Enabling this option generates the ACPI RASF table.

To set ACPI RASF Table Support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**ACPI RASF Table Support** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 91 ACPI RASF Table Support screen



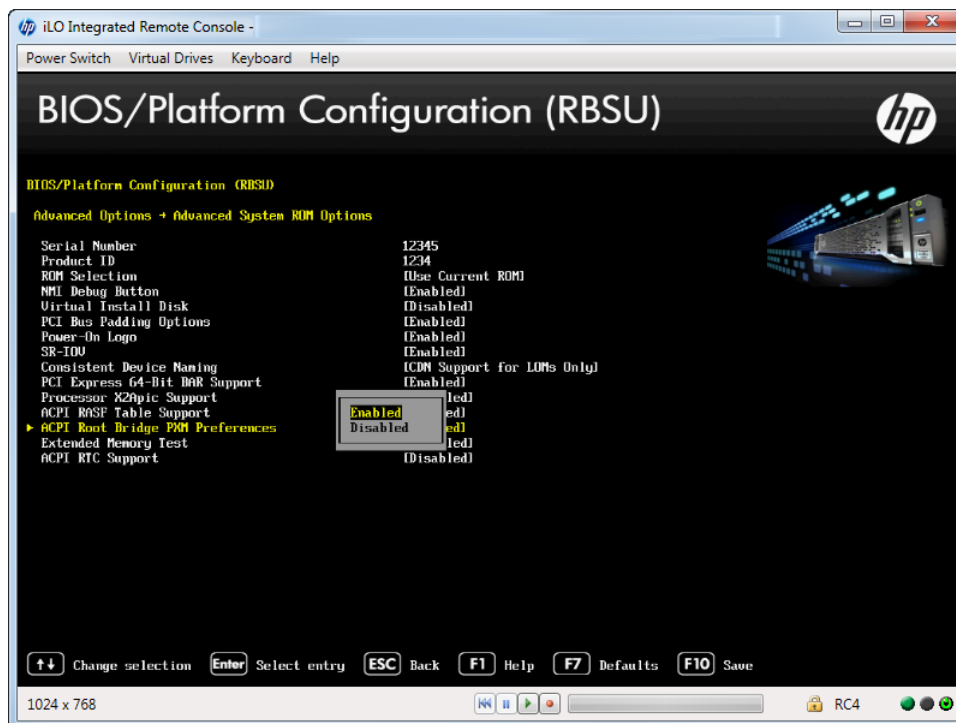
Setting ACPI Root Bridge PXM Preferences

This option enables Root Bridge devices PXM objects. Enabling this option generates an ACPI PXM method for PCI Root Bridge devices.

To set ACPI Root Bridge PXM Preferences:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**ACPI Root Bridge PXM Preferences** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 92 ACPI Root Bridge PXM Preferences screen



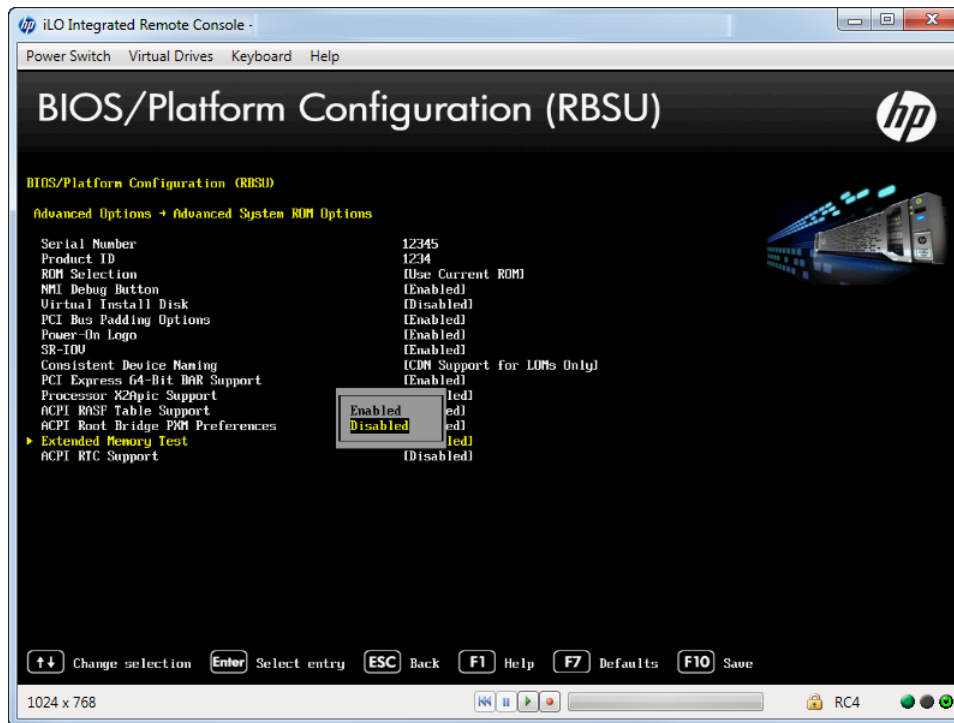
Configuring Extended Memory Test

You can configure the system to validate memory during the memory initialization process. If uncorrectable memory errors are detected, the memory is mapped out and failed DIMMs are logged to the Integrated Management Log (IML). Enabling this option can result in a significant increase in the system boot time.

To configure extended memory test:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**Extended Memory Test** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 93 Extended Memory Test screen



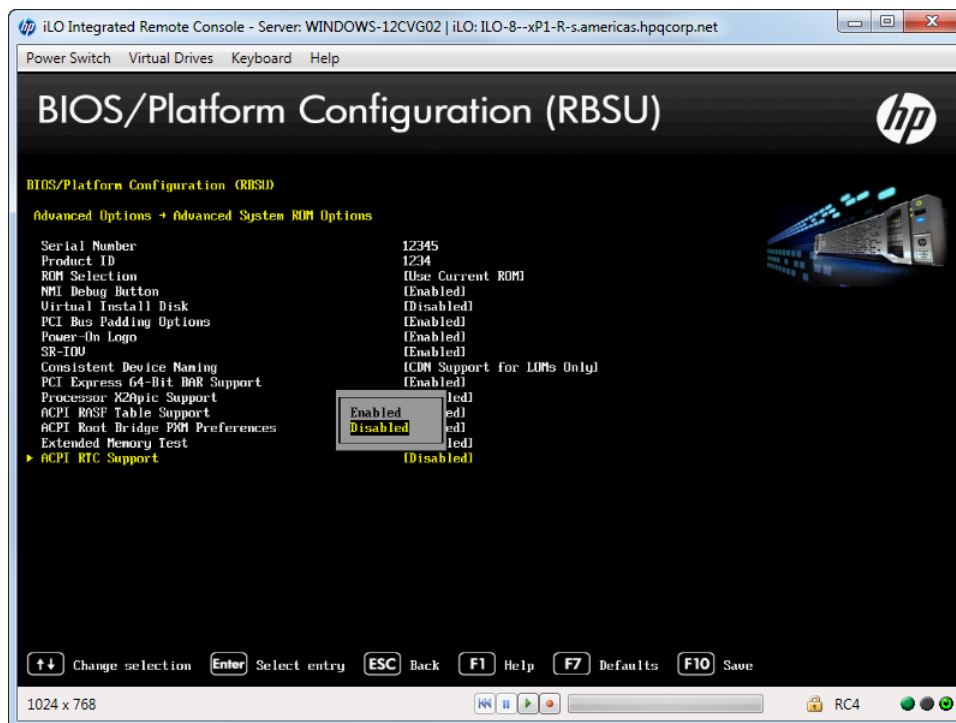
ACPI RTC Support

You can configure standard ACPI (Advanced Configuration and Power Interface) tables to determine whether the operating system should use RTC (Real-Time Clock) for date/time information. Typically, you should set this option to Disabled (default). Newer operating systems support ACPI tables to handle date/time information. Older operating systems do not support ACPI tables.

To configure ACPI RTC Support:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced System ROM Options**→**ACPI RTC Support** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 94 ACPI RTC Support screen



Accessing Advanced Performance Tuning

This menu lets you set HW prefetcher, adjacent sector prefetch, DCU stream prefetcher, DCU IP prefetcher, node interleaving, and performance counter monitor. It also lets you set HP SmartMemory.

To access the Advanced Performance Tuning Options menu:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options** and press **Enter**.
2. Select one of the following options:
 - “Setting HW Prefetcher” (page 103)
 - “Setting Adjacent Sector Prefetch” (page 104)
 - “Setting DCU Stream Prefetcher” (page 105)
 - “Setting DCU IP Prefetcher” (page 106)
 - “Setting Node Interleaving” (page 107)
 - “Setting 1333 MHz Support for 3DPC PC3-10600H HP SmartMemory” (page 108)
 - “Setting 1333 MHz Support for 3DPC PC3-12800R HP SmartMemory” (page 109)
 - “Enabling Intel NIC DMA Channels” (page 110)
 - “Setting Intel Performance Counter Monitor (PCM)” (page 111)

Setting HW Prefetcher

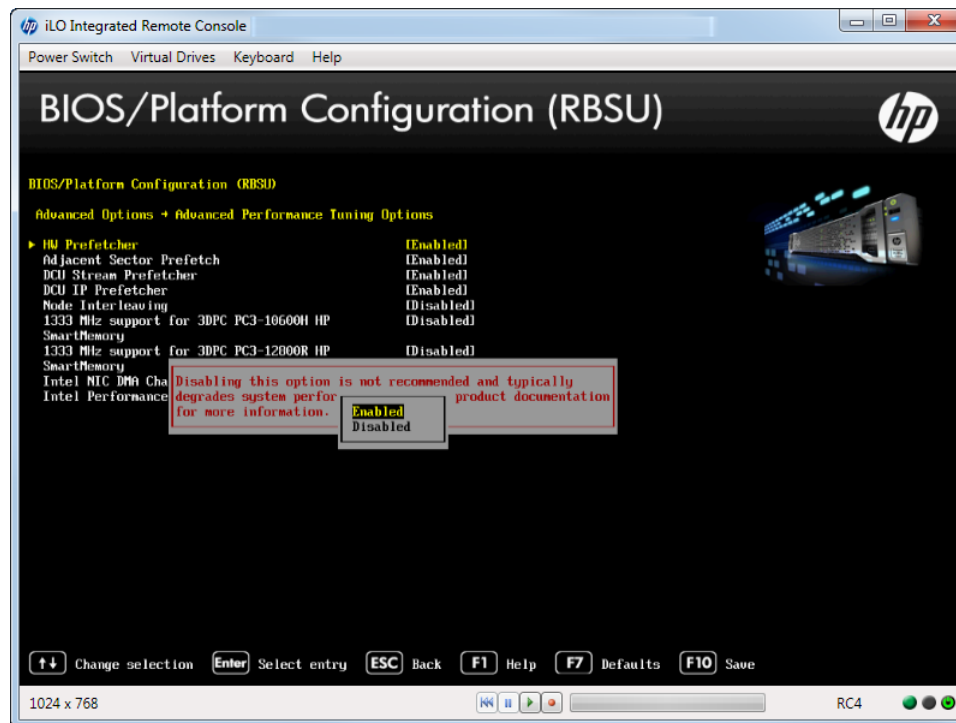
You can disable the processor prefetch option. In most cases, this option should remain enabled. With certain workloads, disabling this option might provide a performance benefit. Disable this option only after performing application benchmarking to verify improved performance in a particular environment. In most environments, leaving the default value of “Enabled” provides better performance.

NOTE: This option is available on servers with Intel processors. Disabling this option is not recommended as it can degrade system performance.

To set HW prefetcher:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**HW Prefetcher** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled**
3. Press **F10** to save your selection.

Figure 95 Advanced Options — HW Prefetcher screen



Setting Adjacent Sector Prefetch

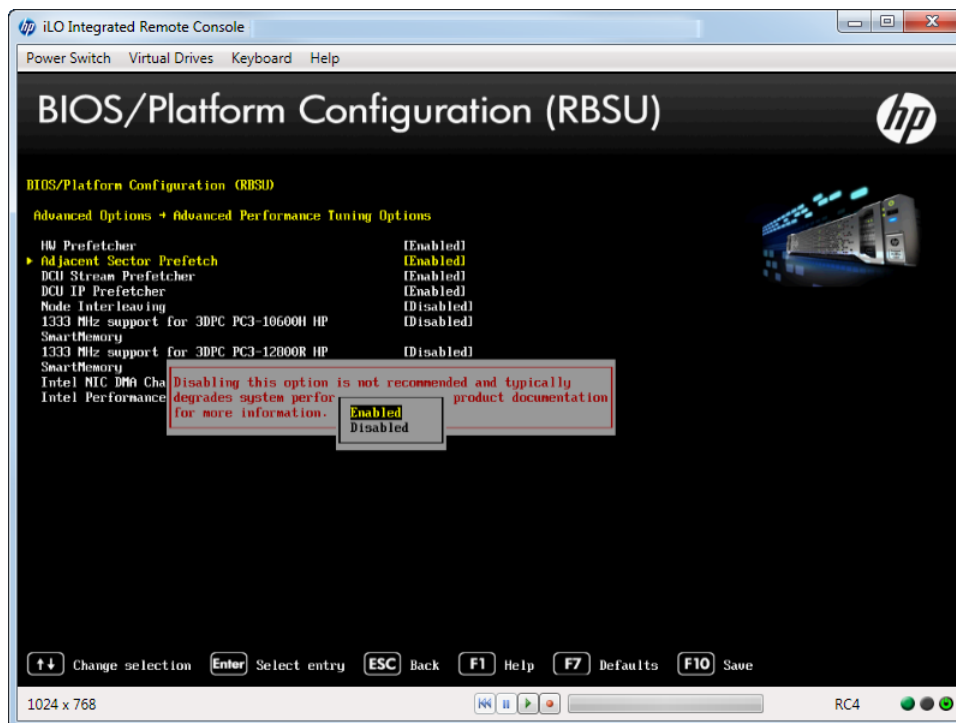
You can disable the processor prefetch option. In most cases, this option should remain enabled. With certain workloads, however, disabling this option can provide a performance benefit. Disable this option only after performing application benchmarking to verify improved performance in a particular environment.

- ❗ **IMPORTANT:** Disabling this option is not recommended because it typically degrades system performance.

To set adjacent sector prefetch:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**Adjacent Sector Prefetch** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 96 Advanced Options — Adjacent Sector Prefetch screen



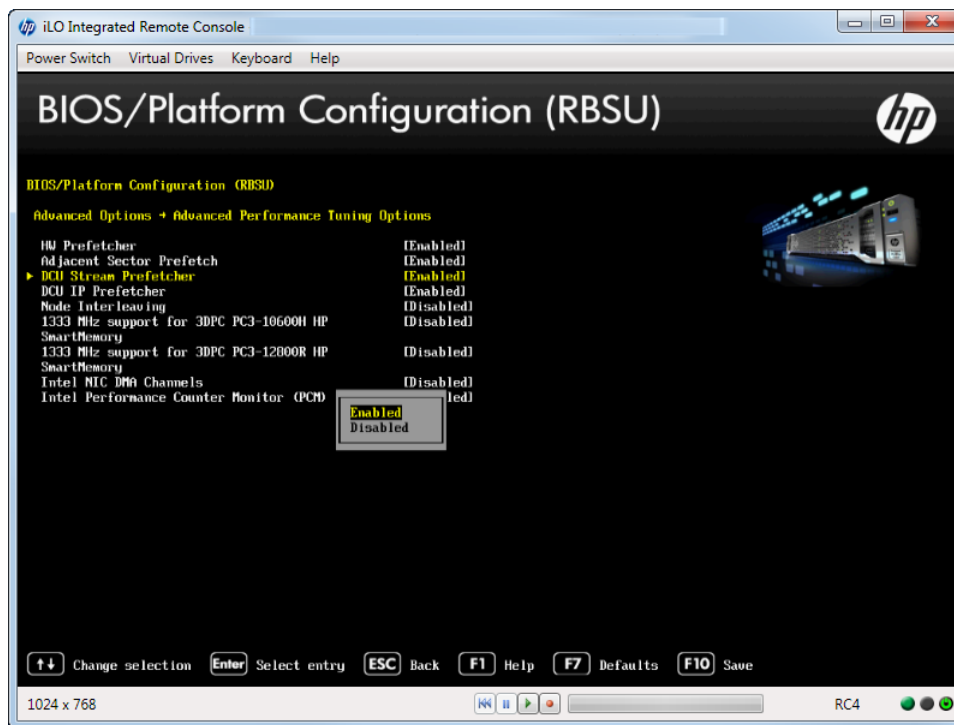
Setting DCU Stream Prefetcher

You can control processor prefetching. In most cases, leave this option enabled. With certain workloads, however, disabling this option can provide a performance benefit. Disable this option only after performing application benchmarking to verify improved performance in a particular environment.

To set DCU Stream Prefetcher:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**DCU Stream Prefetcher** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 97 Advanced Options — DCU Stream Prefetcher screen



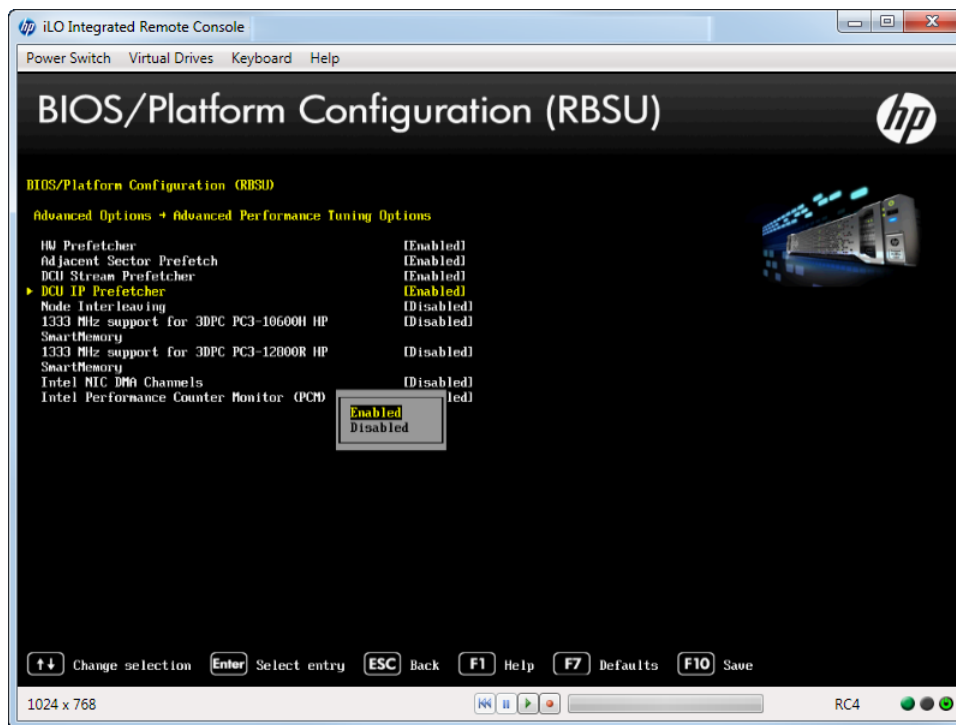
Setting DCU IP Prefetcher

You can control processor prefetching. In most cases, this option should remain enabled. With certain workloads, however, disabling this option can provide a performance benefit. Disable this option only after performing application benchmarking to verify improved performance in a particular environment.

To set DCU IP prefetcher:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**DCU IP Prefetcher** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 98 Advanced Options — DCU IP Prefetcher screen



Setting Node Interleaving

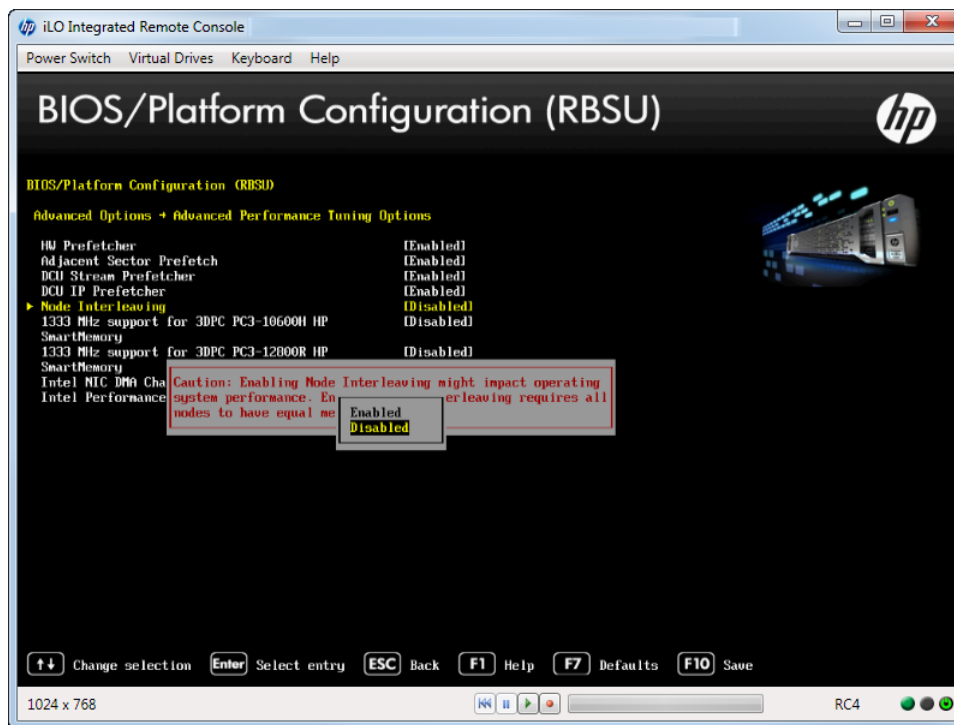
You can disable the NUMA architecture properties of the system. All operating systems supported by this platform support NUMA architectures. In most cases, obtain optimum performance by disabling Node Interleaving. When this option is enabled, memory addresses are interleaved across the memory installed for each processor and some workloads might experience improved performance.

❗ **IMPORTANT:** Enabling Node Interleaving can impact operating system performance.

To set node interleaving:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**Node Interleaving** and press **Enter**.
2. Select one of the following options:
 - **Enabled**—Enabling Node Interleaving requires all nodes to equal memory sizes. System performance might be impacted.
 - **Disabled** (default)—In most cases, disabling Node Interleaving provides optimum performance.
3. Press **F10** to accept your selection.

Figure 99 Advanced Options — Node Interleaving screen



Setting 1333 MHz Support for 3DPC PC3-10600H HP SmartMemory

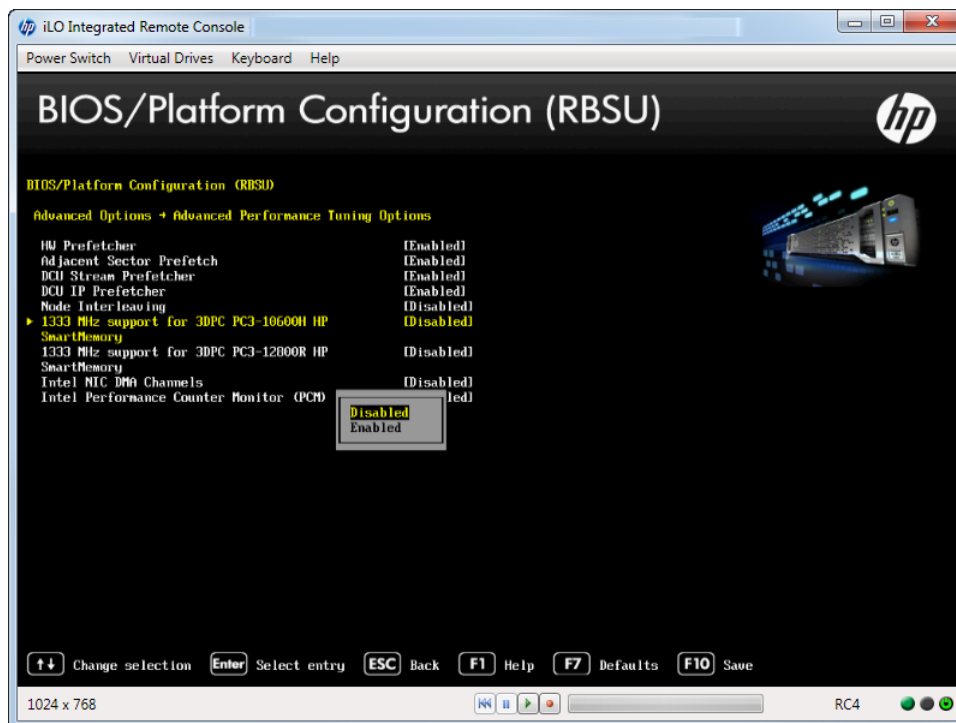
NOTE: This option is available on Gen8 with 3DPC PC3-10600H HP SmartMemory.

You can enable a memory speed of 1333 Mhz for 3-DIMM per channel configurations and should be enabled only when the system contains PC3-10600H HP Smart Memory exclusively.

To set 3DPC PC3-10600H HP SmartMemory:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**1333 MHz support for 3DPC PC3–10600H HP SmartMemory** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 100 Advanced Options — 1333 MHz Support for 3DPC-10600H HP SmartMemory screen



Setting 1333 MHz Support for 3DPC PC3-12800R HP SmartMemory

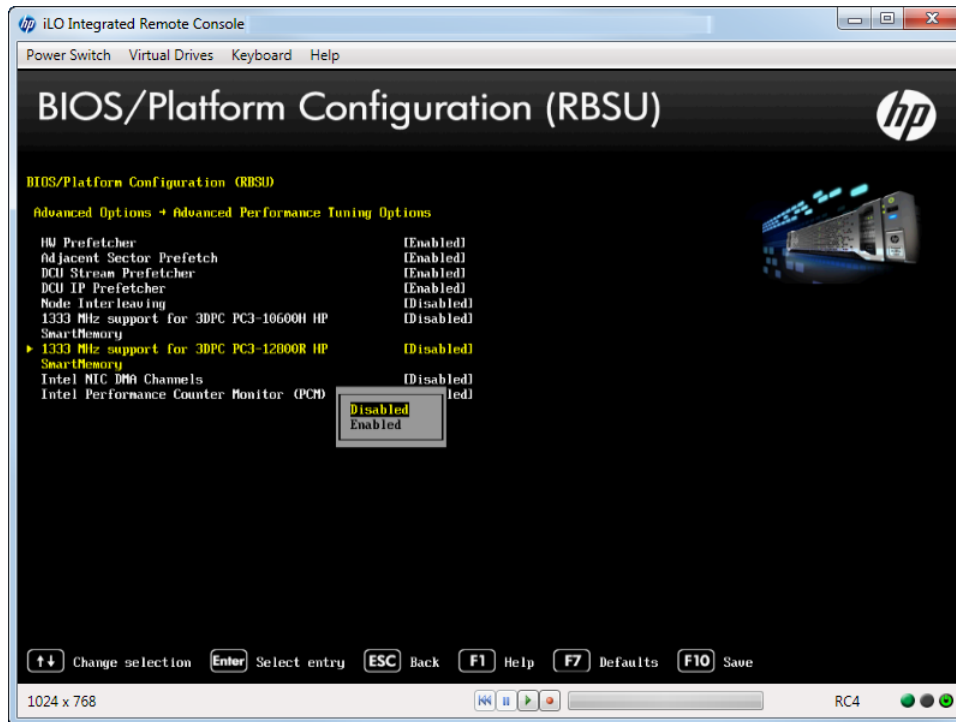
NOTE: This option is available on Gen8 with 3DPC PC3-12800R HP SmartMemory.

You can enable memory speed of 1333 Mhz for 3DIMM per-channel configurations. This option should be enabled only when the system contains exclusively PC3-12800R HP Smart Memory.

To set 1333 MHz Support for 3DPC PC3-12800R HP SmartMemory:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**1333 MHz support for 3DPC PC3-12000R HP SmartMemory** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to accept your selection.

Figure 101 Advanced Options — 1333 MHz Support for 3DPC PC3-12800R HP SmartMemory screen



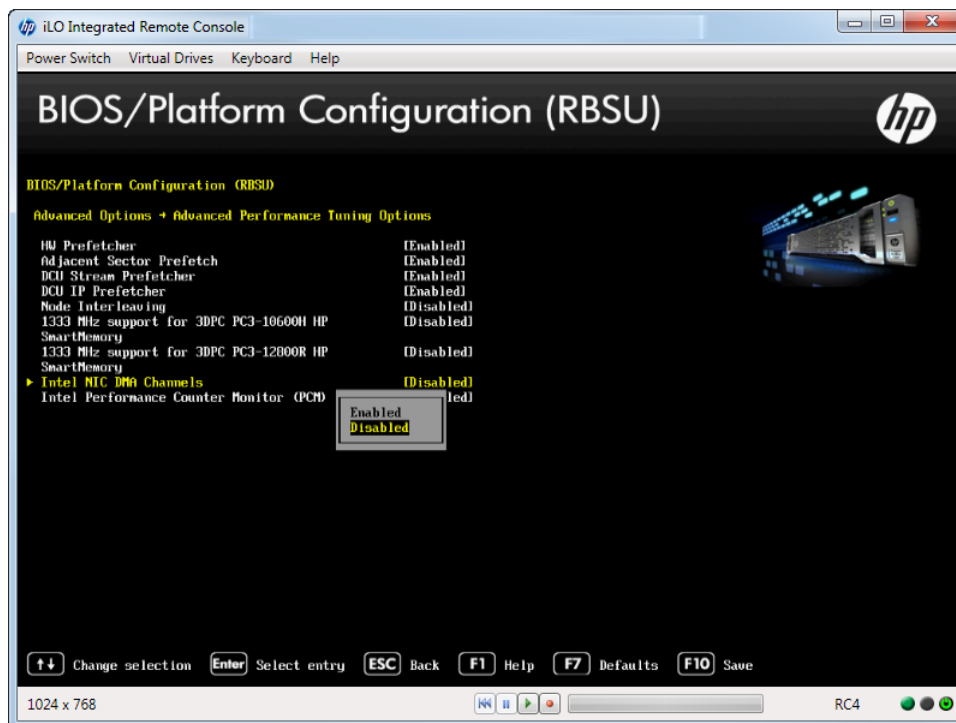
Enabling Intel NIC DMA Channels

This is a NIC acceleration option that only runs on Intel Based NICs. For servers that do not have an Intel NIC, leave this option disabled.

To enable Intel NIC DMA channels:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**Intel NIC DMA Channels** and press **Enter**.
2. Select one of the following options:
 - **Enabled**
 - **Disabled** (default)
3. Press **F10** to save your selection.

Figure 102 Advanced Options — Intel NIC DMA Channels screen



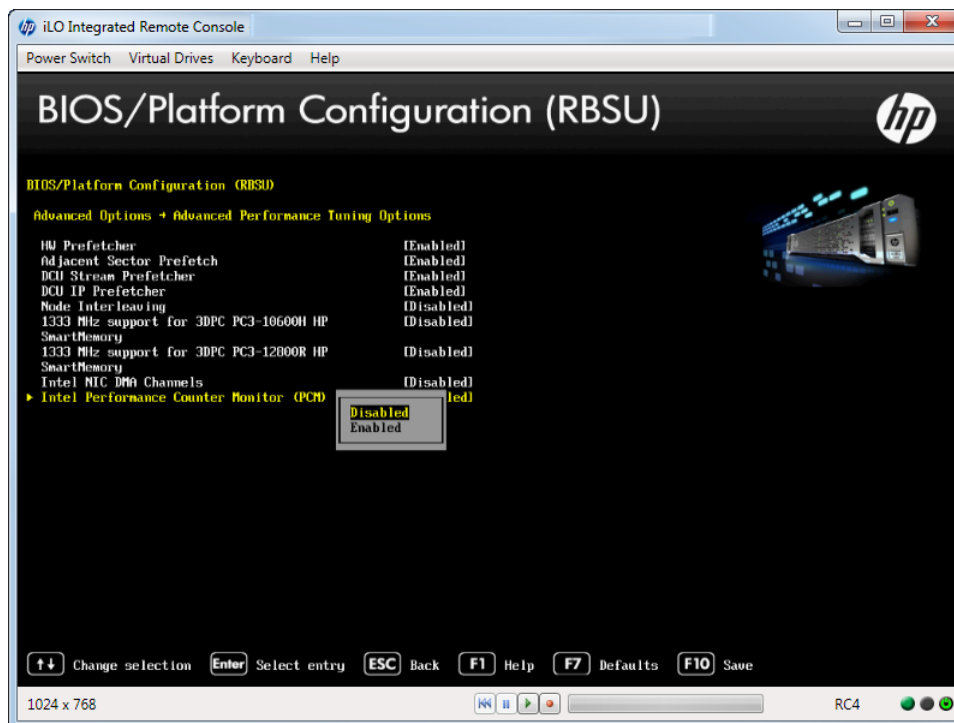
Setting Intel Performance Counter Monitor (PCM)

You can unhide certain performance counters in the processor. If enabled, you can use tools such as PCM.

To set PCM:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Advanced Performance Tuning Options**→**Intel Performance Counter Monitor (PCM)** and press **Enter**.
2. Select one of the following options:
 - **Enabled** (default)
 - **Disabled**
3. Press **F10** to save your selection.

Figure 103 Intel Performance Counter Monitor (PCM) screen



Setting Video Options

You can configure the video display. By default, the system BIOS disables the embedded video controller when an optional video controller is installed in the system. This option allows the embedded video controller to remain enabled so that the iLO remote video functions properly or for dual-head video support. Early system startup video is always displayed to the embedded video controller.

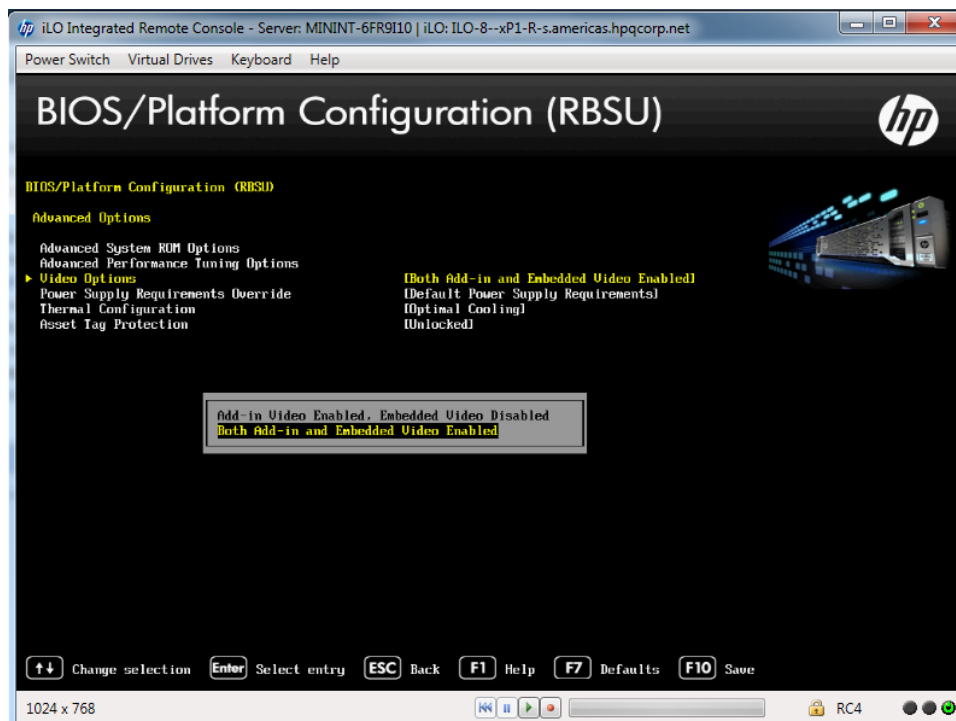
To set video options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Video Options** and press **Enter**.
2. Select one of the following options:
 - **Add-in Video Enabled, Embedded Video Disabled** (default)—The system displays video only to the first discovered add-in video controller.
 - **Both Add-in and Embedded Video Enabled**—The system displays video to both the embedded and the first discovered add-in video controller.
3. Press **F10** to save your selection.

NOTE:

- The ability to support dual-head video between the embedded and a stand-up device is dependent on support from the operating system. For more information, see your operating system documentation.
- When multiple optional video cards are installed, the card that is selected as primary is based on PCI enumeration, which varies depending on the platform. You might have to remove and reinstall the cards in a different order to control which card is the primary controller.

Figure 104 Advanced Options — Video Options screen



Setting Power Supply Requirements Override

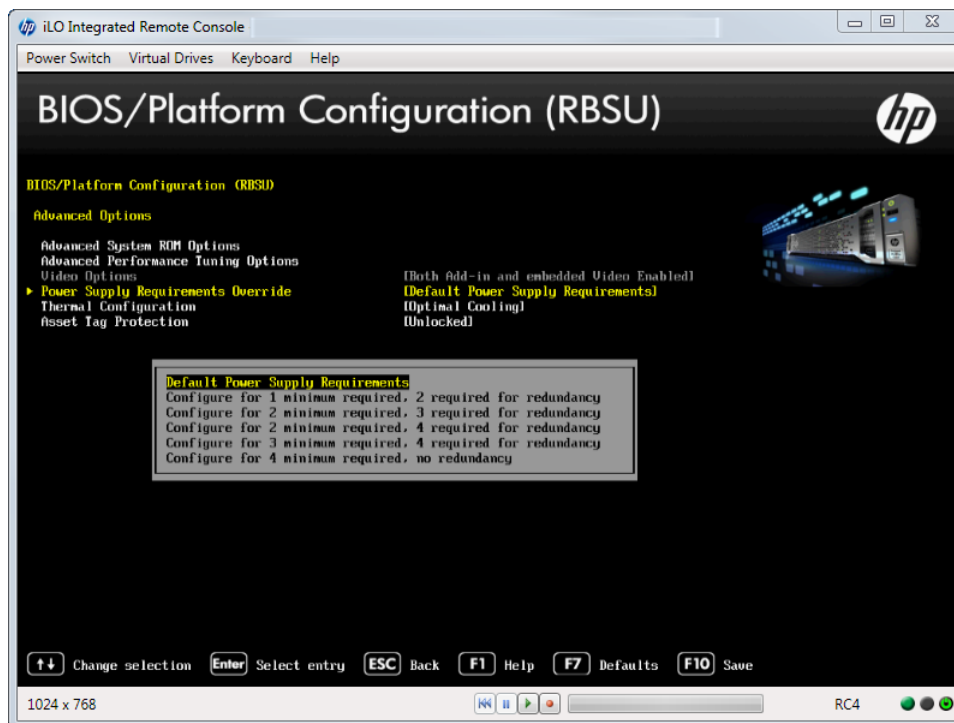
The server can operate workloads and configurations with the required power supplies installed. You can modify the server's power supply requirements to allow the server to operate with one power supply and be redundant or with two power supplies and be redundant with three power supplies. You should only override the normal power supply requirements if they use the HP Power Calculator to confirm that their system's configuration can operate with the selected power supply requirements.

NOTE: Use the HP Power Advisor to confirm the system's power supply requirements before enabling any of the options that override the default power supply requirements.

To set power supply requirements override:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Power Supply Requirements Override** and press **Enter**.
2. Select one of the following options:
 - **Default Power Supply Requirements** (default)
 - **Configure for 1 minimum required, 2 required for redundancy**
 - **Configure for 2 minimum required, 3 required for redundancy**
 - **Configure for 2 minimum required, 4 required for redundancy**
 - **Configure for 3 minimum required, 4 required for redundancy**
 - **Configure for 4 minimum required, no redundancy**

Figure 105 Advanced Options — Power Supply Requirements Override screen



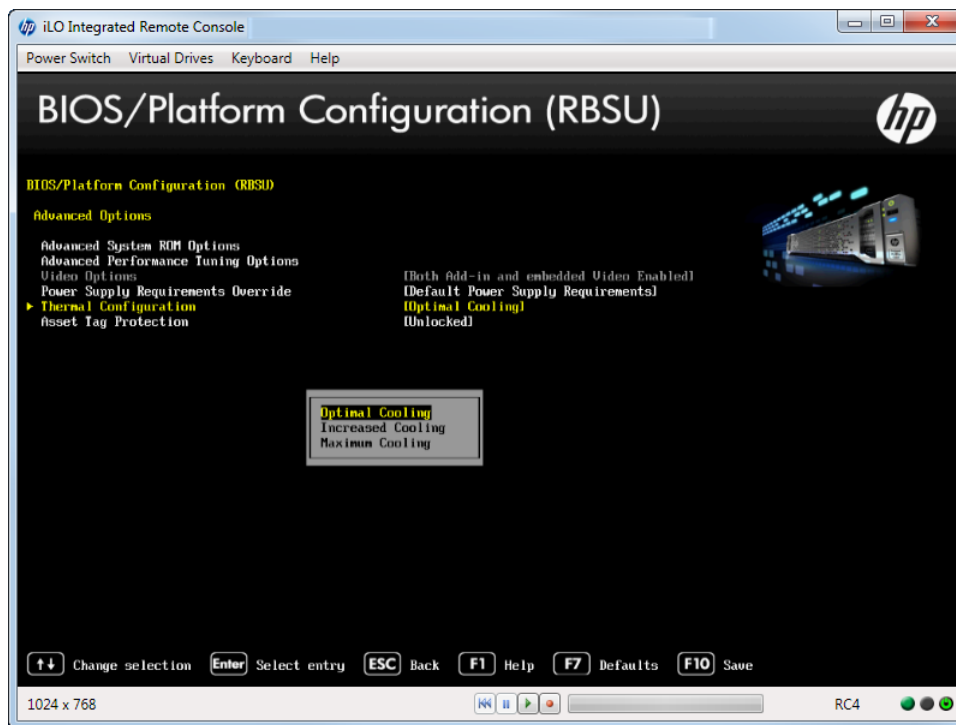
Setting Thermal Configuration

You can select the fan cooling solution for the system.

To set thermal configuration:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Thermal Configuration** and press **Enter**.
2. Select one of the following options:
 - **Optimal Cooling** (default)—Provides the most efficient solution by configuring fan speeds to the minimum required to provide adequate cooling.
 - **Increased Cooling**—Operates fans at higher speeds to provide additional cooling. HP recommends selecting this option when a 10GbE NIC Card or I/O Accelerator is installed, or if the system is experiencing thermal issues that cannot be resolved.
 - **Maximum Cooling**—Provides the maximum cooling available for the platform.

Figure 106 Advanced Options — Thermal Configuration screen



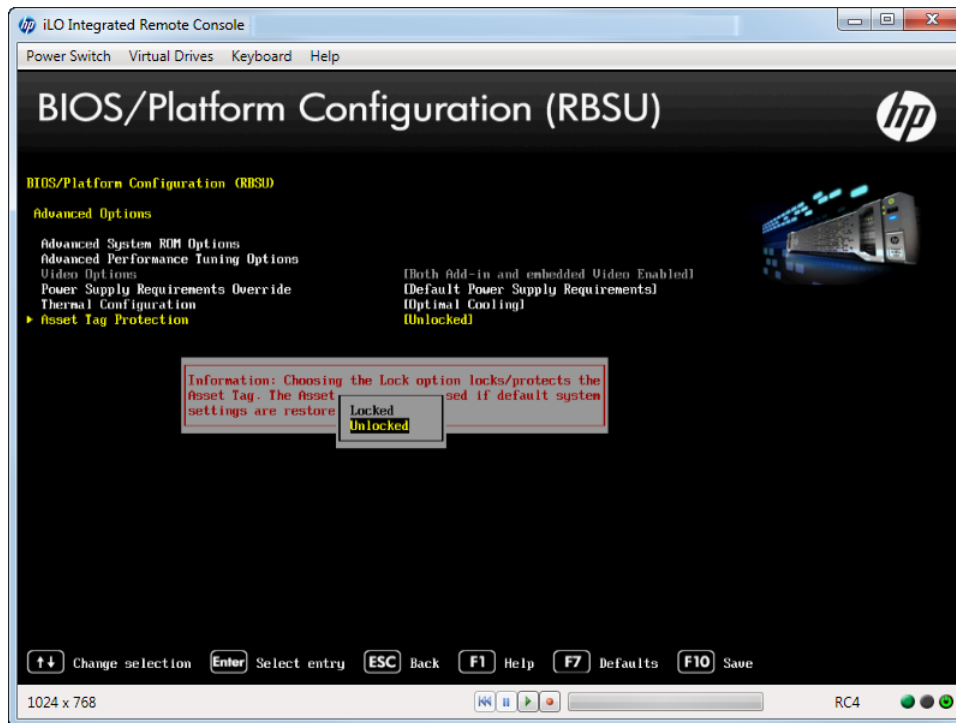
Locking Asset Tag Protection

You can protect asset tag information.

To lock the asset tag information:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**Advanced Options**→**Asset Tag Protection** and press **Enter**.
2. Select one of the following options:
 - **Lock**—The asset tag information is not erased if the default system settings are restored
 - **Unlocked**—The asset tag information is erased if the default system settings are restored.

Figure 107 Advanced Options — Asset Tag Protection screen



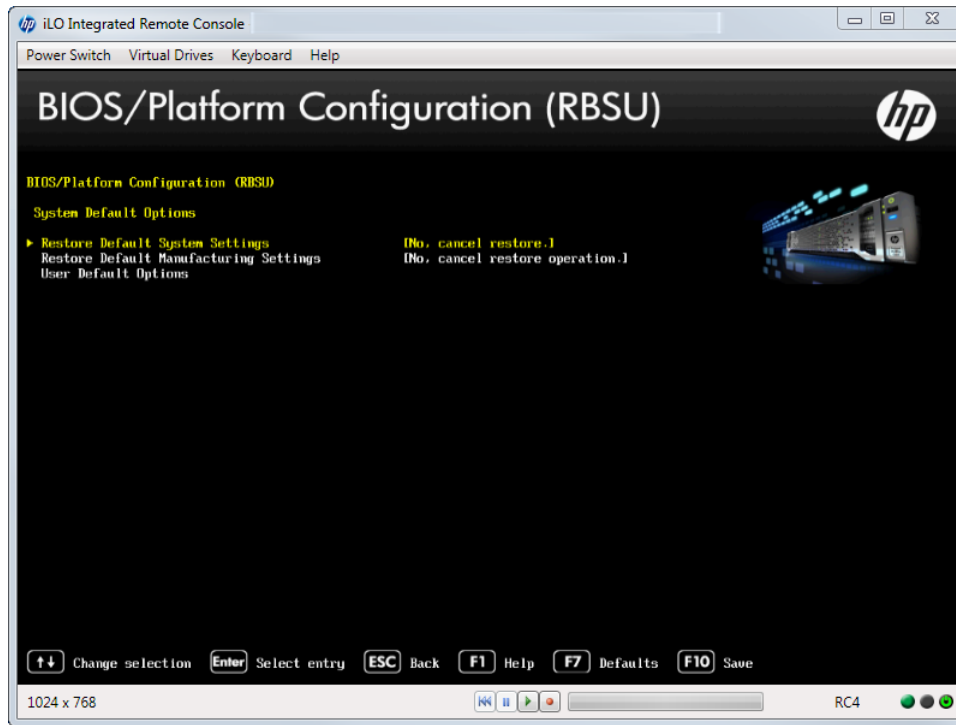
Accessing System Default Options

To access system default options:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Default Options** and press **Enter**.

2. The following configuration options are available:
 - **Restore Default System Settings**—Resets all configuration settings to their default values. Any changes you made are not saved.
 - **Restore Default Manufacturing Settings**— Resets all configuration settings to their default manufacturing values. Previous changes that you have made are lost.
 - **User Default Options**—Defines default configuration settings, which are used instead of the factory default settings.

Figure 108 System Default Options — System Default Options screen



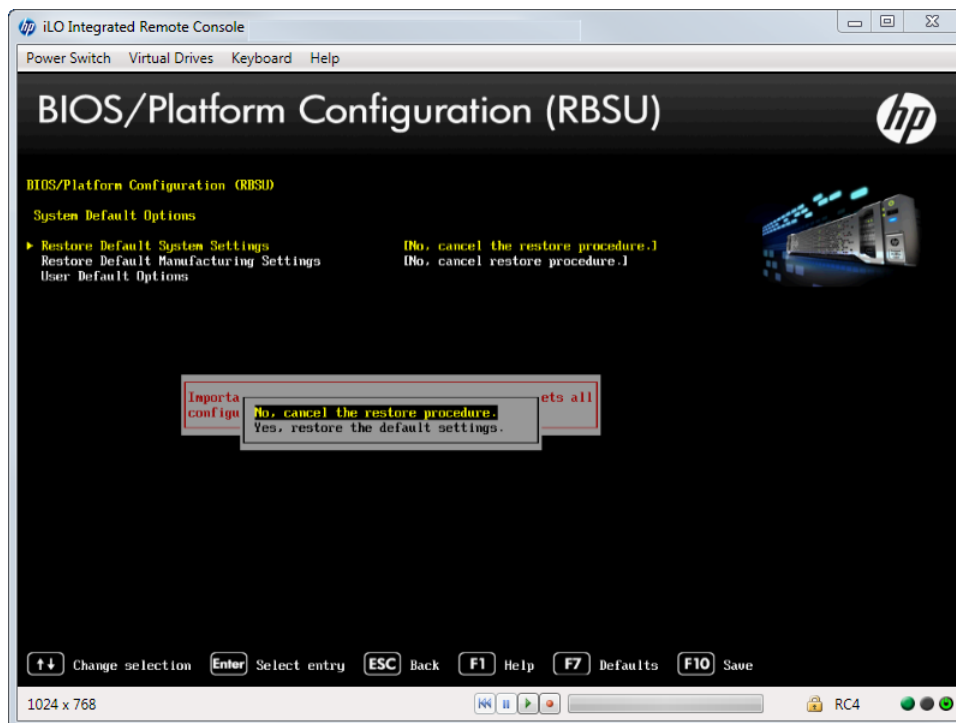
Restoring Default System Settings

You can reset all BIOS configuration settings to their default options. Previous changes that you have made are lost.

To restore default system settings:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Default Options**→**Restore Default System Settings** and press **Enter**.
2. Select one of the following options:
 - **No, cancel the restore procedure.**
 - **Yes, restore the default settings.**
3. Press **Enter** to reboot the server for changes to take effect. Press **ESC** if you need to cancel the procedure.

Figure 109 System Default Options — Restore Default System Settings



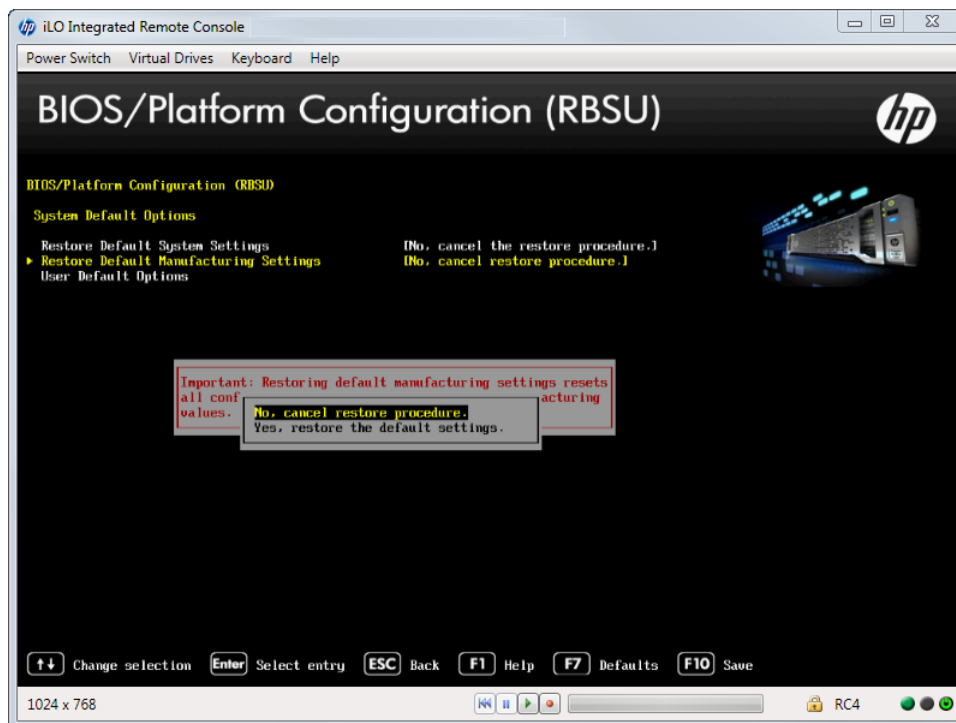
Restoring Default Manufacturing Settings

Restoring default manufacturing settings lets you reset all BIOS configuration settings to their default manufacturing values and delete all UEFI non-volatile variables, such as boot configuration and Secure Boot security keys (if Secure Boot is enabled). Previous changes that you have made are lost.

To restore default manufacturing settings:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Default Options**→**Restore Default Manufacturing Settings** and press **Enter**.
2. Select one of the following options:
 - **No, cancel the restore procedure.**
 - **Yes, restore the default settings.**
3. Press **Enter** to reboot the server for changes to take effect. Press **ESC** if you need to cancel the procedure.

Figure 110 System Default Options — Restore Default Manufacturing Settings screen



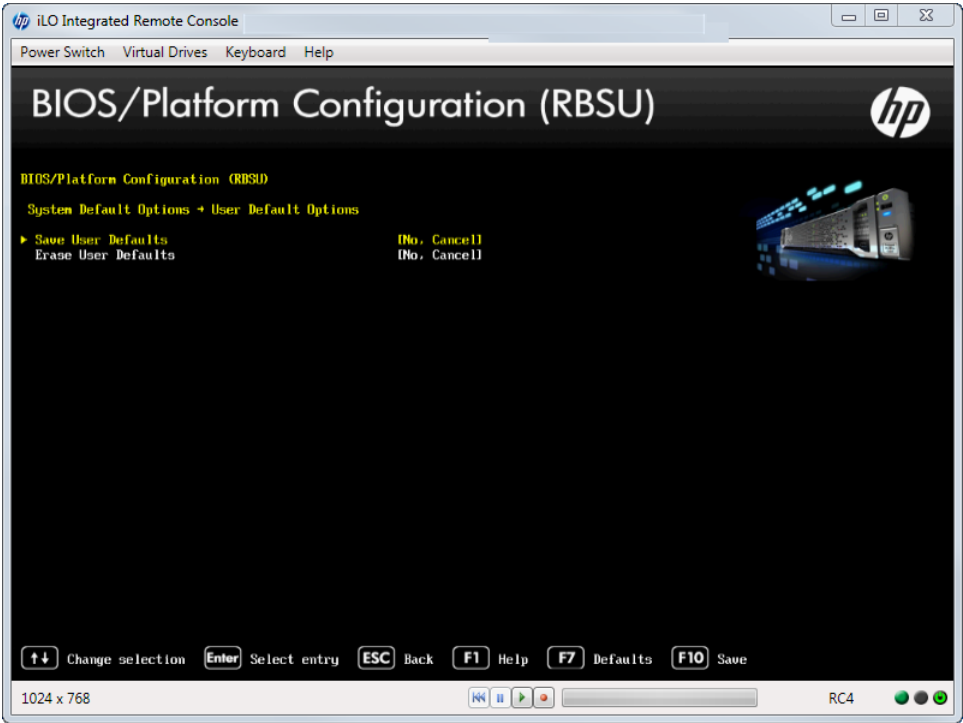
Saving Default Settings

You can configure default settings as necessary and then save the configuration as the custom default configuration. When the system loads the default settings, the custom default settings are used instead of the manufacturing defaults.

To save custom default settings:

1. From the **System Utilities** screen, select **System Configuration**→**BIOS/Platform Configuration (RBSU)**→**System Default Options**→**User Default Options** and press **Enter**.
2. Select one of the following options:
 - **Save User Defaults**—Saves the current settings as the system default settings.
 - **Erase User Defaults**—Erases the current user-defined default settings. Once deleted, you can only restore these setting manually.
3. Press **F10** to save your selections.

Figure 111 System Default Options — User Default Options screen



4 Accessing Smart Array Controllers

You can access Smart Array Controllers and view device information. HP 12Gb/s capable SAS Smart Array controllers (for example, HP Smart Array P430, P431, P731m, and P830 Controllers) support UEFI-based servers. For more information, see the HP Smart Array Controllers compatibility matrix at www.hp.com/go/smartarray/gen8compat.

To view information about Smart Array Controllers:

1. From the **System Utilities** screen, select **System Configuration**→**Embedded SAS : Smart Array P830i Controller** and press **Enter**.
2. Select **Device Information** and press **Enter** to view firmware version, firmware release date, UEFI Driver version, PCI device ID, and PCI Slot number.
3. Select **Enable/Disable Smart Array Debug Messages** to view debug messages. An X in the box indicates that the option is enabled.
4. Select **Exit and launch HP Smart Storage Administrator (HPSSA)** to access configuration options for HPSSA where you can configure and monitor the status of Smart Array controllers.

Figure 112 Smart Array P830i Controller screen

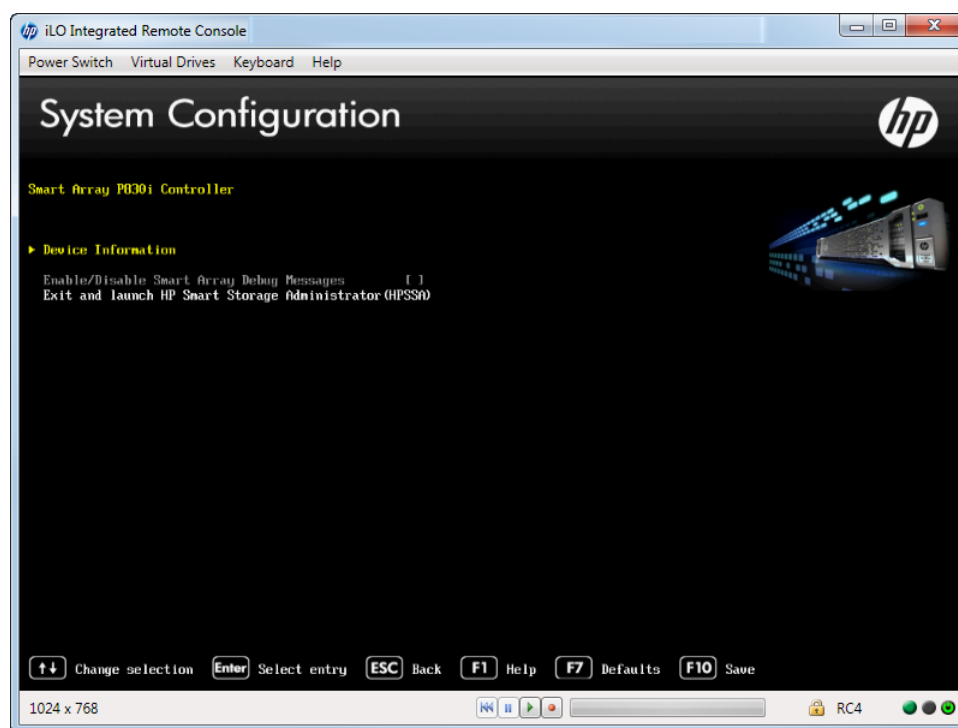


Figure 113 Smart Array P830i Controller screen — Device Information



5 Using the iLO 4 Configuration Utility

The iLO 4 Configuration Utility is available in the HP UEFI System Utilities. iLO 4 Configuration Utility has the following options:

- **Network Options**
- **Advanced Network Options**
- **User Management**
- **Setting Options**
- **About**
- **Set to Factory Defaults**

For more information, see the *HP iLO 4 User Guide*.

Accessing the iLO 4 Configuration Utility menu

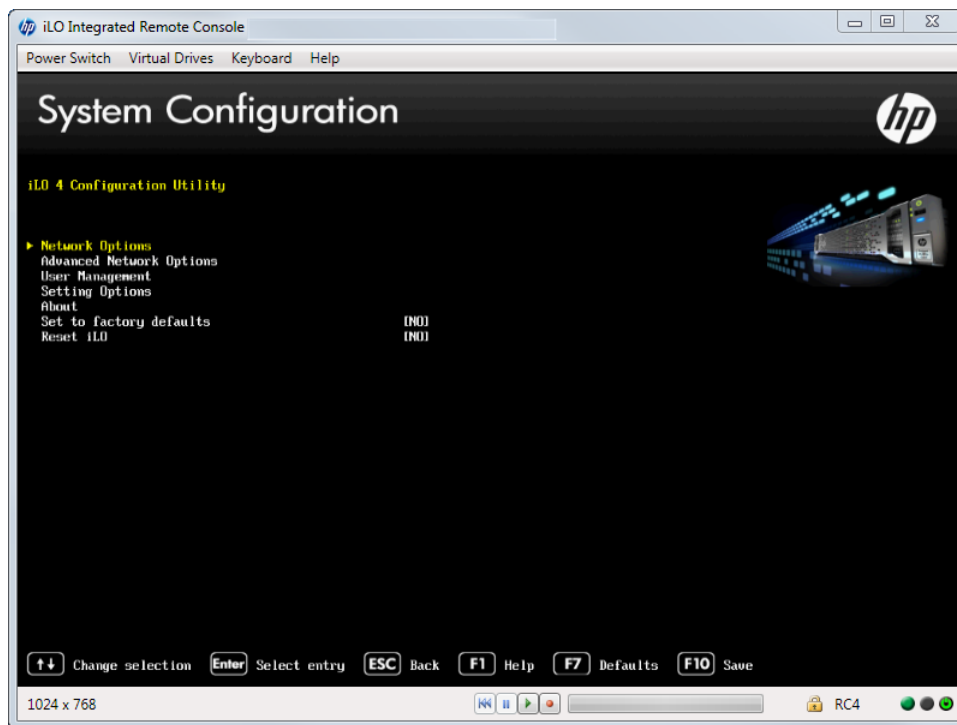
The iLO 4 Configuration Utility is embedded in the system ROM of HP ProLiant servers that support UEFI. This utility allows you to configure iLO 4 settings.

You can access the iLO 4 Configuration Utility from the physical system console, or by using an iLO remote console session.

To access the **iLO 4 Configuration Utility** menu:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.
4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**.
The **iLO 4 Configuration Utility** screen appears.

Figure 114 iLO 4 Configuration Utility screen



5. Select an option, and then press **Enter**.

You can use the iLO 4 Configuration Utility to perform the following tasks:

- “Configuring Network Options” (page 124)
- “Configuring Advanced Network Options” (page 126)
- “Managing iLO users by using the iLO 4 Configuration Utility” (page 128)
- “Configuring access settings by using the iLO 4 Configuration Utility” (page 131)
- “Viewing information about iLO” (page 133)
- “Resetting iLO to the factory default settings by using the iLO 4 Configuration Utility” (page 134)
- “Resetting iLO by using the iLO 4 Configuration Utility” (page 136)

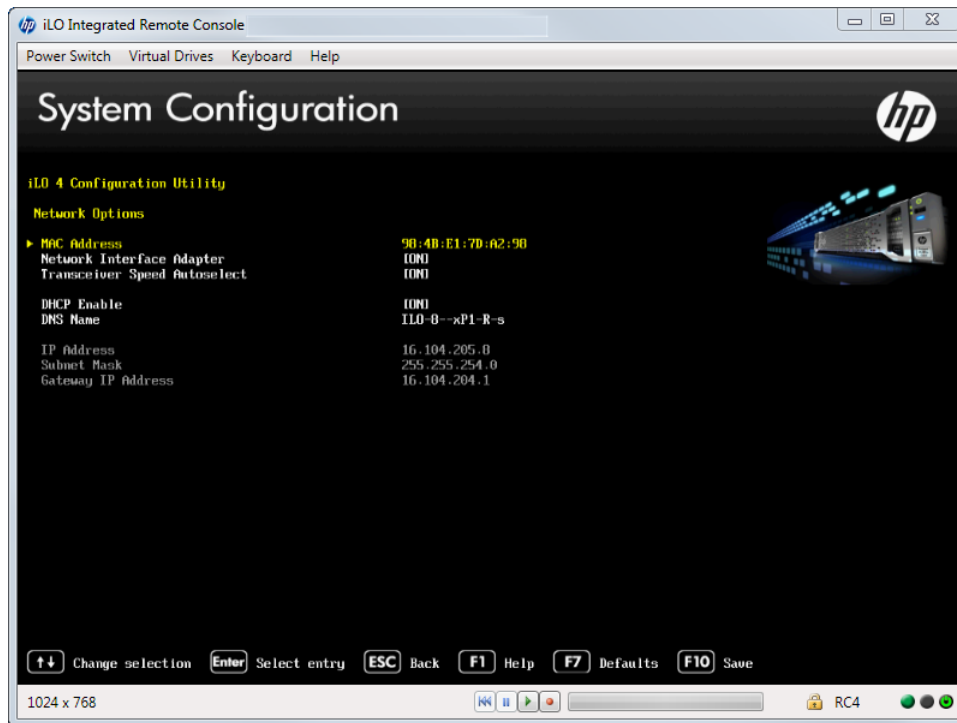
Configuring Network Options

You can use the iLO 4 Configuration Utility **Network Options** menu to configure basic iLO network options.

To configure iLO network options:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.
4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**Network Options**.
The **Network Options** screen appears.

Figure 115 Network Options screen



5. View or update the following values, as needed:

- **MAC Address** (read-only)—The MAC address of the selected iLO network interface.
- **Network Interface Adapter**—Specifies the iLO network interface adapter to use. Select **ON** to enable the iLO Dedicated Network Port. Select **Shared Network Port** to use the Shared Network Port. Selecting **OFF** disables all network interfaces to iLO.
The Shared Network Port option is available only on supported servers.
For more information about the iLO NIC settings, see the *HP iLO 4 User Guide*.
- **Transceiver Speed Autoselect** (iLO Dedicated Network Port only)—Enables iLO to negotiate the highest supported link speed and duplex settings when connected to the network. This option is available only when **Network Interface Adapter** is set to **ON**.
- **Transceiver Speed Manual Setting** (iLO Dedicated Network Port only)—Sets the link speed for the iLO network interface. This option is available only when **Network Interface Adapter** is set to **ON** and **Transceiver Speed Autoselect** is set to **OFF**.
- **Transceiver Duplex Setting** (iLO Dedicated Network Port only)—Sets the link duplex setting for the iLO network interface. This option is available only when **Network Interface Adapter** is set to **ON** and **Transceiver Speed Autoselect** is set to **OFF**.
- **VLAN Enable** (Shared Network Port only)—Enables the VLAN feature.
When the Shared Network Port is active and VLAN is enabled, the iLO Shared Network Port becomes part of a VLAN. All network devices with different VLAN tags will appear to be on separate LANs, even if they are physically connected to the same LAN. This option is available only when **Network Interface Adapter** is set to **Shared Network Port**.
- **VLAN ID** (Shared Network Port only)—If you enabled VLAN, enter a VLAN tag. All network devices that you want to communicate with each other must have the same VLAN tag. The VLAN tag can be any number between 1 and 4094. This option is available only when **Network Interface Adapter** is set to **Shared Network Port**.
- **DHCP Enable**—Configures iLO to obtain its IP address (and many other settings) from a DHCP server.

- **DNS Name**—The DNS name of the iLO subsystem (for example, `ilo` instead of `ilo.example.com`).
This name can be used only if DHCP and DNS are configured to connect to the iLO subsystem name instead of the IP address.
- **IP Address**—The iLO IP address. If DHCP is used, the iLO IP address is supplied automatically. If DHCP is not used, enter a static IP address.
- **Subnet Mask**—The subnet mask of the iLO IP network. If DHCP is used, the subnet mask is supplied automatically. If DHCP is not used, enter a subnet mask for the network.
- **Gateway IP Address**—The iLO gateway IP address. If DHCP is used, the iLO gateway IP address is supplied automatically. If DHCP is not used, enter the iLO gateway IP address.

6. Press **F10** to save your changes.
7. Press **Esc** until the main menu is displayed.
8. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
9. When prompted to confirm the request, press **Enter** to exit the utility and resume the boot process.

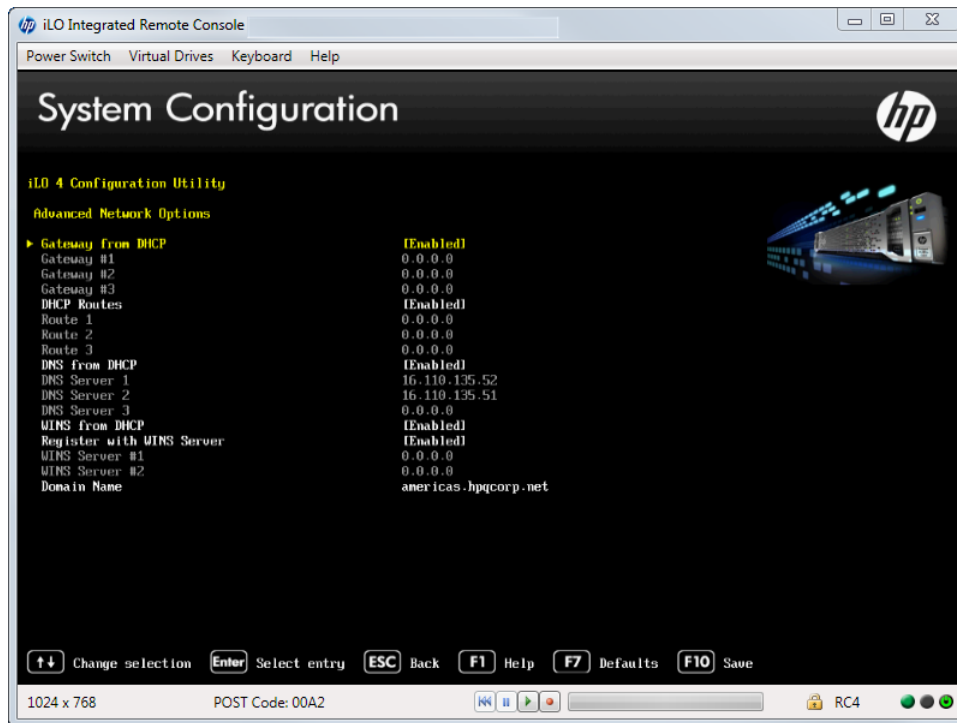
Configuring Advanced Network Options

You can use the iLO 4 Configuration Utility **Advanced Network Options** menu to configure advanced iLO network options.

To configure advanced iLO network options:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.
4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**Advanced Network Options**.
The **Advanced Network Options** screen appears.

Figure 116 Advanced Network Options screen



5. View or update the following values, as needed:
 - **Gateway from DHCP**—Specifies whether iLO uses a DHCP server-supplied gateway.
 - **Gateway #1**, **Gateway #2**, and **Gateway #3**—If **Gateway from DHCP** is disabled, enter up to three iLO gateway IP addresses.
 - **DHCP Routes**—Specifies whether iLO uses the DHCP server-supplied static routes.
 - **Route 1**, **Route 2**, and **Route 3**—If **DHCP Routes** is disabled, enter the iLO static route destination, mask, and gateway addresses.
 - **DNS from DHCP**—Specifies whether iLO uses the DHCP server-supplied DNS server list.
 - **DNS Server 1**, **DNS Server 2**, **DNS Server 3**—If **DNS from DHCP** is disabled, enter the primary, secondary, and tertiary DNS servers.
 - **WINS from DHCP**—Specifies whether iLO uses the DHCP server-supplied WINS server list.
 - **Register with WINS Server**—Specifies whether iLO registers its name with a WINS server.
 - **WINS Server #1** and **WINS Server #2**—If **WINS from DHCP** is disabled, enter the primary and secondary WINS servers.
 - **Domain Name**—The iLO domain name. If DHCP is not used, enter a domain name.
6. Press **F10** to save the changes.
7. Press **Esc** until the main menu is displayed.
8. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
9. When prompted to confirm the request, press **Enter** to exit the utility and resume the normal boot process.

Managing iLO users by using the iLO 4 Configuration Utility

You can use the iLO 4 Configuration Utility to perform the following user management tasks:

- “Adding user accounts” (page 128)
- “Editing or removing user accounts” (page 130)

Adding user accounts

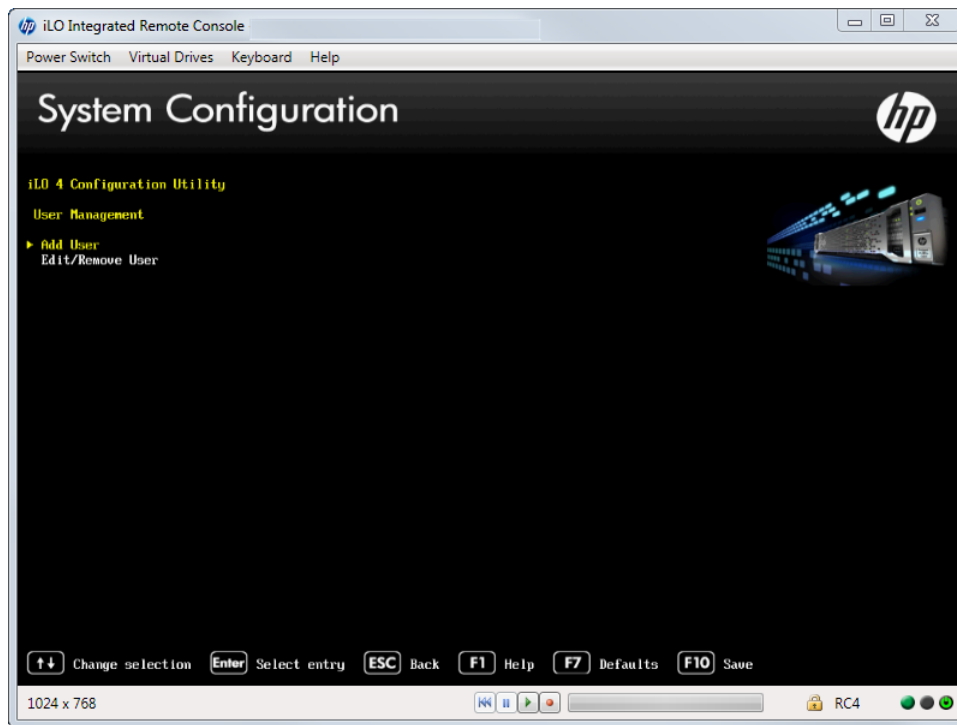
You can use the iLO 4 Configuration Utility **User Management** menu to configure local iLO user accounts.

To add local iLO user accounts:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.
4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**User Management**.

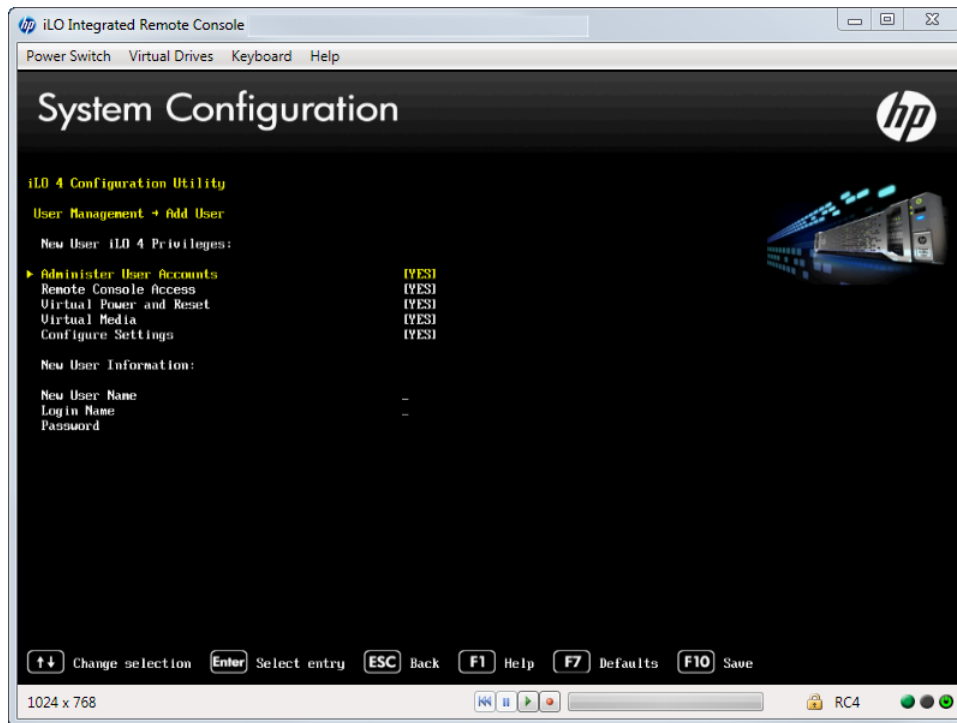
The **User Management** screen appears.

Figure 117 User Management screen



5. Select **Add User**, and then press **Enter**.
The **User Management**→**Add User** screen appears.

Figure 118 Configuring user account properties



6. Select from the following iLO privileges. To enable a privilege, set it to **YES**. To disable a privilege, set it to **NO**.
 - **Administer User Accounts**—Enables a user to add, edit, and delete local iLO user accounts. A user with this privilege can change privileges for all users. If you do not have this privilege, you can view your own settings and change your own password.
 - **Remote Console Access**—Enables a user to remotely access the host system Remote Console, including video, keyboard, and mouse control.
 - **Virtual Power and Reset**—Enables a user to power-cycle or reset the host system. These activities interrupt the system availability. A user with this privilege can diagnose the system by using the **Generate NMI to System** button.
 - **Virtual Media**—Enables a user to use the Virtual Media feature on the host system.
 - **Configure Settings**—Enables a user to configure most iLO settings, including security settings, and to remotely update the iLO firmware. This privilege does not enable local user account administration.
7. Enter the following user account details:
 - **New User Name** appears in the user list on the **User Administration** page. It does not have to be the same as the **Login Name**. The maximum length for a user name is 39 characters. The user name must use printable characters. Assigning descriptive user names can help you to easily identify the owner of each login name.
 - **Login Name** is the name you must use when logging in to iLO. It appears in the user list on the **User Administration** page, on the **iLO Overview** page, and in iLO logs. The **Login Name** does not have to be the same as the **User Name**. The maximum length for a login name is 39 characters. The login name must use printable characters.
 - **Password** and **Password Confirm** set and confirm the password that is used for logging in to iLO. The maximum length for a password is 39 characters. Enter the password twice for verification.
8. Create as many user accounts as needed, and then press **F10** to save the changes.
9. Press **Esc** until the main menu is displayed.

10. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
11. When prompted to confirm the request, press **Enter** to exit the utility and resume the boot process.

Editing or removing user accounts

You can use the iLO 4 Configuration Utility **User Management** menu to edit or remove local iLO user accounts.

To edit or remove a local iLO user account:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.

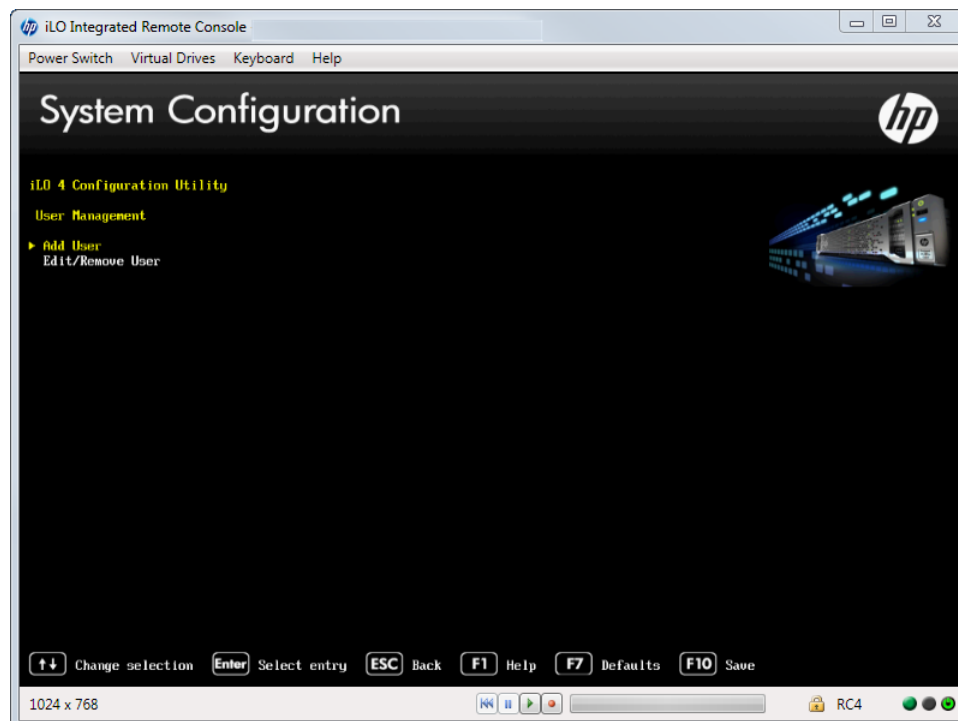
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.

The **System Utilities** screen appears.

4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**User Management**.

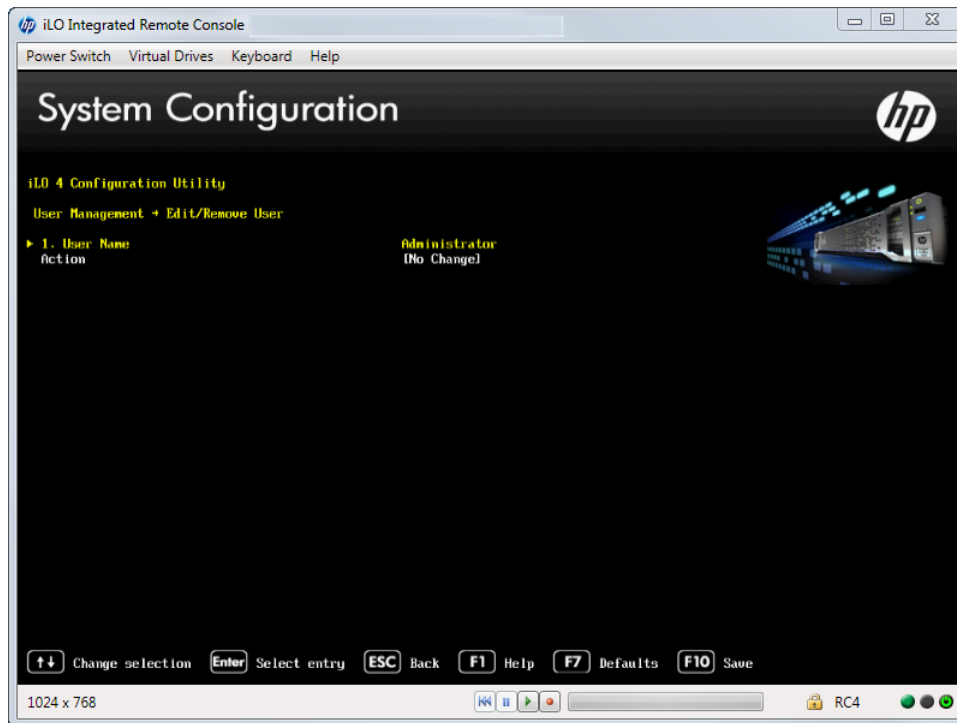
The **User Management** screen appears.

Figure 119 User Management screen



5. Select **Edit/Remove User**, and then press **Enter**.
The **User Management**→**Edit/Remove User** screen appears.

Figure 120 Editing or removing user accounts



6. Locate the user name that you want to edit or delete, select the **Action** menu for that user name, and then press **Enter**.
7. Select one of the following, and then press **Enter**.
 - **No Change**—Returns you to the main menu.
 - **Delete**—Deletes this user.
 - **Edit**—Edits the user.
8. Depending on your selection in [step 7](#), do one of the following:
 - If you selected **No Change**, no further action is needed.
 - If you selected **Delete**, the user name is marked to be deleted when you save the changes on this page.
 - If you selected **Edit**, update the login name, password, or user permissions.
9. Update as many user accounts as needed, and then press **F10** to save the changes.
10. Press **Esc** until the main menu is displayed.
11. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
12. When prompted to confirm the request, press **Enter** to exit the utility and resume the boot process.

Configuring access settings by using the iLO 4 Configuration Utility

You can use the iLO 4 Configuration Utility **Setting Options** menu to configure iLO access settings.

To configure iLO access settings:

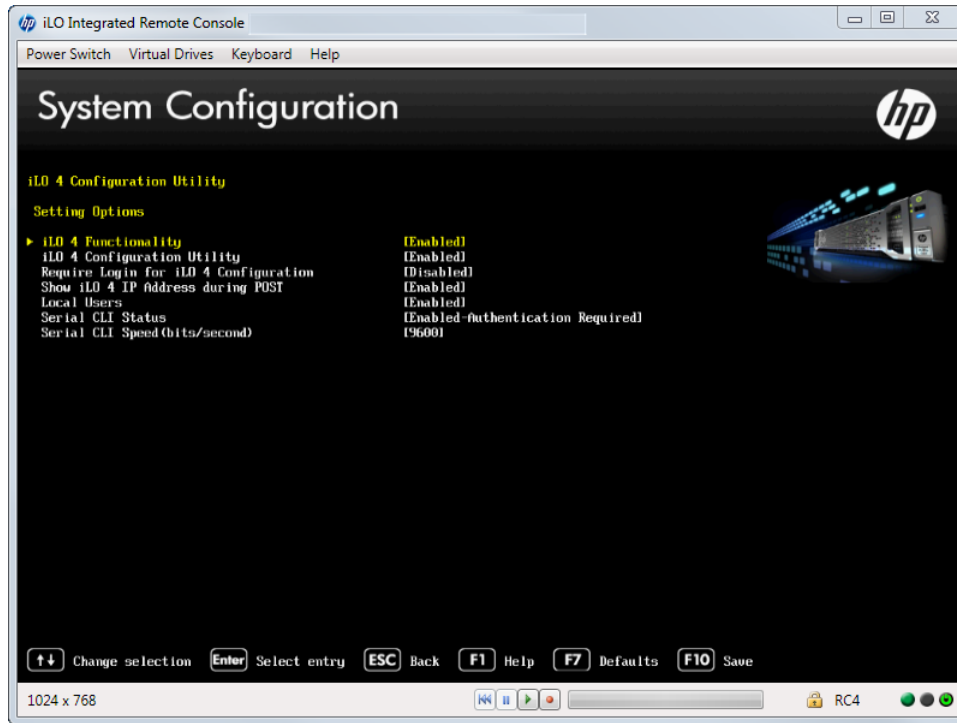
1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.

The **System Utilities** screen appears.

4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**Setting Options**.

The **Setting Options** screen appears.

Figure 121 Setting Options screen



5. View or update the following values, as needed:

- **iLO 4 Functionality**—The iLO network and communications with operating system drivers are terminated when iLO functionality is disabled.

To re-enable iLO functionality, disable iLO security with the system maintenance switch, and then use the iLO 4 Configuration Utility to set **iLO Functionality** to **Enabled**.

- For more information about using the system maintenance switch, see the *Maintenance and Service Guide* for your server model.

NOTE: The iLO functionality cannot be disabled on blade servers.

- **iLO 4 Configuration Utility**—Enables or disables the iLO 4 Configuration Utility. If this option is set to **Disabled**, the iLO 4 Configuration Utility menu item is not available when you access the UEFI System Utilities.
- **Require Login for iLO 4 Configuration**—Determines whether a user-credential prompt is displayed when a user accesses the iLO 4 Configuration Utility. If this setting is **Enabled**, a login dialog box opens when you access the iLO 4 Configuration Utility.
- **Show iLO 4 IP Address during POST**—Enables the display of the iLO network IP address during host server POST.
- **Local Users**—Enables or disables local user account access.

- **Serial CLI Status**—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**—Enables access to the iLO CLP from a terminal connected to the host serial port. Valid iLO user credentials are required.
 - **Enabled-No Authentication Required**—Enables access to the iLO CLP from a terminal connected to the host serial port. iLO user credentials are not required.
 - **Disabled**—Disables access to the iLO CLP from the host serial port. Use this option if you are planning to use physical serial devices.
- **Serial CLI Speed (bits/second)**—This setting lets you change the speed of the serial port for the CLI feature. The following speeds (in bits per second) are valid: **9600**, **19200**, **57600**, and **115200**. You need to set the serial port configuration to no parity, 8 data bits, and 1 stop bit (N/8/1) for correct operation.

NOTE: The 38400 speed is supported in the iLO web interface, but is not currently supported by the iLO 4 Configuration Utility.

6. Press **F10** to save the changes.
7. Press **Esc** until the main menu is displayed.
8. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
9. When prompted to confirm the request, press **Enter** to exit the utility and resume the boot process.

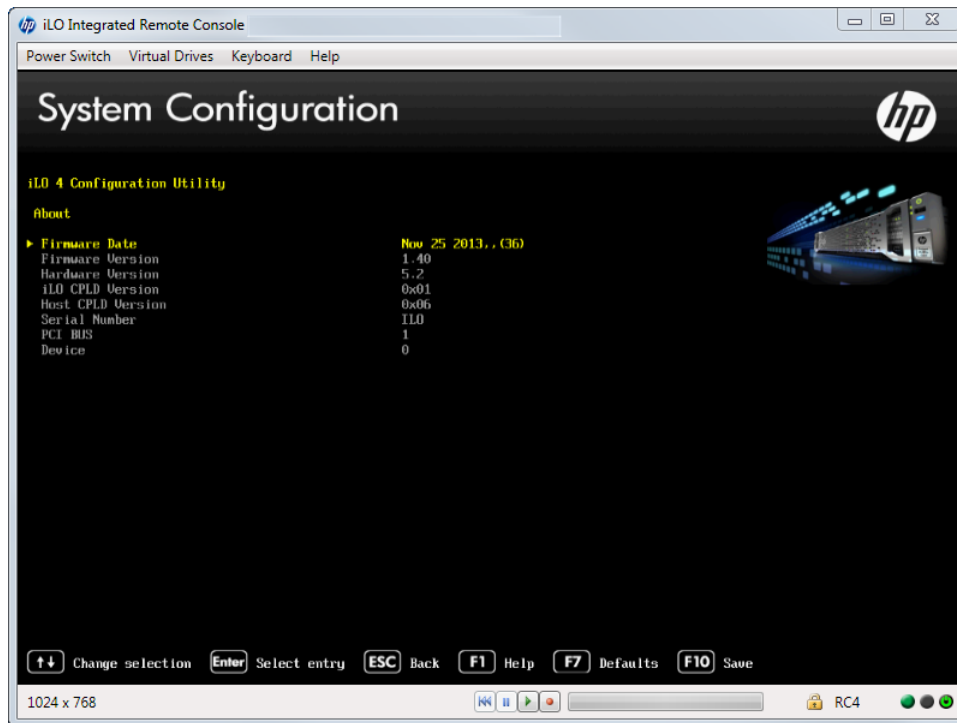
Viewing information about iLO

You can use the iLO 4 Configuration Utility **About** menu to view iLO information.

To view iLO information:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.
4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**About**.
The **About** screen appears.

Figure 122 About screen



This screen includes the following information:

- **Firmware Date**—The iLO firmware revision date.
 - **Firmware Version**—The iLO firmware version.
 - **iLO CPLD Version**—The iLO complex programmable logic device version.
 - **Host CPLD Version**—The ProLiant server complex programmable logic device version.
 - **Serial Number**—The iLO serial number.
 - **RBSU Date**—The iLO 4 Configuration Utility revision date.
 - **PCI BUS**—The PCI bus to which the iLO processor is attached.
 - **Device**—The device number assigned to iLO in the PCI bus.
5. Press **Esc** until the main menu is displayed.
 6. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
 7. When prompted to confirm the request, press **Enter** to exit the utility and resume the boot process.

Resetting iLO to the factory default settings by using the iLO 4 Configuration Utility

You can use the iLO 4 Configuration Utility **Set to Factory Defaults** menu to reset iLO to the factory default settings.

To reset iLO to the factory default settings:

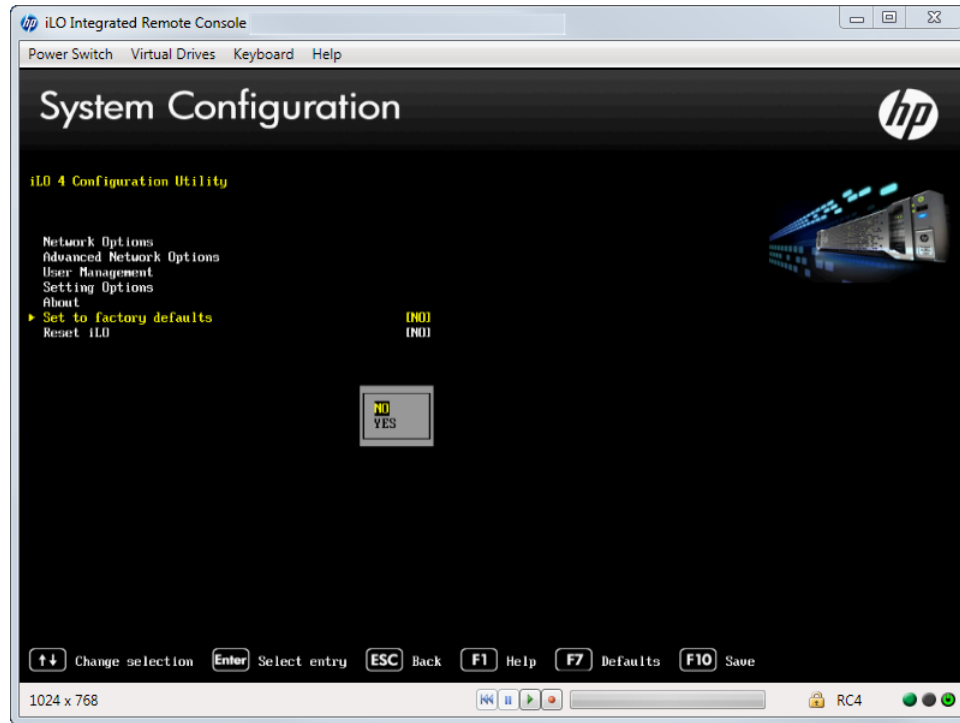
CAUTION: This operation clears all user and license data.

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.

4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**Set to factory defaults**.

The iLO 4 Configuration Utility prompts you to select **YES** or **NO**.

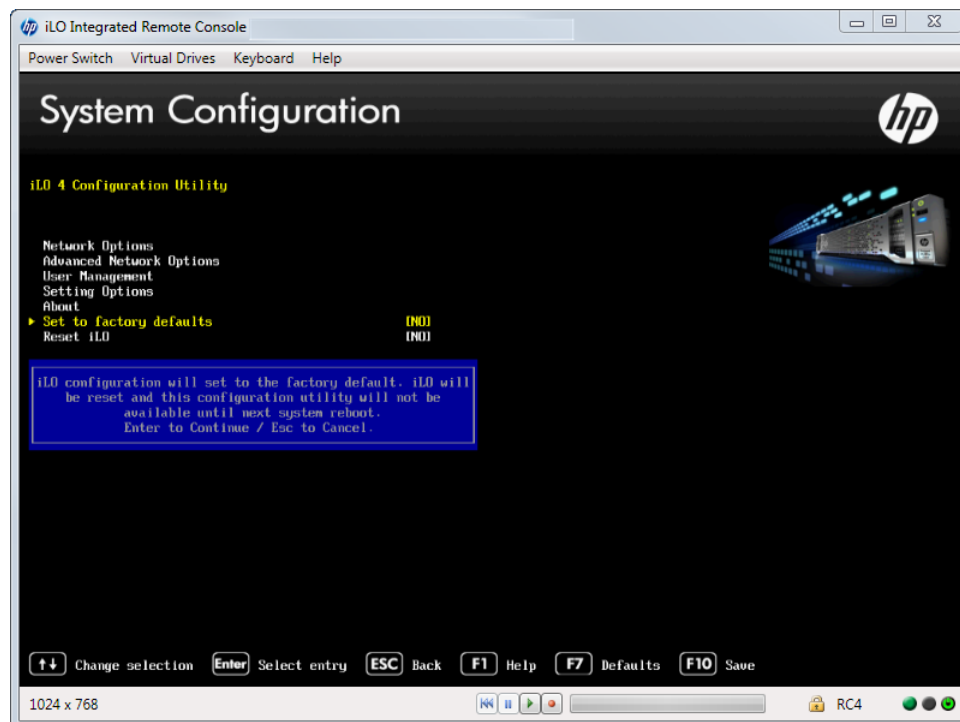
Figure 123 Set to factory defaults screen



5. Select **YES**, and then press **Enter**.

The iLO 4 Configuration Utility prompts you to confirm the reset request.

Figure 124 Set to factory defaults confirmation screen



The iLO system is reset, and you cannot access the iLO 4 Configuration Utility until after the next system reboot.

You can press **Enter** to confirm, or press **Esc** to cancel.

6. Press **Enter**.

iLO resets to the factory default settings. If you are managing iLO remotely, the remote console session is automatically ended.

7. Resume the boot process:

- a. Optional: If you are managing iLO remotely, wait for the iLO reset to finish, and then start the iLO remote console.

The iLO 4 Configuration Utility screen is still open from the previous session.

- b. Press **Esc** until the main menu is displayed.
- c. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
- d. When prompted to confirm the request, press **Enter** to exit the screen and resume the boot process.

NOTE: If a server has an installed iLO Advanced license when you perform this procedure, the iLO Advanced icon might be selected when the server boot process finishes. The icon will be set correctly after POST completes, or after the server is shut down, powered off, and then powered on again.

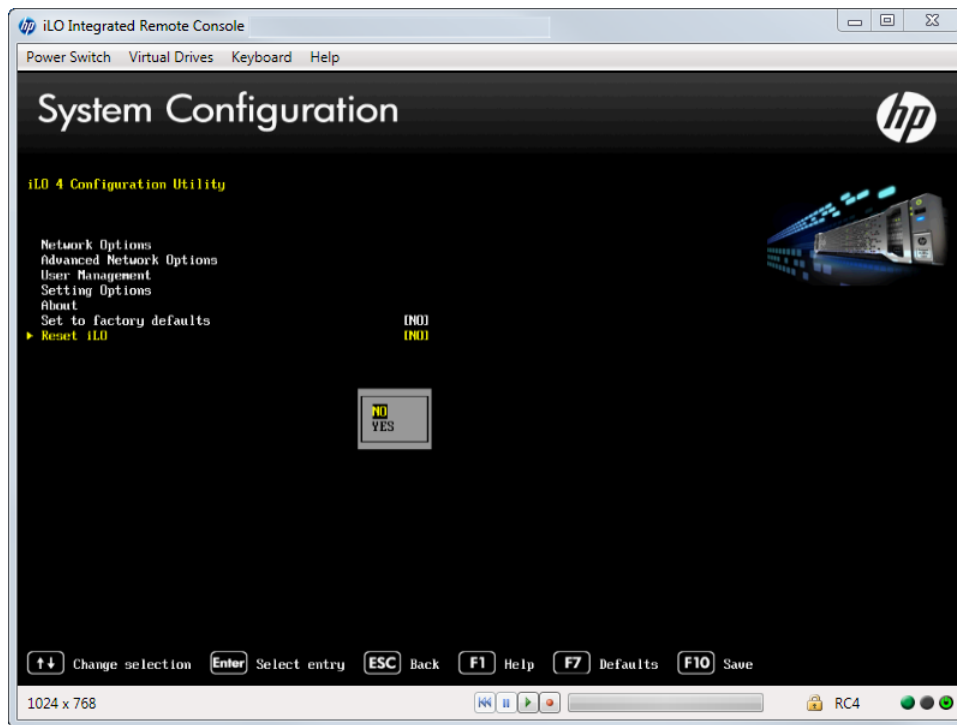
Resetting iLO by using the iLO 4 Configuration Utility

If iLO is slow to respond, you can use the iLO 4 Configuration Utility **Reset iLO** menu to perform a reset.

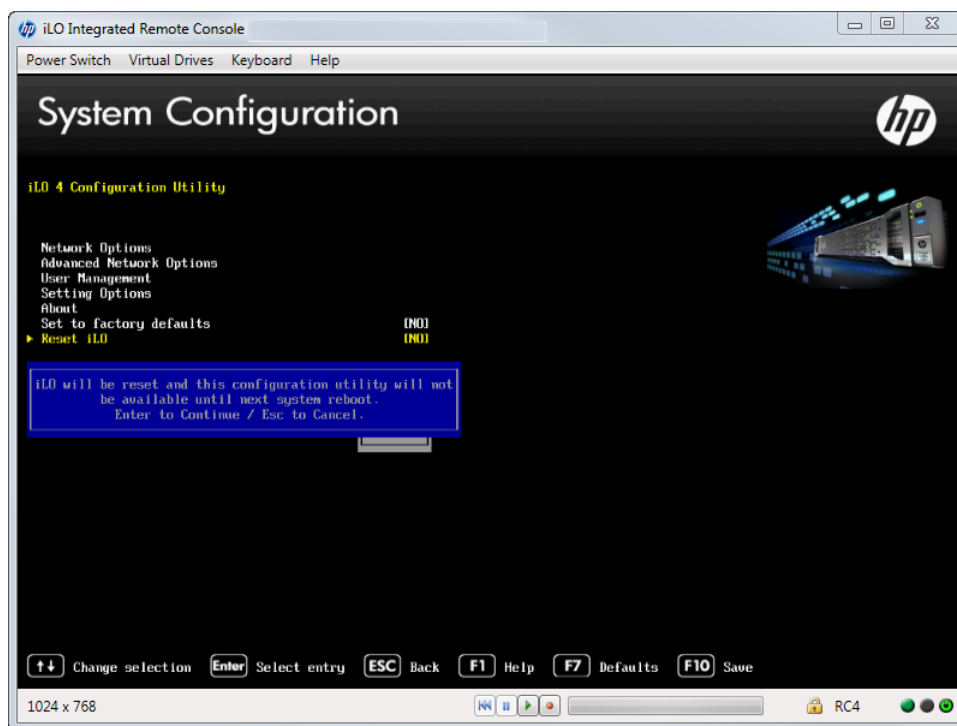
Resetting iLO does not make any configuration changes, but it ends all active connections to iLO. You must have the Configure iLO Settings privilege to reset iLO using this method.

To reset iLO:

1. Optional: If you access the server remotely, start an iLO remote console session.
You can use the .NET IRC or Java IRC.
2. Restart or power on the server.
3. Press **F9** in the HP ProLiant POST screen.
The **System Utilities** screen appears.
4. From the **System Utilities** screen, select **System Configuration**→**iLO 4 Configuration Utility**→**Reset iLO**.
The iLO 4 Configuration Utility prompts you to select **YES** or **NO**.



5. Select **YES**, and then press **Enter**.
The iLO 4 Configuration Utility prompts you to confirm the reset request.



- When you reset iLO, the iLO 4 Configuration Utility is not available again until the next reboot.
6. Press **Enter**.
iLO resets. If you are managing iLO remotely, the remote console session is automatically ended.

7. Resume the boot process:
 - a. Optional: If you are managing iLO remotely, wait for the iLO reset to finish, and then start the iLO remote console.

The UEFI System Utilities are still open from the previous session.
 - b. Press **Esc** until the main menu is displayed.
 - c. Select **Exit and Resume Boot** in the main menu, and then press **Enter**.
 - d. When prompted to confirm the request, press **Enter** to exit the utility and resume the normal boot process.

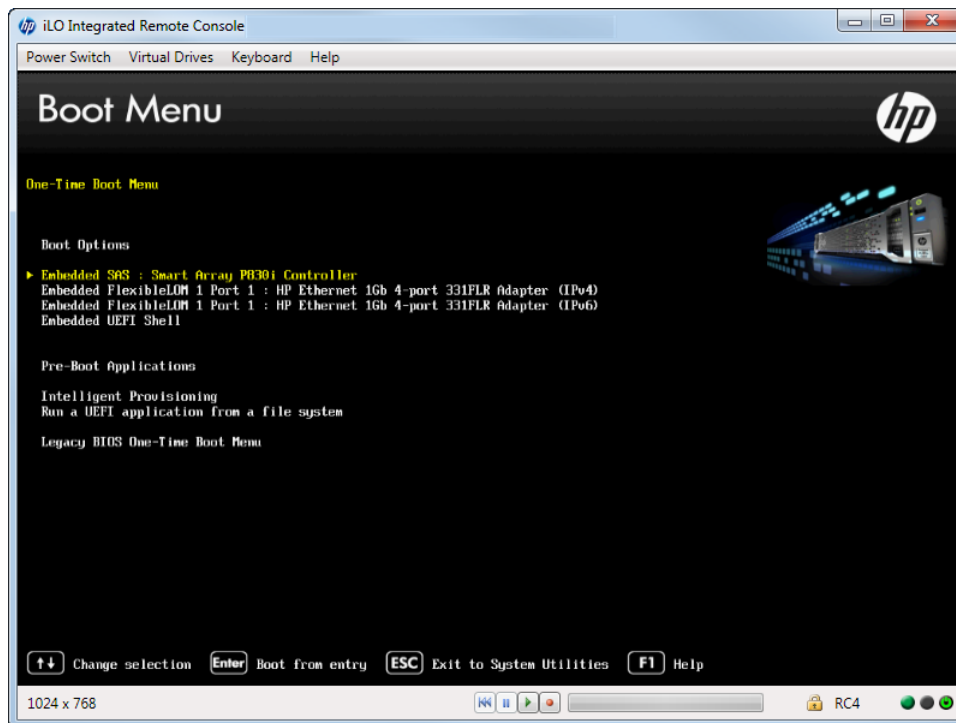
6 Configuring a One-Time Boot Menu

You can select a UEFI boot option for a one-time boot override. This option does not modify your predefined boot order settings.

To configure a One-Time boot menu:

1. From the **System Utilities** screen, select **One-Time Boot Menu** and press **Enter**.
2. Select one of the following options:
 - **Embedded UEFI Shell**—Select this option to exit System Utilities and display the Embedded UEFI Shell prompt. From the Shell prompt, you can enter the `Exit` command to return to the System Utilities.
 - **Intelligent Provisioning**—Select this option to exit and launch Intelligent Provisioning. You can choose a specific boot override option for this boot only. This option does not modify your boot order settings.
 - **Run a UEFI Application from a file system**—Select this option to run a UEFI application from a file system. You can browse all FAT file systems that are available in the system. You can also select an X64 UEFI application (with a `.EFI` extension) to execute (can be an OS boot loader or any other UEFI application).
 - **Legacy BIOS One-Time Boot menu**—Select this option to exit and launch the Legacy BIOS One-Time Boot menu. You can choose a specific override option for this boot only. This option does not modify your boot order mode settings. You need to reboot the server for this change to take effect.
3. Press **F10** to save your selection.

Figure 125 One-Time Boot Menu screen



Accessing the Embedded UEFI Shell

You can access the Embedded UEFI Shell screen at any time. Before accessing the Embedded UEFI Shell, ensure you have selected **UEFI Mode** from the Boot Options menu. See [“Selecting a Boot](#)

Mode” (page 41) for details. You also need to enable **Embedded UEFI Shell** from the UEFI Shell Options menu. See “Enabling the Embedded UEFI Shell” (page 30) for details.

To access the Embedded UEFI Shell:

1. From the **System Utilities** screen, select **One-Time Boot Menu** and press **Enter**.
2. Select **Embedded UEFI Shell** and press **Enter**. You are taken to the Embedded UEFI Shell command screen.
3. Enter the `exit` command to exit the Shell.

For information on running commands, see the *HP UEFI Shell User Guide*.

Figure 126 One Time Boot Menu — Embedded UEFI Shell screen

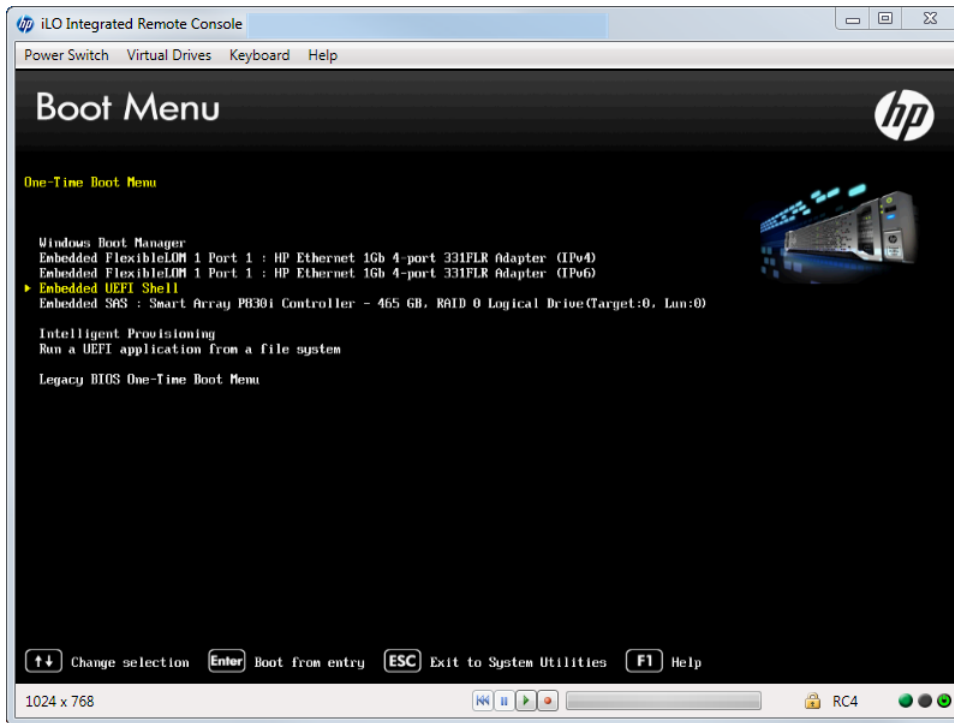
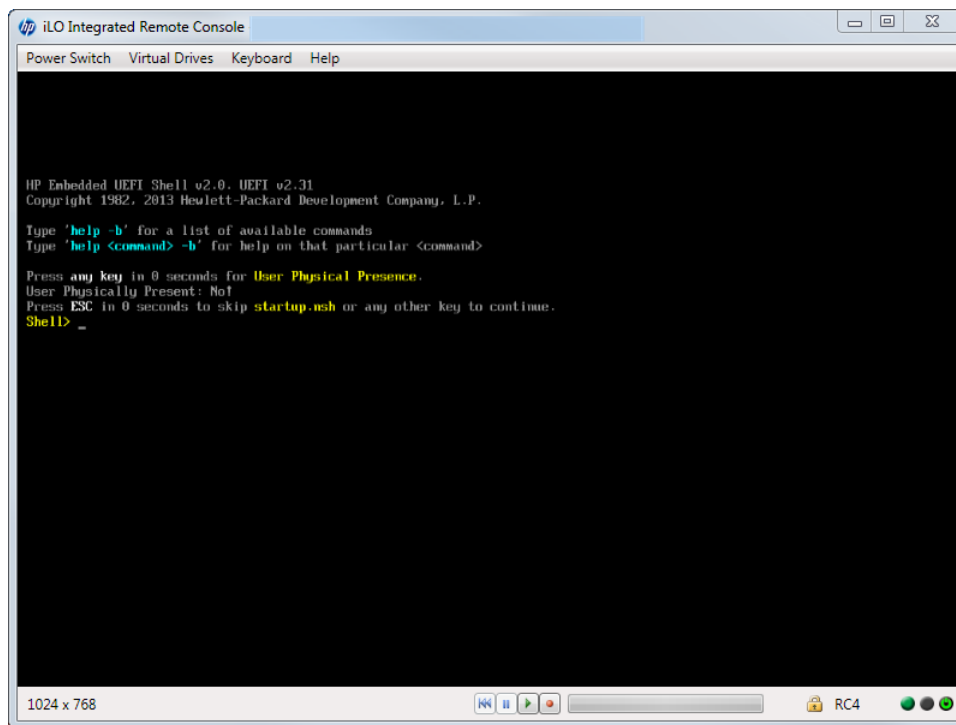


Figure 127 Shell Command Prompt



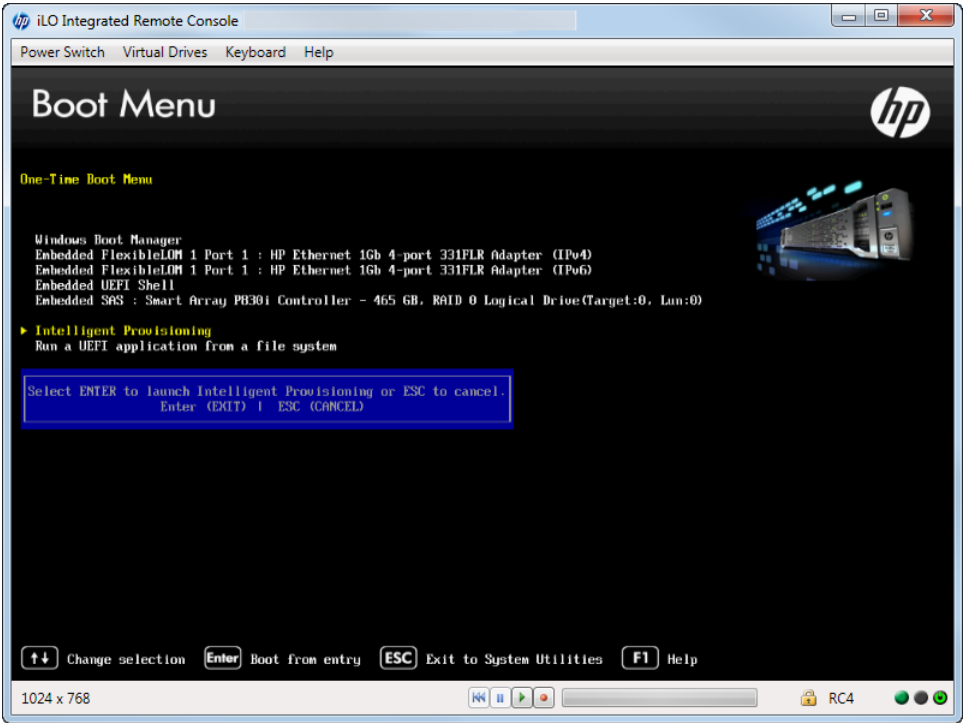
Intelligent Provisioning (F10 Prompt)

Intelligent Provisioning is an essential single-server deployment tool embedded in HP ProLiant Gen8 servers that simplifies HP ProLiant server setup, providing a reliable and consistent way to deploy HP ProLiant server configurations. This option lets you select the Intelligent Provisioning host override option for this boot only. This option does not modify the normal boot order or boot mode settings. For more information, see the *HP Intelligent Provisioning User Guide* on the HP web site (<http://www.hp.com/go/intelligentprovisioning/docs>).

To launch Intelligent Provisioning:

1. From the **System Utilities** screen, select **One-Time Boot Menu** and press **Enter**.
2. Select **Intelligent Provisioning** and press **Enter** to launch Intelligent Provisioning or **ESC** to cancel.

Figure 128 One-Time Boot Menu — Intelligent Provisioning screen



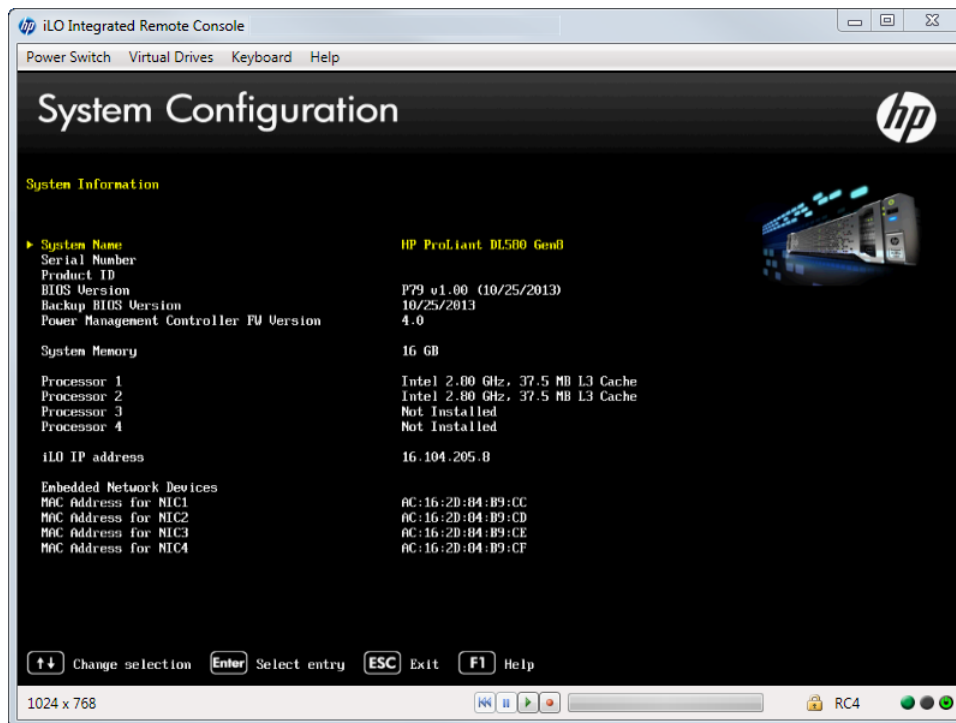
7 Viewing System Information

The System Information menu lets you scan server details and check that the firmware version was updated after applying an update.

To view system information:

1. From the **System Utilities** screen, select **System Information** and press **Enter**.
2. The following information appears:
 - System name and generation
 - Serial number
 - Product ID
 - BIOS Version
 - Backup BIOS version and date
 - Power Management Controller
 - System Memory (GB)
 - Processor 1 to 4
 - iLO IP Address

Figure 129 System Information screen



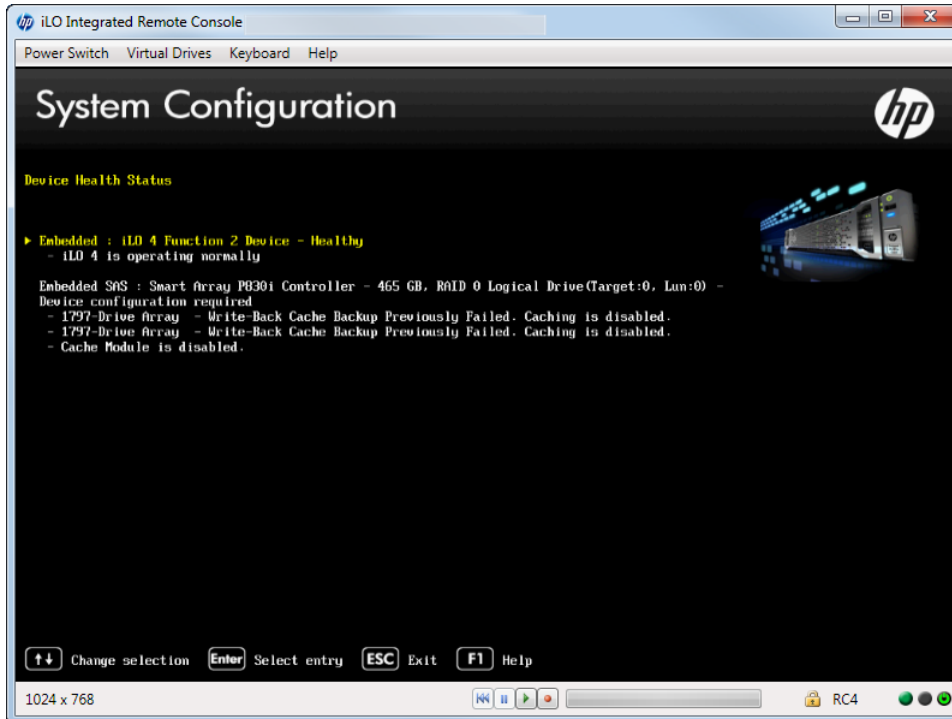
8 Viewing Device Health Status

You can check the health status of all devices in the system. For example, this screen could display the presence of an unsupported device found during the boot process.

To check device health status:

1. From the **System Utilities** screen, select **Device Health Status** and press **Enter**.
2. The following information appears:

Figure 130 Device Health Status screen



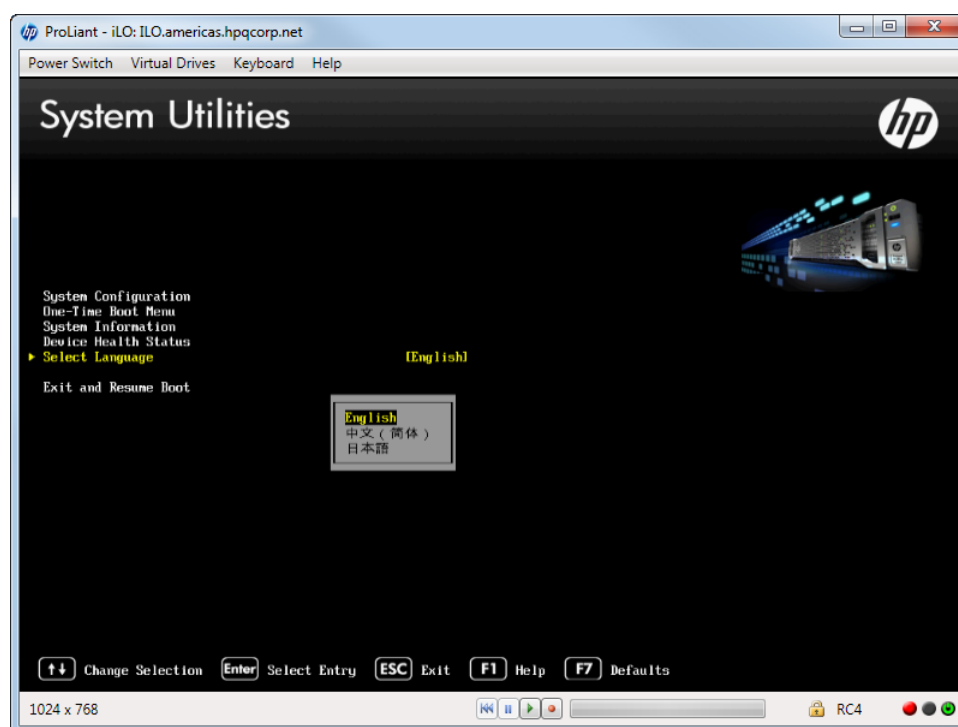
9 Selecting a Language

You can select the current language for the system. Choose from English, Japanese, or Simplified Chinese.

To select the language you want to use with the system:

1. From the **System Utilities** screen, select **Select Language** and press **Enter**.
2. Select one of the following options:
 - **English**
 - **Japanese**
 - **Simplified Chinese**
3. Press **F10** to save your selection.

Figure 131 Select Language screen



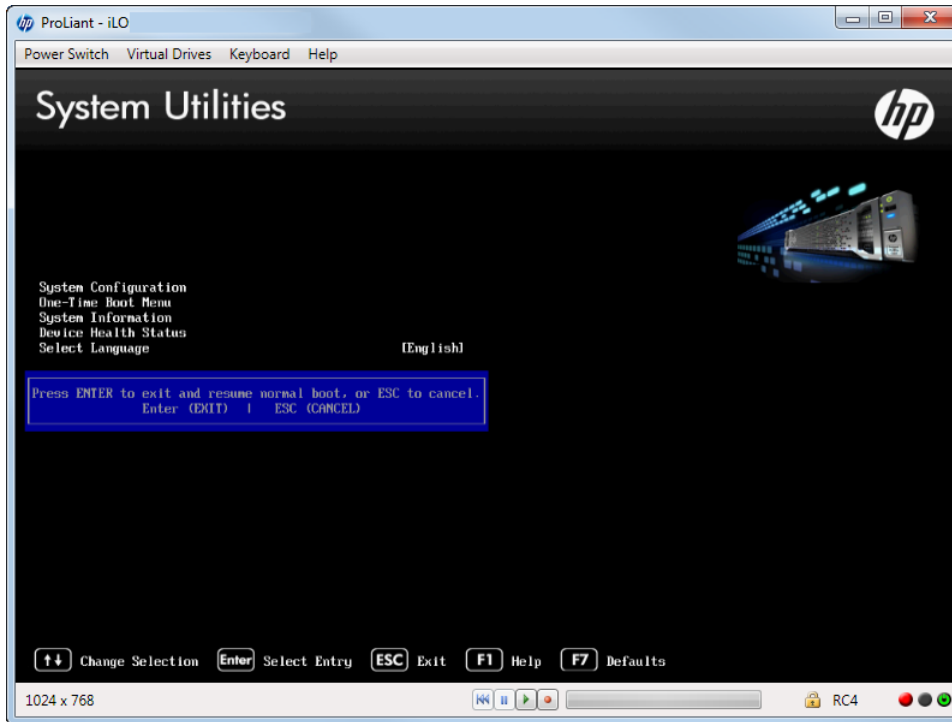
10 Exiting and Resuming Boot

You can exit the system and continue to go through boot order list and launch the first bootable option in the system. For example, you can launch the UEFI Shell, if enabled and registered as first bootable option in the boot order list.

To exit and resume boot:

1. From the **System Utilities** screen, select **Exit and Resume Boot** and press **Enter**. A confirmation message appears.
2. Press **Enter** to exit and resume normal boot.

Figure 132 Exit and Resume Boot screen



11 Configuration flows (manual and scripted)

Configuration flow overview

There are two ways to configure a server:

- “Manual configuration flow” (page 147)
- “Scripted configuration flow” (page 147)

Manual configuration flow

BIOS/Platform Configuration (RBSU) can be used to configure an HP server manually. When the server is powered up in an unconfigured state, BIOS/Platform Configuration (RBSU) executes when you press **F9**, to configure the server.

NOTE:

- Manual flow does not apply for servers with an integrated ATA RAID IDE controller.
- Manual flow is not necessary for servers with Embedded Server Setup.

After the server has been configured using the BIOS/Platform Configuration (RBSU):

1. Restart or power up the server.
2. Press **F9** to enter the System Utilities screen.
3. Select **BIOS Platform/Configuration (RBSU)** to configure BIOS settings.
4. Select **iLO 4** to configure iLO settings.

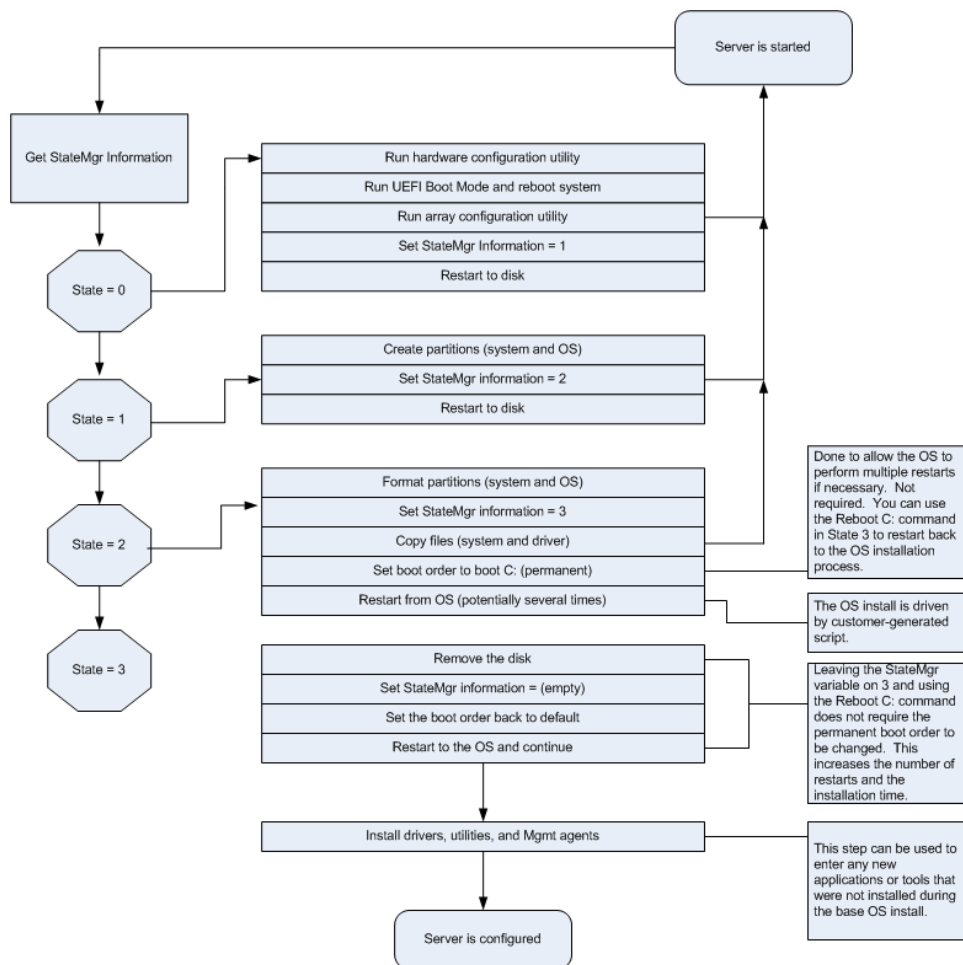
Scripted configuration flow

BIOS/Platform Configuration (RBSU) can be used with the Scripting Toolkit (STK) to create standard server configuration scripts to automate many of the manual steps in the server configuration process. The Scripting Toolkit can be found on the HP website (<http://www.hp.com/go/ProLiantSTK>).

The following utilities are provided in the toolkit:

- “Configuration Replication Utility (CONREP)” (page 148)
- “Array Configuration Replication Utility” (page 149)

Figure 133 Scripted Installation Flow



Configuration Replication Utility (CONREP)

CONREP with HP ProLiant DL580 Gen8 and other UEFI enabled servers is shipped in the Scripting Toolkit (STK) and is a utility that operates with the BIOS/Platform Configuration (RBSU) to replicate hardware configuration on ProLiant Gen8 servers. This utility is run during State 0, Run Hardware Configuration Utility when performing a scripted server deployment. CONREP reads the state of the system environment variables to determine the configuration and then writes the results to an editable script file. This file can then be deployed across multiple servers with similar hardware and software components. For more information, see the *HP Scripting Toolkit User Guide* for your operating system environment on the HP website (<http://www.hp.com/go/stk/docs>).

The following section provides information on using CONREP scripts:

- Restoring a configuration from a backup (“CONREP -I (Load from Data File) Example Usage for HP ProLiant servers not using the Oxx ROM family” (page 148))

CONREP -I (Load from Data File) Example Usage for HP ProLiant servers not using the Oxx ROM family

To load the BIOS configuration settings from a previously captured/edited data file (in this case `sl160zconrep.dat`) to an ProLiant Gen8 server:

```
[root@ilo002481b08134 conrep]# ./conrep -l -xconrepSL160zg6_20090728.xml -fsl160zconrep.dat
conrep 4.00 - Scripting Toolkit Configuration Replication Program
Copyright (c) 20013-2014 Hewlett-Packard Development Company, L.P.
System Type: ProLiant DL580 G8
ROM Date : 01/28/2014
```

```
ROM Family : 033
Processor Manufacturer : Intel
XML System Configuration : conrep_SL160zg6_20090728.xml
Hardware Configuration : sl160zconrep.dat
Loading configuration from sl160zconrep.dat.
ASM values not set! aborting
CONREP Return code: 0
```

Array Configuration Replication Utility

ACR is shipped in the Scripting Toolkit and is a replication utility used for RAID arrays. ACR is used during State 0, Run Array Configuration Utility when performing a scripted server deployment. It duplicates the host array controller configuration utilities and writes them onto an editable script file. This file is then loaded onto a startup diskette for deployment to other servers.

12 Support and other resources

Contacting HP

For worldwide technical support information, see the HP Support Center:

<http://www.hp.com/go/hpsc>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

Receive, by email, support alerts announcing product support communications, driver updates, software releases, firmware updates, and customer-replaceable component information by signing up at <http://www.hp.com/go/myadvisory>.

To change options for support alerts you already receive, click the **Sign in** link on the right.

Related information

The following documents provide related information:

- *HP UEFI Shell User Guide*
- *HP UEFI Release Notes*

You can find these documents at the following website:

<http://www.hp.com/go/ProLiantUEFI/docs>

Websites

- UEFI Specification: <http://www.uefi.org/specifications>
- UEFI Learning Resources: http://www.uefi.org/learning_center

Typographic conventions

Table 4 Document conventions

Convention	Element
Blue text: Table 4 (page 150)	• Cross-reference links and e-mail addresses • A cross reference to the glossary definition of the term in blue text
Blue, bold, underlined text	email addresses
Blue, underlined text: http://www.hp.com	Website addresses

Table 4 Document conventions *(continued)*

Convention	Element
Bold text	- Keys that are pressed - Text typed into a GUI element, such as a box - GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
<i>Italic</i> text	Text emphasis
Monospace text	- File and directory names - System output - Code - Commands, their arguments, and argument values
<i>Monospace, italic</i> text	- Code variables - Command variables
Monospace, bold text	Emphasized monospace text



WARNING! Indicates that failure to follow directions could result in bodily harm or death.



CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.



IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.



TIP: Provides helpful hints and shortcuts.

HP Insight Remote Support

HP strongly recommends that you register your device for remote support to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP Insight Remote Support supplements your monitoring continuously to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications can be sent to your authorized HP Channel Partner for onsite service, if configured and available in your country.

For more information, see *HP Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures* on the HP website (<http://www.hp.com/go/enterprise/docs>). HP Insight Remote Support is available as part of HP Warranty, HP Care Pack Service, or HP contractual support agreement.

HP Insight Online direct connect

When you use the embedded Remote Support functionality with an HP ProLiant Gen8 or Gen9 server or HP BladeSystem c-Class enclosure, you can register a server or enclosure to communicate directly to HP Insight Online without the need to set up an HP Insight Remote Support centralized Hosting Device in your local environment. HP Insight Online will be your primary interface for remote support information.

The Insight Online direct connect configuration is available in iLO 4 1.40 and later, Intelligent Provisioning 1.60 and later, and Onboard Administrator 4.11 and later.

For more information, see the product documentation on the HP website: <http://www.hp.com/go/insightremotesupportdocs>.

HP Insight Remote Support central connect

When you use the embedded Remote Support functionality with an HP ProLiant Gen8 or Gen9 server or HP BladeSystem c-Class enclosure, you can register a server or enclosure to communicate to HP through an HP Insight Remote Support centralized Hosting Device in your local environment. All configuration and service event information is routed through the Hosting Device. This information can be viewed by using the local HP Insight RS user interface or the web-based view in HP Insight Online.

The Insight Remote Support central connect configuration is available in iLO 4 1.10 and later, Intelligent Provisioning 1.20 and later, and Onboard Administrator 3.60 and later.

For more information, see the product documentation on the HP website: <http://www.hp.com/go/insightremotesupportdocs>.

HP Insight Online

HP Insight Online is a capability of the HP Support Center portal. Combined with HP Insight Remote Support 7.x, it automatically aggregates device health, asset, and support information from iLO with contract and warranty information, and then secures it in a single, personalized dashboard that is viewable from anywhere at any time. The dashboard organizes your IT and service data to help you understand and respond to that information more quickly. With specific authorization from you, an authorized HP Channel Partner can also view your IT environment remotely by using HP Insight Online.

For more information, see the following documents on the HP website (<http://www.hp.com/go/insightremotesupport/docs>):

- *HP Insight Online User's Guide*
- *HP Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures*

13 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

Glossary

ACR	Array Configuration Replication Utility
ASR	Automatic Server Recovery
BIOS	Basic Input/Output System
CLI	Command Line Interface
CNA	Converged Network Adapter
CONREP	Configuration Replication utility
ECC	Error Checking and Correcting
ECP	Extended Capabilities Port Mode
EMS	Emergency Management Services
EPP	Enhanced Parallel Port Mode
IDE	Integrated Device Electronics
iLO	Integrated Lights-Out
IMD	Integrated Management Display
IOMMU	I/O Memory Management Unit
IPL	Initial Program Load
IRQ	interrupt Request
LPT	Local Port
MEMBIST	Memory Built-in Self Test
MPS	Multi-Processor Specification
NIC	Network Interface Controller
NMI	Non-Maskable Interrupt
NUMA	Non-Uniform Memory Architecture
NVRAM	Non-Volatile Memory
ORCA	Option ROM Configuration for Arrays
PCC	Processor Clocking Control
PCI	Peripheral Component Interface
PCI-X	Peripheral Component Interconnect Extended
PCIe	Peripheral Component Interconnect Express
POST	Power-On Self-Test
PXE	Pre-Boot Execution Environment
RAID	Redundant Array of Inexpensive (or Independent) Disks
RBSU	ROM-Based Setup Utility
ROM	Read-Only Memory
RTC	Real-Time Clock
SPP	Standard Parallel Port Mode
TPM	Trusted Platform Module
UEFI	Unified Extensible Firmware Interface
VGA	Video Graphics Array
VSP	Virtual Serial Port

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