

5. Getting Started with Intel® RMM4 Operation

The Intel® RMM4 module features remote KVM access and control through LAN or Internet. The Intel® Integrated BMC Web Console is part of the standard BMC firmware / Server Management Software. The Integrated BMC Web Console feature is used to access the remote KVM.

This section describes both the interfaces and how to use them. The interfaces are accessed using TCP/IP protocol.

5.1 Before You Begin

For initial setup information, refer to Chapter 4. Before you log in, you must enable the intended user. The examples in this chapter use user “root”, but other usernames and passwords could be used.

The Intel® RMM4 enabled advanced features may be accessed using a standard Java* enabled web browser. You may use the HTTP protocol or a secure encrypted connection from the HTTPS configurable in the embedded web server.

5.1.1 Client Browsers

In order to access the web console using a securely encrypted connection, you need a browser that supports the HTTPS protocol. Strong security is only assured by using a Cipher Strength (encryption) of 128-bit. Some older browsers may not have a strong 128-bit encryption algorithm.

If you are using Microsoft Windows Internet Explorer 7.0* or higher, you can verify the strong encryption by opening the **Help/About** menu to read about the key length that is currently activated. Figure 38 shows the dialog box presented by Microsoft Windows Internet Explorer 8.0*.



Figure 38: Internet Explorer 8* Displaying Encryption Key Length

In order to use the Remote Console (KVM) window of your managed server, Java® Runtime Environment (JRE) Version 6 Update 22 or higher must be installed.

Note: The Web Console is designed for a screen size of 1280 pixels by 1024 pixels or larger. In smaller screens, the browser displays slider controls to enable the user to see the full content of each web page.

5.2 Logging In

Enter the configured IP address of the Intel® RMM4 or your configured BMC on-board NIC into your web browser. In order to use a secure connection, type `https://<IPaddress>/`. This will take you to the Intel® Integrated BMC Web Console module login page as shown in Figure 39.



Figure 39: Intel® Integrated BMC Web Console Login Page

Log in by entering the username and password.

For example:

- Username = root
- Password = superuser

Click the **Login** button (shown in Figure 39) to view the home page.

After the initial login, system administrators may change passwords, create new users, and have full control over access to the RMM4 enabled advanced features.

Note: The username and password are case sensitive. Any username and password can be used (except anonymous).

5.3 Navigation

After successful login to the Integrated BMC Web Console module, the Integrated BMC Web Console home page appears as shown in Figure 40.

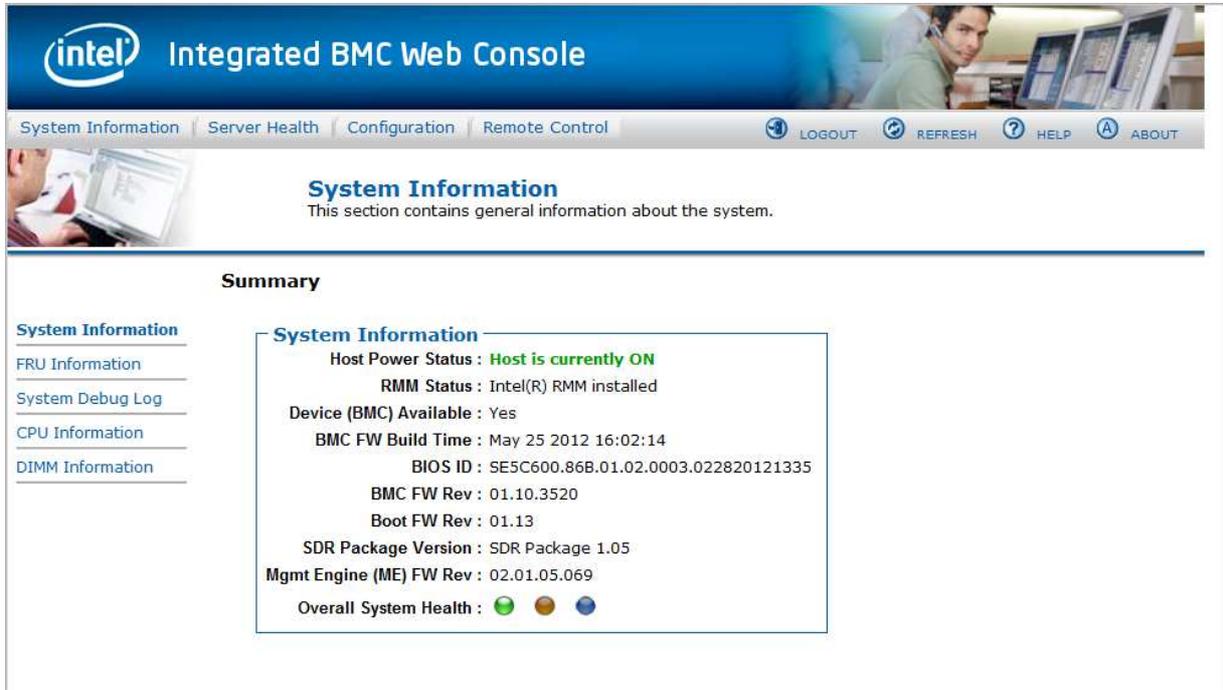


Figure 40: Integrated BMC Web Console Home Page

The top horizontal toolbar within the Integrated BMC Web Console home page has four tabs. Click these tabs to get specific system information and perform tasks as shown in the following table.

Table 9: Integrated BMC Web Console Home Page Tabs

Tab	Function
	Click this tab to access general information about the server. The tab automatically opens the System Information page: <ul style="list-style-type: none"> • System Information • FRU Information • CPU Information (only on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families) • DIMM Information
	Click this tab for access to the sensors and event log. The tab automatically opens the Sensor Readings page: <ul style="list-style-type: none"> • Sensor Readings • Event Log • Power Statistics

Tab	Function
	<p>Click this tab to configure various settings for the server. The tab automatically opens the Network configuration page:</p> <ul style="list-style-type: none"> • Network/IPv4 Network • IPv6 Network (only on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families) • Users • Login • LDAP • VLAN (only on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families) • SSL • Remote Session • Mouse Mode • Keyboard Macros • Alerts • Alert Email • Node Manager (only on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families)
	<p>Click this tab for access to the remote console and to control the power state of the server:</p> <ul style="list-style-type: none"> • Console Redirection • Server Power Control • Virtual Front Panel (only on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families)

The four tabs on the horizontal menu allow you to navigate within the Integrated BMC Web Console. Each of these tabs contains a secondary menu on the left edge of the browser window. For detailed information on the specific functions of secondary menu item see Chapter 7.

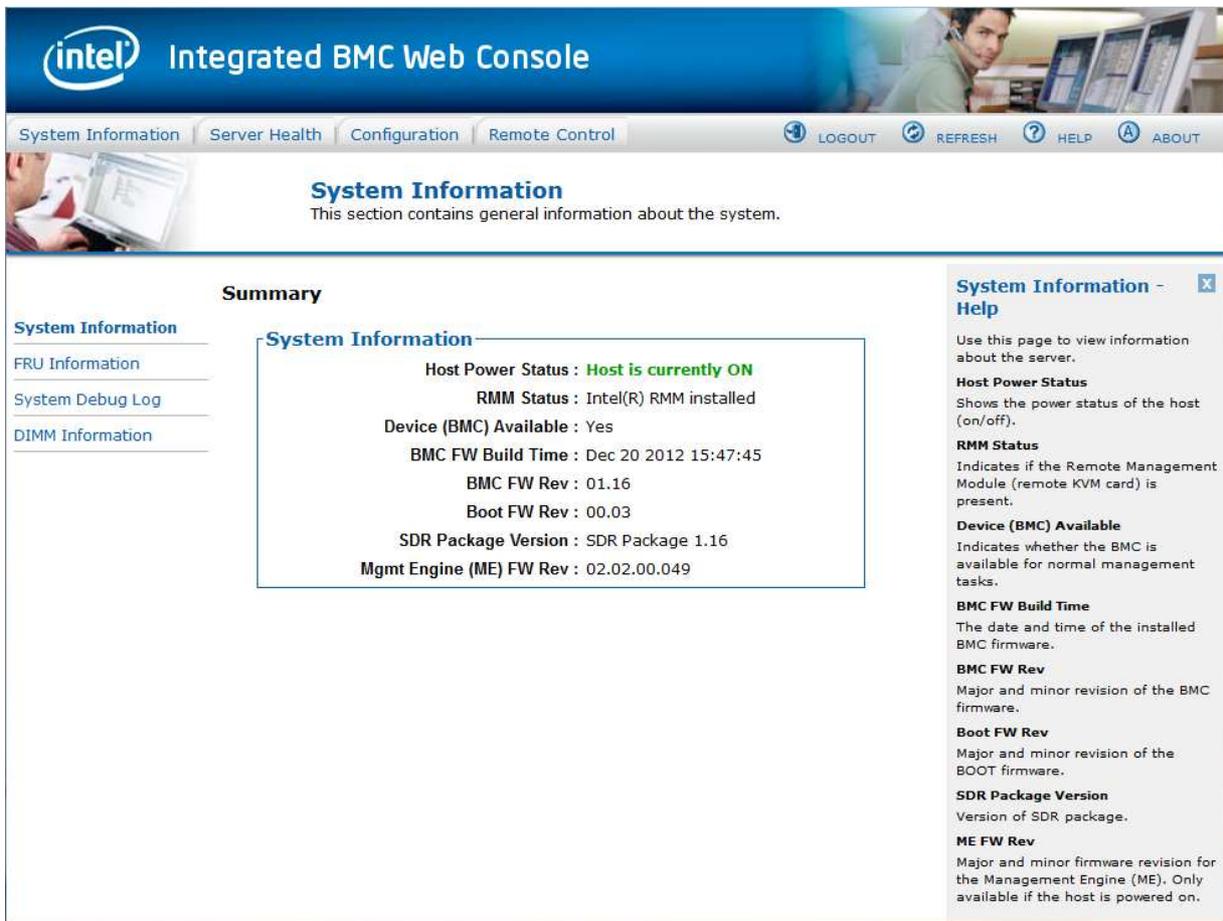
The top horizontal toolbar also has the **Logout**, **Refresh**, and **Help** buttons. Click these buttons to perform tasks as shown in the following table.

Table 10: Horizontal Toolbar Buttons

Button	Function
	<p>Click this button to end the current Web Console session. Note that a remote console (KVM) window, if active, will be closed when you log out. After logging out, the Web Console will return to the Login screen.</p>
	<p>Click this button to refresh the current web page, including any data shown on the page. Note: Using the web browsers refresh/reload button or pressing the function key <F5> to do a refresh/reload is not supported for reloading the Web Console pages. Using either of them can cause unexpected results.</p>
	<p>Click this button to view a brief description of the current page in a frame at the right side of the browser window. Close the Help frame by clicking the "X" in the upper right corner of the frame or by clicking the HELP button again.</p>
	<p>Click this button to view the Intel® copyright information and a statement about the use of open source code.</p>

5.4 Online Help

The Web Console user interface provides specific online help for each page. For additional information on a certain topic or group of options, click the  button on the top horizontal toolbar to view the online help as shown in Figure 41. The right **Help** frame is visible only when the online **Help** is being accessed.



The screenshot displays the Intel Integrated BMC Web Console interface. At the top, there is a navigation bar with tabs for System Information, Server Health, Configuration, and Remote Control. A toolbar on the right contains buttons for LOGOUT, REFRESH, HELP (highlighted), and ABOUT. The main content area is titled "System Information" and includes a summary of system details. A help frame on the right side is open, displaying the "System Information - Help" page, which provides detailed descriptions for each system status item.

System Information Summary:

- Host Power Status : **Host is currently ON**
- RMM Status : Intel(R) RMM installed
- Device (BMC) Available : Yes
- BMC FW Build Time : Dec 20 2012 15:47:45
- BMC FW Rev : 01.16
- Boot FW Rev : 00.03
- SDR Package Version : SDR Package 1.16
- Mgmt Engine (ME) FW Rev : 02.02.00.049

System Information - Help:

- Host Power Status**: Shows the power status of the host (on/off).
- RMM Status**: Indicates if the Remote Management Module (remote KVM card) is present.
- Device (BMC) Available**: Indicates whether the BMC is available for normal management tasks.
- BMC FW Build Time**: The date and time of the installed BMC firmware.
- BMC FW Rev**: Major and minor revision of the BMC firmware.
- Boot FW Rev**: Major and minor revision of the BOOT firmware.
- SDR Package Version**: Version of SDR package.
- ME FW Rev**: Major and minor firmware revision for the Management Engine (ME). Only available if the host is powered on.

Figure 41: Launching the Online Help

5.5 Logging Out

Click the  button to log out the current user and revert to a new login screen as shown in Figure 42 and Figure 43.

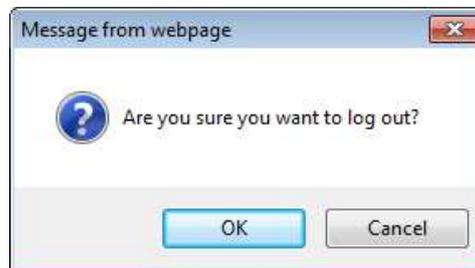


Figure 42: Logging Out of Integrated BMC Web Console – Step 1

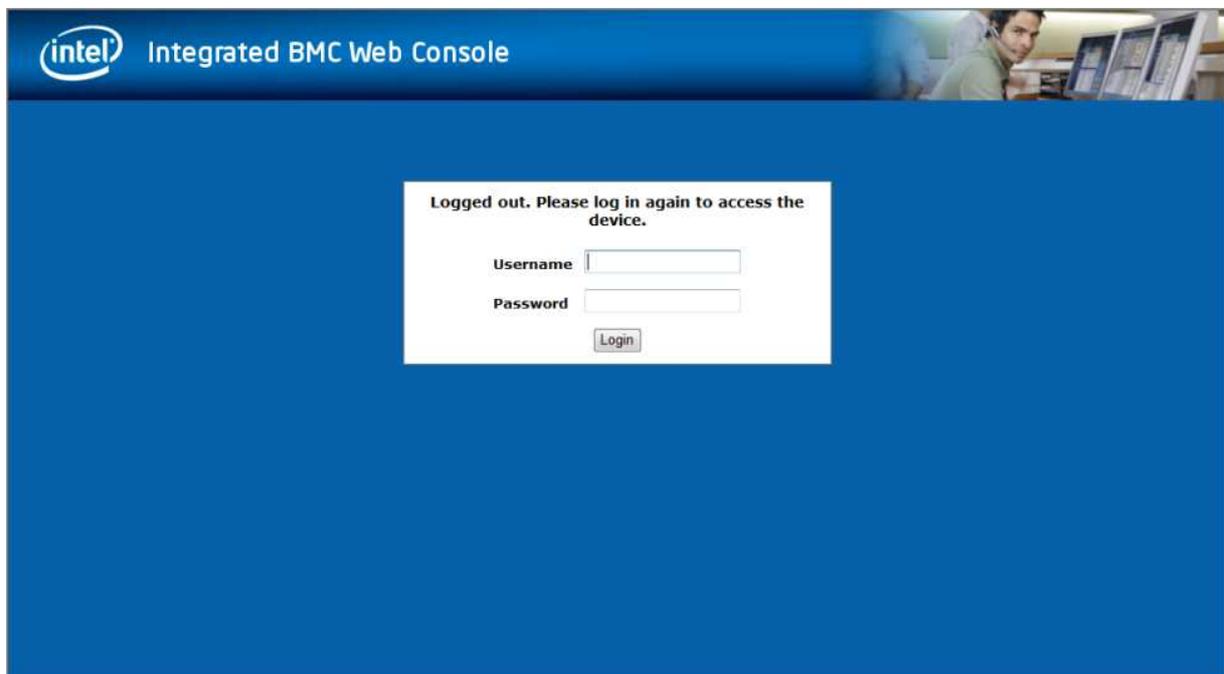


Figure 43: Logging Out of Integrated BMC Web Console – Step 2

Note: Automatic Timeout – If there is no user activity detected by the Web Console for 30 minutes, the current session will be automatically terminated. If the user has an open KVM remote console window, the web session will not automatically timeout. The next action attempted by the user after the automatic timeout will inform the user of the need to login again for continued access to the Web Console.

6. Remote Console (KVM) Operation

The Remote Console is the redirected keyboard, video, and mouse of the remote host system where the Intel® RMM4 module is installed. To use the Remote Console window of your managed host system, the browser must include a Java* Runtime Environment plug-in. If the browser has no Java* support, such as with a small handheld device, the user can maintain the remote host system using the administration forms displayed by the browser.

Starting the Remote Console opens a new window to display the screen content of the host system. The Remote Console acts as if the administrator were sitting directly in front of the screen of the remote system. This means the keyboard and mouse can be used in the usual way.

6.1 Launching the Redirection Console

The Remote Console is the redirected keyboard, video, and mouse of the remote host system where the Intel® RMM4 module is installed. Launch the remote console KVM redirection window from this page.

Note: If you are using Microsoft Windows Internet Explorer*, the Smart Screen is enabled, and the system is on a network with no direct connectivity to the internet, it may take an extremely long time to open a KVM window.

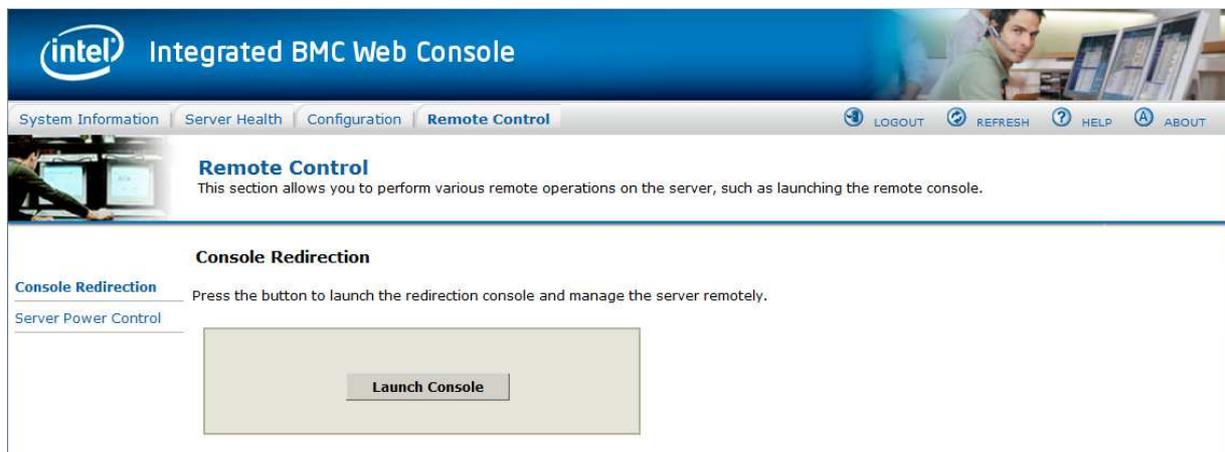


Figure 44: Remote Control Console Redirection Page

Click the **Launch Console** button to launch the redirection console and manage the server remotely.

When the **Launch Console** button is clicked, a pop-up window is displayed to download the Java* Network Launch Protocol, `jviewer.jnlp` file. This in turn downloads the standalone Java* application implementing the Remote Console.

Both Microsoft Internet Explorer* and Mozilla Firefox* browsers are supported.

Notes:

- Java* Runtime Environment (JRE, Version 6 Update 22 or higher) must be installed on the client before the launch of a JNLP file.
- The client browser must allow pop-up windows from the Integrated BMC Web Console IP address.

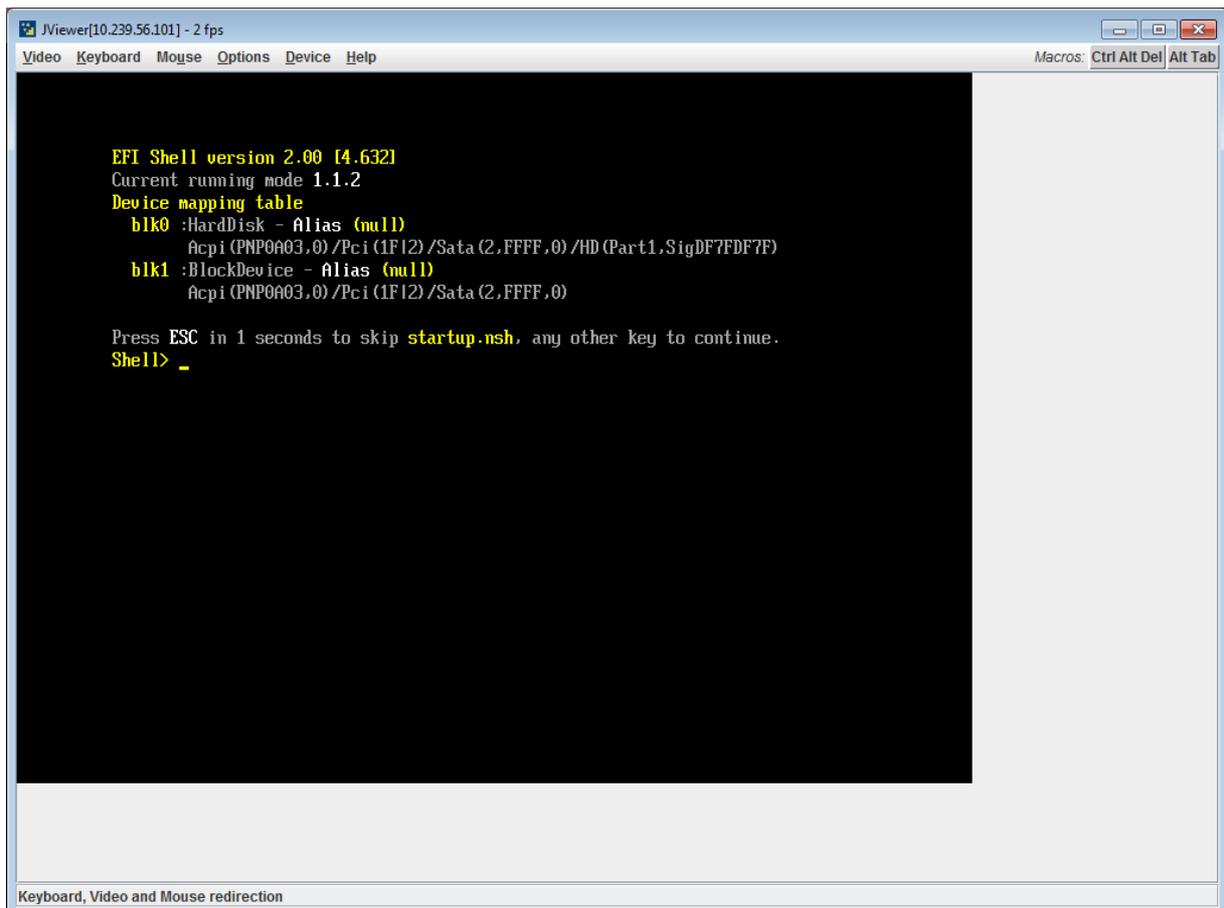


Figure 45: Remote Console

The Remote Console window is a Java* Applet that establishes TCP connections to the Integrated BMC Web Console. The protocol that is used to run these connections is a unique KVM protocol and not HTTP or HTTPS. This protocol uses ports #7578 for KVM, #5120 for CDROM media redirection, and #5123 for Floppy/USB media redirection. Your local network environment must permit these connections to be made, that is, your firewall and, in case you have a private internal network, your NAT (Network Address Translation) settings have to be configured accordingly.

6.2 Main Window

Starting the Remote Console opens an additional window as shown in Figure 46.

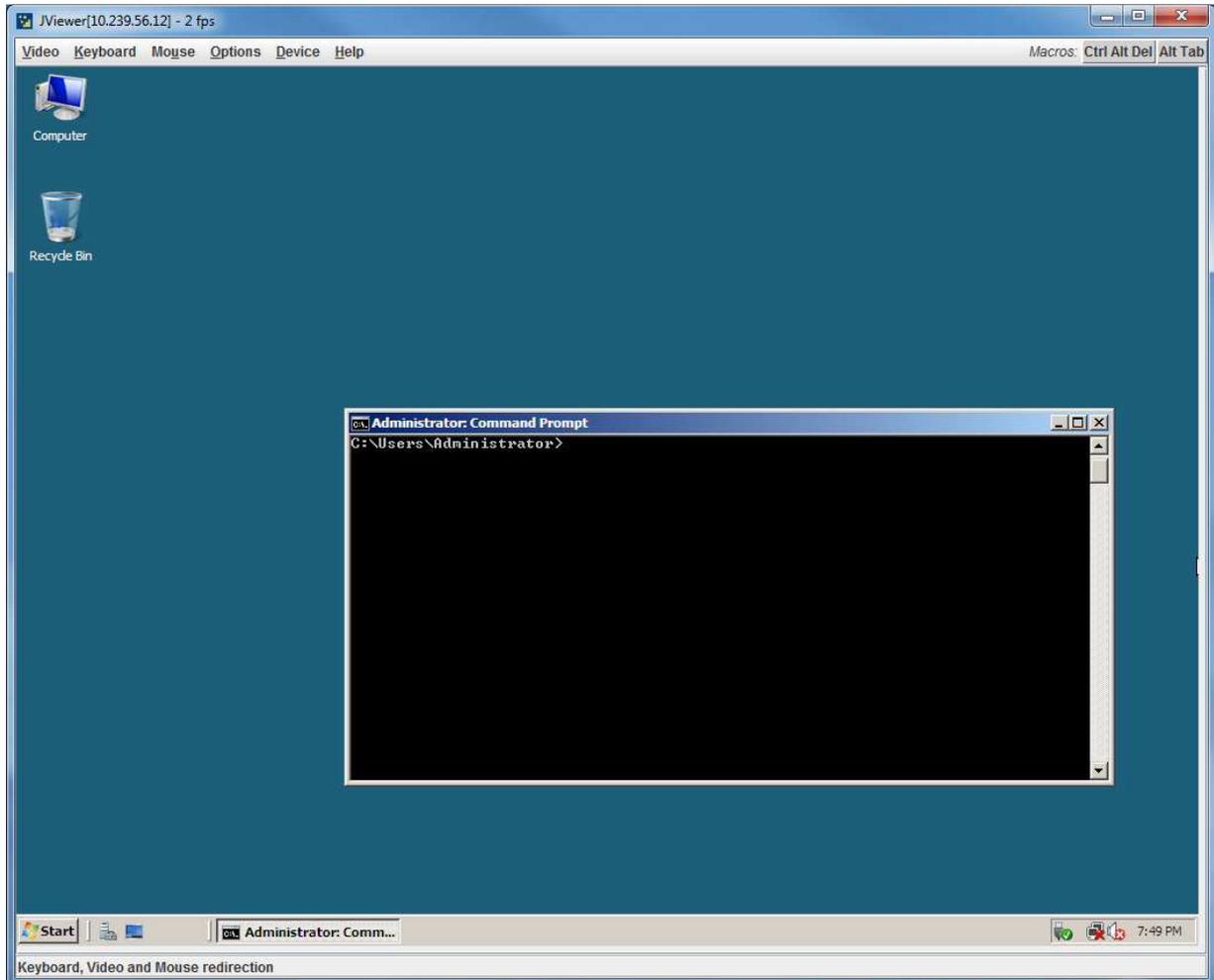


Figure 46: Remote Console Main Window

It displays the screen content of your remote server. The Remote Console behaves as if you were located at the remote server. The responsiveness may be slightly delayed depending on the bandwidth and latency of the network between Integrated BMC Web Console and Remote Console. Enabling KVM and/or media encryption on the **Configuration > Remote Session** web page will degrade performance as well.

The Remote Console window always shows the remote screen in its *optimal size*. This means it will adapt its size to the size of the remote screen initially and after the screen resolution of the remote screen has been changed. However, you can always resize the Remote Console window in your local window as usual.

6.3 Remote Console Control Bar

The upper part of the Remote Console window contains a control bar. Using its elements you can see the status of the Remote Console and influence the local Remote Console settings.



Figure 47: Remote Console Control Bar

The following sub sections describe the tasks you can perform within each control.

6.3.1 Remote Console Video Menu

Click **Video** in the Remote Console control bar to open the Video menu as shown in Figure 48.

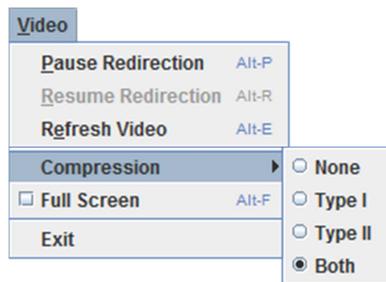


Figure 48: Remote Console Video Menu

Using this menu, you can do the following:

- **Pause Redirection.** Temporarily pauses the redirection of keyboard, video, and mouse. The Remote Console window stops being updated. Keyboard shortcut is Alt+P.
- **Resume Redirection.** Resumes the redirection after a pause. Shortcut is Alt+R.
- **Refresh Video.** Refreshes the Remote Console window. Shortcut is Alt+E.
- **Compression.** Enabling compression improves the responsiveness of the Remote Console. Disabling compression maximizes the quality of the redirected video.
- **Full Screen.** Toggles windowed/full screen mode of the Remote Console. Shortcut is Alt+F.
- **Exit.** Closes the Remote Console window.

6.3.2 Remote Console Keyboard Menu

Click **Keyboard** to open the Keyboard menu as shown in Figure 49.



Figure 49: Remote Console Keyboard Menu

Using this menu, you can do the following:

- **Language.** Controls the keyboard language layout.
- **Soft Keyboard.** Displays and controls the Soft Keyboard window.
- **Hold Ctrl/Alt/Windows* keys.** Allows simulation by holding down these special keys on the remote keyboard. On the local keyboard these special keys are processed by the local OS and not passed on to the remote OS.
- **Ctrl+Alt+Del, Ctrl+Alt+Backspace, Ctrl+Alt+Left, Ctrl+Alt+Right.** Issues a fixed special key combination to the remote OS.

6.3.2.1 Keyboard Language Layout

The Remote Console supports the following keyboard language layouts: English, Dutch, French, German, Italian, Russian, and Spanish.



Figure 50: Remote Console Keyboard Language Sub Menu

In order for local key strokes to be interpreted correctly at the remote end, the client OS, the target OS, and the Remote Console must all be configured for the same language layout.

The Remote Console Java* application reversely translates local key strokes based on the selected language layout. If there is a mismatch, sometimes it works fine anyway, otherwise it mostly works except for a few mistranslated or unresponsive keys and in some mismatched configurations most of the keys are mishandled.

6.3.2.1.1 Windows* Language Layouts

The Remote Console supports the Windows* default keyboard variants for the supported languages.

In Windows*, the language is the current Language Bar setting (initially configured in **Control Panel > Regional and Language Options > Languages > Text Services and Input Languages**). If you are using one of the supported language keyboards, you don't have to manually select the language in the Remote Console because any Language Bar changes can be detected automatically and immediately. Manually setting the language would typically be useful if you are using a keyboard close but not identical to one of the supported ones.

6.3.2.1.2 Linux* Language Layouts

The Remote Console supports the Linux* default keyboard variants for supported languages, except Russian, where it is the "Russian Winkeys" variant. The Dutch layout is "Belgium" in Linux*.

In Linux* you typically select the language at the login screen; it can also be changed with the "locale" command but not while an application, such as the Remote Console, is running. There is also an OS keyboard layout that can be changed independently of the language. If the OS keyboard layout does not match the OS language setting, you may need to manually select the Remote Console layout.

On the other hand, with Linux* Java*, there is less reverse translation required by the application than in Microsoft Windows* and is more likely that a mismatched configuration will work anyway.

6.3.2.2 Soft Keyboard

Click **Keyboard** to open the Keyboard menu as shown in Figure 51.



Figure 51: Remote Console Keyboard Soft Keyboard Sub Menu

The Soft Keyboard window is displayed and closed either by selecting the **Keyboard > Soft Keyboard > Show** checkbox or by the Alt+S shortcut.



Figure 52: Remote KVM Soft Keyboard

Buttons clicked on the Soft Keyboard window get sent as key strokes to the remote target.

The Soft Keyboard is also a convenient way to see the exact layouts supported for the local keyboards because they are the same.

The Soft Keyboard language layout follows the local keyboard language setting when the default **Keyboard > Soft Keyboard > Follow Local** option is selected. This can be manually overridden by selecting a language.

Note: The Soft Keyboard keystrokes get retranslated by the remote target OS just like the local physical keystrokes and are subject to the same mismatched configuration issues.

6.3.3 Remote Console Mouse Menu

Click **Mouse** to open the Mouse menu as shown in Figure 53.

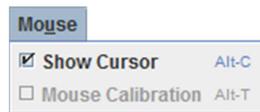


Figure 53: Remote Console Mouse Menu

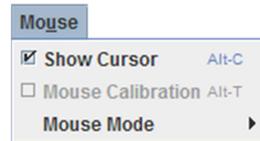


Figure 54: Remote Console Mouse Menu on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families

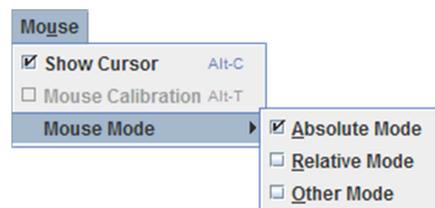


Figure 55: Remote Console Mouse Menu – Mode Selection on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families

The Mouse submenu offers two or three options:

- **Show Cursor.** This option toggles the cursor display in the Remote Console window. It does not affect the remote system cursor. Shortcut is Alt+C.
- **Mouse Calibration.** This option is used to detect the threshold and acceleration settings on the remote system and set the local client's mouse settings accordingly. It only applies when in Relative Mouse Mode, selected on the web page **Configuration > Mouse Mode**. Absolute Mouse Mode does not require calibration. Shortcut is Alt+T.
- **Mouse Mode.** This option is only available on Intel® Server Boards and Systems Based on Intel® Xeon® Processor E5-4600/2600/2400/1600/1400 (v1&v2) Product Families. See Figure 54. This allows you to select the mouse mode being used. You can select Absolute, Relative, or Other as shown in Figure 55. For a description of these modes, see Section 7.3.9. Note that the functionality of this option is the same as changing then saving the mode on the Mouse Mode page. Any selections that you make will be saved for the next time when the remote console window is opened.

Relative Mode Mouse Calibration Procedure

1. If the remote mouse and local mouse cursors are not in sync, start mouse calibration by selecting the **Mouse Calibration** menu item or pressing Alt+T.
2. In this step, the mouse threshold settings on the remote server will be discovered. The local mouse cursor is displayed in red color and the remote cursor is part of the remote video screen. Both cursors will be in sync in the beginning.

3. Use number pad '+' or '-' keys to change the threshold settings until both cursors go out of sync.
4. Detect the first reading at which the cursors go out of sync.
5. After the reading is detected, use Alt-T to save the threshold value.
6. In this step, the mouse acceleration settings on the remote server will be discovered. The local mouse cursor is displayed in red color and the remote cursor is part of the remote video screen. Both cursors will be out of sync in the beginning.
7. Use number pad '+' or '-' keys to change the acceleration settings in steps of 1, or use Alt-'+' or Alt-'-' keys to change the acceleration settings in steps of 0.1 until both cursors are in sync.
8. Detect the first reading at which the cursors are in sync.
9. After the reading is detected, use Alt-T to save the acceleration value.

6.3.4 Remote Console Options Menu

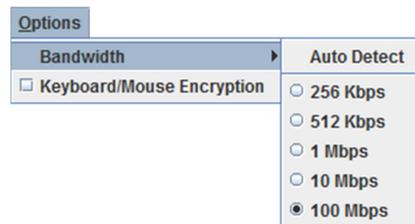


Figure 56: Remote Console Options Menu

Using this menu, you can do the following:

- **Bandwidth.** Changing the bandwidth setting affects low-level connection protocol parameters such as fragment size and timeouts. If you experience performance problems when operating over a slow connection such as a modem, the bandwidth setting may need to be adjusted. Use the **Auto Detect** option to find the correct setting for your connection.
- **Keyboard/Mouse Encryption.** Keyboard and mouse data is normally encrypted before being sent over the connection, but this can be disabled for a small performance increase.

6.3.5 Remote Console Device Menu



Figure 57: Remote Console Device Menu

This menu option allows starting/stopping remote media redirection. The first two options allow you to redirect either a local CDROM/DVD drive or else an ISO image on your local client file system as a virtual CDROM device on the remote system. The third option allows you to redirect either a local floppy drive or local USB key drive. The fourth option allows you to redirect a floppy or USB Key .img file on your local client file system as a virtual floppy device on the remote system.

Note: When trying to attach a local floppy or local USB key drive, if it is in use by the operating system or any other application it will fail to attach.

With Microsoft Windows 2008*, Microsoft Windows Vista*, Microsoft Windows 2008* R2, and Microsoft Windows 7* if a Windows Explorer* GUI is opened after the USB Key has been installed in the local system, you may not be able to attach the USB Key as remote media.

With Microsoft Windows 2003* and Microsoft Windows XP* if a Windows Explorer* GUI is opened after the USB Key has been installed in the local system and you then browse through the USB Key, you may not be able to attach the USB Key as remote media.

The virtual devices act just like any other CDROM/DVD or floppy on the remote system. They can be read, written (assuming they are not read-only), and booted. The pair of virtual devices only appears on the remote OS or BIOS setup menus when some media redirection is active. The virtual devices persist across remote system resets and power up/downs. They do not disappear from the remote system until the checkboxes are unchecked in the Remote Console window.

Note: The virtual devices are not limited to normal floppy/CDROM sizes and will be as large as the device or file being redirected. A USB Key drive is redirected as a virtual floppy device rather than a USB device to allow the loading of custom device drivers during remote OS installation which may require a floppy drive.

There is only one virtual CDROM and one virtual floppy device on the remote system allowed so only one local item of each type can be redirected at a time. Only one Remote Console window can be doing media redirection at any given time.

6.4 Remote Console Status Line

The status line at the bottom of the Remote Console screen shows the console state as shown in Figure 58. When you navigate the menu options, the status line provides a more detailed definition of each option.



Keyboard, Video and Mouse redirection

Figure 58: Status Line