



SGI® UV™ RMC Software User Guide

007-6361-003

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New Features in this Guide

This revision adds the following new features:

- Support for the SGI UV 3000 computer system.
- Miscellaneous corrections and additions.

Record of Revision

Version	Description
001	December 2014 Initial release.
002	May 2015 Supports the SGI Foundation Software 2.12 release.
003	November 2015 Supports the SGI Foundation Software 2.13 release.

Contents

About This Guide	xiii
Related Publications	xiii
Obtaining Publications	xv
Conventions	xv
Reader Comments	xv
1. Getting Started	1
About the Rack Management Controller (RMC)	1
Obtaining Network Information for the RMC	2
(Conditional) Setting the Position of the RMC Within its Rack	3
Adding Your Site Network Information to the RMC	8
Changing the Factory Default <code>ipmitool</code> Command Password	10
Changing the Factory Default <code>ssh</code> Command Password	11
(Optional) Enabling Simple Network Management Protocol (SNMP) Alert Forwarding	12
2. Rack Management Controller (RMC) Tasks	15
Connecting to the Rack Management Controller (RMC)	15
Powering On and Booting an SGI UV System From a Complete Power Off	16
Powering Off an SGI UV System	17
Configuring the Auto-power Capability	18
Retrieving System Configuration Information	19
Setting Hardware Configuration Overrides (SGI UV 3000 Systems and SGI UV 300 Systems Only)	21
Monitoring Log Files	23
007-6361-003	vii

Hardware Event Log (HEL) Log Files	24
System Event Log (SEL) Log Files	24
System Controller Log Files	24
3. Remote Management	27
About Remote Management	27
ipmitool Remote Management Command Formats	29
Running an ipmitool Command on an RMC	30
Running an ipmitool Command on One CMC (SGI UV 3000 Systems Only)	31
Running an ipmitool Command on All CMCs (SGI UV 3000 Systems Only)	31
Running an ipmitool Command on One BMC	32
Running an ipmitool Command on All BMCs	32
Command Format Examples	33
ipmitool Commands Supported on the RMC	34
Creating Crash Dumps and Issuing Power Cycling Commands	35
Issuing Power Cycling Commands	35
Sending a Non Maskable Interrupt (NMI) Signal to Write a Crash Dump	36
Listing Information for Field Replaceable Units (FRUs)	36
Listing the Local Area Network (LAN) Configuration	37
Retrieving a List of the Environmental Sensors and Values	39
Retrieving the System Event Log (SEL)	40
Opening a Serial Console	42
4. Rack Management Controller (RMC) Commands	43
About the RMC Commands	43
Command Targets	45
Command Targeting Examples	46

RMC Commands	47
autopower	47
bios	48
bmc, cmc, and rmc Commands	48
config	49
console	51
hel	51
hwcfg	52
log	52
power	52
sensor	54
uv3dmp	55
version	56
Index	59

Tables

Table 1-1	Configuring RMC Addressing	9
Table 4-1	Target Specifications	46
Table 4-2	RMC Command Targets	47

About This Guide

The following SGI computer systems include a rack management controller (RMC):

- SGI® UV™ 3000 computer systems
- SGI® UV™ for SAP HANA® appliances
- SGI® UV™ 300 computer systems

This guide explains RMC operations, such as the following:

- Connecting to the RMC.
- Using RMC commands.
- Using the open source `ipmitool(1)` command for remote management.

You can use the RMC commands and the open source `ipmitool(1)` commands to monitor and manage SGI UV systems that include an RMC. This guide assumes that you are familiar with the information in the hardware guides.

Most topics in this guide apply to all systems that include an RMC. The few topics in this guide that apply only to specific platforms are noted as such in the topic title.

Related Publications

The SGI Foundation Software release notes and the SGI Performance Suite release notes contain information about the specific software packages provided in those products. The release notes also list SGI publications that provide information about the products. The release notes are available in the following locations:

- Online at the SGI customer portal. After you log into the SGI customer portal, you can access the release notes.

The SGI Foundation Software release notes are posted to the following website:

https://support1-sgi.custhelp.com/app/answers/detail/a_id/4983

The SGI Performance Suite release notes are posted to the following website:

https://support1-sgi.custhelp.com/app/answers/detail/a_id/6093

Note: You must sign into the SGI customer portal, at <https://support.sgi.com/login>, in order for the preceding links to work.

- On the product media. The release notes reside in a text file in the `/docs` directory on the product media. For example, `/docs/SGI-MPI-1.x-readme.txt`.
- On the system. After installation, the release notes and other product documentation reside in the `/usr/share/doc/packages/product` directory.

All SGI publications are available on the SGI support portal. The following publications might be useful to you:

- *SGI UV System Software Installation and Configuration Guide*
- SGI hardware documentation.

SGI creates hardware manuals that are specific to each product line. The hardware documentation typically includes a system architecture overview and describes the major components. It also provides the standard procedures for powering on and powering off the system, basic troubleshooting information, and important safety and regulatory specifications.

The following procedure explains how to retrieve a list of hardware manuals for your system.

Procedure 0-1 To retrieve hardware documentation

1. Type the following URL into the address bar of your browser:

`docs.sgi.com`

2. In the search box on the Techpubs Library, narrow your search as follows:

- In the **search** field, type the model of your SGI system.

For example, type one of the following: "UV 3000", "ICE X", Rackable.

Remember to enclose hardware model names in quotation marks (" ") if the hardware model name includes a space character.

- Check **Search only titles**.
- Check **Show only 1 hit/book**.
- Click **search**.

Obtaining Publications

All SGI publications are available on the SGI customer portal at <http://support.sgi.com>. Select the following:

Support by Product > *productname* > **Documentation**

If you do not find what you are looking for, search for document-title keywords by selecting **Search Knowledgebase** and using the category **Documentation**.

You can view man pages by typing `man title` on a command line.

Conventions

The following conventions are used throughout this publication:

Convention	Meaning
[]	Brackets enclose optional portions of a command or directive line.
command	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
...	Ellipses indicate that a preceding element can be repeated.
manpage(x)	Man page section identifiers appear in parentheses after man page names.
user input	This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
<i>variable</i>	Italic typeface denotes variable entries and words or concepts being defined.

Reader Comments

If you have comments about the technical accuracy, content, or organization of this publication, contact SGI. Be sure to include the title and document number of the publication with your comments. (Online, the document number is located in the

front matter of the publication. In printed publications, the document number is located at the bottom of each page.)

You can contact SGI in either of the following ways:

- Send e-mail to the following address:

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- Contact your customer service representative and ask that an incident be filed in the SGI incident tracking system:

<http://www.sgi.com/support/supportcenters.html>

SGI values your comments and will respond to them promptly.

Getting Started

This chapter includes the following topics:

- "About the Rack Management Controller (RMC)" on page 1
- "Obtaining Network Information for the RMC" on page 2
- "(Conditional) Setting the Position of the RMC Within its Rack" on page 3
- "Adding Your Site Network Information to the RMC" on page 8
- "Changing the Factory Default `ipmitool` Command Password" on page 10
- "Changing the Factory Default `ssh` Command Password" on page 11
- "(Optional) Enabling Simple Network Management Protocol (SNMP) Alert Forwarding" on page 12

About the Rack Management Controller (RMC)

The RMC provides the top layer of system control for the following computer systems:

- SGI® UV™ 3000 computer systems
- SGI® UV™ for SAP HANA® appliances
- SGI® UV™ 300 computer systems

The RMC is a 1U-high, rack-mount chassis that functions as a standalone controller and facilitates the following:

- System control.
- Booting and maintenance.
- Environment monitoring.
- Time synchronization. The RMC provides time synchronization through a synchronous Ethernet connection to each baseboard management controller (BMC).
- System failure analysis, using the `uv3dmp` command.
- Command-based control, both local and remote, as follows:

- For local management, you can use the platform-specific RMC commands.
- For remote management, you can use the open source `ipmitool` command. SGI supports a subset of the open source intelligent platform management interface (IPMI) protocol's specification.

The following topics explain how to configure the RMC on your site network:

- "Obtaining Network Information for the RMC" on page 2
- "(Conditional) Setting the Position of the RMC Within its Rack" on page 3
- "Adding Your Site Network Information to the RMC" on page 8

Obtaining Network Information for the RMC

The following procedure explains the information you need to obtain from your site network administrator in order to configure a static IP address on the RMC.

Procedure 1-1 To obtain network information

1. Consult your network administrator, and obtain the following information:

Field	Information for this RMC
IP address	_____
Network mask	_____
Hostname	_____
(Optional) Site gateway	_____

You can use the second column to record the network information for your RMC.

Note: You can reference the RMC by its hostname or by its IP address. SGI documentation uses the hostname in examples, and SGI recommends that you refer to the RMC by its hostname.

2. (Optional) Obtain the IP address of an external server to which you can forward SNMP trap alerts.
3. Proceed to one of the following:

- If you installed the system in a generic rack at your site, proceed to the following:
"(Conditional) Setting the Position of the RMC Within its Rack" on page 3
- If your system is installed in an SGI rack, proceed to the following:
"Adding Your Site Network Information to the RMC" on page 8

(Conditional) Setting the Position of the RMC Within its Rack

Perform the procedure in this topic if you installed a SGI UV 3000 or an SGI UV 300 into a generic rack at your site. You do not need to perform this procedure if your system is installed in an SGI rack.

The following procedure explains how to examine the RMC, familiarize yourself with the RMC ports, and specify the location of the RMC in the rack.

Procedure 1-2 To connect to the RMC and specify the location of the RMC in the rack

1. Physically install the server chassis and RMC into the rack, and note the following:
 - The rack number into which you installed the RMC.
 - The rack unit position of the RMC.
2. Obtain the following equipment:
 - A laptop computer with a terminal emulation program installed upon it. For example, if you have a Linux laptop, you could use `cu` or `Minicom`. If you have a Windows laptop, you could use `PuTTY`.
 - The cable that has a USB-A connector on one end and a micro USB-B connector on the other end. This cable is SGI part number 018-1667-001.

Note: If you have difficulty completing this procedure from a Windows® laptop using `PuTTY`, you might need to install additional software on your laptop. The following SGI website includes a Windows driver shim and instructions that explain how to install the shim on a Windows laptop:

https://support1-sgi.custhelp.com/app/answers/detail/a_id/5879

3. Open the front door, and locate the RMC.

Figure 1-1 on page 4 shows where the RMC resides on an SGI UV 3000 computer system.

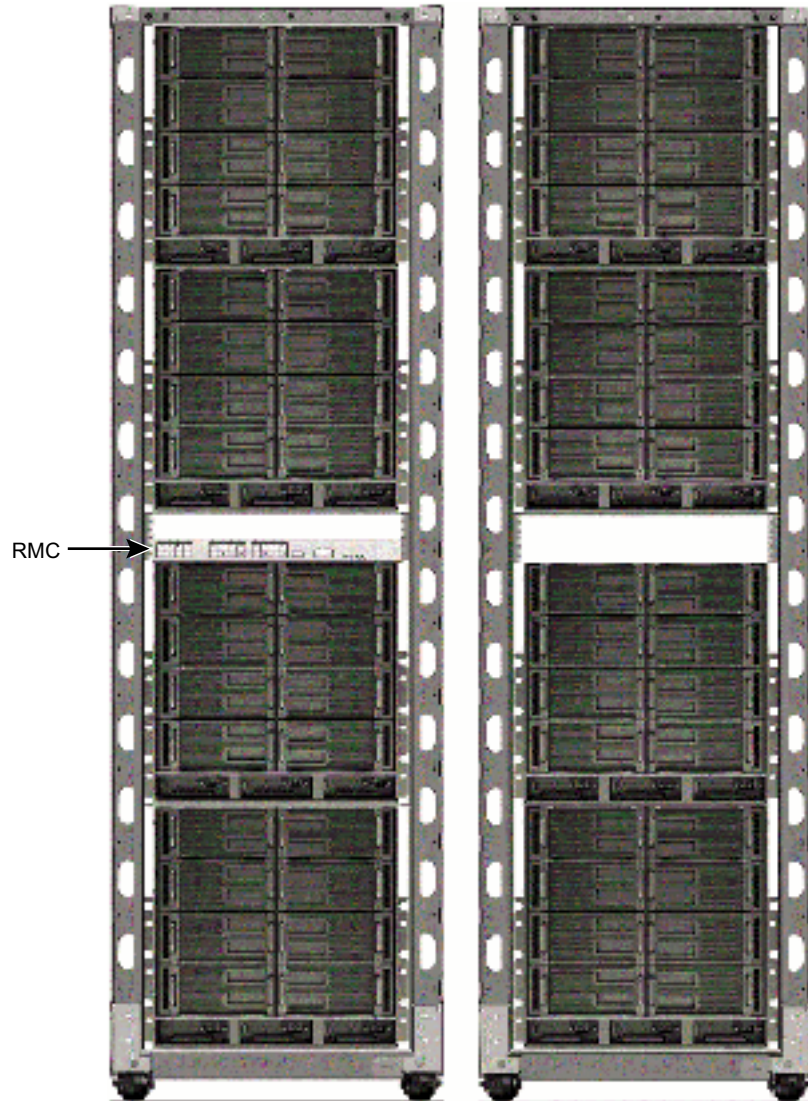


Figure 1-1 RMC Inside the SGI UV 3000 Rack

Figure 1-2 on page 5 shows where the RMC resides on an SGI UV 300 computer system.

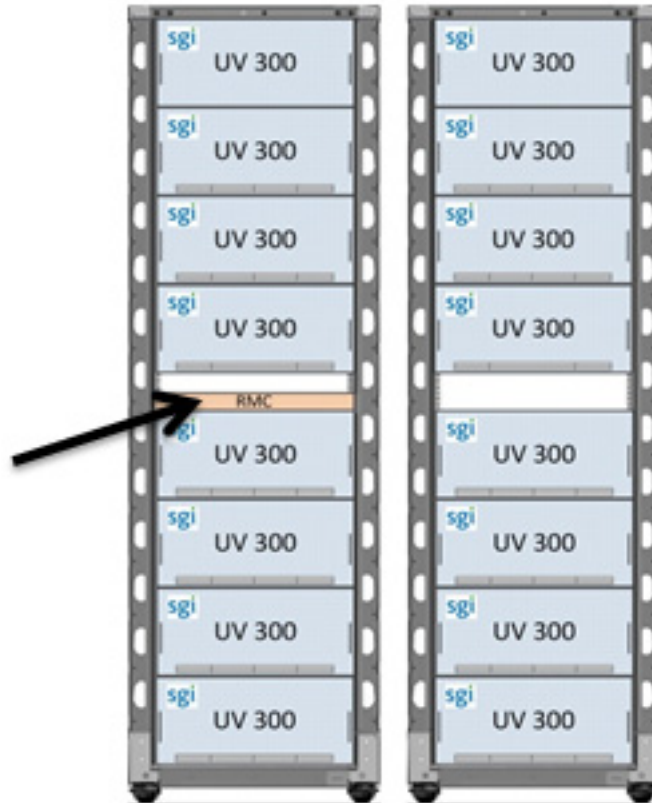


Figure 1-2 RMC Inside the SGI UV 300 Rack

4. Examine the front panel and familiarize yourself with the items on the panel.

Figure 1-3 on page 6 shows the RMC ports and light-emitting diodes (LEDs).

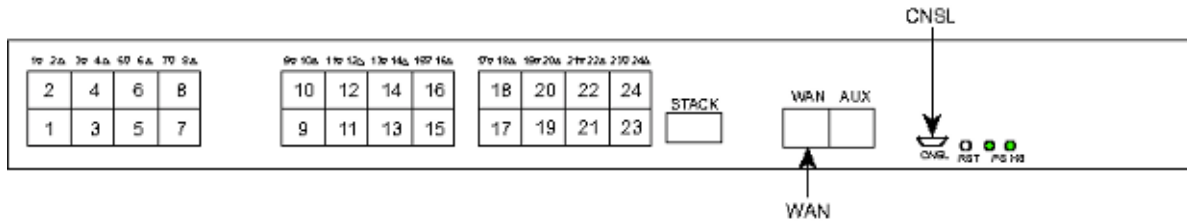


Figure 1-3 RMC Ports

The ports and light-emitting diodes (LEDs) in Figure 1-3 on page 6 are as follows:

Port or LED	Purpose
WAN	The RJ45 port that connects to the customer’s LAN.
AUX	An RJ45 port designed as a service port for SGI support staff.
CNSL	This micro USB-B port is used to connect to the RMC console.
RST	A recessed button that you can push to reboot the RMC.
PG LED	This green LED is lit when the RMC is receiving power at the correct level.
HB LED	This green LED is lit and is flashing when the RMC is functioning correctly.

5. Plug the cable end with the USB-A connector into the laptop.
6. Plug the cable end with the USB-B connector into the RMC’s serial port, which is labeled CNSL.

Figure 1-3 on page 6 shows all the ports on the RMC.

7. Use the terminal emulation program to set the following:
 - Baud rate: 115200
 - Data bits: 8
 - Stop bits: 1

- Parity: No
 - Hardware flow control (RTS/CTS): No
8. Open file `/etc/sysconfig/module_id` from within a text editor:
 9. Search for `MODULE_RACK` within the file.
 10. Modify the `MODULE_RACK` line to specify the rack number of the rack into which you installed the RMC.
 11. Search for `MODULE_UPOS` within the file.
 12. Modify the `MODULE_UPOS` line to specify the rack unit position of the RMC within the rack.
 13. (Conditional) Enable SGI UV 3000 mode.

Complete this step if the RMC is part of an SGI UV 3000 computer system.

Add the following line at the end of the `module_id` file:

```
RMC_MODE=UV3000
```

The following is an example of a completed `/etc/sysconfig/module_id` file:

```
#
# RMC Location/Position settings
#
# This file contains the settings to configure the RMC's location
# within the system. These variables *MUST* be set in for correct
# system operation.

# Rack number for this RMC [numbered from 1]
MODULE_RACK=1

# The RMC U-position within the rack [1-40, top-of-rack enclosures 41+]
MODULE_UPOS=30
RMC_MODE=UV3000
```

The preceding example is for an SGI UV 3000 computer system. A completed `module_id` file for an SGI UV 300 computer system would not have the `RMC_MODE=UV3000` line at the end.

14. Proceed to the following:

"Adding Your Site Network Information to the RMC" on page 8

Adding Your Site Network Information to the RMC

The procedure in this topic explains how to attach the RMC to your site network. SGI configures each RMC at the factory with dynamic host configuration protocol (DHCP) addressing. Use the procedure in this topic to configure a site-specific static IP address.

The following procedure explains how to configure networking information.

Procedure 1-3 To configure the RMC on the site network

1. While logged into the RMC, open file `/etc/sysconfig/ifcfg-eth1` from within a text editor.
2. Configure either static addressing or DHCP addressing.

The SGI factory configures DHCP addressing on the RMC by default. The procedure for configuring addressing differs, depending on whether you want static addressing or the default DHCP addressing. Table 1-1 on page 9 explains how to configure addressing.

Table 1-1 Configuring RMC Addressing

To configure an RMC with static addressing	To configure an RMC with DHCP addressing
<p>1. Search for the line that contains <code>BOOTPROTO=dhcp</code>.</p> <p>2. Insert a pound character (#) in column 1 to make the <code>BOOTPROTO=dhcp</code> line look as follows:</p> <pre>#BOOTPROTO=dhcp</pre> <p>3. Remove the pound character (#) from the following line:</p> <pre># BOOTPROTO=static</pre>	<p>1. Search for the line that contains <code>BOOTPROTO=dhcp</code>.</p> <p>2. Ensure that there is no pound character (#) in column 1 of the <code>BOOTPROTO=dhcp</code>. Remove the pound character if one is present.</p> <p>3. (Optional) Set the hostname. If set, the hostname appears on the command prompt. To set the hostname, complete the following steps:</p> <ul style="list-style-type: none"> • Search for the line that contains <code># HOSTNAME</code>. • Remove the pound character (#) from column 1 of the <code>HOSTNAME</code> line. • Add the hostname you want to the <code>HOSTNAME</code> line so that it appears as follows: <pre>HOSTNAME=new_hostname</pre> <p>For example:</p> <pre>HOSTNAME=myrmc</pre>
<p>4. Edit the <code>IPADDR</code>, <code>NETMASK</code>, and <code>HOSTNAME</code> lines as follows:</p> <ul style="list-style-type: none"> • Remove the pound character (#) from column 1. • Provide site-specific information for the RMC. 	<p>4. Insert a pound character in column 1 of all the other lines in the file. When finished, make sure that only the <code>BOOTPROTO</code> line and the <code>HOSTNAME</code> line are actionable lines in this file.</p>

For example, the lines might appear as follows after they have been edited to enable static addressing:

```
#BOOTPROTO=DHCP
BOOTPROTO=static
IPADDR=100.100.100.100
NETMASK=255.255.255.0
HOSTNAME=myuv300-rmc
```

3. (Optional) Edit the `GATEWAY` line to provide site-specific information for the RMC.

This line is optional.

For example, the line might appear as follows after it has been edited:

```
GATEWAY=150.150.150.150 # Optional
```

4. Save and close file `/etc/sysconfig/ifcfg-eth1`.
5. Type the following command to reboot the RMC:

```
> reboot
```

6. Proceed to the following:

"Changing the Factory Default `ipmitool` Command Password" on page 10

Changing the Factory Default `ipmitool` Command Password

SGI recommends that you change the `ipmitool` command password. The `ipmitool` command facilitates remote management.

The following procedure explains how to customize the password for the `ipmitool` command functions.

Procedure 1-4 To change the `ipmitool` command's authentication password

1. Use the following command to retrieve the current user IDs:

```
ipmitool -I lanplus -H host -U ADMIN -P ADMIN user list
```

For *host*, specify the hostname of the RMC.

For example:

```
% ipmitool -I lanplus -H uv1-rmc -U ADMIN -P ADMIN user list
ID   Name      Callin Link Auth  IPMI Msg      Channel Priv Limit
2    ADMIN     true   false     true          OEM
10   LOCAL     true   false     true          OEM
```

2. Examine the output from the `user list` command, and note the user ID of the `ADMIN` user.

For example, in the preceding step, the user ID is 2.

3. Use the following command to change the password for the ADMIN user's ID:

```
ipmitool -I lanplus -H host -U ADMIN -P ADMIN user set password user_ID new_password
```

For *host*, specify the hostname of the RMC.

For *user_ID*, specify the user ID you obtained earlier in this procedure. For example, 2 is the user ID of the ADMIN user.

For *new_password*, specify the password you want to use for the ipmitool commands at your site.

For example:

```
% ipmitool -I lanplus -H uv1-rmc -U ADMIN -P ADMIN user set password 2 newpwd
```

Note: Do not change the password for user LOCAL. That password is required for internal RMC operations and must not be modified.

4. Proceed to the following:

"Changing the Factory Default ssh Command Password" on page 11

Changing the Factory Default ssh Command Password

When you use the `ssh` command to connect to the RMC, you need to provide a password. SGI configures a default `ssh` command password during the manufacturing process. SGI recommends that you change this default `ssh` command password.

By contrast, if you connect to the RMC through a hardware connection through the serial port, no password is required.

The following procedure explains how to customize the password for the `ssh` command.

Procedure 1-5 To change the `ssh` command's authentication password

1. Use the `ssh` command to log into the RMC as the `root` user, and use the factory default password of `root`.

For example:

```
% ssh root@uv1-rmc
root@uv1-rmc's password: #####

SGI UV300 RMC, Rev. 1.1.44 [Bootloader 1.1.4]

uv1-rmc RMC:r001i01c>
```

2. Use the Linux `passwd` command to change the password.

For example:

```
% passwd
Changing password for root
New password: #####
Retype new password: #####
```

3. (Optional) Proceed to the following topic to enable SNMP forwarding:

"(Optional) Enabling Simple Network Management Protocol (SNMP) Alert Forwarding" on page 12

(Optional) Enabling Simple Network Management Protocol (SNMP) Alert Forwarding

SGI UV 3000 systems contain an RMC, BMCs, and CMCs. SGI UV 300 systems contain an RMC and BMCs.

The RMCs, BMC, and CMCs all generate SNMP alerts, and the RMC receives the SNMP alerts that the BMCs and CMCs generate.

The following procedure explains how to configure the RMCs to forward SNMP alerts to an external IP address.

Procedure 1-6 To configure SNMP forwarding

1. Use the `ssh(1)` command to connect to the RMC.

For example:

```
% ssh root@uv1-rmc
```

2. Use a text editor, such as `vi(1)`, to open file `/etc/sysconfig/snmptrapd`.

3. Search within file `snmptrapd` for the line that includes the following characters:

```
FORWARD_DEST=
```

4. Edit the line as follows:

- Remove the comment character. You need the line to be an active, recognized line.
- Replace the IP address that appears on this line with the IP address of the server you want to configure as the trap listener.

5. Save and close the file.

6. Type the following command to reboot the RMC:

```
> reboot
```

You can safely perform this step on a running system. You need to restart the system to force the system to recognize the edits you made to file `snmptrapd`. The RMC restarts and logs out the `ssh(1)` session.

The following is an example of an edited SNMP trap configuration file on a BMC:

```
# snmptrapd configuration file
#
# snmptrapd command line options
# OPTIONS="-Lsd -p /var/run/snmptrapd.pid"
# use a custom snmptrapd.conf file (for special cases and testing only)
# CONF_FILE="/etc/sysconfig/snmptrapd.conf"
# snmptrapd forwarding destination list:
# List of snmptrapd forward DESTINATIONs, separated by spaces.
# Typically this will be one or more IP addresses, but each entry can
# be a LISTENING ADDRESS as specified in snmpd(8).
FORWARD_DEST="10.160.1.23"
```


Rack Management Controller (RMC) Tasks

This chapter contains the following topics:

- "Connecting to the Rack Management Controller (RMC)" on page 15
- "Powering On and Booting an SGI UV System From a Complete Power Off" on page 16
- "Powering Off an SGI UV System" on page 17
- "Configuring the Auto-power Capability" on page 18
- "Retrieving System Configuration Information" on page 19
- "Setting Hardware Configuration Overrides (SGI UV 3000 Systems and SGI UV 300 Systems Only)" on page 21

Connecting to the Rack Management Controller (RMC)

You can connect to the RMC one of the following ways:

- Through a laptop attached to the RMC through a serial connection.

This type of direct connection is useful if you have lost the RMC password because the RMC does not prompt you for a password when you access the RMC through a serial connection. If you want to log in as the root user, and you do not know the root password, connect a laptop computer to the RMC as described in the following topic:

"(Conditional) Setting the Position of the RMC Within its Rack" on page 3

- Through a network connection, via secure shell.

The following procedure explains how to connect to the RMC over a network connection.

Procedure 2-1 To connect to the RMC over a network connection

1. Use the secure shell (`ssh(1)`) command to log into the RMC.

The SGI factory configures the default login for the RMC to be `root` and the default password to be `root`.

2. Respond to the prompts for the login name and password.

For example:

```
> ssh root@uv1-rmc
root@uv1-rmc's password: #####

SGI UV300 RMC, Rev. 1.1.44 [Bootloader 1.1.4]

uv1-rmc RMC:r001i01c>
```

Powering On and Booting an SGI UV System From a Complete Power Off

The following procedure explains how to power on an SGI UV system from a complete power off.

Procedure 2-2 To power on or boot an SGI UV system

1. Visually inspect the system and make sure that the power breakers are on.
2. Use the procedure in the following topic to establish a connection to the RMC and log in:

"Connecting to the Rack Management Controller (RMC)" on page 15

3. Type the `power on` command to power up the SGI UV system.

The power-on takes only a few minutes.

For example:

```
RMC:r001i01c> power on
```

4. Type the following command to access the EFI shell commands:

```
RMC:r001i01c> uvcon
```

It can take 5 to 10 minutes for the `uvcon` command to return boot-to-shell progress information.

On SGI UV for SAP HANA appliances, this step is not required, but if you type in the `uvcon` command, you can monitor the kernel boot process. Because the appliance is configured to boot automatically, do not complete the remaining steps in this procedure if your SGI UV system is an SGI UV for SAP HANA appliance.

5. (Conditional) When the `Shell>` prompt appears, type `fs0:` to access the boot partition.

Complete this step on SGI UV 3000 platforms and SGI UV 300 platforms.

For example:

```
Shell> fs0:
```

6. (Conditional) Boot the system.

Complete this step on SGI UV 3000 platforms and SGI UV 300 platforms.

Use one of the following commands:

- On Red Hat Enterprise Linux (RHEL) 7 RMCs, type the following command:

```
fs0:\> EFI\redhat\grubx64.efi
```

- On RHEL 6 RMCs, type the following command:

```
fs0:\> EFI\redhat\grub.efi
```

- On SLES 12 RMCs, type the following command:

```
fs0:\> EFI\sles12\grubx64.efi
```

- On SLES 11 RMCs, type the following command:

```
fs0:\> efi\SuSE\elilo.efi
```

Powering Off an SGI UV System

The following procedure explains how to power off an SGI UV system.

Procedure 2-3 To power off an SGI UV system

1. Log into the SGI UV system as the root user, and type the following command to stop the operating system:

```
# halt
```

2. On the RMC, type the `power off` command to power off the SGI UV system.

For example:

```
RMC:r1i1c> power off
==== r001i01c (PRI) ====
```

3. Type the `power status` command to verify that the system has powered down.

For example, the command generates the following output on an SGI UV 3000 system:

```
RMC:r1i1c> power status
==== r001i01c (PRI) ====
chassis on: 0, off: 1, unknown: 0, disabled: 0
```

Configuring the Auto-power Capability

The auto-power capability allows the SGI UV server to power up automatically when power is applied after a power outage.

The following procedure explains how to retrieve information about your system's current setting and how to configure the setting you need.

Procedure 2-4 To configure the auto-power capability

1. Type the `autopower` command, with no parameters, to determine if the auto-power capability is enabled on your system.

For example, the following output shows that the feature is currently disabled:

```
RMC:r001i01c> autopower
==== r001i01c (PRI) ====
auto-power on is disabled
```

2. Use the `-e` option or the `-d` option to enable or disable the auto-power capability.

For example:

- To enable auto-power, use the `-e` option:

```
RMC:r001i01c> autopower -e
==== r001i01c (PRI) ====
auto-power on enabled (120 second delay)
```

- To disable auto-power, use the `-d` option:

```
RMC:r001i01c> autopower -d
==== r001i01c (PRI) ====
auto-power on disabled
```

Retrieving System Configuration Information

You can use the `config -v` command to view your system configuration. Use this command, for example, if you need to retrieve the IDs of the baseboard management controllers (BMCs). On an SGI UV 3000 system, you can use this command to retrieve the IDs of the chassis management controllers (CMCs).

Many SGI UV commands and `ipmitool` commands require you to specify one of these IDs when you want the command to operate on a specific BMC. The command syntax permits you to shorten the IDs by omitting the leading 0 characters. In these commands, if you decide to omit any leading 0 characters, omit all of them. For example, you can specify `r1i1b` rather than `r001i01b`, but you cannot specify `r1i01b`. The following examples show output from an SGI UV 300 system and from an SGI UV 3000 system.

Example 1. The following command output is from an SGI UV 300 system:

```
RMC:r001i01c> config -v

SSN: UV300-00001111

RMCs:          1
          r001i01c UV300

BMCs:          3
          r001i01b IP127-BASEIO
          r001i06b IP127
          r001i11b IP127-BASEIO      BASEIO-DISABLED

Partitions:    1
              partition000 BMCs:    3
```

The output shows the following:

- This SGI UV 300 computer has one RMC, and its node name is `r001i01c`.

- There are three SGI UV 300 chassis BMCs, and their IDs are r001i01b, r001i06b, and r001i11b.

Example 2. The following command output is from an SGI UV 3000 system:

```
RMC:r001i45c> config -v
```

```
SSN: UV3-00000081
```

```
RMCs:          1
r001i45c RMC
```

```
CMCs:          3
r001i01c UV2000
r001i11c UV2000
r001e44c UVORC
```

```
BMCs:          16
r001i01b00 IP137-BASEIO
r001i01b01 IP137
r001i01b02 IP137
r001i01b03 IP137
r001i01b04 IP137
r001i01b05 IP137
r001i01b06 IP137
r001i01b07 IP137
r001e44r00 RTR-ORC
r001e44r01 RTR-ORC
r001e44r02 RTR-ORC
r001e44r03 RTR-ORC
r001e44r04 RTR-ORC
r001e44r05 RTR-ORC
r001e44r06 RTR-ORC
r001e44r07 RTR-ORC
```

```
Partitions:    1
partition000 BMCs: 16
```

```
Accessories:   0
```

The output shows the following:

- This SGI UV 3000 computer has one RMC, and its node name is r001i45c.
- There are three CMCs.
- There are 16 BMCs.

Setting Hardware Configuration Overrides (SGI UV 3000 Systems and SGI UV 300 Systems Only)

The `hwcfg` command lets you view and set hardware configuration overrides.

Note: Do not change the hardware overrides on SGI UV for SAP HANA appliances.

During debugging, it might be useful to reset some overrides. Be aware that when you reset overrides, system performance can degrade, so do not reset these options outside of a troubleshooting or debugging session.

The following are a series of examples, all run on an SGI UV 300 system, that show `hwcfg` output:

- To see a list of the override settings, use the `hwcfg` command without options. This shows all overrides set on any SGI UV 300 chassis BMCs in the system. If any overrides are set on some chassis BMCs and not on others, the output shows a count of chassis BMCs for which the override is set. For example:

```
RMC:r001i01c> hwcfg
DEBUG_SW=0x4
MEMRISER_DISABLE=0x2
```

- To see a list of chassis BMCs where each override is set, use the `-v` option. For example:

```
RMC:r001i01c> hwcfg -v
DEBUG_SW=0x4
  all targeted BMC(s)
MEMRISER_DISABLE=0x2
  all targeted BMC(s)
```

- To see an individual list of chassis BMCs and their overrides, use the `-vv` option. For example:

```
RMC:r001i01c> hwcfg -vv
==== r001i01b ====
MEMRISER_DISABLE=0x2
DEBUG_SW=0x4
harp26-cmc CMC:r001i01c>
```

- To set one or more overrides, use the following command:

```
hwcfg node_name=value [node_name=value ...]
```

For example:

```
uv3ess-rmc RMC:r001i01c> hwcfg DEBUG_SW=0x4
DEBUG_SW=0x4 <PENDING RESET>
```

- To clear overrides, use the `-c` option. For example:

```
uv3ess-rmc RMC:r001i01c> hwcfg -c
```

- To clear all overrides, use both the `-a` and `-c` options. For example:

```
uv3ess-rmc RMC:r001i01c> hwcfg -ac
DEBUG_SW=default [0x0] <PENDING RESET>
MEMRISER_DISABLE=DEFAULT [0X0] <PENDING RESET>
```

- To clear one or more specific variables, use the following command:

```
hwcfg -c node_name [... node_name ]
```

- To show a list of `hwcfg` variables available, use the `-l` or the `--list` option. For example:

```
RMC:r001i01c> hwcfg -l
==== 4/4 BMC(s) ====
SOCKET_DISABLE=yes|no|<socket bitmask>
    Socket disable

PARTITION=<numeric value 0-65535>
    Partition number for this blade

CHASSIS_DISABLE=yes|no
    Disable this chassis
```

BASEIO_DISABLE=yes|no
Disable the BaseIO on this blade (if present)

IIO_DISABLE=yes|no|<socket bitmask>
Disable I/O on specified socket(s)

MEMRISER_DISABLE=yes|no|<mem riser bitmask: bit0=MEM1...bit7=MEM8>
Memory riser disable

DEBUG_SW=<32-bit value>
Software debug switches (see "hwcfg --help DEBUG_SW" for details)

BIOS_FILE=<filename>
Alternate BIOS image file

NL_ENABLE=yes|no|<NL port bitmask>
Enable NL links

- To show all variables, regardless of state, use the --all option. For example:

```
RMC:r1l1c> hwcfg --all
BASEIO_DISABLE=no
BIOS_FILE=/common/bios.fd
CHASSIS_DISABLE=no
DEBUG_SW=0x0
IIO_DISABLE=no
MEMRISER_DISABLE=no
NL_ENABLE=yes
PARTITION=0
SOCKET_DISABLE=no
```

Monitoring Log Files

Log files are useful in troubleshooting. The SGI UV system controllers provide access to various log files. The log files contain information about events that occur on the RMC, BMC, the chassis management controller (CMC), and the SGI UV server.

The following topics provide log file information:

- "Hardware Event Log (HEL) Log Files" on page 24
- "System Event Log (SEL) Log Files" on page 24
- "System Controller Log Files" on page 24

Hardware Event Log (HEL) Log Files

The RMC generates event data for the HEL. This log file resides on the RMC. This log file contains information about correctable memory errors, uncorrectable memory errors, machine checks, and other events. Use one of the following commands to access this event data:

- The RMC `uv3dmp` command. SGI recommends that you use this command to access the HEL data. For more information, see the following:
"uv3dmp" on page 55
- The `hel` command. For more information, see the following:
"hel" on page 51

System Event Log (SEL) Log Files

The RMC and the BMC generate SEL log files, all of which can be useful in troubleshooting. Use the `ipmitool sel list` command to access these log files.

For more information, see the following:

"Retrieving the System Event Log (SEL)" on page 40

System Controller Log Files

The Linux operating system that resides on the RMC, BMC, and CMC supports standard Linux log files, as follows:

- Standard Linux operating system log files. The RMC hosts a standard Linux operating system, so you can view the operating system log file entries in `/var/log/messages`.

- System start-up message log file. To retrieve this log file, use the `ssh` command to log into the RMC, and type the following command:

```
> dmesg
```


Remote Management

This chapter includes the following topics:

- "About Remote Management" on page 27
- "ipmitool Remote Management Command Formats" on page 29
- "ipmitool Commands Supported on the RMC" on page 34

About Remote Management

You can use the Intelligent Platform Management Interface (IPMI) protocol to manage a system from a remote console over a network connection. You can access the IPMI v1.5/v2.0 interface through the `ipmitool(1)` command, which is an open-source command line tool. IPMI management software is included in most Linux distributions and in IPMI-compliant management applications. For more information about the `ipmitool` command, see the following:

<http://ipmitool.sourceforge.net/>

This chapter explains the remote management commands and uses the following terminology:

- The term *SGI UV 3000 system* or *SGI UV 300 system* includes the server, the rack management controller (RMC), and the baseboard management controllers (BMCs). In addition, an SGI UV 3000 system also includes chassis management controllers (CMCs.)
- The term *SGI UV 3000 server* or *SGI UV 300 server* refers only to the server component of the system. The server is enclosed within each chassis. The RMC, the BMCs, and the CMCs are not part of the server itself.

The following figures show the network topology for the RMC management network and the relationships between the major components:

- Figure 3-1 on page 28 shows an SGI UV 3000 system.

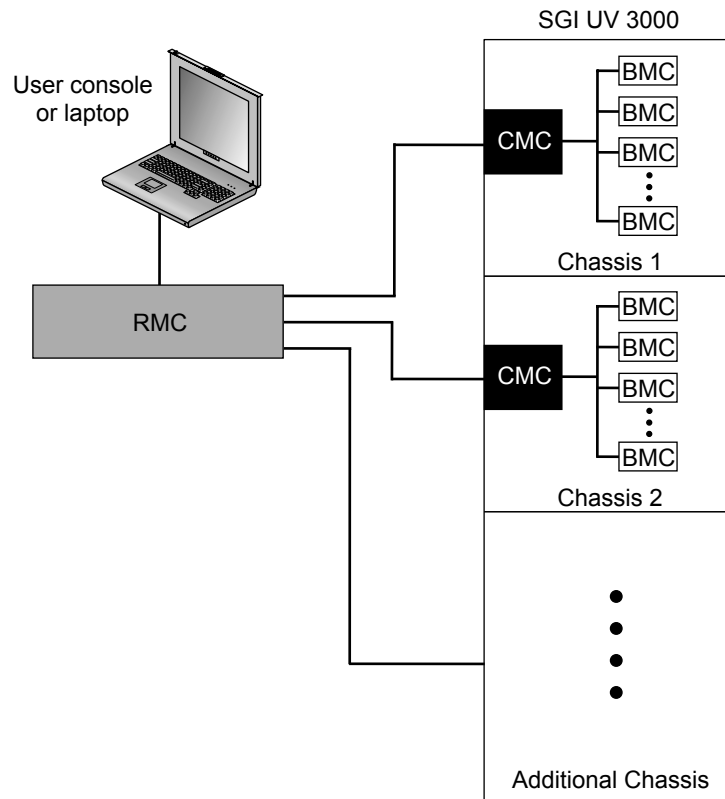


Figure 3-1 Connecting to the SGI UV 3000 RMC and Chassis BMC

- Figure 3-2 on page 29 shows an the SGI UV 300 system or an SGI UV for SAP HANA appliance.

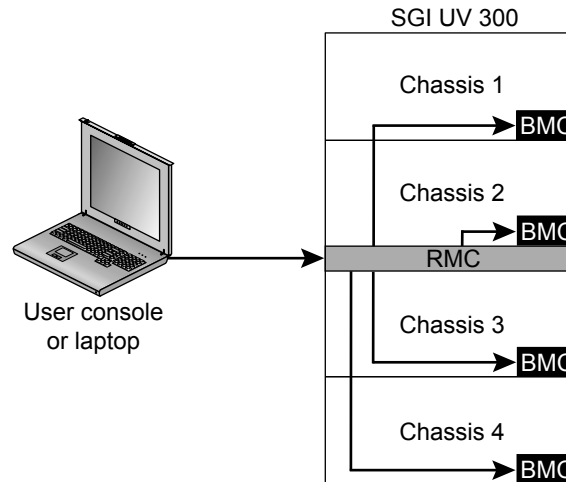


Figure 3-2 Connecting to the SGI UV 300 RMC and Chassis BMC

As Figure 3-1 on page 28 and Figure 3-2 on page 29 show, the SGI UV 3000 and SGI UV 300 systems each have a hierarchical system controller network. Because of this hierarchy, you cannot use `ipmitool` commands to access the baseboard management controllers (BMCs) and chassis management controllers (CMCs) directly.

From a remote console, you can issue `ipmitool` commands over the network to the RMC. The remote console needs to be on the same local network as the RMC, and you need to use the `ssh` command to gain access to the RMC.

`ipmitool` Remote Management Command Formats

The SGI UV chassis CMCs and BMCs are not exposed directly to the network. If you are logged into a remote system and you want to run a command on a BMC or an RMC, you have to connect to the RMC first. The procedures in this topic show how to run `ipmitool` commands on the RMC, BMC, and CMC components of SGI UV 3000 systems and SGI UV 300 systems. These procedures use an SGI wrapper script that makes it easier to target a specific component, all BMCs, or all CMCs in a system.

The following procedures explain how to use the `ipmitool` commands:

- "Running an `ipmitool` Command on an RMC" on page 30

- "Running an `ipmitool` Command on One CMC (SGI UV 3000 Systems Only)" on page 31
- "Running an `ipmitool` Command on All CMCs (SGI UV 3000 Systems Only)" on page 31
- "Running an `ipmitool` Command on One BMC" on page 32
- "Running an `ipmitool` Command on All BMCs" on page 32
- "Command Format Examples" on page 33

This manual explains the `ipmitool` commands that SGI supports.

For more information, see the `ipmitool(1)` man page on the SGI UV server.

Running an `ipmitool` Command on an RMC

The RMC supports a limited set of `ipmitool` commands that you can use to power up the RMC, power down the RMC, or obtain RMC status information. When you run an `ipmitool` command on the RMC, it returns information about the RMC only.

The following procedure explains how to run an `ipmitool` command to the RMC of an SGI UV 3000 system or an SGI UV 300 system.

Procedure 3-1 To run an `ipmitool` command on an RMC

1. From a remote host, type the following command:

```
remotehost% ipmitool -I lanplus -H host -U ADMIN -P pwd cmd
```

The variables in this command are as follows:

host The hostname (preferred) or IP address of the RMC.

For example: `uv1-rmc`.

pwd The authentication password.

The default password is `ADMIN`. If you changed the `ipmitool` command's password, specify your site-defined new password.

For information about how to change the `ipmitool` command's password, see the following:

"Changing the Factory Default `ipmitool` Command Password" on page 10

cmd One of the `ipmitool` commands.

Running an `ipmitool` Command on One CMC (SGI UV 3000 Systems Only)

The following procedure explains how to log into an RMC and then target an `ipmitool` command to one CMC of an SGI UV 3000 system.

Procedure 3-2 To run an `ipmitool` command on one CMC

1. Type the `ssh(1)` command in the following format to log into the RMC:

```
remotehost% ssh root@host
```

For *host*, specify the hostname (preferred) or IP address of the RMC.

For example:

```
remotehost% ssh root@uv1-rmc
```

2. Type the RMC password when prompted.
3. Type the following SGI wrapper command to target the CMC:

```
RMC> cmc exec "ipmi cmd" cmc_id
```

The variables in this command are as follows:

cmd One of the `ipmitool` commands.

cmc_id The ID of a specific CMC.

Running an `ipmitool` Command on All CMCs (SGI UV 3000 Systems Only)

The following procedure explains how log into an RMC and then target an `ipmitool` command to all CMCs of an SGI UV 3000 system.

Procedure 3-3 To run an `ipmitool` command on all CMCs

1. Type the `ssh(1)` command in the following format to log into the RMC:

```
remotehost% ssh root@host
```

For *host*, specify the hostname (preferred) or IP address of the RMC.

For example:

```
remotehost% ssh root@uv1-rmc
```

2. Type the RMC password when prompted.
3. Type the following SGI wrapper command to target all the BMCs:

```
RMC> cmc ipmi cmd
```

For *cmd*, specify one of the `ipmitool` commands.

Running an `ipmitool` Command on One BMC

The following procedure explains how to log into an RMC and then target an `ipmitool` command to one BMC.

Procedure 3-4 To run an `ipmitool` command on one BMC

1. Type the `ssh(1)` command in the following format to log into the RMC:

```
remotehost% ssh root@host
```

For *host*, specify the hostname (preferred) or IP address of the RMC.

For example:

```
remotehost% ssh root@uv1-rmc
```

2. Type the RMC password when prompted.
3. Type the following SGI wrapper command to target the BMC:

```
RMC> bmc exec "ipmi cmd" bmc_id
```

The variables in this command are as follows:

cmd One of the `ipmitool` commands.

bmc_id The ID of a specific BMC.

Running an `ipmitool` Command on All BMCs

The following procedure explains how to log into an RMC and then target an `ipmitool` command to all BMCs.

Procedure 3-5 To run an `ipmitool` command on all BMCs

1. Type the `ssh(1)` command in the following format to log into the RMC:

```
remotehost% ssh root@host
```

For *host*, specify the hostname (preferred) or IP address of the RMC.

For example:

```
remotehost% ssh root@uv1-rmc
```

2. Type the RMC password when prompted.
3. Type the following SGI wrapper command to target the BMCs:

```
RMC> bmc ipmi cmd
```

For *cmd*, specify one of the `ipmitool` commands.

Command Format Examples

Assume the following:

- You are logged into a Linux computer as a regular user, not the root user.
- The hostname of the SGI UV system's RMC is `uv1-rmc`.
- The SGI UV chassis BMC IDs are `r001i01b`, `r001i06b`, `r001i11b`, and `r001i02b`.

Example 1. Type the following command to obtain information about the power status on the RMC:

```
% ipmitool -I lanplus -H uv1-rmc -U ADMIN -P ADMIN power status  
Chassis Power is on
```

Example 2. Type the following commands to obtain information about the power status on SGI UV chassis BMC `r001i01b`:

```
% ssh root@uv1-rmc  
root@uv1-rmc's password:#####  
% bmc exec "ipmi power status" r111b  
Chassis Power is on
```

In this example, the user supplied the root user's password for the RMC when prompted.

Note: The SGI documentation shows `ipmitool` command output. However, depending on the revision level of the `ipmitool` command you use on your remote console, the command output you see at your site can differ from the output shown in the documentation.

`ipmitool` Commands Supported on the RMC

The following list shows the `ipmitool` commands that SGI supports on the RMC:

- `chassis power`. This command powers on the server or powers off the server.
For more information, see the following:
"Creating Crash Dumps and Issuing Power Cycling Commands" on page 35
- `fru list`. This command lists data pertaining to field-replaceable units (FRUs).
For more information, see the following:
"Listing Information for Field Replaceable Units (FRUs)" on page 36
- `lan print 1`. This command lists the LAN configuration.
For more information, see the following:
"Listing the Local Area Network (LAN) Configuration" on page 37
- `sdr list`. This command retrieves information about environmental sensors.
For more information, see the following:
"Retrieving a List of the Environmental Sensors and Values" on page 39
- `sel list`. This command retrieves information about the system event log (SEL).
For more information, see the following:
"Retrieving the System Event Log (SEL)" on page 40

- `sol activate`. This command lets you access the server console of an unpartitioned system. You cannot access the server console if the SGI UV system is partitioned.

For more information, see the following:

"Opening a Serial Console" on page 42

For more information about these commands, see the `ipmitool(1)` man page on your SGI UV server.

Creating Crash Dumps and Issuing Power Cycling Commands

The RMC itself has no power on or power off capability. The RMC is always on if the SGI UV server is connected to a power source. Likewise, the BMCs for each chassis are always on when the SGI UV server is connected to a power source. To power on and power off the SGI UV server, you need to issue power on and power off commands through the RMC.

The following topics explain the `ipmitool` power commands:

- "Issuing Power Cycling Commands" on page 35
- "Sending a Non Maskable Interrupt (NMI) Signal to Write a Crash Dump" on page 36

Issuing Power Cycling Commands

The following command sends power control requests to the SGI UV system:

```
% ipmitool -I lanplus -H host -U ADMIN -P ADMIN chassis power action
```

For *host*, specify the hostname (preferred) or IP address of the RMC.

For *action*, specify `on`, `off`, `cycle`, or `reset`.

If you want to watch the server boot process, use the `ipmitool sol activate` command to open up a serial console. For information about the `sol activate` command, see the following:

"Opening a Serial Console" on page 42

Note: The `ipmitool power` command in this topic addresses the entire SGI UV server, not any of the individual chassis. SGI recommends that you do not attempt to issue power commands to any of the individual SGI UV chassis.

The RMC `power` command is an alternative to the `ipmitool power` command. For more information about the RMC `power` command, see the following:

"power" on page 52

Sending a Non Maskable Interrupt (NMI) Signal to Write a Crash Dump

The following command sends a non-maskable interrupt (NMI) signal to the SGI UV system, which responds by writing a system crash dump:

```
# ipmitool -I lanplus -H host -U ADMIN -P ADMIN chassis power diag
```

For `host`, specify the hostname (preferred) or IP address of the RMC.

For more information about how to create crash dump files, see the *SGI UV System Software Installation and Configuration Guide*.

Listing Information for Field Replaceable Units (FRUs)

The `fru list` command lists information about each FRU.

Example 1. The following command lists FRUs for an SGI UV 300 RMC:

```
# ipmitool -I lanplus -H uv1-rcm -U ADMIN -P ADMIN fru list
FRU Device Description : Builtin FRU Device (ID 0)
Board Mfg Date         : Mon Oct  6 08:29:00 2014
Board Mfg              : BENCHMARK
Board Product          : UV3_RMC
Board Serial           : RXE968
Board Part Number      : 030_2940_002
Board Extra            : _A01
Board Extra            : 00004a87
Board Extra            : 00000002
Board Extra            : 00000e46
```

Example 2. The following commands list FRUs for a specific SGI UV 300 chassis BMC:

```
# ssh root@uv1-rmc
root@uv1-rmc's password: #####
# bmc exec "ipmi fru list" r1i1b
FRU Device Description : Builtin FRU Device (ID 0)
Board Mfg Date       : Tue May 27 05:21:00 2014
Board Mfg            : BENCHMARK
Board Product       : IP127_EX_4_SKT
Board Serial        : RWN463
Board Part Number   : 030_2926_001
Board Extra         : _A05
Board Extra         : 00001369
Board Extra         : 00000002
Board Extra         : 00000448

FRU Device Description : SH775
Board Mfg Date       : Tue May 27 05:21:00 2014
Board Mfg            : BENCHMARK
Board Product       : IP127_EX_4_SKT
Board Serial        : RWN463
Board Part Number   : 030_2926_001
Board Extra         : _A05
Board Extra         : 00001369
Board Extra         : 00000002
Board Extra         : 00000448
```

Listing the Local Area Network (LAN) Configuration

The `lan print 1` command lists the LAN configuration.

Example 1. The following command lists the LAN configuration for the RMC:

```
# ipmitool -I lanplus -H uv1-rmc -U ADMIN -P ADMIN lan print 1
Set in Progress       : Set Complete
Auth Type Support     : NONE MD2 MD5 PASSWORD
Auth Type Enable      : Callback :
                       : User       : MD5
                       : Operator  : MD5
                       : Admin    : MD5
                       : OEM      : MD5
```

```
IP Address Source      : Static Address
IP Address             : 192.168.1.22
Subnet Mask            : 255.255.255.0
MAC Address            : 00:00:00:00:00:00
SNMP Community String : sgi
IP Header              : TTL=0x40 Flags=0x40 Precedence=0x00 TOS=0x10
BMC ARP Control        : ARP Responses Enabled, Gratuitous ARP Disabled
Gratituous ARP Intrvl : 2.0 seconds
Default Gateway IP     : 0.0.0.0
Default Gateway MAC    : 00:00:00:00:00:00
Backup Gateway IP     : 0.0.0.0
Backup Gateway MAC    : 00:00:00:00:00:00
RMCP+ Cipher Suites   : 0,1,2,3,6,7,8,11,12
Cipher Suite Priv Max : XuuOXXuuOXXuOXX
                       : X=Cipher Suite Unused
                       : c=CALLBACK
                       : u=USER
                       : o=OPERATOR
                       : a=ADMIN
                       : O=OEM
```

Example 2. The following commands list the current configuration for a specific SGI UV chassis BMC:

```
% ssh root@uv1-rmc
root@uv1-rmc's password: #####
# bmc exec "ipmi lan print 1" r1i1b
Set in Progress      : Set Complete
Auth Type Support    : NONE MD2 MD5 PASSWORD OEM
Auth Type Enable     : Callback : NONE MD2 MD5 PASSWORD OEM
                       : User      : NONE MD2 MD5 PASSWORD OEM
                       : Operator : NONE MD2 MD5 PASSWORD OEM
                       : Admin    : NONE MD2 MD5 PASSWORD OEM
                       : OEM      :
IP Address Source    : Static Address
IP Address           : 172.30.50.100
Subnet Mask          : 255.255.255.0
MAC Address          : 08:00:69:17:00:b4
SNMP Community String : sgi
IP Header            : TTL=0x40 Flags=0x40 Precedence=0x00 TOS=0x10
BMC ARP Control      : ARP Responses Enabled, Gratuitous ARP Disabled
Gratituous ARP Intrvl : 0.0 seconds
```

```

Default Gateway IP      : 0.0.0.0
Default Gateway MAC    : 00:00:00:00:00:00
Backup Gateway IP     : 0.0.0.0
Backup Gateway MAC    : 00:00:00:00:00:00
802.1q VLAN ID       : Disabled
802.1q VLAN Priority  : 0
RMCP+ Cipher Suites   : 0,1,2,3,6,7,8,11,12
Cipher Suite Priv Max : XaaaXXaaaXXaaXX
                       : X=Cipher Suite Unused
                       : c=CALLBACK
                       : u=USER
                       : o=OPERATOR
                       : a=ADMIN
                       : O=OEM

```

Retrieving a List of the Environmental Sensors and Values

The `sdr list` command retrieves a list of the system's environmental sensors and shows their values.

Example 1. The following command targets the RMC:

```

% ipmitool -I lanplus -H uv1-rmc -U ADMIN -P ADMIN sdr list
RMC Inlet          | 23 degrees C      | ok
RMC Exhst         | 24 degrees C      | ok
RMC PSOC Temp     | 23 degrees C      | ok
RMC PSOC 3.3v    | 3.33 Volts        | ok
RMC 12v          | 12.08 Volts       | ok
RMC 3.3v Aux     | 3.33 Volts        | ok
RMC 2.5v         | 2.47 Volts        | ok
RMC 1.5v         | 1.49 Volts        | ok
RMC 1.2v         | 1.19 Volts        | ok
RMC 1.0v         | 1.00 Volts        | ok
RMC 0.75v        | 0.76 Volts        | ok
Pwr Good          | 0x00              | ok
Pwr Sply Fault   | 0x00              | ok
Pwr Redund OK    | 0x00              | ok
Stacking Pres    | 0x00              | ok
PS0 VOUT         | 11.92 Volts       | ok
PS0 IOU          | 0.41 Amps         | ok
PS0 Temp1        | 20 degrees C      | ok

```

```
PS0 Temp2      | 23 degrees C      | ok
PS0 Fan1       | 10858 RPM         | ok
PS1 VOUT       | 12.05 Volts       | ok
PS1 IOU        | 0.69 Amps         | ok
PS1 Temp1     | 19 degrees C      | ok
PS1 Temp2     | 23 degrees C      | ok
PS1 Fan1       | 10797 RPM         | ok
Memory Warning | 0x00              | ok
Memory Critical| 0x00              | ok
Disk Warning   | 0x00              | ok
Disk Critical  | 0x00              | ok
12V ENA       | 0x00              | ok
```

Example 2. The following commands target a specific SGI UV 300 BMC:

```
% ssh root@uv1-rmc
root@uv1-rmc's password: #####
# bmc exec "ipmi sdr list" rli1b
CPU0_TEMP      | -58 degrees C     | ok
CPU1_TEMP      | -57 degrees C     | ok
CPU2_TEMP      | -59 degrees C     | ok
CPU3_TEMP      | -58 degrees C     | ok
CPU0_DIMM_MAX  | 29 degrees C      | ok
CPU1_DIMM_MAX  | 27 degrees C      | ok
CPU2_DIMM_MAX  | 26 degrees C      | ok
CPU3_DIMM_MAX  | 26 degrees C      | ok
CPU0_DIMM_MAX_ID| 0x00              | ok
CPU1_DIMM_MAX_ID| 0x00              | ok
CPU2_DIMM_MAX_ID| 0x00              | ok
CPU3_DIMM_MAX_ID| 0x00              | ok
HARP_INLET_TEMP| 23 degrees C      | ok
HARP_OUTLET_TEMP| 31 degrees C      | ok
.
.
.
```

Retrieving the System Event Log (SEL)

The `sel list` command retrieves the system event log (SEL).

Example 1. The following command targets the RMC:

```
% ipmitool -I lanplus -H uv1-rmc -U ADMIN -P ADMIN sel list
1 | 07/10/2014 | 12:11:20 | Temperature #0x01 | Upper Non-critical going low | Asserted
2 | 07/10/2014 | 12:11:20 | Temperature #0x01 | Upper Critical going low | Asserted
3 | 07/10/2014 | 12:11:20 | Temperature #0x01 | Upper Non-recoverable going low | Asserted
4 | 07/10/2014 | 12:11:20 | Temperature #0x02 | Upper Non-critical going low | Asserted
5 | 07/10/2014 | 12:11:20 | Temperature #0x02 | Upper Critical going low | Asserted
6 | 07/10/2014 | 12:11:20 | Temperature #0x02 | Upper Non-recoverable going low | Asserted
7 | 07/10/2014 | 12:16:53 | Voltage #0x0a | Upper Non-critical going high | Asserted
8 | 07/10/2014 | 12:16:53 | Voltage #0x0a | Upper Critical going high | Asserted
9 | 07/10/2014 | 12:16:53 | Voltage #0x0a | Upper Non-recoverable going high | Asserted
a | 07/10/2014 | 12:16:56 | Voltage #0x0a | Upper Non-critical going high | Deasserted
b | 07/10/2014 | 12:16:56 | Voltage #0x0a | Upper Critical going high | Deasserted
c | 07/10/2014 | 12:16:56 | Voltage #0x0a | Upper Non-recoverable going high | Deasserted
d | 07/10/2014 | 12:23:50 | Voltage #0x0a | Lower Non-critical going low | Asserted
e | 07/10/2014 | 12:23:50 | Voltage #0x0a | Lower Critical going low | Asserted
f | 07/10/2014 | 12:23:50 | Voltage #0x0a | Lower Non-recoverable going low | Asserted
10 | 07/10/2014 | 12:23:53 | Voltage #0x0a | Lower Non-critical going low | Deasserted
11 | 07/10/2014 | 12:23:53 | Voltage #0x0a | Lower Critical going low | Deasserted
12 | 07/10/2014 | 12:23:53 | Voltage #0x0a | Lower Non-recoverable going low | Deasserted
13 | 07/10/2014 | 12:34:50 | Voltage #0x0a | Upper Non-critical going high | Asserted
.
.
.
```

Example 2. The following command targets the RMC on a different day and shows no SEL entries:

```
% ipmitool -H uv1-rmc -U ADMIN -P ADMIN sel list
SEL has no entries
```

Example 3. The following commands target a specific SGI UV chassis BMC:

```
% ssh root@uv1-rmc
root@uv1-rmc's password: #####
% bmc exec "ipmi sel list" r1i1b
SEL has no entries
```

Opening a Serial Console

The `sol activate` command opens a serial console to the SGI UV server. You might want to issue this command, for example, if you want to observe system messages during a boot. This command is as follows:

```
# ipmitool -I lanplus -H host -U ADMIN -P ADMIN sol activate
```

For *host*, specify the hostname (preferred) or IP address of the RMC.

Rack Management Controller (RMC) Commands

This chapter includes the following topics:

- "About the RMC Commands" on page 43
- "Command Targets" on page 45
- "autopower" on page 47
- "bios" on page 48
- "bmc, cmc, and rmc Commands" on page 48
- "config" on page 49
- "console" on page 51
- "hel" on page 51
- "hwcfg" on page 52
- "log" on page 52
- "power" on page 52
- "sensor" on page 54
- "uv3dmp" on page 55
- "version" on page 56

About the RMC Commands

The rack management controller (RMC) commands perform various tasks on the RMC, the chassis management controllers (CMCs), and the baseboard management controllers (BMCs) in the system.

The commands are located in `/sysco/bin` on the RMC. For a list of available commands, enter the following at the RMC system prompt:

```
> /sysco/bin/help -t
```

For a information about each command, type the command's name and `--help` at the RMC prompt. For example:

```
RMC:r001i01c> command --help
```

Command Targets

The RMC commands use the following format:

```
cmd [params] [target [ target ... ]]
```

The variables in the preceding format are as follows:

<i>cmd</i>	The RMC, BMC, or CMC command you want to run.
<i>params</i>	Zero or more command parameters. Not all commands have parameters.
<i>target</i>	Zero or more component targets. Not all commands accept a <i>target</i> argument. If you do not specify a <i>target</i> parameter, the command operates on all BMCs or all CMCs, as appropriate.

Note: The following list uses < and > symbols for readability. Do not include the < and > characters in your *target* specification.

Use one of the following formats to specify a *target* argument:

CMC <i>target</i> format	r<rack>i<upos>c
SGI UV 3000 BMC <i>target</i> format	r<rack>i<upos>b<slot>
SGI UV 300 BMC <i>target</i> format	r<rack>i<upos>b

The variables in the preceding formats are as follows:

- For *rack*, specify the rack number or an asterisk (*) to specify all racks.
- For *upos*, specify the rack unit position of the component or an asterisk (*) to signify all U-positions.
- For *slot*, specify a blade *slot* within a chassis. (SGI UV 3000 only)

For examples of command targets, see the following:

"Command Targeting Examples" on page 46

Command Targeting Examples

Table 4-1 on page 46 shows how to specify groups of targets. The table uses the following notation:

Notation	Meaning
<i>Any</i>	In the table, <i>Any</i> refers to all racks, all BMCs, or all slots.
<i>upos</i>	The rack unit position, or U-position, in the rack. Some command output uses <i>u</i> , rather than <i>upos</i> ; these terms are equivalent.
<i>rack</i>	The rack in which the component resides.
*	All values in that position. For example, <i>r*</i> references all racks, and <i>i*</i> references all BMCs.

You can use a decimal number to narrow the target selection in place of any asterisk. The commands do not support ranges, but you can specify a space-separated list of targets.

Table 4-1 Target Specifications

<i>target</i> Syntax	SGI UV 3000 BMC <i>rack, upos, slot</i>	CMC or SGI UV 300 BMC <i>rack, upos</i>
<i>*, all</i>	Any, Any, Any	Any, Any
<i>r*</i>	<i>rack</i> , Any, Any	<i>rack</i> , Any
<i>r*i*</i>	<i>rack, upos</i> , Any	<i>rack, upos</i>
<i>r*i*b*</i>	<i>rack, upos, slot</i>	N/A
<i>*c</i>	N/A	Any, Any
<i>r*i*c</i>	N/A	<i>rack, upos</i>
<i>p*</i>	All BMCs with matching partitions. This is a partition target.	N/A

RMC Commands

The following topics describe the commands that you can issue from the RMC. After you log into the RMC, you can use these commands to target the following components:

- On SGI UV 3000 systems, you can target the RMC itself, a BMC, or a CMC.
- On SGI UV 300 systems, you can target the RMC itself or a BMC.

Some RMC commands accept targets. Table 4-2 on page 47 shows the command targets for each command that accepts targets. If you do not specify a target, the command runs on all appropriate components.

Table 4-2 RMC Command Targets

Command	Appropriate Targets
bios	None or a BMC
bmc	None or a BMC
cmc	None or a CMC
console	None, a partition, or a BMC
hwcfg	None or a BMC
log	None, a partition, a BMC, or a CMC
power	None, a partition, a BMC, or a CMC
rmc	None or an RMC

autopower

The `autopower` command allows an SGI UV server to power up automatically when power is applied after a power outage. Issuing the `autopower` command without any argument acts as a query, with the results displaying the current state (enabled/disabled) and (if enabled) the current delay time and the results of the last attempted automatic power on.

For examples, see the following:

"Configuring the Auto-power Capability" on page 18

bios

The `bios` command displays BIOS information for the system after it is powered on. For example:

```
RMC:r001i01c> bios
Last booted: SGI BIOS 2.1.0 built in rel-5.0.4-2014-07-24_14.12.35 by ajm on 2014-07-24 at 19:13:20 UTC
uv3ess-rmc RMC:r001i01c> bios -s
[S:0x03,DF:0x009000] Booted      - CoreExitBootServices
```

bmc, cmc, and rmc Commands

The `bmc`, `cmc`, and `rmc` commands propagate the same command to one or more BMCs, CMC, or RMCs. You can use one of these commands to propagate a Linux operating system command, an `ipmitool` command, or a version command.

The formats for these commands are as follows:

```
bmc [exec] command [target_id]
```

or

```
cmc [exec] command [target_id]
```

or

```
rmc [exec] command [target_id]
```

The command components are as follows:

<code>bmc cmc rmc</code>	Specifies the component type.
<code>exec</code>	Optional. If you target a specific component, use the <code>exec</code> option. For example, the following command runs the <code>df -k</code> command on all CMCs: <pre># cmc exec "df -k" r1i1c</pre>
<code><i>command</i></code>	The command you want to run on all components.

target_id

Optional. The component identifier of a specific BMC, CMC, or RMC. When specified, the *command* runs on only that specific component.

If you do not specify a *target_id*, the *command* runs on all BMC, all CMCs, or all RMCs, as appropriate.

config

The `config` command shows your system configuration. The default output includes information about the number of RMCs, BMCs, CMCs, chassis and blade types, partitions, and some major hardware configuration overrides. For a more detailed report, use the `-v` option.

Example 1. The following `config` command displays a hardware configuration summary on an SGI UV 300 system:

```
RMC:r001i01c> config

SSN: UV300-00000006

RMCs:          1
BMCs:          1
Partitions:    1
```

Example 2. The following `config` command displays a detailed hardware configuration summary for an SGI UV 300 system:

```
UV300 RMC r1i1c> config -v
SSN: UV300-00000030

RMCs:          1
               r001i01c UV300

BMCs:          2
               r001i01b IP127-BASEIO
               r001i06b IP127

Partitions:    1
               partition000 BMCs:    2
```

Example 3. The following `config` command displays a detailed hardware configuration summary for an SGI UV 3000 system:

```
MC r1i44c> config -v

SSN: UV3-00000081

RMCs:          1
    r001i45c RMC

CMCs:          3
    r001i01c UV2000
    r001e44c UVORC

BMCs:          16
    r001i01b00 IP137-BASEIO
    r001i01b01 IP137
    r001i01b02 IP137
    r001i01b03 IP137
    r001i01b04 IP137
    r001i01b05 IP137
    r001i01b06 IP137
    r001i01b07 IP137
    r001e44r00 RTR-ORC
    r001e44r01 RTR-ORC
    r001e44r02 RTR-ORC
    r001e44r03 RTR-ORC
    r001e44r04 RTR-ORC
    r001e44r05 RTR-ORC
    r001e44r06 RTR-ORC
    r001e44r07 RTR-ORC

Partitions:    1
    partition000 BMCs: 16

Accessories:   0
```

For another `config` command example, see the following:
"Retrieving System Configuration Information" on page 19

console

The `console` command opens a console window on a target. The targets can be one of the following:

- The system console. To open this console, log into the RMC and type `console` on an unpartitioned system.
- The BMC console. To open this console, log into the RMC and type the `console` command with a BMC target and hub specification. For example:

```
console r1i0b0h0
```

The following character sequences are available interactively after a `console` session is started:

```
console: escape codes:
console:  ctrl-] s    steal console
console:  ctrl-] r    release console
console:  ctrl-] b    sends break
console:  ctrl-] c    connection status
console:  ctrl-] q    quit (if active console
console:  ctrl-] ?|h  this help
```

Use CTRL -] q to exit the console.

Note: The `console` command is equivalent to the `uvcon` command. The `uvcon` command is an alias to the `console` command.

hel

The `hel` command displays the hardware error logs. This is an expert user command. SGI recommends that you use the `uv3dmp` utility rather than the `hel` command.

For information about the `uv3dmp` utility, see the following:

"uv3dmp" on page 55

hwcfg

The `hwcfg` command displays and sets hardware override variables. You also use the `hwcfg` command when you partition an SGI UV system, as described in the *SGI UV System Software Installation and Configuration Guide*.

For a `hwcfg` command example, see the following:

"Setting Hardware Configuration Overrides (SGI UV 3000 Systems and SGI UV 300 Systems Only)" on page 21

log

The `log` command provides a log of various operations performed on the RMC. The output consists of the system controller firmware logs. These logs contain messages related to the actions of the various pieces of the system controller firmware. This is an expert user command.

If you do not specify a *target*, the command returns all log information for all possible *targets*.

If you specify a *target*, the command returns log information for only that *target*.

power

The `power` command enables you to manipulate and to retrieve information about the power status of an SGI UV server. Specifically, you can use the `power` command to power on, power off, reset, power cycle, get status, or invoke the kernel debugger (KDB) of an SGI UV server.

The RMC, the CMCs, and the BMCs are always powered on if the SGI UV system is connected to an AC power source. You cannot power on or power off the RMC, the CMCs, or any of the BMCs.

The `power` command affects the SGI UV 3000 server or the SGI UV 300 server. Within an SGI UV server, the individual chassis are connected via NUMALink, and the `power` command typically operates upon these chassis as if they were one system. In exceptional cases, you can use the `power` command to target an individual chassis. This is an expert user task, and generally, an expert user powers on or powers off a server only to recover a hung CMC or BMC. This action crashes a running system.

The `power` command accepts the following two command line options:

- `-c`, which clears any saved BIOS settings in conjunction with `on`, `off`, or `reset` actions. For example, you can specify the `-c` option in one of the following ways: `power -c on`, `power -c off`, or `power -c reset`.
- `-v`, which lists the individual chassis and the power status of each chassis.

Example 1. You can use the `power` command or `power status` command to retrieve information about the power state of the SGI UV 300 chassis in the server, as follows:

```
RMC:r001i01c> power
==== r001i01c ====
chassis - on: 1, off: 0, unknown: 0, disabled: 0

RMC:r001i01c> power status
==== r001i01c ====
chassis - on: 1, off: 0, unknown: 0, disabled: 0
```

Example 2. The `-v` option lists the power status of each chassis, as follows:

```
RMC:r001i01c> power status -v
==== r001i01c ====
    r001i01b
    r001i06b
    r001i11b
    r001i16b
chassis off: 0
chassis unknown: 0
chassis disabled: 0
RMC:r001i01c>
```

Example 3. The `power reset` command resets the system without cycling power. The following command resets a system that is powered up:

```
RMC:r001i01c> power reset
```

Example 4. The `-c` option clears the BIOS settings and returns the SGI UV server BIOS to the original, factory-defined settings. You can use the `-c` option with the `on`, `off`, and `reset` arguments. The following command resets a system that is powered up, clears any saved BIOS configuration settings, and returns the BIOS to its original, default configuration:

```
RMC:r001i01c> power -c reset
```

Note: The BIOS configuration settings menus enable you to change BIOS settings. The `-c` option clears all EFI environment variables and all BIOS settings that have been changed.

Example 5. The following command powers the SGI UV server up and down:

```
RMC:r001i01c> power cycle
```

Example 6. The following command invokes the kernel debugger:

```
RMC:r001i01c> power nmi
```

sensor

You can use the `sensor` command to get system temperatures, fan speed, and voltage information.

Example 1: The following command shows CMC `sensor` command output:

```
RMC:r001i01c> sensor
RMC Inlet      | 23.000 | degrees C | ok | na | na | na | 43.000 | 53.000 | 55.000
RMC Exhst     | 24.000 | degrees C | ok | na | na | na | 43.000 | 53.000 | 55.000
RMC PSOC 3.3v | 3.330 | Volts     | ok | 2.625 | 2.787 | 2.950 | 3.620 | 3.783 | 3.946
RMC 12v       | 12.012 | Volts     | ok | 9.570 | 10.164 | 10.758 | 13.200 | 13.794 | 14.388
RMC 3.3v Aux  | 3.294 | Volts     | ok | 2.625 | 2.787 | 2.950 | 3.620 | 3.783 | 3.946
RMC 2.5v      | 2.425 | Volts     | ok | 1.987 | 2.110 | 2.233 | 2.740 | 2.863 | 2.987
RMC 1.5v      | 1.484 | Volts     | ok | 1.189 | 1.263 | 1.337 | 1.640 | 1.714 | 1.788
RMC 1.2v      | 1.188 | Volts     | ok | 0.957 | 1.016 | 1.076 | 1.320 | 1.379 | 1.439
RMC 1.0v      | 0.996 | Volts     | ok | 0.797 | 0.847 | 0.897 | 1.100 | 1.149 | 1.199
RMC 0.75v     | 0.754 | Volts     | ok | 0.595 | 0.631 | 0.668 | 0.820 | 0.857 | 0.894
Pwr Good      | 0x0   | discrete  | 0x0200 | na | na | na | na | na | na
Pwr Sply Fault | 0x0   | discrete  | 0x0100 | na | na | na | na | na | na
Pwr Redund OK | 0x0   | discrete  | 0x0200 | na | na | na | na | na | na
Stacking Pres | 0x0   | discrete  | 0x0100 | na | na | na | na | na | na
```

Example 2: The following command shows RMC `sensor` command output:

```
RMC:r001i01c> sensor
RMC Inlet      | 30.000 | degrees C | ok | na | na | na | 50.000 | 60.000 | 65.000
RMC Exhst     | 32.000 | degrees C | ok | na | na | na | 50.000 | 60.000 | 65.000
```

RMC PSOC Temp	31.000	degrees C	ok	na	na	na	50.000	60.000	65.000
RMC PSOC 3.3v	3.330	Volts	ok	2.625	2.787	2.950	3.620	3.783	3.946
RMC 12v	12.078	Volts	ok	9.570	10.164	10.758	13.200	13.794	14.388
RMC 3.3v Aux	3.294	Volts	ok	2.625	2.787	2.950	3.620	3.783	3.946
RMC 2.5v	2.466	Volts	ok	1.987	2.110	2.233	2.740	2.863	2.987
RMC 1.5v	1.484	Volts	ok	1.189	1.263	1.337	1.640	1.714	1.788
RMC 1.2v	1.195	Volts	ok	0.957	1.016	1.076	1.320	1.379	1.439
RMC 1.0v	0.996	Volts	ok	0.797	0.847	0.897	1.100	1.149	1.199
RMC 0.75v	0.754	Volts	ok	0.595	0.631	0.668	0.820	0.857	0.894
Pwr Good	0x0	discrete	0x0200	na	na	na	na	na	na
Pwr Sply Fault	0x0	discrete	0x0100	na	na	na	na	na	na
Pwr Redund OK	0x0	discrete	0x0200	na	na	na	na	na	na
Stacking Pres	0x0	discrete	0x0100	na	na	na	na	na	na
PS0 VOUT	12.052	Volts	ok	9.563	10.087	10.742	13.100	13.755	14.279
PS0 IOUT	0.414	Amps	ok	na	na	na	12.903	13.386	13.800
PS0 Temp1	26.000	degrees C	ok	na	na	na	50.000	55.000	60.000
PS0 Temp2	29.000	degrees C	ok	na	na	na	50.000	55.000	62.000
PS0 Fan1	10858.000	RPM	ok	5002.000	5978.000	6954.000	na	na	na
PS1 VOUT	na	Volts	na	9.563	10.087	10.742	13.100	13.755	14.279
PS1 IOUT	0.621	Amps	ok	na	na	na	12.903	13.386	13.800
PS1 Temp1	24.000	degrees C	ok	na	na	na	50.000	55.000	60.000
PS1 Temp2	28.000	degrees C	ok	na	na	na	50.000	55.000	62.000
PS1 Fan1	10736.000	RPM	ok	5002.000	5978.000	6954.000	na	na	na
Memory Warning	0x0	discrete	0x0100	na	na	na	na	na	na
Memory Critical	0x0	discrete	0x0100	na	na	na	na	na	na
Disk Warning	0x0	discrete	0x0100	na	na	na	na	na	na
Disk Critical	0x0	discrete	0x0100	na	na	na	na	na	na
12V ENA	0x0	discrete	0x0200	na	na	na	na	na	na

uv3dmp

The `uv3dmp` command retrieves information that can be useful for diagnostics. It is possible that an SGI technical support staff member might ask you to run this command.

version

After you log into a specific component, you can run the `version` command to display the firmware version of that component.

The format of this command is as follows:

```
version [-v]
```

If you specify `-v`, the command generates additional information. This additional information includes firmware versions of the following:

- The Programmable System on a Chip (PSoC) units on that controller
- The Programmable Logic Device (PLD) units on that controller

You can obtain firmware information regarding one component or regarding all components of that type. To obtain information regarding all components of a type, preface the `version` command with one of the following keywords: `cmc` or `bmc`.

Example 1. The following command returns RMC firmware version information:

```
RMC:r001i01c> version  
SGI UV300 RMC, Rev. 1.1.38 [Bootloader 1.1.4]
```

Example 2. The following command uses the `bmc` keyword and returns information about the firmware versions on all SGI UV 300 BMCs:

```
RMC:r001i01c> bmc version  
==== r001i01b ====  
SGI UV300 BMC, Firmware Rev. 1.0.4pre2 [Bootloader 0.5.0]  
==== r001i06b ====  
SGI UV300 BMC, Firmware Rev. 1.0.4pre2 [Bootloader 0.5.0]  
==== r001i11b ====  
SGI UV300 BMC, Firmware Rev. 1.0.4pre2 [Bootloader 0.5.0]  
==== r001i16b ====  
SGI UV300 BMC, Firmware Rev. 1.0.4pre2 [Bootloader 0.5.0]
```

Example 3. The following command uses the `cmc` keyword and returns information about the firmware versions on all SGI UV 3000 CMCs:

```
harp31-rmc RMC:r001i21c> cmc version  
==== r001i01c ====  
SGI UV2 CMC, Rev. 1.1.65pre1 [Bootloader 1.1.4]  
==== r001i11c ====
```



```
SGI UV2 CMC, Rev. 1.1.65pre1 [Bootloader 1.1.4]
==== r001i23c ====
SGI UV2 CMC, Rev. 1.1.65pre1 [Bootloader 1.1.4]
==== r001i33c ====
SGI UV2 CMC, Rev. 1.1.65pre1 [Bootloader 1.1.4]
==== r001e43c ====
SGI UV2 CMC, Rev. 1.1.65pre1 [Bootloader 1.1.4]
```

Index

A

autopower command, 47

B

bios command, 48
bmc command, 48
bmc sensor command, 54
boot partition, 16
booting, 16

C

commands
 autopower, 47
 bios, 48
 bmc, 48
 config, 19, 49
 console, 16, 51
 hel, 51
 help, 43
 hwcfg, 21, 52
 log, 52
 overview, 43
 power, 16, 17, 52
 sensor, 54
 version, 56
config command, 19, 49
console command, 16, 51

D

determining the BaseIO node BMC firmware version, 56
determining the compute node BMC firmware version, 56
determining the RMC firmware version, 56

E

error logs, 51

H

hardware configuration command, 52
hardware error logs, 51
hardware overrides, 21
hel command, 51
hwcfg command, 21, 52

L

log command, 52
logs, 51, 52

O

overrides, 21
overview, 1

P

power command, 16, 17, 52
power off, 17
power on, 16

R

RMC command targets, 45
rnc sensor command, 54
RMC tasks, 15

S

sensor command, 54

T

targets, 45

U

uvcon (console) command, 51

V

version command, 56
viewing your system configuration, 19