

System Controller Software 1.2 Update Guide

System Controller Software 1.2 provides a system control platform for field service and system maintenance applications. It includes the following features:

- Advanced diagnostic support
- Maintenance of the SGI Altix and Origin 3000 system serial number
- Maintenance of the SGI Altix and Origin 3000 router port enable
- Console for the L1 and L2 system controllers

You can download the System Controller Software 1.2 package from <http://support.sgi.com/apps/> or order it on CD-ROM (P/N 812-1138-003). Contact your SGI account representative if you need assistance obtaining the software package.

This guide contains the following sections:

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Components of Release Packages

This section lists the components of each of the following release packages:

- System Controller Software 1.2 (for an L3 controller)
- System Controller Software 1.2 (for the IRIX operating system)
- System Controller Software 1.2 (for SGIconsole)
- System Controller Software 1.2 (for the SGI ProPack for Linux operating system)

System Controller Software 1.2 (for an L3 controller) has the following components:

- Kernel software
- L1 USB module for the Red Hat 7.1 kernel
- L1 USB module for the Red Hat 7.2 kernel
- L1 USB module for the Red Hat 7.3 kernel

- L1 USB module for the Red Hat 8.0 kernel
- L1 USB module for the SGI ProPack 1.5 for the Linux kernel
- L1 USB module for the SGI XFS 1.0 kernel
- L1 USB module for the SGI XFS 1.1 kernel (supports Red Hat 7.1 and 7.2 [2.4.9-31] kernel versions)
- L1 USB module for the SGI XFS 1.1 kernel (supports Red Hat 2.4.18 vanilla kernel versions)
- L1 USB module for the SGI XFS 1.0.1 kernel
- L1 USB module for the SGI XFS 1.0.2 kernel
- L3 driver
- L1/L2 firmware utilities
- Installation tool
- Silicon Graphics 230 Red Hat 6.2 reinstallation script
- L1 USB build script
- L1 USB source files (supports Linux 2.4.x kernels)

System Controller Software 1.2 (for the IRIX operating system) has the following component:

- L1/L2 firmware utilities

System Controller Software 1.2 (for SGIconsole) has the following components:

- L3 driver
- L1/L2 firmware utilities
- Installation tool

System Controller Software 1.2 (for the ProPack Linux operating system) has the following components:

- L1/L2 firmware utilities
- Installation tool

Related Information

For more information about the SGI L1, L2, and L3 controllers, see the following guides:

- *SGI Origin 3000 L3 Controller Installation Guide* (007-4363-00x)
- *SGI Origin 3000 Series Owner's Guide* (007-4240-00x)
- *SGI L1 and L2 Controller Software User's Guide* (007-3938-00x)

Installing from a Downloaded Package

This section explains how to install, from a downloaded package, System Controller Software 1.2 for an L3 controller, for the IRIX operating system, for SGIconsole, and for the ProPack Linux operating system.

To install the System Controller Software 1.2 components for an L3 controller, follow these steps:

1. Log on to the L3 controller as root.
2. Enter the following commands:

```
# cd /dir
```

where *dir* is the directory in which you downloaded the software

```
# chmod 755 install
```

```
# chmod 755 sgi230_l3_reinstall
```

```
# ./install
```
3. To reboot the system, enter the following command:

```
# reboot
```
4. After the system reboots, remove the files that you downloaded.

To install the System Controller Software 1.2 components for the IRIX operating system, follow these steps:

1. Log on to the IRIX system as root.
2. Enter the following commands:

```
# cd /dir
```

where *dir* is the directory in which you downloaded the software

```
# tar -xf 6.5.12-20_field_diags_sysco.tar
```

```
# inst -f field_diags_sysco
```
3. After the installation is complete, remove the files that you downloaded.

To install the System Controller Software 1.2 components for an SGIconsole system, follow these steps:

1. Log on to the SGIconsole system as root.
2. Enter the following commands:

```
# cd /dir
```

where *dir* is the directory in which you downloaded the software

```
# chmod 755 install
```

```
# ./install
```
3. After the installation is complete, remove the files that you downloaded.

To install the System Controller Software 1.2 components for the ProPack Linux operating system, follow these steps:

1. Log on to the ProPack Linux system as root.
2. Enter the following commands:
cd /dir
 where *dir* is the directory in which you downloaded the software
chmod 755 install
./install
3. After the installation is complete, remove the files that you downloaded.

Installing from the CD-ROM

This section explains how to install, from the CD-ROM, System Controller Software 1.2 for an L3 controller, for the IRIX operating system, for SGIconsole, and for the ProPack Linux operating system.

To install the System Controller Software 1.2 components for an L3 controller, follow these steps:

1. Log on to the L3 controller as root.
2. Insert the System Controller Software 1.2 CD-ROM into the CD-ROM drive.
3. Enter the following commands:

```
# cd /mnt/cdrom/RPMS/i386  
# ./install
```
4. Remove the CD-ROM from the CD-ROM drive.
5. To reboot the system, enter the following command:

```
# reboot
```

To install the System Controller Software 1.2 components for the IRIX operating system, follow these steps:

1. Log on to the IRIX system as root.
2. Insert the System Controller Software 1.2 CD-ROM into the CD-ROM drive.
3. Enter the following commands:

```
# cd /mnt/cdrom/dist  
# inst -f field_diags_sysco
```
4. Remove the CD-ROM from the CD-ROM drive.

To install the System Controller Software 1.2 components for an SGIconsole system, follow these steps:

1. Log on to the SGIconsole system as root.
2. Insert the System Controller Software 1.2 CD-ROM into the CD-ROM drive.
3. Enter the following commands:

```
# cd /mnt/cdrom/RPMS/i386  
# ./install
```
4. Remove the CD-ROM from the CD-ROM drive.

To install the System Controller Software 1.2 components for the ProPack Linux operating system, follow these steps:

1. Log on to the ProPack Linux system as root.
2. Insert the System Controller Software 1.2 CD-ROM into the CD-ROM drive.
3. Enter the following commands:

```
# cd /mnt/cdrom/RPMS/ia64  
# ./install
```
4. Remove the CD-ROM from the CD-ROM drive.

Reinstalling on a Silicon Graphics 230 Visual Workstation

If you install System Controller Software 1.2 for an L3 controller on a Silicon Graphics 230 visual workstation and later need to restore the workstation to the original factory configuration and reload the system controller software, you must complete the following steps:

1. Complete the steps in the “Installing the Auxiliary Linux Software” section of the *SGI Origin 3000 L3 Controller Installation Guide*. (The section ends on page 18 of that document.)

2. To run the `sgi230_13_reinstall` script, enter the following command:

```
#./sgi230_13_reinstall
```

The `sgi230_13_reinstall` script automatically installs additional Red Hat Linux components that are normally installed at the factory. The script takes several minutes to run; it lists each package that it installs and displays a progress bar as it installs each package.

3. Perform one of the following actions:
 - To install System Controller Software 1.2 from a downloaded package, complete steps 2 through 4 of the procedure for installing the software for an L3 controller in the “Installing from a Downloaded Package” section on page 5.

- To install System Controller Software 1.2 from the CD-ROM, complete steps 2 through 5 of the procedure for installing the software for an L3 controller in the “Installing from the CD-ROM” section on page 8.

Installing on a Silicon Graphics 230 Visual Workstation Preinstalled with Red Hat Linux

To install System Controller Software 1.2 for an L3 controller on a Silicon Graphics 230 visual workstation preinstalled with the Red Hat Linux 6.2 operating system, you must load additional software packages before you can load the L3 controller software. Follow these steps:

1. Complete the steps in the “Installing the Auxiliary Linux Software” section of the *SGI Origin 3000 L3 Controller Installation Guide*. (This section ends on page 18 of that document.)
2. Perform one of the following actions:
 - To install System Controller Software 1.2 from a downloaded package, complete steps 2 through 4 of the procedure for installing the software for an L3 controller in the “Installing from a Downloaded Package” section on page 5.
 - To install System Controller Software 1.2 from the CD-ROM, complete steps 2 through 5 of the procedure for installing the software for an L3 controller in the “Installing from the CD-ROM” section on page 8.

Note: To use the Network Configurator GUI to configure the network after the workstation has booted the operating system, see the “Configuring Network Settings” section on page 12 of the *SGI Origin 3000*

L3 Controller Installation Guide. To use the User Configurator GUI to configure user accounts, see the “Configuring the Account” section on page 15. To connect the Silicon Graphics 230 visual workstation to an Origin 3000 series server, see pages 21-27 of the *SGI Origin 3000 L3 Controller Installation Guide* for the sections that are appropriate for your system configuration.

New Features and Changes

This section lists the new features and changes included in this release for firmware and software in the following sections:

- L1 Firmware (page 15)
- L2 Firmware (page 21)
- L3 Software (page 23)

Caution: Before you install the L1 or L2 firmware, follow the instructions in service bulletin GIB 200215. If you currently have L1 firmware version 1.4.1 or older installed, upgrading to the L1 firmware in this release enables router port security and system serial number security features. If your system is not configured properly, these features can prevent your R-bricks from powering on or booting.

L1 Firmware

This section lists the added commands, changed commands, added features, other changes, and bugs addressed for the L1 firmware.

Added Commands

<code>button btn</code>	Command added to allow you to obtain the status of the L1 front panel buttons.
<code>button btn all enable en e</code>	Command added to allow you to enable all the front panel buttons (for example, power down, reset, and NMI).
<code>button btn all disable dis d</code>	Command added to allow you to disable all the front panel buttons (for example, power down, reset, and NMI).
<code>button btn pwr power enable en e</code>	Command added to allow you to enable the power down feature with the front panel power button.
<code>button btn pwr power disable dis d</code>	Command added to allow you to disable the power down feature with the front panel power button.
<code>button btn rst reset enable en e</code>	Command added to allow you to enable the front panel reset button.

<code>button btn rst reset</code>	Command added to allow you to disable the front panel reset button.
<code>disable dis d</code>	
<code>button btn nmi</code>	Command added to allow you to enable the front panel NMI button.
<code>enable en e</code>	
<code>button btn nmi</code>	Command added to allow you to disable the front panel NMI button.
<code>disable dis d</code>	
<code>fru capture</code>	Command added to allow you to capture the Altix brick Memory-Mapped Registers (MMRs). This command is used for FRU analysis and error summary and is displayed with the <code>fru print</code> command.
<code>fru print</code>	Command added to allow you to create an error summary using the MMR data dumped on the last invocation of the <code>fru capture</code> command.

Changed Commands

<code>cpu</code> <code><node> [abcd]</code> <code>e d</code>	Command fixed so that there is consistent node naming for the Altix and Origin 3000 CPUs.
<code>date</code>	Command fixed so that you can set the date correctly without needing to specify the year.
<code>env</code>	Command fixed so that when the environmental monitoring is disabled, voltage levels are correctly reported in the output instead of 0.00.
<code>env, leds</code>	Command fixed so that there is consistent node naming for the Altix and Origin 3000 CPUs.
<code>nmi</code>	Command fixed so that Altix bricks can capture MMR data. The command will now invoke <code>fru capture</code> .
<code>node</code>	Command fixed so that enabling and disabling the Twister node does not require an L1 reboot. The node enable and disable now works on bricks with less than four nodes.
<code>port</code>	Command fixed so the II port software LEDs are reported correctly on IP53 bricks.
<code>prom sel a b</code>	Command fixed so that it does not return garbage. This occurred in previous versions and could cause the L2 controller to reboot.

Added Features

- Full support for PX- and IX-bricks was added.
- Full support for Altix 3000 systems was added.
- Improved Twister support, including partitioning and 700-MHz IP53 support.
- Added support for 700-MHz R16K Silicon Graphics Fuel systems.
- Added support for SGI memory DIMM signatures.
- Preliminary FRU analyzer implementation for Altix bricks was added. This preliminary version captures a large quantity of error information via the JTAG interface to the SHUB Memory-Mapped Registers (MMRs). The MMR error data is captured when an nmi is received by the L1 controller, either via the L1 or L2 command line or the NMI button on the front of the brick. An nmi targeted to a single brick or node, or via the NMI button, will only capture MMR error data for that brick. The MMR error data is cached in the L1 RAM (a reboot of the L1 will result in lost data) and is accessible via the `L1 fru print` command. The MMR error data capture can also be manually initiated with the `L1 fru capture` command. Currently the output of FRU only identifies non-zero MMR error data. The output breaks down the MMR error data into individual fields. Development is continuing on FRU to produce an error summary report and to eventually identify a list of possible FRU components.

- Support was added for disabling front panel buttons (for example, power, reset, and NMI) via the new button commands listed in the “Added Commands” section on page 15.

Other Changes

- The environmental fault and warning messages were modified to eliminate confusion where some temperature fault and warning messages contained the word "POWER" because of the internal temperature sensor name. The messages have been reworded to more clearly call out the sensor name.
- "Power Margin Malfunction" error messages, when margining some PE-bricks, were fixed.
- Twister partitioning issues, regarding lost partition IDs in Twister bricks and incorrect partition IDs on I/O bricks connected to Twister bricks, were fixed.
- Automatic power-on issues on Origin 300 bricks in L1 version 1.18.0 through 1.18.5 were fixed. The L1 was incorrectly reporting that an L2 was detected and refused to power on the system.
- Twister now supports mixing PIMMs of different speeds in the same brick. This was causing voltage faults in any PIMMs that were a different type than PIMM 0.
- Clock speed for unconnected II ports was changed to 600 MHz (150 MHz internal) on all Altix bricks.

Bugs Addressed

- 867360 env off causes the current voltage readings to go to all 0.00
- 870308 L1 date not set if year is not included
- 874321 r16k nodes not setting correct voltag
- 875158 Twister: L1 CPU disable command doesn't stick after power on
- 876331 add L1 variable to disable power button
- 876353 L1 node enable not working properly with less than 4 nodes.
- 876495 Twister L1 forgets partition ID when rebooted
- 876597 I-Brick L1 has wrong partition ID
- 876977 L1 error message should say TEMPERATURE not POWER
- 876983 L1 port command - Incorrect reporting of SW LED
- 877845 Cannot power margin 700Mhz Fuel PIMM
- 878142 reboot_l1 on large Altix systems can cause L2s to hang
- 881030 Update L1 firmware so the default II core clk speed = 600 MHz

L2 Firmware

This section lists the added commands, changed commands, added features, other changes, and bugs addressed for the L2 firmware.

Added Commands

- `autopower delay <exp>` Command added that allows you to set the delay before automatic power-on occurs when the L2 is powered on. The default is 30 seconds.
- `sel p 0` Command added that allows you to alias for the `sel reset` command.

Changed Commands

- `cfg s` The brick counts now include PX-bricks in the “P Brick” count, and now include IX-bricks in the “I Brick” count.
- `sel filter` On multi-node bricks (for example, Twister and Altix), the console output will be filtered down to the node level. Only output from the selected node on the selected brick will be seen.
- `sel reset` The command was changed to perform a `dest reset` to set the default command destination to all racks and slots. This change makes the `sel reset` command symmetric with the `sel p <part>` command, which sets the default command destination to `p <part> <cmd>`. This selects all bricks on the selected partition.

Added Features

- Full support for PX- and IX-bricks was added.
- Full support for Altix 3000 systems was added.
- Support added for displaying data generated by the Altix brick `fru capture` and `fru print` commands.
- The L2-to-L2 and L2-to-L1 configuration exchange mechanism was enhanced. The lag between changing a setting on an L1 and seeing the update on all L2s was reduced to a maximum of five seconds.

Other Changes

- Better checks were added to ensure that, during discovery of the L2s, the response is actually from a valid L2 controller. This change eliminates issues with L2s on a public net discovering non-L2 devices and trying to connect to them.

Bugs Addressed

867264 ERROR: no L1s found to match that destination

L3 Software

This section lists the added applications, changed applications, and the changes from the previous release, for the L3 software.

Added Applications

`flashioc4` IOC4 configuration EEPROM update utility:

This new command is a script wrapper around the scan-based `x_svf` utility. It uses the same command-line interface as the L1 and L2 firmware update utility `flashsc`. In addition to executing `x_svf` to program the EEPROM, `flashioc4` also performs the brick and PCI slot power sequence necessary to insure reliable IOC4 EEPROM programming.

Changed Applications

`flashpbay` Power bay firmware utility:

Support was added to correctly display the PX- and IX-brick types as `p` and `i` bricks.

`flashsc` System controller firmware update utility:

Support was added to correctly display the PX- and IX-brick types as `p` and `i` bricks.

Changes from Previous Release

- The IOC4 PROM image (version 62) was added to the release. This PROM image is used to program an FPGA that implements base hardware I/O functions. This chip via a PCI bus provides access to the following ports: 1 ATA, 4 16550-based serial, byte bus (used to control NVRAM in IO9), generic PIO, RTI/RTO, and PS/2 keyboard and mouse.

The changes from the previous beta release are as follows:

- Interrupts that occur while the interrupt registers are frozen, due to a previous interrupt, are not lost but reported after the interrupt registers have been cleared by software. The deltas of modem control inputs in the serial UARTs are cleared by hardware, while in DMA mode, to prevent repeated interrupts as a result of deltas. PIO logic was modified to drop writes to read-only registers accessed by addresses in user page alias space.
- The minor device numbers used by the SGI L1 USB driver was changed due to conflicts with other USB devices. The driver install and start-up scripts manage the creation of /dev/sgil1* device nodes. This change affected all the L3 kernel software packages.

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