



SUSE LINUX<sup>®</sup> Enterprise Server for  
SGI<sup>®</sup> Altix<sup>®</sup> Systems

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## Record of Revision

<b>Version</b>	<b>Description</b>
001	February 2004 Original publication. Supports the SUSE LINUX Enterprise Server 8 Service Pack 3 release.
002	September 2004 Supports the SUSE LINUX Enterprise Server 9 release.



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## Using SUSE LINUX on SGI Altix Systems

This guide contains information about installing and running SUSE LINUX Enterprise Server on the SGI Altix family of servers and superclusters. It also contains information about documentation specific to SGI Altix systems and how to get support and software updates.

### About This Guide

This guide provides information specific to running SUSE LINUX Enterprise Server on the SGI Altix family of servers and superclusters.

This guide contains the following sections:

- "Audience" on page 2
- "SGI Altix Software and Hardware Documentation" on page 2
- "SUSE LINUX Documentation" on page 4
- "Support and Software Updates" on page 4
- "Obtaining the Latest SGI Altix System Firmware" on page 5
- "Technical Notes on Running SUSE LINUX Enterprise Server on an Altix System" on page 6

### Obtaining Publications

To obtain SGI documentation, go to the SGI Technical Publications Library at <http://techpubs.sgi.com>.

### Reader Comments

If you have comments about the technical accuracy, content, or organization of this document, please tell us. Be sure to include the title and document number of the manual with your comments. (Online, the document number is located in the front matter of the manual. In printed manuals, the document number can be found on the back cover.)

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- Send mail to the following address:

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We value your comments and will respond to them promptly.

## Audience

This guide is written for system administrators who are responsible for installing, configuring, and administering SUSE LINUX on the SGI Altix family of servers and superclusters.

## SGI Altix Software and Hardware Documentation

The following list of hardware and software documentation is available from SGI.

- *SGI Altix 3000 User's Guide*

Provides an overview of the architecture and describes the major components of the SGI Altix 3000 family of servers and superclusters. It also describes the standard procedures for powering up and powering down the system, provides basic troubleshooting information, and includes important safety and regulatory specifications.

- *Site Planning Guide for the SGI Altix 3300 Server and the SGI Altix 3700 Supercluster*

Guides you through the process of planning and preparing a site for installation of an SGI Altix 3300 server or SGI Altix 3700 supercluster rack system.
- *SGI Altix 350 System User's Guide*

Provides an overview of the Altix 350 system components, and describes how to set up and operate this system.
- *SGI Altix 350 Quick Start Guide*

Guides a knowledgeable user through the installation, setup, and simple configuration of most SGI Altix 350 systems.
- *SGI L1 and L2 Controller Software User's Guide*

Describes how to use the L1 and L2 controller commands at your system console to monitor and manage the SGI Altix family of servers and superclusters. L1 and L2 controllers are used to monitor and manage the individual bricks in an SGI Altix system.
- *SGIconsole 2.1 Start Here*

SGIconsole 2.1 is software that allows you to manage multiple SGI servers running the IRIX or Linux operating systems. SGIconsole can also provide console services for servers not from SGI. This manual provides an introduction to SGIconsole and information about setting up and configuring SGIconsole software.
- *Linux Configuration and Operations Guide*

Explains how to perform general system configuration and operations under the Linux operating system used with SGI servers and superclusters. The information in this manual is specific to the SGI Altix family of servers and superclusters.
- *Linux Application Tuning Guide*

Provides information about tuning application programs on the SGI Altix family of servers and superclusters, running the Linux operating system. Application programs include Fortran and C programs written with the Intel provided compilers on SGI Linux systems.

## SUSE LINUX Documentation

SUSE LINUX provides documentation on CDs (and some printed material) with the SUSE LINUX Enterprise Server 9. This documentation covers both installation and system administration. Documentation on CDs is the most up-to-date. If you are not familiar with system administration on SUSE LINUX, this documentation is a good place to start.

## Support and Software Updates

This section describe SUSE LINUX software support for your SGI Altix system and how you can obtain software updates.

SGI supports SUSE LINUX software as provided by SUSE. Software not provided by SUSE or SGI (including device drivers, fixes from other Linux distributors, fixes from the Linux community, and so on) is not supported by SGI.

## Support

For support questions, please contact SGI support services or your local SGI support representative. If you are in the United States or Canada and have general SUSE support questions, please contact the Technical Assistance Center at 1-800-800-4SGI.

If your are outside these areas, contact the SGI subsidiary or authorized distributor in your country, or you can find the appropriate number at the following location: <http://www.sgi.com/support/supportcenters.html>.

To ensure optimum performance for your SGI systems, SGI offers support programs with priority response, electronic support, and optional enhancements. SGI offers a comprehensive range of support choices. For more information, please visit <http://www.sgi.com/support/>.

SGI customers running SUSE LINUX on SGI Altix systems also receive a range of support services from SUSE, as follows:

- Access to the SUSE LINUX Portal (<http://portal.suse.de/sdb/en/index.html>)  
Provides access to the SUSE Support knowledgebase with links to support services, main SUSE LINUX world-wide web sites, and FTP servers and the SUSE LINUX Support Database.
- Access to the SUSE LINUX Maintenance Web (<http://support.suse.de/psdb/>)

Provides active maintenance service for your SUSE LINUX Enterprise Server 9 software. You will find here all current security fixes and patches to keep the security level of your SUSE product up to date. You also will have access to bug fixes and enhancements.

- E-mail notification about changes
- Updates to service packs and new major releases.

To gain access to the these online services provided by SUSE, you must register with SUSE. Register using the registration code printed on the letter that shipped with your SUSE LINUX Enterprise Server software from SGI at <http://www.suse.de/register> within 14 days following the purchase.

## Software Updates

The SUSE LINUX Enterprise Server Maintenance Web contains security fixes and patches to help keep your SUSE LINUX Enterprise Server product up to date. SUSE LINUX Enterprise Server also provides a graphical update tool called YaST Online Update (YOU) to help automate obtaining and installing patches. For more details about using YaST Online Update, refer to the SUSE documentation provided with SUSE LINUX Enterprise Server.

For information about obtaining firmware (PROM) updates for your SGI Altix system, see "Obtaining the Latest SGI Altix System Firmware" on page 5.

## Obtaining the Latest SGI Altix System Firmware

There are three levels of firmware to consider on a larger SGI Altix system, as follows:

- L2 controller software (only configurations of SGI Altix systems with routers have L2 controllers).
- L1 controllers on routers, IX-bricks, PX-bricks, C-bricks, and so on.
- The system PROM (each node has a system PROM and each C-brick has two nodes).

L1 and L2 system controller firmware provides support for managing and monitoring the power, cooling, and testing functions for a brick and system-level operation.

Programmable read-only memory (PROM) chips are placed in your computer at the factory with software programmed into them that allows the CPU to boot and allows you to perform system administration and software installations. The PROM firmware is not part of your disk or your operating system; it is the lowest level of access available for your system. Do **not** erase it or attempt to bypass it.

For more information on L1 controller and L2 controller firmware (PROM), see the *SGI L1 and L2 Controller Software User's Guide*, the *SGI Altix 3000 User's Guide* and the *SGI Altix 350 System User's Guide*.

You can always download the latest L1/L2 system controller software and PROM firmware via Supportfolio at <http://support.sgi.com/linux/>. Instructions for updating the L1/L2 system controller firmware are included in the *SGI Altix 3000 User's Guide*, the *SGI Altix 350 System User's Guide* and the *SGI L1 and L2 Controller Software User's Guide*.

L2 firmware version 1.28.1 (or later) supports the L2 password available in the System Controller Software 1.6 release (or later). The current System Controller Software release (as of August 2004) is 1.7.

For more information on updating the PROM firmware, see "Flashing the PROM" on page 10.

## Technical Notes on Running SUSE LINUX Enterprise Server on an Altix System

This section describes caveats and important information specific to running SUSE LINUX Enterprise Server on your SGI Altix system and covers the following topics:

- "Installing SUSE LINUX Enterprise Server 9 on your SGI Altix System" on page 7
- "Location of /boot File System" on page 9
- "XFS Root File System" on page 9
- "System Partitioning Support on SUSE LINUX Enterprise Server Systems" on page 10
- "Flashing the PROM" on page 10
- "Running SUSE LINUX Enterprise Server and SGI ProPack for Linux on the Same Altix System" on page 10

## Installing SUSE LINUX Enterprise Server 9 on your SGI Altix System

Your SGI Altix system will likely come with SUSE LINUX Enterprise Server pre-installed; however, should you need to install or reinstall SUSE LINUX Enterprise Server on your system from CDs, perform these steps, as follows:

1. Insert SUSE LINUX Enterprise Server 9 for Itanium Processor Family - CD1 into the system's CD-ROM drive and (re)start the system by running as root and rebooting the system.
2. While the system is powering up, check the device mapping table. It should look similar to the following:

```
Loading: EFI Shell [Built-in]
EFI Shell version 1.02 [12.38]
Device mapping table
fs0  : Pci(1|1)/Scsi(Pun0,Lun1)/HD(Part1,Sigg1)
fs1  : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part1,Sigg2)
fs2  : Pci(2|1)/Ata(Primary,Master)/CDROM(Entry1)
blk0 : Pci(1|1)/Scsi(Pun0,Lun1)
blk1 : Pci(1|1)/Scsi(Pun0,Lun1)/HD(Part1,Sigg1)
blk2 : Pci(1|1)/Scsi(Pun0,Lun1)/HD(Part2,Sigg6)
blk3 : Pci(1|1)/Scsi(Pun0,Lun1)/HD(Part3,Sigg7)
blk4 : Pci(1|1)/Scsi(Pun0,Lun2)
blk5 : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part1,Sigg2)
blk6 : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part2,Sigg3)
blk7 : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part3,Sigg4)
blk8 : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part4,Sigg5)
blk9 : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part5,Sigg8)
blkA : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part6,Sigg9)
blkB : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part7,Sigg10)
blkC : Pci(1|1)/Scsi(Pun0,Lun2)/HD(Part8,Sigg11)
blkD : Pci(2|1)/Ata(Primary,Master)
blkE : Pci(2|1)/Ata(Primary,Master)/CDROM(Entry1)
```

Look for the CDROM entry. In this example, the CDROM device is mapped to fs2.

3. At the Shell> prompt, type the CD-ROM device name followed by a colon, as follows:

```
Shell> fs2:          Type this to change to the CD-ROM device
fs2:\>
```

4. At the fs2:\> prompt, type the following to boot the CD:

```
fs2:\> cd efi\boot
fs2:\> bootia64 -i initrd linux console=ttyS0,115200
```

---

**Note:** You may also just enter **bootia64** without parameters. This will display the boot menu. From this menu you can enter rescue mode. To continue the installation from the boot menu, highlight **Installation** and supply **console=ttyS0,115200** as a command line option. **115200** is a baud rate parameter.

You can setup networking and SSH from the boot screen by entering the following:

```
console=ttyS0,115200 usessh=1 SSHPassword=sgisgi insmod=tg3
```

The `usessh=1 SSHPassword=sgisgi` option sets up on the SSH server and boots the system with root password **sgisgi**.

The `insmod=tg3` option loads the `tg3` network driver.

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5. Follow the on-screen instructions to complete the installation of SUSE LINUX Enterprise Server Enterprise Server, as follows:
  - The first screen asks you to choose `dhcp` or `manual`.
  - The second screen, assuming `manual` setup, asks you for your IP address.
  - The third screen asks you for your netmask.
  - The fourth screen asks for the IP address of the gateway if needed.
  - The fifth screen asks for the IP address of your nameserver.

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**Note:** You will be asked to specify a terminal type during the installation. Terminal type `xterm` seems to work the best.

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**Note:** The development environment is not installed by default. You can install the development environment at install time by selecting **Software->Detailed Selections** or after installation using `yast2`.

If possible, SGI recommends using the X11 version of YaST. To do this, set your `DISPLAY` environment variable to point to your Linux desktop machine and enter **yast2**. If you cannot use the X11 version, you can switch to the text mode version. Start the program with **yast** or just unset your `DISPLAY` variable to force the curses version. If you need to use the text mode version, it's best to use a Linux xterm window with the `xterm` environment variable set to `vt102`.

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Once that data is entered, the system will load the installer and boot to a prompt to login to the machine using `ssh` and run `yast`. The system is on the network at this point and root passwd is **sgisgi**. You can use `xhost` to enable remote display from the machine and then connect to it using `ssh`, as follows:

```
ssh -X root@ip.address
```

From the remote display, you can run `yast` to start the installation.

After installation has been completed, your SGI Altix system should be running SUSE LINUX Enterprise Server 9.

## Location of /boot File System

Your `/boot` filesystem **cannot** reside on Fibre channel disks. YaST may allow you to put `/boot/efi` on a Fibre channel disk but the system PROM cannot boot from Fibre channel disks. Therefore, if you choose to reinstall your system, be careful when laying out your partitions to avoid using Fibre channel disks for `/boot/efi`. For additional information, see the release notes on your system located at `/usr/share/doc/release-notes/RELEASE-NOTES.en.html`.

## XFS Root File System

SGI recommends using XFS for the root file system. Reiser is the default root file system, unless specified otherwise. To switch to XFS, select **Partitioning** from the **Installation Settings** page.

If you would like to use SUSE's recommended partitioning, and only change the file system from Reiser to XFS, select **Base partition setup on this proposal** from the **Suggested Partitioning** menu.

Select the **root partition** from the partition menu, then select **Edit**. Change the file system to **XFS**.

If you would like to change the partitioning along with the file system type, select **Create custom partition setup** from the **Suggested Partitioning** menu.

## System Partitioning Support on SUSE LINUX Enterprise Server Systems

You can partition a single SGI Altix server into multiple distinct systems running SUSE LINUX Enterprise Server on each partition if your SGI Altix system has routers. For hardware-specific information on system partitioning of an SGI Altix server, see the *Linux Configuration and Operations Guide*.

## Flashing the PROM

To update or "flash" the system PROM, you first need to download the PROM RPM from Supportfolio as described in "Obtaining the Latest SGI Altix System Firmware" on page 5. Once you have the latest PROM RPM, flash the PROM, as follows:

1. Install the update the PROM image with the following command:

```
# rpm -Uvh RPM_NAME...
```

2. Reboot the system and enter the EFI shell. Use the following command to flash the PROM (this assumes the hard drive is `fs0`):

```
Shell> flash -a fs0:\snprom.bin
```

## Running SUSE LINUX Enterprise Server and SGI ProPack for Linux on the Same Altix System

It is possible to run both SUSE LINUX Enterprise Server and SGI ProPack for Linux on the same SGI Altix system, although SGI strongly recommends that each operating system have its own EFI partition. SGI ProPack for Linux mounts the EFI partition at `/boot/efi`; SUSE LINUX Enterprise Server mounts the EFI partition at `/boot/efi`. Due to this difference, system administrators that want to run both SUSE LINUX Enterprise Server and SGI ProPack for Linux need to be aware of the following:

### Linux Operating System Partition View

- For SUSE LINUX Enterprise Server systems:
  - SUSE LINUX Enterprise Server mounts the EFI partition on `/boot/efi`
  - The kernel resides in `/boot/` and `/boot/efi/efi/SuSE`.
  - The `elilo` program and `elilo` configuration files reside in `/boot/efi/efi/SuSE`.
  - The Altix PROM resides in `/boot/efi`.
- For SGI ProPack for LINUX systems:
  - The kernel, the `elilo` binary, and `elilo` configuration files reside in `/boot/efi/EFI/sgi`.
  - The Altix PROM resides in `/boot/efi`.

#### EFI Partition View

- SUSE LINUX Enterprise Server system
  - The kernel resides in `\efi\SuSE`, as do `elilo` and `elilo.conf`.
  - The `elilo` program and the `elilo` configuration files reside in `\efi\SuSE\`.
  - The Altix PROM resides in `\`.
- SGI ProPack for Linux system
  - The kernel, the `elilo` program, and `elilo` configuration files reside in `\efi\sgi`.
  - The Altix PROM resides in `\efi\`.

Keeping the operating system in separate EFI partitions reduces the chance of purging something from the other operating system during installation.