SUSE LINUX® for SGI® Altix™ Systems

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Contents

Chapter 1

Using SUSE LINUX on SGI Systems

This guide contains information about installing and running SUSE LINUX 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 on the SGI Altix family of servers and superclusters.

This guide contains the following sections:

Obtaining Publications

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

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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 it 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.

- *SGIconsole 2.0 Start Here*

  SGIconsole is a combination of hardware and software that allows you to manage multiple servers. This manual provides an introduction to SGIconsole and information about setting up and configuring SGIconsole hardware and 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 includes Fortran and C programs written with the Intel provided compilers on SGI Linux systems.

SUSE LINUX Documentation

Printed documentation is provided with the SUSE LINUX Enterprise Server 8. This documentation covers both installation and system administration. 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 (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 county 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)
- Access to the SUSE LINUX Maintenance Web (http://support.suse.de/psdb/)
- Access to the SUSE LINUX Support Database (http://sdb.suse.de/en/)
- Access to bug fixes and enhancements
- E-mail notification about changes

To gain access to the above 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 software from SGI at http://www.suse.de/register within 14 days following the purchase.

Software Updates

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

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 compute rack.

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. You cannot erase it or 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*. The patch number for the latest system controller software is 5340.

For more information on updating the PROM firmware, see "Flashing the PROM" on page 9.

Technical Notes on Running SUSE LINUX on an Altix System

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

Installing SUSE LINUX Enterprise Server 8 and Service Pack 3 on your SGI Altix System

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

1. Insert Service Pack CD1 into the system's CD-ROM drive and restart 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, 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 linux console=ttyS0,38400n8 hwprobe=-bios
```

Note: You may also enter **`bootia64`**. This will display the boot menu. From this menu you can enter rescue mode. To continue the installation from the boot menu, highlight **linux** and supply **`console=ttyS0`** as a command line option. `bootia64` is just a special name for `elilo` on the Service Pack CD used to boot the system. **`38400n8`** is a baud rate parameter.

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5. You will see the kernel booting. You will be asked to insert CD1. Insert the CD labeled *SUSE LINUX Enterprise Server Installation*. Follow the on-screen instructions to complete the installation of SUSE LINUX. Follow the on-screen instructions to complete the installation of SUSE LINUX Enterprise Server.

Note: You will be asked to specify a terminal type during the installation. Terminal type `vt102` seems to work the best when installing the software over an L2 controller using an `xterm` window on a Linux desktop system.

Note: The development environment is not installed by default. If you wish to install the development environment, SGI suggests that you do so using YaST before you apply Service Pack 3 since the service pack contains updates for the development environment.

Although you started the installation process by booting with the Service Pack 3 CD, after you complete the installation of SUSE LINUX Enterprise Server 8, the updates included in Service Pack 3 still need to be installed.

6. Insert the Service Pack 3 CD into the CD-ROM drive.

Note: 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 ASCII/curses version. Start the program with **`yast`** or just unset your `DISPLAY` variable to force the curses version. If you need to use the ASCII version, it's best to use a Linux xterm window with the `TERM` environment variable set to `vt102`.

7. Next, you will need to let the `YaST` program know that the Service Pack CD is an available resource. From the `YaST` Control Center, click on **Change source of installation**. Select **ADD** and then **CD**. Select `/dev/cdrom` when prompted.
8. The `YaST` program should now find the Service Pack CD and add it to the list of available media. Click **Finish** and return to the previous menu.
9. Click **Patch CD Update** and then **Automated Update** to begin the update procedure. A couple of times during the update you will be presented with a pop-up window that asks you to select **OK**. This is normal. Click **OK** when prompted to continue the update.

At this point, your SGI Altix system should now be running SUSE LINUX Enterprise Server 8 and Service Pack 3.

Location of /boot File System

Your /boot filesystem **cannot** reside on Fibre channel disks. The SUSE installer may allow you to put /boot on a Fibre channel disk but the system PROM cannot boot from Fibre channel disk. Therefore, if you choose to reinstall your system, be careful when laying out your partitions to avoid using Fibre channel disk for /boot. For additional information, see the release notes on your system.

System Partitioning Support on SUSE LINUX Systems

You can partition a single SGI Altix server into multiple distinct systems running SUSE LINUX on each partition. Basically, if your SGI Altix system has routers, you can use partitioning software. For more 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:\boot\efi\snprom.bin
   ```

Suppressing VGA/Keyboard Probing

SUSE LINUX probes for keyboard, video graphics array (VGA) displays, and virtual terminals by default. On SGI Altix systems, these probes are not required and will fail as follows:

```
...
  Loading keymap qwerty/us.map.gz                                    done
  Keyboard: IPv6 v0.8 (usagi-cvs/IPsec6 based StS) for NET4.0
  IPv6 over IPv4 tunneling driver
  kbdrate: Failed waiting for kbd controller!                        failed
```

```
Loading compose table latin1.add                                    failed
Loading console font lat1-16.psfu                                   done
Loading screenmap none                                              done
Setting up console ttys                                             done
...
```

To cancel the probes and suppress the failure messages, disable the `kbd` start script in your configuration file by running this command as root user, as follows:

```
# chkconfig kbd off
```

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

It is possible to run both SUSE LINUX 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 mounts the EFI partition at `/boot`. Due to this difference, system administrators that want to run both SUSE LINUX and SGI ProPack for Linux need to be aware of the following:

Linux Operating System Partition View

- For SUSE LINUX systems:
  - The kernel resides in `/boot/`.
  - The `elilo` program and `elilo` configuration files reside in `/boot/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 system
  - The kernel resides in `\`.
  - The `elilo` program and the `elilo` configuration files reside in `\efi\SuSE\`.

  - The Altix PROM resides in `\efi\`.

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