UP1100

Linux Operating System

Installation Guide

(Red Hat 6.2 and SuSE 6.3)

Y2K Aug. 17

SAMSUNG ELECTRONICS

Installing the Linux Operating System

The firmware initializes the UP1100 system and, via the Alpha SRM Console, enables you to install and boot the Linux Operating systems.

As noted at the beginning of the chapter, this system supports many OS distributions and vendors. Consult our web site for a complete current list at:

http://www.alpha-processor.com/

http://www.samsungalpha.com/

1. With your browser pointed at the Alpha Processor, Inc. Web site, click on API Partner Program.
2. Scroll down in this page to the link, Linux Solutions Datasheet. Click on this link. This takes you to a datasheet on supported operating systems ans applications.
3. Or, click on Software Vendors at the left center of the browser.

Examples of installing commercially available Linux distributions are given in this section. Typical requirements and procedures for Red Hat Linux Versions 6.2 or SuSE Version 6.3 follow.

1. Requirements

Device names are different if you are using SCSI adapters or IDE disks. To the Linux kernel:

- SCSI CD-ROM names are “/dev/scdx”, where x is the device number
- IDE CD-ROM names are “/dev/hdx”, where x is the drive position
- SCSI hard disk names are “/dev/sdx”, where x is the drive position
- IDE devices are “/dev/hdx”, where x is the drive position
- Floppy disk names are “/dev/fdx”, where x is the device number

The following disks are required:

- The appropriate Linux operation system distribution CD-ROM disk, ether the Red Hat Version6.2 or SuSE Version 6.3 CD-ROM disk.
- If you are installing SuSE Version 6.3, you will need a ramdisk floppy. See the SuSE Version 6.3 documentation for instructions about creating this disk.
- The UP1100 installation diskette is also required.

***Note**: For all Linux distributions, be careful when configuring the X server. Do not test the X server configuration. But it fixed on Red Hat 6.2 or higher versions.*

2. Before Installing Linux

Before installing the Linux operating system, follow these instructions:

1. Use the date command to set the system time and date. Refer to section 4.2.4, "Setting the System Date," on page 4-11 for details.

3. Setting Environmental Variables

From the SRM Console prompt, >>>, check the device numbers for disk, diskette and CD-ROM drivers:

Type **show device**

The SRM Console environmental variables identified in Table 4-15 are set.

Table 1 SRM Console Variables

Variable	Setting
bootdef_dev	**Sets default boot device** **Example: DQA0(IDE disk) or DKA0(SCSI disk)**
boot_osflags	Information passed to Linux kernel via boot Example: "root=/dev/hda1"
boot_file	**Sets file to use as the kernel on the default boot device** **Example for Red Hat 6.2: kernels/generic.gz**
auto_action	The auto_action SRM console variable can be set to HALT or BOOT, depending upon what default power-on function you want for your Alpha, when booted into the SRM console
force_pwroff	**The force_pwroff SRM console variable can be set to ON or OFF, depending upon what automatically power-off function you want for your Alpha, when shutdown.**

From the SRM Console prompt, >>>, the procedures are as follows:

■ To set the default boot device:

- To boot from a floppy drive:

  Type **set bootdef_dev dva0**

- To boot from an IDE CD-ROM drive:

  Type **set bootdef_dev dqb0**

***Note**: If your drive is a different device type, set this variable appropriately.*

If you want to install the Red Hat 6.1 or lower versions and SuSE Linux, you must set it to dva0 by using the kernel in our installation diskette.

■ To set the default boot file to the kernel on the CD, choose the command that corresponds to your version of Linux:

- For SuSE Version 6.3:

  Type **set boot_file vmlinux.gz**

- For Red Hat 6.2:

  Type **set boot_file kernels/generic.gz**

■ To set the default boot file to the kernel in the installation diskette:

Type **set boot_file vmlinux.gz**

■ To set the default flags to point to the (currently non-existent) root partition:

- On a SCSI hard drive:

  Type **set boot_osflags "root=/dev/sda1"**

- On a IDE drive:

  Type **set boot_osflags "root=/dev/hda1"**

***Note**: Setting the flags to point to sda1 (Linux terminology for SCSI Disk A Partition 1) assumes that you will create and set the first partition during the installation to be the "root" partition. If you plan to use another name for your root partition, set this variable to that name.*

■ To check the environmental setting parameters you have chosen:

Type **show boot***

4. Starting the Linux OS Installation

To start the Linux OS installation, perform the following:

1. Insert the Red Hat Version 6.2 or SuSE Version 6.3 Alpha CDROM into the drive.
2. From the SRM Console prompt (>>>):
   - For Red Hat Version 6.2:

     Type **boot –flags "root=/dev/hdc"**

   ***Note**: Assume the CD-ROM driver is the master device on the secondary IDE channel.*

   ***Note**: If you are installing with the Anaconda graphical installation tool and you get a graphic card problem, add the "text" flags to install with the text mode installation tool. Type the following to add the correct flag:.*

     Type **boot –flags "root=/dev/hdc text"**

   - For SuSE Version 6.3:

     Type **boot –flags "root=/dev/fd0 load_ramdisk=1 ramdisk_size=20480"**
3. Follow the instructions for your distribution.
4. When installation is complete, the system automatically begins to reboot. Wait until the system reaches the SRM Console prompt, then press Ctrl/C to stop the reboot process.

Background Information

To the SRM Console, the IDE CD-ROM drive is called DQB0. To the Linux kernel, it is called "/dev/hdc". This means that the CD-ROM is the master device on the secondary IDE channel.

Other Boot Options

Refer to your Linux documentation in order to consider other boot options.

■ To boot, the Linux kernel must be on an SRM-supported device.

■ To boot from a diskette, set the environmental variable bootdef_dev to the diskette drive (dva0).;

■ To boot from a hard disk drive (dka0), set the environmental variable boot_file to the directory and filename of the kernel.

Instructions for creating a SRM-bootable diskette or hard disk are available on-line at:

http://www.alphalinux.org/faq/srm.html

http://www.samsungalpha.com/

During Installation:

We will not explain the installation method in detail, because it is same with other linux installation method. But there is some important things you must keep in mind.

Red Hat Version

Please select "Custom Install" in "Installation Type" after "Language Selection", "Keyboard Selection".

Partitioning the Disk

The fdisk tool should be selected for proper partitioning the disk.

- If there is “Use fdisk”selection (in case Red Hat 6.2) :
  Select the “Use fdisk” and partitioning the disk.
- If there is no “Use fdisk” selection (in case Red Hat 6.1)
  Press Ctrl + Alt + F2 Key, then you can see "#" prompt.
  You must divide the partition to BSD style as below.
  bash# fdisk /tmp/hda

```
Command (m for help) : b
BSD disklabel command (m for help) : p
 0 partitions :
 #          size         offset       fstype    [fsize    bsize     cpg]

BSD disklabel command (m for help) : n
Partition (a-h) : a
First cylinder (1 - 8684, default 1) : 5
Last cylinder or +Size or +SizeM or +SizeK (1 - 8684, default 8684) : 2004

BSD disklabel command (m for help) : n
Partition (a-h) : b
First cylinder (1 - 8684, default 1) : 2005
```

Last cylinder or +Size or +SizeM or +SizeK (1 - 8684, default 8684) : 2132

BSD disklabel command (m for help) : n

Partition (a-h) : c

First cylinder (1 - 8684, default 1) : 1

Last cylinder or +Size or +SizeM or +SizeK (1 - 8684, default 8684) : 8684

BSD disklabel command (m for help) : p

3 partitions :

#	size	offset	fstype	[fsize	bsize	cpg]	
a:	40969000	8192	unused	0	0		# (Cyl. 5 - 2004)
b:	264192	4104192	unused	0	0		# (Cyl. 2005 - 2133)
c:	17782784	0	unused	0	0		# (Cyl. 1 - 8683)

BSD disklabel command (m for help) : t

Partition (a-c) : a

Hex code (type L to list codes): 8

BSD disklabel command (m for help) : t

Partition (a-c) : b

Hex code (type L to list codes): 1

BSD disklabel command (m for help) : p

3 partitions :

#	size	offset	fstype	[fsize	bsize	cpg]	
a:	40969000	8192	ext2	0	0		# (Cyl. 5 - 2004)
b:	264192	4104192	swap	0	0		# (Cyl. 2005 - 2133)
c:	17782784	0	unused	0	0		# (Cyl. 1 - 8683)

BSD disklabel command (m for help) : w

Command (m for help) : q

***Note** : The cylinder number is depends on each hard disk geometry.*

***Note** : After completing the partition, you must reset the system using reset button. (It is Redhat 6.1 installation bug.) And re-type the boot command on SRM prompt ">>>" as described on below.*

And you just install the linux same with other linux installation method.

***Note** : You must skip the X Window setup on Redhat 6.1 or lower version.*

Post Installation Check

At this point, Linux is installed on the hard disk. If partition 1 is the root directory, then the environmental variable boot_osflags is correct. If your root directory has another name, take this opportunity to set the variable to the corresponding name.

5. After Installing Linux

After installing the operation system, you must do the following:

- Copy the kernel to hard disk
- Reset environment variables

The following sections describe these procedures.

Copy Kernel to Hard Disk, Red Hat Version 5.2, 6.0, 6.1 and 6.2 or SuSE Version 6.1 and 6.3

Use the following steps to copy the kernel:

1. Insert the UP1100 installation diskette into the floppy dirve.
2. Type the following at the SRM Console prompt >>>:

   >>> **boot dva0 –fi vmlinux.gz –fl "root=/dev/hda1 single"**

   The shell prompt appears.

Note**: On a SCSI hard drive, use the value **"root=/dev/sda1 single"

3. Type the following commands at the bash# prompt:
   - For Red Hat:

     bash# **mount –t ext2 /dev/fd0 /mnt/floppy**

     bash# **cd /mnt/floppy**
   - For SuSE:

     bash# **mount –t ext2 /dev/fd0 /floppy**

     bash# **cd /floppy**
4. Type the following commands at the bash# prompt:

   bash# **./install**
5. To configure the monitor and video driver, perform the following at the bash# prompt:

   bash# **ln –s Tsunami /etc/alpha_systype**

***Note**: It is not necessary on Red Hat 6.2 or higher version.*

   - For Red Hat:

     Type **Xconfigurator**

     Follow the Xconfigurator prompts to set up the monitor and video drivers.
   - For SuSE:

     Type **sax**

     Follow the sax prompts to set up the monitor and video drivers.
6. When the monitor and video drivers are configured, shutdown the system. Type the following command at the bash# prompt:

   bash# **shutdown –h now**

Reset Environmental Variables for Normal Boot

Reset the SRM Console environmental variables for normal operations after installing the OS.

■ If you are using a SCSI disk, type the following at the SRM Console prompt, >>>:

1. >>> **set bootdef_dev dka0**

■ If you are using an IDE disk, type the following at the SRM Console prompt, >>>:

1. >>> **set bootdef_dev dqa0**

■ Belows are common settings for installing the linux.

2. >>> **set boot_file ""**
3. >>> **set boot_osflags "0"**
4. >>> **boot**

■ If you want to set your SRM console variables to automatically boot, use the following commands:

>>> **set auto_action BOOT**

***Note**: When setting the value of the auto_action SRM console variable, note that your machine will not be able to return to the SRM console. If you want to enter SRM console prompt for setting the other SRM variables, press Ctrl/p key when loading the kernel.*

***Nmote**: When your OS installation is complete and working satisfactorily, you can set the auto_action variable to auto to boot into the OS automatically at power on.*

Sound Device Driver Limitation :

The sound device driver has some limitation as below.

- /dev/midi00 : not supported in this version.
- /dev/sequencer : not supported in this version.
- /dev/mixer : works but it is not truly a hardware mixer.
- Recording works fine.
- The sound device itself does not show up in /proc/sound.
- If you want to compile the sound device driver, please use source code in our installation diskette. The kernel 2.4.x will contains the ALi sound device driver. But you must choose the "Trident 4DWave DX/NX or SiS 7018 PCI Audio Core" instead of ALi device driver on the kernel 2.4.0 or test versions.