HPT302/302N UDMA/ATA133 Controller

SuSE Linux 7.1/7.3/8.0/8.1/8.2

Installation Guide

Version 1.1

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1 Overview

The purpose of this document is to provide clear instructions on how to install and use HPT302/302N controller on SuSE Linux 7.1/7.3/8.0/8.1/8.2 system.

2 Installing SuSE Linux on HPT302/302N Controller

If you would like to install SuSE Linux 7.1/7.3/8.0/8.1/8.2 onto drives attached to HPT302/302N controller, please perform the following operations:

Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to HPT302/302N controller, you can use HPT302/302N BIOS Setting Utility to configure your hard disks.

Before installation, you must remove all the disk drives, which are not physically attached to HPT302/302N controller, from your system.

Note

If you have other SCSI adapters installed, you must make sure the HPT302/302N controller BIOS will be loaded firstly. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

Step 2 Check System BIOS Settings

In your system BIOS SETUP menu, change **Boot Sequence** in such a way that the system will first boot from floppy or CDROM, and then from SCSI. Refer to your BIOS manual to see how to set boot sequence.

If your BIOS settings do not support such a boot sequence, you can first set it to boot from floppy or CDROM. After you finish installation, set SCSI as the first boot device to boot up the system.

Step 3 Prepare the Driver Diskette

If you are installing SuSE Linux 7.1, copy all the files under suse71dd directory to a dos formatted diskette.

If you are installing SuSE Linux 7.3, copy all the files under suse73dd directory to a dos formatted diskette.

If you are installing SuSE Linux 8.0, copy all the files under suse80dd directory to a dos formatted diskette.

If you are installing SuSE Linux 8.1, copy all the files under suse81dd directory to a dos formatted diskette.

If you are installing SuSE Linux 8.2, copy all the files under suse82dd directory to a dos formatted diskette.

Step 4 Prepare the Boot Diskette

To install SuSE Linux 7.1/7.3 onto HPT302/302N controller, you must boot from a customized boot diskette to start installation.

First obtain the boot diskette image file. Use suse71boot.img for SuSE Linux 7.1, suse73boot.img for SuSE Linux 7.3.

On a DOS or Windows system, you can make the boot diskette using rawrite.exe. It can be found on the SuSE Linux CD (under /dosutils). Just run it under a command window and follow its prompt. (Note: rawrite.exe can only use 8.3 file name format, so the file name "suse71boot.img" should be typed as "suse71~1.img").

On a Linux system, you can use the "dd" command to make the boot diskette. Insert a floppy disk into the floppy drive and type the command:

for SuSE 7.1

> # **dd if=suse71boot.img of=/dev/fd0**

for SuSE 7.3

> # **dd if=suse73boot.img of=/dev/fd0**

Step 5 Install SuSE Linux

1) Start installing SuSE Linux 7.1/7.3 by booting from the bootable disk provided for HPT302/302N controller. Start installing SuSE Linux 8.0/8.1/8.2 by booting from the installation CD.

2) When a prompted label "**boot:**" appears, for SuSE 8.1 SMP Installation type "**acpi=off**" and then press "**enter**"; for SuSE 8.2 Installation type "**hde=noprobe hdf=noprobe hdg=noprobe hdh=noprobe**" and then press "**enter**"; for others just press "**enter**".

3) For SuSE Linux 7.1/7.3, the driver module will be automatically loaded. You can simply continue the installation as normal. Please refer to SuSE Linux installation guide.

> **Note**
>
> The system device mapping order is the same as the order shown in HPT302 BIOS Setting Utility. If you have no other SCSI adapters installed, the device marked as " BOOT" or "HDD0" will be /dev/sda, " HDD1" will be /dev/sdb, " HDD2" will be /dev/sdc, etc. When creating mount points, you must mount /boot on /dev/sda.

For SuSE 7.1, when you are asked to select the kernel to install, you must have 2.2.18 kernel selected. Installing 2.4.0-4GB kernel is optional.

For SuSE 8.0/8.1/8.2, when "language selection" screen appears, switch to console 2 by pressing <Ctl>+<Alt>+F2, then type in the following commands: (where xxx is the kernel version: 2.4.18-4GB for 8.0, 2,4,19-4GB for 8.1, 2.4.20-4GB for 8.2)

> **# mount /dev/fd0 /mnt**
> **# cp /mnt/xxx/hpt302.o /tmp**
> **# umount /mnt**
> **# insmod /tmp/hpt302.o**

Then switch back by pressing <Ctl>+<Alt>+F7 and continue the installation as normal.

4) If you are installing SuSE 7.1/7.3/8.0, skip this step.

For SuSE Linux 8.1 if you are prompted "**The system was successfully installed. Your machine must now be rebooted...**", **do not** remove the installation CD. Press "**enter**" to reboot the system. This is required for SMP installation and some specific UP installations. If you don't get this prompt, go to step 5.

For SuSE Linux 8.2, **do not** remove the installation CD when reboot.

When a prompted label "**boot:**" appears, for SuSE 8.1 SMP type "**acpi=off**" then press "**enter**"; for SuSE 8.2 type "**hde=noprobe hdf=noprobe hdg=noprobe hdh=noprobe**" and then press "**enter**". When "language selection" screen appears, switches to console 2 by pressing <Ctl>+<Alt>+F2, insert driver diskette into floppy drive, then type in the following commands: (where xxx is the kernel version: 2.4.19-4GB for SuSE 8.1, 2.4.20-4GB for SuSE 8.2)

> **# mount /dev/fd0 /mnt**
> **# cp /mnt/xxx/hpt302.o /tmp**
> **# umount /mnt**
> **# insmod /tmp/hpt302.o**

Then switch back by pressing <Ctl>+<Alt>+F7, when "**Please select**" dialog appears, please select "**Boot installed system**". Then press "**enter**".

5) An additional step is needed to do post install during normal installtion.

For SuSE 7.1/7.3/8.0

After installed lilo as boot loader, a message box will pop up with text "**The LILO boot sector has been written to disk. Restore the old boot sector in the installed system with lilo –u /dev/sda**". Now insert the HPT302 driver diskette into floppy drive and switch to console 2 by pressing <Ctl>+<Alt>+F2, then type in the following commands to perform a post installation script:

> **# chroot /mnt**
> **# mount /floppy**
> **# sh /floppy/postinstall**
> **# umount /floppy**

The post installation script will copy new kernel and driver modules to your hard disk. When it is done, switch to installation program by pressing <Ctl>+<Alt>+F7 and continue the normal installation.

For SuSE 8.1/8.2

When asked to type the password of root, switch to console 2 by pressing <Ctl>+<Alt>+F2, then type in the following commands to perform a post installation script:

insert driver diskette

> **# mount /dev/fd0 /media/floppy**
> **# sh /media/floppy/postinstall**
> **# umount /media/floppy**

The post installation script will copy new kernel and driver modules to your hard disk. When it is done, switch to installation program by pressing <Ctl>+<Alt>+F7 and continue the normal installation.

Now SuSE Linux should boot up from your HPT302/302N controller.

3 Installing Driver on an Existing System

If you are currently running Linux and would like to access drives or arrays attached to the HPT302/302N controller, you can perform the following steps.

Note

If you use a SCSI adapter to boot your system, you must make sure the HPT302/302N controller BIOS will be loaded after that adapter's BIOS. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

Step 1 Update Grub

If you are currently running **SuSe Linux 7.1/7.3/8.0/8.1up System**, just go to Step 2.If you are currently running **SuSE Linux 8.1 SMP System,** you must update /boot/grub/menu.lst first.

```
E.g.
   default=0
   timeout=8
   title Linux
       kernel (hd0,1)/vmlinux root=/dev/hda1 acpi=off
       initrd (hd0,1)/initrd
```

If you are currently running **SuSE Linux 8.2,** you must update /boot/grub/menu.lst first.

```
E.g.
   default=0
   timeout=8
   title Linux
```

```
        kernel (hd0,1)/vmlinux root=/dev/hda1 hde=noprobe
   hdf=noprobe hdg=noprobe hdh=noprobe
        initrd (hd0,1)/initrd
```

Then reboot the system to make new kernel parameter take effect.

Step 2 Obtain the Driver Module

SuSE 7.1 Linux system may use version 2.2.18 kernel or version 2.4.0 kernel. You must
first check your system to find which kernel it uses, and get the corresponding driver
module for it:

2.2.18/hpt302.o	Driver for SuSE 7.1 2.2.18 UP kernel
2.2.18-SMP/hpt302.o	Driver for SuSE 7.1 2.2.18 SMP kernel
2.4.0-4GB/htp302.o	Driver for SuSE 7.1 2.4.0 UP kernel
2.4.0-64GB/hpt302.o	Driver for SuSE 7.1 2.4.0 SMP kernel
2.4.10-4GB/hpt302.o	Driver for SuSE 7.3 2.4.10 UP kernel
24.10-64GB/hpt302.o	Driver for SuSE 7.3 2.4.10 SMP kernel
2.4.18-4GB/hpt302.o	Driver for SuSE 8.0 2.4.18UP kernel
2.4.18-64GB-SMP/hpt302.o	Driver for SuSE 8.0 2.4.18SMP kernel
2.4.19-4GB/hpt302.o	Driver for SuSE 8.1 2.4.19UP kernel
2.4.19-64GB-SMP/hpt302.o	Driver for SuSE 8.1 2.4.19SMP kernel
2.4.20-4GB/hpt302.o	Driver for SuSE 8.2 2.4.20UP kernel
2.4.20-64GB-SMP/hpt302.o	Driver for SuSE 8.2 2.4.20SMP kernel

Step 3 Test the Driver Module

You can test out the module to ensure that it works for your system by changing
working directory to the location where hpt302.o resides and typing in the command
"**insmod hpt302.o**".

Sometimes insmod will report "**unresolved symbols**" when you attempt to load the
module. This can be caused by two ways:

1) If your system is using a kernel, which has not built-in SCSI support, you must load
the SCSI module before load hpt302.o. Try to load SCSI modules first.

E.g.   # **insmod scsi_mod**
              # **insmod sd_mod**
              # **insmod hpt302.o**

2) If you recompile the kernel with SCSI support and still receive the "**unresolved
symbols**" error, it may be caused that you have configured symbol versioning in kernel.
To correct it, recompile the kernel with symbol versioning not configured. Please refer
to the kernel documents for more information.

To ensure the module has been loaded successfully, you can check the driver status by
typing in the command "**cat /proc/scsi/hpt302/x**", where x is the filename you found

under /proc/scsi/hpt302/. You should see the driver banner and a list of attached drives. You can now access the drives as a SCSI device (the first device is /dev/sda, then /dev/sdb, etc.).

Example

If you have one disk attached to HPT302/302N controller, it will be registered to system as device **/dev/sda**. You can use "**fdisk /dev/sda**" to create a partition on it, which will be **/dev/sda1**, and use "**mkfs /dev/sda1**" to setup a file system on the partition. Then you can mount **/dev/sda1** to somewhere to access it.

Step 4 Configure System to Automatically Load the Driver

Most likely, you will not want to type in "**insmod hpt302.o**" each time you boot up the system. Therefore you must install the module and tell the system about it. To install the module, type in the following commands (first change directory to where the proper hpt302.o can be located):

If you are using SuSE 7.1 2.2.18 UP kernel, use

> # **install -d /lib/modules/2.2.18/scsi**
> # **install -c hpt302.o /lib/modules/2.2.18/scsi**

If you are using SuSE 7.1 2.4.0 UP kernel, use

> # **install -d /lib/modules/2.4.0-4GB/kernel/drivers/scsi**
> # **install -c hpt302.o /lib/modules/2.4.0-4GB/kernel/drivers/scsi**

If you are using SuSE 7.3 2.4.10 UP kernel, use

> # **install -d /lib/modules/2.4.10-4GB/kernel/drivers/scsi**
> # **install -c hpt302.o /lib/modules/2.4.10-4GB/kernel/drivers/scsi**

If you are using SuSE 8.0 2.4.18 UP kernel, use

> # **install -d /lib/modules/2.4.18-4GB/kernel/drivers/scsi**
> # **install -c hpt302.o /lib/modules/2.4.18-4GB/kernel/drivers/scsi**

If you are using SuSE 8.1 2.4.19 UP kernel, use

> # **install -d /lib/modules/2.4.19-4GB/kernel/drivers/scsi**
> # **install -c hpt302.o /lib/modules/2.4.19-4GB/kernel/drivers/scsi**

If you are using SuSE 8.2 2.4.20 UP kernel, use

> # **install -d /lib/modules/2.4.20-4GB/kernel/drivers/scsi**
> # **install -c hpt302.o /lib/modules/2.4.20-4GB/kernel/drivers/scsi**

If you are using SuSE 7.1 2.2.18 SMP kernel, use

> # **install -d /lib/modules/2.2.18-SMP/scsi**
> # **install -c hpt302.o /lib/modules/2.2.18-SMP/scsi**

If you are using SuSE 7.1 2.4.0 SMP kernel, use

> **# install -d /lib/modules/2.4.0-64GB-SMP/kernel/drivers/scsi**
> **# install -c hpt302.o /lib/modules/2.4.0-64GB-SMP/kernel/drivers/scsi**

If you are using SuSE 7.3 2.4.10 SMP kernel, use

> **# install -d /lib/modules/2.4.10-64GB-SMP/kernel/drivers/scsi**
> **# install -c hpt302.o /lib/modules/2.4.10-64GB-SMP/kernel/drivers/scsi**

If you are using SuSE 8.0 2.4.18 SMP kernel, use

> **# install -d /lib/modules/2.4.18-64GB-SMP/kernel/drivers/scsi**
> **# install -c hpt302.o /lib/modules/2.4.18-64GB-SMP/kernel/drivers/scsi**

If you are using SuSE 8.1 2.4.19 SMP kernel, use

> **# install -d /lib/modules/2.4.19-64GB-SMP/kernel/drivers/scsi**
> **# install -c hpt302.o /lib/modules/2.4.19-64GB-SMP/kernel/drivers/scsi**

If you are using SuSE 8.2 2.4.20 SMP kernel, use

> **# install -d /lib/modules/2.4.20-64GB-SMP/kernel/drivers/scsi**
> **# install -c hpt302.o /lib/modules/2.4.20-64GB-SMP/kernel/drivers/scsi**

Then you should inform the system when to load the module.

1. If you have no other SCSI adapters installed, you can edit the file "**/etc/modules.conf**" and add the following lines:

> **probeall block-major-8 scsi_mod sd_mod hpt302**
> **options –k hpt302**

This tells the kernel to try loading the SCSI and HPT302 modules whenever it tries to access a SCSI device /dev/sd [a-z]. If you have SCSI support compiled in kernel, you may remove the "scsi_mod" and "sd_mod" from that line.

Notice

Upon your system configuration the modules configuration file may be another file, possibly deprecated "conf.modules" file. You may have to check which configuration file you use and modify the correct one.

Now, reboot the system and try to type in the command "fdisk /dev/sda". The kernel should automatically load the HPT302 driver.

2. If you use a SCSI adapter to boot the system, you cannot do as above since this may conflict with other SCSI devices. However, you can add the driver to the existing RAM disk image. First check which image file you are using by checking the "initrd=" line in file /etc/lilo.conf, the using the following commands (we assume the file is /boot/initrd.suse):

> **# gzip –dc /boot/initrd.suse > /tmp/initrd.ext2**

> **# mkdir /mnt/initrd**
> **# mount –o loop /tmp/initrd.ext2 /mnt/initrd**

For SuSE 7.1 UP 2.2.18 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.2.18/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.2.18/scsi/**

For SuSE 7.1 UP 2.4.0 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.0-4GB/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.0-4GB/kernel/drivers/scsi/**

For SuSE 7.3 UP 2.4.10 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.10-4GB/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.10-4GB/kernel/drivers/scsi/**

For SuSE 8.0 UP 2.4.18 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.18-4GB/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.18-4GB/kernel/drivers/scsi/**

For SuSE 8.1 UP 2.4.19 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.19-4GB/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.19-4GB/kernel/drivers/scsi/**

For SuSE 8.2 UP 2.4.20 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.20-4GB/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.20-4GB/kernel/drivers/scsi/**

For SuSE 7.1 SMP 2.2.18 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.2.18-SMP/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.2.18-SMP/scsi/**

For SuSE 7.1 SMP 2.4.0 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.0-64GB-SMP/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.0-64GB-SMP/kernel/drivers/scsi/**

For SuSE 7.3 SMP 2.4.10 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.10-64GB-SMP/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.10-64GB-SMP/kernel/drivers/scsi/**

For SuSE 8.0 SMP 2.4.18 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.18-64GB-SMP/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.18-64GB-SMP/kernel/drivers/scsi/**

For SuSE 8.1 SMP 2.4.19 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.19-64GB-SMP/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.19-64GB-SMP/kernel/drivers/scsi/**

For SuSE 8.2 SMP 2.4.20 kernel
> **# mkdir –p /mnt/initrd/lib/modules/2.4.20-64GB-SMP/kernel/drivers/scsi**
> **# cp hpt302.o /mnt/initrd/lib/modules/2.4.20-64GB-SMP/kernel/drivers/scsi/**

> **# echo "insmod hpt302" >> /mnt/initrd/linuxrc**
> **# umount /mnt/initrd**
> **# gzip –c /tmp/initrd.ext2 > /boot/initrd.suse**
> **# cp /boot/initrd.suse /boot/initrd**

 # lilo

Then reboot your system and the driver will be loaded.

Step 5 Configure System to Mount Volumes when Startup

Now you can inform the system to automatically mount the array by modifying the file /etc/fstab. E.g. You can add the following line to tell the system to mount /dev/sda1 to location /mnt/hpt after startup:

/dev/sda1   /mnt/hpt   ext2   defaults   0 0

4 Monitoring the Driver

Once the driver is running, you can monitor it through the Linux proc file system support. There is a special file under /proc/scsi/hpt302/. Through this file you can view driver status and send control commands to the driver.

Note

The file name is the SCSI host number allocated by OS. If you have no other SCSI cards installed, it will be 0. In the following sections, we will use x to represent this number.

Checking Devices Status

Using the following command to show driver status:

 # cat /proc/scsi/hpt302/x

This command will show the driver version number, physical device list and logical device list.

5 Updating the Driver

If you are not booting from disks attached to HPT302/302N controller, you can update the driver just by reinstalling it following the previous section, "**Install HPT302 Driver on an Existing System**".

If you are using a system installed to HPT302/302N controller, you can update the driver by the following steps.

1) First obtain the new driver module file hpt302.o. Refer to the previous section "**Obtain the Driver Module**". In the following steps, we assume you have copied it to /tmp/hpt302.o.

2) Replace hpt302.o in the boot RAM disk image.

If you are using SuSE 7.1 2.2.18 UP kernel, you can use the following commands:

 # gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
 # mkdir /mnt/initrd

```
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.2.18/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 7.1 2.4.0 UP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd_24 > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.4.0-4GB/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd_24
# cp /boot/initrd_24 /boot/initrd_24.suse
```

If you are using SuSE 7.3 2.4.10 UP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.4.10-4GB/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 8.0 2.4.18 UP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.4.18-4GB/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 8.1 2.4.19 UP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.4.19-4GB/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 8.2 2.4.20 UP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
```

```
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.4.20-4GB/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 7.1 2.2.18 SMP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o /mnt/initrd/lib/modules/2.2.18-SMP/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 7.1 2.4.0 SMP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd_24 > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o
/mnt/initrd/lib/modules/2.4.0-64GB-SMP/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd_24
# cp /boot/initrd_24 /boot/initrd_24.suse
```

If you are using SuSE 7.3 2.4.10 SMP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o
/mnt/initrd/lib/modules/2.4.10-64GB-SMP/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
# cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 8.0 2.4.18 SMP kernel, you can use the following commands:

```
# gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
# mkdir /mnt/initrd
# mount -o loop /tmp/initrd.ext2 /mnt/initrd
# cp /tmp/hpt302.o
/mnt/initrd/lib/modules/2.4.18-64GB-SMP/kernel/drviers/scsi/hpt302.o
# umount /mnt/initrd
# gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
```

```
    # cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 8.1 2.4.19 SMP kernel, you can use the following commands:

```
    # gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
    # mkdir /mnt/initrd
    # mount -o loop /tmp/initrd.ext2 /mnt/initrd
    # cp /tmp/hpt302.o
    /mnt/initrd/lib/modules/2.4.19-64GB-SMP/kernel/drviers/scsi/hpt302.o
    # umount /mnt/initrd
    # gzip -c /tmp/initrd.ext2 > /boot/initrd.suse

    # cp /boot/initrd.suse /boot/initrd
```

If you are using SuSE 8.2 2.4.20 SMP kernel, you can use the following commands:

```
    # gzip -dc /boot/initrd.suse > /tmp/initrd.ext2
    # mkdir /mnt/initrd
    # mount -o loop /tmp/initrd.ext2 /mnt/initrd
    # cp /tmp/hpt302.o
    /mnt/initrd/lib/modules/2.4.20-64GB-SMP/kernel/drviers/scsi/hpt302.o
    # umount /mnt/initrd
    # gzip -c /tmp/initrd.ext2 > /boot/initrd.suse
    # cp /boot/initrd.suse /boot/initrd
```

3) If you are using lilo to boot your system, use "**lilo**" to reinstall the RAM disk:

```
    # lilo
```

4) Update hpt302.o in /lib/modules:

   On SuSE 7.1 2.2.18 UP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.2.18/scsi/hpt302.o
```
   On SuSE 7.1 2.4.0 UP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.0-4GB/kernel/drivers/scsi/hpt302.o
```
   On SuSE 7.3 2.4.10 UP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.10-4GB/kernel/drivers/scsi/hpt302.o
```
   On SuSE 8.0 2.4.18 UP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.18-4GB/kernel/drivers/scsi/hpt302.o
```
   On SuSE 8.1 2.4.19 UP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.19-4GB/kernel/drivers/scsi/hpt302.o
```
   On SuSE 8.0 2.4.20 UP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.20-4GB/kernel/drivers/scsi/hpt302.o
```
   On SuSE 7.1 2.2.18 SMP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.2.18-SMP/scsi/hpt302.o
```
   On SuSE 7.1 2.4.0 SMP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.0-64GB-SMP/kernel/drivers/scsi/hpt302.o
```
   On SuSE 7.3 2.4.10 SMP kernel, use
```
        # cp /tmp/hpt302.o /lib/modules/2.4.10-64GB-SMP/kernel/drivers/scsi/hpt302.o
```

On SuSE 8.0 2.4.18 SMP kernel, use

 # **cp /tmp/hpt302.o /lib/modules/2.4.18-64GB-SMP/kernel/drivers/scsi/hpt302.o**

On SuSE 8.1 2.4.19 SMP kernel, use

 # **cp /tmp/hpt302.o /lib/modules/2.4.19-64GB-SMP/kernel/drivers/scsi/hpt302.o**

On SuSE 8.2 2.4.20 SMP kernel, use

 # **cp /tmp/hpt302.o /lib/modules/2.4.20-64GB-SMP/kernel/drivers/scsi/hpt302.o**

5) Reboot your system to make the new driver take effect.

6 Uninstalling

Uninstalling the Driver

You can only uninstall the driver when your system is not booting from devices attached to HPT302/302N controller. Just remove the lines you added to /etc/modules.conf and /etc/fstab.