

# Reiser4

**Reiser4** is the successor filesystem for ReiserFS, developed from scratch by **Namesys** and **Hans Reiser**. It is very efficient for handling small files (often used in `/var` for this purpose) and includes features such as cheap transparent compression and block suballocation. Because it is an atomic file system "your file system operations either entirely occur, or they entirely don't, and they do not corrupt due to half occurring." **Benchmarks** (<http://vizzion.org/?id=reiser4>) with other linux filesystems are also available.

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### File systems

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## Important Notes

- Reiser4 requires a patched kernel
- It consumes a little more CPU than other filesystems
- Even **LILLO** as the only bootloader officially supporting Reiser4 seems to have issues with it when `/boot` is formatted as Reiser4
- It is still not considered stable

**Note:** In systemd219, **Access Control Lists** is not enabled by default on Reiser4 partition. If you put `/var` on such a filesystem, you will need to do so or **Tmpfs** will not be mounted correctly. See for details **Systemd#Troubleshooting**

**Tip:** **Gparted LiveCD** (<http://gparted.sourceforge.net/livecd.php>) is a small Linux distribution booting straight into Gparted. It also supports Reiser4

## Packages

1. **Install** the **reiser4progs** (<https://aur.archlinux.org/packages/reiser4progs/>)<sup>AUR</sup> package
2. You will need a reiser4 patched kernel. Patches can be found here <https://sourceforge.net/projects/reiser4/files/>
3. Bootloader (*Optional, only needed if you want to format your `/` (root) as **reiser4***)

**Note:** Backing up your bootloader configuration file should be considered.

a) **Recommended:** make a small (as mentioned above, 20-200mb) partition for `/boot` with a filesystem other than Reiser4 with **GParted**, and then copy your `/boot` folder to the partition. Update your bootloader config accordingly, eg. with **Grub2** do:

```
# grub-mkconfig -o /boot/grub/grub.cfg
```

b) If you wish to put everything including `/boot` on a Reiser4 partition you will need to use **LILO**. This is not advised, as you will probably get an error when trying to update `lilo.conf`:

```
# lilo
```

## 4. Reboot

**Note:** The following steps are for using Reiser4 as your / (root). If you just want to use Reiser in /var (or whatever) you should modify the following instructions according to your needs.

## Moving to Reiser4

In the next steps we will copy the data from your current root partition to the new Reiser4 partitions. Make sure you have enough disk space on the Reiser4 partition with:

```
# df -h
```

## Sample system

```
# fdisk -l
* /dev/sda1: (10 Gb, 5 Gb free); Reiserfs /mnt/reiser4
* /dev/sda2: (10 Gb, 10 Gb free); Reiser4 /
* /dev/sda3: (200 Mb, 180 Mb free); ext2 /boot
```

## Formatting

Run the following commands:

```
mkfs.reiser4 /dev/sdaX
mkdir /mnt/reiser4
mount -t reiser4 /dev/sdaX /mnt/reiser4
```

**Note:** With **X** being your partition number!

It is recommended that you use the Cryptcompress plugin by formatting with the following command:

```
mkfs.reiser4 -o create=cgreg40,compress=lzo1 /dev/sdaX
```

## Copy system

Once the partition is formatted, copy your current system to the new partition and create the system directories. You may either do this from Arch Linux, or **to make it easier** (so that you do not have to use makedev later), just **boot up with the [Gparted LiveCD](http://gparted.sourceforge.net/livecd.php)** and **mount both your new Reiser4 partition and your current root partition. Then, just copy everything over (as root) like so:**

```
cd /mnt
mkdir oldroot
mkdir reiser4
mount /dev/sdaX oldroot
mount /dev/sdaY reiser4 (the Reiser4 partition)
cp -R -a /mnt/oldroot/* /mnt/reiser4/
```

Then, you need to mount your `/boot` partition, and if you have not already, copy `/boot` from your original root partition over to it.

**Note:** It is suggested to empty your /boot from the Reiser4 partition to use it as a mountpoint, which is reflected later in your fstab

```
mkdir bootpart
mount /dev/sdaZ bootpart
cp -R -a /mnt/oldroot/boot/* /mnt/bootpart/
```

Do not forget to edit your bootloader's config appropriately (see examples at the bottom of the article).

**Note:** In case you upgraded grub before rebooting you may need to manually install grub to your /boot partition, otherwise, things may break and prevent you from booting. In this case using a LiveCD to Chroot and would be your last hope.

## /etc/fstab:

Note: If you can confirm that Reiser4 works for you, you should format the old root partition.

```
#
# /etc/fstab: static file system information
#
# <file system> <dir>          <type>  <options>          <dump> <pass>
/dev/sda1      /                reiser4  defaults,noatime,notail 0    1
/dev/sda2      /mnt/oldroot     ext4     defaults            0    0
/dev/sda3      /boot            ext2     defaults            0    1
```

## Bootloader Examples

## /boot/grub/grub.cfg:

```
# (0) Arch Linux
title Arch Linux
set root=(hd0,msdos3)
kernel /vmlinuz-linux root=/dev/sda3 ro noatime notail acl init=/usr/bin/bootchartd
initrd /initramfs-linux.img

# (1) Arch Linux
title Arch Linux Fallback
set root=(hd0,msdos3)
kernel /vmlinuz-linux root=/dev/sda3 ro
initrd /initramfs-linux-fallback.img
```

Run `grub-mkconfig` to update your config:

```
# grub-mkconfig -o /boot/grub/grub.cfg
```

## /etc/lilo.conf:

```
#
# /etc/lilo.conf
#

boot=/dev/hda
# This line often fixes L40 errors on bootup
# disk=/dev/hda bios=0x80

default=Arch4
timeout=20
lba32
prompt
compact

image=/boot/vmlinuz-linux
    label=Arch4
    root=/dev/hda5
    append="video=vesafb:1024x768-24@56,ywrap,mtrr splash=verbose,theme:darch console=tty1 resume2=swap:/dev/hdb1"
```

```
initrd=/boot/initramfs-linux.img
read-only

image=/boot/vmlinuz-linux
label=Arch
root=/dev/hda3
append="video=vesafb:1024x768-24@56,ywrap,mtrr splash=verbose,theme:darch console=tty1 resume2=swap:/dev/hdb1"
initrd=/boot/initramfs-linux.img
read-only
```

Run **lilo** to update your config:

```
# lilo
```

## Troubleshooting

- Permissions: `chown -R username.group <userdir>`
- If you have problem with **su** command after the change of fs, you should reinstall **coreutils** package.

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