FreeBSD Labeled Filesystems

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> **!** **Warning**
> *Make a full backup first*.

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1 What Are Labels?

FreeBSD device names are often dynamic. The same hard drive can show up as */dev/ad0* or */dev/ad4* or even */dev/da0*, depending on several factors. Using these device names in */etc/fstab* is prone to breakage. Put the drive on another connector, in another system, or in an external enclosure, and FreeBSD can't boot because it can't find the device listed in *fstab*.

Labels can be assigned to FreeBSD filesystems or devices, and will remain the same, regardless of the connection type or port. These labels can be used reliably in *fstab*.

2 Boot Single-User And Label Filesystems

This example assigns labels to a drive that was */dev/ad4* with FreeBSD on the first slice in a standard layout. Using part of the hostname or other identifying information in the label helps avoid the confusion of multiple drives with identical labels. The example computer is called *aardvark*, so the labels all start with *aa*.

```
# glabel label aaswap /dev/ad4s1b
# tunefs -L aarootfs /dev/ad4s1a
# tunefs -L aavarfs /dev/ad4s1d
# tunefs -L aatmpfs /dev/ad4s1e
# tunefs -L aausrfs /dev/ad4s1f
```

glabel(8) is used to label swap, which is just a FreeBSD partition without a filesystem. The label will appear in */dev/label* when the drive is detected.

tunefs(8) is used to label UFS filesystems, and those labels will appear in */dev/ufs*. `tunefs` will only label an unmounted or read-only filesystem, hence the boot into single-user mode. (Labeling a read-only filesystem seems weird until you realize that the label isn't part of the filesystem.)

> **!** **Warning**
> Don't be in a hurry. If you immediately mount / so you can edit */etc/fstab*, the new label on / will go away. Reboot first, or disconnect and reconnect an external device.

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3 Boot

Check that all of the labels were assigned correctly.

```
# ls /dev/label /dev/ufs
/dev/label:
aaswap

/dev/ufs:
aarootfs        aatmpfs         aausrfs         aavarfs
```

Edit */etc/fstab* to use the labels you created in the previous step.

```
# Device                 Mountpoint      FStype  Options         Dump    Pass#
/dev/label/aaswap        none            swap    sw              0       0
/dev/ufs/aarootfs        /               ufs     rw              1       1
/dev/ufs/aatmpfs         /tmp            ufs     rw              2       2
/dev/ufs/aausrfs         /usr            ufs     rw              2       2
/dev/ufs/aavarfs         /var            ufs     rw              2       2
```

Reboot to make sure that everything is correct and the system comes up.

4   Done!

That's it. The unchanging labels let FreeBSD find the swap partition and filesystems without caring about the device name or number.