Labeling Unlabeled Hard Drives

For Sun Systems Running the Solaris Operating System

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Labeling a Hard Drive

This document describes how to use the Solaris format utility to label a hard drive. It is intended for system administrators.

The procedure described in this document might need to be performed when you replace or add hard drives to a Sun system running the Solaris Operating System (Solaris OS).

The following topics are covered:

Introduction

The Solaris OS uses an electronic disk label, sometimes called a volume table of contents (VTOC) or Extensible Firmware Interface GUID Partition Table (EFI GPT). The Solaris OS uses the label to communicate with a hard drive.

The disk label is data written to a predefined area on the drive that describes the drive type and drive geometry (number of read/write heads, number of cylinders, sectors, and so on). The disk label also stores the drive's partition structure (the number and size of the slices on the drive).

In the past, drives from Sun were labeled at the factory. Today, you might receive hard drives that are not labeled, and you must label these drives before you can use them.

You use the Solaris `format` utility to label hard drives and to perform a number of other hard drive administrative tasks such as partitioning and formatting.

Caution – Be aware that many of the format utility tasks are destructive to data that may be on a drive. It is very important that you use caution when using the format utility to prevent accidental data loss.

The procedure in this document is limited to describing how to label a drive, and does not describe all the other drive administrative tasks available in the format utility. Refer to the Solaris system administration documentation for comprehensive `format` utility information.

If you suspect that a drive does not have a drive label, perform the procedure in this document. For example, if you are installing the Solaris OS and you receive the following message:

```
Unusable Disk

        This disk (c5t8d0) cannot be used to install Solaris software.

       This disk drive does not have a valid label.  If you want to use
       this disk for the install, exit the Solaris Interactive
       Installation program, use the format(1M) command from the
       command line to label the disk, and type 'install-solaris' to
       restart the installation program.
```

You should label the drive.

If your system is bootable, you can use the Solaris `prtvtoc` command to display disk labels.

Example using the `prtvtoc` command to verify the presence of a label:

```
# prtvtoc /dev/rdsk/c5t8d0s2
 *  /dev/rdsk/c5t8d0 partition map
 *  Dimensions:
 *      512 bytes/sector
 *       63 sectors/track
 *       15 tracks/cylinder
 *      945 sectors/cylinder
 *     8894 cylinders
 *     8892 accessible cylinders
 *
 * Flags:
 *   1: unmountable
 *  10: read-only
 *
 *                           First    Sector    Last
 * Partition  Tag  Flags  Sector    Count    Sector    Mount Directory
     0        2    00    1048950   3381210  4430159    /
     1        3    01          0   1048950  1048949
     2        5    00          0   8402940  8402939    /
     7        8    00    4430160   3972780  8402939    /export/home
```

▼ To Label A Disk with the Format Utility

This procedure describes how to use the Solaris `format` utility to label a hard drive for use on a system running the Solaris OS.

1. **Boot the system from the boot disk, network, or from a CD.**

   The method you use to boot the system depends on the configuration of your system:

   - Boot from the boot disk if:
     - The Solaris OS is already installed on your system.
     - You are adding a hard drive to your system, or you are replacing a drive that does not contain the OS (`/`, `/usr`, or swap slices).
   - Boot from the network if:
     - You cannot boot from the boot drive.
     - You have a boot server configured in your network.
   - Boot from a Solaris OS CD if:
     - You cannot boot from the boot drive.
     - You do not have a boot server configured on your network.
     - You have the Solaris OS CDs or DVDs from which to boot.

   If you are adding this drive (rather than replacing an existing drive), you must inform the operating system that a new device has been installed. There are several ways to do this. One method involves using the `devfsadm(1M)` can be used to dynamically inform the OS. Alternatively, you can perform a reconfiguration boot. A reconfiguration boot is performed when you use a `-r` with the `boot` command.

   Note – For more information about the `devfsadm` command and reconfiguration boot, refer to the Solaris administration documentation.

   ---

2. **Log in as superuser.**

3. **Invoke the `format` utility:**

   ```
   # format
   ```

4. **Evaluate the output to determine if any drives need to be labeled.**

   When you invoke the format utility, the format utility identifies the drives by reading their labels, displays information about each drive, and prompts you to select a drive from which to work.

   The following examples show the different kinds of output you receive based on the presence of unlabeled and labeled drives:

- The format utility detects an unlabeled drive, but is unable to identify anything about the drive. You are notified that a drive is not labeled and you are prompted to label it now, as shown:

```
Searching for disks...done

c5t8d0: Disk not labeled. Label it now?
```

  In this situation, go to Step 6.

- The format utility detects an unlabeled drive and is able to determine and display information about the unlabeled drive, but you are not prompted to label the drive, as shown:

```
Searching for disks...done

c5t8d0: configured with capacity of 68.35GB <--indication of unlabeled
drive

AVAILABLE DISK SELECTIONS:
       0. c0t0d0 <SUN146G cyl 14087 alt 2 hd 24 sec 848>
          /pci@1d,700000/scsi@4/sd@0,0
       1. c5t4d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1d,700000/LSILogic,sas@2/sd@4,0
       2. c5t5d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1d,700000/LSILogic,sas@2/sd@5,0
       3. c5t6d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
          /pci@1d,700000/LSILogic,sas@2/sd@6,0
       4. c5t8d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
          /pci@1d,700000/LSILogic,sas@2/sd@8,0

Specify disk (enter its number):
```

  In this situation, go to Step 5.

- The format utility does not detect any unlabeled drives, as shown:

```
Searching for disks...done

AVAILABLE DISK SELECTIONS:
       0. c0t0d0 <SUN146G cyl 14087 alt 2 hd 24 sec 848>
          /pci@1d,700000/scsi@4/sd@0,0
       1. c5t4d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1d,700000/LSILogic,sas@2/sd@4,0
       2. c5t5d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1d,700000/LSILogic,sas@2/sd@5,0
       3. c5t6d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
          /pci@1d,700000/LSILogic,sas@2/sd@6,0
       4. c5t8d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
          /pci@1d,700000/LSILogic,sas@2/sd@8,0

Specify disk (enter its number):
```

In this situation, select any number from the available disk selections (to get the format utility main menu) and go to Step 7.

5. **Select the disk you plan to label.**

Specify the number from the list of available disk selections (in this example, 4 is specified).

```
Searching for disks...done

c5t8d0: configured with capacity of 68.35GB

AVAILABLE DISK SELECTIONS:
       0. c0t0d0 <SUN146G cyl 14087 alt 2 hd 24 sec 848>
          /pci@1d,700000/scsi@4/sd@0,0
       1. c5t4d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1d,700000/LSILogic,sas@2/sd@4,0
       2. c5t5d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1d,700000/LSILogic,sas@2/sd@5,0
       3. c5t6d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
          /pci@1d,700000/LSILogic,sas@2/sd@6,0
       4. c5t8d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
          /pci@1d,700000/LSILogic,sas@2/sd@8,0

Specify disk (enter its number): 4
```

6. **When prompted to label the drive, answer yes.**

```
selecting c5t8d0
[disk formatted]
Disk not labeled.  Label it now? Yes
```

If you are not prompted to label the drive, the drive is already labeled and you can quit the format utility as shown in Step 7.

Once the drive is labeled, you can perform other drive configuration tasks with the format utility, if needed. For example, if you plan to change the disk partitioning, this is a good time to do so. Refer to the Solaris administration documentation for more information.

7. **Type quit to exit the format utility.**

```
FORMAT MENU:
        disk       - select a disk
        type       - select (define) a disk type
        partition  - select (define) a partition table
        current    - describe the current disk
        format     - format and analyze the disk
        repair     - repair a defective sector
        label      - write label to the disk
        analyze    - surface analysis
        defect     - defect list management
        backup     - search for backup labels
        verify     - read and display labels
        save       - save new disk/partition definitions
        inquiry    - show vendor, product and revision
        volname    - set 8-character volume name
        !<cmd>     - execute <cmd>, then return
        quit
format>  quit
#
```

The labeled drive is now ready for OS or file system installation.