

NAME

ccdconfig - configuration utility for the concatenated disk driver

SYNOPSIS

ccdconfig [-**cv**] *ccd ileave* [*flags*] *dev* ...

ccdconfig -**C** [-**v**] [-**f** *config_file*]

ccdconfig -**u** [-**v**] *ccd* ...

ccdconfig -**U** [-**v**] [-**f** *config_file*]

ccdconfig -**g** [*ccd* ...]

DESCRIPTION

The **ccdconfig** utility is used to dynamically configure and unconfigure concatenated disk devices, or ccds. For more information about the ccd, see ccd(4).

The options are as follows:

-c Configure a ccd. This is the default behavior of **ccdconfig**.

-C Configure all ccd devices listed in the ccd configuration file.

-f *config_file*

When configuring or unconfiguring all devices, read the file *config_file* instead of the default */etc/ccd.conf*.

-g Dump the current ccd configuration in a format suitable for use as the ccd configuration file. If no arguments are specified, every configured ccd is dumped. Otherwise, the configuration of each listed ccd is dumped.

-u Unconfigure a ccd.

-U Unconfigure all ccd devices listed the ccd configuration file.

-v Cause **ccdconfig** to be verbose.

A ccd is described on the command line and in the ccd configuration file by the name of the ccd, the interleave factor, the ccd configuration flags, and a list of one or more devices. The flags may be represented as a decimal number, a hexadecimal number, a comma-separated list of strings, or the word "none". The flags are as follows:

CCDF_UNIFORM 0x02

Use uniform interleave

CCDF_MIRROR	0x04	Support mirroring
CCDF_NO_OFFSET	0x08	Do not use an offset
CCDF_LINUX	0x0A	Linux md(4) compatibility

The format in the configuration file appears exactly as if it were entered on the command line. Note that on the command line and in the configuration file, the *flags* argument is optional.

```
#
# /etc/ccd.conf
# Configuration file for concatenated disk devices
#

# ccd      ileave flags component devices
ccd0      16   none  /dev/da2s1 /dev/da3s1
```

The component devices need to name partitions of type FS_BSDFFS (or "4.2BSD" as shown by `disklabel(8)`).

If you want to use the Linux md(4) compatibility mode, please be sure to read the notes in `ccd(4)`.

FILES

/etc/ccd.conf default ccd configuration file

EXAMPLES

A number of **ccdconfig** examples are shown below. The arguments passed to **ccdconfig** are exactly the same as you might place in the */etc/ccd.conf* configuration file. The first example creates a 4-disk stripe out of four scsi disk partitions. The stripe uses a 64 sector interleave. The second example is an example of a complex stripe/mirror combination. It reads as a two disk stripe of da4 and da5 which is mirrored to a two disk stripe of da6 and da7. The last example is a simple mirror. The second slice of `/dev/da8` is mirrored with the third slice of `/dev/da9` and assigned to `ccd0`.

```
# ccdconfig ccd0 64 none /dev/da0s1 /dev/da1s1 /dev/da2s1 /dev/da3s1
# ccdconfig ccd0 128 CCDF_MIRROR /dev/da4 /dev/da5 /dev/da6 /dev/da7
# ccdconfig ccd0 128 CCDF_MIRROR /dev/da8s2 /dev/da9s3
```

The following are matching commands in Linux and FreeBSD to create a RAID-0 in Linux and read it from FreeBSD.

```
# Create a RAID-0 on Linux:
mdadm --create --chunk=32 --level=0 --raid-devices=2 /dev/md0 \
```

```
/dev/hda1 /dev/hdb1
# Make the RAID-0 just created available on FreeBSD:
ccdconfig -c /dev/ccd0 32 linux /dev/ada0s1 /dev/ada0s2
```

When you create a new ccd disk you generally want to `fdisk(8)` and `disklabel(8)` it before doing anything else. Once you create the initial label you can edit it, adding additional partitions. The label itself takes up the first 16 sectors of the ccd disk. If all you are doing is creating file systems with `newfs`, you do not have to worry about this as `newfs` will skip the label area. However, if you intend to `dd(1)` to or from a ccd partition it is usually a good idea to construct the partition such that it does not overlap the label area. For example, if you have A ccd disk with 10000 sectors you might create a 'd' partition with offset 16 and size 9984.

```
# disklabel ccd0 > /tmp/disklabel.ccd0
# disklabel -R ccd0 /tmp/disklabel.ccd0
# disklabel -e ccd0
```

The disklabeling of a ccd disk is usually a one-time affair. If you reboot the machine and reconfigure the ccd disk, the disklabel you had created before will still be there and not require reinitialization. Beware that changing any ccd parameters: `interleave`, `flags`, or the device list making up the ccd disk, will usually destroy any prior data on that ccd disk. If this occurs it is usually a good idea to reinitialize the label before [re]constructing your ccd disk.

RECOVERY

An error on a ccd disk is usually unrecoverable unless you are using the mirroring option. But mirroring has its own perils: It assumes that both copies of the data at any given sector are the same. This holds true until a write error occurs or until you replace either side of the mirror. This is a poor-man's mirroring implementation. It works well enough that if you begin to get disk errors you should be able to backup the ccd disk, replace the broken hardware, and then regenerate the ccd disk. If you need more than this you should look into external hardware RAID SCSI boxes, RAID controllers (see `GENERIC`), or software RAID systems such as `geom(8)` and `gvinum(8)`.

SEE ALSO

`dd(1)`, `ccd(4)`, `disklabel(8)`, `fdisk(8)`, `gvinum(8)`, `rc(8)`

HISTORY

The `ccdconfig` utility first appeared in NetBSD 1.1.

BUGS

The initial disklabel returned by `ccd(4)` specifies only 3 partitions. One needs to change the number of partitions to 8 using "`disklabel -e`" to get the usual BSD expectations.