CDR INSTRUCTIONS

1. If you want to make a data CD (as opposed to an audio CD), you should make an iso9660 filesystem image. You can use mkisofs in the cdrecord locker, or you can 'dd' the filesystem off of some other CD-ROM. You'll need a lot of local disk space to write this image. (Writing the image into AFS or NFS is a very bad idea.) Lola-granola has a fair amount of space available in /var/tmp.

If you use 'mkisofs', you will almost certainly want to use the -r (generates SUSP and RR records using the Rock Ridge protocol and sets file ownership and modes to more useful values). You may also want to use -J (generates Joliet directory records). Read the man page to decide what other options you want. (Note that with this new version of mkisofs, the -a option for including emacs backup files (i.e., any files whose names end in '~') no longer exists; these files are now always included.)

```
cd /var/tmp
add cdrecord
man mkisofs
mkisofs -J -r -o [filename.iso] [your directory path]
```

2. Everything from here on must be done as root. So use the 'su' command to become root.

3. Issue the command 'dd if=/dev/hdc of=/dev/null count=1'. It'll spew an error message at you. This is okay. (Background: in order to access the CDR device, Linux needs the dynamically loaded driver module "ide-cd". An attempt to access the CD device, /dev/hdc, causes this module to be loaded. This is the reason for the line "pre-install ide-cd modprobe ide-scsi" in /etc/conf.modules)

4. To write this image to a CD, use cdrecord in the cdrecord locker. The CDR drive is on /dev/sga, so give cdrecord the "dev=/dev/sga" option. The CDR drive supports 6x writing, so you can give cdrecord the "speed=6" option. Read the man page to decide what other options you want. We recommend testing your invocation of cdrecord by adding the -dummy option to the command line. If the dummy write produces no error messages, you can go ahead and perform the real write by leaving off the -dummy option.

```
man cdrecord
cdrecord -dummy -v speed=6 dev=/dev/sga [filename.iso]
```

If you are making an audio CD, then you probably want something like this:

```
cdrecord -dummy -v speed=6 dev=/dev/sga -audio track*.cdda.wav
```

5. Please note that if you interrupt cdrecord (either in dummy write mode or write mode), you may not be able to use the drive or eject the CD. Unfortunately, the only way to remedy this is to reboot the machine. You can force-eject the CD, but the drive will still be useless until the machine is rebooted. Don't interrupt (Ctrl-C or otherwise) the cdrecord process.

It should be mentioned that because of device/driver/software limitations, when using the -dummy option the drive may report as follows:

```
WARNING: Some drives don't like fixation in dummy mode.
/usr/local/bin/cdrecord: Input/output error. close track/session: scsi sendcmd:
retryable error
```

Then, it may spew and sense status errors. When you try to start the actual burn without the -dummy option, the drive will think that the CD has previously been written when, in fact, it has not. We suggest you take out the CD after the dummy write. This serves two purposes: to see whether any data was actually written (by looking at the CD's surface) and to reset the drive so that upon re-insertion it won't believe that data was written on the CD. If you just ignore all this, the drive may be smart enough to eject and reinsert the CD on its own, but its a good idea to do this manually.

6. Finally, after cdrecord finish writing the data, the machine (lola-granola) may hang for 30 seconds. Then, cdrecord will fixate (write the Table of Contents to) the CD.

```
CDB:  5B 00 02 00 00 00 00 00 00 00
status: 0x0 (GOOD STATUS)
cmd finished after 10.495s timeout 480s
```

This is normal and should be fixed soon.

7. If everything went okay, you can mount your new CD:

```
        mount -rt iso9660 /dev/scd0 /cdrom
    (...check contents...)
        umount /cdrom
```

If something went wrong, you now have a shiny little frisbee.

Have fun,

Fast Cart et al.

P.S. Here is some Information about CDR capacities that may be useful.

Compact Disc Capacities (Based on Playing Time)
Note 1: The normal CD transfer rate from the disc is 75 blocks per second.
Note 2: Capacities shown in BYTES.

Disc Size & Playing Time	* Audio (2,352 Bytes/Block)	* CD-ROM Mode 1 (2,048 Bytes/Block)	CD-ROM Mode 2 (2,336 Bytes/Block)	CD-i &(XA) Form 1 (2,048 Bytes/Block)	CD-i &(XA) Form 2 (2,324 Bytes/Block)
120mm (74 Min)	783,216,000	681,984,000	777,888,000	681,984,000	773,892,000

```
Blocks total: 335300 Blocks current: 335300
Blocks total: 336225 Blocks current: 336225
```

Blocks total: 359849 Blocks current: 359849

$Header: /afs/sipb/project/doc/icdr/cd.txt,v 1.12 2001/07/01 15:02:26 belmonte Exp $