RSJ CD-Writer for OS/2

Preface

With RSJ CD-Writer you have purchased a product that is totally different to other existing mastering programs – you will notice that right from the start.

RSJ CD Writer provides an own drive letter for your CD Recorder. With this drive letter you can write files on CD by using common commands (COPY, XCOPY,…) or the workplace shell.

RSJ CD Writer supports DAO (disk at once) mode. This copy mode allows the creation of exact copies of audio CDs that do not contain gaps between the tracks (Live-CDs, Musical-CDs).

You can print your own CD-Cover using the RSJ CD Cover Editor.

Using freedb you can get information about the CD via Internet.

You can easily create data-DVDs.

In each chapter you will find many useful tips and examples on how to successfully use this software. We hope that you enjoy working with RSJ CD-Writer.

This documentation offers information on the following subject fields:

Installation	The correct installation of the *RSJ CD Writer File System for OS/2*
Introduction	Step-by-step instructions to basic operations (such as copying files to a CD or creating an audio CD)
File System	Information about the file system tools and operation
CD View	Information about *CD View*, a tool used to copy tracks (both audio and data) from various sources
CD Copy Wizard	Information about *CD Copy Wizard*, a tool used to copy the whole CD
Reference	Detailed information about the commands, settings and programs
Technical Details	Background information about writable CDs

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Programming	The documentation of the programming interface is now available as a separate document. If necessary, it can be downloaded from our internet page http://www.rsj.de
Help on errors	Information about possible error conditions and how to handle them
System Requirements	Hard- and software requirements for RSJ CD-Writer
Appendix	Additional comments and information

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Installation

In order to install the *RSJ CD Writer File System*, the program *INSTALL* has to be started from the installation disk.

The installation program copies the program files from the disk to the desired location on the hard disk and updates the system file CONFIG.SYS.

If you use an external CD recorder, make sure it was turned on before the system was started. If not, turn it on and restart the system before installing RSJ CD Writer.

Note: Upon successful installation, the computer must be rebooted.

Starting the Installation

Enter the following command to start the installation program:

```
a:install
```

The installation dialog window appears:

Options in the Installation Program

The options in the installation dialog have following meaning:

Buffer Size

The buffer size determines the amount of main memory to be used as buffer while copying a cache file to the CD recorder. The faster the recorder is, the larger the buffer size should be. 2048-4096KB should be OK for 2x recorders, whereas 4x recorders should be operated with at least 4096KB.

Cache Size

The cache size is used to specify how large a cache file should become before it will be written to the CD recorder. In case a file to be copied is larger than the size specified here, the cache file will be enlarged automatically; e.g. if a 500MB file is being copied, the cache file will be increased to 500MB, too.

Note: Files as large as this can be copied without temporarily storing them in a cache file by using "CDCOPY"; further information can be found in the reference chapter.

Cache Path

Cache files are stored in this directory. The available free space on this drive should be 4x larger than the cache size in order to be able to create further cache files while the old ones are written.

Mode

This setting allows selecting the CD type to be written. The mode specified here is only used with new CDs; CDs, which already contain data tracks, are continued in the mode they have been started with.

Generally, *CD-XA* mode should be used. In case a specific computer system (such as an old Unix system with a 1x CDROM drive) refuses to accept CD-XA CDs, this setting can be changed to *CDROM*. Please note that many systems don't recognize multiple sessions on CDs, which have been written in *CDROM* mode, that is, if you plan to write multiple sessions, use *CD-XA* mode.

ISO-Level

The ISO Level controls the way in which the ISO9660 directory is constructed. The following settings are available:

1. All file names are truncated to 8.3

2. File names can be up to 31 characters long but only contain one dot (.)

3. File names can contain up to 31 characters and dots

See the section "Long Filenames" for more information about this topic.

Recording Speed

The number in this entry field determines the recording speed factor, which will be used when writing CDs with the file system (1 = 150KB/s, 2 = 300KB/s, 4 = 600KB/s, ...). If the recording speed factor is set to 0, the default recording speed of the CD Writer will be used (in most cases the fastest speed supported by the CD recorder).

Note: The recording speed can be changed at any time with the CDSPEED command. Refer to the reference section for further information about this command.

Test Mode

This option switches the CD recorder into a so-called Test Mode, which is used to determine whether the data transfer rate from the computer to the CD recorder meets the requirements of a specific recording speed. Most recorders will flash the Write or Busy LED to indicate that no data is actually written.

Some recorders produce error messages when the current session is to be closed in test mode. Therefore, the test mode should only be used to verify the data transfer rate, not the operation of the CD Writer File System. To prevent this error, close the CD with the command "CDATTACH" <DRIVE> -C".

Disable Eject

Usually, the CD is ejected after detaching. This setting suppresses the automatically ejection.
Please note that some of the older recorders don't update their internal track directory until the CD is ejected. For that reason, it's a good idea to eject the CD manually *before restarting the computer or turning off the recorder*! Otherwise, the recorder will attempt to write over the previously written tracks, thereby corrupting the information already saved on the CD.

Update WPS and Desktop

If this option is selected, a folder will be created on the Desktop, which contains the program objects used to work with the *RSJ CD Writer*.

Start Error Log

This option determines whether the error log utility should be started automatically.

Source Path

Location of the installation files; should not be changed

Target Path

Destination path; points to the directory where RSJ CD Writer should be installed (only local drives).

Replace OS/2 ATAPI with DaniS506.add

Use DaniS506.add instead of the IDE/ATAPI driver that comes with OS/2. The Dani-driver supports Ultra-DMA modes for many more different chip sets than the original IDE driver; recommended.

Start Installation

Once all options have been set, pressing the „Start Installation" button starts the installation.

During installation, the installation status is displayed in a progress window. This window can also be used to cancel the installation at any time by pressing the "Cancel Installation" button.

If you have the full version, you will be asked for your name and the installation key during the installation. The installation key is stacked on the cover of this manual.

If you have the "internet-only-version" you get a key file delivered. Copy this key file in the installation directory and call up the installer.

Once the message *Installation complete* is displayed in the progress window, the installation is complete and the installation program can be closed. The computer must be rebooted after the installation has completed.

Note: Before rebooting the computer, make sure that the CD Recorder is turned on and properly connected.

Changing CD Writer Options

The installation program can be used to change the main settings of the RSJ CD Writer File system after the installation. After changing these settings the computer has to be restarted.

Furthermore, the settings can be changed with the program *CD Writer Control Panel* (in the *RSJ CD Writer* folder on the WPS). Further Information can be found in the chapter *RSJ CD Writer Control Panel.*

Note: In order to install a new version or to repeat a complete installation, please start the installation program from the installation disk.

Introduction

The *RSJ CD Writer* contains the following main components:

- The file system *CDWFS* (used to copy arbitrary files to data CDs)
- *CD View* (used to copy CD tracks, such as audio tracks)
- *Copy Wizard* (for 1:1 copies of audio CDs, CD-ROM's and data CDs)

Note: CD View, the Copy Wizard and the file system should be regarded as separate products. CDs which have been modified with one component (e.g. formatted) shouldn't be used with the other component at the same time.

The following section describes which product should be used for what purpose.

RSJ CD Writer file system

The file system integrates the CD recorder into your system like a hard disk. You are able to use the same programs and commands to copy files on CDs as you are used to when working with a common drive.

Use the file System if you want to

- create data CDs
- write arbitrary files in any directory structure onto CD
- create backups on the CD
- automate the creation of CDs (e.g. via batch files)

In order to create a CD using the file system, perform the following steps:

- attach the CD to a drive letter
- copy the desired files to the CD
- detach the CD

These procedures are explained in detail in the chapter RSJ CD Writer file system.

RSJ CD View

RSJ CD View is used to copy CDs track by track (title by title). CDs organize the data in tracks. Data CDs (CD-ROMs) usually contain one (or more) data tracks, which contain both the directory tree and the file data. Audio CDs, on the other side, contain a separate track for each title.

Note: Further information about the structure of CDs can be found in the chapter *CD View*.

With *CD View*, you are able to simply copy tracks (or complete CDs) via drag and drop.

Use CD View in order to

- copy audio CDs; the separate tracks (titles) can originate from various source CDs and be written onto the CD in any order. You are able to create an individual CD according to your favor.

- copy data CDs; you are able to create a 1:1 copy of any data CD with *CD View* with only a few steps. Please note: Data-CDs should always be copied onto blank CDs.

Note: *CD View* does not allow copying single files from data CDs onto a CD. To do this, you'll have to use the file system, i.e. a normal copy opration from the command line, the WPS etc. See chapter *RSJ CD Writer File System* for details.

freedb support

freedb.org is a service that provides a huge database of CD data (CD / track titles and more).

The freedb support in RSJ CD Writer is designed to work right out of the box – with one exception: if you access the Internet through a corporate network it is likely that you have to use a proxy server. If so, you have to provide its name, port and eventually login information on the server page of the freedb options dialog before you can access freedb.

So if you are using freedb for the first time, you should perform the following steps:

- Enter proxy information on the Server page if necessary
- Click the Server List button on the server page and get a new server list. Select a server that is close to you. If you use a proxy, select a server using the HTTP protocol.
- Provide a user name and your e-mail address (needed for submissions)

CD View for the Impatient

In order to copy CDs with CD View, the following steps have to be carried out:

Warning: Please read the information about the internal CD structure in the chapter "CD View" before creating or copying complex CDs (e.g. mixed mode CDs)

- Insert a blank CD into your CD recorder
- Start CD View for the target drive (CD recorder); use the object "*CD View - CD recorder*" in the CD Writer folder
- Start CD View for the source drive. Either choose the according object in the CD Writer folder or enter the following command into an OS/2 window:

  ```
  Start cdview <cdrom-drive letter>
  ```

  Further information on starting CD View can be found in the chapter *Starting CD View*.

- Verify that the source drive contains a list of tracks (at least one track) while the target drive (CD recorder) contains no tracks.
- *CD View's* status bar (at the bottom of the window) shows information about the number of existing tracks, the MBs used by these tracks, and the CD's free space in minutes and MBs.
- Using freedb you can receive the CD's titles you want.
- Select all tracks in the source *CD View*
- Drag the tracks into the target *CD View*
- Repeat the previous two steps until all desired tracks (titles) appear in the target *CD-View* in the desired order.

- Verify the target's recording speed; make sure it is not too fast for the source device(s). If you copy audio tracks from a CD-ROM drive, note that many CD-ROMs read audio data with single speed, no matter how fast they can read data.
- If you like to avoid the gaps between the audio tracks please adjust the pause times using the apprpriate context menu commands and press the DAO copy button when done.
- For track at once mode, press the normal "Record" button in the target CD-View's toolbar.
- After all tracks have been copied, you must finalize the session. To do so, press the "Finalize" (CD symbol) button in the target CD-View's tool bar.

For more information about when to use DAO or TAO mode, see "Notes about DAO" below.

Notes about DAO

DAO means Disk at Once and allows the creation of exact copies of audio CDs that do not contain gaps between the tracks (Live CDs or Musical CDs). Additionally, it allows you to manually adjust pause times.

- DAO can be used for audio CDs only.
- After a DAO CD is created, no additional tracks can be added. Therefore, you must collect all source tracks **before** you start the copy operation.
- You have to copy the whole CD in one step.
- If the tracks come from various sources, make sure each source device is available during the copy operation (ie CDs cannot be changed).
- If the DAO copy button does not appear, RSJ CD Writer does not support DAO mode for your recorder.
- Besides this, the DAO copy procedure is the same as the former TAO copy procedure (which is of course, still supported).

Pause times

For DAO copies, you can adjust a pause time before each track (except for the first).

Please note:

- Pause times are used only for DAO copies and are only displayed for queued (not yet copied) tracks. They have to be adjusted before the DAO copy operation is started.

- The first track's pause is always 2.

- If a track's source is located on a CD, the pause time displayed is added to the actual pause time from the source CD. Use a zero pause time to preserve the pause time of the source. If the source is a file (WAV), it is the absolute pause time which is inserted before the track.

- Edit a pause time by simply clicking it with your mouse or by using the appropriate context menu command.

RSJ CD Writer File System

This chapter describes the use of the RSJ CD Writer File system (CDWFS) by simple examples.

Generally

The file system is started automatically when booted after the installation; therefore, it is not necessary to start an additional program in order to work with the file system. Please note that you have to do a CDATTACH.

As the CD recorder receives its own drive letter during the attach operation, the CD recorder can be used like a common drive. In order to simplify the explanation we distributed the drive letters as follows: C: = hard disk, D: = CDROM, Z: = CD recorder.

Attaching the CD (assign a drive letter to the CD) is necessary before writing files to a CD.

After copying the desired files, the recorder has to be detached from the system. This makes sure that all data from the cache is written to the CD and the CD can be read by a normal CD ROM drive.

Nearly all functions used to control the file system can be executed from the *CD Writer Control Panel* or by using the according command line tools. The following section describes the *CD Writer Control Panel*.

CD Writer Control Panel

In order to change the operating parameters as well as to carry out the most important file system commands, the program *CD Writer Control Panel* (located in the RSJ CD Writer folder on your desktop) can be used.

The program consists of an OS/2 notebook with the following pages:

General Used to specify the basic operating parameters *before* attaching the CD (e.g. cache path). Also used to attach and de-tach CDs.

Recorder Allows changing the operating parameters of a currently attached CD (e.g. speed). If no CD is currently attached, the parameters are saved and will take effect the next time a CD is attached.

Status Used to obtain status information about the currently attached CDs (similar to CHKDSK).

System This page displays the CD-Recorder found on your system and the last LOCKCDR boot message.

Info This page displays copyright and version information.

Note: As usual, the settings become active when the dialog is closed. If you want to activate the new parameters without clos-ing the dialog press the *Apply* button.

Note: Parameters that are changed from the control panel are only valid for the next recording session. Use the installer to change parameters permanently.

Dialog Page "General"

These options are identical to the options that can be specified in the installation program. Furthermore, this page allows attaching and detaching CDs to drive letters.
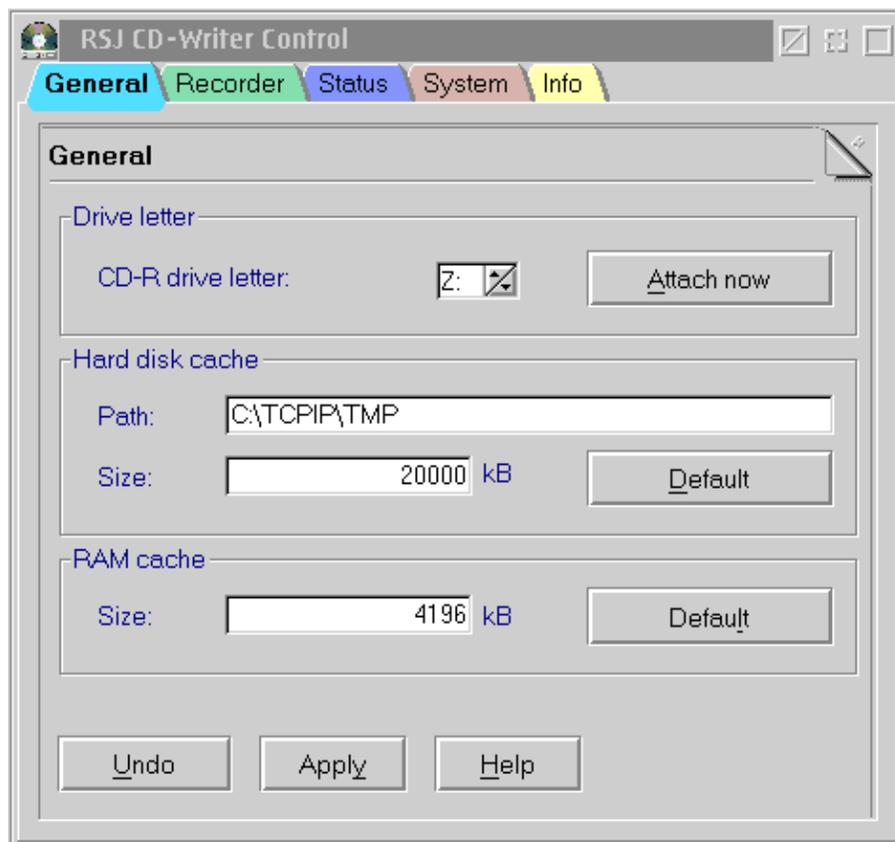
Attaching and Detaching CDs

The upper part of the "General" page is used to attach and detach CDs to drive letters. The following section describes the way this is done.

CDR drive letter

Use this field to select the drive letter, which should be used for subsequent attach/detach operations.

Attach Now

This button appears if the selected drive letter is currently not attached to any file system (that is, the according drive currently doesn't exist). Press this button to attach a CD to the selected drive letter.

A dialog is displayed which allows specifying the number of sessions to be skipped. This can be used to access previous sessions (e.g. if a file has been overwritten or deleted in the current session). Usually, this should be set to "0".
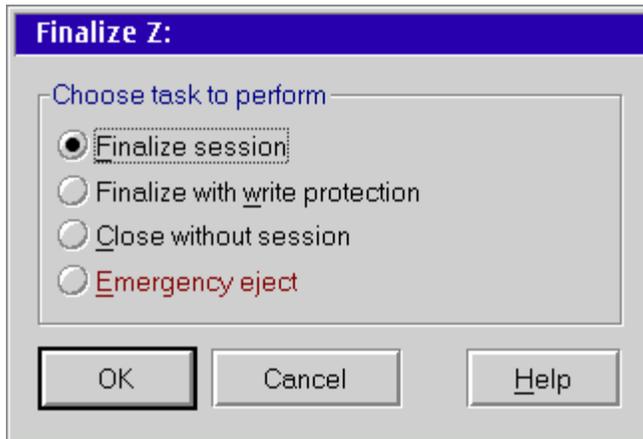
More information about skipping sessions can be found in the description of the "CDATTACH" command.

Closing the Session

If a CD is attached to the selected drive letter, the button "Attach now" changes its label to "Finalize".

Pressing the button at this time will display a dialog, which asks for the way you want to finalize the CD:

Finalize Z:

Choose task to perform

- ● Finalize session
- ○ Finalize with write protection
- ○ Close without session
- ○ Emergency eject

OK   Cancel   Help

Finalize session	The current session is closed and the new session is prepared for writing.
	The CD can be read in CDROM drives
Finalize with write protection	The current session is closed as above, yet the new session is not prepared for writing, that is, the CD is logically write protected (sealed) until the CD is unsealed.
	The CD can be read in CDROM drives
Close without session	The remaining cache data and the directory are written to the CD, yet the current session is not closed. Use this option to temporarily detach a CD without closing the session.
	The CD can only be read in CD recorders with this software.

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| **Emergency eject** | The CD is detached without writing the remaining cache data or the directory tree. This option should only be used to eject a CD, which cannot be ejected with one of the above options (usually in case of hardware errors). |
| | The CD is incomplete and all data on the CD will be lost. However, in most cases the CD can still be used to write further sessions. |

Select the desired option and confirm with OK.

Modifying the Operating Parameters

The lower part of the "General" page is used to modify the basic operating parameters (such as the cache path). Options changed here will take effect the next time a CD is attached; all currently attached drives will continue to use the old parameters.

Hard Disk Cache

Allows changing the cache parameters. Further details about these parameters can be found in the description of the installation program. Please note that the cache path should point to a local drive.

RAM Cache

This field specifies the size of the copy buffer in main memory which is used when copying a cache file to the CD recorder. Further information about this parameter can be found in the description of the installation program.

Dialog Page "Recorder"
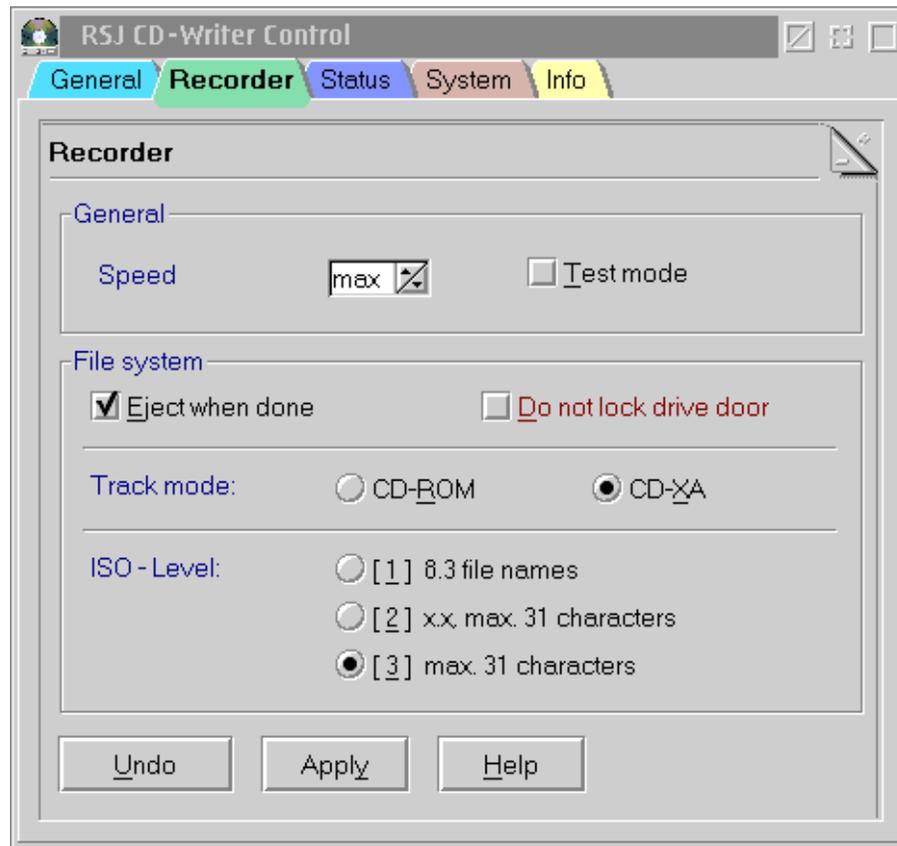
This page can be used to modify the operating parameters of all currently attached CDs as well as the default parameters to be used by subsequent attach operations.

Further information about these parameters can be found in the description of the installation program.

Note: The "Test Mode" should only be changed if nothing has been written to the CD since it has been attached. Otherwise, the contents of the CD might get corrupted; some recorders may even damage the internal CD information structures, making it unusable for subsequent write operations. If in doubt, detach the CD before changing these options.

Dialog Page "Status"

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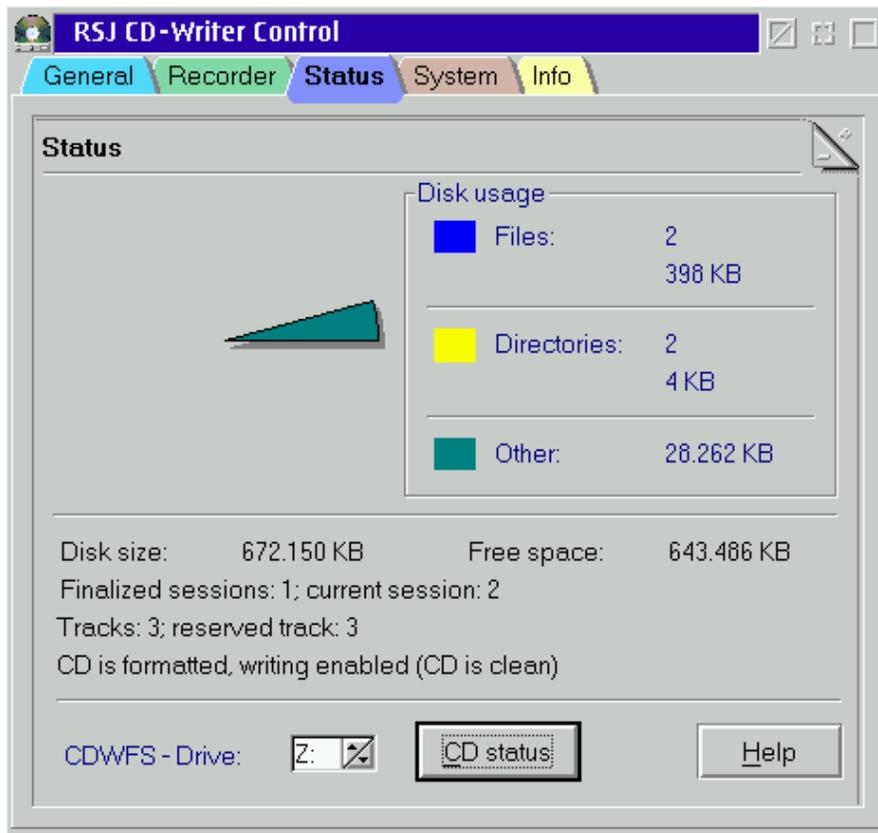
Use this page to obtain information about currently attached CDs. The drive letter spin button allows selecting all drive letters, which are attached to the *RSJ CD Writer File System*. If no CD is currently attached, this field (and the "CD Status" button) will be disabled.

The information displayed is similar to the CHKDSK output and contains the number of files and directories as well as the used and available disk space on the CD.

Dialog Page "System"
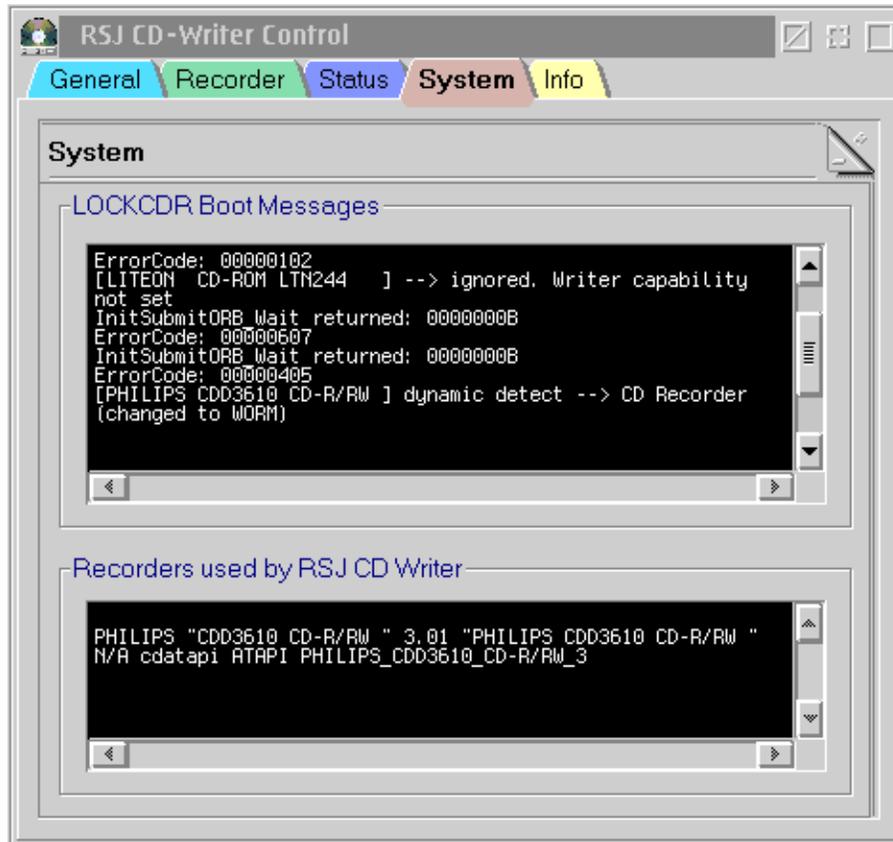
This page displays information about the CD-Recorder found on your system and the last LOCKCDR boot message. This information is for support purpose.

Dialog Page "Info"

This page displays information about the product version as well as copyright information.

Operation

This section serves as a tutorial to the operation of the *CD Writer File System*. Detailed information about each command can be found in the reference section.

Command Line Operation

This section serves as a tutorial to the operation of the file system from the OS/2 command line.

Attaching the CD

In order to associate a drive letter to the CD Recorder, enter the following command

```
cdattach <drive>
```

Example:

```
cdattach z:
```

Note: The drive tray will be locked while the recorder is attached to a drive letter, that is, the CD cannot be ejected until the recorder has been detached as shown below.

This example assigns the drive letter Z: to the CD recorder. Enter the following command to see what's on the CD:

```
dir z:
```

Writing to the CD

Any OS/2 command can be used to write to the CD.

Examples:

```
copy c:\config.sys z:\config.sys
xcopy c:\* z: /s
...
```

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Theoretically, you could even install applications on the CD and work directly from the CD. However, since each track on the CD can be written only once, the CD would be filled by temporary files and repeatedly saving the same file while the amount of data on the CD would remain basically constant.

Note: Extended attributes are automatically discared. The RSJ CD Writer software creates CDs, that are compatible to the ISO9660 standard. This standard does not support EAs, the only way to support them would be an emulation like that one, that FAT uses. But please note, that the OS2 CDROM driver wouldn't know anything about that emulation, so you would have to use our filesystem for reading CDRs with EA emulation.

Getting Information about the CD

The OS/2 command CHKDSK can be used to get detailed information about the CD.

Example:

```
chkdsk z:
```

In addition to the well-known CHKDSK information, some CD-specific information is displayed at the end of the information output. This includes the number of tracks already written (max. 99), the number of sessions and the current status of the CD.

The additional parameter /V tells CHKDSK to provide additional information about the creator of the CD, the software used to write the CD and further information defined by the ISO9660 standard.

Example:

```
[C:\]chkdsk z:

The type of file system for the disk is CDWFS.
The CDWFS file system program has been started.

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   644.868 kilobytes total disk space
         2 kilobytes are in 0 directories
    10.810 kilobytes are in 2 user files
         0 kilobytes are in extended attributes
         0 kilobytes are reserved for system usage
   435.364 kilobytes available for use

CD-Writer specific information:
         7 finalized sessions; open session: 8
        28 tracks; reserved track: 28
        => CD is formatted, writing enabled (CD is clean)
```

This example shows the output generated by a partially written CD. The CD contains 7 sessions and 28 tracks.

Detaching the CD

Before the CD can be ejected, it must first be detached from the associated drive letter. This can be done with one of the following commands:

```
cdattach <drive> -no_flush
cdattach <drive> -c
cdattach <drive> -s
cdattach <drive> -x
```

Example:

```
cdattach z: -c
```

This example causes all unsaved information to be written to the CD. Afterwards, the drive tray is unlocked and the CD can be ejected.

Note: Some drives keep track information in their cache until the CD is ejected. As a result, the CD is ejected automatically if the CD has been modified since it has been attached.

The various detach options have the following meaning:

-no_flush The drive tray will be unlocked without writing any cached information to the CD. This option is useful to eject a damaged CD which can't be detached with one of the remaining detach options.

-c   The cached information, if any, is written to the CD and the drive tray is unlocked. As yet, the information on the CD can only be used together with the *CD Writer File System*; in order to use the CD with CDROM drives, the following detach option must be used.

-s   Same as -c; however, the current session will be closed as well. This allows reading the CD in standard CDROM drives. Closing a session takes about 12 – 20 MB disk space, so this option should be used only if the CD is to be read by CDROM drives.

-x   Like -s but, the CD will be "sealed", that is, the CD becomes write protected. The write protection can be removed at any time by using the command "format <Drive> /UNSEAL".

Note: Old CDROM drives can only access the first session on a CD. If you plan to read the CD in old CDROM drives, make sure you close the current session after all required data has been copied to the CD. You can, however, close the CD at any time (e.g. to interrupt the copy operation temporarily) with the detach option -c.

Accessing a Previous Session

The command CDATTACH has an additional option to skip one or more sessions when the CD is attached to a drive letter. This option allows accessing files, which have been deleted or modified in the currently active session.

Note: If the CD has been created by the CD Writer File System, this option can also be used to skip write operations which have been completed with the detach option -c. CDs created by another mastering software (e.g. Photo CDs) allow skipping physical sessions, only.

Example:
```
cdattach z: -l1
```
This example skips one session; thus, a file, which has been deleted or modified in the current session, is now again available in its original status.

If more than one session is to be skipped, increase the number behind the option -l:
```
cdattach z: -l3
```
This example skips 3 sessions at once.

Long Filenames

The long filename support of the *RSJ CD Writer File System* is based on three different standards:

Rock Ridge Extensions

This standard is used by most Unix systems to save long filenames along with their Posix file attributes. We're currently supporting about 140 characters for long filenames. The Posix file attributes are always set to default values.

Please note that Unix file systems are case sensitive while OS/2 is not. If the RSJ CD Writer File System is used to read Unix CDs, it's possible that a specific file cannot be opened if there's another file in the same directory which differs only in case.

This standard is also used as the base standard for CDs. As long as a CD contains Rock Ridge information, it's preferred to "Joliet" because Joliet limits the length of a single filename to 64 characters.

Joliet

This standard is mainly used in the Windows environment. However, it supports only 64 characters per filename, so it's usually not used to read existing CDs as long as they contain Rock Ridge information.

ISO9660

Selecting ISO Level 2 or 3 will allow filenames up to 31 characters with the following limitations:

- All characters are upper-case
- National language characters are replaced by a tilde (~)
- Long filenames will be truncated to 31 characters

If the CDs are intended to be used on DOS systems, the ISO level should be set to "1". Optionally, you can also make sure that no file violates the DOS 8.3 convention, that is, as long as all files are 8.3, the ISO level won't change the contents of the ISO directory tree.

Using Long Filenames

When a CD is detached (option: finalize session), the complete ISO9660, Joliet and Rock Ridge directories will always be written to the CD. Each time a CD is attached, the standard providing the longest filenames will be used to read the directories.

All known operating systems behave similar, that is, they will always use the directory tree, which preserves as much information about the filenames as possible.

Of course, you can always use the RSJ CD Writer File System to read back CDs containing Rock Ridge or Joliet filenames.

Note: A Joliet-capable update for CDFS.IFS (the file system OS/2 uses to read CD-ROMs) is available on the IBM OS/2 Device Driver page in the Internet.

FixPak 6 and Warp Server for eBusiness both support Joliet. Activate it by specifying the /w option to the CONFIG.SYS call of CDFS.IFS.

Burn-Proof

RSJ CD-Writer supports Burn-Proof. Recorders with that feature will automatically compensate buffer underruns.

Buffer underruns occur when a copy source cannot deliver data quickly enough to the CD as it is recording. This is usually due to heavy system load or a souce device that is simply not fast enough.

How can I activate the burn-proof feature?

There is no user option concerning the burn-proof feature.

The recorder's driver checks if burn-proof is supported or not. If burn-proof is supported, it is automatically activated.

Burn-proof and RSJ CD View or the RSJ CD Copy Wizard:

If the recorder supports burn-proof there will be no more buffer under-run errors.

Burn-proof and the filesystem:

Up to now if there was a buffer under-run the current track was finished and a new track started when there was enough harddisk cache. Using a recorder which does not support burn-proof this mechanism still exists. Using a recorder which supports burn-proof, this mechanism is deactivated.

Creating Data-DVDs

Using RSJ CD Writer you can create data-DVDs. At the moment the creation of video- or audio-DVD's is not possible.

To create a data-DVD please use the filesystem and then finalize the DVD.

The supported DVD types are:
- DVD-R
- DVD+R
- DVD-RW
- DVD+RW

Information about the usage of DVD-RW and DVD+RW:

Before using a rewritable DVD you have to format it. To do so, please use the *blank CD* command in the recorder's context menu. This can take about half an hour.

The maximal filesize is 2 GB.

The reason for this limitation is that RSJ CD Writer uses the ISO9660 file system. The ISO9660 file system is not capable of handling larger files than 2 GB.

CD Copy Wizard

If you want to create a 1:1 copy of a CD, RSJ CD Copy Wizard offers the easiest solution. This wizard creates copies of Audio-CDs, CD-ROM's and Data-CDs.
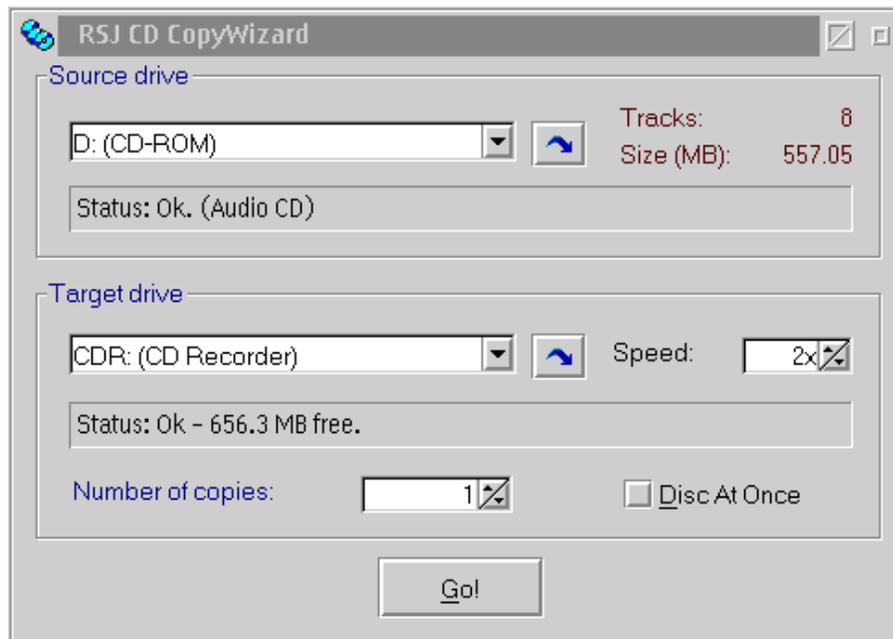
Follow these steps to copy a CD using the CD Copy Wizard:

- Start the CD Copy Wizard by choosing "RSJ CD Copy Wizard" in the CD-Writer folder.

- Insert the source CD.

- Select the desired source-drive.

- If your CD-ROM-drive is not able to read Audio-CDs or if you don't have a CD-ROM-drive, you can use your CD-recorder as source drive and target drive.

- If you are using two drives insert the target CD.
- Select target drive.
- If you like to avoid the pauses between the tracks, please mark the DAO option.
- Press "Go".

Then you can see the copy progress.
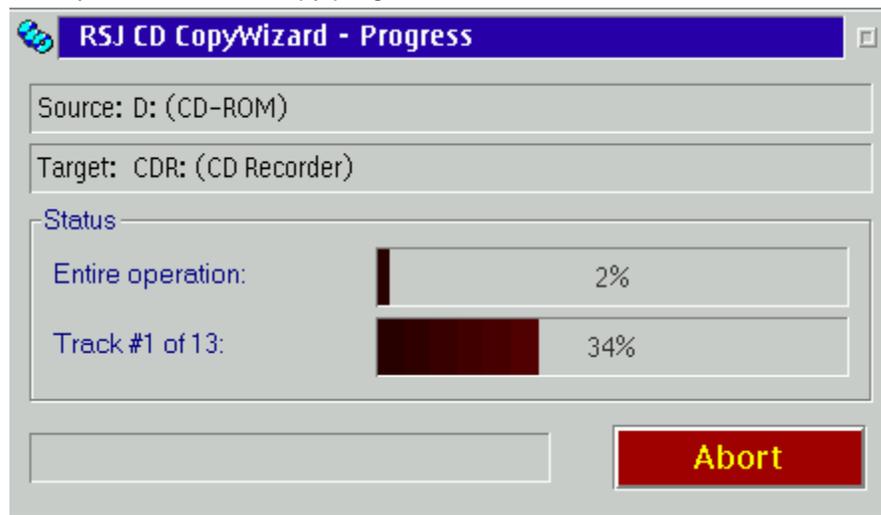
If you want to abort the copy progress, choose "Cancel Copy Operation""
and confirm your decision with "Yes".

CD-View

The PM application CD-View is used to deal with the tracks on a CD. It can be used to copy audio tracks to (or from) CDs in arbitrary order. Furthermore, CD-View can also be used to copy data CDs much like DISKCOPY is copying diskettes.

CD-View should be considered a separate product and needs exclusive access to all devices it is dealing with. Therefore, any currently active drive letter assignment must be deactivated (e.g. by calling "CDATTACH -C") before accessing the CD recorder with CD-View.

Note: Working with tracks requires basic knowledge about the make-up of music and data CDs. To prevent mistakes or data loss, the following section should be read in any case.

Basics

Please read this section carefully before using CD-View.

Tracks, Table of Contents and Sessions

Each (non-blank) CD contains between 1 and 99 tracks.

Each track can save a single data format. Audio tracks can only save digital audio data, while data tracks can only store data.

The Table of Contents (TOC) of a CD only contains information about the number of tracks, their starting position on the CD and the basic track type (audio or data). CD-View uses this information to display the track directory, thus cannot display any information about the contents of the according track.

Data CDs (CDROM)

- Data CDs usually contain only a single data track. Exception: Photo-CDs as well as CDs written by the RSJ CD Writer File System.

- The directory of the files on the CD is located at a certain position in the data track.

- Data tracks must always start at the same address that means the track order of a Data CD must be maintained when being copied to another CD. Furthermore, the target CD must be empty to make sure the first track will start at address 0.

- Additionally CD-View can copy multisession CDs. The number of sessions can be determined by running CHKDSK after attaching the CD to a drive letter with CDATTACH.

- Most Data CDs contain copyrighted material, which may only be copied for private backup purposes.

Audio CDs

- Audio CDs contain one or more music titles, each of which is stored in a separate audio track.

- Some – especially old ones – CDROM drives are not able to read audio tracks. Please note that reading audio tracks is different from playing audio tracks (which is supported by most CDROM drives).

- OS/2 does not offer a dedicated interface for reading audio tracks. Although some CDROM drives are explicitly supported by OS2CDROM.DMD or additional filter device drivers (???.FLT), don't expect to be able to read audio tracks with a specific CDROM drive.

- Audio tracks must be read contiguously. If the audio data can't be processed fast enough, the resulting track might contain cracks or repetitions. In most cases, however, these errors will be beyond the capabilities of a human ear.

- All audio tracks must be located in the first session of the CD. Audio CDs are always single-session CDs, no matter whether the playback device is a multisession capable CDROM drive or not.

- Copyright law protects music titles. Digital copies of audio tracks are only allowed for private use.

Starting CD-View

CD-View is started together with the desired device path name. This path name either points to a CDROM drive letter, a directory on a hard disk or the name of a CD recorder.

The installation program automatically creates program objects for each of the following devices:

- CD recorder
- hard disk (in a subdirectory of the installation path named "Tracks")
- all available CDROM drives

In order to support additional devices, either start CD-View manually or copy one of the existing program objects and edit the device name in the parameter field.

CDROM

In order to start CD-View on a CDROM drive, specify the drive letter of the CDROM drive.

Example:

```
cdview d:
```

This example starts CD-View and displays the track directory of the CDROM drive D:.

Hard Disk (Temporary Cache)

If there's no CDROM drive available (or the CDROM drive does not support reading audio tracks), CD-View supports using a subdirectory on a local hard disk as a temporary cache. This is done by emulating a CD recorder, which saves each track in a file called TRACKxx.TRK or TRACKxx.WAV (xx represents the track number from 01 to 99).

Notes: The subdirectory should only be modified by CD-View. If one of the track files is deleted manually, all following track files must be re-named accordingly.

You can drop WAV files onto a writable CD-View session (recorder or hard disk) from a WPS folder. When doing so, please observe that the files you drop have the following format:

Stereo, 16 bit, 44 kHz sampling rate.

This is a 'standard' WAV format (CD quality).

The emulation driver saves the track information in the extended attributes of the track file. For that reason, the target directory must point to a drive, which supports extended attributes.

Data tracks are saved with the extension .TRK, while audio tracks are saved with the extension .WAV. Playing audio tracks is supported if the system has a sound card, which is able to play audio files with 44.1KHz, 16 Bit stereo.

Example:

```
cdview c:\cdwfs\tracks
```

This example emulates a CD recorder in the directory c:\cdwfs\tracks. The tracks will be saved in files named TRACKxx.TRK or TRACKxx.WAV, respectively.

CD Recorder

In order to run CD-View with a CD recorder, use the device name "CDR:". If multiple CD recorders are attached to the system, the SCSI ID of the desired recorder can be appended after the colon at the end of the device name in the format "a.i". a represents the adapter index (0 = first adapter, 1 = second adapter, ...) while i selects the SCSI ID of the CD recorder.

Notes: Due to a limitation in the device driver RSJSCSI.SYS, only one recorder can be used at the same time. This limitation is subject to change in a future version.

Information about the use of recorders that are officialy not supported by our software, can be found at page 79.

CD-View Interface

CD-View is a Presentation Manager application, which behaves much like the well-known Workplace Shell. It has three main areas: a toolbar at the top, the track directory and a status bar at the bottom.

To change the background color or the font of the track directory, just drag a color or font from the according palette into the track directory.

Color, font and position information are saved in an .INI file named CDVIEW.INI in the installation directory. The information is saved on a per-device base, that is, each device has a separate entry in the .INI file.

CD-View can be closed by double-clicking the system menu or by selecting Close in the system menu.

Toolbar

The toolbar resembles the controls of a CD player or video recorder and is used to operate CD-View. Like a CD player, the toolbar contains controls to start or stop audio playback, eject the CD, ...

The following graphic explains all available controls:

Start audio playback

Plays the currently cursed audio track. If the drive's lineout jack is connected to a sound card, the volume can be controlled by the sound card mixer; otherwise, a headphone or amplifier should be connected to the CD drive.

Pause audio playback
Stops all currently active audio playback operation. As long as no other playback operation has been started be the Play button and the CD has not been replaced or used for copying, the playback operation can be resumed by pressing this button again.

Record
Starts the copy (record) process in TAO mode.

DAO
Starts the copy (record) process in DAO mode.

Ogg encoding
encodes the selected tracks to Ogg Vorbis files

Finalize current session
Once all tracks have been copied to the CD, the current session can be finalized by pressing this button. Please read the chapter Finalize Session before finalizing a session.

Eject
This button causes the currently inserted medium to be ejected.

Recording speed
This control is used to adjust the recording speed of the CD recorder in multiples of 150KB/s. The available speed factors depend on the capabilities of the CD recorder. Adjust the recording speed before pressing the Record or Finalize button. Please read the chapter Recording Speed carefully before adjusting the speed factor.

	Audio Parameter
	Video Mode
	Erase Track This button can be used to delete all chosen tracks.
	Rescan track directory This button forces a rescan of the track directory (e.g. after a new medium has been inserted). All tracks prepared for copying will be discarded if this button is pressed.
	Query freedb Performs a freedb query about the currently insterted CD.
	Print CD cover Prints a cover and label for the current CD on the default printer.

The controls in the toolbar are enabled or disabled according to the capabilities of the target device (CDROM, CD recorder or hard disk). For example, a hard disk cannot be ejected, while a CDROM drive cannot be used to write tracks.

Note: Clicking the track directory with the right mouse button brings up a popup menu which includes most of the controls of the button bar.

Track Directory

The track directory lists all tracks on the current CD. Additionally to the track name, the directory contains the track type (Audio, CDROM or CD-XA) as well as the length of the track in minutes and megabytes.

The area right above the track directory contains the CD label. If the CD is unknown, the CD will be labeled Unknown CD (if there's at least one track) or the track title area is displayed as a narrow, empty row.

The first column contains a musical note for audio tracks or a diskette symbol for data tracks. This icon has an additional purpose: if a track has been prepared for copying, the icon will be displayed as a halftone bitmap. Once the track has been copied successfully, the icon is displayed with full contrast.

To change a track title or the CD label, hold the Alt key while clicking the track title with the left mouse button. The track titles and the CD label are saved in the file CDVIEW.INI under a key, which is generated from the length of all tracks on the CD.

In order to copy tracks from a source window to a target window, select one or more tracks in the source window, grab the tracks with the right mouse button and drag them to the target window. If some of the tracks have been dragged accidentally, they can be removed from the track directory by dragging them to the Shredder of the OS/2 Workplace Shell as long as they have not been written to the CD.

Note: The driver for hard disk directories permits deleting tracks even if they have already been copied. This allows using the hard disk as a temporary track cache.

Status Bar

The status bar displays information about the currently inserted CD as well as the status of CD-View.

Usually, the status bar contains information about the number of tracks on the CD, the disk space used by these tracks and the free disk space left for new tracks.

Note: The calculation of the remaining disk space needs to make assumptions about the tracks, which will be copied, to the CD. Therefore, it may by inaccurate especially if many audio tracks are to be copied to a hard disk directory. Please read the chapter Track Size and Disk Space for further information.

CD Labels

As mentioned in the chapter Track Directory, each track can be given a name. Furthermore, the disk label can be changed in the title area of the track directory. This is done by holding down the Alt key while clicking the title to be changed with the left mouse button.

The track titles and the CD label are saved in the file CDVIEW.INI under a key, which is generated from the length of all tracks on the CD. Thus, two CDs with exactly the same track layout will be treated equal, no matter whether the track contents are different or not. However, it is unlikely to have two CDs with the same track layout and different track contents.

Each time a copy operation has completed, the track directory is saved in the .INI file under a new CD key. The old track directory, however, is not deleted from the .INI file since another CD might still be using it. Thus, it's recommended to copy as many tracks as possible in a single copy operation to prevent the .INI file from growing unnecessarily.

Note: Unmodified track titles will not be saved in the .INI file. For that reason, the .INI file won't become any bigger if the original track titles (such as Track 01, Track 02, ...) are not changed.

Copying Tracks

Before any tracks can be copied, CD-View must be started for both the source and the target drive.

Note: If you want to copy self made WAV files onto CD, please observe the note in the *Hard Disk (temporary storage)* section above.

First of all, the desired tracks must be selected in the source window. Once selected, the tracks are prepared for copying by dragging them with the right mouse button to the target window. The tracks will show up in the target directory with a halftone icon, indicating that they are not yet copied but prepared for copying. Please note that the source column will always show the complete source path of the track in case you get confused after reordering the tracks a couple of times.

Note: The tracks to be copied are inserted right before the track the mouse pointer had been pointing at when the right mouse button was released. Since it is not possible to change the order of the tracks, which have already been copied, to the CD, new tracks must be dropped either onto a track, which has not yet been copied, or the empty area below the track directory.

The order of the new tracks can be changed at will by picking up some tracks once again and dropping them at another location.

Before the copy operation is started, the recording speed can be adjusted in the toolbar. Depending on the speed of the source drive and the quality of the writable CDs, a higher or lower speed might be necessary. Further information about determining the optimum recording speed can be found in the chapter Recording Speed.

Pressing the Record button in the target CD-View starts the copy operation. A new window appears which displays the copy progress:

Track is being copied…

Track 01 from [D:] to [CDR:]

Status

Read Cache:

Copy Operation:

Cancel Copy Operation ☐ Signal completion
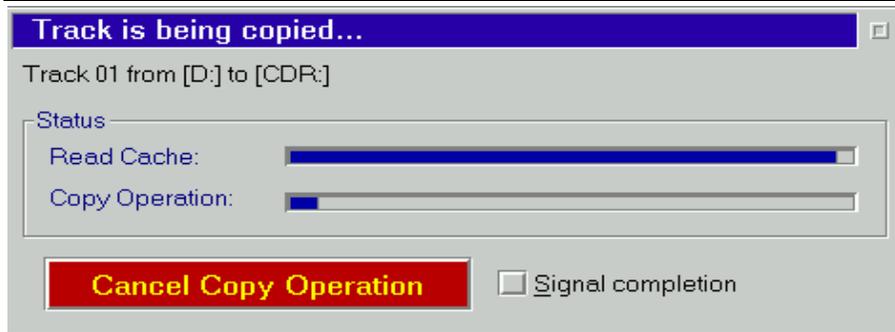
The status window contains two progress indicators which display the number of buffers in the read cache as well as the progress of the copy operation.

The read cache is used to compensate short delays in read commands and/or to maintain a minimum transfer rate when reading audio tracks.

Note: Most CD recorders have an additional cache buffer, which is sometimes bigger than the read cache used by CD-View. In this case, the read cache will run empty at the moment the write operation begins and, depending on the speed of the source drive, will fill up slowly or remain empty. This does not indicate an error as long as the copy operation is not aborted.

The copy operation can be cancelled at any time by pressing the red button labeled *Cancel Copy Operation*. Please note that a partially written track will be useless in most cases.

Finalize Session

Once all tracks have been copied, the current session must be finalized to write the Table of Contents to the CD. The TOC is used by CDROM drives and audio CD players to access the track directory; CD recorders don't need it because they save a copy of the track information in a special area, which can only be accessed by CD recorders.

It might be useful to increase the recording speed to the maximum before finalizing the current session as long as the resulting speed is supported by the medium.

The current session can be finalized by pressing the Finalize button in the toolbar. This will take a couple of minutes, depending on the previously selected speed factor.

Recording Speed

When writing CDs with the *RSJ CD Writer File System*, the recording speed can easily be adjusted afterwards in case of problems without destroying the CD. This is possible because the file system knows the internal structure of the CD according to ISO9660 and can write the files into a new track after the speed has been adjusted.

CD-View, however, has been designed to copy audio and data tracks without any knowledge of the internal track structure. If a copy operation has to be aborted due to insufficient read performance, the resulting CD will be useless and will have to be discarded; a new CD has to be written from scratch.

In order to determine the optimum recording speed, please pay attention to the following points:

- If the source is not able to read the data with the selected recording speed, the copy operation will have to be aborted.

- CD-View tries to measure the read performance while the read cache is being filled. This might result in error messages when copying from a CDROM to a CD recorder if the read performance is just below the selected recording speed. Sometimes, a second try might be necessary to copy the track if the source drive is reading exactly with the same speed as the target drive is writing.

- Since it is not possible to address the very same position in an audio track twice, audio tracks must be read contiguously. Copying an audio track directly from a CDROM to a CD recorder might lead to cracks and/or repetitions in the resulting audio track if the source drive is reading faster than the selected recording speed. Modern CDROM drivers, however, will take care of this problem and prevent cracks and/or repetitions in most cases.

- The speed of CDROM drives can't be adjusted under OS/2. Moreover, most CD recorders and CDROM drives don't read audio tracks with the same speed as data tracks. For that reason, it might be necessary to experiment with the recording speed if it is desired to copy directly from a CDROM drive to a CD recorder. Since inadequate read performance will be detected before the track is actually written, it is recommended to start with the highest available recording speed until the copy operation succeeds. Please note that, depending on the size of the read cache in the CDROM drive, the performance test might pass while the read performance is still way below the requirements. To clear the read cache, eject and reinsert the CD before starting the copy operation with a new recording speed.

- If possible, the read performance of a CD recorder is set to the maximum allowed value.

- If a CD recorder is using an unknown device name the recording speed cannot be changed.

Track Size and Disk Space

The track size is specified in two different units:

- Playback length of the track (in minutes)
- Size of the track (in megabytes)

As the sector size in audio tracks (2352 bytes) is larger than in data tracks (2048 bytes), an audio track consumes more disk space on a hard disk than a data track with the same playback length. Please note that one minute audio is about 10MB space.

The free space reported in the status line assumes a sector size of 2048 bytes. Therefore, it is possible that a specific audio track does not fit on the hard disk although the indicated free space should be sufficient.

Pregaps

Each track starts with a so-called Pregap. This area shows up on audio CDs as a 2 second pause between two music titles; yet it's present on data CDs as well. If the track type changes between two tracks, another second will add to the Pregap which sums up to a total length of 3 seconds. CD-View subtracts the length of the Pregap automatically, that is, the reported track length may differ from the length indicated on the CD cover. The total length reported in the status line, however, includes the Pregaps between the tracks.

The contents of the Pregaps are not copied by default since the contents are unreadable, anyway. This may lead to a 2 second pause between the music titles of live recordings. Using DAO you can avoid the gaps between audio tracks.

The reported track lengths are rounded downwards, thus adding all track lengths together does not necessarily yield the same result as reported in the status line. This is also true when new tracks are added to the CD: the remaining free space might be reduced by another second in addition to the 2 or 3 seconds used by the Pregap.

freedb support

freedb support in RSJ CD Writer allows you to

- query CD data via Internet
- query CD data from local database (only standard format; see below)
- edit extended CD information to create your own submissions
- submit updated or new CD data to freedb

Performing freedb queries

Follow these steps to query title information for a CD:

- Insert the CD into the drive
- Start CD-View for this drive

If CD View does not know the CD, it will use auto-generated track names (track01 … track*nn*), which –naturally – are not very descriptive.

After a successful freedb query, the track list is updated with the title information from freedb:
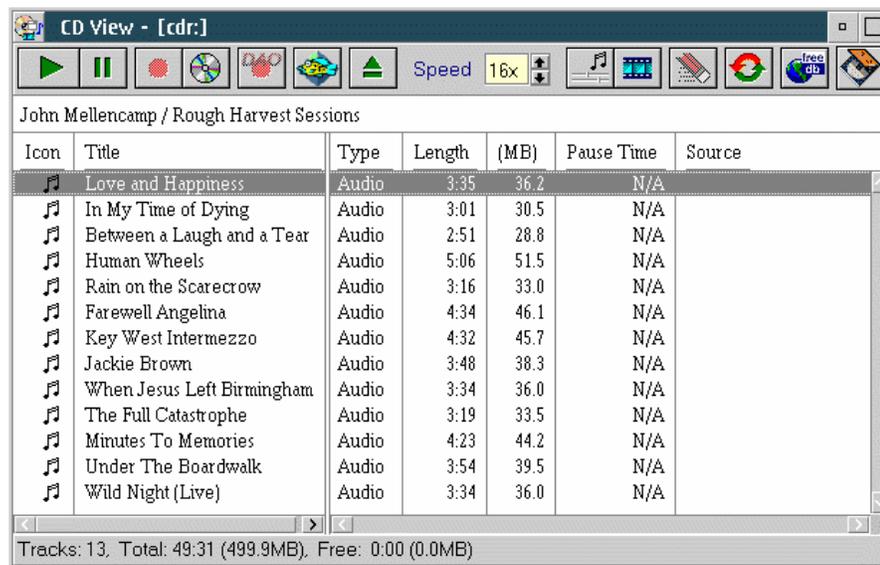
CD View's context menu contains additional freedb related commands:
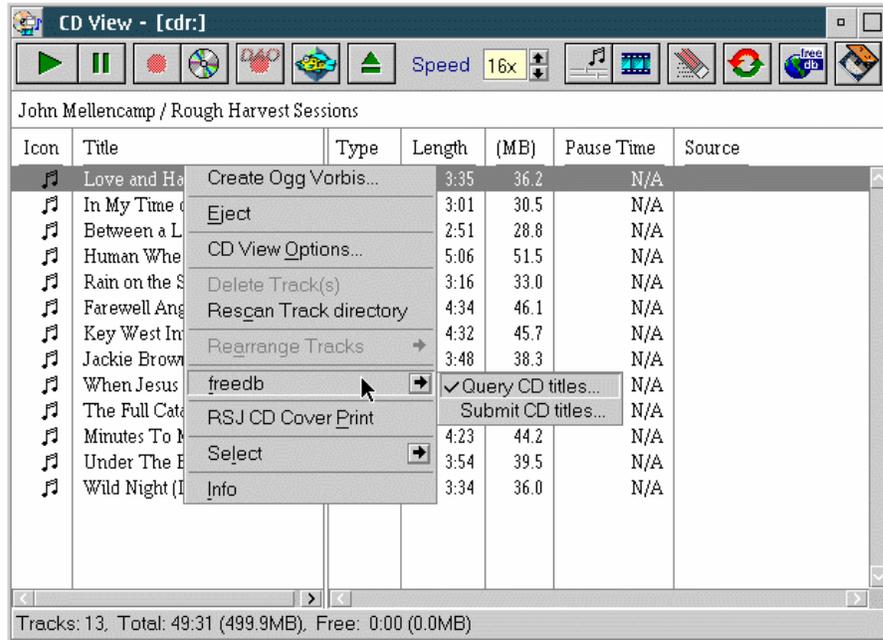
| Query CD titles via freedb | Performs a freedb query for the currently inserted CD. This way, you can access the freedb data base to retrieve the CD title strings. |
| Submit new freedb entry | If your CD cannot be found in the freedb data base, you can submit a new entry using this command. |

Optionally, you can let CD View perform an automatic query each time a new CD is inserted (see CD View options).

Ogg Vorbis

RSJ CD View allows the quick and easy creation of Ogg Vorbis files from audio CD tracks.

General Information

Prerequisites

In order to use CD View's Ogg Vorbis support, the EMX runtime needs to be installed. It is available at Hobbes:

http://hobbes.nmsu.edu/pub/os2/dev/emx/v0.9d/emxrt.zip

(If this link is dead, try searchin Hobbes for emxrt.zip)

What is Ogg Vorbis?

Ogg Vorbis is a very high quality audio compression format. It is completely open source, patent-free and available for virtually every operating system. For more information about Ogg Vorbis, visit the following web sites:

> http://www.xiph.org/ogg/vorbis/
>
> http://www.vorbis.com

By convention, Ogg Vorbis files carry the file extension .ogg.

Header Data

Ogg Vorbis files optionally contain information about the artist, album title, track title and track number (position on the source CD). Ogg Vorbis files created by CD View contain this information; if Ogg Vorbis files are dropped on a CD View session, CD View uses this data to restore track, CD title and, track ordering information.

How can I play back Ogg Vorbis files?

There are several possibilities, e.g.:

Get PM123, a media player application similar to WinAmp or XMMS, at http://sektori.com/pm123/, or install the Vorbis Multimedia IOProc from http://math.berkeley.edu/~roconnor/MMAudioPak/mmioVorb.html, which allows seamless playback of Ogg Vorbis files from MMPM/2 applications and the WPS.

Creating Ogg Vorbis Files

To create Ogg Vorbis files from an audio CD

- insert the audio CD into a CD drive (recorder or CDROM)
- launch CD View for this drive
- perform a freedb query to receive the CD titles
- select the tracks you want to create Ogg Vorbis file from
- use the *Create Ogg Vorbis…* command in CD View's context menu or use the Ogg Vorbis button in the toolbar

CD View will now display a dialog window that allows you to verify the target path for the files being created:
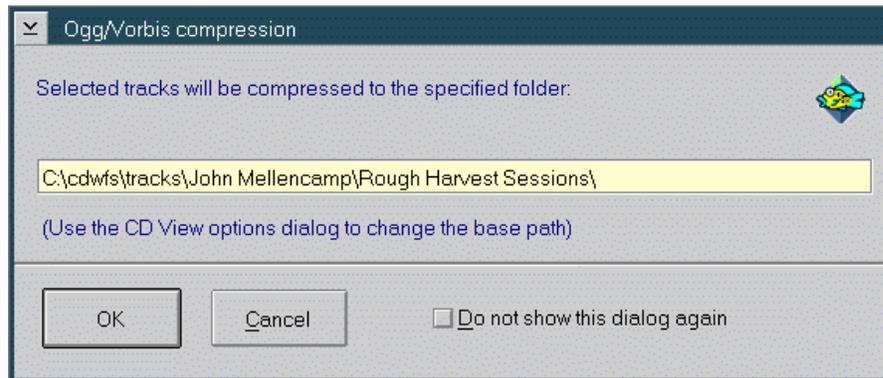
The target path is assembled by CD View using the base directory for Ogg Vorbis files (adjustable in the CD View options dialog) and appending artist name and album title as separate directories. Each individual file receives a filename matching its track number and title (e.g. "13-Wild Night.ogg").

Since CD View uses long path names with spaces, the base directory must point to a drive with a file system that supports long path names (HPFS, JFS).

After clicking on OK, CD View will create the files in the directory specified. CD View will automatically create the directory tree if it does not exist.

When creating Ogg Vorbis files, CD View writes the following information into the Ogg Vorbis header (this information is in standard format, thus it can be used by all applications that support Ogg Vorbis header data):

- track title
- album title
- artist
- CD track number

Writing Ogg Vorbis files to Audio CDs

Naturally, RSJ CD View can create standard audio CDs from Ogg Vorbis tracks. To do so, just drag the Ogg Vorbis files from the WPS to a CD View recorder session (just as you would do with WAV files).

After dropping Ogg files on a CD View session, you can rearrange tham as usual. If the Ogg Vorbis files contain the track numbers from the original CD (which is the case if CD View created them), you can use the context menu command *Rearrange Tracks->by CD track number* to recreate the original CD's track ordering (provided, of course, that the Ogg Vorbis files come from the same CD).

If you drop Ogg Files that all originate from the same stock CD, CD View restores the CD title using Ogg Vorbis header data. Naturally, if this data is not present (some applications might create Ogg files without header information), the CD title cannot be restored.

CD View options

The CD View options is accessible via the *CD View Options* command in the context menu, or the *Options* button in the tool bar. It consists of several pages with the following purpose:

TAO Audio   adjust settings for audio CDs in Track At Once mode

CD Cover Print   options for CD booklet printing

Ogg Vorbis   Ogg Vorbis encoding options

freedb Usage   freedb integration into CD View

Server   freedb server adjustments

Submit   options for freedb submissions

Cache   freedb local cache options

See the following chapters for further details.

TAO Audio

This page contains options that are only relevant if you encounter clipping problems copying audio tracks in Track At Once mode.

The **Start Offset** setting should be adjusted in case audio tracks are clipped at their beginning, while the **Pregap** setting can be helpful if tracks are clipped at their end.

These options rarely need adjustments; it is recommended to leave the default settings here.

CD Cover Print

This page contains two options that cause CD View to include or exclude track numbers and playing times when calling CD Cover Print.

Ogg Vorbis

The Ogg Vorbis page controls how CD View extracts audio tracks to Ogg Vorbis files:
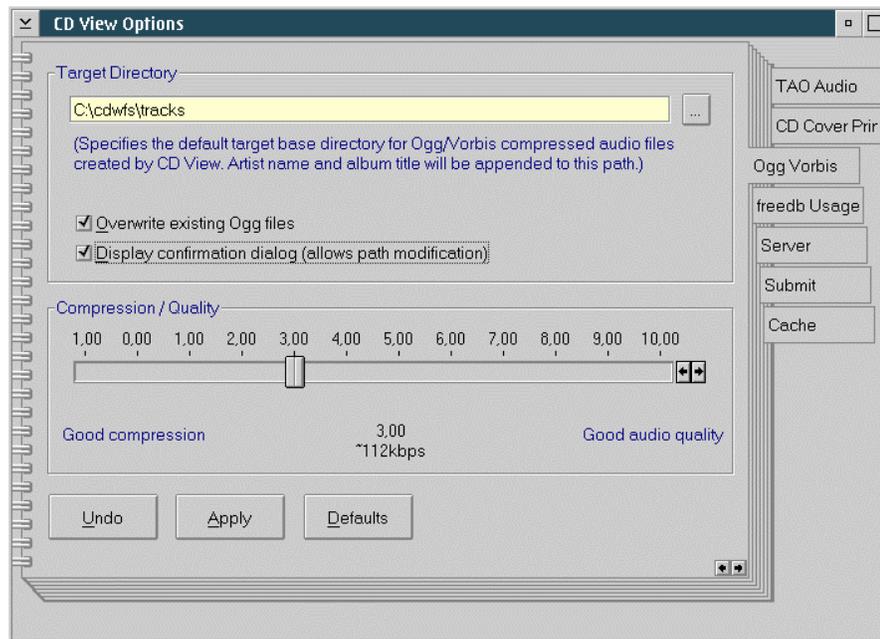
The following options are available:

Target Directory

Specifies the base directory of all Ogg Vorbis files generated by CD View. CD View appends the artist and album name to this path, while the title of the single track is used for the file name. For example, if the Target Directory is `c:\Music`, CD View uses the following path for an Ogg Vorbis file:

`c:\Music\Artist Name\Album Title\Track Title.ogg`

If the **Overwrite existing Ogg files** option is set, CD View will overwrite existing files without prompting.

The **Display Confirmation Dialog** option causes CD View to display a confirmation dialog before encoding the selected tracks. This dialog allows the modification of the target path of this encoding session.

Compression/Quality

This ruler allows the adjustment of the compression ratio (or quality) for Ogg Vorbis files. The better the compression, the lower is the sound quality of the generated files. The default setting is 3.00, which is a good compromise. If very good sound quality is preferred (which is almost as good as the original CD quality), a setting of 5.00 is recommended.

freedb Usage

This page allows you to configure how freedb is accessed by CD View. The following options are available:

Perform a freedb query on startup and CD rescan	performs a freedb query each time CD View rescans the track directory
Automatic queries use local freedb cache only	uses only data located in the local cache for queries
Perform auto queries even for data CDs	performs a freedb query for data CDs each time CD View rescans the track directory

Server

Use this page to specify how to access the freedb database server.

freedb Server Settings

Server settings should not be manually adjusted but retrieved from the main freedb server. Use the "Server List" button to select a server and its settings from the currently known server list.

Server	Name of the freedb server to use for queries and submissions
Port	Access port to use
Protocol	Protocol to use for queries; note that not all servers support HTTP
HTTP Path	CGI Path where the freedb submit executable can be found on the server
Server List	Opens a dialog that displays a list of all known servers; this dialog also provides an option to update the server list by retrieving the latest list from the mail freedb server.

Proxy Settings

If you are unsure about proxy usage, either ask your network administrator or try to turn proxy usage off. If you can't connect to freedb without a proxy, it is likely that your site requires you to use a proxy.

As a rule of thumb, you probably need to specify a proxy if you connect to the Internet using a local area network (LAN). If you connect using any kind of phone line (modem etc.), you probably don't need a proxy.

Please note that proxies require the HTTP protocol; the CDDBP protocol is not supported by proxies.

The following proxy options are available:

Use a proxy	If checked, a proxy server is used for Internet connections; the options below are required and need to be filled in.
Proxy name	Internet name of the proxy to use; i.e. "proxy.mydomain.com"
Port	Proxy server access port
User name / Password	Some proxy servers require you to authenticate yourself. If this is the case, fill in the according fields. If not, leave them blank.

Submit

Please specify a user name and your valid e-mail address in the appropriate fields; although freedb does not require you to register to gain access, specifying a vaild e-mail address will enable freedb to inform you if your submissions fail.

Cache

The freedb library supports a local cache, where information retrieved from the internet is stored on a hard disk. This way, the same data does not need to be queried from the Internet again and again.
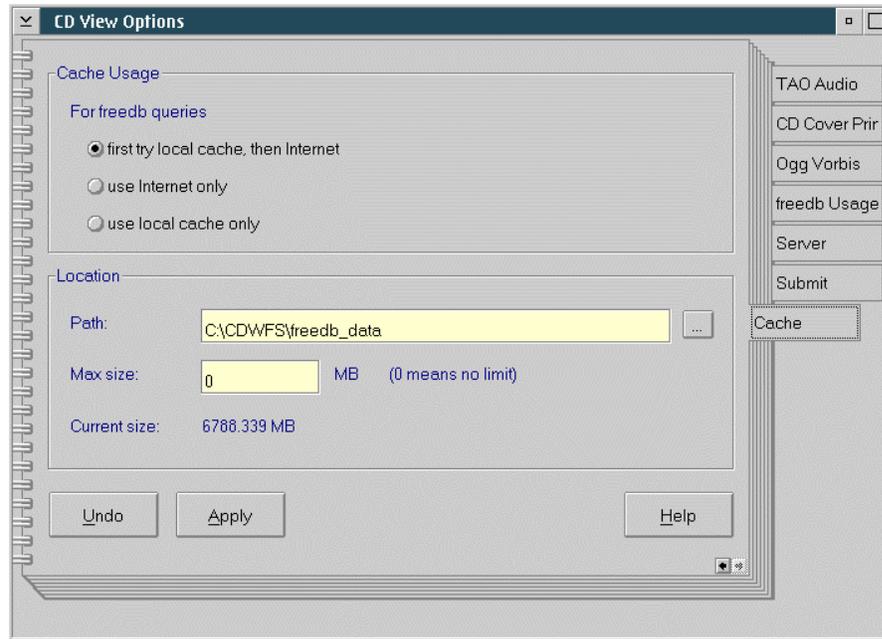
Cache Usage

Use these controls to specify how you want to use the local cache. Please note that if you disable the local cache by choosing the "*use Internet only*" option, the local database is not updated with new data from Internet.

Location

Specify the location of your freedb database files in the "*path*" field; use the '…' button to graphically browse your machine's file system. Optionally you can specify a maximum size for cache usage.

Installing the freedb database locally

freedb allows you to download the entire database as a single compressed archive. Although RSJ CD Writer supports a locally installed freedb database, it is not trivial to install. Therefore, we recommend using a remote database through a freedb server.

If you want to install the freedb database locally nevertheless, here are some hints and tips:

- The database is offered in two different formats, Unix and Windows. Be sure to download the Unix format, since the Windows format is not supported by this software.
- The Unix format is offered in tar.bz2 format only. You will need both GNU tar and BZIP2 to uncompress this format. These programs are available at hobbes (http://hobbes.nmsu.edu in the pub/os2/util/archiver directory); they need the EMX runtime library (available at http://hobbes.nmsu.edu/pub/os2/dev/emx/0.9d/emxrt.zip).
- Use the following commands to extract the archive:
- ```
  bzip2 –dk freedb-complete-…tar.bz2
  tar –xvf freedb-complete-…tar
  ```
- Note that the database is huge; expect around 800 – 900 MB of physical hard disk space needed on a HPFS partition. It contains about 500.000 files, which makes it impossible to install it on a FAT partition. The large number of files might impose problems, especially on partitions that already contain lots of files.
- After installation, change the "*cache path*" field on the cache options page accordingly.

Printing CD booklets and labels

You can print CD booklets and labels from within CD View. If you press the button in CD View's toolbar or use the *RSJ CD Cover Print* command in the context menu, CD View will launch CD Cover Print with the title and track data of the current CD.

More information about cover printing can be found in the "RSJ CD Cover Editor" chapter.

RSJ CD Cover Editor

RSJ CD Cover Editor allows you to create booklets and labels for your CDs.

If you start RSJ CD Cover Editor from within CD View, it will be initialized with the title data of the currently inserted CD; otherwise, you'll have to manually enter the title strings.

User interface

CD Cover Editor's main window basically consists of a tabbed window that allows you to switch between four different pages:

The CD *title page* is used to enter/edit the CD's title, artist and song titles. Of course, you can also enter general CD information if you want to create a data CD label.

The Front preview, Back preview and CD Label pages allow you to preview the result of your work. If one of the preview pages is active, you can use the format window to apply any of the format options to change the look of the label.

CD Cover Editor toolbar

CD Cover Editor's toolbar contains the following commands:

Print
Prints the booklet and CD label without any questions asked using the default printer

Show/hide format window
Shows or hides the format window

Save layout as default
Saves the current format options as new default values. The default values will be active next time you start CD Cover Editor. They are also used by the immediate print function from within CD View

CD Label Position Wizard
This wizard will help you to determine the position of the CD labels you are using

Information
Provides information concerning the Cover Editor

The format window

The format window allows you to adjust standard text attributes and the background to use. It is accessible only if one of the preview panes is active. Use the ![A] button in the toolbar to toggle its visibility state.
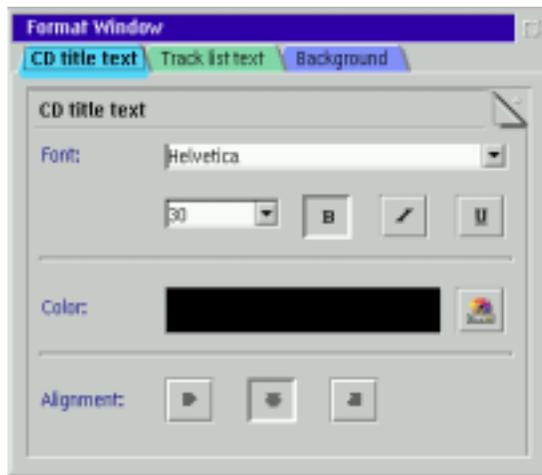
You can save the current formatting options as default values at any time using the ![icon] button in the toolbar. The default settings will be restored each time you start CD Cover Print and will be used for the label print option from within CD View.

CD Cover Editor Options

Use the "Options" command in the View – menu to display the options dialog:
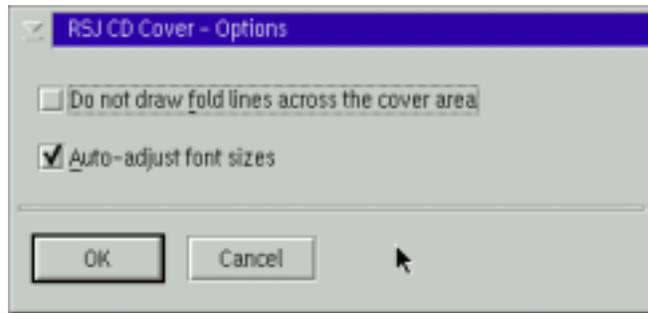
Do not draw fold lines across the cover	Fold lines will be printed only outside the cover itself
Auto-adjust font sizes	Ensures that text will fit in its field by reducing the font size if necessary

CD Cover Printout

Pressing the print button on the toolbar will print the booklet and CD label on the default printer. If you use the "Print" command in the "File" menu, you can specify a different printer and which parts of the cover you want to print.

If you print a CD label for the first time, you will be asked if you want to run the CD Label Positioning Wizard. This is necessary to determine the label's position on the sheet you are using.

The CD Label Positioning Wizard

This wizard helps you to determine the label position on the label sheets.

It prints three "rulers" on one of your label sheets; these rulers cross the label circles at certain points. All you have to do is to determine the values as indicated by the rulers.

Example:
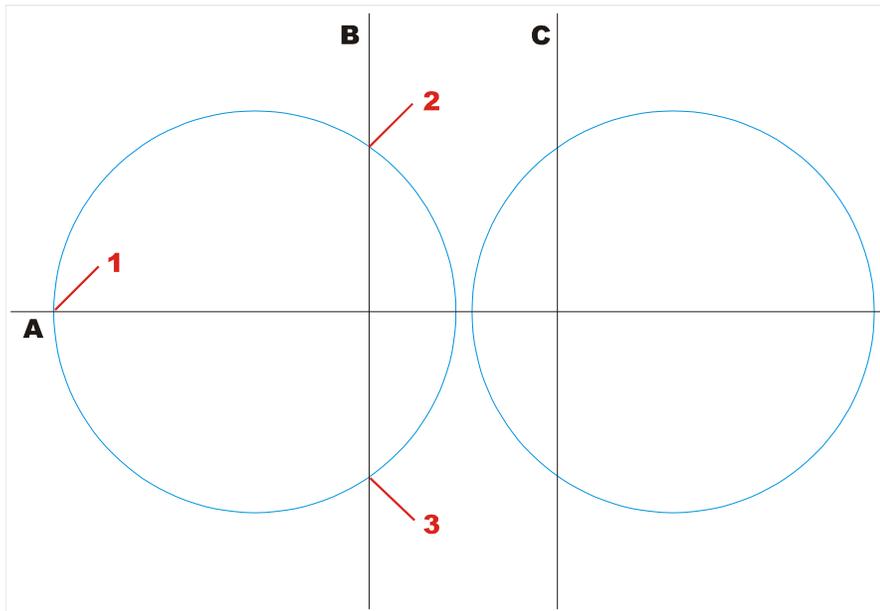
(The circles mark the CD labels as they are cut into the label sheet)

In this sample, we will determine the position of the left circle.

The following values will be entered:

left A-value (#1)   intersection of the *left* circle half with the A ruler; the intersection of the right circle half is discarded

upper B-value (#2) intersection of *upper* circle half with the B ruler

lower B-value (#3) intersection of *lower* circle half with the B ruler

In this example we do not use any values from the C-ruler, since the left circle does not hit it.

If the label circle intersects both rulers, you can enter all 4 values (two B-values and two C-values).The Positioning Wizard will automatically choose the value pair that is the best for the following calculation.

Notes:

- If your label sheet contains two CD labels, please specify intersections of one of the two only. The sheets are usually symmetric so you can use the other label by turning the sheet by 180°

- Please be as exact as you can when you enter the intersection values and try to estimate comma values. This will produce in a much better result.

Using the Printout

The front page is folded once at the fold line, cut and then slid into the transparent CD cover lid.

The back page is folded twice, cut and then slid into the back part of the CD cover. This requires you to remove the usually dark gray CD holder.

For instructions about how to use the CD label please consult the instructions that came with the label sheets.

RSJ CD Boot

RSJ CD Boot allows you to create bootable CDs. Using a bootable CD you can start an operating system from CD.

In order to make a CD bootable, the following conditions must be met:

- The CD must not be created by RSJ CD View or RSJ CD Copy Wizard.
- A boot image file is needed that must be located on the CD that you want to make bootable. If you have such a file on another medium, RSJ CD Boot can copy it to the target CD for you.
- If you do not have a boot image file, RSJ CD Boot can create one for you by copying a bootable disk (i.e. floppy disk) to a boot image file. Of course, the disk's size must not exceed the free space on the target CD.

Follow these steps to create *bootable CDs*:

- Choose Start – RSJ CD Writer – RSJ CD Boot
- **If you already have a boot image file** enter its complete path and file name in the "Boot image file name" field or use the "browse" button next to the entry field to select it.
- Select *do not use a source device* in the "Source device" field.
- Press "OK".

- RSJ CD Boot will copy the file to the CD if necessary and make it bootable.
- At the end of the copy process, please finalize the CD.

- **If you do not have a boot image file yet** enter a name for the boot image file in the first field; RSJ CD Boot will use this name to create a new file on the target CD. If you enter an absolute path, it must point to the target CD.
- Select the source device.
- Make sure the source disk is available (i.e. insert the floppy disk) and select a drive in the "Source device" list.
- Press "OK".

RSJ CD Boot

```
RSJ CD Boot - Recorder Drive Z:

Boot image file name
boot.img                                        ...

Source Device
A: - Size: 1.3 MB                                ▼

Free space on CD recorder (Z:)         656.3 MB

      OK              Cancel                    Help
```
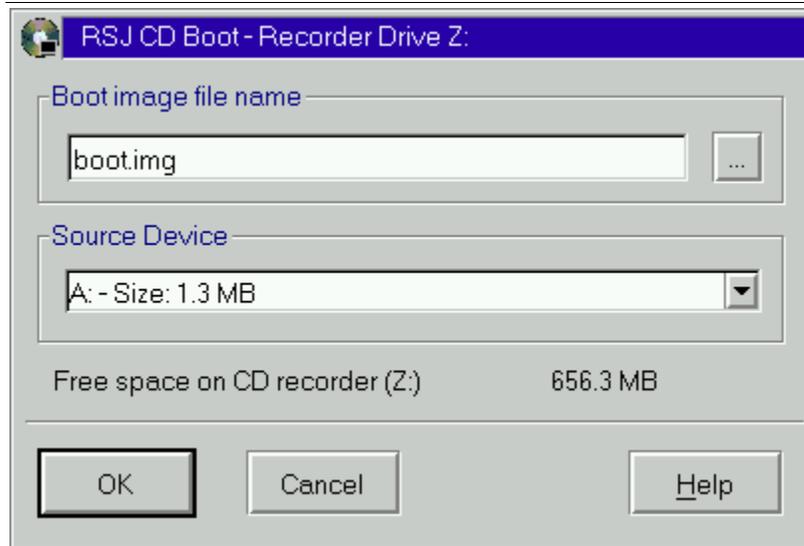
- RSJ CD Boot will copy the entire source disk to the boot image file on the CD and make it bootable.
- At the end of the process please finalize the CD.

Notes:

- If you specify a boot file name that does not point to the target CD, the file must exist.
- If the boot file name points to the target CD and the file does not exist, you must specify a source device so RSJ CD Boot can create the file.
- The source disk must not be greater than the available space on the target CD; note that the physical size of the disk applies, not the space occupied by files (i.e. if you use a 1.44MB floppy, you need approximately 1.4MB free space on the target CD).

Notes about creating a bootable OS/2 CD:

To create a bootable OS/2 CD you do need the following:

- A virtual .88 diskette like SVDISK from Hobbes or WWW.BMTMICRO.COM
- CD_BOOT.ZIP from Hobbes or WWW.OS2BBS.COM

Please do the following:

- Create a virtual 2.88 image from the boot diskette (SVDisk S☺
- Copy the image to your CDROM (CDBOOT Z:\BOOT.IMG -s S:)
- Finalize the CD
-

Please find further information concerning bootable OS/2 CDs at
http://www.os2voice.org/VNL/past_issues/VNL0700H/vnewsf2.htm

Reference

This section describes all files and commands used to work with the RSJ CD Writer File System:

Commands for CONFIG.SYS

The following commands must be specified in the system file CONFIG.SYS. Please note that the computer must be rebooted before any changes can take effect.

RSJSCSI.SYS

The device driver RSJSCSI.SYS provides simplified access to SCSI devices. The CD Writer File System uses this device driver to access the CD Recorder.

Syntax:

```
device=<path>\rsjscsi.sys [-q] [-n<driver name>] [-x]
```

where <Path> is to be replaced by the installation path.

The optional parameter has the following meaning:

-q While booting, ask user for confirmation before installing the device driver.

-s suppress boot messages

Note: This driver is needed even if you use an IDE/ATAPI recorder.

CDWFS.IFS

The file system CDWFS.IFS only provides the background process CDWFSD.EXE with commands contrary to earlier versions. The complete configuration data are registered in "RUN=…\CDWFS.IFS in the CONFIG.SYS.

Following options for CDWFS.IFS are available:

-q Request installation confirmation

-s suppress boot messages

LOCKCDR.FLT

Some CD recorders claim to be CDROM drives. As OS2CDROM.DMD allocates all CDROM drives at bootup, those recorders cannot be accessed by additional software, including the RSJ CD Writer File System. To correct this behavior, the filter device driver LOCKCDR.FLT is added to the file CONFIG.SYS; all CD-ROM drives that actually are recorders will be converted to WORM devices automatically.

LOCKCDR.FLT supports the following options:

-q   suppress boot messages

-s<drive #>   ignore (skip) CD-ROM drive with the specified number; to determine the number of the drive in question, check LOCKCDR's output in the "System" tab of the CD Writer Control Panel

-n   turn off auto-detection of CD recorders; requires "-i"

-i:"SCSI-ID" force all drives with an ID string starting with SCSI-ID to be identified as a recorder

-d   to not change CD Recorders to WORM devices; requires DANIATAPI.FLT for IDE recorders

-v   be verbous; displays more information during boot up

CD Writer Daemon

The *CD Writer Daemon* is running as a background process and receives its commands from the file system *CDWFS.IFS*. Usually, it's started with a *RUN=...* statement in *CONFIG.SYS*, however, it can also be started manually from an OS/2 command line.

If the *CD Writer Daemon* is not running, all attempts to attach a CD to a drive letter will be cancelled with a "Drive not ready" error.

The *CD Writer Daemon* accepts the following command line parameters:

-p <path> Cache path. The specified path is used to save the cache files while data is being written to the CD. It should point to a fast hard disk, which is used as little as possible. A separate partition, however, decreases the performance because the drive head must jump between the partitions instead of staying in the same partition.

-c <KB> Recommended size of the cache files in KB. Since files written to the CD will never be spread across multiple cache files, the size specified here could be exceeded by as much as the largest file to be written to the CD.

Default: 20000 (about 20MB)

> **Note:** Since multiple cache files are read and written simultaneously, the specified hard disk should have at least 4 times the space specified here. Thus, when using the default value "20000", the hard disk should have about 80MB free space.

-b <KB> Size of the RAM buffer, which is used to write a cache file to the CD.

Default: 2048KB

-t <mode> Track mode for new CDs. 1 = CDROM, 2 = CD-XA. If a CD has already been written to, the mode of the last data track on the CD will override the mode specified here.

Default: 2 (CD-XA)

Note: If CDROM tracks are used to create CDs, it's likely to have problems when reading multiple sessions from a standard CDROM drive. For that reason, it's recommended to use CD-XA unless the CD will contain only a single session.

-i \<level\> ISO level used to write the ISO9660 directory information.

The following levels are available:

    1: 8.3 filenames (same as DOS)

    2: max. 31 characters, yet only a single dot (.)

    3: max. 31 characters

Default: 3

Note: Level 3 is not complying with an ISO9660 standard. CDs, which have been created using level 3, might show problems when they are read from other systems. However, there are no known incompatibilities with OS/2.

Independently of the ISO level specified here, long file-names will always be saved in so-called "Rock Ridge Extensions" and the "Joliet" standard. Further informa-tion about long filenames can be found in the chapter "Long Filenames".

-s Recording speed factor. If the minimum speed cannot be maintained while a cache file is written to the CD, the system will automatically slow down the recorder (depending on its ca-pabilities) and retry to write the cache file after a few seconds.

-e Emulation mode. If specified, the recorder will emulate write operations. This should only be used to test the hardware setup.

-j If specified, don't eject the CD after it has been detached from the drive letter.

Please note that some of the older recorders don't update their internal track directory until the CD is ejected. For that reason, it's a good idea to eject the CD manually *before restarting the computer or turning off the CD recorder.* Otherwise, the re-corder will attempt to write over the previously written tracks, thereby corrupting the information already saved on the CD.

-l Don't lock the drive door. This option allows ejecting the CD at any time. However, the file system doesn't expect that a CD could be ejected without an explicit request to the file system and will behave unexpected when this is done. For that reason, this option should only be used for debugging purposes.

OS/2 Commands

The file UCDWFS.DLL extends the OS/2 file management commands FORMAT, RECOVER, CHKDSK and SYS. Hence, it must be copied to a directory which is referenced by the LIBPATH statement in the system file CONFIG.SYS (this is done automatically by the installation program).

Here's a list of changes/extensions to the well-known OS/2 file management commands:

FORMAT

The following options are supported by the FORMAT command:

format z: /unseal	Removes the write protection from a CD which has been "sealed" by using the detach option –x.
Format z: /erase	Erases a CD-RW

In order to run these commands, you have to attach the CD.

Enter the following commands in the command prompt:

- cdattach z:
- z:
- format z: /unseal or /erase
- possible copying of data
- cdattach z: -s

Additionally you can use the following command to format a CDRW:

```
cdwfmt.exe z: /erase or /unseal
```

If you use WSEB or FP13 or higher you can only use the command

`cdwfmt.exe z: /erase or /unseal` to format or unseal a CDRW.

Reference

CHKDSK

The CHKDSK command returns information about the status of the currently inserted CD. In addition to the standard information provided by OS/2, the output contains information about the number of tracks and sessions on the CD.

The following options are supported by the CHKDSK command:

/V   Return additional information (e.g. about the creator of the CD).

RECOVER

The RECOVER command starts a "repair program" in the CD Recorder. This program can sometimes correct minor errors, which have been caused by interrupted write operations.

Note: Usually, this command is not required since the file system triggers the execution of the repair program automatically once an error has been detected.

The RECOVER command does not support any options.

SYS

The SYS command is not supported by the file system.

Command Line Utilities

The *CD Writer File System* can be controlled completely from the OS/2 command line. This chapter discusses all available commands and their options in detail.

CDATTACH

The command CDATTACH allows attaching and detaching a CD to an OS/2 drive letter. To attach a CD means to associate a drive letter to the CD, while detaching refers to removing the association between the CD and its drive letter.

Syntax:
```
cdattach <drive> [-c|-s|-x|-no_flush|-l<n>]
```
Specifying only the drive letter causes the cdattach command to attach the CD to the specified drive. The optional parameters, except -l<n>, are used to detach the CD.

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The following options control the behavior of the cdattach command:

-no_flush The CD is detached from its drive letter without writing any cached data. This is useful to unlock the drive tray if all other detach commands fail due to hardware errors, such as a damaged CD.

-c The cached information, if any, is written to the CD and the drive tray is unlocked. As yet, the information on the CD can only be used together with the CD Writer File System; in order to use the CD with CDROM drives, the following detach option must be used.

-s Same as -c; however, the current session will be closed as well. This allows reading the CD in standard CDROM drives. Closing a session takes about 12MB disk space, so this option should be used only if the CD is to be read by CDROM drives.

-x Like -s but, the CD will be "sealed", that is, the CD becomes write protected. The write protection can be removed at any time by using the command "format <Drive> /UNSEAL".

-l<n> Tells the file system to skip n sessions on the CD. This option allows recovering a previous CD status; this is particularly useful to recover files, which have been deleted or modified in the current session.

Additionally to the parameters described above, the following parameters allow specifying the information in the *Primary Volume Descriptor*. The Primary Volume Descriptor gives information about the TOC of the CD. The information specified together with one of the following options can be retrieved with the command "chkdsk <drive> /v"

-vol_id volume identifier (sort of detailed volume label).

-pub_id name of the institution which has created the CD.

-prep_id name of the person which has prepared (collected) the files on the CD.

-app_id name of the application which has been used to create the CD.

-copyright name of the Copyright file in the root directory.

-abstract name of the Abstract file in the root directory.

-biblio name of the Bibliographic file in the root directory.

If you don't want to specify the same informational parameters over and over again, the default values can be saved as environment strings. Saving the following commands in a batch file or in the system file CONFIG.SYS can do this:

```
set cdattach_vol_id=...
set cdattach_pub_id=...
set cdattach_prep_id=...
```

etc.

Note: The contents of the environment will be overwritten by the according command line parameters, that is, to change a specific field, which has been predefined in the command line just, add the according option to the command line.

If a field has been specified neither in the command line nor in the environment, the previous value - which has been derived from the existing *Primary Volume Descriptor* at the time the CD has been attached - will be used. If a field is to be deleted, it must be overwritten by a blank, e.g. by typing "cdattach z: -c -pub_id " "' .

Examples:

```
cdattach z: -c
```

This command writes all remaining data in the cache to the CD, then detaches the CD and unlocks the drive tray. As yet, the files can be accessed with the CD Recorder, only. To make the files readable by standard CDROM drives, specify the following command:

```
cdattach z: -s
```

After writing all remaining data in the cache to the CD, this command causes the current session to be closed before the CD is detached. This allows reading the CD in standard CDROM drives.

```
cdattach z: -x -pub_id "RSJ Software" -prep_id "Bugs Bunny"
```

This variation writes all cached data to the CD, closes the current session and does not reserve a new track. Consequently, the CD will be write protected until the write protection has been removed by typing 'format <Drive> /UNSEAL'.

Additionally, the information in the Primary Volume Descriptor will be partially overwritten with new contents (-pub_id and -prep_id).

CDCOPY

The command CDCOPY copies arbitrary files from/to arbitrary drives. The advantage of CDCOPY to other OS/2 copy commands is its ability to copy very large files directly. That means, instead of creating a 500MB cache file when a 500MB file is to be copied, the file is copied directly from the source to the target, bypassing the cache mechanism.

Syntax:

```
cdcopy <source file> <target file>
```

Wildcards such as "?" or "*" are not allowed here. The source file and the target file must be specified completely.

Example:

```
cdcopy c:\longfile.dat z:\longfile.dat
```

This example copies a file named LONGFILE.DAT from the hard disk to the CD. Even if the file is larger than the cache size (e.g. 250MB), the file will be copied into a single track. This allows reading the CD under DOS and Windows (NT).

If complete directory trees are to be copied, use the following syntax:

```
cdcopy <source path> <target path> /s
```

Wildcards are explicitly allowed in the source specification. The target path, however, must point to the desired drive/directory without any wildcards; if the target directory does not exist, it will be created automatically.

Example:

```
cdcopy c:\os2\* z:\os2 /s
```

This command copies all files from c:\os2, including all subdirectories (APPS, DLL, SYSTEM, ...) into the same directory on the CD.

CDSPEED

The CDSPEED utility allows changing the recording speed of the CD recorder. It can be used

- to change the speed of the currently attached recorder, or
- to change the default speed which will be applied the next time a CD is attached.

Syntax:

```
cdspeed [drive] [-s <speed factor>] -e
```

If a drive letter is specified, the recording speed of the according CD recorder will be changed immediately. Otherwise, only the default speed will be changed. Using CDSPEED without a drive letter has the same effect as changing the -s option in the CDWFS.IFS command line, followed by a subsequent reboot.

Note: If the recorder is currently writing, the speed cannot be changed. In that case, just wait until the write indicator on the recorder is off before using this command.

Examples:

```
cdspeed z: -s2
```

This command changes both the default value for subsequent sessions as well as the current recording speed. The new speed factor is 2 (double speed, 300KB/s).

```
cdspeed -s4 -e
```

This command changes the speed factor for subsequent sessions to quad speed (600KB/s) and turns on write emulation. Please note that the speed of a currently attached CD recorder will not be changed unless the CD is detached, then attached again.

CDWPOPUP

The error log utility CDWPOPUP tracks all SCSI errors, which have been returned by the CD Recorder. These errors are usually fatal errors, such as damaged CDs, hardware errors, etc.

The error log runs in the background and is usually invisible. If desired, it can be popped up manually by double-clicking its title in the Window List.

Once an error has been detected, the according error message is displayed on the screen. Further details about the error can be viewed by pressing Detailed Information. The contents of the detailed information screen are discussed in the section Problem Determination.

Enter the following command to start the error log:

```
start cdwpopup
```

Since CDWPOPUP creates an error-log file in the current directory, it must be started on a drive with write permission.

Caution: In no case, attempt to start the error log in a directory which points to an attached CD. Otherwise, changing the CD would also "change" the error-log file. Besides, using the CD as the drive for the error-log file could lead to a "racing condition", that is, once an error has been generated by accessing the CD, CDWPOPUP would access the very same CD to update the error log, which would lead to yet another error, which would cause CDWPOPUP to access the CD again, ...

Further information about the error log can be found in the section Problem Determination.

Programming

RSJ CD Writer provides an application programming interface (API) to allow other applications to use the functionality ot RSJ CD Writer. The documentation of the programming interface is now available as a separate document. If needed it can be obtained free of charge from our Web server http://www.rsj.de.

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Problem Determination

This section provides useful information about determining and correcting common problems.

RSJ CD Writer Error Log

RSJ CD Writer Error Log is usually started automatically and stays in the background until an error is returned by the CD recorder. Since there's no icon while *RSJ CD Writer Error Log* is minimized, you'll have to use the window list to restore the program.
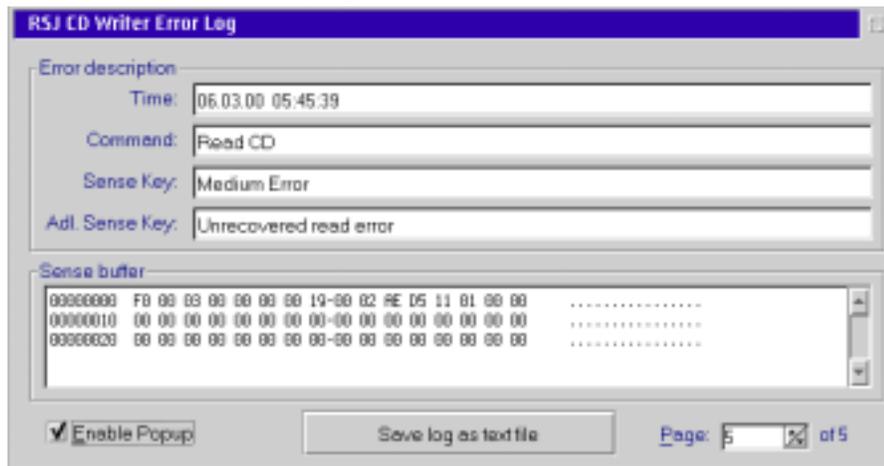
RSJ CD Writer Error Log is used to log and display errors, which are returned by the CD recorder. The error messages are specific to the recorder being used and, in some cases, don't tell the average end user much about the original problem. However, our technical support relies on the information collected by *RSJ CD Writer Error Log* to diagnose the problems.

If there are any problems, save the Error Log Message as text file and send it to support@rsj.de

Note: A damaged CD shouldn't be used together with the CD Recorder anymore. However, all previously closed sessions should be accessible by standard CDROM drives.

OS/2 Error

All errors returned by the file system are standard OS/2 error codes. If necessary, enter the following command to get more information about the error:

```
help sys????
```

where the four question marks are to be replaced by the returned error number.

Error Table

The following table contains information about common errors along with possible solutions to the problem:

Sense Key	Adl. Sense Key	Cause/Correction
Illegal Request	N/A	The cache size is too large, causing OS/2 to get into trouble locking the buffer for the write operation. This can be fixed by reducing the cache size in the installation program
Illegal Request	Invalid Block Address	The CD status does not match the file system status. Detach the CD with the command 'cdattach <drive> -no_flush'.
Medium Error	Unable to read PMA, TOC or Subcode	The CD is either damaged or dirty. If cleaning the CD doesn't help, the CD will have to be replaced.
Medium Error	Absorption Control Error	The track could not be written successfully. Usually, this error indicates that the CD has been removed during write operations. Also, rebooting the computer without detaching the CD first can be the cause for this error. The CD is damaged and must be replaced.

Sense Key	Adl. Sense Key	Cause/Correction
Hardware Error	*	The CD Recorder has detected an internal error. Detach the CD with the command 'cdattach <drive> -no_flush', turn the unit off, then on again and retry the write operation. If the error persists, contact the service representative for the CD Recorder.
Unit Attention	*	The CD has been forcibly changed or the CD Recorder has been turned off while the CD was still attached to a drive letter. Retry the same command again.

CDATTACH

The command CDATTACH displays the OS/2 error message associated to the error code returned by the file system. The most common error messages are:

Error Message	Cause/Correction
Device not ready	The CD Recorder is either turned off or no CD has been inserted.
Access denied	The CD Recorder has already been attached to a drive letter or the connection to the CD Recorder cannot be established.
General error	The CD Recorder could not identify the currently inserted CD. The CD might be damaged.

| File not found | The SCSI device driver name (default: RSJSCSI$) could not be found. Check the name of the SCSI device driver. |

CDCOPY

The command CDCOPY displays the OS/2 error message associated with error code returned by the file system. The most common error messages are:

Error	Cause/Correction
Invalid file name	The source or target filename is invalid. Check the command syntax as well as the specified file names.
Invalid directory	see above
The pipe has been ended	The minimum transfer rate of the CD Recorder could not be maintained. The command CDCOPY is bypassing the file system cache and relies on fast source drives. Hence, it should only be used if the source file resides on a local hard disk or a fast network (e.g. 16MBit/s Token Ring). If the source drive is a CDROM, the speed of the CDROM should exceed the speed of the CD Recorder by at least 50%. Retry the command with a faster source drive or use standard copy commands such as COPY or XCOPY.

Further Errors

The following table contains errors, which can't be associated to a particular command. Especially a bad configuration can cause the errors described here.

Error	Cause/Correction
memory (RAM) fault	Sometimes, a memory fault (RAM) is causing the problems. Most of today's computers don't use parity bits anymore, so a memory error remains undetected until some several problems show up. If in doubt, try to slow down the memory access with the BIOS setup program. Disabling the 2nd level cache for test purposes can also be helpful.
The device driver RSJSCSI.SYS prints the error message: can't connect to SCSI device manager	The SCSI device manager OS2SCSI.DMD could not be found. This error occurs if no adapter driver (.ADD) for the host adapter has been installed. Reinstall the SCSI adapter support. Make sure the CD Recorder is properly connected and turned on while the system is booting.
CD Recorder can't be attached to a drive letter	• The CD Recorder is not ready (no CD, drive turned off, improper connections). • Drive has been turned off or disconnected while the system has been started. • The entries in the system file CONFIG.SYS are incomplete. This can be corrected by reinstalling the CD Writer File System. • The adapter device driver (BASEDEV=????????.ADD in the system file CONFIG.SYS) has not been installed properly. • The drive has already been allocated by another device driver or device manager (e.g. OS2ASPI.DMD). In this case, the offending device driver must be either removed or configured such that the CD Recorder is not allocated. If you are using OS2ASPI.DMD, try adding the parameter /SHARE to its command line. **Note:** Changing the load sequence will have no effect to the above problem. • The CD Recorder is malfunctioning.

Error	Cause/Correction
CD is write protected	• The CD is a CDROM. Only writable CDs can be written to. • The CD already contains too many tracks. This can be verified with the CHKDSK command. • The CD is out-of-disk space. • The CD has been write protected with the command 'cdattach <drive> -x'. The write protection can be removed by typing 'format <drive> /unseal'. • The previously written files cannot be read in a CDROM drive • The CD has been detached without closing the current session. Attach CD again and detach with the command 'cdattach <drive> -x'.
CD cannot be detached	• The last write operation has caused an error. If retrying the operation does not help, detach the CD by typing 'cdattach <drive> -no_flush'. The data written since the CD has been attached will be lost. • Drive is not attached to the specified drive letter. This can be verified by typing 'dir <drive>'.
CD-Recorder cannot be found or there is a system trap during boot	• Please deactivate recorder autodetection with the –N of LOCKCDR.FLT • Add '-i:"ID_OF_YOUR_RECORDER"' to the LOCKCDR.FLT call in your CONFIG.SYS file • Add your recorder to the CDDRV.INF (p. 84) • Reboot your system

Tips and Tricks

The following sections contain some of the most frequently asked questions about the RSJ CD Writer File System.

Incorrect SCSI termination or wiring

Our customer support experience showed that many problems are caused by an incorrect SCSI termination or installation. Please make absolutely sure that your system is correctly configured and terminated. This especially applies to WIDE or U2W SCSI adapters.
In the following section we provide a short and hopefully helpful guide concerning correct termination and wiring.

Termination

A SCSI bus always has to be terminated at both ends. If there is both an external and an internal wire, the internal cable has to be terminated at its end as well as the external cable. To do this, activate the termination on the last device or use a special terminator.

Please also make sure that no device in the chain may be terminated. This happens for example if the adapter is terminated and a device is attached to the external slot connector.

If you use a WIDE adapter that has its wide (16 bit) bus connected to a narrow (8 bit) external port you have to make sure that the high order byte of the bus is properly terminated. This can be achieved using the adapter's setup program or, with onboard SCSI adapters, by a special slot adapter.

However, many onboard adapters come with a slot panel that does not provide proper termination of the high order byte of the wide bus. These slots should not be used.

Correct wiring

SCSI devices must be connected using a single wire as a „daisy chain"
without any forks. With WIDE adapters providing three internal connectors
you have to observe that two of these connectors are connected to the
same bus. Using these two connectors at the same time results in a fork
that is not allowed and very likely to cause problems.

SCSI cable length

The maximum cable length differs depending on the interface type:

Number of devices (incl. Adapter)	SCSI-1	SCSI-2	Ultra(W)-SCSI	U2W-SCSI
1 – 4 devises	6 meter	3 meter	3 meter	12 meters
5 – 7 devices	3 meter	3 meter	1 meter	12 meters

If both external and internal devices are used, the lengths of both cables
have to be added.

Please make sure that there is a minimum cable length of 30 cm (approx
7.5 ") between each device.

If these explanations do not solve your problem, please ask your hardware
dealer or check the manual of your SCSI adapter.

Synchronous transfer

Most recorders produce errors if they are operated in "Sync Transfer
mode". But there's no rule without exception:
Plextor,Teac and newer Yamaha recorders require sync transfer mode!

Some SCSI adapters set this option automatically depending on the device,
others (e.g. Adaptec) require you to set this option manually.

If you are using an Adaptec controller, you can verify this setting in the
adapters's setup program (press Ctrl+A during system boot). Make sure
that the "Initiate sync negotiation" option is OFF for your recorder's SCSI id.

Caution:
Certain Adaptec controller versions do not load the adapter BIOS if there
are no hard disks connected to it. In this case, the adapter setup program
options are ignored. This is indicated by a "Adapter BIOS not installed" or
similar message.

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Ultra DMA Modes (IDE/ATAPI recorders)

If you are using an IDE/ATAPI based recorder, you should, if at all possible, enable one of the DMA modes for all drives that might be involved (hard disks, CD-ROM and recorder). This ensures that the CPU load is greatly reduced during copy processes; using simple PIO (polling) modes will most certainly keep you from successfully using high copy speeds (6x and up).

DMA modes are enabled by default for hard disks; consult the related driver's documentation about details how to enable DMA modes for recorders and CD-ROM drives (see danis506.doc available with danis506.add or type "help ibms506" at an OS/2 prompt).

If your recorder is not recognized by RSJ CD Writer

The RSJ CD Writer Installation program automatically detects any not-too-old recorder. If your recorder is not recognized, please follow these steps:

- Make sure the recorder is detected by OS/2.
- If the recorder is detected by OS/2, open the CDDRV.INF file in the installation directory (make a backup copy of the file first, because any update RSJ CD Writer will contain a new CDDRV.INF) with a text editor.
- Copy the line of the compatible recorder to the bottom of the file
- Modify the first four columns of the new line so they match your recorder
- Move the ID string of the compatible recorder to the compatible ID column
- Add '-i:"ID_OF_YOUR_RECORDER"' to the LOCKCDR.FLT call in your CONFIG.SYS file
- Reboot your system

During boot LOCKCDR.FLT should announce that the recorder has been changed into a WORM-drive. If this is not the case, "ID_OF_YOUR_RECORDER" does not exactly match the name of the recorder.

If you get the "changed to WORM" message during boot but a "device not found" error when trying to attach the recorder you probably mistyped the SCSI id string in the CDDRV.INF file.

FAQs

When copying the last audio track, an error message pops up which claims that there was a read error. However, the audio track apparently has been copied completely.

It's difficult to determine the end of the last audio track. We'll watch this problem and suppress the error message in a later version if we don't find any real errors. Since the target CD was OK in all cases we've heard about, this can be considered a cosmetic problem for now.

My CD is not copied at the speed I expected.

Most of CD-RW's are copied with 2x speed. Some can be copied with a higher speed. Sometimes it depends also on the medium. If you write to a CD-R, you can choose the speed.

The Audio CD I copied does not contain audio, but tracks.

RSJ CD Writer uses the OS/2 CD-ROM driver to read from the CD-ROM drive. This driver sometimes is not able to read audio data in a digital mode (but may be able to play audio). In this case copy the tracks from the CD-Writer to the harddisk and then from the harddisk to the CD-Writer. Or, try a CD-ROM driver that supports digital audio extraction for your CDROM drive (search http://hobbes.nmsu.edu for "jjscdrom").

How do I finalize a data CD from the command line?

Finalize the session with `CDATTACH -S`.

How do I copy a track from the command line?

Use the command `TRACKCPY D: 1 CDR:`

How do I finalize a Audio CD from the command line?

Use the command `TRACKCPY finalize CDR:`

How can I create a CD from an ISO image?

Simply drag the ISO file to the recorder's CD View window and start recording. This procedure is the same as with WAV and other audio files.

Why did the RSJ install SCSI drivers into my CONFIG.SYS although I am using an IDE recorder?

The RSJSCSI.SYS driver has to be installed, because our software uses LOCKCDR.FLT to make your IDE adapter appear as a SCSI adapter. The rest of our software assumes a SCSI adapter.

System Requirements

This section lists the system requirements necessary to run the RSJ CD Writer File System.

Hardware

The following hardware requirements must be met:

- IBM compatible PC with 80386 processor or higher
- SCSI host adapter with OS/2 support (e.g. Adatec or Sym-biosLogic/NCR) or
- IDE adapter with OS/2 support
- at least 16 MB main memory
- supported CD-recorder

A list of supported SCSI host adapters and older CD Recorders can be found at our web Site http://www.rsj.de.

If the recorder in question is not too old (CDMMC or CDATAPI compliant), it will most probably be supported by RSJ CD Writer. Unknown recorders are automatically detected and configured during system boot up.

Software

The following software requirements must be met:

- IBM OS/2 Version 2.1 or higher
- Adapter Device Driver (.ADD) for the SCSI or IDE host adapter
- ASPI support

Appendix

The appendix contains general-purpose information and specifications for the utilization of the CD Writer File System as well as the currently active restrictions.

CDROM

CDs created by the *RSJ CD Writer File System* can be read by virtually all CD-ROM drives and operation systems available today.

The following restrictions should be considered:

- Reading CDs with multiple sessions requires multisession-capable CD-ROMs. Rather old CD-ROM drives (e.g. single or double speed) might not support multisession CDs.

- In addition to a multisession-capable CDROM drive, the CDROM software (e.g. MSCDEX) must be able to handle multiple sessions. This should be the case with most software versions currently in use. If in doubt, please consult the software manufacturer.

Mastering

The RSJ CD Writer File System has primarily been designed to create CDs in small quantities, e.g. for backup applications, customer-specific CDs, transferring data with CDs (e.g. for DTP), creating prototypes, etc.

If a CD is to be used for mass production, it is recommended to notify the CDROM manufacturer of the fact that the files on the prototype CD should be copied into a single track on a new CD before a glass master is created. Otherwise, the internal layout of the CD - multiple tracks and sessions, with gaps between each track (caused by the CD Recorder) - could cause problems when producing or using the CD-ROMs.

Please note that this is not a limitation of the CD Writer File System. Actually, Kodak's Photo CDs have the same basic layout (multiple tracks and sessions), thus will cause the same problems if they are used to print CD-ROMs.

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RSJ CD Writer contains official Ogg Vorbis software (ogg.dll and vorbis.dll)

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