CDDesigner

CDDesigner V1.4

User Guide

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How to use

Installation

Setting up the host adapter's bios

If your host adapter's bios can be configured you may setup "Disconnection Enabled" for the device. Set this option to "Yes" for the following devices: DynaTek CDM240, DynaTek CDM400, Microboards PlayWrite 4000, Microboards PlayWrite 2000, any model of Mitsumi, Olympus and Optima, Plasmon CDR 4400, Procom PCDR-4X, any model of Smart & Friendly except of the CDR 4006, any model of Sony, Yamha CDR100 and Yamha CDR102.. Set it to "No" for other ones. If you will get problems with the fixation of CD-Rs you should try to switch this option.

Installing CDDesigner.pkg

1) Log in as ROOT. If you do not know how to log in as ROOT, ask your System Administrator.
2) Install CDDesigner.pkg. An upgrade to a newer version will not affect the licence.

Configuring the local host

1) Start the CDDesigner.app.
2) Select Info | Configure... to open the configuration window.

3) If you have installed multiple host adapters, press the "Autoconfig" button.

4) Choose Create to configure a new CDROM drive or CD recorder.

5) Select one of your SCSI devices. CDDesigner can access the first seven devices of your first host adapter. The type of the chosen device should be selected automatically. If the type of the device is not detected correctly, you will need to select a type manually. The device is probably compatible to one of the listed types. See *Types* on page 7.

6) Set the path for the cache when you are configuring the CD recorder. It is recommended that the free disk space is a minimum of 750 MB. The selected directory should be readable and writable for root only.

7) Type a local name for the new device.

8) Select public access to distribute the device through the network.

9) Select OK. If you have chosen public access CDDesigner may request the root password for the selected domain.

CDDesigner will install the ”gzdevd” daemon after configuring the first device. Therefore it makes an entry into your /etc/rc.local. This entry will be removed automatically after deleting the last device. You should never remove this entry manually.

Important: Configuring any other devices than CD-ROM drives or CD recorders may crash your system or damage information on local harddiscs.

See also: *Devices* on page 38.

Types

In some cases you will need to select the type manually, even if CDDesigner has detected a type. Use these types for the following CD recorders:

DynaTek CDM240	SCSICDWriterYamaha
DynaTek CDM400	SCSICDWriterYamaha
Grundig CDR100IPW	SCSICDWriterHP
HP 4020i	SCSICDWriterHP
HP 6020i	SCSICDWriterHP60XX
Kodak PCD 240	SCSICDWriterHP
Kodak PCD 200	SCSICDWriterHP
MicroNet MasterCD Pro	SCSICDWriterYamaha
MicroNet MasterCD Plus 4x6	SCSICDWriterYamaha200_400
Microboards PlayWrite 2000	SCSICDWriterSony
Microboards PlayWrite 4000	SCSICDWriterYamaha
Mitsumi CR-2200CS	SCSICDWriterSony
Mitsumi CR-2201CS	SCSICDWriterSony
Mitsumi CD-2401TS	SCSICDWriterSony
Mitsumi CD-2204	SCSICDWriterSony
Olympus CDS615E	SCSICDWriterSony
Olympus CDS620E	SCSICDWriterSony
Olympus CD-R2	SCSICDWriterSony
Optima 650 CD-R	SCSICDWriterSony
Phillips CDD 2000	SCSICDWriterHP or SCSICDWriterPhillips
Phillips CDD 2600	SCSICDWriterHP60XX
Phillips CDD 522	SCSICDWriterHP or SCSICDWriterPhillips
Plasmon RF 4100	SCSICDWriterHP
Plasmon RF 4102	SCSICDWriterHP
Plasmon CDR 4220	SCSICDWriterHP
Plasmon CDR 4400	SCSICDWriterYamaha
Procom PCDR-4X	SCSICDWriterYamaha
Smart & Friendly CDR 1002	SCSICDWriterSony
Smart & Friendly CDR 1004	SCSICDWriterYamaha
Smart & Friendly CDR 2004	SCSICDWriterSony
Smart & Friendly CDR 2006 PRO	SCSICDWriterSony
Smart & Friendly CDR 4000	SCSICDWriterYamaha
Smart & Friendly CDR 4006	SCSICDWriterYamaha200_400
Sony CDU920S	SCSICDWriterSony
Sony CDU924S	SCSICDWriterSony
Sony CDU926S	SCSICDWriterSony
Sony CDW900	SCSICDWriterSony
Sony Spressa 9411	SCSICDWriterSony
Yamaha CDR 100	SCSICDWriterYamaha
Yamaha CDR 102	SCSICDWriterYamaha
Yamaha CDR 200	SCSICDWriterYamaha200_400
Yamaha CDR 400	SCSICDWriterYamaha200_400

If your device is not listed you should have a look at our homepage http://www.ip-service.com/gehle for new drivers and an actual compatibility guide.

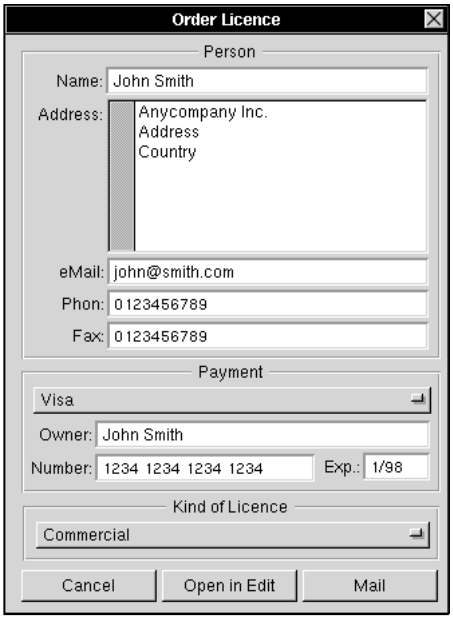
If you have selected a type manually you may need to setup the swap flags. They indicate to swap audio data while reading or recording. Try to change these flags if the read or written audio data is incomprehensible.

Ziegeler & Gehle Infosystems does not guarantee that all listed devices work. We tested the HP4020, HP6020, Sony 926S and all models by Yamaha. Based on informations from the vendors, or customers and the several news groups the other listed models should be compatible with them.

See also: *Devices* on page 38.

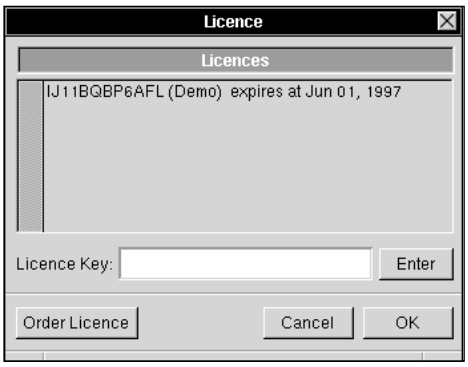
Licensing CDDesigner

When originally installed CDDesigner comes with a demo licence for about one month. To get a valid licence log in as ROOT, start CDDesigner, choose Info | License... and select Order Licence.



Fill out the form and choose Open in Edit or Mail to send us your order. Note that if you send us an eMail, your credit card number will be encoded, but the safest way is to send us a fax by opening the order in Edit.app. Do not delete or reinstall CDDesigner until you have received the licence key.

Type the licence key in the licence panels text field and choose Enter.



You may need to restart the CDDesigner when changes in the type of licence are effected.

Upgrading CDDesigner

If you have already installed an older version of CDDesigner, DON'T DELETE IT. Open the CDDesigner.pkg and choose the same installation path as before. Installing to the same path will detect the older version and upgrade to V1.4 automatically. To replace the old drivers you need to start CDDesigner.app as root, then choose "Configure" from the "Info" menu. Remove any configured devices and create new ones for them.

Deleting CDDesigner

Log in as ROOT. Select the CDDesigner.pkg in the directory /NextLibrary/Receipts and use the Installer.app to delete the CDDesigner. The Installer.app will copy your licence into the current home directory as .cdDesignerLicence.

Reinstalling CDDesigner

Use the Installer.app to reinstall CDDesigner. Copy the licence file (you got after deleting the application) into the CDDesigner.app folder and rename it to `gzlic`.

Adding or removing SCSI devices

CDDesigner detects changing of SCSI-IDs and devices, but it is recommended to reconfigure the devices using the configuration panel: Select any device, choose Modify, check the configuration and press OK.

Designing a CD

The Document

CDDesigner handles descriptions of CDs as documents, further simply called CDs. So CDs are represented by a document window where the window title describes the CD's source. When CDDesigner starts a new empty document is opened.

See also: *Documents* on page 24.

The CD Format

The CD format determines if the CD contains a data track, audio tracks or both of them. The CD format can be changed while designing a CD without any loss of information.

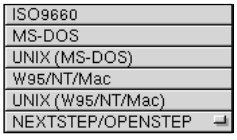
	The CD will contain
CD-DA	- multiple audio tracks.
Mixedmode CD	- a data track and multiple audio tracks.
CD-ROM	- a single data track.

Selecting a CD format may also change the view of the current document. E.g.: Switching from a CD-ROM to a DA-DA selects the audio view. Recording Options may also be effected.

See also: *CD Formats* on page 26.

The Data Track Format

If your CD contains a data track, you need to select the format of the data. You can change the format while you are designing a CD, but as this affects the whole directory tree it is recommended to set the format first. Otherwise changes may take several minutes to complete.



The following list gives an overview of the currently supported formats. As other formats are continuously under development you should meet our homepage for up to date information.

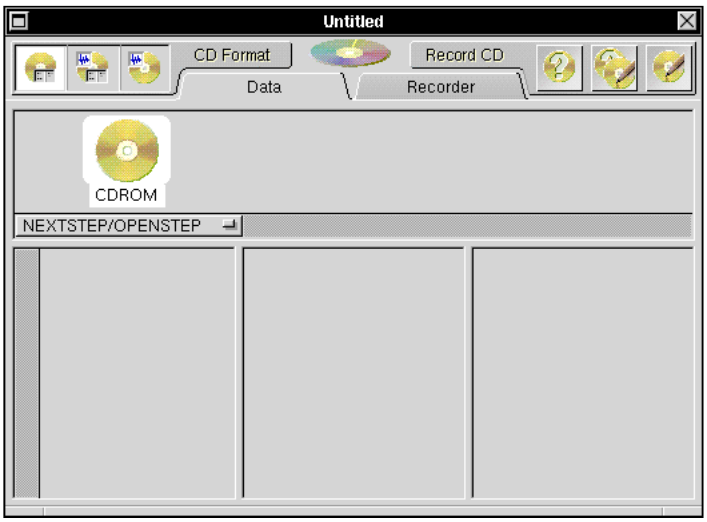
Format	Characteristics	Target Operating Systems
ISO9660		
ISO9660 - Level 1	Filenames are up to eight upper case characters long and have an extensions of three characters. The depth of the directory tree is limited to eight.	MS-DOS, Windows 3.11
MS-DOS		
ISO9660 - Level 1 + MS-DOS Extensions	Does not require a point in a filename and allows any characters readable with MS-DOS	MS-DOS, Windows 3.11
W95/NT/Mac		
ISO9660 - Level 2	Filenames are up to 32 upper case characters long. The depth of the directory tree is limited to eight.	Windows 95, Windows NT, MacOS
UNIX		
ISO9660 - Level 1 + Rockridge IP	Filenames are up to 100 upper and lower case characters long. The directory depth is not limited and link loops are supported. Each file or directory has unix conform attributes, like user and group ID or access and execution rights. None Unix systems will display the ISO9660 - Level 1 based filename and cannot handle link loops.	MS-DOS, Windows 3.11, Unix
UNIX (W95/NT/Mac)		
ISO9660 - Level 2 + Rockridge IP	Same as above except that none Unix systems will display the ISO9660 - Level 2 based filename and cannot handle link loops.	Windows 95, Windows NT, MacOS, Unix
NEXTSTEP/OPENSTEP		
ISO9660 - Level 2 + NextStep Extensions	This extends ISO9660 - Level 2 + Rockridge IP by filenames by NeXT specific characters. This CDs may by unreadable by other Unix systems.	Windows 95, Windows NT, NextStep, OPENSTEP

See also: *Data Track Formats* on page 33.

The Data Tab

The Directory Tree

With ISO9660 based formats the data track contains a hierarchical file system, like a harddisc of your computer. You will define a directory tree that contains files of your system. You can do this like building a tree with NeXTs WorkspaceManager, except that you can use Cut, Copy and Paste from the Edit menu to alter the tree. The order of the files in a directory depends of the selected data track format. Most operating systems reorder the files while displaying the a CD's content.

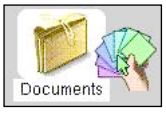


Virtual Folders

CDDesigner makes a difference between virtual folders, that will only appear on the CD, and folders that are determined by a link to your filesystem. You can only edit the contents of virtual folders which are displayed in a golden color. Choose File New Folder n to create a new virtual folder and type the new title.

Adding Files and Folders

To add existing files or folders to the tree, select them in your WorkspaceManager or another document of the CDDesigner and drag them over the folder's icon. If the cursor indicates to create a link, this link is always related to your filesystem and never to another document.



On a Unix system the following folders cannot be written to a CD: /private, /private/vm, /private/tftpboot, /Net, /private/Net, /usr/template/client/tftpboot, /usr/template/client/vm and /usr/template/client/Net.

Changing the Contents of a Determined Directory

If you want to alter the contents of a folder which is a link to a directory, you need to *virtualize* it. Select the folder and choose File | Virtualize Folder V.

Using Cut, Copy and Paste

To edit the tree you can use all items from the Edit menu. You can copy virtual folders, links to your filesystems and directories or files that are determined by this links. To paste you must select a virtual folder; the copied entries will be added as files or subdirectories to it.

Opening a File

To open a file, choose File | Open O or double click on its icon. To select a file in your WorkspaceManager choose File | Select in Workspace.

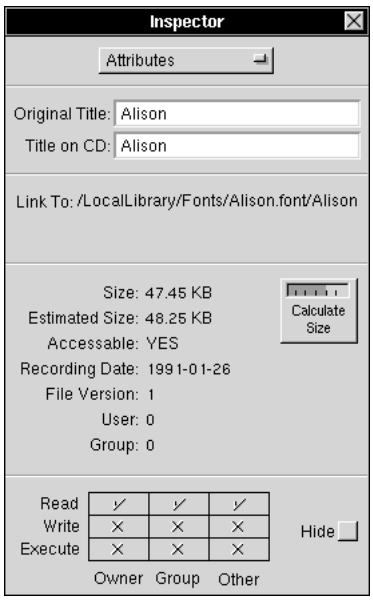
Checking the Tree

Tools | Check Tree C scans the whole directory tree and reports all files and folders that may cause errors.

Inspectors

Choose Tools | Inspector I to open the inspector.

Attributes



The attribute inspector displays the original title and the title used on the CD for the selected file or folder. The used title is based on the original title and depending on the data track format. Whenever you edit a title you will edit the original one. The used title is always processed by CDDesigner and cannot be altered directly.

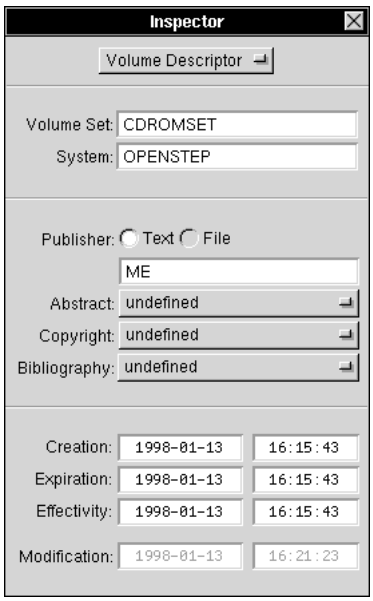
This inspector can also display the content of a selected link and the size of a file or directory. The size of a directory is the sum of the sizes of all files in it's whole subtree. Use the Clac Size button to read the whole tree and calculate the size of an directory.

ISO9660 based formats allow to make files and directories invisible. Choose the hide option for the entry that should not be visible. Some operating systems will show these files but will not allow to read their contents.

If the format is extended by Rock Ridge, the inspector shows additional attributes.

See also: *ISO9660* on page 33. *Rock Ridge* on page 35.

Volume Descriptor

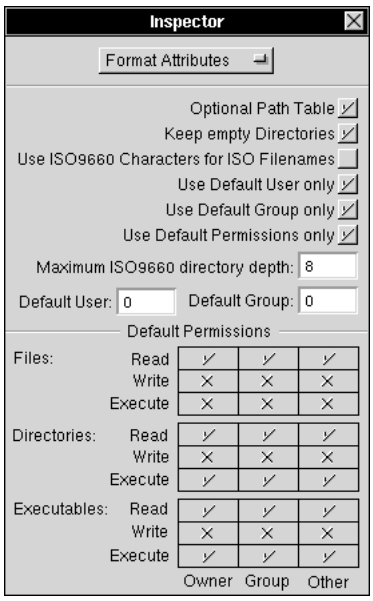


If the selected format is based on the ISO9660 specification, your may open the inspector with Command-2 to edit the Volume Descriptor.

The descriptor consists of text and file identifiers. The text identifiers (Volume, Volume Set and System) contain characters depending on the selected format. The file identifiers (Abstract, Copyright and Bibliography) are titles of files in the CD's root directory and need not to be defined. The Publisher can be a text or a file identifier.

The only field interpreted by all operating systems is the Volume. You can change the volume also by editing the title of the CD in the Data view.

Format Attributes



Select the data tab and open the attribute inspector (Command-3). All ISO9660 based formats allow to record an optional path table. This option should always be selected. You can also define that empty directories should be skipped but in general you can keep them. If the format is extended by Rock Ridge you can setup the default file attributes.

Use “Default User, Group and Permissions only” to force any file or directory to adapt the default values. Otherwise the attributes are taken from the original files, but the recording options are always disabled. As CDs are normally used by different systems you should use the default settings. Note: Files and directories having other values than these defaults may be invisible to NextStep/OpenStep.

The Audio Tab

Select the Audio tab .

To add audio tracks to your CD select a Sound in your WorkspaceManager and drag it to the documents window. Use the items of the Edit menu to cut, copy or paste an audio track.

To change the order of the tracks, select a single track and drag it to the new position.You can also read a CD and reorder, add or remove audio tracks. See *Reading and Copying a CD* on page 20. Audio tracks which were read from a CD cannot be cut or copied. Use Edit Delete to remove those audio tracks.

Open the attribute inspector (Command-1) to play a sound. Sounds located on a CD will be played via your sound device, or sound card.

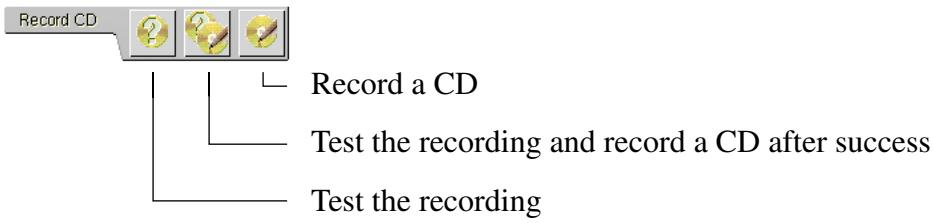
See also: *Audio Tracks* on page 30.

Recording a CD

Recording

To record the content of your document to a CD-R :

1) Hit one of the buttons on the top of the window.



2) Wait until the Workspace requests for a medium and insert a CD-R. If the inserted CD-R is not empty and not fixated (see Recording Parameters below) CDDesigner will automatically add a new session.

3) Do nothing until the CD-R is ejected or the CDDesigner reports any error.

> **Important**: Before removing any written file from your harddisc, insure that the written CD-R contains the file correctly. Therefore you may use FileMerge.app or the UNIX command “diff”.

Test Recording

“Test Recording” will switch off the laser while recording a CD-R. You will need to insert an empty CD-R to test the recording but no data will be written to it. Note: Some devices are not able to simulate the fixation, so fixating a written CD-R may fail even if the simulation succeeded.

“Test & Record CD” will simulate the process of recording. After a successful test the CD-R will be written. Therefore the device may open and close the tray between the simulation and the recording automatically.

Recording Options

Usually you will not have to set the recording options, because CDDesigner sets them for you while you are designing the CD. But in some cases you may want to set them directly to optimize the process of recording. Design your CD and select the recorder tab.

In the top of the window you can select one of the recorders which are installed in your local network. CDDesigner select the first one by default. The names of remote devices are displayed in an italic font

Record Mode

Depending on the used type of CD recorder, the recording mode can be set to Track-at-once (TAO) or Disk-at-once (DAO). As Disc-at-once allows to set the pauses between audio tracks, you will use this when recording a CD-DA and Track-at-once otherwise. CDDesigner selects DAO for CD-DA and TAO for CD-ROM and Mixed Mode CDs by default.

See also: *Recording Mode* on page 29.

Physical Verification

“Verify after recording” verifies the media physically after recording which takes a long time and is not supported by most devices. A successful verification does not guarantee the correctness of the CD-R.

Speed

The maximum speed depends on the content and on your system configuration. You should try low recording speeds first and increase when you got familiar with recording CD-Rs. If you record CDs on-the-fly, you should always select a low recording speed. CDDesigner selects the maximum recording speed by default.

Multisession

Multisession allows to record a CD-R several times until no more space is left. Choosing “Allow later session” will make the CD-R able to store further sessions later on. Choosing “Fixate CD” will close the medium and you won’t be able to record any further data.

Data- and Audio-Track Flow

Each recorder has an image cache to store the raw image to be written. The cache can be activated for data and audio track separately and will be needed if the data to be written cannot be sent to the device fast enough. If a track is cached once, the cached version will be used, whenever you record it again even if caching is disabled.

For example: You have set up the Data-CD’s content and start a test recording with caching enabled. The image will be built to the cache and the CDDesigner will test the recording of the cached track. After completion you start to record the CD. The image will not be built again but the cached track will be used.

Tracks are identified by name and modification date, the image will be built again whenever you change the document’s content.

Recording a CD on-the-fly is done by switching off the image cache. You have to test if your computer is fast enough to provide the data continuously. Note: Lots of small files will take more time to be processed than several large files.

Storing your private data in the cache is save because only the superuser is able to read it.

See also: *Image Cache* on page 37.

Swapping

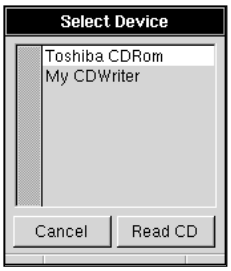
If your systems starts to swap memory, recording may fail. This happens if you build very large images on a machine with less RAM. In this case you should enable caching and start a test recording: Typically test recording will fail due to a buffer underrun.

To work around you should export the raw image of the document, terminate CDDesigner and start it again. Open the saved raw image and try test recording again. On success you can then record the CD.

Reading and Copying a CD

1) Choose

.
2) Select a device to read the CD.



3) Hit the Read button and insert a CD when the Workspace asks for it.
4) If the inserted CD is a Multisession CD, CDDesigner asks for the session to be opened.
5) Now you have a new document which can be written as usual. If your source device can read data with a multiple of the recording speed, you should switch off the cache to copy the CD directly.
6) Close the document's window to eject the CD.

If the source device is the same as the CD recorder you want to use, you will need to switch on the cache. The process of recording will copy the content of the CD to the cache, eject the CD and ask for an empty medium to be inserted. Then the data will be written to the CD-R and the document window will be closed.

Important: Copying CDs may be illegal. Some devices cause a system crash while reading audio tracks with NextStep/OpenStep (e.g. Apple, Sony and compatible). Use this function at your own risk and meet our homepage for an actual compatibility guide.

Import and export

Importing a raw image

CDDesigner detects files with the extension .raw and .rawimage as raw images. Select Document | Open... o and choose a file with one of this extensions. Use Document | Open Raw Image... to open a raw image with any file extension. In the current version imported rawimages cannot be altered anymore. You can only record them to a CD-R and open files of it by choosing File | Open O.

Exporting a raw image

Select Document | Export As... E and choose “Raw Image” as the export format. Note: This could last up to an hour depending on the size of the image.

Exporting audio tracks

Read a CD, select the tracks to be exported and choose Document | Export As... E . The track will be written as a NeXT soundfile with the extension .snd. Use the Shift and Alernate keys to select multiple audio tracks and to export them in a single process.

See also:*Reading and Copying a CD* on page 20.

Reference

Documents

Open

Document | Open... o opens an existing description of a CD as a document. The filename must have the extension .cdd and the document window title will display it.

Open Raw image

Document | Open Raw Image... opens an existing raw image. The file may have any extension. Currently the raw image must be an image of a CD-ROM or Mixed-Mode CD (Mode 1). Images of a CD-ROM/XA or a Photo CD may cause a recorded CD-R to be unusable as they are based on Mode 2.

See also: *Raw Image* on page 31. *CD Formats* on page 26.

Read CD

Disk | Read CD... R reads a CD and represents it in a document window. The window title will display the name of the device used to read the CD. The CD can be written to a CD-R, but the document cannot be saved. Closing the document window causes ejection of the CD.

See also: *Reading and Copying a CD* on page 20.

New

Document | New N creates a new description of a CD and represents it by a new document.

Save

Document | Save s saves the CD description represented by the current document window to the given filename. Documents that were generated by reading a CD or by importing a raw image cannot be saved.

Save As

Document | Save As... S requests for a new filename and saves the CD description represented by the current document window. The filename gets the extension .cdd. The title of the window will display the new filename. Documents that were generated by reading a CD or by importing a raw image cannot be saved.

Export

allows to save any content of the current document in special formats. This is used to export raw images and audio tracks separately.

Revert to Saved

reverts to the last saved version of the current document.

Close

Closing documents that were generated by reading a CD will cause ejection of the medium and release the device.

CD Formats

CD-DA

A CD-DA contains up to 99 audio tracks as specified in the Red Book in 16 bit wide - 44.1kHz - stereo format.

CD-ROM

A CD-ROM (defined in the Yellow Book) consists of a single data track written in Mode 1 which stores 2048 bytes of user data per block and 338 bytes of error correction.

Mixed Mode Disc

A Mixed Mode Disc consists of a single data track and multiple audio tracks. The data track is the first one and written in Mode 1. The maximum track count including the data track is 99.

CD-ROM XA

XA (defined in an extension of the Yellow Book) allows data and Adaptive Pulse Code Modulation (ADPCM) audio data to be put on the same track. Both are written in Mode 2 which sacrifices the error correction of Mode 1 in order to store 2386 bytes of user data per block. This mode is usually used for video and Photo-CDs where an error is less important than in a computer program.

CDDesigner cannot create CD-ROM XA currently, but it may be able to copy single session CDs of this formats if either the reader's and the recorder's driver support Mode 2. As rarely used CDDesigner will not support the recording of audio data in XA format.

Photo-CD

A Photo-CD stores pictures on CDs which can then be viewed with any Photo-CD player, CD-I player, CD-ROM XA player and 3DO player. Photo-CDs are based on the CD-ROM XA specifications and may make usage of multiple sessions in order to add pictures in several steps.

Currently CDDesigner is not able to read or record Photo-CDs, but they may be supported in future releases.

CD-I

A standard governed by the Green Book. It enables full screen/full motion video, sound and data to be supported on one disc. It was developed by Phillips for use with their CD-I console system - an appropriate card with ADPCM decoding is required for use with a PC.

As CD-Is contain special data for Phillips' console system, it is not supported by CDDesigner. Special software for creating CD-Is is available for Windows and MacOS.

CD-Bridge Disc

The CD-Bridge Disc specification defines a way to put additional information in a CD-ROM XA track in order to allow the track to be played on a CD-I player.

As CD-Bridge Discs contain special data for Phillips' console system, it is not supported by CDDesigner. Special software for creating CD-Bridge Discs is available for Windows and MacOS.

Multisession-CD

Published material is mastered at one time - the directory of the disc is therefore in one place only. Discs of this kind are known as single session. The ability to master and duplicate titles in-house and applications such as Photo-CD, means, that subsequent recording sessions are available on CD-ROM. This is known as multisession - such discs will contain more than one directory of information and data.

Running Nextstep/Openstep you need to use CDDesigner's "Read CD" function to access sessions other than the first one.

Technical Information

Subcode channel

As defined in the Red Book, each block of a CD contains additional informations in its subcode channel. Some of them are used for synchronization and the others may define the audio track channel count, a copy permission flag, the International Standard Recording Code (ISRC) and information about the way the track was recorded.

Lead In, Lead Out

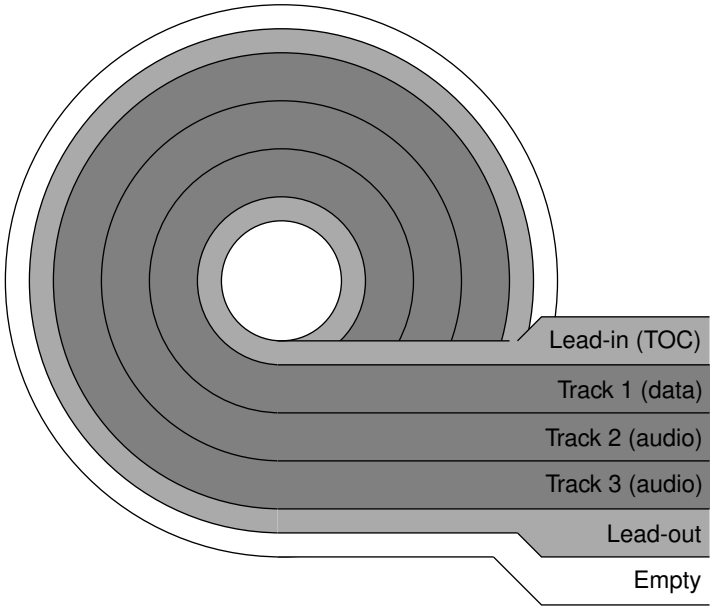
Each session is introduced by a lead-in and closes with a lead-out area. They are written automatically when closing a session or fixating a CD.

Table of Contents (TOC)

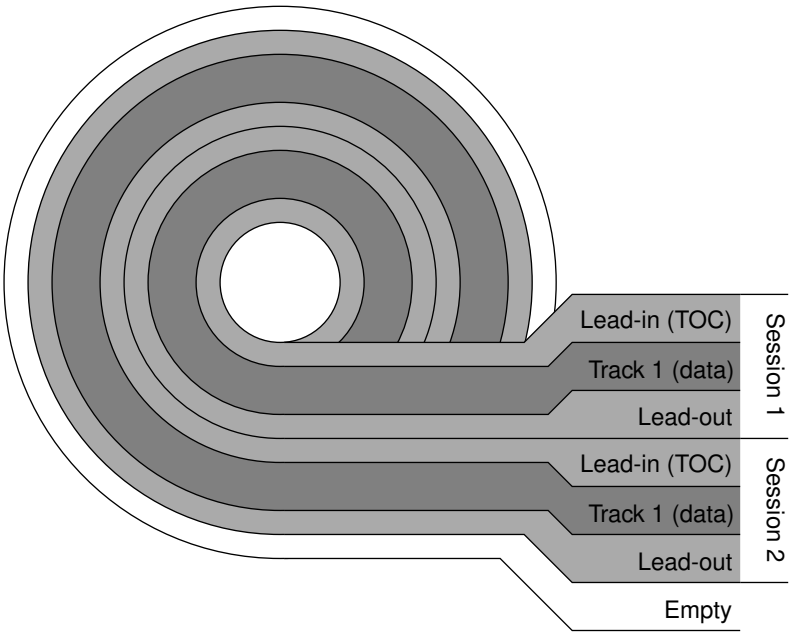
The table of contents is located in the lead-in area and holds information (like start sector and mode) about each track. This has nothing to do with the directory tree of a data track, these informations are included in the data track itself. CD-ROM devices or drivers, which cannot handle with multiple TOCs, will always show the first session.

Format Examples

Mixed Mode Disc, containing one data and two audio tracks:



Multisession-CD, two sessions each containing a single data track:



Recording Mode

Disc-at-once

Disc-at-once records the entire CD in one pass, possibly recording multiple tracks. The entire burn must complete without interruption, and no further information can be added. CDDesigner is responsible to record Lead-in and Lead-out. Further releases of CDDesigner will allow to add indexes to audio tracks.

Track-at-once

Track-at-once allows the records to be done in multiple passes. The disadvantage of track-at-once are pauses of two seconds added between any tracks. Some audio CD players will not play the second track after the first was completed, others will play the run-in and run-out blocks between tracks, resulting in slight but annoying clicks between tracks.

Fixation

Records the Lead-in and Lead-out to a CD written track-at-once. The kind of fixation determines if any further sessions may be written to the CD. If fixation fails the CD-R will become unusable.

Audio Tracks

Audio Tracks are displayed be the audio view, selected by choosing the

tab.

Formats

Currently audio tracks need to have two channels, 16-Bit wide linear samples and a sampling rate of 44.1 kHz. They may be in a raw format if they are located on a read CD or in NeXT's SND or Microsoft's WAVE format if they are located on a harddisc. If a WAVE file includes multiple sounds, only the first one is used.

Format conversions are processed in real-time while playing or recording a track.

Adding

Files with the extension .snd and .wav are added by drag'n'drop from the Workspace or pasting one of CDDesigner's tracks. A new track is always added to the end of the list of tracks.

Order

Audio tracks are written in the order displayed in the audio tab. The order is changed by selecting a track with the mouse and dragging it to the new position.

Cut, Copy, Paste, Delete

Cut, Copy, Paste and Delete are supported for any track with its source on a harddisc. Tracks located on a read CD cannot be copied,

is used to remove them.

Playing

The attribute inspector allows to play a track. This function plays the track via the local sound device or sound card and opens a panel to display the current state of progress. The Cancel button of this panel is used to stop playing.

Volume

The volume slider is available for tracks located on a harddisc. Increasing the volume may cause clippings while recording, so the written CD-R may become unusable. The volume is processed in real-time while playing or recording the track.

Data Tracks

Raw Image

A raw image is a file storing the content of a CD data track. This file includes the directory structure and the attributes and contents of all data track files. The raw image is exactly the data written to a CD-R track-at-once and can currently not be modified with CDDesigner.

See also: *Open Raw image* on page 24. *Read CD* on page 24.

Directory Tree

The Data tab displays the directory tree as it will appear on the written CD-R.

Filenames

Filenames are converted automatically to fit the selected data track format and are shown as they will be written to the CD-R. So any file or directory has an original title (that equals the filename on the harddisc or the name that was entered by the user) and the title that is used on the CD. The entry attribute inspector displays both titles.

See also: *Data Track Formats* on page 33.

Entries

Entry is the common term for either a file or a directory. Each entry has a size and an estimated size, where the estimated size includes the space for the directory tree. The estimated size of a directory is the sum of the space needed to organize its subtree on the CD plus sizes of all its files and subfiles.

Attributes and the name of an entry cannot be modified, if this entry is determined by a superior entry which is a link to a folder on the harddisc.

Virtual Folder

Virtual folders are located on the CD only and shown in a golden color. Their names and contents can be edited and they are used to give the CD a senseful structure without building the tree on the hard disk and without unnecessary copying of data.

Links

An entry referring to a file or folder on the hard disk is called a link. If a link refers to a folder, any subentries are determined by this entry and cannot be modified by the user. They are actualized when checking the tree, sizing the folder, exporting the raw image or recording a CD-R. Links are added by selecting the file or folder in the Workspace and dragging them to the CD's icon or a virtual folder's icon in the data tab's directory tree.

On a Unix system the following folders cannot be written to a CD: /private, /private/vm, /private/tftpboot, /Net, /private/Net, /usr/template/client/tftpboot, /usr/template/client/vm and /usr/template/client/Net. Adding a link to one of these folders makes the entry inaccessible.

Link Loops

If the selected format supports symbolic links, they will be used to handle link loops. In this case an entry which is a link to a superior folder will have a special icon:

Though CDDesigner does not display any subentries of this entry, the written CD or exported raw image will contain an endless link loop.

If the selected format does not support links, the raw image cannot be exported and CDs cannot be written.

Opening file

File | Open opens the selected file. This can also be done by double clicking the file in the data tab browser or by double clicking the files icon.

Selecting in Workspace

File | Select in Workspace selects the file in the Workspace's file viewer.

Cut, Copy, Paste, Delete

Any commands from the Edit can be used with a single or with a selection of files and folders. Edit | Paste adds the copied selection as subentries to the selected folder.

Data Track Format

Any data track is based on a data track format which effects and extends the capabilities of the tree in its special way. Most extensions are found in the entrie's and Volume Descriptor's attributes inspector.

See also: *Data Track Formats* on page 33.

Data Track Formats

ISO9660

ISO9660 is the most common format of data tracks on CDs. Many other formats extend the ISO9660 format.

Volume Descriptor

Any ISO9660 based Data Track Format defines a volume descriptor that consists of text and file identifiers. The text identifiers (Volume, Volume Set and System) contain characters depending on the selected format. The file identifiers (Abstract, Copyright and Bibliography) are titles of files in the CD's root directory and need not to be defined. The Publisher can be either a text or a file identifier.

Identifier	Content
Volume	The CD's title.
Volume Set	As sets of CDs are not readable by the most operating systems CDDesigner does not support them. Normally you will use the default value.
System	This field should identify the target system, but the most operating systems do not make use of it.
Publisher	This field should identify the user who specified the contents of the CD. Most operating systems do not make use of it.
Abstract	The title of a file in the CD's root directory containing an abstract of the CD's content. Most operating systems do not make use of it.
Copyright	The title of a file in the CD's root directory containing a copyright statement. Most operating systems do not make use of it.
Bibliography	The title of a file in the CD's root directory containing bibliographic records interpreted according to standards that are subject of an agreement between the originator and the recipient of the CD. Most operating systems do not make use of it.
Creation Date & Time	Shall specify the date and time of the day at which the content of the CD was created. CDDesigner sets a default value when a new document is created.
Expiration Date & Time	Shall specify the date and time of the day at which the information on the CD may be regarded as obsolete. Most operating systems do not make use of it.

Identifier	Content
Effective Date & Time	Shall specify the date and time of the day at which the CD's content may be used. Most operating systems do not make use of it.
Modification Date & Time	Specifies the date and time of the day at which the content of the CD was last modified. This field is automatically set by the CDDesigner whenever the directory tree is modified or the data tracks format is changed.

Filenames

ISO9660 Level 1 allows 8.3 characters per filename, Level 2 allows up to 32 characters. Both use filenames from the following set of characters:

0	1	2	3	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	_						

Any other characters are skipped and ß is transformed to ss.

As some operating systems accept non-ISO9660-conform characters, the user may decide to use any characters in ISO9660 filenames by switching off Use ISO9660 Character Set in the Volume Descriptor's Format Extensions inspector. Note that filenames which are added to the ISO9660 names, like the long filenames of Rockridge, are not affected by this option.

Directory depth

ISO9660 limits the depth of the directory tree to eight.

Optional Path Table

Any ISO9660 based data track may have an optional path table. The ISO9660 specification explains nothing about its need and usability. It is recommended to add the optional path table to every image. If there is any specific reason to skip it, the user may switch off Optional Path Table in the Volume Descriptor's Format Extensions inspector.

Empty Directories

CDDesigner can skip empty directories while recording a CD-R or exporting a raw image by switching off Keep empty Directories in the Volume Descriptor's Format Extensions inspector.

Hide Flag

Any entry may be hidden by setting the hide flag. Though CDDesigner still shows hidden entries and their contents, the entry may not be shown or its content may not be readable by the operating system reading the written CD-R.

Rock Ridge

Rock Ridge extends ISO9660 by long filenames and Unix-conform file attributes and allows an unlimited depth of the directory tree.

Filenames

Rock Ridge allows to use filenames up to 100 characters long and makes use of a wider set of characters:

0	1	2	3	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f	g
h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	.	_
-																				

It is important to realize that the long filenames are added to the ISO9660 based ones: If using a Rock Ridge based CD with an operating system that is not able to read Rock Ridge conform CD's, the user will see the ISO9660 conform filenames.

Directory depth

The directory depth is not limited, but accessing files at a depth greater than eight may be slower than accessing others. Operating systems which do not support Rockridge will only show the first eight levels.

File-Version

Currently the file version is always set to 1. Most operating systems do not interpret this field.

Dates

The creation and modification dates are adapted from the files and folders referring to. The creation and modification dates of a virtual folder are set when creating them.

Permissions

Unix-conform user and group ids and permissions to read, write, and execute files and folders are added to each entry.

Symbolic Links

Rock Ridge supports symbolic links, the directory tree is allowed to contain link loops.

See also: *Link Loops* on page 32.

NextStep Extension

This format is based on Rock Ridge and gives CDs the capabilities of NextStep/OpenStep filesystem.

Filenames

The length of filenames is still limited to 100 but the set of usable characters is not limited, except of ligatures (like fi and fl) and the German ß which is still translated to ss.

Permissions

Permissions are only allowed to be set in a way NextStep/OpenStep can handle.

Physical Structure

Inside of the data track CDDesigner places the directory structure to the fastest area of the CD, so navigating through the CD's content will be as fast as possible.

Image Cache

Each recorder has an image cache which is simply a path leading to harddisc of the local host. Two or more devices could refer to the same path. CDDesigner prepares a cached track by using a file in this folder. If the disc becomes full, old and unused files will be removed automatically.

The superuser may give any user the right to remove these files in order to get more free disk space on the disc, but this should be handled with care: If a user removes a file currently used by CDDesigner the system may crash!

Note: Even if anyone is able to remove these files, only the superuser is allowed to read the contents of them.

Devices

Reader

CDDesigner calls every device that can read CDs a “reader”. This are CDROM drives and CD recorders.

Speed

Some devices do not read the tracks correctly at maximum speed. So the maximum reading speed can be lowered down to 1x or 2x. This should be done if a read audio track clicks while playing: e.g. HP, Phillips and compatible devices should be forced to read audio tracks with double speed.

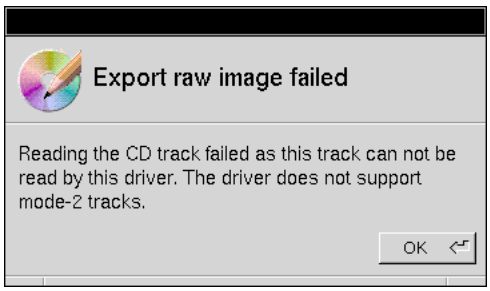
The set speed is ignored if the device does not support it. E.g. most devices by Toshiba read audio tracks always with single speed.

Swap Audio

As some devices swap the LSBs and MSBs of audio data while reading, CDDesigner may swap them again to get valid sound. If playing a sound located on a CD causes noise, this flag should be set.

Mode 1, Mode 2

Every reader device supports the reading of Mode 1 tracks used by CD-ROM and Mixed Mode Discs. Though most CD-ROM drives also support the reading of Mode 2 tracks (used by XA and Photo-CDs), some of CDDesigner’s drivers do not support reading them currently. This will lead to the following panel, if the users wants to read a Mode 2 track:



See also: *CD Formats* on page 26.

NetInfo properties

The configuration panel is a graphical frontend to the NetInfo database, like UserManager.app or PrintManager.app. It creates a “readers” and a “recorders” folder in the NetInfo domain, containing descriptions and configurations of the devices. For advanced users it may be interesting to configure CDDesigner manually.

Property	Description	Value Example
name	The name of the device defined by the user.	Toshiba
objc_classname	The name of the class describing the device.	SCSICDRomDescription
servername	The name of the distributed object registered by the daemon serving the device.	_ZG_SCSI_Daemon_
note	A note defined by the user.	Data 2x Audio1x
sharedTo	The NetInfo domain to which the device is exported.	/
sharedAs	The remote or public name of the device defined by the user.	Remote Toshiba
host	The name of the host to which the device is connected.	localhost
server	The name of the daemon serving the device.	gzdevd
vendor	The vendor of the device. Used by the the daemon to locate the device if the SCSI configuration changes.	TOSHIBA
product	The product identification of the device. Used by the daemon to locate the device if the SCSI configuration changes.	CD-ROM XM-3401TA
revision	The revision of the device or of its firmware. Used by the daemon to locate the device if the SCSI configuration changes.	3593
device	The raw device file used to access the device. This does not need to be correct if not two identical devices are connected to a single host.	/dev/rsd2h

Property	Description	Value Example
type	The type or driver for the device.	SCSICDRomToshiba
scsi_id	The SCSI-ID of the device. This does not need to be correct if not two identical devices are connected to a single host.	3
scsi_lun	The SCSI-LUN. Currently always set to zero.	0
scsi_type	The SCSI-TYPE. Does not need to be correct.	5
scsi_removeable	Indicates to prevent the ejection of a medium while reading or recording. Sould not be altered.	YES
interface	The interface to which the device is connected. Currently only “scsi” is supported.	scsi
lead_out	The lead out code to read the TOC of a CD. Most devices use 170, but several, like NECs, need 162.	170
swap_audio_read	Indicates to swap the LSB and MSM while reading audio tracks.	YES
read_data_speed	Limits the reading of data tracks to this speed. The value is an integer and a value of -1 indicates to use the device’s maximum speed.	-1
read_audio_speed	Limits the reading of audio tracks to this speed. The value is an integer and value of -1 indicates to use the device’s maximum speed.	-1
reads_digital_audio	Indicates if the device supports digital reading of audio tracks.	YES

Recorder

CDDesigner calls every device that can record CDs a “recorder“. As all supported recorders can read CDs they are also “readers”.

Swap Audio

As some devices swap the LSBs and MSBs of audio data while recording, CDDesigner may swap them again to get valid sounds on the CD. If playing CDs (e.g. with a CD-Player) causes some noise, this flag should be set.

Mode 1, Mode 2

Every recorder device supports recording of Mode 1 tracks used by CD-ROM and Mixed Mode Discs. Though most CD recorders also support recording of Mode 2 tracks (used by XA and Photo-CDs), some of CDDesigner's drivers do not support recording them currently.

Packet Writing

Packet writing will be supported in future releases of CDDesigner's drivers.

NetInfo properties

As all supported recorders are also readers, all reader's NetInfo properties are adapted. Additionally a recorder defines the following properties:

Property	Description	Value Example
swap_audio_write	Indicates to swap the LSB and MSM while recording audio tracks.	NO
cache	The path in which tracks are located that are cached.	/Athene
writing_speeds	A set of integers describing the supported recording speeds.	1 2
supports_test_writing	Indicates that the device and the driver support test recording.	YES
supports_disc_at_once_writing	Indicates that the device and the driver support recording disc-at-once.	NO
supports_track_at_once_writing	Indicates that the device and the driver support recording track-at-once.	YES
supports_verify	Indicates that the device supports the verification of a medium.	YES
supports_packet_writing	Indicates that the device and the driver support packet recording.	NO
supports_multi_session_tao	Indicates that the device supports record multi session CDs track at once.	YES
supports_multi_session_dao	Indicates that the device supports recording multi session CDs disc at once.	YES
writes_audio_pauses_tao	Indicates that the device is able to record user defined pauses track at once.	YES
writes_audio_pauses_dao	Indicates that the device is able to record user defined pauses disc at once.	YES

Property	Description	Value Example
writes_four_channel_audio_tao	Indicates that the device is able to record audio tracks with four channels track at once.	YES
writes_four_channel_audio_dao	Indicates that the device is able to record audio tracks with four channels disc at once.	YES
writes_copy_bit_tao	Indicates that the copy protection bit can be recorded track at once.	YES
writes_copy_bit_dao	Indicates that the copy protection bit can be recorded disc at once.	YES
writes_audio_indeces_tao	Indicates that subindeces can be recorded track at once.	YES
writes_audio_indeces_dao	Indicates that subindeces can be recorded disc at once.	YES
writes_audio_preemphasized_tao	Indicates that the preemphasize flag can be recorded track at once.	YES
writes_audio_preemphasized_dao	Indicates that the preemphasize flag can be recorded disc at once.	YES
maximum_cache_size	The maximum size of the image cache in MByte. If the value is -1 the cache uses the whole free disc space. Otherwise this value must be at least 750 MByte.	750
hp_write_after_test_ workaround	Indicates to eject and reload the medium between testing and recording, if the user choosed “Test before recording”	YES

See also: *NetInfo properties* on page 39.

Appendices

Troubleshooting

Debugging CDDesigner

CDDesigner's daemon reports detailed information to the syslogd. To make them visible add the following line to your /etc/syslog.conf :

daemon.info /dev/console

You will get messages from CDDesigner into your console. Choose "Console" from the "Tools" menu in your Workspace to display them.

CDDesigner cannot connect to the daemon

Reason: The daemon was not installed.

Solution: Choose

to configure the local host.

Reason: The daemon is initializing.

Solution: Try again.

Reason: The daemon was not started.

Solution 1: The licence has expired. Apply for a new licence. See *Licensing CDDesigner* on page 9.

Solution 2: The disk on which the CDDeginer.app is located needs to be accessable while booting. Make sure that the required disk is mounted by an entry in /etc/fstab. See UNIX man-pages for further information.

Reason: The recoder is connected to a host running OpenStep 4.X and CDDesigner was started an a host running NextStep 3.X. CDDesigner reports a NSNXProxy exception.

Solution: All hosts need to run either on NextStep or on OpenStep. A mixture of both is not allowed.

CDDesigner hangs while connecting to the daemon

Reason: The recoder is connected to a host running NextStep 3.X and CDDesigner was started on a host running OpenStep 4.X. CDDesigner hangs directly after hitting the "Record" or "Read" button.

Solution: All hosts need to run either on NextStep or on OpenStep. A mixture of both is not allowed. CDDesigner will terminate after a while, but you may kill the hanging CDDesigner from the Workspace.

Building of an image fails

Reason:	There is not enough space to build the image.
Solution 1:	Make sure that the caches path leads to a disk with at least 750 MByte of disk space available.
Solution 2:	The cache is filled up with data that cannot be removed. Log in as root and remove all files in the cache's directory ending in ...REC manually.
Solution 3:	Try to record the CD without using the image cache. See *Data- and Audio-Track Flow* on page 18.

Reason:	Some files are missing or invalid.
Solution1:	Check your directory tree for those files. See *Checking the Tree* on page 14.
Solution 2:	Select Ignore in the Volume Descriptors Attribute inspector.

Recording fails

Reason: Your recorder is not configured correctly.

Solution: Configure your recorder. You won't need to restart your computer after resetting the configuration. See *Configuring the local host* on page 6.

Reason: The recording speed was to high. Typically this causes a buffer underrun but CDDesigner may also report something like Write (6 bytes) failed.

Solution 1: Select a lower speed.

Solution 2: Switch on the image cache.

Reason: Your SCSI controller is not configured correctly.

Solution: Please send us a mail with your configuration. E.g.: Intel, Adpatec 2940, HP 4020. Meet our web site to get a list of tested and new configurations. Try to alter the controllers parameters for your recorder. E.g.: Disable *Disconnection enabled* and *Multiple Lun Support*.

Reason: The CD-R was already written or is defect.

Solution: Try a new CD-R and choose the option Test Write Only to eliminate this problem.

Reason: Your system started to swap memory while recording the CD-R.

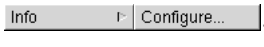
Solution: This happens if you build very large images on a machine with less RAM. In this case you should enable caching and start a test recording: Typically test recording will fail due to a buffer underrun. Now you should save the document, terminate CDDesigner and start it again. Open the saved document and try test recording again. On success you can then record the CD.

Reason: The size of the CD-Rs data track was not large enough.

Solution: Please try to write more data. The size should be greater than 2 MBytes.

Incomprehensible Sounds on an Audio CD

Reason: Your recorder is not configured correctly.

Solution: Log in as ROOT. Start the CDDesigner and choose 

. Select the local entry for your recorder and press Modify. Change the Write flag to swap the audio data while writing and press OK to make the configuration available. You won't need to restart your computer, just try again to write an Audio-CD. See *Types* on page 7.

The CD does not contain all files

Reason: You do not have read access to some files.

Solution 1: Check the directory tree. See *Checking the Tree* on page 14.

The Workspace does not ask for a medium

Reason: The Workspace will not mount CDs anymore. After choosing the “Write CD” button CDDesigner reports that no medium was detected.

Solution: Insert the medium, wait to make sure that the Workspace does not eject it and choose the “Write CD” button.

A device does not eject the medium

Reason: The device is not configured correctly or an unknown error occured.

Solution 1: Log in as ROOT and press the Emergency button in the configuration panel. Restart CDDesigner and choose

. Now you can eject the CD by closing the window.

Solution 2: Configure your recorder. See *Configuring the local host* on page 6.

CDDesigner terminates

Reason: Any unkown error has occurred. Normally CDDesigner displays the reason. Please report any of these crashes to us. Thanks.

Solution: Restart the application.

The Workspace asks for a medium while ejecting

Reason: An error of the driver.

Solution: Select “Cancel” (probably several times)

The system crashes while reading an audio track

Reason: Some devices cannot read protected audio tracks.

Solution: None. Meet our homepage for an actual compatibility guide.

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