Adaptec Toast™

User Manual

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Manual and Software Made in USA.

Contents

Part 1:
Introduction and Basics

Chapter 1: Introduction

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About the Software

Thank you for purchasing Toast 3.5, the world's leading CD mastering software for the Macintosh. Toast is loaded with powerful features that will make your work easier. To get the most out of your new software, please take some time to review this manual. If you encounter any problems while setting up or using Toast, help is available by telephone or e-mail (see below for details.)

Toast lets you create CDs in many popular formats:

• **Mac Files & Folders**, which lets you easily create an HFS CD containing any files or folders you choose.

• **Mac Volume**, which is used to copy an entire volume or partition to a CD in HFS format.

• **ISO 9660**, for making CDs which are compatible with a wide range of systems, including DOS, Windows, Unix, Macintosh and more. Now includes Joliet support for Windows 95 and WindowsNT.

• **Mac/ISO Hybrid**, combines the benefits HFS and ISO on a single disc. Toast even lets you define "shared" data to save disc space.

• **Audio CD** for creating your own audio CDs from existing CDs or from standard sound files which can be played in any standard CD player.

• **CD-i** for writing pre-authored CD-i images to disc.

• **Enhanced Music CD** (CD EXTRA) format that combines audio tracks and data.

• **Video CD**, creates CDs which can be played by Video CD or CD-i players.

• **SCSI Copy** for making a direct copy of a hard drive or CD.

• **Disc Image** format allows you to write previously created disc images to disc (such images can be created with Toast, or by other applications.)

• **Multitrack CD-ROM XA** for writing existing XA tracks to disc.

• **Mixed Mode**, combines data in HFS, ISO or any other format and audio tracks.

Each feature and function of Toast is covered in detail in this manual. You may want to give special attention to these features:

• Drag & Drop

• Disc Images – Chapter 15 "The File Menu"

• Temporary Partitions – Chapter 15 "The Utilities Menu"

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- Optimize on-the-fly – Chapter 16 "The Mac Volume Format"

- Mounting Disc Images – Chapter 15 "The Utilities Menu"

- Saving virtual images – Chapter 15 "The File Menu"

- Check Speed – Chapter 17

- Simulation Mode – Chapter 17

- AppleScript – Chapter 20

- Verification – Chapter 17

- Compare – Chapter 15 "The Utilities Menu"

- Autoloaders – Chapter 15 "The Utilities Menu"

- Shared data on hybrid discs – Chapter 6

New in version 3.5

In addition to the major enhancements introduced in version 3.0, Toast 3.5 adds several important new features based on user feedback:

- **Toast's Greatest Hits** - Allows you to easily create your own compilation audio discs by combining your favorite tracks from your CDs. Tracks can be copied directly from audio discs without having to save them on your hard drive.*[1]

- **Audio Extraction**- Save tracks from audio discs as standard AIFF sound files on your hard drive.[1]

- Joliet support in ISO 9660 format.

- Support for Rewriteable drives.

requires SCSI Manager 4.3

[1] requires a CD-ROM drive which supports audio extraction

Updates

Adaptec is committed to continuous improvement of all our products. We occasionally release updates to our software to incorporate support for new recorders and to correct any reported bugs. These updaters are available directly from our web site at **http://www.adaptec.com**

Registration

To qualify for technical support and to insure that you receive notification of new versions, please mail the registration card which came with the software.

About the Manual

The manual is divided into 4 parts:

- Introduction & Basics, which covers installation of the software.

- Writing CDs in different formats, which gives step-by-step instructions for writing CDs in each of the supported formats.

- Reference, which covers every format and menu command in detail.

- Frequently Asked Questions, which answers common questions and provides tips for troubleshooting problems.

Installing the Software

Run the Installation Program

The Toast installation disc includes installers in several languages. Each installer is contained in its own folder. Insert the Toast disc in your CD-ROM drive, locate and open the appropriate language folder and double-click the TOAST INSTALLER within. Follow the on-screen instructions to install Toast on your hard drive.

➤ Note Toast is a "FAT" binary, so the same application runs on either Power Macintoshes or 68K Macintoshes.

About Toast CD Reader Extension

The *Toast CD Reader* extension will automatically be installed in your Extensions folder. It allows you to use your CD recorder as a CD reader.

Note: Toast CD Reader is not required for writing CDs.

Running the Software

Start Toast by double-clicking its icon.

The first time you run Toast, you will need to personalize the software.

After you have entered the personalization information, the main window will appear.

The main functions of Toast are all easily accessible from the main window.
• The upper part of the window gives information about the CD format and any data which you have selected. This information includes how much data is selected and the total running time for the selected data.
• The lower part shows information related to your CD recorder, including SCSI ID and recorder brand and model.
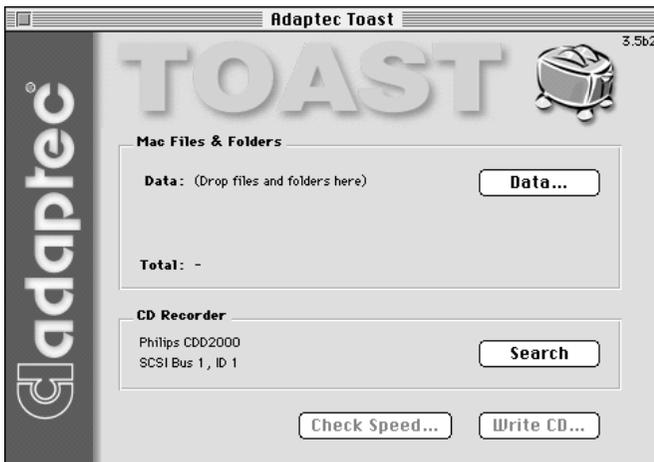
Chapter 2: CD Terminology and Background

About CDs

A CD (compact disc) is 1.2 mm thick and has a diameter of 8 or 12 cm. Its data capacity is approximately 650 MB for 74-minutes discs and 550 MB for 63-minutes discs. The exact capacity varies from one brand of media to another.

The access time and data-transfer rate of a CD is typically much slower than a hard disk, although technological improvements have resulted in CD-ROM readers that read up to 8 times faster than the original single-speed drives.

The recordable part of a disc consists of (at least) three blocks:

1) **Lead-In block:** holds the directory information; located on the innermost 4 mm of the disc's recording surface.

2) **Program block:** holds the data or audio tracks and fills the next 33 mm of the disc.

3) **Lead-Out block:** marks the end of the CD and fills the external 1 mm.

A CD is divided into sectors. The actual available size for data is 2352 bytes for each sector.

Different CD formats use that 2352 bytes in different ways. For example, an audio-CD uses all 2352 bytes for audio data, while data formats need several bytes for error detection and correction.

Each sector of a CD is again divided into logical blocks of 512, 1024 or 2048 bytes. The block sizes are part of the definition for each CD format.

There are 5 different types of sectors:

Type 1: Red-Book Sector or Audio Sector

2352 Audio Sample Bytes

Type 2: Yellow-Book Data Sector Mode 1

Sync 12	Header 4	Data 2048	Error correction 288

Type 3: Yellow-Book Data Sector Mode 2

Sync 12	Header 4	Data 2336

Type 4: CD-ROM XA and Green-Book Data Sector Mode 2-Form 1

Sync 12	Header 4	Subheader 8	Data 2048	EC 280

Type 5: CD-ROM XA and Green-Book Data Sector Mode 2-Form 2

Sync 12	Header 4	Subheader 8	Data 2324	EC 4

Type 1 are audio sectors; they only contain audio samples (1 Sample = 4 bytes).

Type 2 to 5 are data sectors which are used to store computer data (types 2 and 4) or compressed audio and video data (type 5). (Type 3 is very rarely used.)

The standard recordable discs (12 cm of diameter) can hold 63 or 74 minutes of data. The capacity of a CD is measured in time (minutes:seconds:frames - 1 frame = 1 sector) rather than megabytes since CDs were originally conceived to only store audio data.

The data for Audio CDs is 16 bit/44.1 kHz, stereo, i.e. each audio sample occupies 4 bytes (16 bits = 2 bytes per channel) and one second of audio contains 44,100 samples. Since an audio sector (type 1; 2352 bytes/sector) only contains audio samples: 2352/4 = 588 samples/sector. One second contains 75 sectors: 44.100/588 = 75 sectors/second. Therefore a 74 min. CD-R contains 333,000 sectors (4,440 * 75).

The number of megabytes a CD can hold depends on on the type of sectors used on the disc:

• If only type 1 sectors are used, these 333,000 sectors correspond to approx. 747 MB of audio data (333,000 * 2352 bytes).

• If types 2 or 4 are used they correspond to approx. 650 MB of data (333,000*2048 bytes).

If a disc is read with a standard, single speed CD-ROM drive 150 kilobytes of data are read per second (75 sectors * 2048 bytes in one second).

Terminology

AIFF

"Audio Interchange File Format". Created by Apple as a standard file format for saving sound files of any type.

Audio Sectors

Audio sectors are made up of the sound data you hear plus error correction data. Audio sectors cannot be read with a standard CD-ROM drive. Many CD-ROM drives do however offer the ability to convert audio data to computer data. (see previous section "About CDs").

Audio Tracks

Audio tracks are simply a collection of **audio sectors**. These tracks are playable on standard audio-CD-players. For the audio-CD players to be able to recognize and play the tracks, the tracks must always be in the FIRST **session** on the CD.

Blue Book

The Blue Book specifies the CD EXTRA standard for interactive CDs. A CD EXTRA (also known as **Enhanced CD**) is a multisession CD which contains audio tracks in its first session followed by a data track in the second session.

CD

A CD (Compact Disc) consists of up to approx. 333,000 sectors. A CD can be recorded in one of two ways with Toast: **track-at-once** or **disc-at-once**.

CD Extra - see Enhanced Music CD

CD-i

CD-i (Compact Disc Interactive) is a computer system developed by Philips. It is able to read discs in the following formats: CD-i, **Video CD** and Photo CD. A disc in CD-i format consists of one CD-i track with mode 2 sectors (types 4 and 5, see previous section "About CDs"). A CD-i is specified in the "**green book**". Opposed to other CD-ROM XA discs, a CD-i track has no entry in the **TOC**.

CD-Recordable (CD-R)

CD recordables are special compact discs which can record data by using a special laser that "burns" microscopic holes in the recording layer. These pits can then be read by standard CD readers. Recordable CDs are somewhat more fragile than standard CDs, so care should be taken in their storage and handling. The label side is particularly delicate.

CD-ROM Tracks

CD-ROM tracks are made up of mode1 sectors (type 2, see previous section "About CDs") and are used for many file systems such as **HFS**, **ISO 9660** and others.

Disc-At-Once

Disc-at-once is a method of recording CDs whereby the entire CD is recorded in one pass without turning off the laser. The advantages of disc-at-once are two fold:

1. No run-out sectors are generated which means that the pause between each track can be made any length (songs can actually run together).

2. If you are creating audio CDs to be commercially reproduced, it is normally necessary to record them in disc-at-once mode as run-out sectors will often be interpreted as irrecoverable errors. Not all CD-recorders can record in disc-at-once mode.

Disc Images

*   they contain all needed data to create a CD (as opposed to virtual images which only contain references to the data).
*   most disc images can be mounted to check contents and functionality (Video CD disc images cannot be mounted).
*   mounted disc images appear just like any other volume on the desktop.
*   if the disc image was created from a Mac format ("Mac Files & Folders" or "Mac Volume"), the contents can be modified after mounting (all other disc images appear as a write-protected volumes)

Enhanced Music CD / CD Extra

CD Extra is the new standard for interactive albums defined in the "blue book". These discs consist of two sessions. The first session consists of pure audio tracks, the second session consists of a data track in a restricted format. If a CD Extra is inserted into an audio CD player only the audio tracks are visible, the data session cannot be played.

Not all discs containing an audio session and an additional data session are CD Extras! The data tracks has to contain special information such as MPEG still pictures, etc. Special software is needed to create a CD Extra file structure or a **QuAC file**.

Green Book

The Green Book describes the details of the CD-i format (Compact Disc Interactive).

HFS

Hierarchical File System. HFS is the standard Macintosh file system. Because of the Mac's ability to use long file names and the unique data fork/resource fork structure of Mac files, HFS is not conformant to **ISO** Standard. On a CD recorded in HFS format, each session is represented as a separate **volume** on the desktop.

Both "Mac Files & Folders" and "Mac Volume" formats create CDs in the HFS format.

Index / Index-Point

Every sector contains an index which is a number between 0 and 99. Index 0 and 1 have special meanings: 0 indicates a **pause** sector and 1 the beginning of the data in a track.

ISO 9660

ISO 9660 format is a standard for cross-platform CD-ROMs. Discs created in this format can be read by many different operating systems, including Mac, Windows, DOS, UNIX, etc.

However, since ISO 9660 does not support long file names, custom icons or saved directory settings (i.e. "view by Icon"), it is less than ideal for discs intended only for Macintosh users.

ISRC-Code

The ISRC-Code holds the "serial number" of each track in a standardized format (as prescribed by the Red Book.). ISRC codes cannot be set in Toast, Toast CD-DA has to be used to define these codes.

Media Catalog Number

The Media Catalog Number (MCN) is a unique identification number for the CD (UPC/EAN Bar-Code). It is issued centrally by the EAN authority and consists of a series of 13 consecutive digits. The MCN can only be defined in Toast CD-DA.

Mixed Mode CD

A mixed mode CD consists of one data track and several audio tracks. Data and audio is written in one session. The data track is always placed before the audio tracks on the disc and there is no way to change this order.

The Mixed Mode format has generally been superseded by the audio/data **Multisession** format where the first session consists of audio tracks and the second session consists of data (**CD Extra** or second session in **HFS**, **ISO 9660** XA, Mac/ISO Hybrid XA format).

MPEG

MPEG is a standardized compression method for audio and video data. Because of its very high compression rates, MPEG makes it possible to play full screen/full motion video from a CD. MPEG tracks consist entirely of mode2 form2 sectors and are mostly found on **Video CD**s and **CD-i** discs.

Multisession

A multisession CD consists of multiple sessions, each recorded at a different time. Each of the sessions are linked together in such a way that only one logical device appears when the CD is mounted. Not all CD-recorders can record this type of CD and not all CD-ROM drives can read them.

Multivolume

A multivolume CD consists of multiple sessions, each recorded at a different time. Each of the sessions are completely independent of one another so that when the CD is mounted, each session appears as an individual logical volume. Not all CD-recorders can record this type of CD and not all CD-ROM drives can read them. NOTE: **HFS** CDs can only be multivolume, not multisession.

Orange Book

The Orange Book is the name of the standard developed by Sony and Philips for recordable CDs (CD-Rs). Part II of the Orange Book describes the structure of an empty CD-R and the recording procedure on a physical level.

Pause

A data CD which was recorded in **track-at-once mode** contains 150 sectors (2 seconds) of pause and 2 **run-out sectors** between each track.

On a **mixed-mode CD** (data + audio) written in track-at-once mode the gap equals 377 sectors: 375 of pause and 2 run-out sectors.

A CD with multiple **audio tracks** written in track-at-once mode has gaps of 150 sectors pause and 2 run-out sectors. CDs which where recorded in **disc-at-once mode** do not have a fixed number of sectors between tracks.

Q-Codes

Q-Codes contain extra information about sectors such as the **ISRC code**, the **Media Catalog Number** and the **indices**.

QuAC File

In 1995 Apple introduced the **Qu**ickTime **A**udio **C**ontainable standard for documents that contain information for music CDs as well as pictures and optional interactive controls. QuAC files can be created with the "Apple Interactive Music Toolkit™" (AIMT).

Red Book

The Red Book is the original CD-DA (Compact Disc Digital Audio) standard developed by Sony and Philips. The Red Book defines the format in which an audio CD must be recorded so that an audio CD-player can play it. It also specifies what a CD-player must do to play audio CDs correctly. A CD recorded in accordance with the Red Book standard will be playable in every CD-player.

Run-Out Sectors

Run-out sectors are created due to the fact that the write laser beam cannot be turned off immediately upon termination of data recording. Consequently, 2 sectors are allocated to be "wasted" as the laser shuts down.

Scrambling

Data on a CD is scrambled (the bits of data are not recorded one after another in sequential order; the data is mixed up in a predefined pattern.) The recorder scrambles the data while writing and the CD player descrambles them when reading.

Session

A session is a collection of one or more tracks. Each recording procedure generates a session that contains all the tracks recorded at that time. A CD recorded in multiple recording sessions is known as a **multisession** CD.

TOC

The TOC (table-of-contents) contains a list of the contents of a CD. The TOC contains an entry for each session and each track which lists the **index** 1 of each track (except **CD-i** tracks which have no entry in the TOC). The end or length of the track or session is not recorded in the TOC.

Track

The track is the smallest logical unit on a CD. A track is a minimum of 600 sectors in length and a CD can contain up to 99 tracks. There are three types of tracks: **audio tracks**, **CD-ROM tracks** and **XA/CD-i tracks**. Each track must be preceded by 150 empty sectors.
A CD recorded in **disc-at-once mode** requires only the 150 sectors before track 1.

Track-At-Once

The track-at-once mode records each track of a CD individually with 150 empty sectors immediately preceding it. **Run-out sectors** are created at the end of each track.

Video CD

VIDEO CD format is used to record full-motion video or movies on a CD. Playing a Video CD requires special equipment, including an MPEG decoding system.

Use the Video CD format, if you want to write a "**white book**" compatible Video CD that can be played on Video CD and CD-i players. A "Video CD" track must always be placed in the first session of a disc.

White Book

The White Book describes the data format of a **Video CD**.

XA / CD-i Tracks

These tracks only contain mode2 sectors and are used for **ISO 9660** XA CDs, **CD-is**, **Video CDs** and Photo CDs.

Yellow Book

The Yellow Book is a document that specifies all parameters for CD-ROMs. The adherence to these parameters guarantees that the CD can be used on all CD-ROM drives. The Yellow Book does not however specify the data structures.

A Toaster's Checklist

Here are some hints for making your CD mastering work as successful as possible:

- Make sure your recorder is connected properly, using as short a cable as possible.

- Verify that your SCSI chain is correctly terminated.

- Keep the entire SCSI chain as short as possible.

- If you encounter speed problems, temporarily remove all unneeded SCSI devices (*particularly scanners and SyQuest drives*)

- Disable all but essential extensions.

- Check the data transfer rate before writing ("Check Speed", chapter 17).

- Allocate most of your unused RAM to the RAM Cache (**Preferences** from the **Edit** menu).

- Before writing with a new system configuration or when writing in a format for the first time, try writing in *Simulation Mode* first (see chapter 17).

The Optimal System Configuration

There are several factors that effect the hardware requirements for CD recording. In general, if you want to write at higher speed (2x, 4x, 6x, etc) you will need a faster computer and a faster hard drive.

We recommend using a Macintosh with 68040 processor or Power Mac with at least 16 MB of free RAM. (*More RAM can help alleviate data transfer irregularities.*)

Due to the limited SCSI performance of PowerBook computers, they are not capable of writing CDs at high speed.

Several of Toast's features requires SCSI Manager 4.3. Macintoshes which supports the SCSI Manager 4.3 are capable of significantly higher transfer rates.

You can see if your Macintosh supports SCSI Manager 4.3 by running Toast and looking at the way your recorder is identified in main window. If "Bus x ID y" is displayed, your Macintosh supports the SCSI Manager 4.3, if only the SCSI ID is displayed (no Bus), it does not.

NOTE: 68040 and PowerPC Macintoshes support SCSI Manager 4.3. **No PowerBooks support SCSI Manager 4.3.**

Toast requires System 7.0 or above (we recommend using at least System 7.5).

The extensions "Drag & Drop Manager" and "Thread Manager" have to be installed when they are not part of the system (like in System 7.5.x). If they are not installed, they will be added automatically during the installation of Toast. The "Drag & Drop Manager" requires System 7.1. With System 7.0 you will not be able to drag any items onto the Toast window; data can only be selected using the dialog boxes.

Steps to Writing a CD

Writing a CD with Toast consists of four basic steps:

• choosing a CD format,

• selecting the desired data,

• verifying that you have sufficient data transfer speed,

• and clicking the **Write CD…** button.

In many cases you can simply drag the data you want from the Finder onto the Toast window to select it. Toast offers many tools for refining your data selection, and for creating complex CDs in just a few simple steps. For more information, read the section on each format later in this manual.

IMPORTANT NOTE:

Writing CDs requires a significant amount of computing power. To maximize your success, we recommend turning off all but essential extensions and control panels when writing CDs. What is "essential" will vary depending on your application, but generally you can run with ALL extensions off, except as noted below:

• if you will be copying directly from another CD-ROM drive, you will need to run the driver software for that CD-ROM drive (for example, an Apple CD-ROM drive uses two extensions: APPLE CD-ROM and FOREIGN FILE ACCESS).

• if you will be copying from a network volume, you will need your networking drivers. These may include APPLESHARE, OPEN TRANSPORT, NETWORK, APPLETALK, TCP/IP, among others.

In addition, to maximize your data transfer rates, you may want to disconnect any extra SCSI devices. SyQuest drives and scanners in particular have been known to slow down the SCSI chain (see chapter 17 "The Data Rate").

Part 2:
Writing Discs in the Various Data Formats

Chapter 3: Mac Volume

The MAC VOLUME format is used to write the entire contents of a local volume or partition to the CD in HFS format.

Areas of Application

Use "Mac Volume" when:

- You intend to copy an entire volume (hard disk, partition, cartridge, etc.) to a disc exactly as it is.

- You want to precisely control the visual appearance of the disc.

- You intend to publish a disc.

- You want to create a "bootable" CD

- You want to define a file on the disc that is to be opened automatically when the disc is inserted.

- You want to optimize the data for faster access.

For detailed information on this format as well as its settings see the section "The Mac Volume Format" in chapter 16.

Writing a Disc

To write a disc in the Mac Volume format, please proceed as described below:

1) **Prepare your source volume exactly as it should appear on the disc.**

   Since an identical copy of your source volume will be created, icons, position and order of windows and objects etc. are faithfully copied from the source volume to the disc.

   If you don't have a hard disk volume or partition that contains only the data for the CD, you can use Toast to create a Temporary Partition to hold the data. See "The Utilities Menu" in chapter 15.

2) Choose Mac Volume from the Format menu and click Data….

The following window will be displayed:

3) Highlight the desired volume in the upper part of the dialog.

You can only select volumes with the comment "ok to write". Depending on the settings you choose, the comments might change.

4) Select any additional features using the checkboxes:

a) **Optimize on-the-fly** to have Toast automatically defragment your data.

b) **Don't copy free space**, if you are not optimizing.

For detailed information on the various settings see chapter 16 "The Mac Volume Format".

5) Click OK.

The amount of the selected data and the associated settings will be displayed on the main window:

6) Choose Check Aliases from the Utilities menu.

Select the desired volume and click **OK** (see chapter 15 "The Utilities Menu").

7) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

8) Insert a recordable CD in your writer. This disc may be either empty or contain data that has been written as a session.

To determine if the inserted disc is still recordable, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

9) Click Write CD….

The following dialog will be displayed:

10) Verify that the desired writing speed is selected in the pop-up menu.

11) If you may want to add data to this disc later, click Write Session. (If your source volume contains more than 625 MB this option is disabled.)

If you want the disc to be closed so that no further data can be added later, click Write Disc.

The writing process will begin at the selected speed. When all the data is written, Toast will automatically verify the data.

For further information on the writing process see chapter 17.

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➤➤ **You will find the following further information on the format "Mac Volume" in chapter 16:**

- Comments
- The Optimizer
- Don't copy free space
- Bootable CDs
- AutoStart
- The "Info" dialog
- Check Aliases

Examples

Example 1: Creating a Disc for Publication

Your Situation and Your Goal:

You want to write a pure Macintosh HFS disc, ready to be duplicated at a disc manufacturing plant.
The data includes numerous small files and many customized icons.
You have a hard disk at your disposal that only contains the data that is to be written.
You want the disc to hold as much data as possible.
Your clients' convenience when using the disc is of highest importance to you.

Procedure:

1) **Prepare the data to be written exactly as you want them to appear on the disc**. Since the appearance of each window is important, open each folder and arrange the files to your preferred layout (Remember, the disc will keep everything just as you left it, including view, label settings and icon positions).

2) **Open Toast and choose Mac Volume from the Format menu.**

3) **Click Data…:**

4) Since you are using customized icons for many items and there are a lot of smaller files on your hard disk, it is very important to optimize the data.

    Check the option Optimize for Size.

    This insures that the icons are displayed rapidly after mounting and that you make the most efficient use of the space on your disc. Leave the other options unchecked.

5) Click OK, load the data.

A figure for the entire amount of data is displayed on the main window, which corresponds to the figure that is displayed as "Used" in the "Info" dialog. This figure might be bigger than the free space on your CD-recordable.

However, since you have selected "Optimize for Size" and your data includes many small files, this figure will most probably be reduced during optimization.

6) In order to make sure all aliases point to target files that are placed on the same volume, choose Check Aliases from the Utilities menu.

Select your hard disk to have it checked. (See chapter 15, "The Utilities Menu").

7) To make sure that the selected amount of data will fit onto your disc after optimizing, click Check Speed….

Before the data rate is actually checked, the data is prepared for optimization:

➤ Note   Once the checking of the data rate has begun, you may cancel the process, since right now you are just checking the amount of data after optimization (of course, it does not cause any harm to go through the entire checking routine).

Click **Done** to cancel.

The main window will now indicate how much space your data will actually use on the CD. If it is still too large for your disc, you will have to delete files from your hard disk accordingly and repeat the procedure.

8) Check the data rate before writing and write the disc as described in chapter 17.

Example 2: Creating a Disc without Optimization

Your Situation and Your Goal:

You want to create a backup of the entire contents of your hard disk. Since the disc will merely serve as a back up and assuming your Macintosh is not fast enough to optimize while writing, you write the disc without optimization. Your hard disk has a capacity of 2 GB, but it only contains 364.3 MB of data:

Procedure:

1) **Prepare the data to be written exactly as you want it to appear on the disc.**

2) **Open Toast and choose Mac Volume from the Format menu. Click Data…:**

3) **Highlight the name of your hard drive in the upper part of the dialog box. Check the option Don't Copy Free Space. Leave the other options unchecked.**

4) **Click Info…, to check if the data fits on the disc. The window shows a graphic representation of the data on your disk.**

    If you save and delete data frequently on your hard disk, it may appear highly fragmented:

BIG HD Info

Volume size: 1717.5 MB   **Size of CD-ROM:**   1596.1 MB
      Block size: 20 k   (When using "Don't copy free space")
         Used: 325.3 MB ▣
         Free: 1392.3 MB ☐

OK
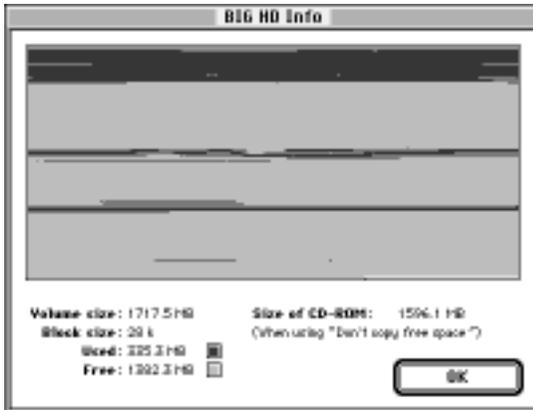
In this example the hard disk cannot be written to the disc without activating the optimizer, because the **Size of CD-ROM** exceeds the capacity of a blank disc.

Click OK.

➤ Note   Toast only recognizes free space after the last data block. (Free space between data blocks is not recognized.)

If you use NORTON FILE SAVER™, the **Size of CD-ROM** will always equal the size of the volume selected, since FILE SAVER stores its invisible files at the very end of the drive. Deactivate FILE SAVER using its control panel to prevent this.

5) There are two ways to solve this problem:

a) You can use a standard defragmentation program, e.g. Norton Speed Disk™, to defragment your hard disk. This rearranges your data in such a manner that it occupies one continuous block on your hard disk, beginning at the first sector. After defragmentation the figure for "Used" in "Info" will be equal to the figure for "Size of CD-ROM". (See note regarding NORTON FILE SAVER above.)

Defragmentation also speeds up data access on your hard disk. However, the defragmentation process can take a long time on slow Macs or large hard drives.

After defragmentation return to step 2.

b) If your Macintosh is too slow to optimize data on-the-fly, but you have sufficient free space, you can have Toast create an optimized duplicate of the data on your hard disk before writing.

Check the option **Optimize for Size**.

6) Click OK to close the Data dialog and to select the hard disk.

7) Click Write CD….

The following dialog will be displayed:

If you have chosen the second possibility in step 5, i.e. you have enough free space at your disposal to duplicate your data, check the option **Create Disc Image First**.

Toast will then save an optimized disc image on your hard disk before writing, which is then automatically written to the disc.

8) Click Write Disc or Write Session.

If you have marked the option **Create Disc Image First**, Toast will ask you where you want the disc image to be saved (see chapter 17).

Chapter 4: Mac Files & Folders

MAC FILES & FOLDERS is a variation of the HFS format which allows you to select any combination of files, folders and volumes as the source for your data. It is even possible to select items from network volumes (depends on network bandwidth).

Areas of Application

Choose "Mac Files & Folders" format:

• for easy backups

• for rapid data archiving

• if you want to write open files, e.g. the currently used system files on your startup volume

• if you want to control the treatment of aliases. "Mac Files & Folders" allows you to determine for each alias whether the alias itself or the target file will be written to the CD.

If you want to prepare a disc for publishing purposes, we strongly recommend using the format "Mac Volume" (see chapter 4), since "Mac Files & Folders" gives you only limited control over the layout of your disc (see chapter 16).

For detailed information on this format and on the settings please see the section "The Format Mac Files & Folders" in chapter 16.

Writing a Disc

To use the FILES & FOLDERS format:

1) **Start Toast and choose Mac Files & Folders from the Format menu.**

2) **Click Data….**

   The following window will be displayed:

3) a) Either click Add… and select the desired items:

Click **Add** until all items are selected. Then click **Done**.

b) Or drag files and folders that you want to be written to the disc from the Finder onto the window. (You do not have to select everything at once. Drag as many times as necessary to include all the desired files.)
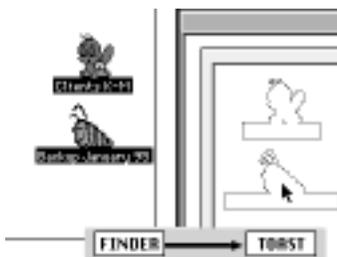
Depending on what you drag into the empty window, your results will be different:

If you drag…	Result
one folder	This folder will be made into a disc. Name of the folder = Name of the disc Icon of the folder = Icon of the disc Contents of the folder = Contents of the disc
one folder while the control button is pressed	A new untitled disc will be created, the folder will be placed on the top level in the folder hierarchy.
several folders	A new untitled disc will be created, all folders will be placed on the top level in the folder hierarchy.
one or several files	A new untitled disc will be created, all files are placed on the top level in the folder hierarchy.
folders and files	A new untitled disc will be created, all objects will be placed on the top level in the folder hierarchy.

4) After selecting all your data, click Done.

The size of the selected data will be displayed in the main window:

➤ Note   Toast allows you to save your setup so you can use it later. Simply choose the **Save as** command from the **File** menu.

For further information see chapter 15, "The File Menu".

5) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

6) **Insert a recordable CD in your writer.** This disc may be either empty or contain data that has been written as a session.

   To determine if the inserted disc is still recordable, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

7) **Click Write CD….** The following dialog will be displayed:

8) **Verify that the desired writing speed is selected in the pop-up menu.**

9) **If you may want to add data to this disc later, click Write Session.** (If your source volume contains more than 625 MB this option is disabled.)

   If you want the disc to be closed so that no further data can be added later, click Write Disc.

   The writing process will begin at the selected speed. When all the data is written, Toast will automatically verify the data.

   For further information on the writing process see chapter 17.

_____

➤➤   **You will find the following further information on the format "Mac Files & Folders" in chapter 16:**

   •   The Main Window

   •   Creating a New CD / a New Folder

   •   Importing the Data

   •   Renaming Folders, Files and the Disc and Changing Visibility

   •   About the Desktop Files

   •   Selecting Items

   •   Removing Items

   •   Copying the Contents as Text

- Modifying the Hierarchy

- Resolve Aliases

- The Appearance of Windows on the Disc

- The Order of Files on the Disc

- Mac HFS Discs with Several Sessions

Examples

Example 1: Backup with Aliases

Your Situation and Your Goal:

You want to create a backup of your clients' data. In order to make your work easier, you have created several aliases. This is the folder that is to be backed up:

The folders "John" and "Francis" should be copied exactly as they appear originally.
The folder "Clark" contains aliases that should be loaded in different ways.

- The alias "*January*" points to another hard disk, that contains already completed projects. In this case the original should be written instead of the alias.

- The folder "February" should be copied exactly as it is.

- The folder "March" contains references to target files that are located in the folder "February". In order not to write those files twice, they should be written as aliases to the disc.

Procedure:

1) **Choose Mac Files & Folders from the Format menu and click Data….**

   The empty selection window will be displayed.

2) **Click New CD to create an empty disc for your backup.**

3) **Change the name of the disc to "Backup".** Double-click the disc icon to open the information window where you can specify the new name.

4) **Click New Folder. Name this folder "Clients A-K".**

   (Note: If all aliases were treated alike, you could drag the original folder "Clients A-K" onto the selection window.)

5) **Drag the two folders "John" and "Francis" over the folder "Clients A-K"** you have just created, since those folders are to be written to the disc without any changes. Since these folders do not contain any aliases, you need not choose any other settings.

6) **Click New Folder. Name this folder "Clark".**

   Drag this folder over the folder "Clients A-K" in order to place it on the same level in the folder hierarchy as "John" and "Francis".
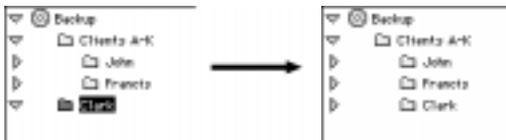
7) **Check the option Resolve Aliases and drag the alias "*January*" over the folder "Clark".**

   Instead of the alias the original data will now be loaded from the second hard disk.
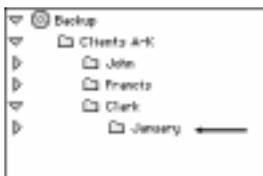
8) **Un-check the option Resolve Aliases** (the box next to it is not xed) **and drag the two folders "February" and "March" over the folder "Clark".**

   If you look at the contents of the folder "March" (to do this, click on the small arrow icon so that it points to the bottom), you will see from the italics, that the two aliases "*Picture*

DEF" and "*Picture XYZ*" were loaded instead of the original files.

9) **Load all further data for your backup, click** Done**, check the data rate and write the disc (see chapter 17).**

Example 2: Folders with Customized Icons

Your Situation and Your Goal:

You want to create the same backup as in example 1, but you prefer icons other than the standard icons, both for the disc and the folder "Clients A-K". However, you cannot change any icons in Toast itself.

Procedure:

1) If you create an empty disk as in example 1, you will not have any opportunity to change the icon later. Therefore, you have to change the icons on the Finder level.

   Create a new folder on a hard disk and name it "Backup".

2) **Copy the icon of your choice for the disc from a suitable source.**

3) **Highlight the newly created folder and choose** Get Info... **from the** File **menu of the Finder.**

4) **Highlight the icon displayed there by clicking with the mouse and insert the icon by choosing** Paste **from the** Edit **menu of the Finder.**

---

5) **Repeat steps 1) - 4) for the folder "Clients A-K".**

6) **Choose Mac Files & Folders from the Format menu in Toast and click Data….**

7) **Drag the empty folder "Backup" that contains the icon of your choice onto the selection window.** The folder will be made into the disc. The icon is displayed in this folder as an invisible file (displayed as a "grayed" icon).

8) **Now drag the folder "Clients A-K" onto the disc icon,** so that it is placed in the top level of the folder hierarchy**.**

9) **Now continue to import your data as described in example 1.**

Example 3: Backup over a Network

Your Situation and Your Goal:

You want to create a backup from various computers in the network. To do so you choose a time of day when the network will not be busy.

➤ **Note** not all networks are fast enough to support direct writing to CD. Be sure to check the speed before trying to write from the network.

Procedure:

1) **Choose Mac Files & Folders from the Format menu and click Data….**

2) **Click New CD and name the disc, e.g. "Backup Jan 20, 96".**

3) **Now mount all the volumes which contain the data to be backed up.**

4) **Drag the data that is to be written into the selection window in Toast.**

5) **When you have selected all the data, click Done.**

➤ **Note** Since the data has not been loaded from locally mounted volumes, Toast will use the desktop files of your startup volume for the disc.

6) **Check the speed for all the selected data. To do this click Check Speed….**

   Go through the entire checking routine! When the selected data is not located on local volumes, the data rate is extremely important. In case of an insufficient data rate you could create a disc image before writing (for details on possible problems and solutions see chapter 17.)

7) **Write the disc as described in chapter 17.**

Chapter 5: ISO 9660

The ISO 9660 format is a standard for cross-platform CD-ROMs. Discs created in this format can be read by many different operating systems, including Mac, DOS, UNIX, etc.

Toast can create standard ISO discs, as well as ISO discs with Joliet extensions which preserve the long file name structures from Windows95 and WindowsNT.

Since ISO 9660 does not support custom icons or saved directory settings (i.e. "view by Icon"), it is less than ideal for discs intended only for Macintosh users.

Note: Toast also supports a special ISO option which preserves Macintosh file names. Disc written using this option are only useable on Macintosh computers.

Areas of Application

"ISO 9660" format should be used when:

- You want to write a disc that can be run on several platforms, e.g. Windows, Windows 95, UNIX, Atari, Amiga, Macintosh, etc.

- You want to write multisession CDs where all sessions are mounted as a single volume (in contrast to HFS Multivolume where each session appears as a separate volume).

- You prefer incremental backups for your backup purposes, i.e. only the data which has changed since the last session is written to the disc. Unchanged data is never written to the disc more than once, saving space and time.

For detailed information on this format as well as its settings see the section "The ISO 9660 Format" in chapter 16.

Writing the First ISO Session

To write the first or only session of an ISO 9660 disc, proceed as described below:

1) **Choose ISO 9660 from the Format menu.**

---

2) Click Data….

The following window will be displayed:

3) a) Either click Add…:

Click **Add** until all the desired data is selected. Then click **Done**.

b) Or drag files and folders that you want to be written to the disc from the Finder onto this window.
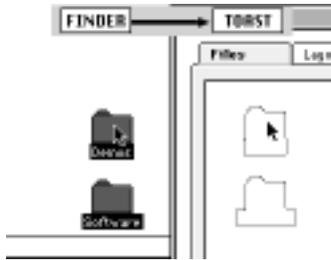
Depending on what you drag onto the empty window, your results will be different:

If you drag…	Result
one folder	This folder will be made into a disc. Name of the folder = Name of the disc Icon of the folder = Icon of the disc
one folder while the control button is pressed	A new untitled disc will be created, the folder will be placed on the top level in the folder hierarchy.
several folders	A new untitled disc will be created, all folders will be placed on the top level in the folder hierarchy.
one or several files	A new untitled disc will be created, all files are placed on the top level in the folder hierarchy.
folders and files	A new untitled disc will be created, all objects will be placed on the top level in the folder hierarchy.

4) **Click the Settings tab at the top edge of the window.**

The window changes to the following appearance:

5) **Select a data format from the** Format **menu:**

    a) **Choose the format** CD-ROM XA, if you want to be able to add more sessions to this disc later.

    b) **Choose the format** CD-ROM, if you do not intend to add any more data to the disc later.

6) **Choose a** Naming **option for your files and folders. Toast will automatically convert file names to conform to the naming option selected.**

For details on the various naming possibilities and their implications, see chapter 16, "The ISO 9660 Format".

7) **Click** Done.

The number of files and folders, the size of the selected data, and the space they will occupy on the disc will be displayed in the main window:

➤ Note   Toast allows you to save your setup so you can use it later. Simply choose the **Save as** command from the **File** menu. For further information see chapter 15, "The File Menu".

8) **Click** Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click Done. For more information see chapter 17.

9) **Insert a recordable CD in your writer.** This disc may be either empty or contain data that has been previously written as a session.

  To determine if the inserted disc is still recordable, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

10) **Click Write CD….**

  The following dialog will be displayed:

11) **Verify that the desired writing speed is selected in the pop-up menu.**

12) **If you may want to add data to this disc later, click Write Session.** (If your source volume contains more than 625 MB this option is disabled.)

  If you want the disc to be closed so that no further data can be added later, click Write Disc.

  The writing process will begin at the selected speed. When all the data is written, Toast will automatically verify the data.

  For further information on the writing process see chapter 17.

_____

➤➤ **You will find the following further information on the format "ISO 9660" in chapter 16:**

• Files The Main Window
        Creating a New CD / a New Folder
        Importing the Data
        Renaming Folders, Files and the Disc and Changing Visibility
        Selecting Items
        Removing Items
        Copying the Contents as Text
        Modifying the Hierarchy
        Resolve Aliases

• Layout The Order of Files on the Disc

- Settings   Format Settings
                        Naming Settings
                        Other Settings

- Concerning Rockridge Extensions for UNIX

- The Appearance of Windows on the Disc

Writing an Additional ISO Session

This section covers the procedure for adding an additional ISO session to a disc containing one or more ISO sessions.

For more details on this procedure see chapter 16, "The ISO 9660 - Multisession Format".

If you add a new session to the disc and want to make sure that the data from the previous sessions is still accessible, follow these steps:

1) **Choose ISO 9660 from the Format menu and click Data….**

2) **Drag the data of your choice onto the window.**

   For details on the data selection see the previous section, "Writing the First ISO Session".

3) **Click the Settings tab.**

   Make sure that the format **CD-ROM XA** is selected and that you select the same naming option that you used in the previous session.

   For information on importing previous sessions from a disc see chapter 16 "The ISO 9660 - Multisession Format".

4) **Click Done.**

   The size of the selected data will be displayed in the main window.

5) **Click Check Speed….**

   When the Data rate has been checked, click **Done**.

   For more information on the data rate see chapter 17.

6) **Insert the ISO disc to which you want to add the data into your CD recorder.**

To verify that the inserted disc is really the disc to which you want to add the data, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

7) Click Write CD….

The following dialog will be displayed:

8) Choose **Ignore Existing Sessions**, if you do not want previously written sessions visible when inserting the disc. (it will be as if the data from the old sessions was deleted from the disc.)

Choose **Append to "*Name of last session*"**, if you want all sessions visible when inserting the disc.

(Incremental Backup is covered in chapter 16, "The ISO 9660 - Multisession Format".)

9) Click OK.

The following dialog box will be displayed:

10) Click Write Session, if you want to add data to this disc later.

Click Write Disc, if you want the disc to be closed so that no further data can be added later.

➤ Note   If the setting **CD-ROM** was chosen for the previous session, you will be unable to add a new session to the disc!

The writing process will begin at the selected speed. When it is completed, the data will

be verified automatically.

For further information on the writing process see chapter 17.

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➤➤ **You will find the following further information on the format "ISO 9600 - Multisession" in chapter 16**:

- Adding an ISO Session
- Importing a Session from a Disc
- Modifying an Existing File Structure
- Removing an Imported Session

Examples

Example 1: Daily Backups of a Current Project

Your Situation and Your Goal:

Your are working on a project for client "Smith" and you would like to backup your work daily. The project is placed in a folder that has the following structure:

You never change the basic structure of this folder. You only add data, or change or delete existing data.

Since many files do not change every day, you want only new data to be written to the disc in order to save space and time.

You only want the most recent version of the files to be visible on the disc.

Procedure:

You begin by backing up all the data to a blank disc, then adding the changed data to the same disc when you backup again.

1) **Choose ISO 9600 from the Format menu and click Data….**

   The empty selection window will be displayed.

2) **Drag the folder "Smith" onto the selection window. A new disc is created with the folder name "Smith" as its name.**

   As an example, we will now look at the subfolder "Pictures" of the folder "Ads":
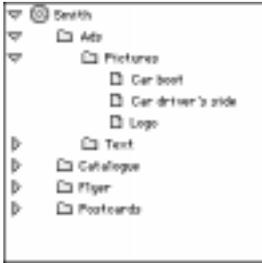
This folder contains three pictures "Car boot", "Car driver's side" and "Logo".

3) Click Settings.

Choose **CD-ROM XA** as format and **Allow Macintosh Names** as naming option.

Also check **Use Apple Extensions**.

➤ Note   You can click **Set Defaults…** to save these settings so you won't have to reselect them each time you backup.

4) Click Done.

The size of the selected data will be displayed in the main window.

5) Click Check Speed…, to check the transfer rate.

For details see chapter 17.

6) Click Write CD… and then Write Session.

All the selected data will be written to the disc.

When finished, the data in our example would look something like this:
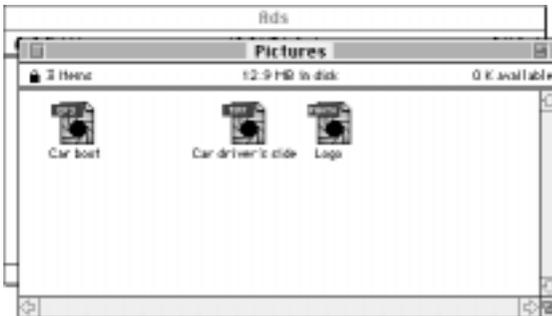
When you are ready to back-up the changed data.

1) Again, choose ISO 9660 and click Data….

2) Drag the same folder "Smith" onto the selection window. These are the differences:

The file "Logo" was deleted, the file "Logo new" was added.

The picture "Car front side" was added.

3) Verify that you have selected CD-ROM XA as format, Macintosh Names as naming option and that Apple Extensions are activated, then click Done.

4) Click Write CD….

The following dialog will be displayed:

5) Check the option Incremental Backup and click OK.

Toast will now check which files were changed, deleted, or added. After checking, only the size of the data that is actually to be written is displayed in MB in the main window.

6) Click Write Session in the next dialog.

Only the changed data will be written to the disc.

After writing, the folder "Pictures" will look like this:

ISO 9660: Examples
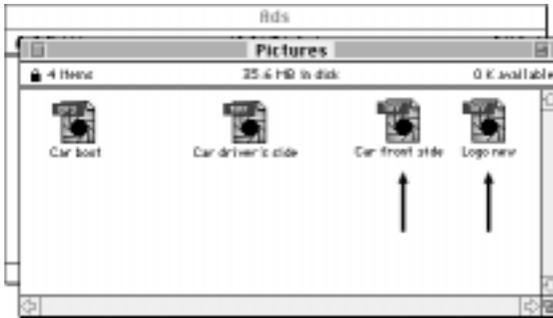
the picture "Logo" is not visible any more, because it was deleted from the source folder.

➤ Note   if any files have exactly the same name, the same modification date and are placed in the same file structure as in the previous session, they will not be written to the disc again.

Example 2: Specific Rearrangement of Old Sessions

Your Situation and Your Goal:

At the conclusion of your project "Smith" (as described above), you obtain a hard disk from your client that contains further data. You want to write this data to your disc without saving it on your hard disk first. Your client's hard disk contains a folder with new pictures. You want to arrange these pictures on the disc so that they appear in the appropriate existing folders.

As an example, we will again look at the subfolder "Pictures" of the folder "Ads".

Procedure:

1) **Start Toast and insert the disc with the project "Smith" in the recorder.**

2) **Choose ISO 9660 from the Format menu and click Data….**

    The empty selection window will be displayed.

3) **Select Import Session… from the pop-up menu in the window.**

    Toast will read all sessions of the inserted disc and display them in a window:

Import Session

Session	Size	Date
1 Smith	12.9 MB	5/26/96 5:27 PM
2 Smith	135.6 MB	5/27/96 11:24 AM

The imported session will be...
- ⦿ Merged
- ○ Put into a directory

[Eject] [Cancel] [OK]

4) Highlight the last session (it contains the newest data), select Merged and click OK.

The entire file structure of the imported session will now be displayed in the selection window:

The files that are marked with a disc icon have already been written to the disc (all files in this case).

5) Click New Folder.

A new folder will be created on the top level in the folder hierarchy.

6) Double-click the new folder.

The following window will be displayed:

Information

Name: New Folder

Kind: Directory
Size: 0 Bytes, 0 Files / 0 Directories

Where: -

Created: Thu, May 2, 1996, 3:59 PM
Modified: Thu, May 2, 1996, 3:59 PM

☐ Invisible

[Cancel] [OK]

Name the folder "Originals" and click OK.

ISO 9660: Examples

7) Drag the new folder over the subfolder "Pictures" of the folder "Ads".

8) Now drag all the pictures of your choice from you client's hard disk over the folder "Originals" and click Done (this example assumes that you have already defined the correct settings for format and naming option as default in example 1)**.**

9) Check the transfer rate and click Write CD… (see chapter 17)**.**

10) Click Write Disc in the dialog now displayed, because the project is to be concluded with this session.

Toast will only write the new data that you have selected. The file structure and the data of the last imported session will be retained.

After writing, the disc would look like this:
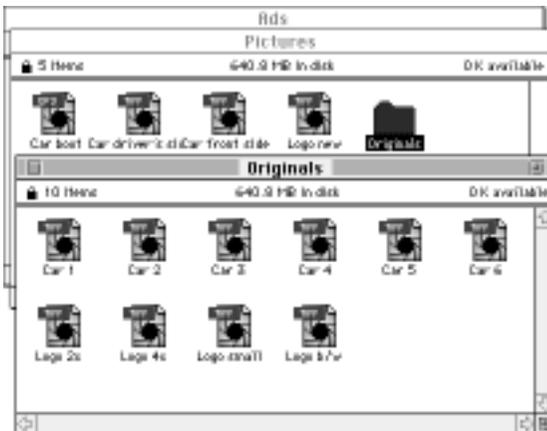
Example 3: Placing old Sessions in a Folder

Your Situation and Your Goal:

You are beginning a new project for your client Smith. You want to keep all the files from the old project, but you want them marked as "old projects".

Procedure:

1) **Start Toast and insert the disc with the old projects in your recorder.**

2) **Choose ISO 9660 from the Format menu and click Data….**

3) **Click New CD and name it "Smith projects".**

4) **Drag the files and folders from the new project onto the window.**

    They will appear at the top level of the folder hierarchy.

5) **Choose Import Session from the pop-up menu in the window.**

    Toast will read and display the contents of the disc.

6) **Highlight the last session (it contains all the data) and choose the option Put into a directory. Click OK**.

    The previous session will be appear as a folder on the top level in the folder hierarchy.

---

7) **Change the name of the folder which contains the old session to "Smith old" and click Done.**

This part was newly loaded.

This part has already been written to the disc.
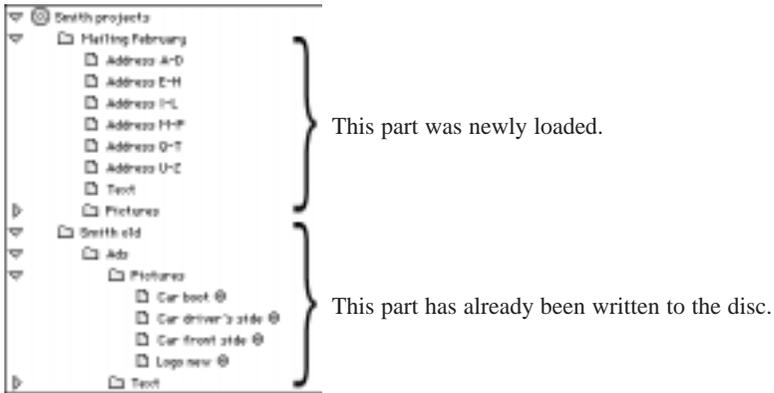
8) **Check the data transfer rate and write the disc (see chapter 17).**

When finished, the disc would look something like this:

The folder "Smith old" contains the data from previous sessions, while the folder "Mailing February" contains the new project.

Chapter 6: Mac/ISO Hybrid

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The HYBRID format combines both ISO 9660 and HFS format on a single disc. This allows Macintosh users to see the normal icons and window positions for the data, while maintaining complete compatibility with DOS/Windows systems (and others).

Areas of Application

HYBRID format should be used when:

You want to write discs that can be read on a Macintosh and on a PC, with the Macintosh data only visible to the Macintosh users and the ISO data only visible to other users.

Hybrid format is ideal for:

- Multimedia applications intended for both Macintosh and DOS/Windows

- Writing picture, sound or text files that can be read on both platforms

- Software created for both platforms that you want to deliver on a single disc

- As the second session of an audio CD, so that the audio tracks are only shown on an Audio CD player and the computer data only on a computer (many people mistake this for CD Extra).

For detailed information on this format as well as its settings see the section "Mac/ISO Hybrid format" in chapter 16.

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Writing the Disc

A disc can contain only one Hybrid session. This session can be written as a first session or as the second session of an audio CD.

A Mac/ISO Hybrid disc uses two data sources: a Macintosh volume and a group of files/folders which are selected to be the ISO data.

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a) Preparing the Data for the Macintosh Part of the Disc

The Macintosh part of the Hybrid disc must be created from a Macintosh volume (hard disk, temporary partition, hard partition, etc.).

This volume should contain:

• **Files and folders that will only be visible on the Macintosh and**

• **Files and folders that will be visible to both the Macintosh and ISO users. This is referred to as the "shared data" (these files will only be written to the disc once).**

For information on the creation of a temporary partition see chapter 15, "The Utilities Menu".

➤ Note The Macintosh volume will be copied exactly to the disc, including window sizes, positions and view settings. If the arrangement of the windows is important to you, be sure to prepare the volume accordingly.

b) Preparing the Data for the ISO Part of the Disc

Generally, no special preparation is needed for the ISO part, since you can choose files and folders one by one for writing. However, if you intend to prepare the disc for publishing, we recommend to collect the ISO data in a folder. This will help you to avoid mistakes and also makes the data selection a lot easier. The determination of which data is shared occurs while selecting the ISO data (see below).

c) Selecting the Macintosh Data

To select the Macintosh data for the Hybrid disc:

1) **Choose Mac/ISO Hybrid from the Format menu.**

2) **Click Mac….**

   The following window will be displayed:

3) Highlight the volume of your choice in the upper part of the window.

You should check **Optimize** to avoid problems relating to sector sizes and to make the disc as responsive as possible. Click **OK**.

The size of the selected data will be displayed in the main window.

For information on the various settings see chapter 16, "The Mac Volume Format".

d) Selecting the exclusive ISO Data

To select the exclusive ISO data for the Hybrid disc:

1) Click ISO….

An empty selection window will be displayed:

2) Drag the ISO data onto the selection window or click Add….

Any files that are not placed on the selected Macintosh volume will be displayed in black print.

e) Selecting the Shared Data

Now drag any shared data **from the Macintosh volume** selected in step "C" to the desired location in the ISO file structure or click **Add…** to select them.

Files and folders may have different names in the Mac and in the ISO part.

Shared files are displayed in blue (only the files, not the folders). These files will be written to the disc only once but will be visible by both Mac and PC users.

f) Settings

Click the Settings tab. The following window will be displayed:
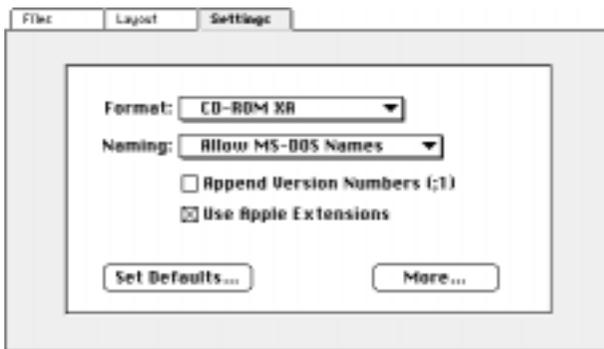
- Choose the format **CD-ROM XA**, if the Hybrid session will be the second session of an audio CD.

- Choose **CD-ROM**, if this is to be the only session on the disc.

Choose a **Naming** option for files and folders.

For details on the various settings see chapter 16, "The ISO 9660 Format".

g) Writing a Disc

1) When you have selected all the data and chosen the correct settings, click Done.

The selected data will be displayed in the main window:

2) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

3) Insert a recordable CD in your writer.

4) Click Write CD….

The following dialog will be displayed:

5) Verify that the desired writing speed is selected in the pop-up menu.

6) Click Write Disc (writing a session is not recommended for Hybrid discs).

The writing process will begin at the selected speed.

When all the data is written, Toast will automatically verify the data.

For further information on the writing process see chapter 17.

Examples

Example 1: Creating a Disc for Publication

Your Situation and Your Goal:

You want to write a Hybrid disc that will be submitted for manufacturing. You have created a multimedia application which has different applications (executables) for Macintosh and PC but which uses the same supporting data files.

For the Macintosh part you have a hard disk at you disposal that contains all the Macintosh data together with the shared data. You have arranged the hard disk so that the main window is open and only the executable application is visible:

The multimedia application for the Macintosh on a Macintosh volume.

For the ISO part you have created a folder on another hard disk, that contains data that will be visible only to PC users:

The data for the PC

The folder "DOS" is empty at the moment, it will later contain the shared data.

➤ Note It is no longer necessary to create aliases for shared data (as required in older versions of Toast), however this method will still work. Toast realizes if an alias points to a target file on the selected Macintosh volume and will write this file only once (if **Resolve aliases** is checked).

With some authoring applications it may cause problems if you use different names for shared data on the Macintosh and PC sides. We recommend your using names of the format 8.3 characters for all shared files. (*Check with the publisher of your authoring applications for information on handling shared data files.*)

For details on restrictions for the naming options see chapter 16, "The ISO 9660 Format".

Procedure:

1) **Choose Mac/ISO Hybrid from the Format menu.**

2) **Click Mac….**

    Highlight the hard disk that contains the Macintosh data and the shared data. Since you intend to publish the disc, you want the data arrangement on the disc to be as perfect as possible. Therefore, check the option **Optimize**. Do not check the other options. Click **OK**.

    If your system configuration is not fast enough to optimize on-the-fly, you can save a disc image of all the data before writing (see below).

3) **Click ISO….**

    The empty selection window will be displayed.

4) **Drag the folder containing the ISO data onto the window.**

    All these files belong exclusively to the ISO part, so all file names are displayed in black:

The folder "DOS" is still empty.

5) In the Finder highlight the files on the selected Macintosh volume that are to be shared by the Macintosh and ISO parts of the disc.

6) Drag these files onto the folder "DOS" in the ISO window.

The shared files will be displayed in blue:

All files in the folder "DOS" will be shared, since they have already been selected as part of the Mac volume.

7) Click Settings and choose the following options:

- **Format: CD-ROM**
- **Naming: Allow MS-DOS Names**
- **Append Version numbers: not checked**
- **Use Apple extensions: not checked**

8) Click OK.

The size of the selected data will be displayed in the main window:

9) Click Check Speed….

Before the checking routine begins, the optimization process will be prepared:
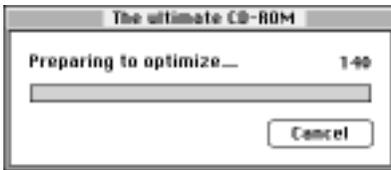
After this, the speed check routine will start. Be sure to allow the check to finish if you are unsure whether your system is fast enough to optimize on-the-fly. Click **Done**.

10) Click Write CD….

If the result of the speed check was negative, check the option **Create Disc Image First** and click **OK**. (If a disc image is created, you will be asked to specify a location for storing the image file).

The writing process will start automatically after saving.

Example 2: Creating a Disc that Only Contains Shared Data

Your Situation and Your Goal:

You want to create a disc that contains graphics and text files. Since you do not know whether the disc will be used on a Mac or a PC, you decide to write a Hybrid disc. (You could also use the pure ISO 9660 format, but it does not allow control over the placement and appearance of files like HFS does.)

You have collected all the data in a folder, rather than having it on a volume which contains no other data. Consequently, you will create a temporary partition for the Macintosh part and copy the data into it.

Procedure:

We will explain the procedure in detail. If you already know how to create a temporary partition, you can skip to step "b".

a) Creating a Temporary Partition

1) Make sure that you have a hard disk connected with enough free space to duplicate all the data to be written.

2) Choose Create Temporary Partition from the Utilities menu.

The following window will be displayed:
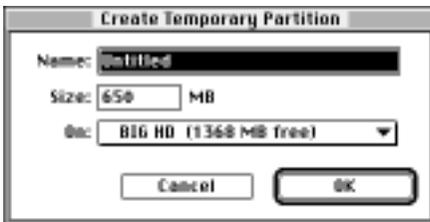
3) Enter a size for the partition that is about 2 MB larger than the data to be copied. (You can use the GET INFO command in the Finder to determine the size of the data.)

Select a volume that contains sufficient free space and click OK.

The temporary partition will be created. A single file (the "image file") the size of the partition will be created on the volume you selected; the partition itself will be mounted on the desktop.

For details on temporary partitions see chapter 15, "The Utilities Menu".

4) Copy the contents of your folder into the mounted partition by dragging it onto the icon of the mounted partition (not the icon of the image file).

Arrange the data as you would like it to appear on the finished disc:
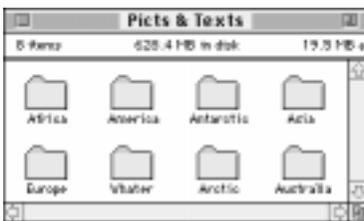
➤ **Note** If you have chosen a custom font for displaying file names (using the VIEWS control panel), it is a good idea to reset the font to the default setting of "9 pt Geneva" before arranging the icons. This will help insure that the windows look the way you intended when viewed on another Macintosh.

b) Selecting the Data for the Macintosh Part

1) Choose Mac/ISO Hybrid from the Format menu and click Mac….

The Mac Volume selection window will be displayed:

2) Highlight the temporary partition and check the option Optimize. Click OK.

c) Selecting the Data for the ISO Part

1) Click ISO….

The empty selection window will be displayed.

2) Drag the same partition onto the window that you have selected for the Macintosh part.

All the data will be recognized as shared and will be written to the disc only once.

3) Click the Settings tab.

Select Joliet (MS-DOS + Windows95) from the naming menu

4) Click Done.

The size of the data selected will be displayed in the main window.

6) **Check the data rate and write the disc.**

See chapter 17.

Chapter 7: Audio CD

The AUDIO CD format records audio tracks on the CD in the format used by standard consumer CD players.

Areas of Application

Use the "Audio CD" format if you want to write a standard audio CD. The discs can be played on all audio CD players, as long as the audio data is placed in the first session of the disc.

➤ **Stop**   Never write an audio session as second the session of a disc, since standard CD players can only read the first session.

For detailed information on this format as well as its settings see the section "The Audio CD Format" in chapter 16.

Introduction to Toast's Greatest Hits

Toast's Greatest Hits is a great new feature that lets you create audio CDs by simply dragging tracks from existing CDs or sound files onto the Toast track list.

• Tracks can be copied directly from the original CD without having to save them to a hard drive first. You can even select tracks from different CDs and Toast will prompt you to insert the correct source CD while writing the new disc.

• Toast can also write audio CDs from standard Mac sound files. Toast recognizes SoundDesigner II or AIFF sound files (they must be in 16-bit, 44.1 kHz format)

You can combine these two methods if desired.

Note: direct copying of audio tracks requires a CD-ROM drive which supports audio extraction and a Macintosh which supports SCSI Manager 4.3.

Writing an Audio CD

1) Choose Audio CD **from the** Format **menu.**

2) Click Audio**….**

The Audio Tracks window will be displayed:

3) Drag the audio files or tracks that are to be written to the disc from the Finder onto the window:
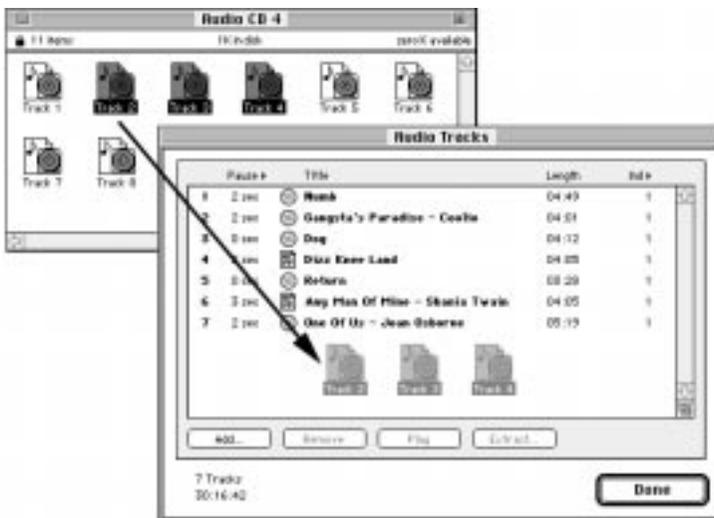
or click Add**… and select the desired files.**

The selected items will be displayed in the Audio Tracks window. You can click and drag on items in the list to rearrange them.

NOTE: Toast uses the disc and track names which have been entered with the AppleCD Audio Player. If the selected tracks have already been named, the names will appear in the track list.

If you select a track belonging to a CD which has not been named, Toast will prompt you to give the CD a name:

You can also specify names for each track. *Names entered in Toast are saved in the same database used by the AppleCD Audio Player.*

Double-click on any item in the track list to display the naming dialog:

Enter the desired track name(s) then click OK. You can use the arrows to move to a different track. If you change the name of a track which is based on a sound file, rather than a CD track, the name of the source file will be changed.

Toast automatically inserts a 2 second gap between each track. If desired, you can specify a different gap using the Pause menu. The menu will set the pause *before* the selected track(s).

If your recorder does not support pauses of less than two seconds, you may see this message:

> The currently selected recorder has a fixed pause of 2 seconds between tracks. Larger pause values will add audio silence to the previous track, smaller values will be ignored.
>
> OK
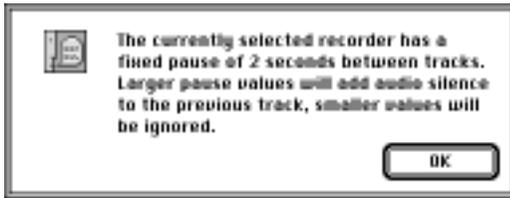
Check the Toast READ ME file on the installation disc for more information.

4) When all files are loaded, click DONE.

The total length of the selected tracks will be displayed in the main window:

> **Audio CD**
>
> **Audio:** 21:29:45 (6 Tracks)   Audio...
>
> **Total:** 21:29:45

5) Click Check Speed….

Toast will read all the selected tracks to determine if your system is fast enough to write the disc in the chosen speed.

If you have selected tracks from more than on CD, Toast will prompt you to insert the appropriate disc as it reads each track:

> **Toast Greatest Hits™**
>
> Please insert the Audio CD "DADA – PUZZLE", containing "Dog"
>
> Cancel

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

6) Insert a blank recordable CD in your writer.

In order to check if the inserted disc is indeed empty, choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

7) Click Write CD….

If you have selected tracks from more than one disc, Toast will display a list of the discs you will need:

Make sure you have all the required source discs, then click OK. This window will be displayed:

8) Verify that the desired writing speed is selected in the pop-up menu.

9) **If you want to add data to this disc later, click Write Session.** (*If your audio files occupy more than 625 MB or if you selected 99 files this option is disabled.*)

Note: standard audio players can only read tracks from the first session!

If you want the disc to be closed so that no further data can be added later, click Write Disc.

The writing process will begin at the selected speed.

Toast will prompt you to insert the appropriate source disc as it reads each track:

NOTE: Audio files cannot be verified after writing.

For further information on the writing process see chapter 17.

➤➤   **You will find the following further information on the format "Audio CD" in chapter 16:**

- Naming audio CDs and tracks
- Selecting Audio Files in Toast
- Rearranging the Audio Files
- Saving Audio tracks as sound files
- Removing Audio Files
- Previewing Audio Files
- Index-Points – Text and Numeric Markers
- The Pause between Tracks

Chapter 8: CD-i

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The CD-i (compact disc interactive) format is designed primarily for multimedia applications and games. CD-i discs require special playback equipment.

Areas of Application and Requirements

Use the CD-i format, if you want to write a disc that can be played on CD-i players.

In order to be able to write a CD-i, you need a completely mastered CD-i disc image that contains the entire data and target files. Such images can be created with a CD-i authoring system like MediaMogul. You can also load CD-i disc images that were created with "ASTARTE CD-Copy" from an existing CD-i. You cannot create CD-i links with Toast, or import "dyuv" files or videos into Toast.

For detailed information on this format see the section "The CD-i Format" in chapter 16.

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Writing a CD-i

1) Choose CD-i from the Format menu and click Data….

The standard file selection dialog will be displayed:

2) Select the desired CD-i image and click Open.

Or drag the disc image onto the main window.

The size of the selected data will be displayed in the main window:

3) **Click Check Speed….**

   Toast will read the selected data to determine if your system is fast enough to write the disc in the chosen speed.

   When the test is completed, click **Done**. For more information on the data rate see chapter 17.

4) **Insert a blank recordable in your CD recorder.**

   In order to check if the inserted disc is indeed empty, choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

5) **Click Write CD….**

   The following dialog will be displayed:

6) **If you want to add data to this disc later, click Write Session. (THIS IS NOT RECOMMENDED FOR CD-i FORMAT!).**

   If you want the disc to be closed so that no further data can be added later, click Write Disc.

   The writing process will be started in the selected speed.

   CD-i data cannot be verified after writing. For further information on the writing process see chapter 17.

➤➤ **You will find the following further information on the format "CD-i" in c chapter 16:**

   • Scrambling

Chapter 9: Video CD

The VIDEO CD format is used to record full-motion video or movies on a CD. Playing a Video CD requires special equipment, including an MPEG decoding system.

Areas of Application and Requirements

Use the Video CD format, if you want to write a "white book" compatible Video CD that can be played on Video CD and CD-i players. A "Video CD" track must always be placed in the first session of a disc.

To write a "Video CD", you need the following data:

- **a Video CD disc image**, that contains the MPEG-stream(s), menu pages, and links (this file is created by a Video CD authoring systems) or

- **MPEG streams** that were created with "ASTARTE M. Pack" (version 1.02 or later).

You have to use the following settings for encoding and multiplexing in "ASTARTE M. Pack":

- **Basic Settings: Format** ➔ Custom; **Target System** ➔ Video CD

- **Video: Format** ➔ PAL or NTSC

- **Audio: Bit Rate** ➔ 224 KBit/s

- **Multiplex: Toast-Ready** ➔ checked.

Video CDs created directly from M.Pack MPEG streams will not have menus; they simply play their video tracks in the order they were added to the list.

For detailed information on this format please see the section "The Video CD Format" in chapter 16.

Writing a Video CD

1) **Choose Video CD from the Format menu and click Data….**

The following dialog box will be displayed:

2) Choose one of the two possibilities:

   a) A Video CD image file.

   The standard file selector dialog, from which you can choose a disc image, will be displayed.

   b) One or more MPEG streams.

   The following window will be displayed:
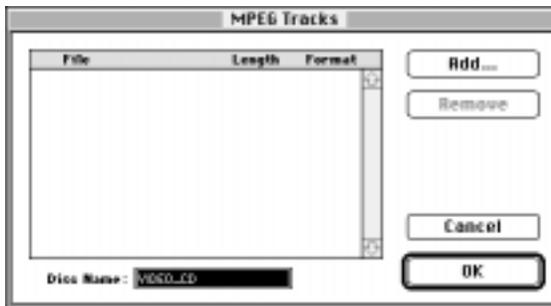
   Enter the name for the disc, drag the MPEG-streams of your choice onto the window (or use the **Add…** button) and click **OK**.
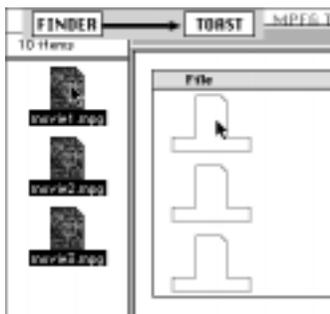
3) The loaded data will be displayed in the main window:

a) If you have loaded a disc image:

b) If you have loaded MPEG streams:
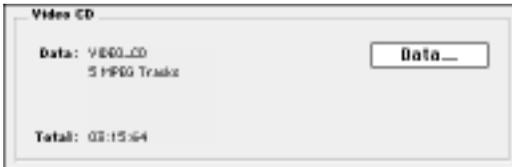
4) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

5) Insert a recordable CD in your writer.

6) Click Write CD….

The following dialog will be displayed:

7) Verify that the desired writing speed is selected in the pop-up menu.

8) **If you want to add data to this disc later, click Write Session.**
(THIS IS NOT RECOMMENDED for VideoCD format!)

If you want the disc to be closed so that no further data can be added later, click Write Disc.

The writing process will begin at the selected speed.

Video CD data cannot be verified after writing.

For further information on the writing process see chapter 17.

➤➤   **You will find the following further information on the format "Video CD" in chapter 16:**

- A Video CD from a Disc Image
- A Video CD from MPEG Streams
- Adding MPEG Tracks to a Video CD
- Changing the Order of the Tracks
- Removing MPEG Tracks from the List

Chapter 10: Enhanced Music CD

The ENHANCED CD (CD EXTRA, formerly known as CD PLUS) format combines audio tracks and graphic files on a disc that can be played using special applications which allow you to view the graphics while hearing the sound.

➤ **Note** Creation of Enhanced Music CDs can be quite complex. This section is intended only as an overview of the process. We recommend that you refer to the documentation included with your Enhanced Music CD authoring system for more information.

Areas of Application and Requirements

Use the format "Enhanced Music CD" (or "CD Extra", formerly "CD Plus"), if you want to write a "blue book" compatible disc. An "Enhanced Music CD" track always occupies the **second session of an audio CD**.

In order to write an Enhanced CD, you have to create the associated file/folder structure as it is defined in the "blue book", or you need a corresponding QuAC file created with the "Apple Interactive Music Toolkit™" (AIMT).

In the past an Enhanced CD was often misunderstood to be simply a disc that contained one audio session and any other data session (in HFS, ISO 9660 XA or Hybrid XA format) as its second session. Such discs do not actually comply with the "blue book" standard. If you are not concerned with compliance to the standard, you can write a second session using the techniques discussed in chapter 3 through 6.

A CD EXTRA disc written with Toast is always written as a Hybrid disc with shared data for the Macintosh and the PC.

For detailed information on this format please see the section "The Enhanced Music CD Format" in chapter 16.

Writing an Enhanced Music CD

Start with a CD which already has **audio tracks written as its first session** (see chapter 7 for more information).

---

1) Copy the QuAC file onto a Macintosh volume. (If the volume already contains data, this data will also be visible on the Macintosh part of the disc)
or

Create a CD EXTRA directory structure on a Macintosh volume.

For details on QuAC files and CD Extra directory structures see Chapter 16 "The Enhanced Music CD Format".

2) Choose Enhanced Music CD from the Format menu and click Data….

The following dialog will be displayed:

3) Highlight the volume that contains the required file structure or the QuAC file.

Toast will verify that the volume contains the required data structure for an Enhanced CD. If the structure does not conform to the "blue book" specifications, Toast will report which files or other elements are missing.

The selected data will be displayed:

If there was a QuAC file on the volume, Toast generates a CD EXTRA directory structure based on its contents. A new folder named "CD EXTRA" is then placed on the volume.

4) The folder "CD EXTRA" contains all the data which will be "shared" (visible on both the Mac and ISO parts of the disc). Although this data will be visible on both the Macintosh and on the PC it will only be written once to the disc.

Drag any additional files that you want into the "CD EXTRA" folder.

Toast uses the MS-DOS naming conventions for the ISO part of this Hybrid disc. Make sure all your files and folders conform to the 8-dot-3 naming format.

You can also drag aliases which point to items located on the same Mac volume onto the "CD EXTRA" folder. This allows to have shared data placed in different directory structures on the Macintosh and on the PC.

5) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

6) Insert your disc which already contains the audio session in your CD recorder.

In order to check if the inserted disc contains an audio session, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

7) Click Write CD….

The following dialog will be displayed:

8) If you want to add data to this disc later, click Write Session (THIS IS NOT RECOMMENDED for this format!).

If you want the disc to be closed so that no further data can be added later, click Write Disc.

The writing process will begin at the selected speed.

Enhanced Music CD data cannot be verified after writing.

For further information on the writing process see chapter 17.

➤➤ **You will find the following further information on the format "Enhanced Music CD" in chapter 16:**

- Steps to Creating an Enhanced Music CD
- QuAC Files
- CD EXTRA Hierarchies

Example: Creating a CD EXTRA with Additional Data for Macintosh and PC

Your Situation and Your Goal:

You wish to produce an audio CD with additional computer data. The disc should conform to the "blue book" specification in order to be authorized to have the "CD EXTRA" label. You created a QuAC file with the software "Apple Interactive Music Toolkit™". This QuAC file contains all desired information about the audio tracks on the disc.

For marketing purposes you want to put an additional multimedia presentation on the disc which describes your company. This presentation was created with the authoring tool "Macromedia Director™". You have created different applications (executables) for Macintosh and PC but you want to share the supporting data files (Director™ documents and QuickTime™ movies).

Procedure:

1) **Write all audio tracks on a blank CD-R. Be sure to choose the option Write Session, not Write Disc.**

   For more control over pauses, ISRC codes and MCN you could use the optional software "Toast CD-DA" for mastering the audio session.

2) **Prepare a Macintosh volume which only contains the following data:**

- the QuAC file,
- the Director™ application for the Mac and
- all Director™ documents and videos, which are accessed by the Mac and the PC application (in a folder named "DOCS").

Enhanced Music CD: Example

3) Choose Enhanced Music CD from the Format menu. Click Data….

Select the volume, check **Optimize** and click **OK**.

4) The following dialog is displayed:

If there were more than one QuAC file on the volume you could now select the correct one. In this example there is only one QuAC file on the volume. Click **Yes**.

5) Go back to the Finder and see how the volume has changed:

Toast created a "CD EXTRA" folder out of the QuAC file which contains the directory structure defined in the "blue book".

6) The folder "CD EXTRA" is shared, i.e. it contains all the data which will be visible on the Macintosh and on the PC. All other items are only visible on the Macintosh.

To make the multimedia application visible on the PC, copy the PC executable and other files which are needed on the PC into the folder "CD EXTRA".

Then create an alias of the folder "DOCS" (it contains all Director™ documents and QuickTime™ movies which are to be shared) and drag this alias onto the folder "CD

EXTRA" (don't forget to change the name of the alias so that the PC application can find the folder and the contained files).

7) Go back to Toast, check the data rate and write the disc (see chapter 17).

The integrity of the directory structure will be checked again before writing.

Chapter 11: SCSI Copy

SCSI COPY lets you copy directly from one SCSI device (such as a CD-ROM drive) to a CD.

Areas of Application and Requirements

Use the "SCSI Copy" format, if you want to create the exact copy of a SCSI device, e.g. hard disks, CD-ROM drives with a disc inserted, magneto-optical drives with a cartridge inserted, ZIP drives with a disk inserted, etc.

You have to observe the following restrictions:

• Since SCSI copy makes an exact copy of the volume, the resulting CD may not work as expected. For example, if you copy a volume which has been formatted as a DOS drive, it will not work properly on a PC; PCs require the ISO format for CDs, but your CD would have the format and structure of a hard disk.

• You can faithfully copy and read Macintosh hard disk in this manner, however we recommend using the "Mac Volume" format instead.

• If you select an audio disc or a mixed mode disc, Toast will use SCSI Copy for the data part of the disc and the Audio Tracks option for the audio tracks. This will be set up automatically.

• You cannot copy discs that contain Mode2 Form2 sectors ("Terminology" in chapter 2) e.g. Video CDs, CD-i, Photo CDs, etc., because the Macintosh cannot read those sectors.

• Discs to be copied must only contain one session, because the Macintosh cannot read the sectors between sessions.

• To copy discs with multiple sessions, you could use an application like "ASTARTE CD-Copy" which will save the contents of the disc as files which can then be written back to the disc with Toast.

For detailed information on SCSI Copy and its settings please see the section "The SCSI Copy Format" in chapter 16.

Writing a SCSI Copy

1) **Choose SCSI Copy from the Format menu and click Data….**

All connected SCSI devices will be displayed:

---

2) **Select the device to be copied and click OK.**

The following dialog box will be displayed:
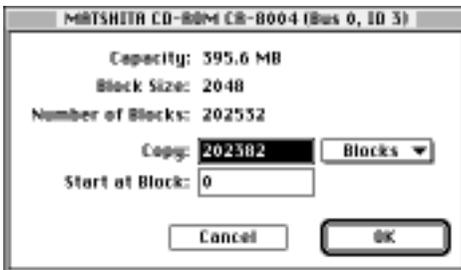
When you select a CD that you have written yourself, Toast will automatically subtract the unreadable blocks at the end of the disc to avoid errors while writing.

Do not change these numbers unless you know what you are doing, or you disc may not work.

3) **Click OK.**

The amount of data to be written will be displayed in the main window:

4) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

➤ Note   If you are copying from a CD, make sure that the speed of the CD-ROM drive is higher than the selected writing speed. As a general rule, use a write speed that is 1/2 the speed of the reader.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

5) Insert a blank recordable in your CD recorder.

To verify that the inserted disc is indeed empty, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

6) Click Write CD….

The following dialog will be displayed:

7) If you want to add data to this disc later, click Write Session.
(THIS IS NOT RECOMMENDED!)

If you want the disc to be closed so that no further data can be added later, click Write Disc.

The writing process will begin at the selected speed.

For further information on the writing process see chapter 17.

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➤➤   **You will find the following further information on the format "SCSI Copy" in chapter 16:**

- Searching the SCSI Bus
- Options
- The Amount of Data to be Copied

Examples

Example 1: Copying a Large Volume Using SCSI Copy

Your Situation and Your Goal:

You want to copy a 2 GB hard disk which contains almost 600 MB of data. The drive has been defragmented.
You have verified that the target system can read the file system of your hard disk if it's recorded on a CD.

Procedure:

1) Choose SCSI Copy from the Format menu and click Data….

The SCSI selection window will be displayed:
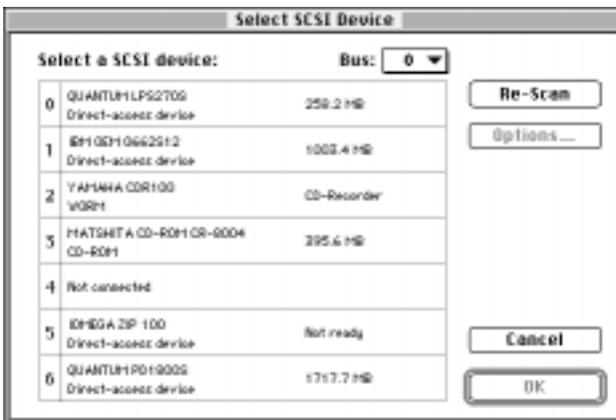
In this example, the hard disk we want is connected to bus 0, SCSI ID 6.

Notice that the entire hard disk is too large to be copied to a disc.

2) Select the hard disk and click OK.

3) Enter 600 MB into the dialog displayed. The copy can start at sector 0, since the hard disk was defragmented:
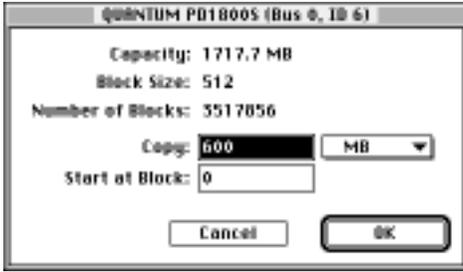
➤ **Note**   Toast will only copy the data in the range you have entered. If there is data on the disc, outside of that range, it will not be copied, and most likely the disc will not work.

4) Click OK.

The amount of the selected data will be displayed in the main window:

5) Check the data rate and write the disc.

See chapter 17.

Example 2: Creating a Backup of a CD-ROM that You Have Written Yourself

Your Situation and Your Goal:

You have written a disc in Hybrid format that is to be submitted for manufacturing. You want to create a backup disc for safety. You have at least one 2x CD-ROM drive at you disposal, so you can be sure that the speed will suffice to copy directly from disc to disc (2x readers can usually be copied at 1x, while a 4x reader can usually be copied at 2x).

Procedure:

1) Insert the CD-ROM in your CD-ROM drive.

---

2) Choose SCSI Copy from the Format menu and click Data….

The CD-ROM drive is connected on bus 0 with SCSI ID 3:
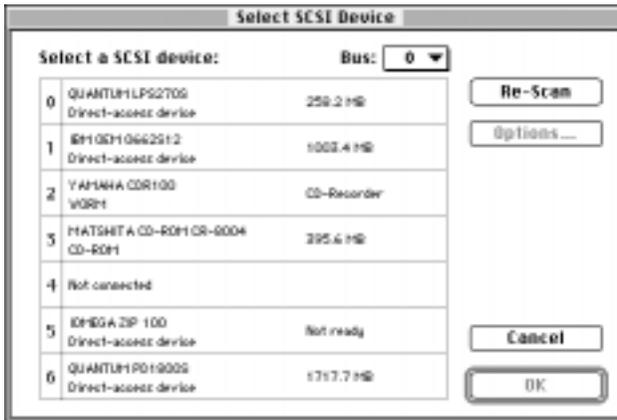
3) Select the appropriate drive from the list and click OK.
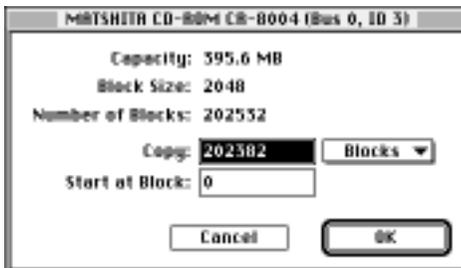
The number of blocks on the disc does not correspond with the number of blocks to be copied, since a disc that you have written yourself always contains "run out" sectors at the end, that cannot be read by the Macintosh (see the section "Terminology in chapter 2), Toast automatically excludes these blocks to avoid errors while writing.

4) Click OK, check the data rate and write the disc.

See chapter 17.

Chapter 12: Disc Image

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Areas of Application

The Disc Image format allows you to write a previously created disc image to a CD. You can use disc images created by Toast, as well as images generated by a variety of specialized tools.

A disc image is simply a single file, saved on your drive, that contains ALL the data and formatting information needed to create the CD.

You would use Disc Image format under these circumstances:

• if you have saved your selected data as a disc image in Toast (see chapter 15 "The File Menu").

• you need to write an image to disc but don't know its exact format.

• If you used a UNIX utility (like "mkisofs") to create an ISO image with Rockridge extensions. (see chapter 16 "The ISO 9660 Format"),

• after saving the contents of an HFS, ISO 9660, Hybrid disc or other single-track CD-ROMs with "ASTARTE CD-Copy".

➤ **Stop** When saving the contents of a Photo CD with "ASTARTE CD-Copy" the "Multitrack CD-ROM XA" format must be used, not the Disc Image format (see next chapter).

For detailed information about this format please see chapter 16 "The Disc Image Format".

___

Writing a Disc Image to CD

1) **Select Disc Image from the Format menu and Click Data….**

The standard file selection dialog will be displayed:

___
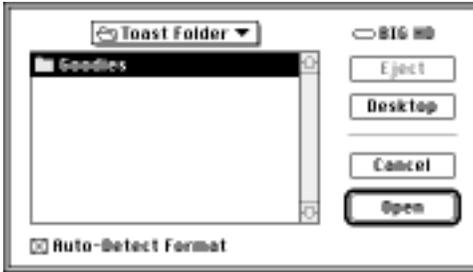
2) Select the desired disc image and click Open.

The size and format of the selected data will be indicated in the main window:

3) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

4) Insert a recordable CD in your writer.

To determine if the inserted disc is still recordable, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

5) Click Write CD…. The following dialog will be displayed:

6) **Verify that the desired writing speed is selected in the pop-up menu.**

7) **If you may want to add data to this disc later, click Write Session.** (If your source volume contains more than 625 MB this option is disabled.)

   If you want the disc to be closed so that no further data can be added later, click Write Disc.

   The writing process will begin at the selected speed. When all the data is written, Toast will automatically verify the data.

   For further information on the writing process see chapter 17.

➤➤ You will find the following further information on the format "Disc Image" in chapter 16:

   • Auto-Detect Format

   • Mounting Disc Images

Example:

Creating, Mounting and Writing a Disc Image

Your Situation and Your Goal:

After finishing a multimedia production in Hybrid Format you want to test the applications before actually writing the discs.

Procedure:

Begin by setting up your Hybrid disc, including selecting the Hybrid format and selecting the appropriate data for the Mac and ISO parts of the disc. (following the instructions in chapter 6)

1) **Select Save as Disc Image… from the File menu..**

   A dialog is displayed.

2) **Select a hard disk with enough free space to hold the disc image file** (check the Toast main window for details on how much disk space will be required.)

A progress indicator will be displayed while Toast builds the image file.
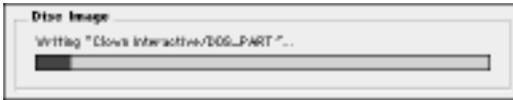
3) **When the process is complete, double-click the saved disc image.**

   Toast will automatically switch to the **Disc Image** format and select the newly created image as the source.

4) **Click the Mount button.**

   Since you've created a Hybrid disc, two volumes will be mounted on the desktop: one for the Mac part and one for the ISO part.

   You can now test items on the disc (Hybrid images are mounted as read-only so no changes can be made to the data.)

5) **Once you are satisfied that everything is set up correctly, you can write the disc** (see chapter 17).

Chapter 13: Multitrack CD-ROM XA

Areas of Application

The Multitrack CD-ROM XA format is used to write a disc with several CD-ROM XA tracks in one session.

➤ **Note** This format is seldom used, as most CD formats consist of only one data track per session. Its most common use is for copying Photo CDs with a tool like "ASTARTE CD-Copy".

For detailed information about this format see chapter 16 "The Multitrack CD-ROM XA Format".

Writing a Disc with Several XA Tracks

1) **Select Multitrack CD-ROM XA from the Format menu. Click Data….**

    The CD-ROM XA dialog will be displayed:
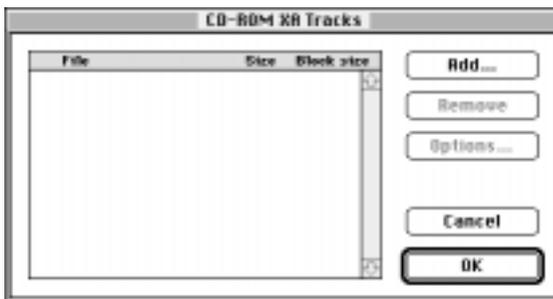
2) **Click Add… and select the desired CD-ROM XA files or drag the files into the window.**

    The Names, Sizes and Block Sizes of the selected files will be displayed. You may drag the items around in the list to change their order, if desired.

3) **After selecting all files click OK.**

The total size of the selected tracks will be displayed in the main window:

4) **Click Check Speed….**

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

5) **Insert a recordable CD in your writer.**

To determine if the inserted disc is still recordable, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

6) **Click Write CD….** The following dialog will be displayed:

7) **Verify that the desired writing speed is selected in the pop-up menu.**

8) **If you may want to add data to this disc later, click Write Session.** (If your source volume contains more than 625 MB this option is disabled.)

If you want the disc to be closed so that no further data can be added later, click Write Disc.

The writing process will begin at the selected speed.

For further information on the writing process see chapter 17.

Chapter 14: Audio Tracks – Mixed Mode CD

Areas of Application & Requirements

The Mixed-Mode format is used to combine one data track and several audio tracks in a single session.

This format has been largely replaced by "CD-Extra" (see chapter 10).

• The data portion of a Mixed Mode CD can be any of the Toast formats.

• The audio tracks can be set up using the normal techniques outlined in Chapter 16.

Writing a Mixed Mode CD

1) **Select the desired data format from the Format menu, and select Audio Tracks from the Format menu.**

   Two buttons are displayed in the main window: **Data**… and **Audio**….

2) **Click Data….**

   Select your data. For details see the respective chapter on the selected data format.

3) **Click Audio….**

   The audio track selection window is displayed:

4) Click Add… and select the desired audio files or drag the audio files into the window.

File name, Time and number of index-points in the track selection window.

5) After selecting all the desired audio files click OK.

The total size of the selected tracks (data and audio) will be displayed in the main window:

6) Click Check Speed….

Toast will read all the selected data to determine if your system is fast enough to write the disc in the chosen speed.

When the test is completed, click **Done**.

For more information on the data rate see chapter 17.

7) Insert a blank recordable CD in your writer.

To determine if the inserted disc is indeed blank, you can choose **Disc Info** from the **Recorder** menu (see also chapter 15, "The Recorder Menu").

8) Click Write CD…. The following dialog will be displayed:

Start writing now?

Speed: [4x ▼]

☐ Simulation Mode
☐ Create Disc Image First

[**Write Session**]

[Cancel]   [Write Disc]

9) Verify that the desired writing speed is selected in the pop-up menu.

10) If you may want to add data to this disc later, click Write Session. (If your source
volume contains more than 625 MB this option is disabled.)

**If you want the disc to be closed so that no further data can be added later, click
Write Disc.**

The writing process will begin at the selected speed. The audio tracks cannot be verified
after writing.

For further information on the writing process see chapter 17.

Part 3: Reference

Chapter 15: The Menus

The File Menu

The File menu consists of the following items:

Open

Opens previously saved Toast files (or virtual images), which restores all the settings and file selections to the same state as when it was saved.

Save / Save as

Saves a virtual image containing references to all selected data, settings, modified file names so they can be restored later.

Virtual images can be created for every format.

Toast will generally ask if you want to save your current settings when you quit the application or switch to a different format.

➤ Note Since a virtual image saves references to selected files, but not the files themselves, the image will be invalid if the original data is deleted.

Revert

Revert to last saved Toast document (virtual image).

Save as Disc Image

Saves all selected data as a single file. This file contains all the data for the CD, not just the settings.

Disc Images can be written to a CD at any time, even if the original data has been moved or deleted.

There are several situations where you might want to create a disc image:

• if your Mac is too slow to write or optimize on-the-fly.

• if you are writing data from a network volume or CD that doesn't have sufficient speed to write directly.

• if you want another person to write the discs, but don't want them to be able to change the contents or layout of the disc.

Properties of disc images:

• they contain all needed data (as opposed to virtual images which only contain references to the data).

• most disc images can be mounted to check contents and functionality (Video CD disc images cannot be mounted).

• mounted disc images appear just like any other volume on the desktop.

• if the disc image was created from a Mac format ("Mac Files & Folders" or "Mac Volume"), the contents can be modified after mounting (all other disc images appear as a write-protected volumes)

Mounting a disc image:

• Select **Mount Disc Image** from the **Utilities** menu.

➤ **Note** Only defragmented disc images can be mounted (the entire image file must reside on contiguous blocks on your hard disk). Use a commercial disk optimizer like Norton Speed Disk™ to defragment if necessary.

To save a disc image and write the CD all in one step select the option **Create Disc Image first** after clicking **Write CD…** on the main screen (see chapter 17).

Quit

Exits the Toast application, after asking you to save your settings (when appropriate).

➤ **Note** Clicking the Close box in the main window is the same as selecting the **Quit** command.

The Edit Menu

The Edit menu consists of the following items:

Standard Functions

Undo, **Cut**, **Copy**, **Paste**, **Clear** and **Select All** are standard Macintosh functions that are available for use in any of Toast's lists or error logs.

The **Copy** function can also be used to copy all selected items as text in the "ISO 9660" and the "Mac Files & Folders" dialog (see chapter 16 for details).

Preferences

Displays a dialog box which allows you to set the following operational parameters:
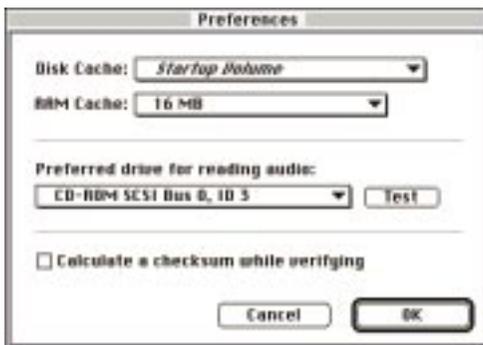
Disk Cache

In addition to the RAM cache, Toast uses your hard disk to temporarily store small files while optimizing and writing on-the-fly.

If you have more than one hard disk attached to your Mac, you can specify which drive to use for this temporary storage:

```
✓ Startup Volume
  Application Volume

  Clown Interactive (52 MB free)
  Start HD (17 MB free)
  BIG HD (546 MB free)
```

Select the fastest drive that has sufficient free space.

➤ **Note** Don't select an optical drive or other slow storage devices as the Disk Cache.

RAM Cache

Toast uses RAM installed in your Macintosh to augment the RAM cache built into your recorder.

The amount of RAM Toast uses for Cache Enhancement is selectable:

```
Standard (Speed × 1 MB)
Generous (Speed × 2 MB)

1 MB
2 MB
4 MB
8 MB
16 MB
32 MB
64 MB
```

You can choose a relative amount, based on the selected write speed, or

you can set a specific amount of RAM to be used, regardless of the write speed.

In general, if you are writing CDs from data sources with erratic data rates (like network volumes), you should set a higher value. On the other hand, if you generally write from a very fast hard drive on a fast computer, small values should work just fine.

➤ **Note** Cache Enhancement only works if your Mac supports SCSI Manager 4.3 and if you have asynchronous hard disk drivers installed.

Preferred Drive for Reading Audio

If you have more than one CD-ROM drive on your system, you can use this menu to specify which drive will be ejected when Toast requests an audio disc.

The TEST button will check the selected drive to verify that it has audio extraction capabilities. *This test requires an audio disc in the drive.*

Calculate a checksum while verifying

When this option is checked, Toast will calculate a checksum each time it verifies a disc. This is useful if you are writing CDs from image files created in another application that also calculates a checksum (such as Astarte CD-Copy). You could then compare the two values to insure that the disc is identical to its source.

Once it is calculated, you can select **Copy** to copy the Checksum to the clipboard.

➤ **Note** if you don't have software that generates images and checksums, don't bother to check this option.

The Format Menu

The Format menu is used to select the specific CD format that you want to write. Each format is explained in detail in Part 2 and chapter 16.

➤ **Note** You can also switch formats using the popup menu on the main screen:

The Recorder Menu

The Recorder menu contains commands related to the functioning of the CD recorder.

Write Speed

Allows you to specify what speed to use when writing a CD. Only the speeds that are applicable to your recorder will be available in the menu.

➤ **Note**   You can also set the write speed in the write dialog after clicking **Write CD...** (see chapter 17).

Simulation Mode

Selecting Simulation Mode allows you to test the entire writing process without actually writing any data to your blank CD. This is a very accurate way to insure that you have sufficient data transfer rate before writing a CD.

The words ***Simulation Mode*** are displayed in the menubar in red while Simulation Mode is active.

➤ **Note**   When you write a CD using Simulation Mode, it will look just like the disc is actually being written. The record light on the CD writer will even turn on. But as long as SIMULATION MODE appears in the menubar, no data will be written to the disc.

Simulation Mode can also be set in the write dialog after clicking **Write CD...** (see chapter 17).

Disc Info

Select this command to view information about the CD currently inserted in the recorder:
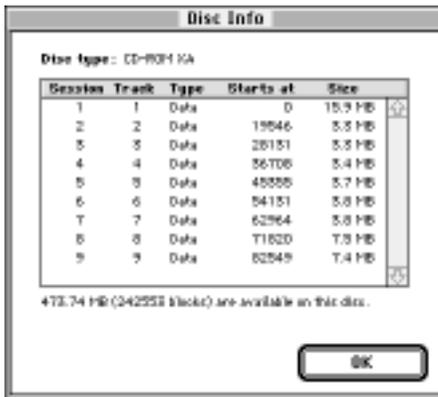
Available information includes:

- Media type (recordable or not)

- any existing sessions that may be on the disc

- amount of disc space used and available

- whether the disc can accept additional sessions

Recorder Info

This command displays technical information about the connected CD recorder. If you ever need to know the firmware version of your recorder, you can find it by using this command.

Eject

Ejects any currently inserted CD from the recorder.

Mount CD-ROM

This will cause any mountable sessions that may be on the currently inserted disc to appear on the Mac desktop. Once a disc is mounted, it can be used normally until you eject the disc or restart the computer, even if you exit the Toast application.

It is not necessary for the Toast CD Reader extension to be installed for this function to work.

➤ **Stop**   Blank CD-Rs cannot be mounted.

The Utilities Menu

The Utilities menu consists of the following items:

Mount Disc Image

Mounts a previously created disc image on the Mac desktop. All images except Video CD images can be mounted.

Mounted images function just like any other volume.

Mounted HFS Images can be modified, all other formats are mounted as "read only".

➤ **Note** Only defragmented disc images can be mounted (the entire image file must reside on contiguous blocks on your hard disc). Use a commercial disc optimizer like Norton Speed Disk to defragment if necessary.

Images can also be mounted by clicking **Mount** on the main screen in the "Disc Image" Format (see chapter 16).

Create Temporary Partition

This command allows you to create an empty disk image file of any size which can then be mounted and used to set up data to be written to a CD.

Temporary partitions are useful in situations where you want to have complete control over the layout of your data and how its windows are arranged and displayed.

Since temporary partitions are automatically created with 2K allocation blocks, they can also make it possible to have shared data on a hybrid CD, even though your hard drive may not have the required block size. (See chapter 6 for more information on shared data.)

Follow these steps to create a temporary partition:

1) **Select Create Temporary Partition.**
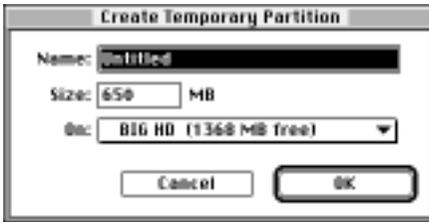
2) **Enter Name and desired Size for the partition.**

3) **Select the hard disk where you want the image file for this partition to reside.**

4) **Click OK.**

➤ **Stop**   Temporary partition files must reside on contiguous blocks on your hard disc.

If sufficient contiguous space is not available, Toast will report an error:
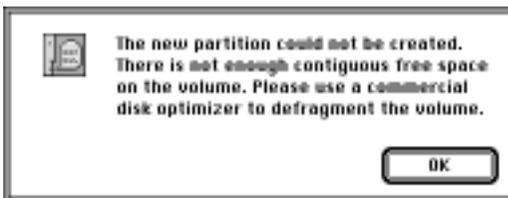
Compare

The Compare command is used to compare the contents of two data sets to see if they match. You can compare two volumes, two folders, or two files:

➤ **Note** **Compare** differs from the Verification function which Toast performs after writing a CD in two significant ways. First, **Verify** always compares the selected source data to the finished CD; with **Compare** you can compare any two data sets. Second, **Compare** checks each individual file when comparing the data; the **Verify** function only compares blocks. This means that when the **Compare** function finds a problem, it can usually tell you exactly which file contains the error.

1) **Choose Volumes, Folders or Files from the pop-up menu.**

2) **Select the desired original and copy.**

3) **Click Compare.**

If any mismatches are found, Toast will display a list:

You can select items from the list and simply drag them to the desktop to create a text-clip file (requires the Apple Clipping extension). Open the clip by double-clicking its icon.

Check Aliases

Examines all the aliases on a specified volume to make sure they all point to items on the same volume and that all the original files can be found.

You should always check aliases before writing in Mac Volume or Hybrid format.

After choosing Check Aliases**, select the desired volume and click OK.**

Aliases are checked, and any problems are displayed in a list:

You can drag items from the list to the Finder for later use:

Be sure to delete or correct any non-functional aliases before writing your CD.

Make System 6 Compatible

Choosing this command causes Toast to build a System 6-type desktop file on the selected volume that will be written on the CD. This is required if the disc will be used on Macs running System 6.

Select the desired volume and click OK.

The desktop file is created on the volume.

Autoloader

To automatically write a series of discs, select this item. After writing one disc Toast waits for a new discs to be inserted and starts writing when the recorder is ready.
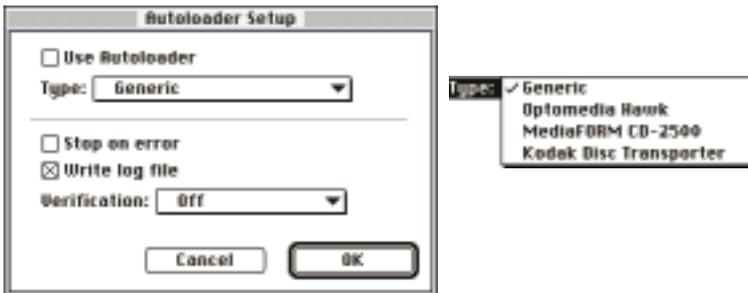
- **Use Autoloader:** Check this option to use the Autoloader option.

- **Type:** Select the desired Autoloader type. To use this function even if you have no autoloader system select the **Generic** option. You can then insert a new disc yourself as soon as one disc is finished. If you want to write several discs with the same contents, this function is very useful to save time and avoid errors.

- **Stop on error:** Checking this option causes Toast to stop writing any additional discs if it encounters an error while writing or verifying. **We recommend always using this option.**

- **Write log file:** Select this command to have Toast keep a log file of all events during a writing session.

- **Verification:** The Verify command lets you specify which discs should be verified while writing multiple discs with an autoloader system.

➤ **Note** Verifying takes as long as writing (see chapter 18). To minimize the time it takes to verify, uncheck the option **Calculate a checksum while verifying** in the **Preferences** (**Edit** menu).

After clicking **Write CD…** on the main window the following dialog will be displayed:

Batch Job....

> **Number of Copies:** `1`
> ☐ **Fixate Discs**
>
> (Cancel) (**Start**)

Enter the number of copies to be written.

If you want the discs to be closed so that no further data can be added later, check the option **Fixate Discs**.

After clicking **Start** the following dialog is displayed:

Discs to write: 2
Discs written: 0
Errors: 0
Type ⌘-. to stop after the current disc.

Waiting for the first disc...
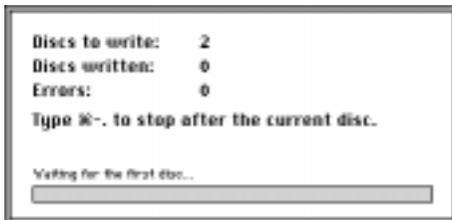
Chapter 16: Settings for the different Formats

The "Mac Volume" Format

The volume selection window is displayed after clicking **Data**…:

This window lists all available volumes/partitions along with information about their status.

Comments

Only volumes which are listed as **ok to write** can be selected as the data source for a Mac Volume CD.

Other possible comments are listed here, along with suggestions for correcting problems.

Comment	Information	Possible Solutions
Startup volume	This volume contains the active System Folder	Check "Optimize on-the-fly". Open files can then be written.
Busy	This volume contains the currently used Toast software.	Check "Optimize on-the-fly". Open files can then be written.

Comment	Information	Possible Solutions
Shared	The volume is currently being shared.	Turn off Filesharing in the Sharing Setup control panel
Audio CD, ISO 9660, High Sierra, MFS	The volume is not an HFS volume.	Write the volume using SCSI Copy, or use another software tools to convert the contents into writable format (e.g. "ASTARTE CD-Copy").
Foreign File System	The volume is not an HFS volume, it is e.g a DOS formatted hard disk.	Select the data in "Mac Files & Folders" or in "ISO 9660" format.
Server Volume	The volume is a server volume.	Select the data in "Mac Files & Folders" format.

The Optimizer

Background

The built-in optimizer is one of Toast's most useful features. Its unique technology allows you to do things that used to be impossible:

- you can now reliably write a CD from a fragmented data source

- you can write CDs that seem to hold more data, by allowing Toast to select the optimum block size

- you can write CDs that mount more quickly and feel more responsive, by having Toast position every file at the beginning of a sector.

- any mounted volume can be selected as your data source, even the startup volume and volumes with files in use.

- you can change your data right up to the time you write the CD, without having to worry about creating fragmentation (as would be the case if you used normal optimizers.)

Functionality of the Optimizer

Unlike typical disc optimizers, Toast's optimizer works while the disc is being written.

- Nothing is changed on the source volume, so there is no risk to your data.

- The directory and desktop files for the CD are written at the beginning of the disc, greatly reducing seek time for finished disc, and further increasing responsiveness.

The Optimizer's Settings

You can choose between two different optimizer strategies:

• Optimize For Size

• Optimize For Speed

➤ Note All Mac volumes are divided into allocation blocks. A volume can have a maximum of 65,535 blocks, no matter how large the volume is. Since a file always occupies at least one block, the larger the volume is, the larger the minimum size of the file on the disc (due to the increased block size).

The option **Optimize for Size** looks for the smallest possible block size and uses it for the CD. This means that if you have many small files, you might be able to save more data onto a disc than without optimizing.

The option **Optimize for Speed** looks for the smallest possible block size which is a multiple of 2048. This insures that each file starts at the beginning of a CD sector (1 CD sector = 2048 bytes), which speeds up access times. (When writing a Mac/ISO Hybrid disc this option is the only available as the ISO 9660 system is based on CD sectors.)

An extreme example:
You have 20,000 files, all smaller than 512 bytes.

Using **for Size** a block size of 512 bytes is used, the volume needs : 512 * 20,000 = 10 MB.

Using **for Speed** a block size of 2048 bytes is used, the volume needs: 2048 * 20,000 = 40 MB.

Other Advantages of the Optimizer

• Even if your system configuration is not fast enough to optimize on-the-fly you still save time when saving the volume as disc image and you get a disc which is optimized for CD and not for hard disk

• Finished discs will have no errors in their file structure as the optimizer creates a fresh structure as it works. You might even be able to write from a volume which has a damaged file structure.

Disadvantages of the Optimizer

• Higher hardware requirements: Power Mac or 68040 with 25 MHz, SCSI Manager 4.3 support and a fast hard disk.

• The optimizer requires more available RAM: about 1 MB for each 3000 files, plus 4 MB for 2x write speed, 6 MB for 4x write speed.

Both issues can be resolved by saving the volume as disc image before writing (see chapter 15 "The File Menu").

Don't copy free space

➤ **Note** if you select one of the optimization methods, then this option is not available (or needed).

Selecting **Don't copy free space** causes Toast to ignore any portion of the source volume after the last block which contains data.

This option allows you to use a source volume which is larger than the capacity of the CD, as long as the defragmented data does not use more space than the CD has available.

➤ **Stop** Your data should be defragmented for this option to be useful; empty blocks that are "buried" among the used blocks are not considered to be free. (see "The Info Dialog" below)

Bootable CDs

Select the **Bootable** option to create a CD which can function as a startup disc when used in an **Apple-brand** SCSI CD-ROM drive.

In order for the bootable option to work, the source volume must contain a functional System Folder that will work on the specific Macintosh model(s) that you want to use the disc in. A System Folder that works on one Mac (a PowerMac for example) will not necessarily work properly on a different Mac model. Be sure you construct a System Folder that is appropriate for the target machine(s).

➤ **Stop** A Trash and a Desktop-Folder are created as soon as you click this option; this can be annoying if the finished disc will be shared over a network; do not select the bootable option if you don't need it.

To actually boot from a bootable CD, you have to press a special key code while the Macintosh starts up:

- on some Macs, you simply press and hold the "c" key until the "Welcome To Macintosh" message appears.

- on other models, you have to press and hold the Command, Option, Shift and Delete keys (simultaneously) until the message appears.

- You can also use the STARTUP DISK control panel to set the CD as the startup device.

AutoStart

Using the **AutoStart** option, you can specify a file/application that will open automatically whenever the CD is mounted.

- When you click the **Autostart** option, a standard file selection window appears. Simply select the desired file and click **Open**.

- To change the selected file, click on its name in the rectangle. The selection window is then again displayed.

➤ **Stop** The name of the item selected must be 11 characters or less, and the file must reside at the root level of the drive.

If you select a file (rather than an application) to Autorun, be sure that the application needed to open that file will be available on the target system.

The "Info" Dialog

Once you've selected a volume in the volume selection window, the **Info…** button will be available. Click the button to display this informational window:

The upper portion of the window shows a graphic representation of the data on your disk. The blue areas show blocks which contain data, while gray areas show empty blocks. (If you save and delete data frequently on your hard disk, it may appear highly fragmented, with many gray areas "buried" within the blue area.)

➤ **Note** Toast only recognizes free space after the last data block. (Free space between data blocks is not recognized.)

If you use NORTON FILE SAVER, the **Size of CD-ROM** will always equal the size of the volume selected, since FILE SAVER stores its invisible files at the very end of the drive. Deactivate FILE SAVER using its control panel to prevent this.

The items in the lower left part of the window display details about the volume you've selected, including the total size of the volume and its block size, along with the amount of space used by files, and the amount of free space.

To the right of the volume information is the **Size of CD-ROM** info. This number shows how much space is required on the CD to be able to write all the data from the selected volume. If the volume is fragmented, the space required will be larger than the actual space used (as shown to the left).

➤ **Note**   When **Optimize on-the-fly** is checked, the information shown in this window may not be accurate.

Check Aliases

Before writing a Mac Volume, it's a good idea to use the **Check Aliases** command to insure that any aliases on the CD will function as expected. (See chapter 15 "The Utilities Menu".)

The "Mac Files & Folders" Format

The Main Window

The main file selection window lists all the files and folders that you have selected for inclusion on your CD. Changes that you make in this window will change the contents of the CD.

All directories are displayed in alphabetical order. The list behaves very much like a standard directory window in the Finder which is sorted "by name".

Click on the arrow to the left of the disc or folder name to "open" the item and display its contents. Click the arrow again to "close" the item.

➤ **Note** To open all folders at once hold the Option-key while clicking an arrow. Repeat the procedure to close all folders.

Creating a New CD / a New Folder

If the selection window is empty, you can create a new CD by clicking the **New CD** button.

An untitled CD icon will appear in the list. You can then add other items to the CD by dragging and dropping, or by using the **Add…** button.

If the selection window already contains some items, the **New Folder** button will be available. Click it to create a new, empty folder at the same level as any selected item. If no item is selected when you click the **New Folder** button, the new folder will be placed at the root level.

Importing the Data

1) Drag & Drop Method

To add files and/or folders to the list, simply select their icons in the Finder and drag them onto the Toast window.

---

2) The Selection Method

Click the **Add…** button.

Select the desired item from the file selection dialog and click **Add**. Repeat as often as required to add all the items you want.

Click **Done** when finished.

Renaming Folders, Files and the Disc & Changing Visibility

You can change the name of files, folders and discs, as well as setting their visibility property without affecting the original items on your drive.

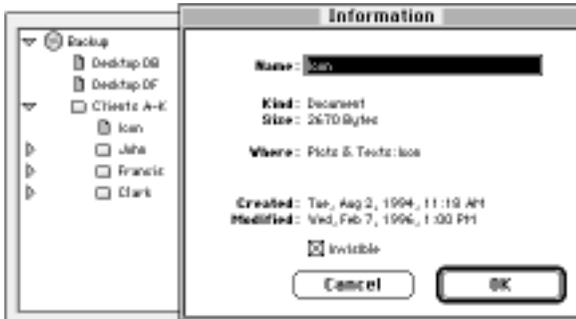**To change the name of an item in the list, double-click it.**

The information window is displayed:

Enter the new name and click **OK**.

To make a file or a folder invisible check the **Invisible** checkbox. When checked, the item will be written to the CD, but will not be visible in the Finder.

Invisible items are displayed in gray in the list.

➤ **Note** Two desktop files are always written onto each CD – "Desktop DB" and "Desktop DF" (see below). These files are always invisible, regardless of how you set their "Invisible" property.

About the Desktop Files

The Desktop files contain information that the Mac operating system uses to determine which icon should be associated with each file or folder. Normally, each Mac volume has its own desktop files. These files are updated automatically by the System, whenever you copy new items to that volume.

Because Toast makes it possible to assemble a CD from files and folders located on several different volumes, it is possible that the desktop files may not contain all the icons needed to properly display each item. Toast attempts to use the desktop files that will yield the best result, but in some cases you may want to override its choices.

Here is how Toast gets its desktop file information:

If a folder is dragged from a local volume into the empty window, the desktop files of the volume where that folder resides are selected. If you start by selecting a folder from a non-local volume, the desktop files of the startup volume are used.

To select the desktop files of a special volume, start with an empty Toast window and import any folder (it can even be empty) from that volume. Toast will then use the desktop files from that volume.

Selecting Items

To select a single item in the list, simply click on it. To select more than one item, use one of these methods:

- **Drag a selection-rectangle around the items with the mouse.**

- **Click the first item, hold down the shift-key and select the last item to select all items in between.**

- **To select items which are not next to each other in the list, hold down the command-key while clicking the respective items.**

- **To select all items in the list choose** Select All **in the** Edit **menu.**

Removing Items

To remove selected items use the **Backspace key**, choose **Clear** from the **Edit** menu or click the **Remove** button.

➤ **Stop** Removing items cannot be undone. If you accidentally remove the wrong item you will have to reselect it.

Copying the Contents as Text

To copy the contents of the list as text select **Copy** from the **Edit** menu. The text can be pasted into any other application.

Modifying the Hierarchy

You can reorganize the hierarchy of the CD by dragging items around in the list. You can move items to different folders or move folders until you have the layout you want.
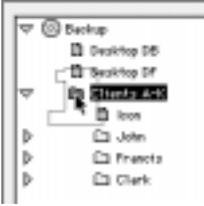
➤ **Stop**   If you change the contents of a folder by moving items in the Toast file selection window, then its appearance will no longer match the original when written to the disc. (see below "The Appearance of Windows on the Disc")

Resolve Aliases

If the data you select for your disc contains aliases, you can determine how those aliases are treated when the CD is written.

Resolve Aliases checked   ➜   the original files will be written onto your CD
Resolve Aliases not checked   ➜   the aliases will be written to the CD

➤ **Stop**   If you decided not to resolve aliases, you should make sure that the aliases will still be valid once they are written to the disc.

➤➤   Also see chapter 4 Example 1: "Backup with Aliases".

The Appearance of Windows on the Disc

If the contents of an imported folder is not changed by any means, the appearance of the window will be exactly the same as in the original folder (this includes the view settings, window size, and window position).

If items are added to a folder which were not in the original folder, the contents will be displayed according to these rules:

- If the folder contains 9 items or less its contents will be sorted "by icon". (If you use long file names, they may overlap when viewed this way.)

- If a folder contains more than 9 items it will be sorted "by name".
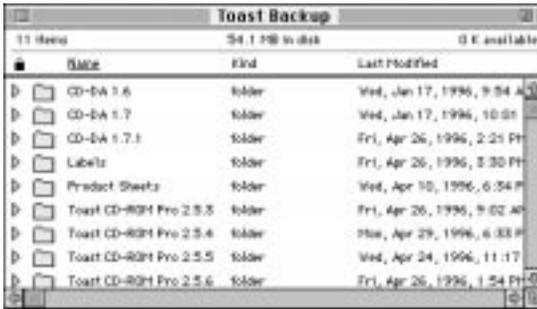
The Order of Files on the Disc

Files/folders are written onto the disc in alphabetical order, as shown here:
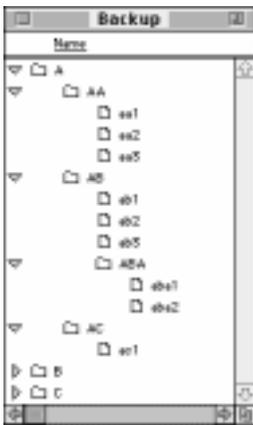
Data is written defragmented to leave the maximum amount of free space for additional sessions.

Mac HFS Discs with Several Sessions

An HFS disc with more than one session is a multi-volume disc. This means that each session will always appear as a separate volume on your desktop.

Depending on which CD-ROM driver you use, you may initially only see the first session

when you insert a multi-volume disc in your CD-ROM drive.

- **Apple CD-ROM driver Version 5.0.x and lower:**

  Only the first session is automatically mounted.

- **Apple CD-ROM driver Version 5.1.1 and higher:**

  All sessions are automatically mounted as separate volumes on the desktop.

- **Toast CD-Reader Version 2.0 and higher (to use your recorder as a player):**

  All sessions are automatically mounted as separate volumes on the desktop.

The "ISO 9660" Format

The ISO File Selection window has three parts: **Files**, **Layout** and **Settings**. You can switch between the parts by clicking the tabs at the top of the window:

- • **Files:** selecting the data
- • **Layout**: determining the layout or order of the files on the disc
- • **Settings**: setting the options for file naming, format, etc.

Files

The Main Window

The main file selection window lists all the files and folders that you have selected for inclusion on your CD. Changes that you make in this window will change the contents of the CD.

All directories are displayed in alphabetical order. The list behaves very much like a standard directory window in the Finder which is sorted "by name".

Click on the arrow to the left of the disc or folder name to "open" the item and display its contents. Click the arrow again to "close" the item.

➤ **Note** To open all folders at once hold the Option-key while clicking an arrow. Repeat the procedure to close all folders.

Creating a New CD / a New Folder

If the selection window is empty, you can create a new CD by clicking the **New CD** button. An untitled CD icon will appear in the list. You can then add other items to the CD by dragging and dropping, or by using the **Add…** button.
If the selection window already contains some items, the **New Folder** button will be available.

Click it to create a new, empty folder at the same level as any selected item. If no item is selected when you click the **New Folder** button, the new folder will be placed at the root level.

Importing the Data

1) Drag & Drop Method

To add files and/or folders to the list, simply select their icons in the Finder and drag them onto the Toast window.

2) The Selection Method

Click the **Add…** button.

Select the desired item from the file selection dialog and click **Add**. Repeat as often as required to add all the items you want.

Click **Done** when finished.

Renaming Folders, Files and the Disc & Changing Visibility

You can change the name of files, folders and discs, as well as setting their visibility property without affecting the original items on your drive.

To change the name of an item in the list, double-click it.

The information window is displayed:

Enter the new name and click **OK**.

To make a file or a folder invisible check the **Invisible** checkbox. When checked, the item will be written to the CD, but will not be visible in the Finder.

Invisible items are displayed in gray in the list:

Selecting Items

To select a single item in the list, simply click on it.

To select more than one item, use one of these methods:

• **Drag a selection-rectangle around the items with the mouse.**

• **Click the first item, hold down the shift-key and select the last item to select all items in between.**

• **To select items which are not next to each other in the list, hold down the command-key while clicking the respective items.**

• **To select all items in the list choose Select All in the Edit menu.**

Removing Items

To remove selected items use the **Backspace key**, choose **Clear** from the **Edit** menu or click the **Remove** button.

➤ Stop   Removing items can not be undone. If you accidentally remove the wrong item you will have to reselect it.

Copying the Contents as Text

To copy the contents of the list as text select **Copy** from the **Edit** menu. Depending on the naming option selected, one of these windows will be displayed:

- **All items**: all items in the selection window are copied as text.

- **Renamed items or Items with Illegal Names**: only renamed or illegal items are copied as text. For details on the different naming options please see "Settings" below.

The text can be pasted into any other application.

Modifying the Hierarchy

You can reorganize the hierarchy of the CD by dragging items around in the list. You can move items to different folders or move folders until you have the layout you want.

Resolve Aliases

If the data you select for your disc contains aliases, you can determine how those aliases are treated when the CD is written.

Resolve Aliases checked ➜ the original files will be written onto your CD
Resolve Aliases not checked ➜ the aliases will be written to the CD.

➤ **Stop** Aliases only work on Macintoshes; if the ISO disc you are creating will be used on other systems BE SURE TO SELECT RESOLVE ALIASES so the original items will copied to the CD!

➤ **Note** If you are working on a hybrid disc, aliases which point to items on the selected Mac volume will be resolved by using shared data.

Layout

The Order of Files on the Disc

If no changes are made in the **Layout** portion of the files selection window, then the files are written in the following order:
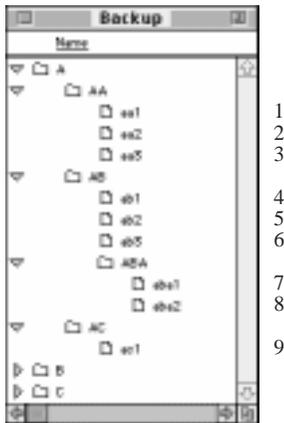
Files are written defragmented to leave the most possible space for more sessions.

In most cases the standard layout will work just fine.

However, you can change the order in which the files are written on the disc for special purposes.
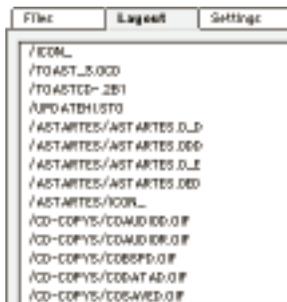
To change the order, simply move selected files to the desired place in the list.

- Files located at the top of the list will be written first (towards the inner part of the disc).

- To place selected files on top or at the bottom click **Move to top** or **Move to bottom** respectively.

Settings

Format Settings

Use the **Format** pop-up menu to select the desired format for your ISO disc.
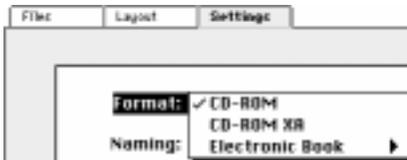
CD-ROM

This format should be used for single session CDs, and CDs that will be duplicated by a replication plant. Some very old CD-ROM drives can only read CDs in this format.

➤ **Note**   If you select CD-ROM format, you will not be able to add sessions to the disc later.

CD-ROM XA

Select CD-ROM XA format for multisession discs, so you have the possibility of adding additional sessions later.

➤ **Stop**   When a Hybrid track is written as a second session of an audio CD this format has to be used. See chapter 6 and below for details.

Electronic Book

The Electronic Book format is rarely used. You will know if you need it.

Naming Settings

The **Naming** menu lets you specify how Toast should handle file names that are not compatible with the ISO file format.
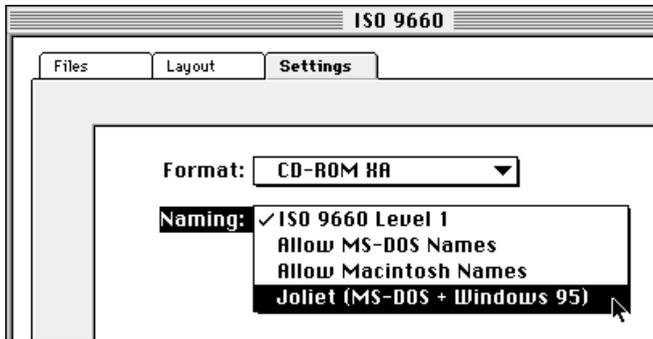
Toast will automatically transform file or folder names so they conform to the selected naming option.

The **Files** list displays the transformed name, along with the original name (in gray).

➤ Note   To see all transformed (or illegal) names choose **Copy** in the **Edit** menu, then select **All items** or **Renamed items (or illegal names)** from the dialog that appears. You can then paste the list into any text processing application.

ISO 9660 Level 1

This is the original ISO naming format and is very restrictive (most systems don't need pure ISO standard).

Name requirements:

- **Length:** 8.3 characters
- **Characters:** uppercase letters A-Z, numbers 0-9 and the underscore _. No other characters are allowed.
- **Examples:** ISO_NAME.TXT, IMAGE_1.TIF

ISO Level 1 has a limitation of 8 levels of nested directories. Toast will allow you to have more than 8 levels but the data might not be readable on many systems (you will be warned before trying to write an ISO disc with more than 8 levels).

Allow MS-DOS Names

Similar to ISO Level 1 but not as restrictive. Use this option for discs intended for DOS or Windows 3.x systems.

- **Length:** 8.3 characters
- **Characters:** uppercase letters A-Z, numbers 0-9, the underscore _ and these special characters: { } @ - ^ ! $ % & ( ) ` ´ # ~

ISO format has a limitation of 8 levels of nested directories. Toast will allow you to have more than 8 levels but the data might not be readable on many systems (you will be warned before trying to write an ISO disc with more than 8 levels).

Allow Macintosh Names

This option causes Toast to leave all file and folder names as they are. Use this option if you are using ISO format discs to make incremental backups from your Macintosh.

➤ **Stop** Discs created with this naming option can only be used on Macintoshes!

Joliet (MS-DOS & Windows95)

This is an extension to the ISO format which allows the disc to preserve long file names for use under Windows95 and WindowsNT, while also being fully compatible with older versions of DOS and Windows.

A Joliet format disc contains two file systems: An ISO 9660 compliant file system using MS-DOS names, and the Joliet file system using long Unicode names. Both file systems point to the same data files. Remember that only Windows 95 and Windows NT 4.0 systems will have access to the long names, while ISO 9660 compliant systems such as MS-DOS, Unix, or Mac OS will only see the ISO 9660 file system. *A Mac/ISO hybrid disc created with Joliet names will actually contain three different file systems: HFS, ISO 9660 and Joliet.*

Name requirements:

- **Length:** 31 characters
- **Characters:** These characters are not allowed */:;?\
- **Example:** 1998 Report to Shareholders

Toast does not change file names when Joliet is selected. Instead, illegal names (containing */:;?\ ) are flagged with three red exclamation marks in the file list.
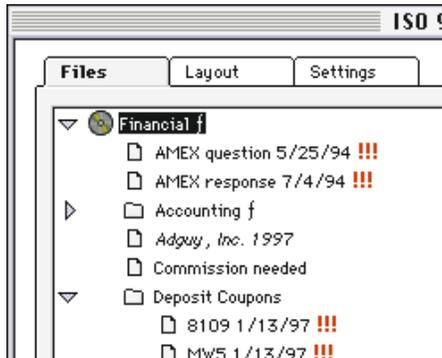
You can use the "Copy" command in the "Edit" menu to export a list of all illegal names to the clipboard.

```
═════════════ Copy ═════════════

Copy...
    ⦿ All items
    ○ Items with illegal names

    ⌈  Cancel  ⌉      ⌈⌈    OK    ⌉⌉
```

```
▤▤▤▤▤  Clipboard  ▤▤▤▤▤
Clipboard contents:  text
─────────────────────────────
Financial ƒ                        ⬆
  AMEX question 5/25/94 !!!
  AMEX response 7/4/94 !!!
  Accounting ƒ
    1987 Tax Materials
      Cornerstone Equip–9/19/87 !!!
    1988 Tax Materials
      IRS re; payment 11/12/89 !!!
      IRS re;partial payment !!!
    1989 Tax Materials
      David Anderson/taxes 10/7/90 !!!
    1991 Tax Materials
      Note to CPA 10/5/92 !!!
    1993 Tax Materials
      Note to CPA 3/27/94 !!!
    1994 Tax Materials
      More info for Todd 8/8/95 !!!
    1995 Tax Materials
      Tax Extension Form 8/14/96 !!!
```

Viewing the Short Names under Joliet

To view the short names seen by MS-DOS or (if you're not creating a hybrid disc) Macintosh systems go to the "Settings" panel and switch to "Allow MS-DOS Names".

Note: If you change a short name the long (Joliet) name will be changed too.

Other Settings

Append Version Numbers (;1)

This option adds the standard ISO version number (;1) to every file name. This version number is normally invisible, and is seldom needed. This option is not available with Mac names.

➤ **Stop** The installed ISO driver does not usually display version numbers even if they are on the disc. If you want to see full names on the Mac press the option-key while inserting the disc.

Use Apple Extensions

Check this option to have Toast write both the data and resource forks for Mac files.

This has no effect when the disc is read on a PC.

For hybrid discs this option is not needed, as both forks are always written to the HFS part of the disc.

Set Defaults

Clicking this button will preserve your current settings as the default for future Toast sessions.

More

Clicking the **More…** button lets you enter a variety of additional information that will be written to the disc as part of the directory.

➤ **Note**   In most cases this information is not visible or accessible to the user.

Concerning Rockridge Extensions for UNIX

Toast cannot create discs with the Rockridge extensions for UNIX. It can, however, write images created by UNIX utilities such as "mkisofs" which do incorporate Rockridge name extensions.

The Appearance of Windows on the Disc

On a Mac all windows of an ISO disc will be sorted "by icon".

➤ **Note** If you use ISO format to make backups for a Mac, you might want to use short files names so that they don't overlap when viewed "by icon".
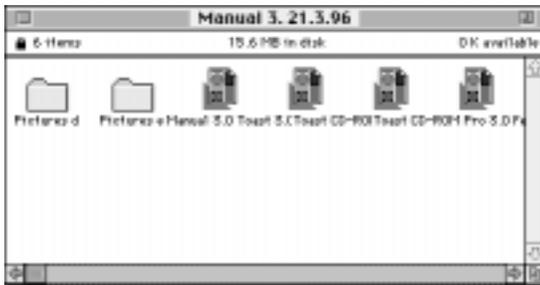
The "ISO 9660 – Multisession" Format

This section covers adding an ISO 9660 session to a disc which already contains at least one additional ISO session. There are several different strategies that can be used when adding an ISO session. Each approach is covered below.

Before deciding which approach to use, you need to know what relationship the data in your new session has to the existing data. For example, does the new data supersede the old data? Or is it additional data that should be stored along with the old data?

The three primary strategies are:

-   **Ignore old sessions**

-   **Append to old sessions**

-   **Incremental backup session**

Adding an ISO Session

To add a new ISO session to a disc, begin by selecting your new data in the normal fashion (as described in chapter 5.)

Once your data is selected, click the **Write CD…** button in the main window.

This dialog box will appear:

Ignore Existing Sessions

Choosing this option will produce a CD which appears to contain ONLY the data from the new session. All old data will be gone (it's not actually gone, since CDs cannot be erased, but you will no longer be able to access it.)

➤ **Note** There is no way to view these "old" sessions. Only use this option if you are sure that older sessions are no longer needed.

Append to "*Name of the previous Session*"

This option results in a disc that has the name of the new session as its volume name or label and which has both the new data and the old data together in the "top" level of the directory structure.

Example:

In this example, two folders named "John" and "Smith" were originally written as a session named "Backup".

A second session named "Backup II" was added; it contained one folder named "Francis".

Notice that the disc is now named "Backup II" and that the folder "Francis" appears at the same level as the old folders.

➤ **Note** It is also possible to selectively "delete" folders from the structure. For example, let's assume that the folder "John" is no longer needed. In the ISO dialog create a new folder, give it the name "John" and define it as **Invisible** (see "Renaming Files & Folders and Changing Visibility" earlier in this chapter). Then add any new data you may want, and write the session. The new data will be added to the structure and the folder "John" is no longer visible.

Incremental Backup

Selecting Incremental Backup causes Toast to write only the files and folders which have changed since the last session.

➤ **Note** For this to work correctly you need to select the same volume or folders for each session. If you select completely different data, the results of an incremental backup will be the same as if you selected "Ignore existing sessions".

See chapter 5 "ISO 9660" "Examples": "Example 1".

Importing a Session from a Disc

For the ultimate in control, Toast allows you import the directory of previous ISO sessions and then edit and make any changes you want. You can delete, rename, move, and reorganize any of the files and folders of the old sessions.

To import an existing session, make sure the CD is in your recorder, then:

1) **Click the arrow on the lower right side of the window and select Import Session.**
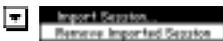
If there is at least one ISO session already written on the disc, the Import Session dialog will be displayed:

2) **Select the desired session to import (usually you would select the most recent session.)**

➤➤ **WARNING**: If you import a session other than the most recent one, you will not be able to see any data from the sessions written after the one you have imported!

3) **Specify how you want the session to appear in the new session's directory by clicking one of the radio buttons.**

If you select **Merged**, the name of the session will become the name of the new session and the data of the old session will become the data for the new session.

If you choose **Put into a directory** the old session is put in a directory with the name of the session. If no data was selected before, a new CD directory is created containing one folder which contains the data from the old session.

4) **Click OK.**

The imported session will be displayed in the ISO directory window. Files that are already written on the CD are marked with a small CD icon by their name.

Modifying an Existing File Structure

At this point you can make any desired changes to the file structure.

You can make any or all of these changes to the structure:

- **Files and folders can be moved to another position.**
- **Files and folders can be added or removed**
- **Files, folders and the disc can be renamed.**
- **The visibility of files and folders can be changed.**
- **New data can be added to any part of the directory structure.**

The way you arrange the data will determine the layout of the disc once you write the new session.

➤ **Note** To conserve disc space, files which are already on the disc are not written to the disc again; the directory structure is simply altered to match your changes.

Removing an Imported Session

To remove an imported session from the ISO directory window, select **Remove Imported Session** from the pop-up menu in the lower right corner of the window. All the files and folders from the imported session will be removed from the window, leaving only new data which you may have added.

The "Mac/ISO Hybrid" Format

This section covers the creation of Mac/ISO Hybrid discs. Hybrid discs may seem complex at first, but if you follow the simple guidelines presented here, it's a snap.

Preparing the Mac Portion of a Hybrid Disc

For a hybrid disc, the Mac data must be by itself on a volume or partition.

This volume or partition should contain all the data for the Mac portion of the disc, as well as all the data which will be shared by both the Mac and ISO portions.

You may arrange the data in any way you like, and the shared data may be located anywhere in the directory structure of the Mac volume.

For details please see "The Mac Volume Format" earlier in this chapter.

About Block Size and Shared Data

In order to write a hybrid CD containing shared data (data visible on the Mac and the PC), the block size of the Mac volume must be a multiple of 2048 Byte (2 Kilobyte), unless you choose the **Optimize** option in the volume selection window.
The block size of the volume is shown in the **Info…** dialog (see "The Info Dialog" in "The Format Mac Volume" earlier in this chapter).

If the block size of the selected Mac volume is not a multiple of 2 K, you have these options:

- You can check the option **Optimize for Speed** ("Optimize for Size" is not available in Hybrid format), which will allow the data to be shared.

- You could simply choose to write the common data to the disc twice, once for the Mac part and once for the ISO part. (This of course requires that there is enough room on the disc for two copies of the shared data.)

- You can create a temporary partition using Toast for use as your Mac data source. Temporary partitions created with Toast automatically have the correct block size for shared data. (See chapter 15 "The Utilities Menu")

- Reformat your hard disk and choose a compatible block size.

The ISO Part of a Hybrid Disc

The data for the ISO portion of a hybrid disc can reside anywhere on your hard drives. You simply drag the desired files and folders into the ISO window in Toast to select the data.

- **If you select data for the ISO part which is located on the volume which you selected as the source of the Mac data**, that data will automatically be shared, and hence will be written to the disc only once.

- **If you select data from other volumes or directories**, it will be visible only on PCs**.**

For details about the different settings please see "The ISO 9660 Format" earlier in this chapter.

➤ **Note**   If you prefer to prepare data for hybrid CDs by using an ISO folder and aliases to the shared data (as required by older versions of Toast), you can still use that method with Toast version 3.

Why Multisession Hybrid Discs are a Bad Idea

While it is possible to create a multisession Hybrid disc, this is generally not recommended.

- No link can be established between the different sessions, which means you would end up with a multi-volume disc.
- On the PC only the data of the last session would be visible; earlier sessions will be ignored. (On a Mac each session would appear as a separate volume.)

➤ **Note**   It is OK to write a Hybrid session as the second session after an audio session. An audio CD player would then see only the audio tracks, while computers will see both audio and data.

Testing your Hybrid Disc Before Writing

You can test the layout and contents of a hybrid disc before writing to make sure it is set up the way you want it.

1)   After selecting all the data, choose Save as Disc Image from the File menu.

The Mac and the ISO part are saved as a single disc image file.

2)   Select Mount Disc Image from the Utilities menu..

Two volumes are mounted on the desktop: one for the Mac part and one for the ISO part. You can then open the volumes to review their contents. (No changes can be made to volumes mounted in this manner.)

You can then review the layout of both volumes, and make any desired changes befor writing the image to disc using the DISC IMAGE FORMAT. (Select Disc Image Format and choose the saved hybrid disc image as the source.)

Toast's Greatest Hits & Audio CDs

Toast's Greatest Hits lets you create audio CDs by simply dragging tracks from existing CDs or sound files onto the Toast track list.

• Tracks can be copied directly from the original CD without having to save them to a hard drive first. You can even select tracks from different CDs and Toast will prompt you to insert the correct source CD while writing the new disc.

• Toast can also write audio CDs from standard Mac sound files. Toast recognizes SoundDesigner II or AIFF sound files (they must be in 16-bit, 44.1 kHz format)

You can combine these two methods if desired.

Note: direct copying of audio tracks requires a CD-ROM drive which supports audio extraction and a Macintosh which supports SCSI Manager 4.3.

Selecting Tracks

There are two methods of selecting audio files or tracks for writing to a CD.

1. **Drag & Drop Method**

    Select the desired audio files in the Finder and drag them onto the main window.
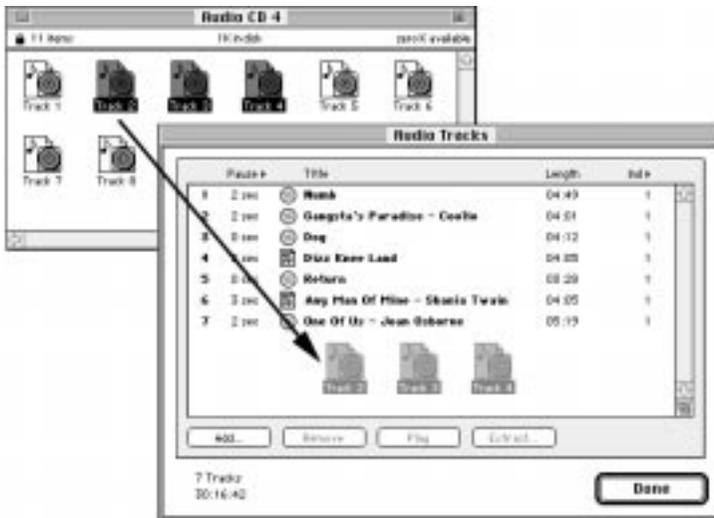
    When selecting from an audio CD, you can drag one or more tracks, or simply drag the icon of the disc to select all the tracks.

2. **The Selection Method**

Clicking the **Audio**… button in the main Toast window will display the AUDIO TRACKS window, shown here:

Click **Add**… and select the desired files in the dialog which appears. To import all files in a given folder click **Open all** while the contents of that folder is displayed.

Rearranging the Audio Files

You can drag the individual audio tracks around in the AUDIO TRACKS window to change the order that they appear on the finished disc.

Removing Tracks

To remove tracks from the list, select the desired files and click **Remove**.

➤ **Stop** Removing items from the list cannot be undone, but you can re-import the file if you remove something from the list by mistake.

Previewing Tracks

To play a track select it in the AUDIO TRACKS window and click the **Play** button. The track will be played back using the Mac's internal audio output. If the track is on a disc which is not currently mounted, you will be prompted to insert it.

➤ **Stop** Playing audio tracks requires the system extension "Sound Manager".

Saving Tracks as Sound Files (Audio Extraction)

Toast can save an audio track as a standard AIFF sound file. Simply select the desired track or tracks in the track list and click the Extract button. You will be prompted for a destination for the files.

➤ **Note**   When you extract a track, Toast will update the track list to refer to the extracted file, rather than to the source CD for that track.

Naming Your Source CDs & Tracks

For convenience while organizing and writing compilation discs, Toast uses the disc and track names which have been entered with the AppleCD Audio Player. If the Apple database contains names for any tracks selected, those names will be used by Toast.

You can edit these names using Toast, or with the AppleCD Audio Player.

• **To edit the names with Toast, double-click on any item in the track list to display the naming dialog:**

Enter the desired disc and track name(s) then click OK. You can use the arrows to move to a different track. (*If you change the name of a track which is based on a sound file, rather than a CD track, the name of the source file will be changed.*)

• **To edit the names using the AppleCD Audio Player, select the player from your Apple menu:**

Enter the desired disc and track name(s) in the appropriate fields.

Writing from multiple source discs

If you have selected tracks from more than one disc, Toast will display a list of the discs when you click the Write CD button.

Make sure you have all the required source discs available before proceeding, as the write process cannot be aborted once begun.

While writing, Toast will prompt you to insert the appropriate source disc as it reads each track:

The Pause between Tracks

Toast automatically inserts a 2 second gap between each track. If desired, you can specify a different gap using the Pause menu. The menu will set the pause *before* the selected track(s).

If your recorder does not support pauses of less than two seconds, you may see this message:

The currently selected recorder has a fixed pause of 2 seconds between tracks. Larger pause values will add audio silence to the previous track, smaller values will be ignored.

OK
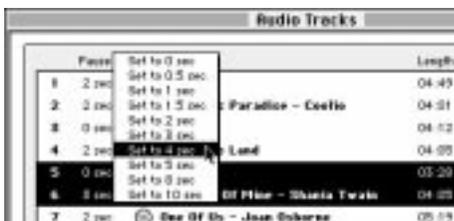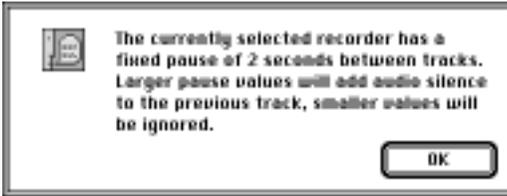
Check the Toast READ ME file on the installation disc for more information.

Index-Points – Text and Numeric Markers

If you have defined index points in your SoundDesigner II files, Toast will recognize them and write them to the disc. To read the markers in your sound files, select the marker type from the Index pop-up menu.

Use Text Markers
Ind Use Numeric Markers
1
1

Choose **Text Markers** or **Numeric Markers** depending on the type of markers you defined. The number of markers is then displayed in the track list.

➤ **Note** Index-points are seldom used, because most audio CD players cannot use them (or even see them).

WARNING: Index-points cannot be used as track start points. They are additional positions within a track which some audio CD players can use to go directly to a specific spot within a track. (see chapter 2 "Terminology").

Not all CD writers are able to write index-points in track-at-once mode (the mode used by Toast). If your writer does not support index points, a dialog box will be displayed to warn you when you try to write the CD.

The "CD-i" Format

Toast can write a CD-i disc from a CD-i image; these disc images are generated by various CD-i authoring systems like *Media Mogul* from Philips.

Toast cannot create CD-i disc directly from "dyuv" or video files.

Scrambling

Toast can accept CD-i disc images that are scrambled or unscrambled. The application automatically detects the file type and writes the disc accordingly.

The "Video CD" Format

Toast can create a Video CD in two ways:

*   **by writing a Video CD disc image created by a Video CD authoring system**
*   **by using individual MPEG streams multiplexed with "ASTARTE M. Pack"**

Video CDs can be played on Video CD players, CD-i players and computers with MPEG decoder cards.

See Chapter 9 for information on the proper settings for creating MPEG streams for use on Video CD's.

A Video CD from a Disc Image

All menu pages, links, and MPEG streams defined in your Video CD authoring software will be written to the disc when writing from a disc image.

A Video CD from MPEG Streams

When you create a Video CD from one or more MPEG streams, the resulting disc will not have menu pages or links. It will function more like an audio CD. The following functions will be available when playing the disc in a Video CD or CD-i player:

*   **play first (or only) video**
*   **jump to the next video if available**
*   **fast forward and rewind**
*   **pause**
*   **stop**

If you need more flexibility in your Video CDs you will have to create them using an authoring system and then write the discs using a disc image.

Adding MPEG Tracks to a Video CD

After selecting **Video CD** from the **Format** menu, click the **Data…** button in the main window.

The MPEG Tracks window will appear.

Click the **Add…** button to select files to be added to the track list. You can also specify a name for the disc (if desired).

Changing the Order of the Tracks

To change the order of MPEG tracks, simply select them and drag them to the desired position in the list.

The order of the files in the list determines the order of the tracks on the finished disc.

Removing MPEG Tracks from the List

If you wish to remove imported MPEG-streams from the list, select the desired files and click **Remove**.

The "Enhanced Music CD" Format

➤ **Note** Creation of Enhanced Music CDs can be quite complex. This section is intended only as an overview of the process. We recommend that you refer to the documentation included with your Enhanced Music CD authoring system for more information.

An "Enhanced Music CD", also called "CD Extra" and formerly known as "CD Plus", is a disc which contains audio tracks in the first session and a data track in the second session. The data track has to conform the specifications of the Blue Book, which requires a precisely defined file structure.

Toast creates Mac/ISO hybrid Enhanced Music CDs with shared data.

➤ **Note** "CD EXTRA" is a copyrighted name. This name can only be used on your disc if it conforms the Blue Book standard. Discs which have a second session in any other format are not really CD Extra format.

Toast supports the creation of 100% Blue Book conformant discs.

Steps to Creating an Enhanced Music CD

The first step in creating an Enhanced Music CD with Toast is to create an Audio CD containing the desired tracks (see chapter 7 for information on creating Audio CDs)

Be sure to choose **Write session** rather than **Write disc** when creating the audio disc, or Toast will not be able to append the Enhanced Music CD session to the disc.

Toast is able to create Enhanced Music CDs from

• **a pre-made CD EXTRA directory hierarchy, or**

• **a QuAC file.**

Using a pre-made Hierarchy

Launch Toast and set the disc format to "Enhanced Music CD"

Click the **Data**... button and select a volume to be used for the CD.

If you do already have a valid hierarchy, just select a Macintosh HFS volume which contains the "CDPLUS" and "PICTURES" directories in a directory called "CD EXTRA" at its root level.

The root level "CD EXTRA" folder will be used to create the ISO part of the CD.

Toast will check the integrity of the directory hierarchy and report any problems found. See "CD EXTRA Hierarchy" below for further details.

Using a QuAC File

To create a Enhanced Music CD from an existing QuAC file, simply put the file into the root directory of a Macintosh HFS volume. When you select the volume, Toast will ask you whether you want to use the QuAC file to make a Enhanced Music CD and will create a directory hierarchy from the QuAC file for you.

See "QuAC Files" below for further details.

All Enhanced Music CD discs created with Toast are hybrid Macintosh HFS / ISO-9660. The ISO part will contain all the files in the "CD EXTRA" folder of the Macintosh volume.

Files in the "CD EXTRA" folder are automatically shared, with two exceptions:
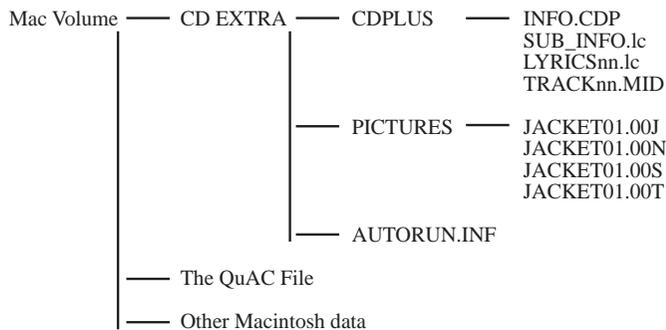
- INFO.CDP is duplicated in the ISO part, because it has to be placed at relative sector address 75 according to the Blue Book standard.

- The MPEG pictures are not shared either because they are recorded in form 2 sectors.

Before Toast writes the disc it verifies the integrity of the data structures. If everything is fine, the relative sector offset addresses will be updated and the CD written.

QuAC Files

In 1995 Apple introduced the **Qu**ickTime **A**udio **C**ontainable standard for documents that contain information for music CDs as well as pictures and optional interactive controls.

When you choose a QuAC file as your data source for a Enhanced Music CD, Toast will create a structure like this:

```
Mac Volume ──── CD EXTRA ──── CDPLUS ──── INFO.CDP
                │                          SUB_INFO.lc
                │                          LYRICSnn.lc
                │                          TRACKnn.MID
                │
                │            ──── PICTURES ──── JACKET01.00J
                │                               JACKET01.00N
                │                               JACKET01.00S
                │                               JACKET01.00T
                │
                │            ──── AUTORUN.INF
                │
                ──── The QuAC File
                │
                ──── Other Macintosh data
```

lc = language code, e.g. "de" for german, "en" for english, etc.
nn = Track number; 01, 02,… for the single tracks, 00 for the whole album

Toast will only create files for which data actually exists, but it will always create the INFO.CDP, at least one SUB_INFO.lc and four picture files.

Picture files will be created for the front cover picture of the album only. Toast will substitute MPEG files using a set of internal replacements pictures (showing the CD EXTRA logo). If desired, you can replace these files with your own sectorized MPEG pictures in the proper resolutions (NTSC or PAL).

The QuAC file will appear at the root level of the ISO volume.

CD EXTRA Hierarchies

Toast can also make an Enhanced Music CD disc from a manually constructed directory hierarchy. The structure has to be similar to the one described in "QuAC Files" above.

Toast CD-ROM will verify several parts of the directory structure before starting to write it to CD. In particular, Toast will check the following criteria:

Directories

A "CDPLUS" and a "PICTURES" directory must be present in the "CD EXTRA" directory in the root directory of the Macintosh HFS volume.

INFO.CDP

The file "INFO.CDP" must be present in the "CDPLUS" directory. It has to conform to the Blue Book specifications and contain space for pointers to each of the "SUB_INFO.lc" files.

SUB_INFO.lc

The "SUB_INFO.lc" files have to be valid, i.e. they have to conform to the Blue Book specifications and contain space for pointers to each of the "TRACKnn.MID", "LYRICSnn.lc", and picture files.

AUTORUN.INF

If there is no "AUTORUN.INF" file in the "CD EXTRA" directory of the HFS volume, Toast will will create a simple file with just the line "[autorun]" in it. You can edit this file, but remember to save it in CRLF format.

Picture Files

Toast only accepts picture files with file extensions of the form nnx (e.g. JACKET01.00J or VANESSA.01J) where nn is a track number (or 00 for the whole album) and x is the format type which could be any of J, N, T, S, P, A, or L.

At least the JPEG files have to be present, MPEG files will be substituted using Toast's built-in set of MPEG replacement pictures (showing the CD EXTRA logo) if they are missing. If MPEG files are present, they have to be fully sectorized (2352 bytes/sector). They must not be scrambled. The header and sync fields will be patched during recording, but the subheader has to be correct.

The "SCSI Copy" Format

SCSI Copy is used to make a direct copy from a hard drive, CD-ROM drive or other SCSI volumes, to a CD. It is ideal for making exact copies of existing data CDs.

When you click the **Data**… button while in SCSI Copy mode, this window will be displayed:
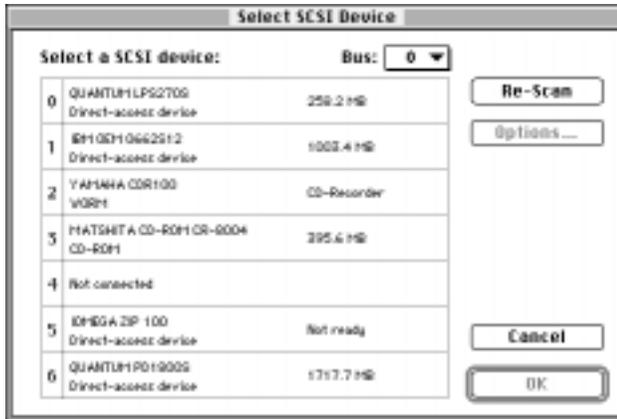
If your Mac has more than one SCSI bus, select the desired SCSI Bus from the pop-up menu to view the devices connected to that bus.

Searching the SCSI Bus

If you switched on a SCSI device after opening this window the device will not appear in the list. Click **Re-Scan** to search the SCSI bus and list new devices.

Options

After you have selected a device in the list, the **Options**… button will be available. Click it to set these options:
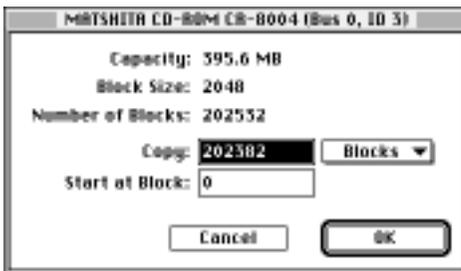

Normally both options should be checked. If you are copying a bootable CD, uncheck "Clear Driver Descriptor Map".

If you are not sure what you are doing, just accept the default settings.

The Amount of Data to be Copied

After selecting a device to copy, click **OK**. This window will be displayed:

SCSI copy normally copies the entire volume, even if not all the space contains data.

If desired, you can change the number of blocks to be copied to eliminate the copying of empty space. You should only change these settings if you are very sure of what you are doing. Incorrect settings can result in a useless disc.

➤ **Note** When copying a disc which you have written yourself, the Number of Blocks to copy will be less than the total number of blocks on the disc. Toast makes this adjustment automatically, since the Mac cannot read the last blocks from a CD-R.

See Example 1 in chapter 11.

➤ **Stop** Mac volumes should not be copied using SCSI Copy; it is always preferable to use the "Mac Volume" format.

When Copying a CD

Copying a CD only works under these conditions

- **The disc may only contain one track in one session.**

- **The disc may only contain sectors which can be read by the Mac: Mode1 or Mode2 Form1 sectors (see "Terminology" in chapter 2).**

- **Discs containing Mode2 Form2 sectors cannot be copied** as the Mac cannot read those sectors (see "Terminology" in chapter 2).

- **Your CD-ROM drive must be faster than your selected recording speed.** For example, if you want to record the copy at 2x, your CD reader must be at least a 4x.

➤ **Note**   To copy audio CDs use the Audio CD format and drag the icon of the audio disc onto the track list window to select all the tracks.

The "Disc Image" Format

Disc Image format is used to write a previously saved disc image to a CD. Disc images can be created in Toast, by using the "Save as Disc Image" command (see "Save as Disc Image" in chapter 15 "The File Menu"). Disc image files can also be generated by some multimedia authoring systems and other specialized applications.

➤ **Note** Video CD or CD-i disc images created in their respective authoring systems should always be written in the corresponding format, NOT the Disc Image format.

When you select **Disc Image** format for a disc, the **Data…** button displays this file selection dialog:

Auto-Detect Format

Turning on this checkbox sets Toast to automatically determine the appropriate CD format for any disc image that you select. **Normally you should leave this option checked.**

If you need to set the format options manually, uncheck the **Auto-Detect Format** checkbox. When you select an image and click **Open**, following dialog is displayed:

Only change these settings when really necessary!

Pregap and Postgap

You can change these from the standard settings.

Sector Size

The Sector Size is set automatically according to the contents of the disc image. You may change it using the pop-up menu.

Scrambled

If the selected disc image is NOT scrambled, uncheck the **Scrambled** checkbox.

Once you have selected an image file, and click **Open**, the size and format of the data will be displayed in the main window.

Mounting Disc Images

You can mount the selected disc image as a volume on the desktop in order to check its contents. Simply click the **Mount** button. (If no image file has been selected, clicking the **Mount** button will display a file selection dialog.)

➤ **Note** If you mount a Mac/ISO Hybrid disc image two volumes will be mounted on the desktop, one for the Mac part and one for the ISO part of the disc image.

➤ **Stop** A disc image file must be stored in contiguous disk space in order to be mounted. If your disc image is fragmented, use a commercial disk optimizer (e.g. Norton Speed Disk) to defragment the volume which contains the image.

A disc image can also be mounted by selecting **Mount Disc Image** from the **Utilities** menu. For details see chapter 15 "The Utilities Menu".

The "Multitrack CD-ROM XA" Format

This format is used for writing several CD-ROM XA tracks in one session. Most CD-ROM formats consist of only one track per session and therefore the "Multitrack CD-ROM XA" format is very seldom used.

When you select the **Multitrack CD-ROM XA** format, and click the **Data...** button, this track selection window is displayed:
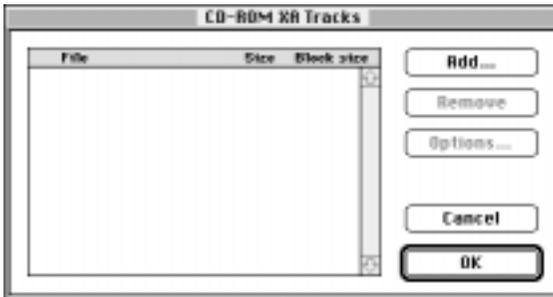
Use the **Add...** button to select the XA image files that you want to include on the disc or drag them onto the window.

Options for XA Tracks

The **Options...** button allows you to change the block size for the select track:
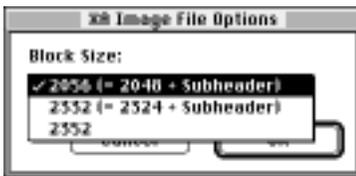
It is normally set to the correct value automatically so don't change it unless your really know what you're doing.

The "Audio Tracks" Format

The "Audio Tracks" format is used to add audio tracks to another data format to create Mixed Mode CDs. The Data and audio is written in one session. The data track is always placed before the audio tracks on the disc and there is no way to change this order.

➤ **Note**   If you write a CD with audio tracks selected but no data, the result will be a standard audio CD.

➤ **Stop**   If you write a disc in this format with both data and audio tracks, the data track should not be played in a standard audio CD player. Because the data is part of the first session, the audio recorder would be able to "see" the data tracks. Playing data tracks can be harmful to an audio system, especially speakers.

The Mixed Mode format has generally been superseded by the audio/data Multisession format where the first session consists of audio tracks and the second session consists of data (CD Extra or second session in HFS, ISO 9660 XA, Mac/ISO Hybrid XA format). Using this format the data track is not visible in audio CD players. (Some older CD-ROM driver software will not mount audio/data Multisession disc. See the publisher of your CD driver for more information.)

Requirements for audio tracks as well as explanations on how to import, delete or move audio tracks can be found in the section "The format Audio CD" earlier in this chapter.

Chapter 17: The Transfer Rate and the Write Procedure

What is Transfer Rate?

In order to successfully write a CD, Toast has to be able to get your computer to supply a steady stream of data to the recorder. How fast the data has to be supplied depends on the writing speed and disc format that you've selected.

The speed of data flow is called the **Transfer Rate**; it indicates how many kilobytes of data are transferred in one second from the Mac to the writer.

This chart shows the transfer rates required for different formats and writing speeds:

Write Speed	Audio & Mode2 Form2	HFS, ISO, Hybrid Mode1 / Mode2 Form1
1x	172 K/s	150 K/s
2x	344 K/s	300 K/s
4x	689 K/s	600 K/s
6x	1033 K/s	900 K/s

Checking the Transfer Rate

To minimize wasted discs, Toast gives you two different tools for verifying that you have adequate transfer rates: **Check Speed** and **Simulation Mode** (Simulation Mode is covered later in this chapter).

You can check the transfer rate before writing to see whether your system is fast enough to write with the desired speed.

To run the Check Speed procedure, click the **Check Speed…** button in the main window (make sure you have selected your data first!). This window will be displayed and the checking will begin automatically:
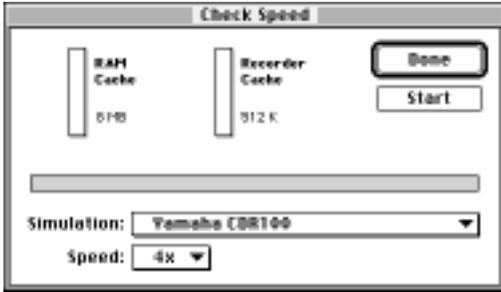
The speed check proceeds as follows:

1) **If you checked the option Optimize in "Mac Volume" or "Mac/ISO Hybrid" format the Optimize progress window will appear while the files are rearranged.**
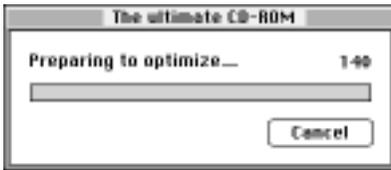
2) **The RAM cache is then filled with data read from the source volume.** (The size of the RAM cache is set in the **Preferences** dialog in the **Edit** menu.)

3) **The Recorder cache is filled.**

4) **All selected data is read.**

The two vertical bars indicate how much data is currently stored in the RAM caches. The downward-facing arrows mark the lowest point that the cache level reaches during the checking process.

It is normal for the levels to fluctuate during testing, however, if the **Recorder Cache** bar reaches the bottom at any time during the speed check, it means that the data rate is too low. If that happens, the FAILED indicator will appear:
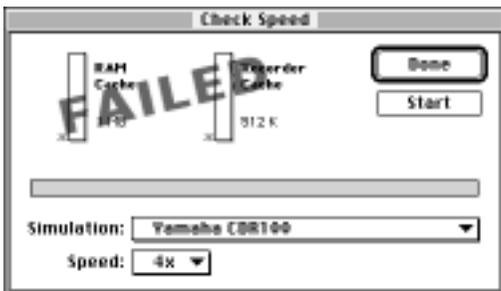
➤ **Stop**   Do not write the disc with these settings, as the write procedure will most likely fail and the CD will be wasted!

If you want to check the data rate for a different writing speed or a different recorder model, click the **Stop** button, then make your new selection from the **Simulation** or **Speed** menus, and click **Start**. (These menus are initially set to match the connected recorder.)

Error Messages

You might get the following error message while checking the transfer rate:

This can happen if you try to copy one of the following CDs using SCSI Copy mode:

• CD-i, Video CD, Photo CD, CD Extra or

• another disc with audio or Mode 2 Form 2 sectors or

• a disc containing more than one track or

• a disc containing more than one session.

Do not try to write the disc if you get this message!

➤ **Note**   If you want to copy such a disc you will need to obtain special software that converts the tracks into readable files, e.g." ASTARTE CD-Copy".

➤ **Stop**   "Check Speed" is only an approximation (the data is read but not transferred to the writer). If the results of the speed check are borderline, you should try Simulation Mode, which gives a much more accurate evaluation. (For details, see the next section or "The Recorder Menu" in chapter 15).

What to do if "Check Speed" fails

These are some possible solutions if "Check Speed" failed:

- **Set the write speed to a lower value.** For details see "The Write procedure" later in this chapter.

- **Use an AV hard disk with no thermal recalibration while writing** (please refer to your dealer for details about your hard disk).

- **Turn off all system extensions which are not needed.** If you use System 7.5 you can boot with all extensions off (hold down the shift-key while starting your Mac).

➤ Note Toast does not require any extensions to run, however, if you are copying from a CD you will need to run the appropriate driver software for your CD-ROM drive. Also, on older Macintoshes, you may need to run the SCSI MANAGER, the THREAD MANAGER and the DRAG & DROP MANAGER extension to take advantage of some of the features of Toast.

- **Turn off all network connections** when writing data placed on local volumes.

- **Remove all devices from your SCSI chain which are not needed** at the moment. Some devices slow down the SCSI bus (especially removable media drives and scanners.)

- **Check cables and terminator**. Slightly defective cables or terminators may slow down the SCSI bus, even though the effect may not be noticeable in normal use.

- **If your Mac supports SCSI Manager 4.3:**
    - **Increase the RAM Cache** (Preferences from the Edit menu).
    - **Make sure your hard disk driver is able to work in asynchronous mode** (With System 7.5 the driver information is displayed in the "Get Info" dialog for the hard disk in the Finder.)

- **Create a disc image of the selected data before writing.** Please refer to the next section for details.

The Write Procedure

After satisfying yourself that the transfer rate is adequate, you are ready to write the disc.

- **Insert a recordable CD with enough free space to write the selected data.** (To check the free space available on a disc, choose **Disc Info** from the **Recorder** menu.)

- **Click Write CD….**

- **If there is no disc in the recorder this message will appear:**

- **Toast will now verify that it can locate all the data that you selected.**

  If you selected many files this procedure may take a while. (If you are sure that you didn't move or rename any items after selecting them you can skip the verification.)

  If one or more selected items could not be found, an error report is displayed:
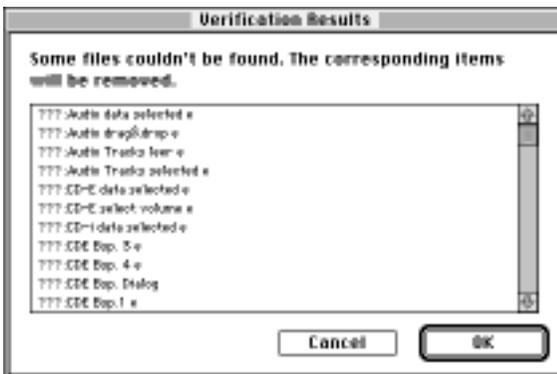
  If you click **OK** Toast will remove these items from the list and will not write them to CD. Click **Cancel** if you want to locate the files and reselect them in the data selection window.

- **If you have chosen ISO 9660 format and the inserted disc already contains at least one session**, the ISO Multisession dialog is displayed:

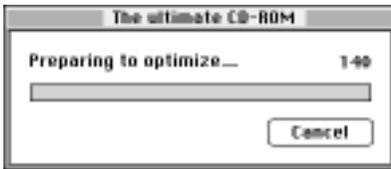Click on the desired option to determine how the new session is linked to existing sessions. (For details please refer to chapter 16 "The ISO 9660 – Multisession Format".)

- **If you checked the Optimize option**, Toast will prepare for the optimization process (if your data contains many small files, this can take some time):

- **If there is not enough free space on the disc** for the selected data, Toast will warn you:
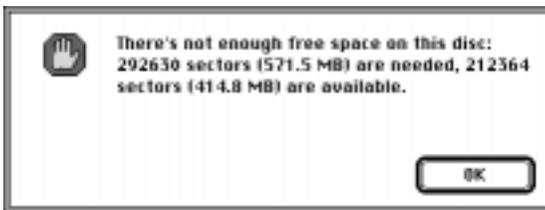
You cannot write the disc if there is not enough space for the selected data.

- If **Use Autoloader** or **Use Kodak Disc Transporter** (**Utilities** menu) was selected:

Enter the **Number of Copies** you want to be written. If you want the disc to be closed so that no further data can be added later, check **Fixate Discs**. For details see chapter 15 "The Utilities Menu".

- **The Write Dialog will appear**

The Write Dialog

The Write Dialog lets you set a variety of options for the writing process.

Speed

Use the **Speed** menu to select the desired writing speed (this menu is a duplicate of the **Write Speed** menu in the **Recorder** menu). Only those speeds which apply to your recorder will be available.

The last write speed used in "Check Speed" will be set by default.

Simulation Mode

Simulation Mode allows you to run through the entire process of writing the disc, exactly like the real writing process, except that the laser is not turned on in the recorder, so nothing is written to the disc.

- All error messages which would be displayed while writing will also be displayed in simulation mode.
- Simulating the write procedure takes the same amount of time as writing.
- When simulation mode is selected *** Simulation Mode*** is displayed in the menu bar in red letters.

➤ Note   During simulation, the "write" indicator light on the recorder will turn on, just as if you were actually writing. This is normal, and does not indicate that the disc is really being written.

The simulation mode gives more exact results than "Check Speed" since the data is actually transferred to the writer. (see "Checking the Transfer Rate" earlier in this chapter).

Create Disc Image first

If your Mac is not fast enough to write with the selected speed or to optimize a Mac volume while writing you can choose to create a disc image of the selected data before writing the disc.

If you check this option, the disc image will be created and then writing will begin automatically, using the image as the source.

➤ **Note** If you are not sure that the transfer rate is high enough to write the disc image with the desired speed, use the **Save as Disc Image** command from the **File** menu after selecting the data (see chapter 15 for details). Then choose the Disc Image format to write the saved disc image and check the transfer rate again.

Writing a Session

Click **Write Session** if you want to be able to add additional data to the disc at a later time.

If you checked the option **Create Disc Image first** you are asked to select the place to save the image file. The image file takes the same amount of disc space as the selected data.

➤ **Note** If you are not sure whether you will add more sessions to the disc later, just choose **Write Session** anyway; it makes no difference when using the disc if you wrote it as session or not. However, if the disc will be used as master for a duplication plant it should always be closed (see "Writing a finalized Disc" later in this chapter).

The **Write Session** command is not available if:

- The selected data occupies more than 625 MB.

- There would not be enough space left on the disc to write another session.

- You write in "ISO 9660" or"Mac/ISO Hybrid" format and you did not select the "CD-ROM XA" option for the format (see chapter 16 "The ISO 9660 Format" for details).

➤ **Stop** Each new session on a disc requires additional space to hold the directory structure.

- **the first session uses approximately 23 MB**

- **each additional session takes approximately 12.5 MB.**

Consequently, if you write many small sessions, the disc will hold less data than if you write larger sessions.
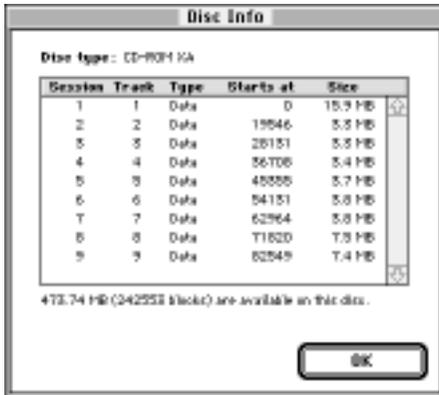
For example:

These 9 sessions use a total space of 52.1 MB if you just add up their sizes.
In theory that would leave 598 MB available when starting with a CD-R with 650 MB of free space.
However, Toast shows that is only 474 MB available; 124 MB was used for the sessions´ overhead.

Theoretically you could write a disc containing 99 sessions each having approximately 6.56 MB of data (6.56 MB x 99 = 649.44 MB). But because of the additional overhead you can only have 33 sessions each using 6.56 MB. ((6.56 MB + 23 MB) + (32 *(6.56 MB + 12.5 MB))) = 639.48 MB.

Writing a finalized Disc

If you want to write the selected data and close the disc so no more data can be added later, click **Write Disc**.

If you checked the option **Create Disc Image first** you are asked to select the place to save the image file. The image file takes the same amount of disc space as the selected data.

➤ **Note**   If the disc will be used as master for a duplication plant it should always be closed.

After Writing

After all the data is written the following dialog is displayed:

If you do nothing or if you click **Verify**, the newly written data is compared with the original data on a block level.

If there is a data mismatch Toast will display a notification dialog.

If both the original and the copy are identical, you get the following message:

➤ **Note**   Audio CDs, CD-is, Video CDs, Enhanced Music CDs and Multitrack CD-ROM XA discs cannot be verified after writing.

You can also compare the original and the copy by choosing the **Compare** command from the **Utilities** menu. The Compare function works on a file-by-file basis, rather than block-by-block, so Toast will be able to list specific files that don't match. (see chapter 15 "The Utilities Menu" for details)

- If the option **Calculate a checksum while verifying** in the **Preferences** (**Edit** menu) was checked, the checksum is displayed after verifying (see chapter 15 "The Edit Menu" for details).

- Select **Copy** from the **File** menu to copy the checksum or simply write it down.

Chapter 18: About CD-rewritable Drives

CD-Rewritable is a new technology that allows a recordable CD to be erased and reused. To take advantage of this technology you need a CD-rewritable drive and special erasable media.

If you have a rewritable drive, you can erase your disc at any time by inserting the disc in your recorder, selecting the DISC INFO command from the RECORDER menu and clicking the ERASE... button.

The Erase Confirmation dialog gives you the option to perform a *Quick Erase* or a *Standard Erase*. Quick Erase erases only the TOC (Lead-in) and the pregap of the first track, which is very fast. This option is ideal for discs that will be written with Toast but is not compatible with packet-writing. *If you want to be able to write the disc with software other than Toast, be sure to select the standard Erase button.*
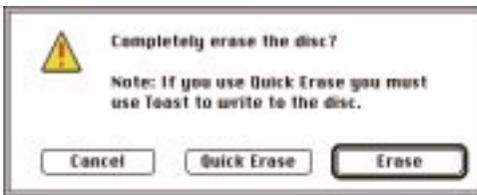
Toast can erase in the background if SCSI 4.3 is present. *Erasing can not be aborted.*

Toast ejects the disc after erasing without any further messages.

Part 4:
Appendix

Appendix A: Toast and AppleScript

Toast 3.5 is fully scriptable using AppleScript. Virtually any type of CD mastering tasks can be automated.

When you ran the Toast installation program it installed several sample scripts on your hard drive. These will give you a glimpse into what's possible with Toast and AppleScript.

Toast & Shutdown *script*

This simple script writes a CD and then shuts down the machine. This might come in handy if you'd like to start a CD writing session before you leave the office. The script assumes that Toast is running and ready to start writing (data selected, etc). In case of an error the script is aborted and the Mac is not shut down, so that you can examine the cause of the error when you return.

Copy SCSI Disk *script*

This is a sample script that demonstrates how you can setup Toast to copy the first 30 MB of the SCSI device at Bus 0, ID 0 (usually the internal hard disk) to CD. (You normally wouldn't want to do that.)

Drop*Burn *script*

A somewhat more complicated script which writes items dropped onto it to CD. It demonstrates how AppleScript can be used to create a customized user interface for Toast.

Hybridizer *script*

This sample Droplet offers an easy way to set up a Mac/ISO hybrid disc. Just prepare a Mac volume as usual, and put all the ISO data in a folder on that volume. Then drop that folder onto the Hybridizer icon.

For more information please open the AppleScript dictionary using ScriptEditor or other similar application.

NOTE FOR SOFTWARE DEVELOPERS:
Please contact us if you want to control Toast from your application via AppleEvents. A header file containing useful constants and some documentation is available on request.

➤ **Note** It is beyond the scope of this manual to cover application scripting. However, there are many good books available on the subject and the ADAPTEC web site (www.astarte.de) features links to useful scripting-related resources.

Appendix B: Troubleshooting

This section contains answers to commonly asked questions about writing CDs with Toast. The information is grouped by the following topics:

- **The different disc formats**
- **Checking the Data Rate**
- **Before Writing**
- **While Writing**
- **After Writing**

Problem/Question	Information	Possible Solutions
"Mac Volume" Some windows do not look the same as they were on the original. (i.e. you closed all the windows, but when the CD is mounted, some windows are open.)	The information about window positioning, size and view is only recorded by the Finder from time to time. The latest position was still not saved by the Finder before the disc was written.	• Unmount the volume (drag it into the Trash) and mount it again before writing or • open any application (the Finder will then save all window positions)
Although a volume's amount of used space does not exceed the capacity of a CD-R you get the message that the data will not fit on the CD-R.	The selected volume is fragmented, i.e. the data is not stored contiguously on the volume. Click **Info**… to see how the data is stored. The important value is the **Size of CD-ROM**.	• Defragment the volume using a commercial disk optimizer (e.g. Norton Speed Disk™") or • Check the Optimize option in the Volume Selection window.
Although you checked **Optimize for Size** the value for the amount of data to be written displayed in the main window seems to be too big.	The amount of data which is actually written is only displayed after Toast has performed its optimization procedure.	Click **Check Speed**… on the main window. Before checking the data rate, optimization takes place. Afterwards the real value will be displayed in the main window.
You select a volume and get the following message: **"*Your Volume*" could not be unmounted. All open files and programs on this volume must be closed first.**	Volumes with open files or applications cannot be written without optimization.	• Close all files and quit open applications or • check the option **Optimize**. This will allow you to write open files and programs.
You drag a volume onto the main window while the "Mac Volume" format is selected. Toast changes to another format and selects the data in this format.	Only local Macintosh HFS volumes can be written in "Mac Volume" format.	Depending on the kind of volume "Mac Files & Folders" (when a server volume is dragged) or "SCSI Copy" (when no HFS volume is dragged) is selected. The data is then loaded automatically.

Problem/Question	Information	Possible Solutions
You get the following message: **The Apple CD-ROM driver could not be found. Would you like to look for it?**	You checked the **Bootable** option but no Apple CD-ROM driver was found in the System Folder of your startup volume. (Toast uses the Apple CD driver to create the necessary boot information on a Bootable CD.)	Click **OK** and select the driver which is to be used to boot from the disc.
You wrote more than one HFS session on the same disc. When you insert the disc you only see the first session.	Your current CD-ROM driver does not support multisession discs.	• If you have an Apple CD-ROM Drive, install the Apple CD-ROM driver version 5.1.x (or higher) or • mount the disc using your CD writer and the system extension "Toast CD Reader". **NOTE**: Each HFS session is mounted as an individual volume/icon.
In older versions of Toast you could mount a temporary partition by double-clicking its image file. Now when you double-click an image file it just opens Toast.	Since disc images can now be saved for all formats, it might not be desirable (or even possible) to automatically mount a disc image when double-clicking it.	After double-clicking a disc image in the Finder, Toast will open with that image automatically selected in the "Disc Image" format. You can then click on the Mount button to mount the image.
Even though a partially used volume appears to be totally defragmented (when viewed in the **Info**… window), Toast still reports that the entire drive is used.	You may be using Norton FileSaver™. FileSaver places its invisible files on the very last block of the drive, which makes Toast believe that the entire drive is full.	Before writing, deactivate FileSaver for the selected drive. FileSaver will then delete its hidden files and Toast will report the correct amount of space used.

Problem/Question	Information	Possible Solutions
"Mac Files & Folders" When you drag files and folders onto the selection window you get the following messages: **Please insert disk…** **At the File Server "*The Server*" registered as…** **Some aliases couldn't be resolved:**	The option **Resolve aliases** was checked. The selected data contains aliases which point to data which cannot be found. This often happens when you drag a System Folder containing folders like "Recently used applications" or similar.	Uncheck the **Resolve aliases** checkbox. The aliases are loaded as aliases and are not resolved. (They are displayed in italics.)
You drag files and folders onto the selection window. You get the following message: **Couldn't complete the last command because the volume could not be found.** **Error code = -35.**	The option **Resolve aliases** was checked. The selected data contains aliases which point to a volume which cannot be found.	• Connect the respective volume or • Uncheck the option **Resolve aliases**. These aliases will then loaded as aliases and are not resolved.
You insert a disc written in "Mac Files & Folders" format and the icons of files created by a specific application don't look like they usually do.	The desktop files used for the disc do not contain information about the applications used to create those files.	Before importing any data, import a folder from the volume which contains the respective applications. Then the desktop files from that volume will used (see chapter 16 "The Format Mac Files & Folders").

Problem/Question	Information	Possible Solutions
You wrote more than one HFS session on the same disc. When you insert the disc you only see the first session.	Your current CD-ROM driver does not support multisession discs.	• If you have an Apple CD-ROM Drive, install the Apple CD-ROM driver version 5.1.x (or higher) or • mount the disc using your CD writer and the system extension "Toast CD Reader". **NOTE**: Each HFS sessions is mounted as an individual volume.

Problem/Question	Information	Possible Solutions
"ISO 9660" You want to back up your Macintosh data using ISO format. After importing the data, all names are shortened and the original names are displayed beside the new names in gray letters.	A naming option was chosen which doesn't allow more than 8.3 characters.	In the ISO window click **Settings** and choose **Allow Macintosh Names**. Also check the option **Use Apple Extensions**.
When you drag files and folders onto the selection window you get the following messages: **Please insert disk…** **At the File Server "*The Server*" registered as…** **Some aliases couldn't be resolved:**	The option **Resolve aliases** was checked. The selected data contains aliases which point to data which cannot be found. This often happens when you drag a System Folder containing folders like "Recently used applications" or similar.	Uncheck the **Resolve aliases** checkbox. The aliases are loaded as aliases and are not resolved. (They are displayed in italics.) **NOTE**: Aliases only work on the Mac!
You drag files and folders onto the selection window. You get the following message: **Couldn't complete the last command because the volume could not be found.** **Error code = -35.**	The option **Resolve aliases** was checked. The selected data contains aliases which point to a volume which cannot be found.	• Connect the respective volume or • Uncheck the option **Resolve aliases**. These aliases will then loaded as aliases and are not resolved.
After importing all the data you click **Write CD…**. The option **Write Session** is not available.	• Either there is not enough free space on the disc to add another session or • You didn't choose **CD-ROM XA** for the format in the ISO dialog.	• If there is not enough free space on the disc the disc will have to be closed. Click **Write Disc**. • Be sure to choose **CD-ROM XA** for the format in **Settings**.
After importing all the data you click **Check Speed…** or **Write CD…** and get the following message: **The ISO 9660 standard does not allow more than 8 levels of nested folders. The disc will not conform to the ISO 9660 standard if you continue.**	The naming options were set to **Allow MS-DOS Names** or **ISO 9660 Level 1**. Your data contain more than 8 levels of nested folders.	If you write this disc some files may not be visible when reading the disc on a PC. (It depends on the particular ISO driver whether more than 8 directory levels can be accessed.)

Problem/Question	Information	Possible Solutions
You wrote an ISO multisession disc. If you read the disc on the Macintosh, each session is mounted as a separate volume, but all sessions have the same name and apparently the same contents.	Some CD-ROM drivers are buggy. Instead of showing only the last session, all sessions are mounted.	• Install the lastest Apple CD drivers or • read the disc with your writer and the extension "Toast CD Reader" or • install other driver software, e.g. "CD-ROM Toolkit™" from FWB.
When you write a session to a disc which already contains an ISO session. You get the following message: **The disc appears to be damaged. Ignore existing sessions?**	Important data could not be read from the disc such as the TOC (table of contents) or similar.	If you continue, the session will be written as a separate volume.
You wrote a multisession disc. When you insert the disc you only see the data of the last written session. Data from former sessions is not visible.	When you wrote the last session you chose the option **Ignore existing sessions** or **Incremental Backup**.	To recover the data of the previous session choose **Import Session** in the ISO dialog. Import the previous session and add the data for the new session.
You want to add a session to a disc which already contains at least one session. You click **Write CD…** and get the following message: **"*Your Session*" is in CD-ROM format. It is recommended to use CD-ROM XA for multisession discs. Would you like to change the format to CD-ROM XA?**	You didn't choose **CD-ROM XA** for the format options in the **Settings** window.	Click **Change**. If not you will not be able to add any other data to this disc later.
You back up your data in ISO multisession format. The writing of the last session was aborted. You cannot read any file on the disc although you see them.	The TOC was written but nothing else.	You can recover the data of the previous session by using the **Import Session** command in the ISO dialog. Import the last session which was correctly written and add the data for the new session.

Problem/Question	Information	Possible Solutions
You drag a volume onto the ISO selection window. Items which were on the desktop or in the trash on the volume are not shown in the list.	There is neither a "Desktop folder" or a "Trash" folder on ISO discs so items in those directories cannot be written to an ISO disc.	If you want to write those items, drag them onto the selection window after dragging the volume.
You wrote a disc with Macintosh names. Some file names are not shown like they were originally defined. Therefore you get error reports when comparing the disc with the original data (when using **Compare** from the **Utilities** menu).	Some ISO drivers cut the following characters at the end of a file name: "blank", ";", ".", ";number".	Press the Option key while inserting the disc in the Mac. Then all names are displayed in their full length.

Problem/Question	Information	Possible Solutions
"Mac/ISO Hybrid" You have selected a volume for the Macintosh part. In order to share data with the ISO part you drag files from the same volume onto the ISO selection window. You get the following message: **"Optimize for Speed" will be used, because the allocation block size of "Your Volume" is not a multiple of 2 K.**	You can only have shared data on Macintosh volumes with an allocation block size which is a multiple of 2 K. Otherwise the optimizer has to be used.	If your computer is not fast enough to optimize on-the-fly: • Save all data as a disc image before writing -or- • Use a temporary partition created with Toast for the Mac volume -or- • Reformat your hard disk with a correct block size.
You do not have a complete volume available which only contains the Macintosh and the shared data.		1) Choose the format **Mac Files & Folders** and drag all desired data onto the selection window. 2) Save the data as a disc image. 3) Mount the disc image and use it as the Mac data source -or- Create a temporary partition and copy all the data into the partition.
You want to have shared data on a Hybrid disc. You select all data for the Macintosh and the ISO part but no data is recognized to be shared.	In order to share data, they have to be placed on the selected Macintosh volume and they have to be selected again for the ISO part.	• Make sure that you import the data from the already selected Macintosh volume in the ISO dialog. • If the shared data was defined using aliases, make sure that the aliases point to items placed on the selected Mac volume and that the option **Resolve aliases** is checked.
You wrote several Hybrid sessions onto the same disc. You get different results when reading the disc on a Macintosh or on a PC.	Hybrid discs should never be written as multisession discs.	On a PC you will only see the last written session, on a Macintosh you will either see only the first session or all sessions as single volumes (depending on the installed driver)

Problem/Question	Information	Possible Solutions
You wrote a Hybrid track as the second session of an audio CD. When you insert the disc into your CD-ROM drive you cannot see any data, only audio tracks are displayed.	Older CD-ROM drivers do not read such discs correctly.	Install another CD-ROM driver: Apple CD-ROM driver version 5.1.x or higher, "CD-ROM Toolkit™" or use your writer with the extension "Toast CD Reader".

Problem/Question	Information	Possible Solutions
"Audio CD" / "Audio Tracks" You drag an audio file onto the audio selection window and get the following message: **Only 16 bit/44 kHz sound can be written. "*Your File*" is not in this format.**	The audio file has the wrong format.	Save sound files in the following format: 16 Bit, 44.1 kHz, stereo or mono.
Beside the name of the file "Mono" is displayed in brackets.	The sound file was saved in mono format.	Mono files are converted into stereo files where both channels contain exactly the same sound information.
You take an audio CD to a disc replicator for duplication and they report a problem with the master.	Toast writes audio CDs using "track-at-once" mode, but replicators prefer auido master discs written in "disc-at-once" mode.	Use a program like Toast CD-DA to write your audio master.
You hear noises between audio tracks although your original data is correct.	The firmware versions of some writers cause clicks between tracks.	Please contact your hardware dealer to get a firmware update for your writer.
Before writing you get the following message: **Your recorder does not support index generation. All index markers will be ignored.**	Not all writers can write index-points in track-at-once mode.	If you need to have index-points on the disc (they are very seldom used) use another application which writes in disc-at-once mode, e.g. "Toast CD-DA".

Problem/Question	Information	Possible Solutions
"CD-i" You drag a disc image onto the main window. Toast changes to "Video CD" or "Disc Image" format.	Only images conforming to the "green book" standard can be written as CD-i.	CD-i images can only be created with special authoring software as the structure defined in the "green book" is very specific.
You selected a disc image after clicking **Data**… in the CD-i format. You write the disc but it cannot be read by CD-i players.	The disc image might have had the wrong format.	Drag the image onto the main window. If it is not a CD-i image Toast will change to the appropriate format.

Problem/Question	Information	Possible Solutions
"Video CD" You import an MPEG stream and get the following message: **"*Your File*" can not be used to create a Video CD. Please use the "Toast Ready" option in ASTARTE M. Pack.**	The file does not contain the required information to create a Video CD.	Multiplexing has to be performed with the software "ASTARTE M. Pack" (version 1.02 or above). The option **Toast Ready** has to be checked.
When a Video CD is created from individual MPEG streams, what functionality will be available on the finished disc?		There will be one menu which allows you to play the videos, stop, fast forward, rewind, pause, go to next video track, and go to previous video track.
You drag an image file onto the main window while the "Video CD" format is selected. Toast changes to the "Disc Image" format.	Your file is not a valid Video CD disc image.	Use a Video CD authoring system to create a Video CD disc image or import MPEG streams created with "ASTARTE M. Pack".

Problem/Question	Information	Possible Solutions
"Enhanced Music CD" You select a volume in "Enhanced Music CD" format and get the following message: **"*Your Volume*" does not contain a CD EXTRA directory hierarchy or a QuAC file. It can not be used to create an Enhanced Music CD.**	The structure of a CD EXTRA is very restrictive (defined in the "blue book"). Your volume does not contain such a structure nor does it contain a valid QuAC file.	• Create a QuAC file with the software "Apple Interactive Music Toolkit™". • Create a CD EXTRA hierarchy. Currently there is no authoring system which creates such a structure for you. Experienced programmers which have the "blue book" specifications can create the CD EXTRA structure manually.
You wrote an "Enhanced Music CD" track as second session of an audio CD. When you insert the disc in your computer you can only see the audio tracks, no data.	Older CD-ROM drivers do not read such discs correctly.	Install another CD-ROM driver: Apple CD-ROM driver version 5.1.x or above, "CD-ROM Toolkit™" or use your writer with the extension "Toast CD Reader".
You put extra data into the folder "CD EXTRA" in order to make them visible on the PC. All file and folder names are cut.	Toast uses the naming convention "Allow MS-DOS names" for the ISO part of a CD EXTRA (see chapter 16 "The ISO 9660 Format").	If don't want Toast to transform the names for you, make sure that all names in the folder "CD EXTRA" have a length of 8.3 characters.
You get the following message before writing: **The audio tracks will be written into the second session. Most likely this is not what you want.**	In order to play the audio tracks on a CD player the tracks have to be placed in the first session of a disc.	For the first session of an "Enhanced Music CD" only select audio files in the "Audio CD" format. Then add the data as a second session on the same disc.

Problem/Question	Information	Possible Solutions
"SCSI Copy" You copied a SCSI hard drive. The disc is not readable when inserted into a CD-ROM drive.	Almost no operating system (except the Mac OS) is able to read CD-ROMs which have the same file system as a hard drive. If you try to copy an MS-DOS formatted hard drive directly, you will not be able to read this disc, since DOS expects a read-only file system for CDs.	Mount the respective hard drive on the Macintosh and write the data in the "ISO 9660" format rather than using SCSI Copy.
You want to copy a disc directly. While checking the data rate or while writing you get an error message.	Not all CDs can be copied directly. CDs containing mode 2 form 2 cannot be copied. These are: Video CDs, CD-is, CD EXTRAs, Photo CDs, etc..	Use another application to extract the tracks of these discs so that they can be written back onto disc, e.g. "ASTARTE CD-Copy".
You copy a bootable CD but the copy is not bootable.	The wrong options were set in the SCSI Copy dialog.	Click "Options…" and UNCHECK the option "Clear Driver Descriptor Map" before copying the disc.

Problem/Question	Information	Possible Solutions
<u>**"Disc Image"**</u> You want to mount a disc image and get the following message: **"***Your File***" is fragmented. Please use a commercial Disk Optimizer to defragment the volume "***Your Volume***". You can also try to duplicate the file or copy it to another volume.**	Only defragmented disc images can be mounted.	Defragment the volume which contains the disc image (e.g. with "Norton Speed Disk ™"). In some cases it might help to duplicate the image or to copy it to another volume.
You want to mount a disc image and get the following message: **"***Your File***" could not be mounted because it contains an unknown file system. Most likely the system extensions files "Foreign File Access" and/or "ISO 9660 File Access" are not installed.**	These files must be installed in your system folder in order to mount a disc image which is not in Macintosh HFS format.	Did you boot your Mac with all extensions OFF? Verify that the extensions folder in your system folder contains the files "Foreign File Access" and "ISO 9660 File Access". Restart your Mac with extensions ON.
You want to save a disc image and get the following message: **The image file could not be created because the disk is full: x MB are needed, y MB are available.**	The selected volume does not have enough free space to save the image.	Select another volume to save the image.

Problem/Question	Information	Possible Solutions
"Multitrack CD-ROM XA" You add a file and get the following message: **Warning: The length of "*Your File*" is not a multiple of the sector size.**	The file is not a valid CD-ROM XA file as it has an invalid length.	You can write this file to disc, but it might not be usable.

Problem/Question	Information	Possible Solutions
Checking the Data Rate You get the following message: **A RAM Cache of x MB was requested but only y MB could be allocated. To make more memory available, try quitting other running applications (if any.)**	A higher RAM cache than available RAM was defined in Preferences (menu Edit).	If you don't change anything, Toast uses the maximum available RAM for the RAM cache. Quit other applications to get more available RAM.
You get the following message: **Couldn't complete the last command because of a Mac OS error.** **Error code = 2.**	The selected data cannot be read by a Macintosh. This happens e.g. when you try to copy a disc which contains mode 2 form 2 or audio sectors.	Extract the tracks of the disc with appropriate software, e.g. "ASTARTE CD-Copy".
Other problems related to checking the data rate are explained in chapter 17.		

Problem/Question	Information	Possible Solutions
Before Writing		
You get the following message: **An unknown driver is installed for SCSI ID x. If you run into problems, please remember to disable the driver next time.**	Some drivers cause problems during writing. These could be other CD-writer drivers, scanner drivers, etc..	If you are running System 7.5.x, boot with all extensions off (shift-boot). With other System versions, disable all extensions which are not needed to write.
You get the following message: **This recorder can not write a CD-ROM track on a CD-ROM XA, sorry**.	Some writers do not allow mixing formats on a disc. The inserted disc contains at least one CD-ROM XA track.	Select the data in "ISO 9660" or "Mac/ISO Hybrid" format and choose **CD-ROM XA** for the format settings.
You get the following message: **This recorder can not write a CD-ROM XA track on a CD-ROM, sorry.**	Some writers do not allow mixing formats on a disc. The inserted disc contains at least one CD-ROM track.	• Select the data in "Mac Files & Folders" or "Mac Volume" format. • If you wish to use the "ISO 9660" or "Mac/ISO Hybrid" format, choose **CD-ROM** for the format settings. The disc is closed after this session (**Write Session** is not available).
You click **Write Disc** or **Write Session** and get the following message: **Failed to allocate x MB of temporary hard disk cache on "*Your Volume*". Please use the "Preferences" menu item to select a different volume.**	The selected data contains many small files which have to be saved to the temporary hard disk cache in order to avoid speed problems while writing. The selected hard disk does not have enough free space to save all the required files.	• Choose **Preferences** from the **Edit** menu and select another hard drive which contains more free space than the currently selected. • Or create a disc image of the selected data (then no temporary hard disk cache is needed).
The option **Write Session** is not available in the write dialog.	• You have selected more than 625 MB of data to write. • There is not enough free space on the disc to write more sessions after the current one. • You chose "ISO 9660" or "Mac/ISO Hybrid" format and you did not choose the option CD-ROM XA for the format settings.	• There wouldn't be enough space for another session, so Toast disables that option. • Use a blank CD-R. • Choose **CD-ROM XA** for the format settings in the ISO dialog Settings.

Problem/Question	Information	Possible Solutions
You get the following message: **You can not write this disc with the selected recorder.**	Not all writers can write all disc formats. This message mostly appears when writing the following formats with some writers: Video CD, CD-i, Multitrack CD-ROM XA, Enhanced Music CD.	Please contact your dealer. There might be a firmware update for your writer which enables it to write these kinds of discs.
More problems appearing before writing are explained in chapter 17.		

Problem/Question	Information	Possible Solutions
While Writing		
You get the following message: **SCSI Error:** **The SCSI connection is not stable. Please check the cables and termination.**	This message only appears with unstable SCSI connections. Cables, terminators or SCSI ports might be damaged.	Check cables and termination. The problems might not be apparent in normal disk operations, but writing a disc requires perfect SCSI connections!
You get the following message: **The drive reported an error::** **Sense Key = …** **Sense Code = 0x…** *Description*	These messages are sent from the writer and are different for each brand/model of writer.	If you get an error which is not explained in this section please write down the **Sense Code** and the **Description** before requesting technical support. This will be a big help in resolving the problem.
Description = *BUFFER UNDERRUN*	The writer's data buffer ran out while writing. If this happens the write procedure will be aborted and the disc will be unusable.	• Disable all system extensions which are not needed. • Remove all drives from the SCSI chain which are not needed. • Check cables and terminator. Replace them if necessary. • Choose a lower write speed. • Increase the RAM cache in **Preferences** from the **Edit** menu.
Description = *TRACK FOLLOWING ERROR*	This is a calibration problem. The write laser is not able to find the last bit of data on the disc.	• Your recorder is not level. • The inserted CD-R is damaged. • The brand of media is not compatible with your writer. • The writer's calibration mechanism is defective.
Sense Key = *HARDWARE ERROR*	These errors are mostly generated by the writer's hardware. The writer might be damaged.	If errors of this kind occur frequently please contact our technical support.
Sense Key = *MEDIUM ERROR*	Most of these errors occur because of problems with the particular brand or batch of CD-Rs you are using.	Change the brand of CD-Rs. There are big differences in quality.

Problem/Question	Information	Possible Solutions
After Writing While verifying you get the following message: **Mismatch at byte x/sector y. Verification failed.**	While comparing the disc with the original data a mismatch was found.	Verify the disc by choosing the **Compare** command (**Utilities** menu).
The **Verify** button is not available.	You probably selected one of these formats: Audio CD, Video CD, CD-i, Enhanced Music CD, Multitrack CD-ROM XA.	Only discs that are readable by the Mac can be verified.