

Acorn ISO 9660 CD-ROM Formatter User Guide

About this guide

You must complete the following steps in order to make a CD-ROM:

- 1 Create a directory structure containing all the files that you wish to include on the disc.
- 2 Transform this structure into an "ISO 9660 image".
- 3 Create a trial disc from the image, and check that it works.
- 4 Duplicate quantities of the disc.

This guide tells you how to use the ISO 9660 CD-ROM Formatter software to complete step 2.

The rest of this guide tells you

- how to install the software
- how to produce a CD-ROM – including practical advice on aspects such as file naming to make sure that your CD is not only ISO 9660 conformant but also as compatible as possible with other Acorn software systems
- how to use each of the Formatter options, with details in the Technical Reference sections.

Introduction

The ISO 9660 standard defines a format for encoding a hierarchy of files onto a Mode 1 CD-ROM, and is supported by all major manufacturers including IBM, Apple and Sun. Acorn supports the standard with CDFS – the Compact Disc Filing System – through

How to install Isoform

which RISC OS users can access files and run applications from a CD-ROM in exactly the same way that they access data from a floppy or hard disc.

The Formatter creates the image as a sequence of blocks, each 2048 bytes long, which may be written to a RISC OS file or directly to a specified area on a SCSI disc. The image may then be taken to a specialist company where it is transferred to a "write-once" CD-ROM disc — often called a "gold disc" — which you can test out on your normal CD-ROM drive. If all is well, you may now send the gold disc as master to a CD manufacturer to replicate your CD-ROM in production quantities.

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Hardware requirements

The Formatter software itself has no special hardware requirements, and will run successfully on any Archimedes computer with the RISC OS operating system.

However, if you wish to construct an ISO image you will need sufficient disc space to hold that image together with your original hierarchy. Remember that a CD-ROM can contain over 600MB of data, and so it may be convenient to hold the image on an external SCSI disc which you can then detach and take to a suitable specialist company when you are ready to make a gold disc.

Installation procedure

You must first make sure that your !System directory contains up-to-date versions of the system modules required by ISOForm. The easiest way to do this is to use the !SysMerge application to merge the contents of the !System directory supplied with ISOForm with your own master !System. If you are not familiar with !SysMerge, details can be found in the !Help file inside the application: this file can also be displayed by choosing the Help sub-menu option from the Filer.

The Formatter can be run either as a multi-tasking desktop application, or directly from the command line. The desktop version is !ISOForm, which you should copy to a convenient location. The command line version is held in the file ISOForm which you should copy to your Library directory.

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Designing the hierarchy

The properties of CD-ROM drives are quite different from those of hard disc drives, and you should keep in mind limitations on access time and transfer rates when designing the structure of your application. The maximum data transfer rate is 150K per second, and for a drive with an average seek time of 400mS typical seek times can vary from around 250mS for adjacent data to as much as 800mS for data at the other end of the disc: compare these with 600K per second and 16mS for a typical SCSI disc. Some modern CD-ROM drives include substantial buffer storage which can help mitigate the effects of seek time when reading data that is clustered together on the disc, so it is wise to check out your application on an older unbuffered drive before committing to quantity production.

Performance can often be improved by making sure that files which are likely to be accessed together are stored close together on the disc, and so an understanding of the way in which the Formatter lays out files in the image may be useful. The rules are as follows:

- The files within a given directory are stored one after the other in alphabetical order.
- All directories at the same level are stored (with their files) one after the other in alphabetical order.
- The root directory (and its files) appears at the start of the image, and is followed by all level 1 directories, then level 2, and so on.

A compact disc is written from the inside out, and so files in the root directory will be closest to the centre, and files deepest in the hierarchy will be closest to the edge. You can use the `-report` option when running the Formatter to see exactly where each of your files will be stored.

The contents of a CD are not restricted to data, and you can design a "mixed mode" CD which includes one or more audio tracks as well as the data track; any specialist CD facility will be able to provide details of how to prepare audio material to be incorporated in the gold disc.

The ISO 9660 standard and RISC OS

The ISO 9660 standard imposes a number of constraints on the form of the hierarchy and the names of directories and files within it. These are all checked by the Formatter, and any violations are reported as errors. The major constraints of which you should be aware are as follows:

- The hierarchy must contain no more than 8 levels; in other words, no path name can have more components than
`$.dir1.dir2.dir3.dir4.dir5.dir6.dir7.file8`
where `$` represents the root directory of your hierarchy.
- File and directory names may only contain
 - upper-case letters
 - digits
 - underlines.
- File names may contain no more than 30 characters.
- Directory names may contain no more than 31 characters.

Most RISC OS filing systems are case-insensitive, and so the Formatter automatically replaces lower-case letters by their upper-case equivalents in file and directory names. Many RISC OS filing systems also limit name lengths to 10 characters, and for this reason it is wise to restrict your own names in the same way: the Formatter will generate a warning message if any name longer than 10 characters is found.

How are application names handled, when exclamation marks are not permitted characters? The Formatter replaces any leading ! by an underline, and records special "system-specific" information in the image to inform CDFS of the replacement; when the file or directory is accessed from CDFS, the ! is reinstated.

The RISC OS file type, date/time stamp, and attributes (including access rights) are also recorded in this way, so that CDFS can access this information when required. System-specific extensions of this kind are permitted by the ISO 9660 standard, and do not prevent the files from being accessed on other systems.

If you wish your disc to be compatible with Acorn's Level 4 Fileserver software, you should also meet the following requirements:

- The disc must have a volume identifier, which must contain no more than 16 characters of which the first is a letter.
- All relevant files should have "public read" access.
- No directory should contain more than 77 files.

Empty directories and files are also best omitted: although CDFS will handle such objects correctly, other CD-ROM filing systems may not do so.

These conditions are all checked by the Formatter, and warning messages issued if any violation is found.

Constructing an image

Double-click on the !ISOForm application to load it onto the icon bar, and then click on the application icon to open the "set up" window; now fill in fields as follows:

Root directory

You can either type the directory name into the field, or you can drag the corresponding icon from a directory display and drop it

... ..

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Volume id

Enter this in upper-case; it will become the name by which CDFS recognises the disc.

Check hierarchy only

Make sure that this is the output option that is selected.

Now click on the "Run" button, and the Formatter will start executing, sending its output to a new window on the screen. Typical output might be as follows:

```
Acorn ISO 9660 CD-ROM Formatter version 1.00 at 17:24:23 on 24-Jan-1992
Checking the hierarchy
  SCSI::Disc4.$isoroot
    SCSI::Disc4.$isoroot.ISOFORM
*** Error: File or directory name 'COMP+go' contains illegal character(s)
    while examining directory 'SCSI::Disc4.$isoroot.ISOFORM'
*** Error: File or directory name 'EX-image' contains illegal character(s)
    while examining directory 'SCSI::Disc4.$isoroot.ISOFORM'
  SCSI::Disc4.$isoroot.MISCPROGS
    SCSI::Disc4.$isoroot.MISCPROGS.H
*** Warning: This directory is empty
    while examining directory 'SCSI::Disc4.$isoroot.MISCPROGS.H'
  SCSI::Disc4.$isoroot.MISCPROGS.O
*** Warning: This directory is empty
    while examining directory 'SCSI::Disc4.$isoroot.MISCPROGS.O'
Check complete

***** Warnings ***** 78
  files do not have Public Read access, and so will not be accessible
  from a Level 4 Fileserver
  There are 2 empty directories
*****

  The size of the ISO image will be 313 ISO blocks (626k) containing:
    9 directories
    78 files

*****
  Structure does not conform to ISO 9660 standard - 2 errors reported
*****
```

When it is complete, you should check all error and warning messages, making corrections to your hierarchy as necessary. You are now ready to create an ISO 9660 image.

The image can be directed to a R]SC OS file, or to a specified area on a SCS] disc; you should choose the option most convenient to the company who is to make the gold disc for you. In most cases this will be the SCSI option, and section 4.4 below gives details of how you can set up a SCS] disc ready to receive an image.

For the moment we shall assume output to a file, and you should now click on the "Write image to file" option and fill in the corresponding field. If the CD you are creating is to be accessed over a network you should also click on the "Public access" button, and if you want details of where your files will appear in the image you should click on the "Report image contents" button.

Click on "Run" to start the Formatter again. This time (provided there are no more errors) an image will be written to the file, and details will be reported in the window:

```
Acorn ISO 9660 CD-ROM Formatter version 1.00 at 17:34:42 on 24-Jan-1992
Checking the hierarchy
  SCSI::Disc4.$isoroot
  SCSI::Disc4.$isoroot.ISOFORM SCSI:
  :Disc4.$isoroot.MISCPROGS SCSI::
  Disc4.$isoroot.ISOFORM.C SCSI::
  Disc4.$isoroot.ISOFORM.H SCSI::
  Disc4.$isoroot.ISOFORM.0 SCSI::
  Disc4.$isoroot.MISCPROGS.C
Check complete
The size of the ISO image will be 311 ISO blocks (622k) containing:
    7 directories
    78 files
Writing the image
```

Object	Type	Start Address	Length	Bytes	n
System Area	-	0	16	32768	
Primary Volume Descriptor	-	16	1	2048	
Volume Descriptor Set Terminator	-	17	1	2048	
Type L Path Table	-	18	1	84	
Type M Path Table	-	19	1	84	
Root directory	D	20	1	2048	
STATUS	F	21	3	5525	
ISOFORM	D	24	1	2048	
ISOFORM.COMPG0	F	25	5	9928	
ISOFORM.EXIMAGE	F	30	15	28828	

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ISOFORM.O.TOFILE	F	290	1	1900
ISOFORM.O.TOSCSI	F	291	3	4784
MISCPROGS.C	D	294	1	2048
MISCPROGS.C.DIRSCAN	F	295	3	5258
MISCPROGS.C.FREX	F	298	2	2121
MISCPROGS.C.SCSIEX	F	300	3	5389
MISCPROGS.C.SCSIEX2	F	303	4	6553
MISCPROGS.C.SORTX	F	307	2	3118
MISCPROGS.C.VARGEX	F	309	2	2220
Image complete				

If you wish to save or print the output, you can bring up a "Save" box by clicking menu over the window and choosing the "Save" option. Looking at the output above, you will see that the Formatter works in two stages: checking the hierarchy, and creating the image.

During the first stage, the hierarchy is thoroughly checked for conformance to the ISO 9660 standard. Any problems are reported as errors or warnings, and progress is indicated by writing out the name of each directory just before its contents are checked. When the check is complete, summaries of any errors or warnings are produced, and information about the size of the image is printed.

During the second stage, the image itself is written out, including tables containing information gathered during the first stage. The program assumes that no changes will be made to any of the files in the hierarchy between these two stages, and so you must be careful not to alter the hierarchy or its contents in any way whilst the Formatter is running.

How to store an image on a SCSI disc

Specifying the image area

The Formatter provides an option for writing the image to a specified area on a SCSI disc. To do this, you must supply the device identifier, a start block address, and the length of the area:

- **Device identifier**

This is the number allocated to the device on the SCSI bus, and is in the range 0 to 6. Use the `*devices` command if you do not know the device id for the disc which you wish to use.

- **Start block**

This defines whereabouts on the disc you wish the image to be recorded. It may be left blank, in which case an appropriate default will be chosen — see below.

- **Length**

This defines how much of the disc is to be used. It may be left blank, in which case the Formatter assumes that all space from the start block until the end of the disc is available. The Formatter checks that the image will fit into this space before starting to write it.

The start block and length are measured in terms of the SCSI device's block size, whereas information about image size is normally reported in terms of the ISO 9660 logical block size of 2048 bytes. Many SCSI discs have a block size of 512 bytes, in which case a length of 102400 would reserve space for an image up to 50MB —or 25600 ISO blocks — in size.

When you write an image to a SCSI disc you should make a note of the start block and length ready to give to the company who makes the gold disc: such images are not held in any filing system, and so there is no other way of locating them.

There are two simple ways of preparing a new SCSI disc for use by the Formatter, and these are described below. You will need a copy of SCSIDM (supplied with the ACORN SCSI Expansion Card) in order to configure the disc: further information on how to use SCSIDM can be found in the SCSI Expansion Card User Guide.

If you wish to re-configure an existing disc you **MUST** take a back-up copy first, since any data on it will be destroyed by the configuration process.

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A dedicated disc

If you wish to dedicate a whole disc to image storage, you should use `SCSIDM` to format the disc only. After formatting, you would normally use the section command to partition the drive; you should omit this stage:

```
*scsidm
scsidm> device 2
Current device is 2, type 0 (direct access)
Device identifies itself as
scsidm> format
        ...format complete
        reading new disc shape...done
scsidm> quit *
```

You can now specify any part of the disc for image storage, although you would normally start at the beginning — block 0; this is the default value assumed by the Formatter if no start block is given.

A disc shared with RISC OS

In this case, you should follow the format command with the section command, answering "yes" to the question about RISCiX partitions, and specifying the number of blocks which you wish to be allocated to RISC OS:

```
*scsidm
scsidm> device 2
Current device is 2, type 0 (direct access)
Device identifies itself as ....
scsidm> format
        ...format complete
        reading new disc shape...done
scsidm> section
Include RISCiX partitions? (yes) >y
Device 2 has a block size of 512 bytes
The RISC OS area must be between 1275 and 480124 blocks long
size of RISC OS area (1275)? >240000
Rounded number of blocks in RISC OS partition up to 240975

Writing RISC OS partition...done
scsidm> quit
```

In the above example, blocks 0 to 240974 will be used by the R]SC OS SCSIFS filing system, and blocks 240975 to 480123 are available for storing images. If you do not give a start block value, the Formatter will recognise that a RISC OS area is present, and will use as default the first block that is free — 240975 in this example.

Further information

More complicated situations are possible in which your SCSI disc also contains one or more RISC iX partitions, and in such cases you should always specify an explicit start block and length.

The Formatter always checks to make sure that the specified image area does not overlap with any part of the disc occupied by either R]SC OS or RISC iX data, and will refuse to write out the image if any overlap is found. This means that you will need to reconfigure any SCSI disc that is already fully allocated before you can use it to store ISO images.

If the image itself is smaller than the space allocated for it, the Formatter (unless instructed otherwise by the `-nowipe` option) writes zeros to the remaining blocks. This makes sure that any data previously on the SCSI disc is not accidentally copied to the CD-ROM when the gold disc is made.

Producing a CD-ROM

Once you have your image on a SCSI disc you can take or send this to a specialist company for a test pressing. Before doing so, you should check once more that all the data you require has been included: it is impossible to add more files to a gold disc once it has been written. In many cases, a gold disc can be produced "while you wait", at a cost of a few hundred pounds.

The final stage — quantity production — involves the most financial outlay, and so you should check your gold disc carefully. Once satisfied, the gold disc itself (or tapes produced at the same time) can be used as the master for quantity production, with typical costs around £2 a disc with a once-off mastering charge of around £1000.

Technical reference - command line program

Introduction

This section explains how to use the Formatter from the Command Line, and gives details of all the available options.

The program operates in two phases.

During the first phase, the specified hierarchy of files is checked for conformance to the ISO 9660 standard. This phase is normally quite fast, since only directories are accessed and file names checked: there is no need to read the contents of the files themselves.

The image itself is constructed during the second phase. This may take some time for large images as all of the data has to be copied from the hierarchy to the image.

The Formatter assumes that no changes are made to the hierarchy between the two phases, and so you must be careful not to access any of the files involved whilst formatting is in progress.

Notation

The next section describes the syntax of each option using a formal notation. Items enclosed in angle brackets stand for parameters which the user must supply; for example `<dirname>` should be replaced by a suitable RISC OS directory name.

The following items are common to a number of options, and are to be interpreted as follows:

- `<dirname>` any valid RISC OS directory name
- `<filename>` any valid RISC OS file name
- `<d-string>` a string composed only of the following characters:
 - upper-case letters
 - digits
 - underlines
- `<a-string>` a string composed only of the following characters:

- upper-case letters
- digits
- underlines
- spaces
- special characters

where the special characters are: !"

%&'()*+,-./:;<=>?

Any `<a-string>` parameter that includes one or more spaces or quotes must itself be quoted with each internal quote doubled. For example, the `<a-string>` FRED AND "JIM" would have to be entered as "FRED AND "JIM" .

`<int>` a sequence of digits representing an integer

Square brackets are used to enclose optional items, and a vertical bar is used to separate alternatives. For example, `<int> [k K]` means that the user should supply an integer optionally followed by the letter k or K.

Starting the Formatter

The program is invoked by the command `*ISOform`, optionally followed by a number of options:

```
*ISOForm [ <option> ... ]
```

Each `<option>` is identified by a minus sign immediately followed by a sequence of lower case letters; this may be followed by one or more parameter values.

Normally the option list will include at least the `-root` option, together with one of the output options. If no option is given, the command responds with a short description of all available options.

Options

`-root <dirname>`

Specifies `<dirname>` as the directory that defines the hierarchy of files that is to be formatted.

`-check`

If this option is present, no image is created: instead, the hierarchy is simply checked to make sure that it conforms to ISO 9660 requirements.

`-tofile <filename>`

Specifies that the image is to be written to the file `<filename>`. -

`toscsi <deviceid> [<startblock> [<numblocks>]]`

Specifies that the image is to be written as "raw" data to SCSI device number `<deviceid>`: `<deviceid>` is an `<int>` whose value lies between 0 and 6.

If `<startblock>` and, optionally, `<numblocks>` are present, then these define explicitly the portion of the device to be used: if `<numblocks>` is absent, the portion is assumed to run from `<startblock>` to the end of the device.

If not, all of the device following any R]SC OS partition present is to be used.

Both `<startblock>` and `<numblocks>` have the form

`& <int>`; if the optional ampersand is present, the digit sequence may include the letters A to F, and will be interpreted as a hexadecimal value.

`-volid <d-string>`

The given string is recorded as the Volume Identifier for the CD-ROM, which will be used as the disc name by CDFS. It may contain at most 32 characters.

`-pubid <a-string>`

The given string is recorded as the Publisher Identifier for the CD-ROM. It may contain at most 128 characters.

`-copyid <d-string>`

Specifies `<d-string>` as the Copyright File Identifier.

`<d-string>` must be the name of a file inside the directory specified by the `-root <dirname>` option, and must be no more than 8 characters long.

h e l p

Lists and gives information about these options.

n o w i p e

If present, this prevents any unused blocks in a SCS] destination area from being cleared to zero.

q u i e t

Progress is normally indicated by output of a line each time a directory in the hierarchy is opened; such messages are inhibited if this option is selected.

n o w a r n

Certain legal but possibly undesirable circumstances normally generate warning messages; details are given in a later section. These messages are suppressed if this option is selected, but a summary of all warning messages will still be written at the end.

-report

This option causes details of the location and size of each object to be produced as the image is created during the second phase. These details replace any progress messages which might otherwise appear (see -quiet option above).

—public

This option causes "public read" access to be added to every file and directory in the image.

If it is not set, a warning message noting the number of files without public read access is printed: note that no such file can be accessed from a CD-ROM on a Level 4 Fileserver, for example.

-ptsize <int>[kIK]

Specifies the number of bytes to be allocated to an internal data structure called the "path table structure".

The amount of storage required depends on the number of directories in the hierarchy and on the length of their directory names. The default value of 120K should be sufficient for a hierarchy containing up to 3000 directories with names around 8 characters long.

`-dirsize <int>[kIK]`

Specifies the number of bytes to be allocated to an internal data structure called the "directory structure".

The amount of storage required depends on the maximum number of objects in any one directory in the hierarchy, and on the length of the names of those objects. The default value of 25K should be sufficient for a directory containing up to 500 objects with names around 8 characters long.

`-opts <filename>`

Specifies `<filename>` as the "command file" in which (further) program options may be found.

Each line of the file must either be empty, or must contain a single option.

If an option is specified both on the command line and in the command file, then the command line option takes precedence.

Notes:

- 1 If no option is present, the effect is as if the option `-help` had been given.
- 2 Exactly one of the options `-check`, `-tofile` and `-toscsi` must be given.
- 3 Either of the options `-tofile` and `-toscsi` given in the command line will override either of them given in any command file.

Output options

The ISO image can be written as a RISC OS file (to any device) using the `-tofile` option, or as a "raw" stream of data blocks to a direct-access SCSI device using the `-toscsi` option. This latter option provides a system-independent interchange format.

If the `-tofile` option is selected, no checks are made: any pre-existing file with the same name will be overwritten by the new image.

The `-toscsi` option specifies a raw SCSI destination by providing a device identifier, a start address, and a length:

<code><deviceid></code>	this is the SCSI device identifier, given in the range 0 to 6
<code><startblock></code>	this may be given explicitly as a SCSI block address
<code><numblocks></code>	the length in SCSI blocks

For convenience, the start address and length may be specified implicitly as either the whole device, or that part of the device that follows any RISC OS section already present.

In all cases, a check is made to see whether the requested destination area is free: if any part of it appears to be part of a RISC OS or RISC iX partition, then the program will refuse to proceed. (Note that a SCSI disc without either a RISC OS or RISC iX partition can be created by using SCSIDM just to format the disc.)

If all is well, the image is written to the destination from the start address onwards as a sequence of blocks. If the image is smaller than the specified length, all remaining blocks in the destination are zeroed, unless the `-nowipe` option is set.

Errors

Faults in user-supplied options are reported immediately and the program proceeds no further; suitability of the selected output option is also verified before phase 1 is entered.

During phase 1, the Formatter reports as errors any non-conformances found as it scans the root hierarchy; phase 2 –writing the image – will only be entered if no errors are found.

The program can be interrupted at any time by the user pressing "Escape".

Warnings

The following circumstances will generate warning messages (unless suppressed by the `-nowarn` option):

- A file or directory name contains more than 10 characters.
- A file or directory is empty.
- No Volume Identifier has been specified.
- The specified Volume Identifier contains more than 16 characters, or does not start with a letter.
- A directory contains more than 77 objects.
- Files without Public Read access are present.

These situations do not create non-conformant images, but may cause difficulties when inter-working with other RISC OS software.

Progress messages

Progress messages reporting the start and finish of each major phase of the Formatter's operation are always produced.

A message is also output each time a new directory in the hierarchy is processed, unless the `-quiet` option is selected.

The Start Address is given relative to the beginning of the image, and both Start Address and Length are given in terms of]SO blocks, each of which is 2048 bytes long.

Technical reference - desktop application

Introduction

The desktop version of the ISO Formatter has been developed using Acorn's DDE (Desktop Development Environment) FrontEnd tools, and those familiar with the Acorn Desktop C or Acorn Desktop Assembler products will recognise most of the features of the Formatter's user interface.

The Formatter is run as a desktop application as follows: I

Load the !ISOForm application onto the icon bar.

2 Click on the]SOForm icon to display the Setup dialogue box.

3 Set Formatter options by filling in fields in the SetUp box, or by choosing appropriate entries in the SetUp menu.

4 Click on the RUN button: the Formatter starts executing, with output directed to the Text window that now appears on the screen.

5 During execution it may be convenient to "iconise" the Text window by clicking Adjust on the window's Close icon; it is then replaced by a smaller Summary window. The original Text window is recovered by clicking Adjust on the Summary window's Close icon.

6 When formatting is complete, the contents of the Text window can be saved by choosing the appropriate entry from the Text window menu.

Each of these steps is described in detail in the following sections.

Loading the application

Bring up a directory display containing the !ISOForm application directory, and double-click on the !]SOForm icon. This will load the application onto the icon bar at the bottom of the display.

The Application menu

The Application menu is displayed by clicking menu on the !]SOForm icon on the icon bar. The following entries are available:

Info =>

This entry leads to a dialogue box displaying information about the program including identification, copyright, version number and date.

Save options

Choosing this option will save the current options defined by the Options menu below. These should not be confused with the Formatter options which are specified in the SetUp box and its associated menu: these options are not saved.

Options =>

This entry leads to the following sub-menu:

Auto Run: Choosing this entry toggles "auto-run" status: the entry is ticked if auto-run is switched on.

To use the auto-run option, you must create a "command file" in which each program option appears on a separate line; for example, the file could consist of the following lines:

```
    r o o t   a d f s : : 4 . $ .  
c d a p p  
    t o s c s i      2  
    r e p o r t  
    v o l i d   A R C H M E D
```

Make sure that auto-run is switched on, and drag the icon representing this file from a directory display and drop it onto the ISOForm icon on the icon bar; the Formatter will start executing immediately with the options specified in the command file.

If auto-run is off, the Formatter does not start executing, but the SetUp dialogue box appears with the "Options file" field already filled in with the name of the command file.

Auto Save: This option is not available to ISOForm, and the entry is permanently greyed-out.

Display =>: This leads to a sub-menu containing two entries called **Text** and **Summary**. Choosing one of these entries ticks it, and causes the other to be un-ticked.

When **Text** is ticked, ISOForm will display a Text window when it starts executing, but when **Summary** is ticked, execution starts with a Summary window.

Help

Choosing this option brings up a scrollable window containing a summary of the Formatter options available with a short description of each one.

Quit

Removes the application from the icon bar.

The SetUp dialogue box and its menu

The SetUp box is displayed by clicking on the ISOForm application icon on the icon bar, and its menu is displayed by pressing Menu over the Setup box itself.

Most of the fields in the Setup box and entries in the menu correspond to Formatter options, as defined below; the options themselves are more fully explained in the reference section 5, and an example of how to use them to construct an image appears in section 4.3.

The SetUp box contains the following fields:

Root directory

This defines the value of the `-root` option. You may enter a directory name explicitly, or drag an icon representing the root directory and drop it onto the field.

Volume id

The `-volid` option.

Output options

Exactly one of these options should be selected: choose the one you want by clicking on the corresponding radio button.

- **Write image to file**

The -tofile option: enter a file name, or drag an icon representing the desired output file and drop it onto the field.

- **To SCSI device**

The -toscsi option: enter a digit between 0 and 6 for the device id, and enter values into the Start block and Length fields as required.

- **Check hierarchy only**

Report image contents

Click on this option icon to set the -report option; click again to reset it.

Options file

The -opts option: enter a file name, or drag an icon representing your command file and drop it onto the field.

Public access

Click on this option icon to set the -public option; click again to reset it.

Run

Click on this button to start the Formatter executing after you have set all the options you need.

Cancel

Click on this button to remove the Setup box from the display.

The Setup menu has the following entries:

Command Line =>

This entry leads to a dialogue box in which the command line corresponding to the options already selected is displayed. You may edit this line in any way you wish, and then click on the Run button to start the Formatter executing.

Publisher =>

This entry leads to a writable field for the -pubid option.

Copyright =>

This entry leads to a writable field for the -copyid option.

No warnings

Choose this entry to toggle the state of the -nowarn option: the entry is ticked when the option is selected.

No wipe

Choose this entry to toggle the state of the -nowipe option: the entry is ticked when the option is selected.

Quiet

Choose this entry to toggle the state of the -quiet option: the entry is ticked when the option is selected.

PT size =>

This entry leads to a writable field for the -ptsize option.

Dir size =>

This entry leads to a writable field for the -dirsize option.

The Text and Summary windows

As soon as the Formatter starts execution, a Text window containing output appears on the screen (unless the Summary Display option has been chosen – see above). There is a menu associated with this window with the following entries:

Info =>

This entry leads to a dialogue box containing information about the ISOForm program.

Cmd line =>

This entry leads to a dialogue box containing a field in which the command line corresponding to the options selected for this run is displayed. You may edit this field in any way you wish, and clicking on the ReRun button will create a new task corresponding to the options now specified.

Running two copies of the **Formatter** at the same time is not likely to be useful, and this option is normally only selected to re-run with the same options as before after correcting errors found in the previous run.

Save =>

This entry leads to a standard R]SC OS Save box. You can use this to take a copy of the contents of the Text window even while the **Formatter** is still running, making it easy to examine the output produced so far.

Abort

Choose this option to terminate the **Formatter** run; the Text window remains on display, and its contents can be examined before closing it.

Pause

Choose this option to halt execution of the **Formatter** temporarily.

Continue

Choose this option to resume execution of a paused **Formatter**.

A Text window may be turned into a Summary window by clicking Adjust on its Close icon — and vice-versa.

The Summary window displays the number of lines of output produced so far, contains two buttons, and has a menu with three entries called Info, Cmd line and Save; the buttons and menu entries duplicate the functions available from the Text window menu in an obvious way.

Technical notes on image structure

These notes describe details of the way in which the Formatter constructs an ISO 9660 image from a hierarchy of RISC OS files.

This section assumes a knowledge of the ISO 9660 standard: details are given in the standards document reference ISO 9660: 1988 (E) entitled *Information processing — Volume and file structure of CD-ROM for information interchange*.

The image does not contain any Supplementary Volume Descriptors, nor any Optional Path Table Occurrences.

Every file name is recorded with a null extension and a version number 1: for example, the RISC OS filename `trainspot` will be recorded as the ISO filename `TRAINSPOT . ; 1 .`

The following fields in the Primary Volume Descriptor are left unset:

- System Identifier
- Volume Set Identifier
- Application Identifier
- Abstract File Identifier
- Bibliographic File Identifier
- Volume Expiration Date and Time
- Volume Effective Date and Time.

The Data Preparer Identifier in the Primary Volume Descriptor is recorded as `ACORN ISO 9660 FORMATTER VERSION 1.00 .`

The Volume Creation Date and Time and Volume Modification Date and Time in the Primary Volume Descriptor are recorded as the time when the Formatter is run.

The Recording Date and Time field in a Directory Record is recorded as the timestamp information associated with the corresponding RISC OS directory or file.

The GMT offset field in Date and Time values is always recorded as zero.

Technical notes on image structure

The product described in this manual and products for use with it are subject to continuous development and improvement. All information of a technical nature and particulars of the product and its use (including the information and particulars in this manual) are given by Acorn Computers Limited in good faith. However, Acorn Computers Limited cannot accept any liability for any loss or damage arising from the use of any information or particulars in this manual.

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Published by Acorn Computers Limited
Part number 0484,083
Issue 1, February 1992