ARDI
And
EMTCOPY for
Windows and OS/2

Licensed program
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Program functions

These programs are tools to make physical diskette backups

It is easy to understand the purpose of making physical diskette backups. Making physical diskette backup allows the user to restore the diskette matching exactly the source diskette. Any data is at the same place on the diskette. This is almost like the “Diskcopy” command, but the image file can be send through the network allowing diskettes to be send over the net.

Starting with version 4.30, you can restore diskette images to USB connected removable disks. This allow to use diskette data on Diskette-less PCs. The Removable disk can be any size between 8 meg to 512 meg. The program has been tested with DiskOnKey devices by IBM and M-Systems.

Virus detection

All these programs run an integrity test when started to warn you if they have been virus infested or if the program file has been damaged.

History

Most of the time bootable diskettes or diskette with non-standard file system are required to update system or card firmware. Sending data over the network to build such diskettes can be done with different method, but the simplest method is to build an exact copy of the original diskette by using a disk imager / restorer. The ARDI program family is totally oriented toward diskette imaging and restoring.

Originally those programs were DOS oriented. When OS/2 was available I re-wrote these programs for OS/2. Windows 3.1 was just a user interface, so it didn’t provide any advantage for diskette imaging. When Windows 95, NT4, 2K and XP were available, I wrote imaging programs for these systems.

To ease diskette imaging for the end user, I designed a self-restorable diskette image format. (The ARDI diskette image format)

Microsoft Windows Systems

There are three Windows system groups:

- Windows 95, Windows 98 and Millennium (Windows Me). When not otherwise specified, just see Windows Millennium as an evolution of Windows 98.
- Windows NT 3.x, Windows NT, Windows 2000.
- Windows XP. Same as the above NT group except that OS/2 support has been removed from Windows XP. This prevents Character mode ARDI files to be used under Windows XP.

The programs discussed here have been written to support all these system but Windows NT 3.5.

Some users have requested special features, some of these features are not documented here.

Among the special features, there is a RAMDISK for Windows NT 4.0 used to build diskette images from the RAMDISK (This RAMDISK has a diskette form factor and only work with some of the programs described here. There is a RAMDISK for Windows 2000..

Another feature is the availability of DLL's. These DLL's are used for building images from diskettes by bypassing the diskette device driver. This is useful for non-FAT formatted diskettes. (UNIX backup diskettes for example). The DLL are version dependent and are only used for Windows 95/98/Me systems.

Diskette imaging is used to send diskette through a network (Internet for example).

The ARDI software program family provides several methods for doing this.
The charts below show some examples. (There are other programs in the ARDI software).
There are several Diskette image file formats used.

Diskette imaging operations

- EMTcopy format provides transport of copy protected diskettes when used in conjunction of IBM confidential program. It includes a fixed format diskette label , a 16 bit check sum and a light compression.
- DSK (loaddsk) is a simple diskette image with added free format label and simple 32 bit check sum. Data compression is available.
- MIF IBM corporate general purpose data transmission format. A subset is used to pack diskette sectors with 72 characters per line label, and simple 16 bit check sum.
- IMG Simple diskette image without any additional data, without compression, without check sum.
- ARDI (Auto (self) restorable diskette image) including free format diskette label, free format message to user and free format technical data record, 32 bit check-sum, data compression and password protection.

EMT4WIN operations summary:

Figure 1 Using new supports with EMT4WIN

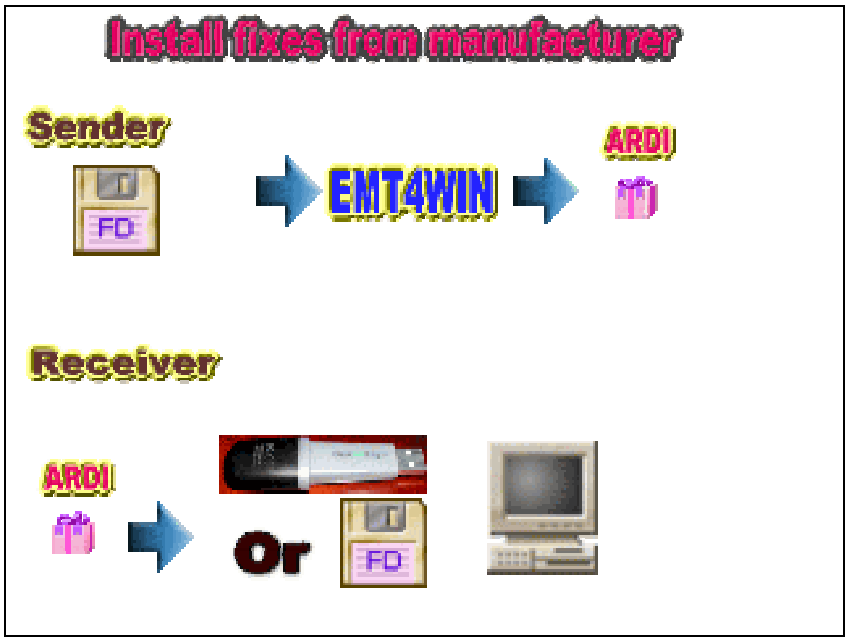

Figure 2 Using Emt4win for diskette transfer

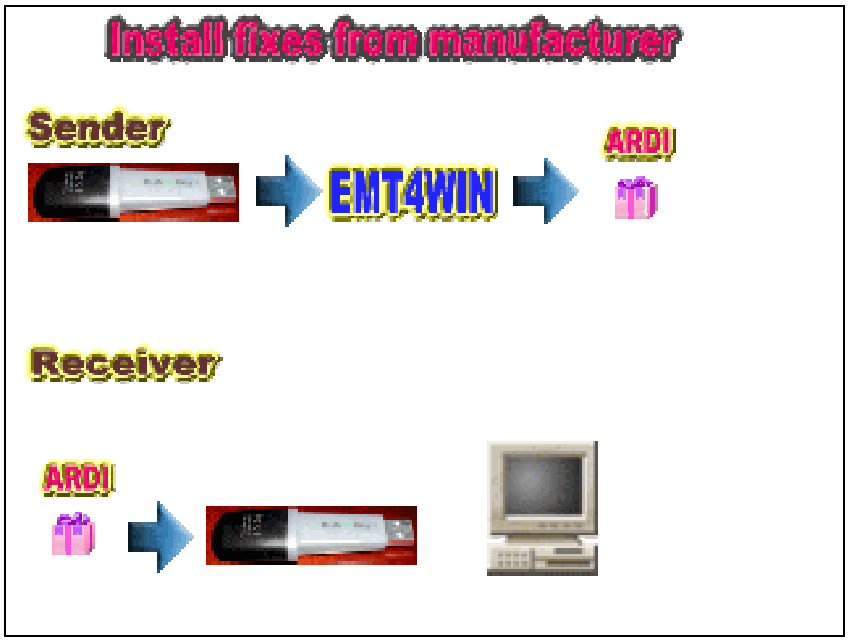

Figure 3 Using Emt4win for Removable disk transfer

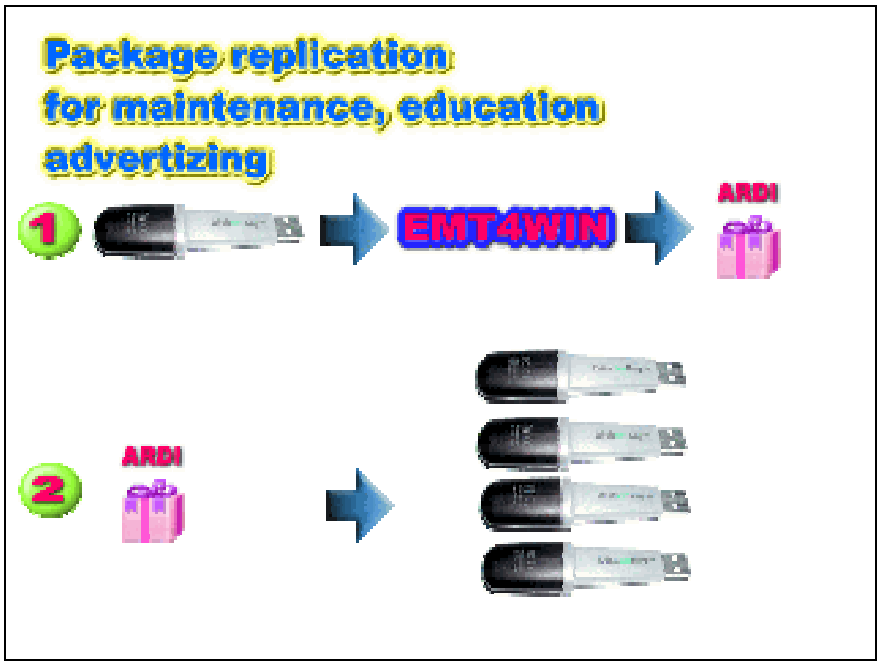

Figure 4 Package replication

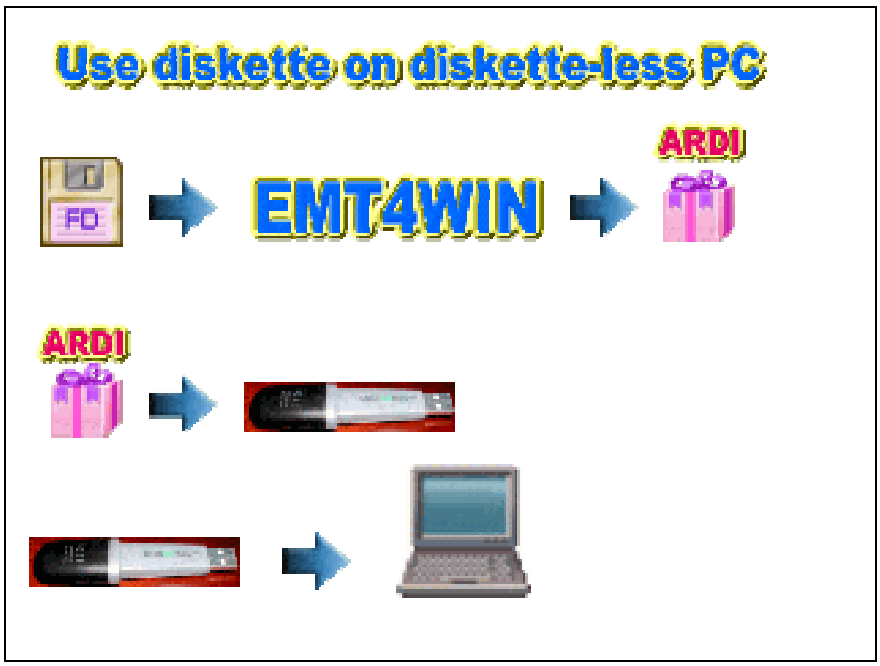

Figure 5 Using diskette on diskette-less PCs

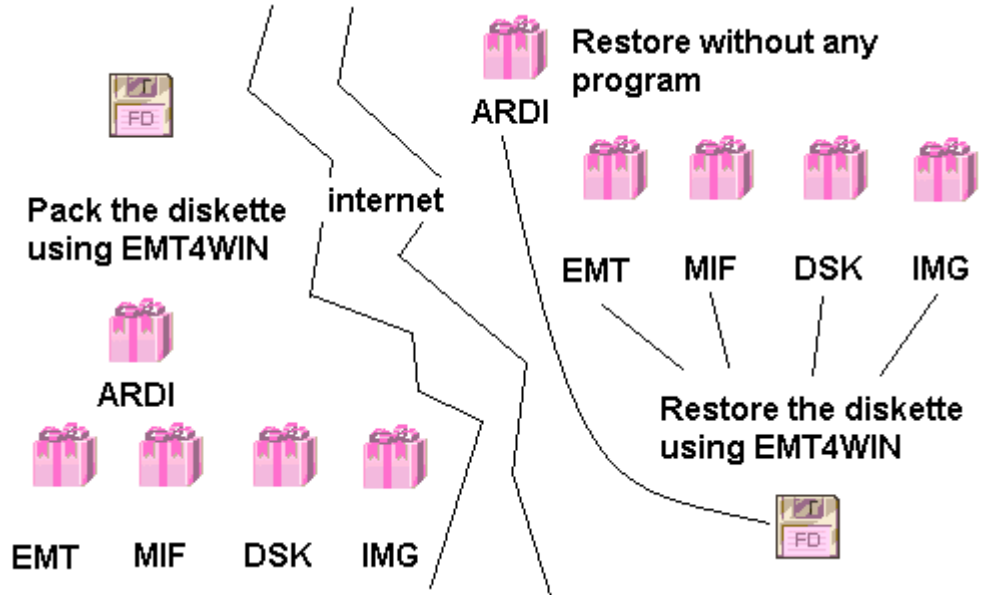

Figure 6-EMT4WIN operations

EMT4xxx (Character mode programs) operations

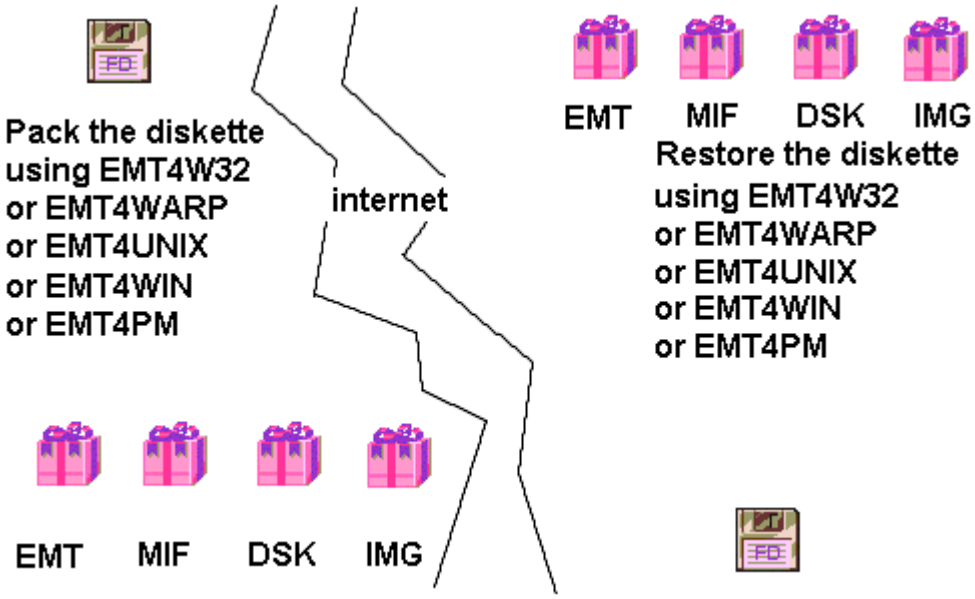

Figure 7-EMT4xxx operations .

ARDI and IMG2ARDI files conversion operations:

IMG2ARDI or I2AWDZ can be used to create Self restorable diskette images from any of the following:

- a **EMT** diskette image file.
- a **MIF** diskette image file
- a **DSK** compressed diskette image file
- a **IMG** simple diskette image file
- a **ARDI** self restorable diskette image file of any version and of any target system type.

Converting **ARDI** files is needed when you receive **OLD ARDI** files which don't support your new system (for example Windows 2000 was not supported before version 4.11), or if you got **ARDI for OS2** image files and you have Windows 2000 on your system. Converting an **ARDI** file is a simple and very fast process, using **I2AWDZ** (Windows program) or **IMG2ARDI** (OS/2 program).

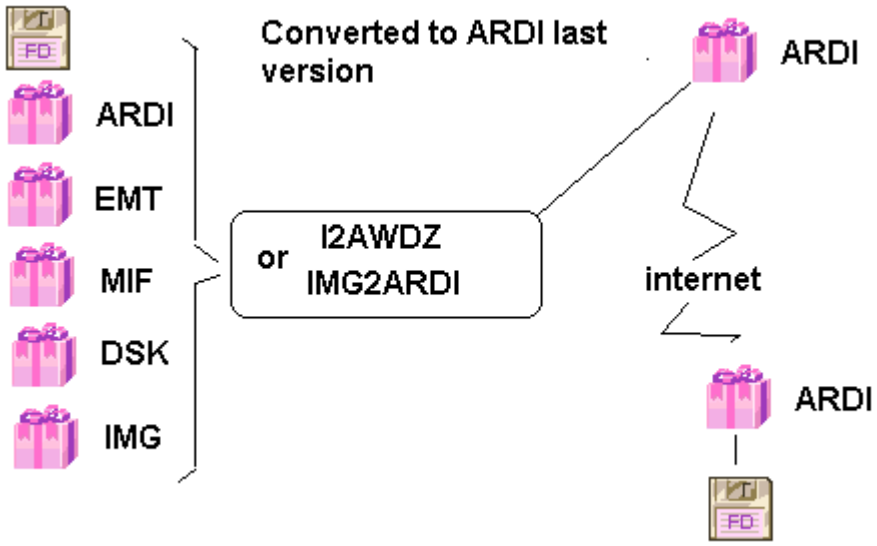

Figure 8-I2AWDZ and IMG2ARDI operations

To convert an **EMT**copy diskette image file to **ARDI** for Windows:
C:>cd C:\myimages

C:\myimages>I2AWDZ AnImage.EMT AnImage.EXE /W /ponewpassw

AnImage.EMT is the original Diskette image file in EMT format
AnImage.EXE is the new ARDI file (self restorable)
/W is the option for Windows ARDI file (**/O** for OS/2 ; **/D** for DOS only ; **/U** for character mode)
/poxxxx is the optional Output file password.

To convert an **ARDI** file to another target system or to the last level **ARDI** for Character mode (for Windows, DOS or OS/2)

C:\myimages>I2AWDZ AnImage.EXE C:\MyImages\MyNewImages\AnImage.EXE /U /pipassword /ponewpassw

AnImage.EXE is the original Diskette image file in ARDI format
MyNewImages\AnImage.EXE is the new ARDI file (self restorable)
/U is the option for Character mode ARDI file (**/W** for Windows ; **/O** for OS/2 ; **/D** for DOS only ; **/U** for character mode)
/pixxxx is the optional Input file password
/poxxxx is the optional Output file password

Available programs

Character mode programs

Windows

- EMT4W32 (for Windows 9x/Me/NT/2000/XP)

OS/2

- EMT4WARP (for OS/2 32 bit)
- EMT4OS2 (for OS/2 16 bit)

DOS

- EMT4DOS (for DOS).

Graphic user interface programs

Windows

- EMT4WIN

OS/2

- EMTFORPM (for OS/2 32 bit)
- EMT4PM (for OS/2 32 bit WARP)

Program features

For building images from diskettes:

	ARDI files	Diskimage	Compressed Diskimage (LOADDSK)	Un-compressed LOADDSK (1)	EMT	MIF
EMT4W32	No	Yes	Yes	Yes	Yes	Yes
EMT4WARP	No	Yes	Yes	Yes	Yes	Yes
EMT4OS2	No	Yes	Yes	Yes	Yes	Yes
EMT4DOS	No	Yes	Yes	Yes	Yes	Yes
EMTFORPM	No	Yes	Yes	Yes	Yes	Yes
EMT4WIN	Yes	Yes	Yes	No	Yes	Yes
EMT4PM	Yes	Yes	Yes	No	Yes	Yes

Table 1 Building images feature

NOTE 1: DISKIMAGE with check-sum and comments added, but without data compression added, suitable for diskette full of compressed data (most of installation diskettes).

Other features

See note 2 below	Restore from					Query image file	Query diskette
	Diskimage	Compressed Diskimage	Un-compressed Diskimage (1)	EMT	MIF		
EMT4W32	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMT4WARP	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMT4OS2	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMT4DOS	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMTFORPM	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMT4WIN	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMT4PM	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2 Other features

NOTE 1: DISKIMAGE with check-sum and comments added, but without data compression added, suitable for diskette full of compressed data (most of installation diskettes).

NOTE 2: ARDI images are self-restorable. They do not require additional program to restore data to diskettes.

Self restorable Images (ARDI files)

Target systems

ARDI files have been designed to run on the most popular systems for INTEL CPU based machines.

Advantages of ARDI over traditional formats:

The ARDI format has several advantages :

- The final user does not need to know anything about images.
- The final user just runs the file and press enter.
- The complete diskette is transferred, no sector is suppressed (LOADDSKF suppresses unused sectors).
- The restore program unpacker included in the file is small and efficient, the compression is more efficient, so the unpacker size is not a problem.
- The label size is free, so you can use as many lines of any size you want (up to 10000 bytes for the whole label).
- A message to the user can be added.
- A free format technical record is included.
- A password protection (optional) is included, so that files can be generally distributed on CD-ROM and only authorized users may get the password.
- The diskette data checksum is included in the file (DISKIMAGE format does not include the checksum in the file).
- The unpacker version matches the file version, (the unpacker comes with the file).
- ARDI structure can change with every ARDI version, (the unpacker is included). This is a major advantage (for enhancements and fixes) over traditional formats where compatibility has to be maintained over versions.
- ARDI format is structured to insure data integrity and ease of use.

File structure

ARDI format is structured to insure data integrity and ease of use.

The file is split in various records including but not limited to:

- The DOS unpacker (uncompressed)
- The Windows 9x/Me/NT/2000/XP or OS/2 unpacker (uncompressed)
- Common unpacker data (for DOS Windows 9x/Me, Windows NT/2000/XP and OS/2) (compressed)
- Diskette Label (compressed)
- End user message (compressed)
- Technical data (compressed)
- Diskette data (compressed, checked and protected)
- End record for future use (encrypted uncompressed)

This structure can change with every ARDI version, since the unpacker is included. This is a major advantage over traditional format where compatibility has to be maintained over versions.

ARDI can include three records:

The three records are of free format and although a 10000 bytes buffer is reserved in the program, it is recommended to give them a much smaller size. Other limits exist in the Presentation Manager list box size.

Each record is a character string ending with zero. CR/LF characters separate lines. These records can be loaded from disk and saved to disk for future use. A suggested template is available with the " Default " push-button. A copy of the last records is kept in the ARDI.INI or in the registry file for the next record editing.

CHECKSUM

What is the CRC code/value ?

ARDI CRC value is the same value calculated by the CRC program with the default parameters on a DISKIMAGE file of the same diskette. This value is included in the file for comparison when building the file. The CRC code does not include Label message record and is independent of password protection.

ARDI-files exist in four formats:

For Windows 9x/NT/2000/XP and DOS

Can be unpacked under:

- Windows 95/Me, Windows NT 4/2000/XP
- DOS 4 and up

For OS/2 and DOS

Can be unpacked under:

- OS/2 2.0 to WARP with Graphical user interface
- DOS 4 and up with line interface
- DOS under Windows 3.1 with line mode interface
- DOS under Windows 95/Me with line mode interface
- Dos under OS/2 with line mode interface

For DOS

Can be unpacked under:

- Windows 95/Me, Windows NT 4/2000(4)
- DOS 4 and up

Character mode self restorable images(3)

Can be unpacked under:

- Windows 95/Me, Windows NT 4/2000 ***(DO NOT use under Windows XP)***
- DOS 4 and up
- OS/2 2.x and up

Note 3: If you don't need a graphical user interface for image unpacking, this is the recommended format.

Note 4: Under Windows NT4 or Windows 2000, the diskette must be formatted before being written.

ARDI ***files include the following feature:***

- Self restorable diskette image,
- Optional password protection.

Running **ARDI** files, produces the diskette without the need for any additional program.

Non-self restorable images

These diskette backup files can be restored to diskette using the appropriate program depending on the file format used to create the diskette backup to image.

Table 3 Diskette image restorer programs

Programs from the ARDI family able to restore these non-self restorable image files:

- EMTFORPM (OS/2 32 bit only) graphical user interface
- EMT4PM (OS/2 32 bit only) graphical user interface.
- EMT4WARP (OS/2 32 bit only) character mode interface
- EMT4OS2 (OS/2 16 or 32 bit) character mode interface.
- EMT4WIN (Windows 9x/Millennium/NT/2000) graphical user interface.
- EMT4W32 (Windows 9x/Millennium/NT/2000) character mode interface.
- EMT4DOS (DOS 5.x and up) character mode interface.

Programs from others:

- EMTCOPY (DOS 4.x and up) character mode interface. Restores EMT and MIF images.
- LOADSK(F) (OS/2 2.x, OS/2 3.x and WARP, DOS) character mode interface. Restores LOADDSK and DISKIMAGE images.
- WINIMAGE (Windows 3.1, Windows 9x/NT) graphical user interface. Restores DISKIMAGE images (and WINIMAGE images) Limited to FAT diskettes.

Simple DISKIMAGE

This diskette image includes only diskette data. No comments or check-sum are added.

Compressed diskimage (LOADDSK)

The compressed image also called SAVEDSK(F) or LOADDSK(F) from the name of the programs used to create and restore them originally, includes a check-sum and a comment record for the destination user. Jack Gersbash from IBM originally created this file format

There are two compression forms used in this format:

- The end diskette unused sectors are NOT copied to the diskette when packing FAT diskettes. This may be a problem if you want to send a virus infected diskette to an anti-virus company for analyze. The other problem is that LOADDSK(F) do not write the unsent sectors which may be a problem under some circumstances. The ARDI family program fixes this last problem.
- The data on the diskette are compressed with an IBM proprietary algorithm, which increase data size when the data is already compressed. So there is an option to be set (Do not compress) when you pack a diskette with compressed data.

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EMTCOPY images

EMTCOPY files are complex image files including track format and sector position allowing imaging of non-standard diskettes. This program allows only standard formats. They include the complete diskette and are compressed.

The data check-sum is included. Label data can be added. No password protection is available

MIF images

MIF files are files allowing transport of any form of data. This form of MIF file is adapted for transport of diskette data. They include the complete diskette and are compressed.

The check-sum is included. Label data can be added. No password protection is available.

Selection chart for ARDI files

Unpack under:	OS/2-DOS ARDI	WIN95/NT ARDI	DOS ARDI	Char. ARDI
OS/2 2.0->WARP	Yes	No	Yes	Yes
DOS 5->7	Yes	Yes	Yes	Yes
Windows 3.1x	Yes	No	Yes	Yes
Windows 9x	Yes	Yes	Yes	Yes
Windows Me	Yes	Yes	Yes	Yes
Windows NT	No	Yes	Yes (1)	Yes
Windows 2000	No	Yes	Yes (1)	Yes
Windows XP	No	Yes	Yes (1)	Yes (1)

Table 4 Unpacker selection

Note 1: cannot format diskettes. You must provide an error-free formatted diskette.

Graphical user interface	OS/2-DOS	Win 9x / NT	DOS	Character
OS/2 2.0->WARP	Yes	N/A	No	No
DOS 5->7	No	No	No	No
Windows 3.1x	No	N/A	No	No
Windows 9x/98/Me	No	Yes	No	No
Windows NT	N/A	Yes	No	No
Windows 2000	N/A	Yes	No	No
Windows XP	N/A	Yes	No	No

Table 5 Graphical user interface selection

The target user runs OS/2 or DOS or Win31	OS/2-DOS ARDI
The target user runs Win 9X/Me /NT/2000	Win 9X/NT ARDI
The target user runs AIX or UNIX	DISKIMAGE (3)
The target user runs AIX or UNIX but owns a DOS system on the network.	DOS or Character ARDI
I don't know the target user system	Character ARDI or compressed image or EMTCOPY (2) or MIF (2)
The target user uses diskette loader duplicators	EMTCOPY or (2) MIF (2)
Note 2:Compressed,Emtcopy and MIF images require tools to be unpacked Note 3:AIX (UNIX) uses the “dd” command to restore DISKIMAGE file to diskettes.(dd if=myimage.img of=/dev/rfd0 bs=2048)	EMT4PM EMT4WIN

Table 6 Image selection chart

Selection chart for non-self restorable images

See Table 6 Image selection chart

Supported diskette formats and restrictions.

5.25 " diskettes

- 160k DOS-Windows-OS/2 diskettes
- 180k DOS- Windows-OS/2 diskettes
- 320k DOS- Windows-OS/2 diskettes
- 360k DOS- Windows-OS/2 diskettes
- 720k DOS- Windows-OS/2 diskettes with special hardware and driver
- 1.2M DOS- Windows-OS/2 diskettes

- 360k XENIX diskettes(4)
- 1.2M XENIX diskettes(4)

Table 7 5"25 diskettes

3.5 " diskettes

- 720k DOS- Windows-OS/2 diskettes
- 1.4M DOS- Windows-OS/2 diskettes
- 720k AIX-PS/2 , UNIX and RS6000 diskettes (1)(4)
- 1.4M AIX-PS/2, UNIX and RS6000 diskettes (1)(4)
- 2.8M DOS- Windows-OS/2 diskettes
- 2.8M AIX-PS/2, UNIX and RS6000 diskettes (1)(4)

USB Removable disks

- Removable Disk IBM 8M USB DiskOnKey P/N 19K4513 (5)
- Removable Disk IBM 32M USB DiskOnKey P/N 22P5296 (5)
- Removable Disk 64M USB DiskOnKey P/N ???(5)
- Removable Disk IBM 128M USB DiskOnKey P/N ???(5)
- Any removable disk from 8 Meg to 512 Meg supporting its own FAT file system and an alternate form factor (255 tracks per cylinder and 63 sectors per track) for non-FAT disks.

Table 8 3"1/4 diskettes

Restriction (note 1) APAR PJ14848 :

APAR PJ14848 INC-8234X,B650,C706,562107701

An OS/2 restriction exists with OS/2 2.x and above. This prevents to reliably build images from AIX or UNIX diskettes (or any NON-FAT diskette) when a valid media code exists in the first byte of sector two (0xF0, 0xFD, 0xFE, 0xFF...) For these diskettes, ARDI should output a message saying that the diskette format cannot be determined.

This problem is referenced in RETAIN as APAR PJ14848 Incident=8234X,B650,C706,562107701 and closed as permanent restriction for this OS/2 family (OS/2 2.x and WARP).

Windows 9x/Me has the same problem but there is a bypass available in the program, which works most of the time. The Windows 9x/Me diskette VXD being somewhat “confused” by the bypass, Windows 9x/Me must be re-booted after building UNIX diskette images (It is left in an unstable state).

The problem seems to occur mostly on UNIX/AIX backup continuation diskette. Native DOS or DOS sessions under OS/2 are not affected. OS/2 1.x or Windows NT4/2000/XP don’t have the problem.

Restriction (note 2) :5"1/4 720k

5.25 " 720k 80 tracks diskettes are not supported without using a low density 720k drive or a special device driver allowing PC AT 1.2meg drive to run at low density and single stepping. EXTDSKDD does not provide this feature.

Restriction (note 3) :127Mo optical

Even if 127 Mo Optical diskettes are correctly detected this format is not supported by theses programs.

Restriction (note 4): Unsupported under ARDIWIN

These formats cannot be packed using the Windows 95 packer. But ARDI-files built by ARDI (OS/2 version) can be unpacked to diskettes using any supported systems.

Restriction (note 5): Only supported under Windows

- Removable disks can be copied to images , compressed images or ARDI self restoring images. You must be running with Administrator privileges for doing this under Windows 2000 and Windows XP.

Microsoft DMF

- Microsoft DMF diskettes are detected, but cannot be built under OS2 without a special device driver or filter. So images are not accepted. DMF are almost standard diskettes with 21 sectors per track, sectors are interleaved, the space between sectors is smaller. Format operation is affected by this change. There is a partial support for this format in EMT4WIN when running under Windows NT4/2000/XP

Backup Technologies XDF

- IBM introduced the XDF format to pack OS/2 and DOS 7.0 diskettes. OS/2 or DOS 7.0 supports this format directly during installation. Then the system is enabled to read XDF diskettes. Any problem related to XDF format should be directed to OS/2 or DOS support. The XDF format is owned by Backup Technologies.

Backup Technologies diskettes are detected, but cannot be built under OS2 without a special device driver or filter. So images are not accepted. XDF diskettes are very different from standard diskettes. They have 19 sectors per tracks on the first tracks then different size sectors of up to 8192 bytes. XDFCOPY is provided by OS/2 and DOS 7.0 to build images and diskettes.

Sector size

ONLY 512 Bytes per sector is supported

Single side diskettes

Note that on 1 sided diskette, the second side is not erased

Single drive system :

- This program does not handle alternate logical diskettes (as B : for the A : drive

- When only one diskette drive is installed). Be sure the active diskette address for the diskette drive is the primary address (A : for A : drive for example). Do not switch to the alternate address (B : for the A : drive when only one diskette drive is installed) from another window when using the primary address with this program.

Guide to using…

EMT4W32, EMT4WARP, EMT4DOS

```
+-------------------------------------+
¦        -EMT4W32  Version 4.17-      ¦
¦   (C) - Daniel F Valot 1991-2000    ¦
¦             TheSeaHorse             ¦
+-------------------------------------+
EMT4W32  Building diskettes from LOADDSK, EMT, MIF or DISKIMGE image files
         Or building EMT, MIF, LOADDSK or DISKIMGE image files from a diskettes
         To get help:
         [C:\]EMT4W32   [enter]
         EMT4W32   (Electronic Master Transfer for Windows) usage:
         to build a diskette from EMT, MIF, LOADDSK or DISKIMGE image file:
         [d:\]EMT4W32   [C:][\PATH\]filename.ext d: [/f] [/Q] [/n] [/b] [/W]
          ↑              ↑      ↑        ↑       ↑    ↑    ↑    ↑    ↑    ↑
          ¦              ¦      ¦        ¦       ¦    ¦    ¦    ¦    ¦    ¦
          +--Prompt      ¦      ¦        ¦       ¦    ¦    ¦    ¦    ¦    ¦
         Eventual drive--+      ¦        ¦       ¦    ¦    ¦    ¦    ¦    ¦
         Eventual Path----------+        ¦       ¦    ¦    ¦    ¦    ¦    ¦
         Input  file name----------------+       ¦    ¦    ¦    ¦    ¦    ¦
         Diskette--------------------------------+    ¦    ¦    ¦    ¦    ¦
         Force formatting-(usually not needed)--------+    ¦    ¦    ¦    ¦
         Suppress percent display--------------------------+    ¦    ¦    ¦
         Suppress prompt for batch processing-------------------+    ¦    ¦
         To suppress beep ----------------------------------------------+    ¦
         To suppress write retries---------------------------------------------+
         Generally EMT4W32  formats the output diskette.
         if the output diskette is not formatted,
         if a track is not good or the format is
         different from expected format.
         If EMT4W32  Format doesn't succeed, try Windows FORMAT.
         Press a key to continue
```

Figure 9 EMT4xxx Help text

Examples:

To restore a diskette from an image	C:>EMT4W32 myimage.img a:
To check image file format	C:>EMT4DOS myimage.dsk
To check diskette format	C:>EMT4WARP a:
To build a compressed image from a	C:>EMT4W32 a: myimage.dsk /l /b /r

Table 9 EMT4xxx sample commands

EMT4xxx includes:

- EMT4W32 , the Windows 9x/Me/NT4/2000/XP character mode program,
- EMT4DOS, the DOS character mode program,
- EMT4WARP the OS/2 32 bit OS/2 character mode program,
- EMT4OS2, the 16 bit OS/2 character mode program.

These programs have all the same functions, but work on different platform.

To get a help, just type the program name at a prompt. You can print this help by redirecting the output to the printer:

EMT4W32 > lpt1:

And pressing the space bar up to the program return.

These programs cannot build self-restorable diskette images

The last option allows you to reset any option to its default value.

The MIF special setup for APAR format, 5-1/4 720 k diskettes and simple MIF files for compatibility with old applications.

- The force formatting options.
- The security prompts suppression.

EMT4WIN, EMT4PM

The Windows and OS/2 version include the same functions. There are small differences in the “file dialog” and “setup notebook” look and feel.

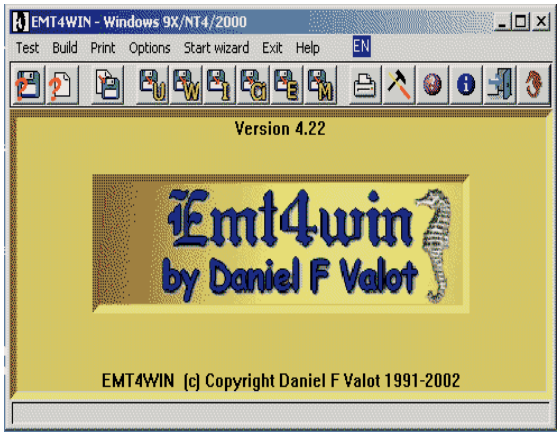

Figure 10 First screen (Windows)

See Figure 10 First screen (Windows)

There are fives paths to using **ARDI** programs

- The **wizard** which gives a step by step path to any available functions.
- The **Toolbar** which gives a fast path to main operations related to drive A:
- The **menu** which gives a fast path to any functions
- The “file dropping” function
- Use this function to restore diskettes from a non-ARDI image. Just drop a file from the file manager application on an EMT4WIN or EMT4PM icon, and the program starts. This program accepts only one file dropping.
- The transparent mode (see advanced functions).

This is a batch mode function with a script file used to build NON-ARDI images.

Build menu

This menu allows you to select the drive address you want to build the ARDI image from.

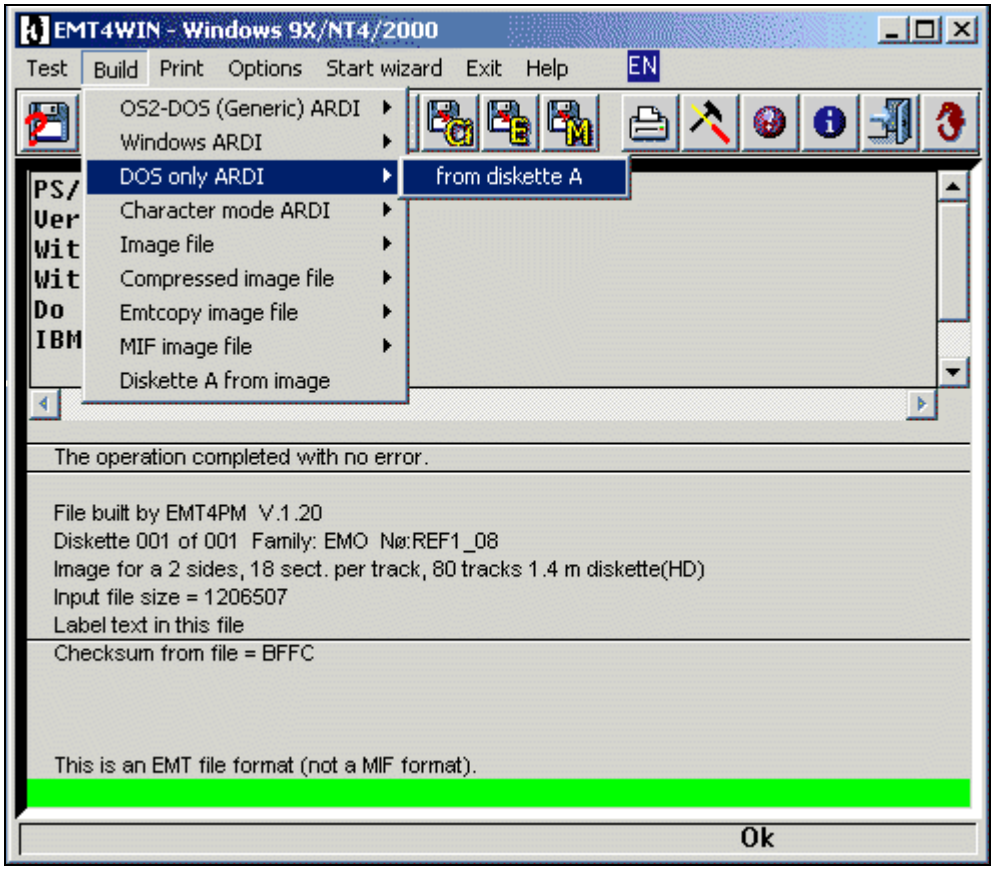

Figure 11 - Build menu

Test menu

This menu has to be used for testing a diskette in one of the diskette drives. If the diskette format is valid for ARDI, you will be able to build an image from it. You can get file information with Test->Image file, or test the file integrity with Test->Source file integrity.

See Figure 12 Test menu

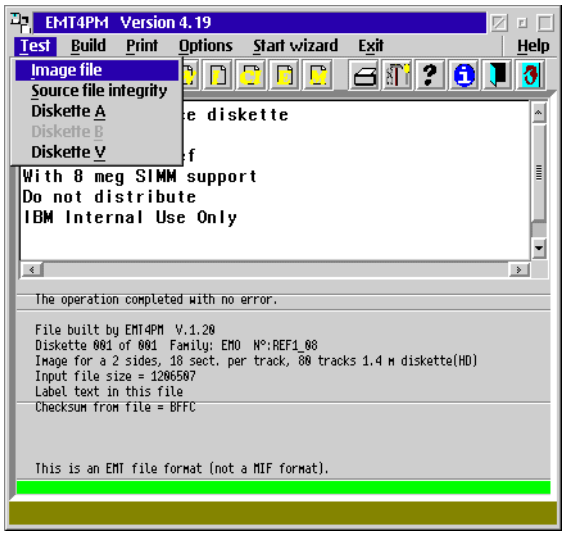

Figure 12 Test menu

Setup menu

This menu allows you to set different options.

- Beep suppression to suppress end of operation success or error beep.
- Windows position while running (maximized or minimized) and save window position for next program usage.
- Font selection.
- Animation (none, diskette filling or bar graph.)
- Restore to first time use.
- Shell association (with file ***.IMG,*.DSK,*.MIF,*.EMT**
- Under Windows, you can select the file extension used by the Windows explorer to start the program.

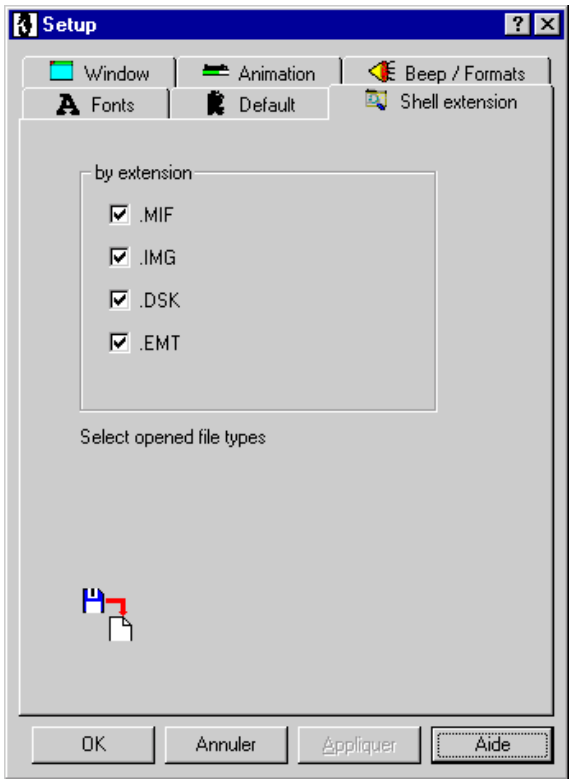

Figure 13 Setup notebook (Windows 95)

See Figure 13 Setup notebook

Exit option

Used to quit ARDI

- You can also use F3
- or Alt-F4

Help menu

The help menu summarize some of the main tasks.

See Figure 12 Test menu

Toolbar

A toolbar is provided for the most common operations. To work with diskette " **B : "**

you must use the menu, not the toolbar.

The Label window

Label, message and technical data :

This dialog is displayed after you pressed Build from A : for example.

As you can see on Figure 14 Label dialog, you can edit several data from this dialog.

- **Diskette label** is a text with lines separated by CR/LF characters and ending with binary zero. You can enter as many lines of any size up to 10000 characters. The limit is probably below that for the unpacker. This label will not be written to the diskette. This label is not CRC checked.
- **Message to user** is the message that is displayed when the user runs the image file to create the diskette. This message will not be written to the diskette. This message is not CRC checked.

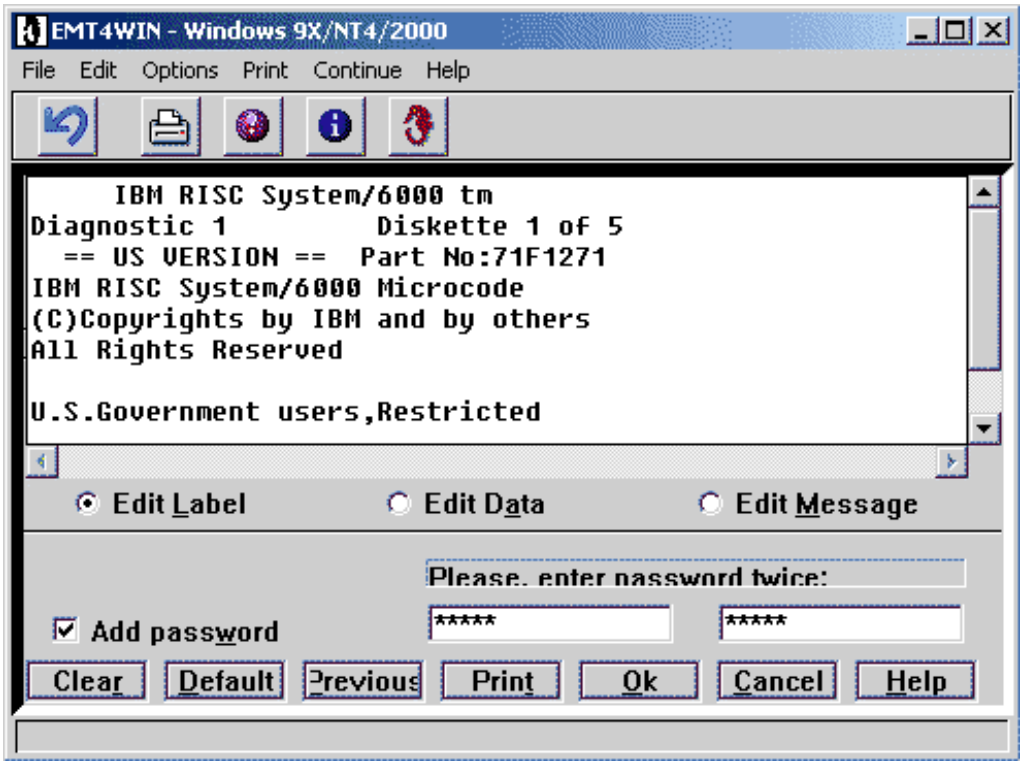

Figure 14 Label dialog

- **Technical data** are any data you think suitable to be joined to the image data. These data will be available to the image user. These data will not be written to the diskette. These data are not CRC checked.
- **The label dialog** is also used for the " **COMPRESSED image format "** that can include a label, and for the " **PRINT "** operations (printing labels, messages and technical data.).

Password protection

On Figure 14 Label dialog, you can see the "add password" check-box. Activating this box adds two password fields. The password must consist of four to twelve alphanumeric characters. This is non-case sensitive. (i.e. AlPhA and aLpHa are equivalent). When a file is built with password protection, this password must be known to restore the diskette from the file. The password doesn't affect the check-sum value. It doesn't affect the content of the target diskette. The target diskette is always the exact copy of the source diskette when building is successful.

Clear button

This button is active for Label, Message or technical data editing. It clears the text buffer.

See Figure 14 Label dialog

Default button

This button is active for Label, Message or technical data editing. It displays a default text as sample to be patched and overwritten.

See Figure 14 Label dialog

Previous button

This button is active for Label, Message or technical data editing. It recovers the last text you edited for this field. This is stored in ARDI.INI.

See Figure 14 Label dialog

The save (File menu)

You can choose to save the Label or the message to user or the technical data in a particular file on your disk for future use. Use this button to call the save as.. dialog. You can only save one data by file.

See Figure 14 Label dialog

The load Text (File menu)

The Load button calls the Load dialog to load a file into the Label editor, or the message editor or the technical data editor.

See Figure 14 Label dialog

The Cancel button

The return is for aborting the operation and returning to the first window.

See Figure 14 Label dialog

The help button

Use this to get help for this dialog. Help in ARDI is context sensitive.

See Figure 15 Contextual help (OS/2)

OK button

This button is used when every field in the dialog is completed. This will give you the save as dialog for the ARDI file.

See Figure 14 Label dialog

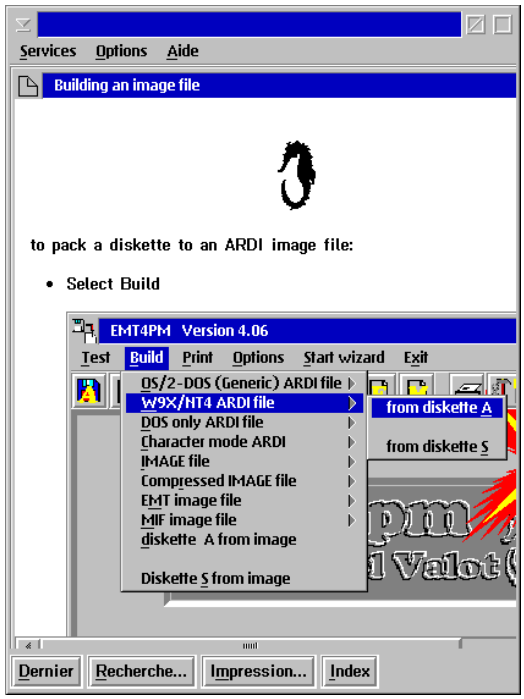

Figure 15 Contextual help (OS/2)

The file save as dialog

This is the standard OS/2 dialog. or the standard Windows 95/NT4 dialog. ARDI file name must be a valid executable file for your system.

On a FAT file system, the file name must be 1 to 8 characters without space and the file extension must be " EXE " or " COM "

On a HPFS file system, the file name can have 1 to 250 characters including space. The file extension must be " EXE " or " COM ". Use an " EXE " extension when possible.

- Default extension for Diskette image is IMG
- Default extension for Compressed Image is DSK

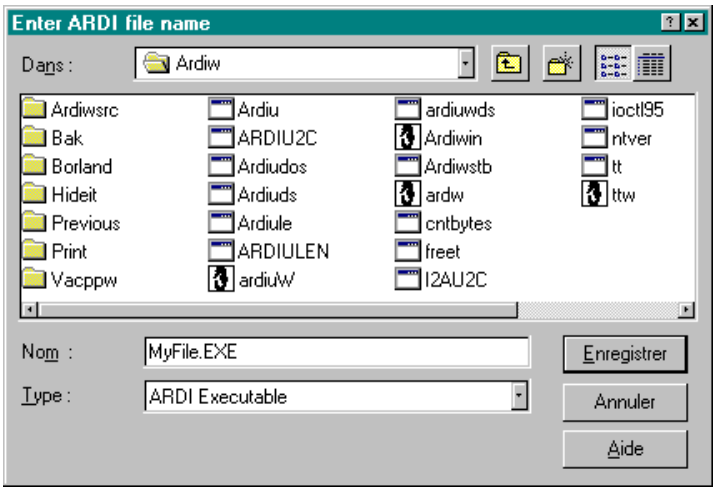

Figure 16 Save as.. Dialog (Windows 95)

The file exist warning

If the target file exists, the save as... dialog has a warning pop-up.

The file building progress

The Diskette filling or bar graph indicator shows file building progress.

See Figure 17 ARDI completion

The image completion

When operation completes a green indicator and low beep to high beep shows success. Bad operations are shown by a half red bar and high beep to low beep sound. The message in the middle of the window indicate eventual errors

See Figure 17 ARDI completion

Building other images

You can build more images without leaving ARDI.

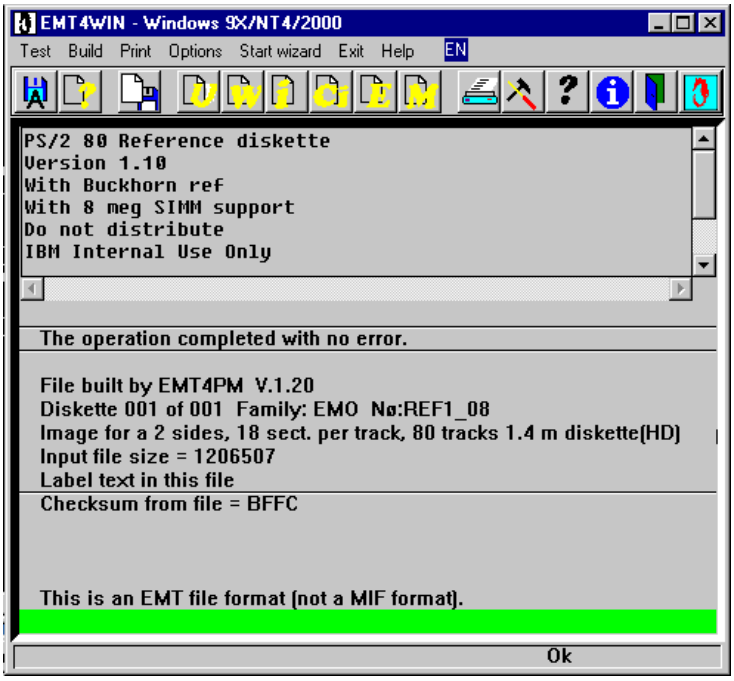

Figure 17 ARDI completion

Lost diskette drive

- In an attempt to detect a non-standard diskette format, or to detect the format of a defective diskette, the diskette drive can be set to an unknown state. Generally, trying to format a diskette under OS/2 in the diskette drive is sufficient to restore the diskette drive to a standard status. In rare situation you will need to shutdown and restart your workstation to recover diskette drive usage.

Diskette Image files

- Diskette image files are files which include any diskette data without any addition.(No check -sum, no label, no unpacker) Use EMT4PM, EMT4DOS or EMT4WPS to build diskettes from them.

Compressed Image files

- Compressed diskette files are special images including a label, a check-sum and suppressing the unused end of the diskette when it is not full (if the diskette is FAT formatted).
- The Ziv compression is applied to diskette data. BUT if the diskette includes compressed data, you must not compress them more, you must check the [Do not compress] check-box on the label dialog to prevent compression. Use EMT4PM, EMT4DOS or EMT4WPS to build diskettes from them.

Restoring diskettes

- **You can only restore images to 100 % error-free diskettes**.

Diskette drive size

Diskette sizes are known by several elements.

- 1 Mb diskettes are also known as :
- 720 k (9 * 512 * 80 * 2 = 737280 byte)
- 3"1/2-DD diskettes
- 2 Mb diskettes are also known as :
- 1,4 Mb (18 * 512 * 80 * 2 =1474560 byte)
- 3"1/2-HD diskettes
- 4 Mb diskettes are also known as :
- 2.88Mb (36 * 512 * 80 * 2 =2949120 byte)
- 3"1/2-ED diskettes

Table 10 Diskette size

The real size of the diskette is below the indicated value because there are file system tables (FAT, directory).

Restoring diskettes under DOS

Getting help when building diskettes

```
             -- ARDI   Version x.xx --

    ©  Copyright Daniel VALOT  1991- 1999 -

 OS/2 and DOS Self restorable diskette image
```

```
Usage :
Filename[.exe] [d : ] [/F] ...
where :
      Filename is the name of the ARDI file
      d : is the target diskette drive (A : if omitted)
      /F or -F to force target formatting
      /D=filename.img convert ARDI to image file
      /H or -H to display this message; /I test file integrity
      /PLn     Print label      (n = 1 to 3 for lpt1 to lpt3)
      /PRn     Print references (if n is omitted, lpt1 is assumed)
      /PMn     Print message    (no prompt if n is present)
      /Q or -q suppress percent display
ARDI- Self Restorable Diskette Image
```

Figure 18 DOS unpacker help

Just type the ARDI file name followed by /h :

Read this help to know any batch options :

- Force diskette formatting
- Suppress percent display
- Getting help.
- Printing the different records on various parallel ports (lpt1, lpt2 or lpt3).
- Setting the output drive.

Diskette size

Be sure to put in the drive the correct size diskette. It is very important for long-term reliability that diskette be used for the correct size.

Copy protection

Copy protected diskette are not supported by ARDI.

Remote drive

If you have problem when building diskette from remote drive, copy the source file to a local drive before using it.

Starting the operation

Type the ARDI file name and an optional drive letter and / or parameters

```
IBM RISC System/6000 tm
Diagnostic 1          Diskette 1 of 5
  == US VERSION ==  Part No : 71F1271
IBM RISC System/6000 Microcode
©Copyrights by IBM and by others
All Rights Reserved

U.S.Government users,Restricted
RIGHTS Use,Duplication or disclosure

Diskette # 1 of 1 . Product family : unknown
Code     P/N : ___________  Order number : ___________
Assembly P/N : ___________  Code     E/C : ___________
Medium   P/N : ___________  Assembly E/C : ___________
Contact : ____________________________________________
Support : ____________________________________________
_______________________________________________________


This file allows you to build diskette number " Diskette_Number "
of " Product_Name " version " Version_Value "
Be sure to put a " Diskette_Size " diskette in the diskette drive.
This file is password protected, please enter the password : ********
Working... This may take some time

-- ARDI   Version x.xx --

     ©  Copyright Daniel VALOT  1991 - 1999 -

   OS/2 and DOS Self restorable diskette image

Insert a diskette in drive J : and press enter or type another letter or
ESCape
100 percent copied

ARDI -   Expected/Actual check-sum are :  X"4208", X"4208"
```

Figure 19 DOS Building

If the ARDI file is Password protected, you will be asked the password. The file will not be useable if you don't know the password.

At the press enter prompt, you get a chance to change the output drive by pressing another drive letter (just press the letter, no colon), or pressing the escape key to quit.

Diskette formatting

Usually, ARDI files format the output diskette only when this is needed or when the boot sector is different from expected. You can force formatting with the format option.

Restoring diskettes under OS/2

This chapter is for the OS/2 ARDI unpacker included in the ARDI file.

Run the ARDI file produced by ARDI to build the diskette Any diskette format supported by ARDI can be built. The Windows 95/NT4 unpacker includes the same features, except that it only supports diskette A : and B : (no support for device driver drive.)

See Figure 20 OS/2 and Windows unpacker

Be sure to put a diskette of the correct type in the output drive before starting the operation.

The ARDI builder dialog lets you select the target drive, the record you want to print (before or after building the diskette), and if the file is password protected, the password entry field.

When the diskette is built, the list-box displays the expected and actual check-sum. They are equal if the diskette building is successful.

ARDI builder help can be displayed in the same box when pressing the help button.

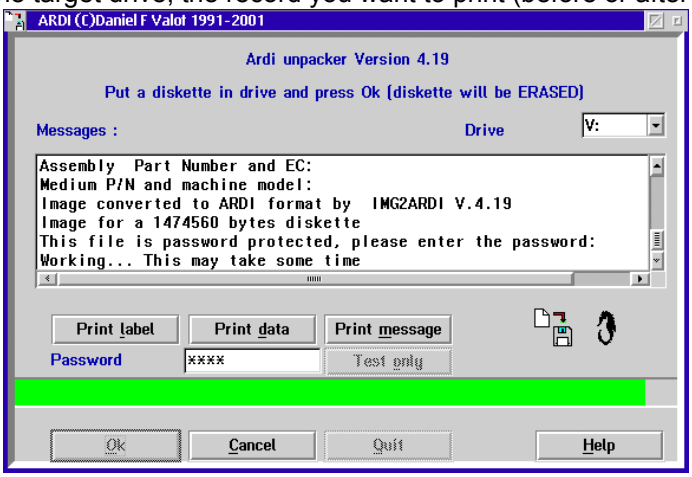

Figure 20 OS/2 and Windows unpacker

See Figure 20 OS/2 and Windows unpacker

Read this help to know any batch options:

- Force diskette formatting
- Proceed without pressing OK (only available when no password is required).
- Ending without pressing ESCape.
- Printing the different records on various parallel port (lpt1, lpt2 or lpt3). The result is different depending on the OS/2/Windows 95/NT4/2000 printer setting.
- Setting the output drive.

See Figure 21 OS/2 unpacker help

Copy protected diskette are not supported by ARDI.

If you have problem when building diskette from remote drive, copy the source file to a local drive before using it.

When building ARDI images from diskettes, you have to be sure the target system will be able to unpack them.

OS/2-DOS ARDI images can be restored to diskettes on the following systems:

- DOS 5.0 to 7.0
- OS/2 2.0
- OS/2 2.1x
- WARP
- Windows 3.1 DOS sessions.
- Windows 95 DOS sessions.
- Windows 95 DOS

Table 11 System platform for OS/2-DOS ARDI files

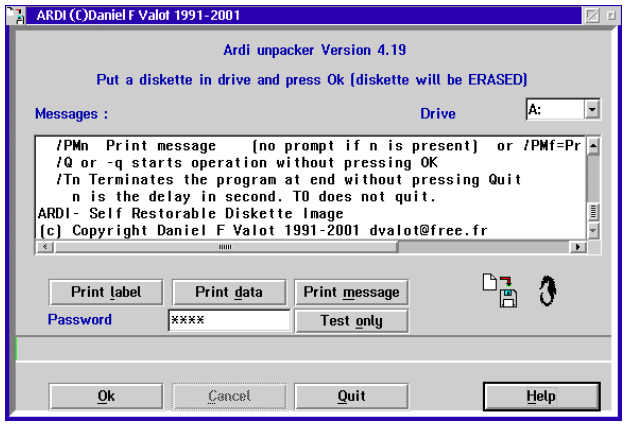

Figure 21 OS/2 unpacker help

Windows ARDI images can be restored to diskettes on the following systems :

- DOS 5.0 to 7.0
- Windows 95/NT4/2000/XP

Table 12 System platform for Windows ARDI files

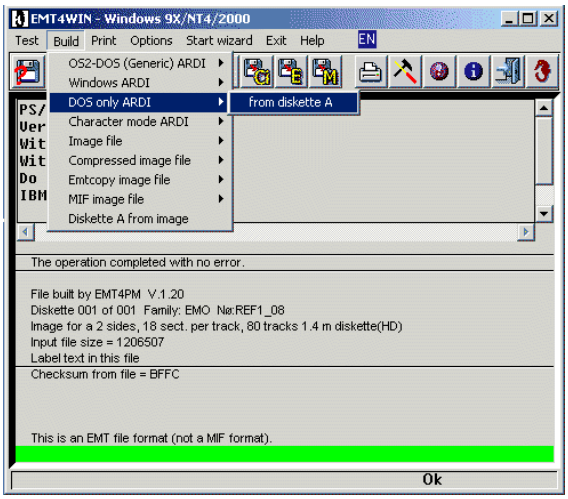

Figure 22. Contextual help

Diskette formatting

When building a diskette from an ARDI image, ARDI selects the correct format, and generally format the diskette if it is needed. A check-sum is included in the file and a comparison is made when building the diskette.

Help:

See Figure 22. Contextual help

ARDI is an OS/2 Presentation Manager or Windows application. Help is available any time you press the F1 key from anywhere within the program. Because this is context sensitive help, the help information that is displayed depends on where in the program F1 was pressed. For instance, you receive help for the Build pull-down on the action bar when you highlight Options and press F1. However, this is not the same help that is displayed when you press F1 while the W95/NT4 ARDI Selection choice in the Options pull-down is highlighted. Under OS/2 Press Esc at any time to view the previous help window or to return to the main ARDI window if there is no other help windows.

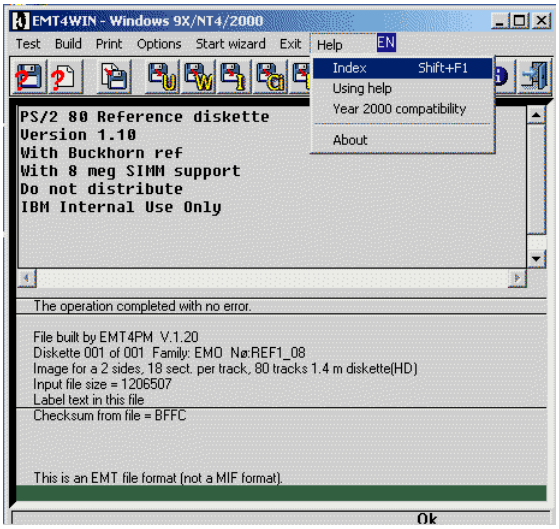

Figure 23. Help menu (Windows version)

See Figure 22. Contextual help

Advanced functions for…

EMTFORPM

The functions unique to EMTFORPM are:

- Diskette copy function
- Diskette image to diskette compare

- Drag and drop of multiple selected files.
  To allow the drag and drop function, create a program icon on your desktop. Open the program once to select the output diskette drive. Close the program. Then you can select multiple file from the drive object and drop them on the EMTFROPM icon. The program will open a dialog for each file to build asking for confirmation and build the diskette.

EMT4WIN/EMT4PM

Transparent mode

Power user may want to use the program in transparent mode from a batch file

EMT4WIN can be used in two ways:

- 1 - Install a program icon on your desktop and drop a file on it from the Windows explorer. This will start the program and ask you the target drive address for confirmation, then the diskette will be built from the image.
- 2 – either type a command line in a window or start the program from a *.BAT file under Windows NT. (Windows 9x is not good for batch processing with windows programs.).

```
For building an EMT file.
C:>EMT4WIN a: myfile.emt /f:profile.tsh /E [/a]
For building a MIF file.
C:>EMT4WIN a: myfile.mif /f:profile.tsh /M [/a]
For building a Compressed file.
C:>EMT4WIN a: myfile.dsk /f:profile.tsh /C
For building a DiskImage file.
C:>EMT4WIN a: myfile.img /f:profile.tsh /I
For building an OS/2-DOS ARDI file.
C:>EMT4WIN a: myfile.exe /f:profile.tsh /G [/p:password]
For building an Windows ARDI file.
C:>EMT4WIN a: myfile.exe /f:profile.tsh /W [/p:password]
For building an DOS ARDI file.
C:>EMT4WIN a: myfile.exe /f:profile.tsh /D [/p:password]
For building an Character mode universal ARDI file.
C:>EMT4WIN a: myfile.exe /f:profile.tsh /U [/p:password]
For building a diskette from an image file.
C:>EMT4WIN myfile.xxx a:
```

Figure 24 Transparent mode valid commands

If the profile is omitted, blank information is inserted in the corresponding field.

If the password is omitted, no password is used to protect the file.

The PROFILE.TSH file is of the form :

```
;=========================================
;This is the profiling file for creating diskette images
```

```
;in transparent mode under Windows NT using a procedure
;(.BAT, .CMD or .REX)
; This profile can have any valid filename.
;Any field can appear in any order and start with the
;record name on one line between square brackets
;followed by the data field text .Comments must not appear
;inside data fields. The data field is ended by a
;semicolon or an open bracket. Data between the
;semicolon and the next open bracket is ignored.
;
;Field name must be in uppercase characters.
;Blank lines are significant in multi-line fields.
;a label or a comment terminate the previous field.
;The END label close the last field.
;Label lines may be enclosed in double quotes.
;the LABEL field is 9 * 36 characters for EMT
;                  99 * 72 characters for MIF
;some lines of text for Compressed images and ARDI
;EMT label ends here--(cut here)---><--not wrapped--------
[LABEL]
This is the first label line

There was a blank second line in this label
"               centered text                "
                               P/N1234567890
                              ASM # 456789-A
   777
8th line TheSeaHorse Software      ----------
This is the 9th line and the last.
;
;The number field is 1 to 999  (EMT & MIF files)
;The default value is 1
[NUMBER]
1
;The of number field is 1 to 999 (EMT & MIF files)
;The default value is 1
[OF]
854
;The PROTECTED field is 1 Y or N (EMT & MIF files)
;leading spaces are part of the data.
[PROTECTED]
N
;The FAMILY field is 4 Alphanumeric characters (EMT & MIF files)
[FAMILY]
EMT4
;The PTF/APAR number field is 8 Alphanumeric characters (EMT & MIF files)
;when using the HDR=a format (APAR format) this field holds the APAR number.
[PTF]
PTF12345
;The PMR field is used for HDR=a format file (Apar format) it is 15 char long.
[PMR]
123456789 - 123
;The Part number field is 12 Alphanumeric characters (MIF files)
[PN]
123
;The Engineering change number field is 12 Alphanumeric characters (MIF files)
[EC]
123456789012
;The Assembly part number field is 12 Alphanumeric characters (MIF files)
[ASM]
  012012012
;The Assembly engineering change field is 12 Alphanumeric characters (MIF files)
[ASMEC]
   a  sm12
;The Medium part number field is 12 Alphanumeric characters (MIF files)
[MEDIUM]
NEW-MEDIUM
;The Model field is 12 Alphanumeric characters (MIF files)
[MODEL]
ThisIsamodel
;The Message to user is free format and is only used in ARDI files
[MESSAGE]
This is an image for a 1.44 diskette (HD)
;The Technical data field is free format and is only used in ARDI files
[DATA]
This image was converted from data received by I.M.G
1998/04/15
```

```
The owner is Joe Smith from The Company Inc.
[END]
;=====================================================================
```

Figure 25 Transparent mode profile file

The PROFILE.TSH file can have any file name

Fields that are significant for a file format are:

Name	EMT	MIF	Compressed	ARDI	Other
LABEL	YES	YES	YES	YES	NO
NUMBER	YES	YES	NO	NO	NO
OF (1 of n)	YES	YES	NO	NO	NO
PROTECTED	YES	YES	NO	NO	NO
FAMILY	YES	YES	NO	NO	NO
PTF	YES	YES	NO	NO	NO
PMR	YES in APAR	YES in APAR	NO	NO	NO
PN	NO	YES	NO	NO	NO
EC	NO	YES	NO	NO	NO
ASM	NO	YES	NO	NO	NO
ASMEC	NO	YES	NO	NO	NO
MEDIUM	NO	YES	NO	NO	NO
MODEL	NO	YES	NO	NO	NO
MESSAGE	NO	NO	NO	YES	NO
DATA	NO	NO	NO	YES	NO

Figure 26 Significant fields

EMT4XXX character mode.

Batch sample file for using EMT4xxx

```
@ECHO OFF
REM ******************************************************
REM This batch field is a sample for automatic processing.
REM if you do not want to input any data in the macrofile
REM just use the /n switch without any environment data.
REM But, if you sent the file to another location, you have
REM to use a batch file like this one, with the /n switch.
REM
REM To start this file type EMTBATCH a: C:\EMTFILE.MIF /r /n /M
REM to produce a MIF file from diskette in a:.
REM ******************************************************
REM
REM             Tree characters for diskette numbers
REM Diskette number
SET EMTDNO=001
REM LAST diskette number
SET EMTLAST=003
REM Protect Y or N
REM             One character for protection
SET EMTPROT=N
REM Diskette family
REM             4 char. for family name
SET EMTFAMI=OS/2
rem Diskette PTF number and diskette APAR number
REM             8 char. for PTF and APAR
SET EMTPTF=12345678
SET EMTAPAR=01234567
rem Diskette PMR
REM             15 char for PMR
SET EMTPMR=PMR-0X254-0706B
REM Diskette label line text 1 to 9
REM             Label line may be entered within double quotes
REM             Do not put more than 36 char. between quotes.
REM             One EMTLAB? field must be filled at a minimum.
REM             Double quote allow some character to be used
REM             such as =.
SET EMTLAB1="             Installation diskette"
```

```
SET EMTLAB2=         Copyright IBM Corp
SET EMTLAB3="               IBM internal Use Only"
SET EMTLAB4=
SET EMTLAB5=                          May 15th,1997
SET EMTLAB6= FRU P/N 64X5654
SET EMTLAB7=EC 1234567                   GID:8654
SET EMTLAB8="           CODE=XYZH"
SET EMTLAB9= ---------------------------------
REM Diskette image Part number,EC number, Assembly part number
REM medium part number and machine model.
REM              These fields require 12 char.
SET EMTIMAGEPN=P/N 12345678
SET EMTIMAGEEC=EC: 12345678
SET EMTASMPN=ASMN12345678
SET EMTASMEC=ASME12345678
SET EMTMEDPN=P/N 12345678
SET EMTMACHMOD=3990  MOD  3
EMT4OS2 %1 %2 %3 %4 %5 %6 %7 %8 %9
rem .... execute the operation
REM Then reset the environment
SET EMTLAB1=
SET EMTLAB2=
SET EMTLAB3=
SET EMTLAB4=
SET EMTLAB5=
SET EMTLAB6=
SET EMTLAB7=
SET EMTLAB8=
SET EMTLAB9=
SET EMTDNO=
SET EMTLAST=
SET EMTPROT=
SET EMTFAMI=
SET EMTPTF=
SET EMTAPAR=
SET EMTPMR=
SET EMTIMAGEPN=
SET EMTIMAGEEC=
SET EMTASMPN=
SET EMTASMEC=
SET EMTMEDPN=
SET EMTMACHMOD=
@REM end sample
```

Figure 27 Sample batch file

MIF and EMTcopy file format

There are advanced options:

- APAR format requires HDR=a option which replace the PTF field by the APAR field (IBM specific) With the APAR record the PMR record is also added.
- 720k 5”25 option for specifying a different diskette form factor. This format is probably no more used but retained for compatibility.
- Simple MIF option. This option prevents compression of data sectors. This is no more used but retained for compatibility.

Year 2000 compliance

Any of the programs described here have been tested for year 2000 compliance under Windows 95/NT4 and OS/2 WARP.

Note: The date is only used once in the MIF file for time stamping of a comment record. The date is OK up to 2038 (Compiler library problem above this date). The diskette data are NOT affected by the date.

Problem with antivirus programs

NORTON Antivirus

There are known problems with NORTON Symantec Antivirus program and EMT4WIN and ARDI files under Windows. The problem may occurs after installing **Lotus Notes**.

Figure 28 Version 5 setup page

Details :There is a potential problem with Symantec Norton Antivirus and programs such as EMT4WIN which write the diskette boot sector.
NAV has an advanced option under Autoprotect which allows to select three methods with respect to diskette boot sector writing. You should select "Ask me" or "Allows".
If you get a bleue screen when using EMT4WIN, just turn off NAV autoprotect during EMT4WIN operation.
Turn it back to "On" when EMT4WIN is not used.
Blue screen is a sign of Norton Antivirus damaged installation by another application (**Lotus Notes** is known for doing this).
Other method : Disable Norton Antivirus Autoprotect feature before writing or reading the diskette. Then, be sure to re-enable the feature.
This problem is not present on any configuration, so there may be a conflict with another application.

Working with Removable disks.

What is a removable disk ?

Removable disks are devices detected as such by the system. For example USB connected DiskOnKey devices are memory devices configured to look like a removable disk. Flash card memories connected to the PC by their card reader, look like removable disk?

What can I do with removable disks and EMT4WIN ?

Removable disks can replace diskettes on Diskette-less PCs.

Example 1:

I have old diskette images with important data on them, I want to use these data on a diskette-less PC.

- I can load a DiskOnKey with one diskette image (using EMT4WIN) and use this DiskOnKey on the diskette-less PC just like a diskette to transfer data to the PC.
- Or I can transfer the diskette images to the diskette-less PC by the network and then transfer the image to the DiskOnKey with EMT4WIN. Then I Can transfer the DiskOnKey data as if it were a diskette.
- After this operation I need to recover the DiskOnKey full capacity. For this I use EMT4WIN option “Un-Format” to remove the diskette file system from the DiskOnKey, and then I format the DiskOnKey with the system.

Example 2:

- I use Removable disks to transfer data between different systems. These data can use FAT or other file system on a removable disk. To be sure to provide these data on a remote site exactly as they are, I get an image (backup) of the removable disk using EMT4WIN.
- On the remote site, the data is restored on a removable disk using EMT4WIN , or if the image was self restorable, I just run the file to restore it to a removable disk. The target disk must have the same size as the source disk or it may be larger. It must accepts the same form factor (number of tracks per cylinder and number of sectors per tracks.).

Removable disks requirements:

Removable disks are supported from 7 meg to 512 megs. The source can be loaded with a diskette image.
The program supports the original disk FAT file system for FAT disks.
If the disk is not known as a FAT disk, then the system uses 255 tracks per cylinder and 63 sectors per track (faster organization). DiskOnKey devices support these form factors.

System requirements:

Windows 98 need a driver to support removable disks.
Windows 2000 may need service pack 2 to work reliably with removable disks. There are bypasses in the program to support Windows 2000 without service pack 2.
Windows XP run without problem.
Windows 2000 and Windows XP need to run the program with administrator rights
.

Limited warranty

A disclaimer is shown when you load a new version for the first time.

The ARDI program is neither a freeware nor a shareware program. This is copyrighted and you cannot distribute it.

The files produced by ARDI have no distribution restriction related to the merged ARDI unpacker, But the same limited warranty apply.

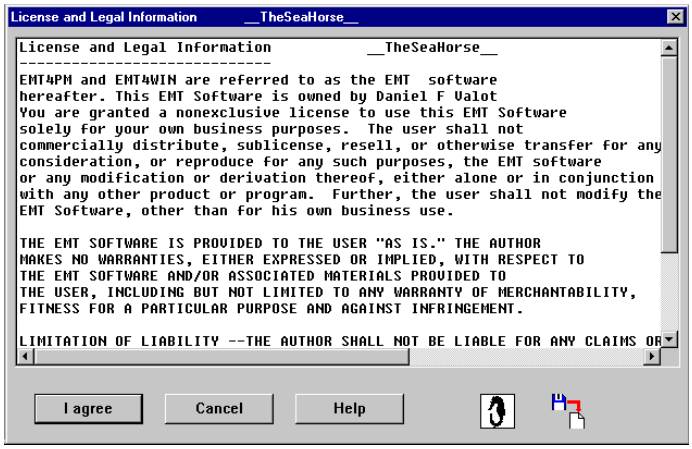

Figure 29 Limited warranty and usage

LEXIQUE

EMTLAB1
: First label line text max 36 characters

EMTLAB2
: Second label line text max 36 characters

EMTLAB3
: Third label line text max 36 characters

EMTLAB4
: Fourth label line text max 36 characters

EMTLAB5
: Fifth label line text max 36 characters

EMTLAB6
: Sixth label line text max 36 characters

EMTLAB7
: Seventh label line text max 36 characters

EMTLAB8
: Eighth label line text max 36 characters

EMTLAB9
: Ninth label line text max 36 characters

EMTDNO
: Diskette number three digit characters

EMTLAST
: Last diskette number three digit characters

EMTPROT
: Protection character must be one or N Y or P

EMTFAMI
: Diskette family in four characters

EMTPTF
: PTF number in 8 characters

EMTAPAR
: APAR number in 8 characters

EMTPMR
: PMR number in 15 characters

EMTIMAGEPN
: Diskette image part number in 12 characters

EMTIMAGEEC
: Diskette image EC number in 12 characters

EMTASMPN
: Diskette assembly part number in 12 characters

EMTASMEC
: Diskette assembly EC number in 12 characters

EMTMEDPN
: Diskette media part number in 12 characters

EMTMACHMOD
: Machine model in 12 characters

EMT format

A file format created by Carsten Groennemann.

MIF Format

A corporate standard to exchange data over VNET (IBM specific)

DSKIMAGE format

A file formed with every diskette sector without any additional data.

DISKIMGE format

Same as above.

APAR format

EMT or MIF file with information on APAR number and PMR number.

MIF=SIMPLE

a MIF file without compression.(old format).

EMTCOPY

Subset of EPLCOPY with “copy protected diskette” copy disabled.

PAGE PRINTER

Printer which print a page at a time such as 4019 as opposed to line printer such as 4201

EPLCOPY

a program to compare and copy diskette or create file for electronic transfer.

This section will define some of the words used in this document.

NOTE: Some of them are taken from “EPLCOPY SCRIPT by Carsten Groennemann”

AUTOLOADER.

Auto-loaders are devices that attach to the PC, and make it possible to insert and extract diskettes from a diskette drive by electronic signals from the PC. This is very helpful in a production environment where you will be making many copies. AUTOLOADER are not handled by ARDI programs family.

CRC

Cyclic Redundancy Check. All sector on a diskette have a CRC written after the data portion, to enable the hardware to detect read errors.

CHECKSUM

To guard against accidental errors due to random changes or truncation of an image, a checksum is applied. The checksum consists of all bytes (data and control information) added together modulo 65536.

COPY PROTECTION

Diskettes intended for the PC's sometimes contain special features to prevent them from being copied. This is known as copy-protection. EPLCOPY has been designed to copy them anyway if possible, while EMTCOPY has artificially been restricted from doing so. The ARDI programs family don’t handle COPY PROTECTION.

DMF

Microsoft distribution diskette format. The diskette are formatted to 21 sectors per track. Special program are required to copy them, normally, most machines should be able to read them.

EPL

European Program Library. An IBM organization for distributing software in the EMEA area.

EPLCOPY

An SPC developed program for copying of all types of diskettes.

EMTCOPY

The original version of EPLCOPY was restricted from copying copy-protected diskettes, and then released for internal use in IBM. This version is called EMTCOPY, and is otherwise the same program as EPLCOPY.

ERASE OF TRACKS

EPLCOPY has the capability to erase non-defined tracks. Actually the tracks are overwritten with a special signal, that will overwrite all information from the track, and therefore after the operation, the track will appear as had it never been used. The ARDI programs family do not support track erase. This is not needed for not copy protected diskette.

IMAGE

A file containing all the necessary data to re-create a diskette.

LOADDSK(F)

A program by Jack Gersbach to unpack file packed with SAVEDSKF. This program can be replaced by EMT4PM, EMT4WIN etc…

MIF

Microcode Image Format. This is an IBM standard. It describes how to package data for the distribution of micro-code. As this can be on diskettes, it can also be used to describe diskette images. MIF format generated by EMTCOPY and EMT4xxx have CRC checking.

NOTE: We do recommend that you use the EPLCOPY image for copy-protected diskettes, there is no choice. They cannot be written in the MIF format.

SAVEDSK(F)

A program by Jack Gersbach to pack diskette images. The software include a Diskimage and a TERSE program. Optional comments can be included in the file by the file imager

XDFCOPY

A program distributed by IBM and Backup Technologies to create and copy diskettes formatted in XDF format. This format is unpublished . It uses variable length sectors on the same track to store up to 1.84 meg data on 1.44 meg diskettes for example. Under OS/2 the components used for this format are: XDFCOPY, XDFLOPPY IBM2FLPY and IBM1FLPY.

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