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ISO 9660: Translator Difficulties Accessing DOS CD-ROMs (1/94)

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TOPIC -----

I've been trying to use DOS CD-ROMs with the Macintosh and have come across some anomalies. One solution I investigated was making CD-ROMs available to a network, using File Sharing or AppleShare. Then the network Macintosh could mount the CD and access it using SoftPC AT.

In trying this, I discovered that ISO 9660-formatted CD file extension names became garbled when accessing the network-mounted CD with SoftPC. The same software works fine when mounting the CD locally, and file names appeared normal.

Insignia told me that there's a problem with the ISO 9660 translator that comes with Apple's CD-ROM software and that it causes garbling of the file name extensions.

DISCUSSION -----

In summary, the version information defined in the ISO 9660 specification, isn't required and isn't widely used. Apple's ISO 9660 driver does pass the version information along when doing the conversion. The problem with appending the version suffix (;1) to every filename has been fixed. CD-ROM Setup 5.0 fixes the problem and no longer adds the version suffix. The software is available on AppleLink in the Apple Software Updates bulletin board.

Detailed Explanation

The ISO 9660 specification defines a file specification consisting of five parts:

- A file name, of alphanumerics plus underscore

- a period (".")
- A file extension, of alphanumeric plus underscore
- a semicolon (";")
- A file version number, of numerics between 1 and 32768

Either the file name or file extension may be optional. All the other parts exist.

Nomenclature

There are four basic ways in which implementations of ISO 9660 seem to differ.

You can encode these as [Pp], [Uu], [Vv], and [Xx]:

P/p	Show/hide trailing periods
U/u	Display alphabetic characters in UPPER/lower case
V/v	Show/hide version numbers (;1)
X/x	Files are/aren't executable

Here's a summary of what some vendors are doing about U, V, and X:

0	uvx	Irix, Linux
1	uvX	386BSD, BSD/386, SunOS
2	uVx	[none known]
3	uVX	AIX, IS/IX
4	Uvx	MS-DOS? Windows?
5	UvX	HP-UX MS-DOS? Windows?
6	UVx	MachTen, Ultrix, Macintosh OS (by default)
7	UVX	Macintosh OS (if Apple Extensions to ISO 9660 are used for executable files)

The question marks after the DOS and Windows entries are there because DOS and presumably Windows rely on extension naming conventions to establish executability.

Holes in the Standard

The hole in the standard is that the last section of it, "Requirements for systems," describes a very incomplete implementation.

In the ISO 9660 standard, Section 3 (Requirements for systems) Part 12, Requirements for an originating system, it says "The implementation shall allow the data preparer to supply the information that is to be recorded in each of the descriptor fields listed below, and shall supply the information for a field if the data preparer does not supply it." The list DOES include "File Version Number of a File Identifier."

However, the following section, Part 13, Requirements for a receiving system, it says "The implementation shall make available to the user the information that is recorded in each of the descriptor fields listed below" and the list that follows DOESN'T include "File Version number."

The ISO 9660 file system translator written for the Macintosh follows Part 12 instead of Part 13 when deciding to pass version numbers to the Macintosh operating system. In retrospect, that wasn't the best way, primarily because MS-DOS's MSCDEX doesn't handle version numbers. This makes Macintosh-to-DOS file name translation difficult.

Two Possible Solutions

- Rewrite the "ISO 9660 File Access" file system translator so that it can optionally pass the ";1" or truncate it.
- Convince the third-party company (in this case, Insignia) to have an option in their software that allows them to truncate file names ending in ";1".

Article Change History:

4 January 1994 - Added "fix" information for the ";1" problem. CD-ROM Setup 5.0 fixes the problem.

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