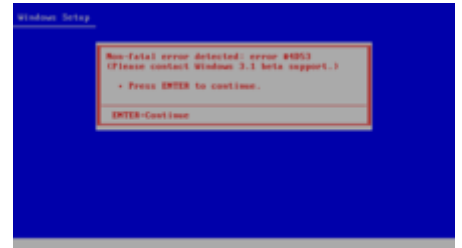


AARD code

The **AARD code** was a segment of code in a beta release of Microsoft Windows 3.1 that would determine whether Windows was running on MS-DOS or PC DOS, rather than a competing workalike such as DR-DOS, and would result in a cryptic error message in the latter case. This XOR-encrypted, self-modifying, and deliberately obfuscated machine code used a variety of undocumented DOS structures and functions to perform its work, and appeared in the installer, WIN.COM, and several other executables in the OS.^[1]



An example of the error messages the AARD would produce.

The AARD code was originally discovered by Geoff Chappell on 17 April 1992 and then further analyzed and documented in a joint effort with Andrew Schulman.^{[2][3][4][5][6]} The name was derived from Microsoft programmer Aaron R. Reynolds (1955–2008),^[7] who used "AARD" to sign his work; "AARD" was found in the machine code of the installer.^{[8][9]} Microsoft disabled the AARD code for the final release of Windows 3.1, but did not remove it, so that it could have become reactivated later by the change of a single byte in an installed system, thereby constituting a "smoking gun".^[5]

DR-DOS publisher Digital Research released a patch named "business update" in 1992 to enable the AARD tests to pass on its operating system.^{[10][11][12]}

The rationale for the AARD code came to light when internal memos were released during the *United States v. Microsoft Corp.* antitrust case in 1999. Internal memos released by Microsoft revealed that the specific focus of these tests was DR-DOS.^{[1][13][14]} At one point, Microsoft CEO Bill Gates sent a memo to a number of employees, reading "You never sent me a response on the question of what things an app would do that would make it run with MS-DOS and not run with DR-DOS. Is there [*sic*] feature they have that might get in our way?"^{[12][15]} Microsoft Senior Vice President Brad Silverberg later sent another memo, stating: "What the [user] is supposed to do is feel uncomfortable, and when he has bugs, suspect that the problem is DR-DOS and then go out to buy MS-DOS."^{[12][15]}

Following the purchase of DR-DOS by Novell and its renaming to "Novell DOS", Microsoft Co-President Jim Allchin stated in a memo, "If you're going to kill someone there isn't much reason to get all worked up about it and angry. Any discussions beforehand are a waste of time. We need to smile at Novell while we pull the trigger."^{[16][12][15]}

What had been DR-DOS changed hands again. The new owner, Caldera, Inc., began a lawsuit against Microsoft over the AARD code, *Caldera v. Microsoft*,^{[12][17][18][19]} which was later settled.^{[15][20][21][22]} It was believed that the settlement ran in the order of \$150 million,^[23] but was revealed in November 2009 with the release of the Settlement Agreement to be \$280 million.^{[24][21][22][25]}

See also

- Bug compatibility
- Fear, uncertainty and doubt
- Halloween documents

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