

# PC-DOS Notes

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The scope of this document is from version 5.00 onwards and OS/2 2.0 onwards. The IBM releases of Windows are also covered. Files that derive from earlier versions, and continued to be used in these releases, are also documented.

IBM moved from an OEM DOS to a retail DOS with DOS 5.0. This DOS is the most extensively updated version of DOS, and is the source of OS/2 DOS files. DOS 6 followed the availability of the microsoft code. 6.3 copies 6.2, while 7.0 is a rewrite of DOS. 7.1 is found in various appliance applications only, never went to retail.

The power of computers of this era is relatively tiny. But between 1990 and 2000, the size of memory and of hard disks quickly exceeded artificially large limits set not all that long before.

Peko (my computer in this era) was a fairly top-of-the-line 486DX66 machine, had eight megabytes of RAM and 120 MB fixed disk. It replaced an 8-bit machine, with 24 kB of memory and storage. I bought a cassette for it, so that I could save files on the run. Compared with 24 kB, 120 MB seem huge.

Where OS/2 2.x could run quite easily, and 3.x with a light bit of hacking, OS/2 4.x and NT 4.x loaded barely, even with turning features like bitmaps and animation off. Further, the bits and pieces were expensive. Hard disks were still in the range of dollars per megabyte, the first CD burner was 600\$, pretty much a good portion of a fortnight's wage.

Even by 1995, we see that the DOS manuals of the era were still talking of small systems. The OS/2 2.11 power-user guide shows a partitioning of a 120 MB drive into four partitions.

The limits encountered are as followed. These were set by the BIOS, but there were ways around it. OS/2 could break the 504 barrier, if a different bios was loaded. So Peko had hard disks that OS/2 could access. You could even load bits of OS/2 outside the 504 barrier, such as Win-OS2.

NT could also see past the 504 limit, once booted. But its install was monolithic.

	Cylinders	Heads	Sectors	Bytes	Result
504 MB	1024	16	63	512	504 M
8 GB	1024	256	63	512	7.875 G
cd-rom			65536	2048	137 MB

A disk drive is addressed by the CHS number. The disk is radially divided into sectors, each containing bytes. In a multi-layer disks, there are several disks on the same spindle. The cylinders refer to the position of the heads as in a gramophone player. The heads refers to which side of which disk is being played. The sector is the portion of track under the head.

DOS, for being 16-bit, reports the largest number if the sector-count overflows. For a cdrom, there are many more sectors than 65536, but DOS can see the sector size and allocations, and more than 65536 sectors. So it reports 128 MB (dec 137).

LBA or “logical block address” is a fix for this. In stead of DOS having to deal with bad sectors and such like, this was placed in the hands of the hardware controller. The partitioning is still done in the older style, but the address is now a direct sector of the disk.

It does not so much affect FAT file-system, since the file addresses are stored in the table as a long-count of sectors, ie LBA. But this can be converted on the day to CHS addressing.

## **DOS 3 – OS/2 v1.x**

### **BASICA**

BASICA. and GWBASIC, is more to cater for needs from the 1980s, where these emulate the default OS on the 8-bit machines. The version numbers usually matched the DOS version, until it was stopped being developed.

The last IBM compiled version is for PC-DOS 3.00. This is also the last version to include the sample files (except MORTGAGE.BAS). Microsoft provided the code for the later versions. 3.10 and 3.20 check for DOS versions, but 3.31 and 3.4 are defanged.

To test for the source code, run this as soon as Basic loads. This will tell you which RND code is used.

```
PRINT RND
0.1213501   Basic compiled by Microsoft
0.7151002   Basic compiled by IBM
0.7055475   QuickBasic and QBASIC.
```

BASIC was dropped in the run of DOS 3. GWBASIC proclaims to be v3.23, the last PC-DOS version corresponds to 3.40, but string-patched to 4.00 for PC-DOS 4.00.

```
36285      DOS 4 (no rombasic)
64160      OS/2 1.3 and later, PC DOS 5.00 and 5.00.1
64161      PC-DOS 5.02 (second attempt)
69460      MOV BASIC 5.00 attempt (works)
```

### **DOS 4**

An experimental DOS, renowned for its experimental flaws. The lessons learnt ended up in OS/2 and 32-bit Windows. This is the last version of DOS to contain GWBASIC.

The working version number for this DOS in beta was 3.40, which explains why Rombasic in version 5.0 has version 3.40, even though it's identical to 4.00 version.

## **DOS 5 – OS/2 v2.x**

The following is a list of changes made to PC-DOS 5.00 from its original release to the PS/2. The compatibility fix at 91.08.06 allows QBASIC to load on machines without ROMBASIC: ie Clone PCs.

MS ~ files replaced in 5.00a from 5.00

UPD501 comes from an early PS/1 restore tape in the most part.

UPD502 is based on a CSD issued at the time of the release of 5.00.1.

UPD503 comes from a PS/VP computer, differs from the final 37378 level.

91.04.09 Initial MS dos 5.00 release

91.05.09 represents the initial release.

91.07.18 IFD35033 fix for XCOPY. Found as fixdos5 on Vetasware.

91.08.06 CSD35423 is a compatibility fix for QBASIC and EDIT (remove ROMBASIC dependence)

91.10.25 UR35748 is a fix for SYS.COM

91.11.11 Reissue of MSDOS 5.00 with fixes to date.

91.11.29 UR35834 represents fixes to and including "Upgrade Enhanced Install Utility/DOS 5.0"

92.02.28 UR36603 represents fixes up to the release of 5.00.1 # means same size as previous

92.05.09 IFD UR37250 is a fix on the released DOS versions.

92.09.01 is the 5.02 release. # is same size as previous

92.09.11 is CSD 37378 the final release

§ 5.03 A third attempt at putting ROMBASIC into BASIC A.

QBASIC has the Phatcode drive a: patch, the QBED rename patch and the file-open to \*.\* patch applied.

1_File	PCDOS 5.00	UPD 1 = 500	UPD 2 = 501	UPD 3 = 503	5.02
2_date	91.05.09	91.11.29	92.02.28	92.05.09	92.09.01
		91.11.11 ~ (MS)		92.09.11	
CSD UR numbers		35423 (A)	36603	37250 A	
		35834		37387 B	
AUTOCONF.EXE		40183 \$			
BACKUP.COM	36076		36318 =	36542 B	34879
BASICA.COM	64164	= %	=	§ (69460)	64161
CHKDSK.COM	16184	~	16184 =		16168
COMMAND.COM	47987	~	48006 (40825)	48042 B	47990
DOSSHELL.COM	4610	~	4624 =	4716 B	4717
DOSSHELL.EXE	235534	~	236288 =	236404 A	236231
DOSSHELL.HLP	162032	162032	=		=
DOSSWAP.EXE	18756	~	18756 =		18743
EDIT.COM	413	~	=u =	§ (qbed.com)	=
EMM386.EXE	91742 (v4.20)	~	91742 = (v4.33)		91742 (v4.33)
FORMAT.COM	32911	32911 ~	#c		34415
GRAPHICS.COM	19678	19678	#c		#2
HIMEM.SYS	11552 (v2.77)	11584 ~	= (v2.78)	11584 A	11680 (v2.78)
IBMBIO.COM	33430	~	33446 #1	33446 A	33718
IBMDOS.COM	37378	37378 ~	#2	37362 A	#2
KEYB.COM	15163	~	#c	15163 A	15339
KEYBOARD.SYS	38206	~	=	39390 A	41710
MEM.EXE	39802	39818	#c		39501
MENUTOINI.EXE	43998	40183 \$	=		33937
MIRROR.COM	18169	~	18169 =		=
MODE.COM	23585		=	23617 B	23601
MOUSE.COM	31833 (7.04)		31833 =		37678 (v8.20)
QBASIC.EXE	252317	252283 (A) %\$ ~	252235 =	252219 A §	252235 =
RECOVER.COM	9146	~	9178 =		9165
REPLACE.EXE	20210	20258	=		19847
RESTORE.COM	38278		=	38246 A	35659
SETUP.EXE	91466	97958 \$ ~	(74084)		81727
SETUP.INI	2161	2465 \$ ~	(2161)		2265
SYS.COM	13424	13424 (B)	#c		#2
UNDELETE.EXE	13924	~	=	13924 A	13911
XCOPY.EXE	15804	15804 A, # ~	#c		#2

(new) new size.

#c same size, copyright date updated

#1 same size, few bytes changed.

#2 a number of different changes

= File identical to 5.00 updates.

=% This file identical to OS/2 MDOS

=u File exists in update, but no change.

§ These files were in DOS5EIU. This is an enhanced install utility, install these files over the OEM DOS.

(v9.99) version of driver in this column

~ Replaced from MS-DOS 91.04.09 in 91.11.11

also files 8514.vid country.sys, diskcomp.com, diskcopy.com, expand.exe, fdisk.exe, nlsfunc.exe, printfix.com, setver.exe, [io.sys and msdos.sys against PC-equivalents]

Microsoft issued a few spot releases for their MS-DOS 5.00, but these always update to 11.11 version, and the delsame compare shows that most of files waited to the 11.11 release.

## QBASIC

QBASIC went through three versions, all of which are available.

- 0 252317 - The version in the original IBMDOS 5.00 OEM, tied to ROMBASIC
- 1 252283 - The version in 91.08.06 Compatibility fix, into every OS/2 2.0 onwards.
- 2 252235 - The version in 92.02.08, PSP DOS 5.00.1, repeated into 5.02.
- 3 252219 - The version in 92.05.09 PCC version, and CSD37387.

PSP = Personal Software Products

PCC = Personal Computer Company

Qbasic and Edit were dropped after DOS 5.0, apparently MSFT was asking \$15 a copy.

Microsoft compiled a version of QuickBasic as an interpreter. v5 of Quickbasic was skipped, so these would be the corresponding version 5.xx of that program, albeit interpreter.

v1.00 254799 DOS 5.00, 91.06.04

v1.01 254799 was used in DOS 500a, and betas of Win95, and

v1.02 254799 in Windows NT to Win2k.

v1.1 257824 was used in DOS 6, and in the OLDMSDOS section on Win9x cdroms.

v2.0 69902 appeared in Chicago betas, and repeated in 95 and 98. Compressed in ME.

Edit 2.x was a different program, but numbered in the DOS Edit series.

v0.9.015 "Chicago Emergency Editor"

v0.9.019 "MS-DOS Editor" separate release as download.

v2.0.026 "MS-DOS Editor" as per Win9x releases. In WinME, it is compressed.

Found this on the IBM DOS Technical Solutions (its2dos.boo, topic 120.0)

### **930719 Running PCDOS 5.02. QBASIC & EDIT are not included.**

This copy of DOS 5.02, Without QBASIC or EDIT, has been licensed to EMPERT INTERNATIONAL and is sold at a dramatic discount. IBM does NOT support this product. All inquiries should be directed to EMPERT at 818-855-1820.

## MOUSE

PC-DOS has always included a mouse driver.

In 5.00 and 5.00.1, this is the same as the Windows 3.0 mouse (vers 7.04), this being the same as the retail mouse (the diskette that comes with a mouse).

Version 8.20 was recompiled from the source, is included with 5.02, 6.00, 6.10, and late copies of 6.30. It also appears in IBM Windows 3.10 and 3.11.

A recompiled version appears in PC-DOS 7.0 and 2000.

This table shows the size and crc32 of all of the MOUSE.COM from PC-DOS and IBM Windows.

31833	0x956966DC	"DOS.500"	"DOS.501"	"Win.300"	(v7.04)
37678	0x659DDBE5	"DOS.502"	(v8.20)		
37681	0xCAA27BF7	"DOS.610"	"DOS.630"	"Win.310"	"Win.311" (v8.20)
37681	0xFBB64F93	"DOS.700"	"DOS.701"	(v8.20)	

## OS/2 2.x

### Windows 3.10

Windows 3.10 appears to be the last joint-stock code. Win-OS/2 is essentially this less the bitmaps, and less the games.

Running delsame over win310 and the ibm oem version, reveals that the differences amount to a few edited .wri files, the mouse and the vgalogo.rie. IBM's installation on their pc's however, is rather interesting in that the bulk of the unused drivers and files are placed in c:\windows\drivers. This might suggest, for example, that the PCC had a stripped installation, with the bare essentials in the setup directory. This would speed installation, as proven in experiment.

It is interesting that no OS/2 files made their way into the install. The winos2 install fixes a number of bugs present in the base windows set, which were not fixed up until the Wall Street Journal made a noise about calc.exe doing 3.11-3.10. No difference, really.

### DOS 6 – OS/2 v3.x

The OEM version of MS-DOS 6.xx is titled "Microsoft MS-DOS 6.xx plus Enhanced Tools". Outside the setup files, it is identical to the upgrade, titled "Microsoft MS-DOS 6.xx Upgrade". During the run of this version, Microsoft issued two step-ups, to 6.20 and to 6.22.

The former was to overcome horrible problems with DBLSPACE: a new utility, essentially a hacked version of NDD, was introduced into 6.20, to partly mitigate the issues.

The latter is to follow suite on IBM's PCDOS613 program, which updated all of the utilities of MS-DOS 6,xx to 6.22 level.

Microsoft had visions of turning DOS into a Windows loader, but at this stage, there were eyes on the source, so they would stave it off for a while longer.

A number of utilities were removed to supplemental disks. DOSSHELL was move with the 6.20 version, apparently it's IBM territory.

Microsoft's "Enhanced Tools" mainly consist of hobbled Norton utilities, and an antivirus that was basically shied away in the marketplace. (It's a toss-up as to whether no anti-virus is better protection. At least you know there's no antivirus), and a backup that relied on dblspace for compression.

### DOS 6.0 Beta files

The DOS 6.0 beta includes an IBM-branded version of MSD v 2.01. Since IBM would have had access to the code, I imagine that they did a spot of rebranding. The mouse is a 6.10 version, compressed with PKLITE.

Note that 2.01 is the same version that appears in MSDOS 6.00 to 6.21. Windows 3.10 has version 2.00, complete with the 'leave me alone' when help-about is selected with F1. This is replicated into all versions of OS/2.

The 'Enhanced Tools' are the additional stuff that Microsoft had added to DOS, and were going to charge additional mechanicals should IBM decide to use it.

Edit (QBED) and MSD were replaced by home-grown E 3.12 and QConfig. Users of IBM's DOS could still access MSD in Windows or WinOS/2, and Edit was left if found there (and even mentioned in the PC-DOS 6.3 manuals under E and also DOSSHELL).

The early packaging used the DOS 5 logo (DOS on a black background).

IBM's "Enhanced Tools" consist of a back-version of Central Point utilities, suitably modified for PC-DOS.

The early MS-DOS 6.0 beta had a file 'doshelp.exe', for reading 'doshelp.hlp', the DOS 5 help. This was renamed to 'fasthelp' before the beta ended.

## **PC-DOS 6.0**

Getting PC-DOS 6.1 out the door was done before a standard livery was chosen for it. So you get variously IBMDOS or PC-DOS, and 6.0 or 6.1. This goes to the manuals, to the files and even the icon. The copy of IBMDOS 6 has the IBMDOS5.ICO, a manual describing itself as for IBMDOS 6.00 (in the same style as PC-DOS 5.0 manuals), and command.com calling itself as IBMDOS 6.1.

## **DOS 6.1**

The package was finally organised along a PC-DOS 6.1 and 6.3 style, where the DOS manual and box agrees with COMMAND.COM, and that the icon is the IBMDOS6 icon. This icon is also widely used in OS/2 Warp 3.x for their DOS sessions, a 16×16 version appearing beside some feature like 'full screen', 'window', 'editor', etc. The matching OS/2 icon is now on a black, rather than brown icon.

## **DOS 6.21**

The last recorded version of MS-DOS on a PCC computer, is MS-DOS 6.21, with the supplemental files in a subdirectory \DOS5, and mouse 9.01 installed. Mouse is identical to the retail version.

The files revealed by delsame in 6.21 different to 6.20 are command, country.sys, debug, diskcopy, ega2.cpi, fdisk, format, kdbuf, keybrd2.sys, and setver. The version was required because Microsoft were using software they had no patent licence to, and lost to Stac electronics.

## **DOS 6.30**

This is based on the 6.20 code, and has the same features that MS-DOS 6.20 has, including MSCDEX. The bulk of the extra utilities match that of PC-DOS 6.10, that is, back-versions of Central Point software.

In the pre-1994 versions, the mouse offered is 9.01, with a pre-configured cursor that was for laptops. Deleting mouse.ini fixes this issue.

An OEM version that I have, shows that the first of the fixes (smartdrv) is added, the mouse reverts to the IBM 8.20 variant, and a different date is used. This is more suggestive that the sharing agreement with Microsoft has ended.

IBM offered a stepup for download to upgrade 6.xx to 6.30. This is a five-disk array, of which I have seen the french, german, and japanese versions.

## **OS/2 PPC**

The OS/2 Power PC edition, is an evolution from OS/2 3.x to 4.x, but still mostly 3.x.

The bitmaps and icons are still those of 3.x but the tutorial is based on 4.x.

The DOS emulation is a fairly complete version of PC-DOS 6.30, with some interesting 7.x features. It is separate, because the Power PC does not provide for running bound programs. So these are run under DOS.

The E editor is still the 6 version, ie 3.12.

Rexx as in DOS is provided as in DOS 7. and it runs .bat scripts. but command.com does not know about .bat files that are rexx programs. The similar arrangement of .rx files is also given.

help.exe now seeks out view.exe to display cmdref.inf. But view and cmdref are still OS/2 files, rather than DOS text files.

Winhelp.exe from this version describes itself as 'Win-OS/2 Help'.

## **DOS E Editor**

2.08 E2 v1.08, surfaced 1992, with an E3 style ehelphlp.

3.05 1987 IBM internal use only

3.12 PCDOS 6.0, 6.1, OS/2 PPC

3.13 PC-DOS 7.0, 2000, 7.1

The DOS E Editor was an internal editor, used for programming. E.EX can be compiled for different needs. The released versions 3.12 and 3.13 do not have the necessary tools to compile the file, so the option is fixed.

Version 3.05 has two files that represent an archiver and archive. Unpacking this archive reveals the source (\*.E) and tokeniser (ET) for 3.05.

## **Windows 3.11 and MSDOS 6.22**

These were released after a sharing agreement ended. PPC still had access to this stuff, which is why I imagine that MS-DOS 6.21 was used.

Microsoft originally intended that MS-DOS 6.22 and Windows for Workgroups 3.11 be offered. However, Wfw conflicted with other network vendors, and OEMs complained of this. This is why a free step-up to win311, and win311 itself was offered without the networking.

MSD.EXE is then 2.00 in Win311, 2.10 in Wfw 3.11, and 2.11 in DOS 6.22. New drivers were provided to fix various bugs, and a stepup from previous ms-dos 6.xx to 6.22, and a paid-stepup from Windows 3.1x to Wfw 3.11 also provided.

The step-ups, both Microsoft and IBM, use a compression scheme not used in the retail versions. Microsoft's version in part simply changed the DOS version from 6.20 to 6.22.

As calc.exe has it, 3.11-3.10 = 0.00 but a huge hidden string of nines.

## **SMARTDRV 4.20**

The following text is taken from Brian Livingstone's More Windoze Secrets. pages 89-90.

The story runs like this. The copies of SMARTDRV in both MS-DOS 6.0 and Windoze 3.11 did not complete disk writes before displaying the prompt. This meant, that if ye turn off your computer when the prompt is displayed, then ye can lose data as SMARTDRV has not finished flushing its buffers. This was fixed in release 4.2.

But to encourage DOS sales, Microsoft made SMARTDRV 4.2 run only under DOS 6. This didn't help Windoze users who needed the upgrade, but were happy using DOS 3, 4, or 5.

Independent developer Gary Tessler suggests the following patch, which allows SmartDrive 4.2 to

run under versions of DOS other than DOS 6. <leftmargin 0>

Step 1. Exit Windows, take the SMARTDRV line out of your AUTOEXEC.BAT, and reboot.

Step 2. Copy SMARTDRV.EXE to SMARTDRV.OLD, then rename SMARTDRV.EXE to SMARTDRV.BIN.

Step 3. At the plain old DOS prompt, in the directory where SMARTDRV.BIN resides, issue the command DEBUG SMARTDRV.BIN. At Debug's hyphen prompt, type the following lines:

```
s 0 ffff 75 0f b4 30    (before this: 33 CD 21 80 FB 06)
nnnn: 6636
e 6636
90 90
w
q
<Enter>
```

After the S command, ye will see two four digit numbers. The second number, probably 6636, is the number ye must use in the E command. After the E command, ye will see a prompt of numbers, at which point ye type 90 (space) 90 (enter) and the rest.

If anything goes wrong, type Q at any hyphen prompt to quit Debug, then copy SMARTDRV.OLD to SMARTDRV.EXE and ye will be back the way ye were.

If everything goes well, rename SMARTDRV.BIN to SMARTDRV.EXE. Use this new version in your AUTOEXEC.BAT. Microsoft, who knew that people would apply this patch, left in the code, the old routine that tests for DOS 3.3, the version that SmartDrive really requires.

## STEP-UPS

Microsoft issued a step-up from MS-DOS 6.xx to 6.22. This was until recently fairly readably available on their website. IBM followed suite with PC-DOS 6.xx to 6.30.

This I imagine is a way of spreading CSD files to users.

### ***psnl4006.boo §3.8***

3.8 PC DOS Upgrade Available Worldwide on the Internet June 20, 1994

IBM Personal Software Products has announced the PC DOS 6.1 to 6.3 Upgrade special offering is now available worldwide via anonymous FTP on the Internet.

This special accommodation is being made available to licensed users of PC DOS 6.1 and will be available until September 30, 1994. The following PC DOS 6.1 to 6.3 Upgrade national language versions are available for downloading:

## MS-DOS 6.30

The original plan was to replace various files from the OLDMSDOS directory with versions from 6.22, that had been defanged (version-removed). This eventually grew into creating a defanged DOS along the lines of DOS 7 below. In essence, instead of using setver to set the explicit version for these utilities, the whole thing runs under any DOS. It's an educational process.

The other element that needed a serious rewrite was the HELP.HLP file. This is unchanged from MSDOS 6.22, but the file can be dismantled with Helpmake v 1.08, and new topics added and removed.



## Windows 3.15

The version number allocated to the various files in MINI.CAB on the Win9x disks. These amount to a standard-mode version of Windows, that will load the Win9x setup. There are three subversions, Mini95, (OS/R 1, 2), Mini98 (98, 98SE), and MiniME (ME).

## DOS 7 – OS/2 v4.x

These were the last versions from IBM. By this time, Windows 9x was in the air, and was at least playing catchup enough to satisfy public demand.

## PC-DOS 7

PC-DOS 7 was released after code-sharing, and so it has features borrowed from OS/2. Apart from this, it is built on a new code-base.

- Files are distributed in PACK2 bundles, placed on XDF format diskettes.
- COMMAND will run REXX scripts that live in .bat files.
- Help is as in OS/2 PPC dos, in OS/2 INF files. View will now open OS/2 help files, with some limited functionality.
- The DOS E Editor is updated to support menus and mouse.

New commands provided are

- `acalc.exe`                Now you really can do calculations from the command prompt.
- `backup.exe`              Revived from DOS 5.x, along with `restore.exe`.
- `crc.exe`                    Cyclic redundancy check, no `crchk`, though as in the EWS pack.
- `dynaload.com`            And load device drivers.

This DOSSHELL does not run in Vista, since it uses full-screen mode. Use the one from 6.30 instead.

## PCDOS 7 Supplement files

PC-DOS 7 drops a number of files that were in DOS 6.30 (COMP, EDLIN, FASTOPEN, GRAPHICS, PRINTER.SYS and various .CPI files for the printers). In the DOS 7 CMDREF file, there is mention, that if you have a licenced copy of DOS 6.30, you could copy these to DOS 7.

Later, a package appeared eg UKDOSSUP.ZIP, or DKDOSSUP.ZIP, which contains these files, and a help file in the form of DOSCMDS.INF. `Readme.txt` is the dos7 help file, `README.DOC` is the licence and instructions of how to load the files. The DOS 6.30 requirement was removed.

EDLIN and COMP turned up on a Japanese version of PC-DOS 7.

The PC-DOS 6.3 manual mentions ADOS, this is also mentioned as a possible include on the IBM description of PC-DOS 6.3, but never made it.

## PCDOS 7 updates

A number of loose fixes were made to fix issues with the files. In each case, they update the files to DOS 2000 level. The file size is of the updated version.

d70acalc	acalc.exe	32831	Fix bitwise and (&) and or (:)
d70dcomp	diskcomp.com	7636	compare disk compressed with stac
d70dcopy	diskcopy.com	9359	fix error msg for diskcopy compressed disk

d70e	e.ex	51785	TEMPFILENAME returns an error if on a ramdrive
d70emm	emm386.exe	119902	Ctl-Alt-Del fails if altboot param on line.
d70mode	mode.com	15729	on some mach, error when rate=xx delay=xx
d70power	power.exe	8808	DX register not saved when power is called.
d70share	share.exe	8720	memory errors or lockup, on loading share.
d70stac	ssetup.exe		Allow use on machines less than 286
d70tv1	tv-lie.com		command to pretend that it's DOS 6.30,
d70xdf	xdfcopy.exe		does not recover free space if no space for temps.

TV-LIE is provided to convince programs that you are not running Windows 95, but some other thing called DOS 7. QEMM is listed as an example. It does not work under PC-DOS 2000.

## PCDOS 7 Y2K fixes

This is a separate distribution at 1998.06.01, containing some 30 files, all of which are identical to those in DOS 2000. POWER.EXE is the only file to be double-updated. The files in the root of the zip-file are mostly install files, except for attrib.exe.

There is no point running this in PC-DOS 2000, since that already has the new files.

REXX in PC-DOS 7.00 needs the version to be set under OS/2. This limitation is removed under the 2000 version.

## DSAPR1.INF

This is an OS/2 INF file, that lists the APRs or problems, with PC-DOS 7.0, 6.3, 6.1 and 6.0. Since the APRs for DOS 5 also exist, it makes an interesting addition to a proposed addin file. Issued in 1995, it does not cover dos 2000.

## OS/2 4.00

OS/2 4.0 is a big update to 3.0, but still requiring fixes for some bios limitations. The version released corresponds to OS/2 Warp Connect with Win-OS/2. All of the other versions were discontinued. Like Windows 95, it contains new wallpaper, and an on-line registration. The little dancing elephant on the desktop reminds you to enter a registration.

In the main, it appeared after the 'glory days' of OS/2, but IBM updated it a few times to bring it up to server level. The final version is 4.52.

The Warp convenience packs 1, 2 are versions 4.5x, it's on these versions that eComStation, and later AcrOS are built. These by default install a sampling of OS/2 4.00's bitmaps, but the distribution contains them all. All you have to do is unpack the two bitmap files to the boot drive.

## *And In The End*

DOS and OS/2 were developed at the IBM office at Boca Raton in Florida. This was far enough from the New York headquarters to stop the managers interfering. It was where DOS 1 and the IBM PC was developed. Because IBM spent a lot of money in the MS-DOS compatible stage (to 1990), they had won the video war. But it was Compaq and American Megatrends who reverse-engineered the IBM video bios, necessary to run IBM games on clone computers.

IBM themselves started into manufacturing clones with the PS/1 and PS/Valuepoint, but still held out that somehow the PS/2 microchannel bus would take over. In this end, the USB appeared in the 1990s, where plugin stuff would acknowledge themselves. This largely displaced other ends, like the PCMCIA or PC-Card. These changes came after a different event.

IBM decided to pull out of the PC-OS market.

## eComStation

## AcraOS

## Glossary

**ACLAC:** A command-line calculator for DOS. You too can turn your \$5000 computer into a calculator. Actually, it was quite useful. Coupled with DOSKey, you had an editable tape calculator, which you could go back and fix things.

**BASIC:** The basic of the 1980s included line numbers, the language was used on quite a number of eight-bit devices. There is an IEEE standard on tokenising basic as a means for saving it. Microsoft recycled the term to include their range of basic-oid languages.

**COMPRESS:** Any of the utilities that compress files. The ones we are interested are those that prepare SZDD or KWAJ files. Microsoft has issued a large number of files of this name, so we have renamed these ENCOMP1 and ENCOMP2.

**CRC:** The standard version used is from the IBMEWS utilos2 package, which comes in DOS, OS/2 and Win32 versions. CRCCHK will check files against a previous CRC redirected to a file.

**CRCsize:** A sort of files in subdirectories by SIZE and CRC. This is then processed by a REXX script, eg DELSAME.

**DEFANG:** To remove or disable the DOS version check. Also used of Win32 programs.

**DELSAME:** A REXX script that uses IBMEWS crc.exe. and then a sort utility, to sort the files in the tree under where it is run. by size and crc. The files matching the first instance of size, crc, are then deleted. Useful for sifting out changes in various operating systems.

**DISKS (Blue / Salmon):** Whether the OS/2 was packed with PACK or PACK2. The latter is tighter compression, but "blue" versions can not unpack PACK2 bundles. DOS 7 is PACK2.

**DOS3 era:** The run of DOS 3, DOS 4, OS/2 1.x and Windows 3.00. Basica and GWBasic are emulators of the standard 8-bit systems. The larger disks that appeared in this era is a move away from ROMBASIC. Edlin was the order of the day.

**DOS5:** A rename of the Help command from the different DOS versions, to overcome that 4DOS uses help as an internal command, and that PC DOS 7 has a different help command.

**DOS5 era:** The run of DOS 5, OS/2 v 2.x, and Windows 3.10.

**DOS6 era:** The run of DOS 6, OS/2 v 3.x, and Windows 3.11

**DOS7 era:** The run of DOS 7, OS/2 v 4.x and Windows 9x.

**DOS8 era:** Refers to the period after WinME, where WinNT makes a bootable WinME disk, but the emulated DOS is still DOS 5.0

**DOSCMD:** A patch to the PC DOS 7 HELP.EXE, to replace instances of CMDREF with DOSCMD. This allows the DOS and OS/2 files of the same name to co-exist.

**EDLIN:** The DOS Editor up to 5. It was still in use when PC's arrived at our office. I've used it a number of times. The more baroque notions of user-hacking was to 'diddle edlin', ie make edlin work in an earlier version of DOS than what it was extracted from.

**ENCOMP1, 2:** The COMPRESS utility for making DOS 6, 5 era files. v1 makes KWAJ files, v2 makes SZDD files. Other programs, use different compressions, such as the magic SZ(space).

**EWS:** (IBM) Employee Written Software. About half of it has made its way on the net. The

programs roughly correspond to Microsoft Powertoys, or Unsupported Software, but usually much higher quality.

**EXPANDD:** The expand utility v 2.10 from Windows 3.11. This handles decompression of all DOS and Windows stuff in the DOS 5.0 and 6.0 era (ie SZDD and KWAJ).

**EXTRACTD:** The DOS-only UNCAB utility. The bound version is left unchanged. The D is to differentiate it from other extract utilities.

**EXTRACT2:** The utility from <http://www.winimage.com> extract using vers 2.10. This has separate DOS and Win32 versions, so OS/2 is not tempted to load Windows when it is run.

**FC2:** An NC-clone available for OS/2, Win32 and Win64, as well as Linux. It supports the ! abbreviations on the command-line. <http://silk.apana.org.au/fc.html>

**HELPMAKE:** The utility for decompiling and recompiling MS-Help files. v1.08 preserves the markup code needed to recompile the file.

**HEXIT:** The hex editor v1.57. by Mikael Klasson. <http://mklasson.cjb.net> in DOS and Win32.

**.INF:** IBM's standard help file, imported into OS/2. There are a number of utilities that read .INF, such as IVIEW.EXE and DOCVIEW (Watson C), that read these files in Windows. The PC-DOS 7 help system uses a light version of this.

**KWAJ:** The first four characters of files compressed with compress v 1.xx. We use v1.11, which places underscores rather than \$ signs. DOS 6, Win3.11, Wfw 3.11

**LOADDSKF:** IBM's compressed diskette format. It is usually a bound utility, to to run it under Vista or XP, you need to use `command.com /c` or `4dos /c` to create a dos-only environment.

**MAGIC:** Information in a file that is particular to that format. Some programs use magic rather than the file extension to open files. To find the type of file by reading the first few bytes.

**MSCF:** The compression magic used by Microsoft's Windows 9x and Windows NT from 3.5 onwards. Like Pack, these can be put in bundles (called 'cabinets', as Win9x is), or separately (as WinNT is).

**MSED:** A string edit on Win9x Edit to replace EDIT with MSED. The help file is renamed to .OHP, and the ini file to .CFG, to overcome that Windows also uses these names. See also QBED.

**MULTIMEDIA:** IBM computers of the DOS 5/6 era include a package of Win31 MME.

**PACK, PACK2:** OS/2 utilities used to create the bundles and loose packed files, found in OS/2 and in PCDOS 7. The magic for PACK is 'A596 FEFF'x while PACK2 is 'A596 FDFD'x. OS/2 1.x packs the files individually using PACK.

**PCC:** Personal Computer Company. Responsible for producing IBM-branded computers and loading these with software.

**PHATCODE:** A patch to various Microsoft Basic utilities, including QBASIC, correcting the seeking of floppy disk drives as well as correctly handling network drives. (Jon Petrosky) See eg <https://www.phatcode.net/downloads.php?id=16> .

**PKLITE:** Many of the DOS files, especially era 6, are compressed with the exepacker PLKITE. UNP412 does a good help at unpacking these.

**PKZIP:** The standard level is taken at 2.50, for which registered copies for DOS, OS/2 and Win32 are held. Microsoft had an AV version (ie standard registered) of 2.04gr, while IBM had a special compile 2.06 (also registered). The 2.06 version can be found fairly readily. PKWARE discontinued providing AV codes for this product, since Infozip has taken over the ZIP market.

**PSP:** Personal Software Products: the division of IBM that made retail boxed products for the

home PC.

**RETAIL:** As sold in boxes. Retail drivers are diskettes included with hardware, such as the mouse, include many more utilities than those included in the OS. A retail MSCDEX might include utilities for playing the cdrom from the command-line.

**QBASIC:** A DOS BASIC interpreter, using Microsoft's new version of BASIC. I've tested things like VBA script in it, for example. Unlike IBM, Microsoft never really made an effective glue language for their systems.

**QBED:** A string-edit to qbasic.exe, to allow Edit.com and Edit.hlp to be renamed to QBED.COM and HLP. This allows a different file to occupy this spot. See also MSED.

**.QH:** The Microsoft DOS/OS2 help system, replaced by Winhelp. The help for DOS 6 help, qbasic and edit are in this format.

**QUERCUS REXX:** A very early entrant to the market, much before general REXX for OS/2 was formalised. Their manuals have notes along the lines of 'use the SAA feature instead'. The files are tokenised on first run (after an edit), and the thing is very fast. I used all four versions (DOS, OS/2, Win16, Win32) in the day.

**REXX:** Most of the scripting is done in REXX, then as now. REXX is available for many platforms, either as (former) buy-ware or freeware. SAA level programming is the order of the day.

**SPINE (Blue / Red):** In versions 2 and 3 of OS/2, the blue spine contains WinOS/2, while the red-spine uses the Windows for DOS. "OS/2 for Windows" is the red spine. (Think 'Big Blue').

**SZDD:** The first four bytes of files compressed with COMPRESS v 2 from the Windows SDK. This is used in DOS 5 era stuff (Win3.0, Win3.10, Wfw3.10 WinNT 3.10, DOS 5.)

**\*.TXT** A patch to qbasic to replace one instance of \*.TXT to \*.\* , to allow any file to be opened in the editor.

**UNPACK2:** The PC-DOS 7 utility, required to unpack PC-DOS 7 and OS/2 salmon-disk files. Also UNPACK, the DOS5 compression era. The compression is done in an OS/2 session with PACK and PACK2. No version of these unpacks the files from the other.

**VBA:** Microsoft's attempt at a glue language. The language was never implemented at a level of writing *useful* command-line utilities, and as such, the language was diverse from normal use. Couple this with an auto-run, and documents could do wondrous things. Virus-protection now included dealing with the front door.

**VC:** The Volkov Commander. v4.05 This is one of the better DOS implementations of the file-commander series.

**WARP (Connect):** Warp refers to v3 and later, which introduced new APIs not found in 2.x. The Connect means it has additional networking capacity, in the same way as Windows for Workgroups. Nearly every book I have seen on the subject refers to Warp 3.

**WINDOWS (for Workgroups):** Windows 3.1 is an update to Windows 3.0. During the run of 3.1, a parallel version was made with simple networking software included. A number of companies who were favouring other networks complained, and a non-workgroups version was released as Win 3.11. The Workgroups versions are designated Wfw 3.1x. Wfw 3.10 was very slow, and acquired the hacronym of 'Windows for Warehouses' (Part of Windows Everywhere), in the idea that it would accumulate unsold in warehouses.

**WINDOZE:** The hacronym for Windows. The allusion is that you could doze off as it boots, since the stated requirements were barely enough to load the operating system, let alone any applications. The various homegrown windows builds use this name.

**WIN-OS/2:** The versions of 3.0 (in OS/2 2.0), and 3.1 (OS/2 2.1+), compiled by IBM for use in

the OS/2 emulation.