The dosemu HOWTO

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The dosemu HOWTO

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This is the `Frequently Asked Questions' (FAQ) / HOWTO document for dosemu. The most up−to−date version of the dosemu−HOWTO may be found at ***http://www.dosemu.org****.*

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1.The preliminaries

1.1 What is dosemu, anyway?

To quote the manual, "dosemu" is a user–level program which uses certain special features of the Linux kernel and the 80386 processor to run MS–DOS/FreeDOS/DR–DOS in what we in the biz call a `DOS box.' The DOS box, a combination of hardware and software trickery, has these capabilities:

o the ability to virtualize all input/output and processor control instructions

o the ability to support the word size and addressing modes of the iAPX86 processor family's "real mode," while still running within the full protected mode environment

o the ability to trap all DOS and BIOS system calls and emulate such calls as are necessary for proper operation and good performance

o the ability to simulate a hardware environment over which DOS programs are accustomed to having control.

o the ability to provide DOS services through native Linux services; for example, dosemu can provide a virtual hard disk drive which is actually a Linux directory hierarchy."

1.2 What operating systems does dosemu work under ?

Dosemu is primarily written for Linux. It also works on NetBSD and possibly FreeBSD, however the graphics emulation is unlikely to work on NetBSD, which means that all DOS programs that use graphics mode (most DOS programs) will not work under NetBSD.

1.3 What processors does dosemu work on ?

Dosemu only works on Intel 80x86 processors, e.g. 80386, 80486, Pentium etc.

1.4 What if I have an Alpha/Sparc/Motorola/other non−Intel CPU ?

Dosemu only works on Intel 80x86 processors but there are alternatives: Bochs (**http://www.bochs.com**) is an open source shareware PC emulator that runs on most Unixes (as well as MS−Windows), and there are other (non−free) alternatives − see the comp.emulators.misc FAQ, available via usenet or **ftp://rtfm.mit.edu/pub/usenet−by−hierarchy/comp/emulators/misc/**

1.5 Do I need MS−DOS to use dosemu ?

No. You need some version of DOS but not necessarily MS−DOS. See the section "What versions of DOS are known to run with dosemu ?"

1.6 Can I run Microsoft Windows programs under dosemu ?

Not reliably. You would be better to use the Windows emulator Wine (**http://www.winehq.com**). If you insist on running Windows under dosemu, see section 8 − dosemu and MS−Windows 3.1.

1.7 I want to run something that won't run under DOSemu or Wine

See section 1.4.

1.8 Names and numbers

```
(xx/yy/zz) means day zz in month yy in year xx.
```

```
winemu mean WinOS/2 running in dosemu.
```

1.9 What version of Dosemu should I use?

Dosemu uses the same numbering scheme as the kernel. Uneven second numbers are for possible unstable developer releases, even second numbers are for releases considered stable. At the time of writing, **0.98.8** is the latest stable release, while **0.99.10** is the latest developer's release. So if you want to use dosemu, get the latest **stable** release.

1.10 What's the newest version of dosemu and where can I get it?

The newest version of dosemu as of 99/04/09 is **dosemu0.98.8** and can be ftp'ed from:

```
ftp://ftp.dosemu.org/pub/dosemu/
```

Remember that this is ALPHA code, however: there may be serious bugs and very little documentation for new features. The development version is particularly likely to have bugs. Please use it only if you like to do active development. Don't report bugs in the development version, fix them instead.

1.11 Where can I ask questions?

If you have problems regarding installing and running dosemu after reading the documentation, first try to help yourself: Your question has probably been asked and perhaps answered before. Try some search engine on the internet to retrieve that information. E.g. you can ask

```
http://www.dejanews.com
```

to find all newsnet articles containing the keywords of your question. Helping yourself will probably be faster than asking a well known question. It also frees up the time of developers from answering trivial question and so helps the further development of dosemu.

1.12 Where can I report bugs and ask questions?

If you want to ask questions and report bugs regarding dosemu, you should consider subscribing to the linux−msdos mailing list. To subscribe, send mail to **Majordomo@vger.rutgers.edu** with the following command in the body of your email message:

```
subscribe linux-msdos your_username@your.email.address
```

If you ever want to remove yourself from the mailing list, you can send mail to **Majordomo@vger.rutgers.edu** with the following command in the body of your email message:

```
unsubscribe linux-msdos your_username@your.email.address
```

(95/8/11). When you are subscribed to linux−msdos, you can send your report as mail to linux−msdos@vger.rutgers.edu. There is a gate that send mails to linux−msdos@vger.rutgers.edu as postings to the newsgroup named **linux.dev.msdos**. If your News provider doesn't carry that group, ask her(him) to add that group. Before you ask a question, you should carefully read all of the documentation, including this HOWTO and check one of the mailing list archives listed at **http://www.dosemu.org/mailinglist.html** to see whether your question has already been asked and answered.

1.13 What documentation is available for dosemu?

Dosemu comes with documentation. The main documentation files README.txt and README−tech.txt cover virtually all aspects of dosemu and may be more up−to−date than this HOWTO.

The "dosemu Novice's Altering Guide" or DANG is a road map to the inner workings of dosemu. It is designed for the adventurous, those who wish to modify the source code themselves. The DANG is maintained by Alistair MacDonald (**alistair@slitesys.demon.co.uk**) and is found in the doc directory of the dosemu source tree.

The EMU failure list (EMUfailure.txt) is a partial list of programs known **not** to work under dosemu.

And then, of course, there is the dosemu FAQ/HOWTO. But you already know about that, don't you. It is also posted once in a while to the mailing list and found in the doc−directory. The most recent version can be found at **http://www.dosemu.org**.

1.14 I have a program that fails, not listed in EMUfailure.txt

First check, if the failure of your program is not caused by some of the fundamental incapabilities of dosemu, listed in EMUfailure.txt. If you think you have something new, please report to linux−msdos@vger.rutgers.edu. Perhaps it can be made going with the help others. Give detailed information about your setup, tell the version of kernel, dosemu etc and name the observed errors. You can use xdos to cut and paste the error message into your report. But keep your report in a readable form. We know the content of ../etc/config.dist. So only send the active lines from your dosemu.conf. Try running dosemu with some or all debug output turned on and scan through your debug output and at first only send those parts you think are relevant. Few people are willing to decode some long attachment to a mail, to do debugging for others. But keep your logs at hand, in case others ask detailed questions.

1.15 How do I submit changes or additions to the HOWTO?

The preferred method is to edit the file **dosemu−HOWTO−xx.x.sgml** to incorporate the changes, create a diff file by typing something like

```
diff −uw original−file new−file
```

and send it to **davidhodges@altavista.net**. If you do not know SGML, that's ok. Changes or new information in any form will be accepted. Creating the diff file just makes it easier on the HOWTO maintainer. :−)

1.16 Message from Greg...

2.Compiling and installing dosemu

2.1 Where are the installation instructions?

The installation instructions are in the file, "QuickStart", included in the distribution.

2.2 Top ten problems while compiling and installing dosemu.

1. Forgetting to read the **QuickStart** Guide.

2. Try to compile some old version of dosemu.

3. Try to compile with a kernel older than 2.0.28 or 2.1.15.

4. Having the wrong linux kernel source sitting in **/usr/src/linux** or missing **/usr/src/linux/include/version.h**

5. Use dosemu with a kernel that does not have **IPC** compiled in.

6. Compile with gcc older than 2.7.2 or libc older than 5.x.x.

7. Forget to edit your **/etc/dosemu.conf**, **/etc/dosemu.users** and **/var/lib/dosemu/global.conf** files

8. Run DOSEMU with partition access while they are already mounted.

9. Don't install dosemu with sufficient privileges (i.e., root).

10. Try to run programs that use DPMI without enabling dpmi in /etc/dosemu.conf

2.3 How do I make aout binaries?

Starting with version 0.64.4 there is no a.out support any more. If you absolutely need it, you must use version 0.64.3.1. The configure script then should take care for this, if you setup is a standard setup.

2.4 How do I compile dosemu on a machine with low memory?

Marty Leisner (**leisner@sdsp.mc.xerox.com**) reported (95/4/8) that

If you have problems with running out of swap space you may want to add `CFLAGS+=-fno-inline` after `CFLAGS` is defined in **dpmi/Makefile**. Be careful before you do this and check for the existence of swap space. I found Linux crashes at times when it has no swap space.

2.5 Compilation fails with some strange error regarding "slang"

You probably have

```
slangforce off
```

in your compiletime−settings file. You need to change it to

```
slangforce on
```

and recompile.

2.6 What configurable options are available ?

The compiletime−settings.help file describes the options you can change at compile time. The README.txt file describes the options you can change at run time.

2.7 Do I need to run dosemu as root?

No. Although dosemu drops root privilege wherever possible, it is still safer to not run dosemu as root, especially if you run DPMI programs under dosemu. Most normal DOS applications don't need dosemu to run as root, especially if you run dosemu under X. Thus you should not allow users to run a suid root copy of dosemu, wherever possible, but only a non−suid copy. You can configure this on a per−user basis using the /etc/dosemu.users file.

Programs that require direct access to hardware ports (e.g. if the program needs to talk to some unusual hardware that is not supported by Linux and dosemu) require dosemu to run as root but printers, serial ports, mice and video cards (and to a small extent sound − hopefully more soon) are emulated by dosemu so you don't need direct hardware access and don't need to run as root to use these.

2.8 How do I patch dosemu ?

If you do patch dosemu from one version to another, do "make pristine;./configure; make". If you don't make pristine, at least the version of the new executable will be wrong, if the whole thing compiles at all(97/2/9).

2.9 What versions of DOS are known to run with dosemu ?

All versions of DOS should work with dosemu, with the following caveats:

FreeDOS (**http://www.freedos.org**) does not (yet) have a working redirector so you will not be able to access your Linux filesystem or Novell networking under FreeDOS. Note also that FreeDOS is unreliable beta software and may crash unexpectedly, trash its filesystem, etc. etc.

DOS 4.01 had problems by itself, so it won't work reliably with dosemu either.

With **MsDos−7** aka **Win95** you must not start the graphic shell at bootup. If you make the hdimage bootable with the so called "Rescue Disk" you are offered to make during the Windows installation, you get the right settings. If you use your normal Win95 installation to transfer the system files, have a look at the msdos.sys written on the hdimage and change the settings under the section [Options] to have entries like [Options] Logo=0 BootGUI=0

3.Hard disk setup

3.1 How do I use my hard disk with dosemu?

First, mount your dos hard disk partition as a Linux subdirectory. For example, you could create a directory in Linux such as /dos (mkdir −m 755 /dos) and add a line like

```
 /dev/hda1        /dos      msdos    umask=022
```

to your /etc/fstab. (In this example, the partition is mounted read−only. You may want to mount it read/write by replacing "022" with "000" and using the −m 777 option with mkdir). Now **mount /dos**. The README.txt says:

```
you just can have a Linux directory containing all what you
want to have under your DOS C:. Copy your IO.SYS, MSDOS.SYS or what
ever to that directory (e.g. /var/lib/dosemu/bootdir), put

        $_hdimage = "bootdir"


into your /etc/dosemu.conf, and up it goes. DOSEMU makes a lredir'ed
drive out of it and can boot from it. You can edit the config.sys and
the autoexec.bat within this directory before you start dosemu.  Fur-
ther more, you may have a more sohisticated setup. Given you want to
run the same DOS drive as you normal have when booting into native
DOS, then you just mount you DOS partition under Linux (say to /dos)
and put links to its subdirectories into the boot dir. This way you
can decide which files/directories have to be visible under DOSEMU and
which have to be different. Here's a small and incomplete example
bootdir setup:


       config.sys
       autoexec.bat
       command.com -> /dos/command.com
       io.sys -> /dos/io.sys
       msdos.sys -> /dos/msdos.sys
       dos -> /dos/dos
       bc -> /dos/bc
       windows -> /dos/windows


There is, however, one drawback, you can't use the DosC kernel
(FreeDos) for it, because it hasn't yet a working redirector (will
hopefully be available some time in the future).
```

3.2 How can I access the hdimage from Linux?

Use mtools. With a line in **/etc/mtools.conf** like

```
 drive n:  file="/var/lib/dosemu/hdimage" MTOOLS_SKIP_CHECK=1 \
 MTOOLS_LOWER_CASE=1 MTOOLS_NO_VFAT=1 partition=1 offset=128
```

you can use the mtools on the hdimage, like "mdir n:". "mcopy n:/config.emu /tmp" copies the config.emu file from the hdimage to /tmp/config.emu. You can edit it there and copy it back. Use a drive letter you find sensible. "N:" is only an example.

3.3 Can I use my stacked/double−spaced/super−stored disk?

At this time, compressed drives cannot be accessed via the redirector (lredir or emufs) on a standard kernel. There is a patch for the kernel to mount compressed files under the name "dmsdosfs". Find it on sunsite.unc.edu and its mirrors

```
http://sunsite.unc.edu:/pub/Linux/system/filesystems/dosfs/
```

A good idea is also to look in http://sunsite.unc.edu:/pub/Linux/Incoming for a newer version. The "wholedisk" option in older versions of dosemu is no longer allowed in recent versions, however, a line like

```
$_hdimage = "/dev/hda1"
```

may work, at the risk that you could lose all data in that partition on a dosemu crash.

If your dos partition is already mounted with write access and you try to run dosemu with partition access, dosemu will print a warning message and abort. This prevents DOS and Linux from making independent writes to your disk and trashing the data on your dos partition(95/8/11).

−−−−−−−−−−−−−−−−−−−−−−

If LILO is installed, the above will not work. However...

Thomas Mockridge (**thomas@aztec.co.za**) reported (94/8/5) that

To boot dosemu with LILO and Stacker 4.0 I did a little work around...

1. **dd** the MBR to a file. (or norton utility, etc., first 512 bytes)

2. Boot dos (from full boot not emu), do a fdisk /mbr, make your dos partition active with (dos) fdisk.

3. Copy the new MBR to a file.

4. Replace the original MBR

5. Copy the second MBR to /var/lib/dosemu/partition.hda? (Whichever is your dos partition)

6. Set dosemu.conf

```
disk {partition "/dev/hda? ?"}
```

7. Start dosemu and and voila! No LILO.

For recent versions of dosemu you need to change the

```
disk {partition "/dev/hda? ?"}
```

line to something like

```
$_hdimage = "/dev/hda1"
```

−−−−−−−−−−−−−−−−−−−−−−

Holger Schemel (**q99492@pbhrzx.uni−paderborn.de**) reported (94/2/10) that

Works even fine under dosemu with MS−DOS 6.0. If you have problems, then you have to edit the file 'DBLSPACE.INI' manually and change the disk letter to the letter your drive gets under dosemu.

−−−−−−−−−−−−−−−−−−−−−

Darren J Moffat (**moffatd@dcs.gla.ac.uk**) also reported (94/3/27)

"...use 6.2 if you can get it!! Just make sure you have a LILO boot disk on hand since dos 6{.2} will change the MBR of the boot HZ."

3.4 Creating your own hdimage file.

The easy way is to use mkdexe − see README.txt for details. The old−fashioned way (I don't know why anyone would want to do it that way any more but here it is, just in case) is as follows:

There is an extra util program called mkfatimage16 which allows for creating a hdimage file headers. The full information is in the manpage (man/mkfatimage16.1) included in your distribution.

To create a hard disk image file with a geometry corresponding to that of a real hard disk of 32 megabytes run:

```
mkfatimage16 −k 32768 > hdimage
```

This is probably too large for most needs; if you need this much space, consider using the disk redirector."

Usually it is a good idea to format the drive after it.

4.Parallel ports, serial ports and mice

4.1 Port access worked with older version, but doesn't work now!

Read ../**doc/README.txt** and the port−section in ../**etc/config.dist**

4.2 Port access was faster with older versions!

To have a chance to log port access, by default every port access produces an exception out of vm86−mode. This takes some time. If you don't want to log port access, use the keyword **"fast"** in the appropriate port statement.

4.3 Where are the (microsoft compatible) mouse drivers?

Tom Kimball (**tk@pssparc2.oc.com**) reported (93/11/24) that

Several people said to use a different mouse driver and suggested some. I found a couple that seem to work fine.

```
oak.oakland.edu:/pub/msdos/mouse/mouse701.zip    (mscmouse)
oak.oakland.edu:/pub/msdos/mouse/gmous102.zip    (gmouse)
```

Normally you can use dosemu's internaldriver, so you don't need any additional mousedriver in dosemu outside winemu(97/2/10).

4.4 Why doesn't the mouse driver work?

Mark Rejhon (**mdrejhon@magi.com**) reported (95/4/7) that

If you start the mouse driver and it just hangs (it might actually take 30−60s), but if you are waiting longer than a minute for the mouse driver to start, try specifying the COM port that the mouse is on, at the mouse driver command line.

4.5 Why does dosemu clobber COM4?

Rob Janssen (**rob@pe1chl.ampr.org**) reported (94/3/24) that

According to **jmorriso@bogomips.ee.ubc.ca**, "dosemu still clobbers COM4 (0x2e8, IRQ 5). 0x2e8 isn't in ports{} in config. I have to run setserial /dev/cua3 irq 5 on it after dosemu exits."

This is caused by your VGA BIOS. I have found that by enabling the IO port trace and seeing where it was clobbered.

Disable the "`allowvideoportaccess on`" line in config and it will work fine. When you then have problems with the video, try to enable more selective ranges of IO addresses (e.g., 40−43).

4.6 How do I use dosemu over the serial ports?

4.7 How can I switch between dosemu and a shell over the serial line?

John Taylor (**taylor@pollux.cs.uga.edu**) reported (94/5/25) that

I am running Linux 1.1.13 and want to point out a great feature that should be protected and not taken out (IMHO). With the 52 version, I can run the program, "screen." From screen, i can invoke dos −D−a. What is really great (IMHO) is the screen commands (the CTRL−A cmds) still work. This means I can do a CTRL−A C and add another unix shell, and switch between the two (DOS / UNIX). This allows me to use dosemu over the serial line really well, because switching is made easy.

4.8 How can I get the parallel ports to work?

The dosemu.conf has lines at the end to redirect printers to either lpr or a file. If you want direct access to the bare metal, comment out these emulation lines, and add the line

```
$_ports { device /dev/lp0 fast range 0x3bc 0x3bf } # lpt0
```

for the "monitor card" printer port (corresponds to /dev/lp0), or

```
$_ports { device /dev/lp1 fast range 0x378 0x37f } # lpt1
```

or

```
$_ports { device /dev/lp1 fast range 0x278 0x27f } # lpt2
```

for LPT1 (/dev/lp1) or LPT2 (/dev/lp2) respectively(97/2/9).

Hans Lermen (lermen@dosemu.org) writes:

But NOTE: these lines should not be _added_ simply, the string should be concatenated such as:

$_ports = "...." $_ports = $_ports, " device /dev/lp0 fast range 0x3bc 0x3bf" = This blank is important

---

5.Multiple users and Non−interactive sessions

5.1 Can I use dosemu on a multi−user system?

Yes, you can configure dosemu on a per−user basis. See README.txt for details.

5.2 How can I run dos commands non−interactively?

You can do any of the following: 1. redirect a file to dosemu standard input 2. use the keystroke configuration option and the −I command line option as described in the README.txt file to specify keystrokes on the command line that will act exactly as if you had typed them within dosemu 3. use the mkdexe program to create a DEXE file − a small DOS filesystem image containing just the program you want to run − see the README.txt file for details.

Here are some additional alternatives:

Daniel T. Schwager (**danny@dragon.s.bawue.de**) reported (94/7/2) that

You can use different dosemu.conf files (and different hd−boot−images with different autoexec.bat's) and call dosemu like

```
$ dos -F my_quicken_q_exe_dosemu.conf
```

−−−−−−−−−−−−−−−−−−−−−−−−−

Dietmar Braun (**braun@math20.mathematik.uni−bielefeld.de**) reported (94/7/4) that

This is no problem at all when you use the redirector of dosemu. It is possible to redirect a drive letter to a linux path given by an environment variable.

So I have a shell script named "**DOS**" which does something like

```
 mkdir /tmp/dos.$$
 DOSTMP=/tmp/dos.$$; export DOSTMP
```

and then a little trick to get "**echo $* > $DOSTMP/startup.bat**" really working (actually a small C Program which turns '/' in '\' and terminates lines correctly for messy dos with cr/lf pairs and adds **^Z** at the end of the file), creates startup files, links and so on in this directory, and then starts dosemu. Within "**autoexec.bat**" drive c: is redirected from hdimage to this tmp−directory, which has links for **$HOME** and **$PWD**.

So if I want to see my filenames shortened to 8.3 I can type "**DOS dir**" and I get my current directory listing. So I have full DOS multi user (I don't have any DOS partition and redirecting to Linux preserves user permissions) and multi tasking. (dosemu sessions are completely independent). I did this once to be able to use a dos driver for my printer. My printcap df is actually a DOS program. So you can even make DOS executables act as lpr filters.

6.dosemu and Netware

6.1 How do I get Netware access from dosemu?

As always, access through the Linux filesystem is preferred. Mount your Netware drives with Caldera's Netware utilities or Volker Lendecke's free ncpfs utility (**ftp://ftp.gwdg.de:/pub/linux/misc/ncpfs**). If you need real IPX access, e.g. to run Novell's "syscon", read **../doc/NOVELL−HOWTO.txt**. You probably can not currently access Netware from FreeDOS.

7.dosemu and X−windows(97/2/9).

7.1 Can I run dosemu in console mode while running X?

Ronald Schalk (**R.Schalk@uci.kun.nl**) reported (94/1/17) that

Yes, no problem. Just remember to use ctrl−alt−<Fn> to go to a Virtual Console (VC), and you can run any Linux application (dosemu is a linux−application). I've got almost always WP5.1 in a dos session.

[Note: Use ctrl−alt−F7 to switch back to X from dosemu, if X runs on VC7.]

7.2 Is it possible to run dosemu in a window in X−windows?

If you have X installed and you have successfully compiled dosemu and run it successfully outside X−windows, you should be able to run "`xdos`" or "`dos -X`" right away to bring up a dosemu window. If this does not work, make sure:

```
 1. Dosemu has X support compiled in. This is default, however
    if you you have compiled dosemu with "x off" in the
    compiletime-settings file you don't have X support. So changing
    "x off" to "x on" in the compiletime-settings file, followed by
    "make pristine; make; make install" should build
    you a dosemu-executable with X support, if you have the
    X-libraries installed in /usr/X11R6.
 2. Set up your X key-mappings.  In an xterm, type

    xmodmap -e "keycode 22 = 0xff08"
    xmodmap -e "keycode 107 = 0xffff"
```

```
   These lines fix the backspace and delete keys respectively.
3. Configure the X-related configuration options in your
   /etc/dosemu.conf file.
```

Alternatively, you can run dosemu inside a color xterm, which is not recommended because many color xterms have buggy support for the complex text display capabilities of dosemu. This does not require `X_SUPPORT` to be compiled into dosemu. However, if you really want to do this, do the following steps:

```
1. Install ansi_xterm.  The recommended package is available as:
   tsx-11.mit.edu:/pub/linux/ALPHA/dosemu/Development/ansi-xterm-R6.tar.gz

2. Set up your X key-mappings.  In an xterm, type

   xmodmap -e "keycode 22 = 0xff08"
   xmodmap -e "keycode 107 = 0xffff"

   These lines fix the backspace and delete keys, respectively.

3. Configure the terminal-related (not X-related) settings in
   /etc/dosemu.conf
```

Marty Leisner (**leisner@sdsp.mc.xerox.com**) reported (95/3/31) that

I have xrdb log the following resources

```
dosxterm*Font: vga dosxterm*geometry: 80x25
dosxterm*saveLines: 25
```

or I alias "`dosxterm`" to "`term -fn vga -title dosxterm -geometry 80x25 -sl 25`"

If you use the xrdb method, all you have to do is run "`xterm -name dosxterm`"

7.3 Xdos dosen't work on a remote X−display!

At present, dosemu is set up to use the MIT shared memory extensions. This extension only works on a local display. If you want to run xdos on a remote display, compile dosemu with "mitshm off" in the compiletime−settings file after a **"make pristine"** or on the clean source tree(97/2/9).

7.4 Xdos dosen't find the VGA font

Check that the vga fonts you installed are listed in the font.dir of the directory you installed the fonts in:

```
hertz:~> grep misc /usr/X11R6/lib/X11/XF86Config
    FontPath    "/usr/X11R6/lib/X11/fonts/misc/"
hertz:~> grep vga /usr/X11R6/lib/X11/fonts/misc/fonts.dir
vga.pcf vga
vga11x19.pcf vga11x19
```

```
hertz:~> ls /usr/X11R6/lib/X11/fonts/misc/vga*
/usr/X11R6/lib/X11/fonts/misc/vga.pcf
/usr/X11R6/lib/X11/fonts/misc/vga11x19.bdf
/usr/X11R6/lib/X11/fonts/misc/vga11x19.pcf
```

If you installed some X−fonts, like you did when you installed dosemu with X−Support for the first time, "mkfontdir" and then "xset fp rehash" needs to be run. The dosemu install should take care for "mkfontdir" and tells you about "xset fp rehash". Tell us if it doesn't work for you. (97/2/13)

7.5 The vga font is very small on my high resolution display

Look for the vga11x19 font. (97/2/13)

7.6 Dosemu compilation fails with some strange error regarding X!

As stated above, dosemu uses the MIT shared memory extensions by default. Under XFree86 they are only available with Version 3.1.2 and above. If you have an older version, consider to upgrade, or configure dosemu to not use this extension (see last section)(97/2/9).

7.7 Does ansi emulation work properly?

Marty Leisner (**leisner@sdsp.mc.xerox.com**) reported (95/3/31) that

Yes. I use `nnansi.com` under X windows. I find 25, 43 and 50 line mode work properly, however 50 line mode is difficult to use on a 1024x768 screen (unless smaller fonts are used or you use a bigger screen. 43 line mode will resize the `xterm` window to use 43 lines.

8.dosemu and MS−Windows 3.1

8.1 Is it possible to run MS−Windows 3.1 under dosemu?

The **../doc/README.Windows** file says:

```
****************************************************************
*    WARNING!!! WARNING!!! WARNING!!! WARNING!!! WARNING!!!   *
*                                                              *
*  Danger Will Robinson!!!  This is not yet fully supported   *
```

```
*  and there are many known bugs!  Large programs will almost *
*  certainly NOT WORK!!!  BE PREPARED FOR SYSTEM CRASHES IF   *
*  YOU TRY THIS!!!                                            *
*                                                             *
*    WARNING!!! WARNING!!! WARNING!!! WARNING!!! WARNING!!!   *
***************************************************************
```

Okay, it is possible to boot WINOS2 (the modified version of Windows 3.1 that OS/2 uses) under DOSEMU. Many kudos to Lutz & Dong!

However, YOU NEED BOTH LICENSES, for WINDOWS−3.1 as well OS/2 !!!

There are many known problems. Windows is prone to crash, could take data with it, large programs will not load, etc. etc. etc. In other words, it is NOT ready for daily use. Many video cards are known to have problems (you may see a nice white screen, however, look below for win31−in−xdos). Your program groups are all likely to disappear. ... Basically, it's a pain.

for more details see the README.txt file.

8.2 Can I run 32bit stuff with winemu

Sorry, no you can't. Win32s needs stuff running in ring 0. That's a "nono" with linux. (97/04/27)

8.3 Errormessage: Cannot find the vdtapi.386 file when starting dosemu

As explained above, winemu can't handle 32 bit stuff. All drivers ending in 386 are 32bit. So to run winemu, you have to delete all references to .386 drivers in your win.ini. (97/04/27)

8.4 Windows 3.x in xdos:

As of version 0.64.3 DOSEMU is able to run Windows in xdos. Of course, this is not recommended at all, but if you really want to try, it is safer then starting windows−31 on the console, because _when_ it crashes, it doesn't block your keyboard or freeze your screen.

Hints:

```
1. Get Dosemu & Linux source.
2. Unpack dosemu.
3. Run "./configure" to configure Dosemu (it will enable vm86plus as a
   default).
4. Type "make" to compile.
5. Get a Trident SVGA drivers for Windows. The files are tvgaw31a.zip
   and/or tvgaw31b.zip. They are available at garbo.uwasa.fi in
   /windows/drivers (any mirrors?).
6. Unpack the Trident drivers.
7. In Windows setup, install the Trident "800x600 256 color for 512K
```

```
   boards" driver.
8. Do the things described above to get and install OS2WIN31.
10. Start xdos.
11. In Dosemu, go to windows directory and start winemu.
12. Cross your fingers.
```

8.5 Can I install windows from within dosemu?

No you can't. Dos will tell you something like

```
The XMS driver you have on your system is not compatible with
Windows...
```

You need to install windows from Dos. You can copy the windows tree to somewhere on your Linux Filesystem and use lredir to mount it on the same place as it is in dos. Example:

```
You have windows in d:\windows You have d:\ mounted as /dosc
in Linux You copy the windows tree to Linux, e.g. "cp −a
/dosd/windows /usr/share Inside dosemu you redirect the
copied tree like lredir d: linux\fs\dosd
```

Now dosemu can't mess around in you windows directory, but changes in the windows directory aren't seen by dosemu too. If you want to do the same with windows on drive c:> look in this FAQ how to redirect c:.

But you can use "setup" from inside the windows directory to install drivers and change some settings. (97/2/1497)

8.6 Notes for the mouse under win31−in−xdos:

1. Use the mouse driver "mouse.drv" from WinOS2

2. In order to let the mouse properly work you need the following in your win.ini file:

```
[windows]
MouseThreshold1=0
MouseThreshold2=0
MouseSpeed=0
```

3. The mouse cursor gets not painted by X, but by windows itself, so it depends on the refresh rate how often it gets updated, though the mouse coordinates movement itself will not get delayed. (In fact you have 2 cursors, but the X−cursor is given an 'invisible' cursor shape while within the DOS−Box.)

4. Because the coordinates passed to windows are interpreted relatively, we need to calibrate the cursor. This is done automatically whenever you enter the DOS−Box window: The cursor gets forced to 0,0 and then back to its right coordinates. Hence, if you want to re−calibrate the cursor, just move the cursor outside and then inside the DOS−Box again. (97/2/10)

8.7 Why did my Icon disappear from the Program manager?

MS−Windows and WinOS2 handle the program manager group differently. While MS−Win store the setup in progman.ini, WinOS2 wants the contents of progman.ini in system.ini. Here's a tip from **(friest@acm.org (Todd T. Fries))**:

```
cat progman.ini >> system.ini
```

Be sure to use >> :−)

9.Video and sound

9.1 Can I run 32−bit video games under dosemu?

Mark Rejhon (**mdrejhon@magi.com**) reported (95/4/8) that

With the recent DPMI improvements that has gone into 0.60, you can now run some 32−bit video games in dosemu. If the game is compatible in an OS/2 DOS box, there are chances that it will work in dosemu. (Example 32−bit games include Descent, Dark Forces, Mortal Kombat 2, Rise of The Triad, which have all successfully been tested in recent dosemu releases).

Before you attempt to run a video game, you must have the keyboard configured in raw keyboard mode and enabled VGA graphics modes, in the **/etc/dosemu.conf** file.

Note, however, you will have to turn off the sound in the game. (Someone will have to program in sound board emulation before we can avoid this). Note that game timers can be a little bit slow, due to Linux multitasking and lack of high−frequency timer support. So the games may run from anywhere from 5 to 100 percent speed. Typically, the speed is approximately 50 percent in recent dosemu releases and is expected to improve eventually.

Who knows, it might even work. If you can't get it to work, check EMUfailure.txt if the program is listed there, or falls in a category of programs that at present don't or probably never work with dosemu. If you think, it should be listed in EMUfailure.txt, report to **linux−msdos@vger.rutgers.edu**

There is a security hole when having enabled DPMI and having dosemu suid root (especially when using dos4gw−based games), the client is able to access the whole user space, hence also can modify the dosemu code itself. Use of the 'secure' option in /etc/dosemu.conf, e.g.

```
$_secure = "ngd" # secure for: n (normal users), g (guest), d
(dexe)
```

disables this. It is better to run dosemu as a normal user under X rather than root anyway.

9.2 Exiting from dosemu gives me a screen full of garbage.

(95/4/8)

The problem is that the font information for the VGA text screen is not being saved. Get a copy of the svgalib package. The current source is in

`sunsite.unc.edu:/pub/Linux/libs/graphics/svgalib-1.3.1.tar.gz`
It may also be available as a pre–compiled package in your favorite Linux distribution (e.g., Slackware, etc.). Use `savetextmode` to save the current text mode and font to a file in **/tmp** before running dosemu. Then run `textmode` upon exiting dosemu to restore it.

Addition from (**lermen@elserv.ffm.fgan.de**(97/2/11)):

Have a look also at src/arch/linux/debugger/README.recover and README.dosdebug, dosdebug can aid you recovering.

9.3 Why doesn't my soundcard software work with dosemu?

Dosemu includes a rudimentary soundblaster emulator called SBemu – the documentation for it is currently at http://www.slitesys.demon.co.uk/a.macdonald/dosemu/sound/ This is a work in progress, not completed yet so much or most DOS software that uses sound will not work correctly with it yet.

10.Games

10.1 Duke3d dosen't work

Hans Lermen **<lermen@elserv.ffm.fgan.de>** said (97/2/16): duke3d must be 'configured' via a setup, within this setup you have to choose 'keyboard + mouse', else it won't work.

11.Problems and fixes

11.1 Security issues

A full featured Dosemu needs to be suid root, e.g to access ports. Most dos programs don't need this however so when running under X you usually do not need to run dosemu as root. Dosemu runs as suid "root" only where it is needed, and releases this right thereafter. But with DPMI, the Dos client programm can access the whole user space, hence also can modify the dosemu code itself. Use of the 'secure' option in /etc/dosemu.conf disables this. There are several other important security considerations discussed in the Security section of the README.txt file.

11.2 dosemu says "ERROR: general protection" and terminates when I run some program

This will happen if your program uses DPMI and you do not have DPMI enabled. Try changing the line

```
$_dpmi = (off)
```

in /etc/dosemu.conf to

```
$_dpmi = (nnnn)
```

where nnnn is the number of kilobytes of memory you wish to give to the DOS program (e.g. Doom requires about 4000 kilobytes). If you do this, you should not run dosemu as root (see the Security Issues section) – it is better not to run dosemu as root whenever possible, in any case.

Another likely cause is that your program uses VCPI (see EMUfailure.txt for more details) or some other means of switching to protected mode (other than DPMI), in which case it will never work under dosemu.

If none of these is the case, see section 1.14 I have a program that fails, not listed in EMUfailure.txt.

11.3 Dosemu dies when booting. I have Win95 installed.

Dosemu relies that the Dos−Version on the hdimage and the Drive you map to contain command.com are the same. If not, dosemu will crash sooner or later. With the dual boot option Win95 offers when pressing the F4,F5 and F8 Keys with the "Starting Win95" text, versions on the Win95 drive may swap. Take special care for command.com. Let your shell variable in config.emu point to the correct static version of command.com, e.g.: shell=c:\win95\command.com c:\ /P /E:1024 (97/02/28)

11.4 Dosemu hangs! How can I kill it?

Switch to another console and type dosdebug, then type kill (it may take a while but will work eventually).

11.5 Dosemu crashed and now I can't type anything.

Daniel Barlow(jo95004@sable.ox.ac.uk) reported (95/4/8) that

If you have no terminal or network access that you can use to log in, you may have to press the reset button. If you can still get a usable shell somehow, run "`kbd_mode -a`" to switch the keyboard out of raw mode, and/or "`stty sane`" on the console so that you can see what you're typing.

A useful thing to do is to use a script to run dosemu, and run "`kbd_mode -a`" automatically right after dosemu. When dosemu crashes, the script usually will resume running, and execute the "`kbd_mode -a`" command.

11.6 I've enabled EMS memory in dosemu.conf but it does not help.

Rob Janssen (rob@pe1chl.ampr.org) reported (94/7/11)

Don't forget to load the provided ems.sys from the config.sys file.

11.7 How do I get rid of all those annoying "disk change" messages?

(94/8/11)

Grab and install `klogd`. Try

```
sunsite.unc.edu:/pub/Linux/system/Daemons/sysklogd1.2.tgz
```

11.8 Why won't dosemu run a second time after exiting in console mode?

Aldy Hernandez (**aldy@sauron.cc.andrews.edu**) reported (94/7/8) that

You should disable your video and/or BIOS caching.

11.9 Why will dosemu run in a term but not in the console?

JyiJiin Luo (**jjluo@casbah.acns.nwu.edu**) reported (94/4/19) that

I experienced exactly the same problem before. I figured out all the video shadow in my AMI BIOS must be disabled. Now dosemu runs fine on my system.

11.10 How can I speed up dosemu?

In some cases it is useful to play with the value of the `HogThreshold` variable in your `dosemu.conf` file.

Daniel Barlow(**jo95004@sable.ox.ac.uk**) reported (95/4/8) that

HogThreshold should now be set to approximately half of the BogoMips value that the system reports on boot.

11.11 My CDROM drive has problems reading some files under dosemu.

Vinod G Kulkarni (**vinod@cse.iitb.ernet.in**) reported (94/4/7) that

When a CDROM is mounted from linux and used from within dosemu (mapped drive), there could be some problems. The CD–ROM driver (iso9660) in the kernel tries to find out the type of the file (i.e. binary or text). If it can't find, it tries to guess the type of the file using a heuristic. This heuristic fails under some circumstances when a (almost) text file is to be treated as binary. (I do not know if it is a bug or feature.)

The result of this is that if you copy such a file from CD–ROM (from linux itself, and not necessarily dosemu), the resulting file will be usually bigger than original file. (Blanks get added before `^J,^M`.) So a program running in dosemu gives an error or hangs, which may be mistaken as problem of dosemu.

Rob Janssen (**pe1chl@rabo.nl**) reported (94/8/10) that

The way to solve this is to turn off conversion altogether. Pass the option "**−o conv=binary**" to the mount command mounting the CD–ROM, or use the following in **/etc/fstab**:

```
/dev/cdrom      /cdrom          iso9660 conv=binary,ro
```
No patches to the kernel are necessary.

11.12 How do I see debugging output?

Daniel Barlow(**jo95004@sable.ox.ac.uk**) reported (95/4/8) that

As of dosemu 0.60, debugging output is redirected to a file specified on the command line. Use "**dos −D+a −o /tmp/debug**" to log all debug output to **/tmp/debug**. There should no longer be any need to redirect `stderr`.

11.13 Why are my keystrokes echoed ttwwiiccee??

Nick Holloway (**alfie@dcs.warwick.ac.uk**) reported (94/2/22) that

After running dos after playing with some stty settings, I was getting doubled key presses. I can now reveal what the reason is!

It only happens when dos is run on the console with 'istrip' set. This is (I think) because the raw scancodes are mutilated by the 'istrip', so that key release events look like key press events.

So, the input processing needs to be turned off when using the scan codes on a console (it wouldn't be a good idea to do it for tty lines).

11.14 Dosemu scrambles my screen?

For those graphics cards not fully supported in dosemu, with allowed console graphics a dosemu crash may leave your console in a scrambles and nearly unusable way. To prepare for that situation, Spudgun <spudgun@earthlight.co.nz> posted the following solution. First save your registers when running on the console ~> cat /usr/bin/savetextmode ~> restoretextmode –w /etc/textregs ~> restorefont –w /etc/fontdata Then, when a crash happened, run following script: restoretextmode –r /etc/textregs restorefont –r /etc/fontdata restorepalette

If it doesn't fix it nothing will I also found having an X server running sometimes put my Vid card's registers into a strange state where this script made things worse I think since changing X servers and/or running savetextmode on a vt while X was running helped. (97/04/08)

11.15 MS FoxPro 2.6 won't run

FoxPro 2.6 doesn't run on network drives. Alexey Naidyonov <growler@growler.tsu.tula.ru> states on that problem: And I guess your FoxPro files are on lredir'ed disk, yeah? The matter is that FoxPro doesn't run on such disk, but when I said disk { partition ... } in /etc/dosemu/conf, it runs.

12.Contributing to the dosemu project

12.1 Who is responsible for dosemu?

Dosemu is built upon the work of Matthias Lautner and Robert Sanders. Hans Lermen (lermen@dosemu.org) is responsible for organizing the latest releases of dosemu.

```
                History of dosemu

 Version    Date                Person
-------------------------------------------------
 0.1        September 3, 1992   Matthias Lautner
 0.2        September 13, 1992  Matthias Lautner
 0.3        ???                 Matthias Lautner
 0.4        November 26, 1992   Matthias Lautner
 0.47       January 27, 1993    Robert Sanders
 0.47.7     February 5, 1993    Robert Sanders
 0.48       February 16, 1993   Robert Sanders
 0.48pl1    February 18, 1993   Robert Sanders
 0.49       May 20, 1993        Robert Sanders
 0.49pl2    November 18, 1993   James MacLean
 0.49pl3    November 30, 1993   James MacLean
 0.49pl3.3  December 3, 1993    James MacLean
 0.50       March 4, 1994       James MacLean
 0.50pl1    March 18, 1994      James MacLean
 0.52       June 16, 1994       James MacLean
 0.60       April 9, 1995       James MacLean
 0.64.4     February 9,1997     Hans Lermen
 0.66.3     April 20, 1997      Hans Lermen
 0.98.1     December 9, 1998    Hans Lermen
 0.98.6     March 21, 1999      Hans Lermen
```

12.2 I want to help. Who should I contact?

The dosemu project is a team effort. If you wish to contribute, see the DPR (dosemu Project Registry). A current copy may be found in **doc/DANG**.