The dosemu HOWTO

edited by Mike Deisher, `deisher@dspsun.eas.asu.edu` v0.60pl4, 11 August 1995

This is the 'Frequently Asked Questions' (FAQ) / HOWTO document for dosemu. The most up-to-date version of the dosemu-HOWTO may be found in `dspsun.eas.asu.edu:/pub/dosemu`.

Contents

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 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 MS-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's the newest version of dosemu and where can I get it?

The newest version of dosemu is `dosemu0.60` and can be ftp'ed from:

```
tsx-11.mit.edu:/pub/linux/ALPHA/dosemu/
dspsun.eas.asu.edu:/pub/dosemu/
```

However, pre-release versions are also available for developers and ALPHA testers. They may be found in

```
tsx-11.mit.edu:/pub/linux/ALPHA/dosemu/Development
dspsun.eas.asu.edu:/pub/dosemu/Development/
```

and have names of the form `pre0.61.*.tgz`. The pre-release code has the advantage that it is compatible with the most recent Linux kernels. Also, it includes new features. Remember that this is ALPHA code, however: there may be serious bugs and very little documentation for new features.

1.3 Where can I follow the development?

If you want to follow the development of dosemu, you should consider subscribing to the linux-msdos-digest 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-digest 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-digest your_username@your.email.address
```

1.4 What documentation is available for dosemu?

The dosemu manual (`dosemu.texinfo`) written by Robert Sanders has not been updated in some time but is still a good source of information. It is distributed with dosemu.

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 (`am20@unix.york.ac.uk`) and is posted once in a while to the MSDOS channel of Linux Activists.

The EMU success list (EMUsuccess.txt) is a list of all programs that have been reported to work with dosemu. It is posted once in a while to the mailing list. The most recent version can be found on dspsun.eas.asu.edu:/pub/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. The most recent version can be found on `dspsun.eas.asu.edu:/pub/dosemu`.

1.5 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 original-file new-file
```

and send it to `deisher@dspsun.eas.asu.edu`. 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. :-)

1.6 Message from Greg...

If you have questions, please contact Greg Hankins, the Linux HOWTO coordinator, at gregh@cc.gatech.edu.

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.

(4/8/95)

1. Forgetting to read the QuickStart Guide.

2. Try to compile with a kernel older than 1.1.45.

3. Having the wrong linux kernel source sitting in `/usr/src/linux`

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

5. Compile with gcc older than 2.5.8 or libc older than 4.5.21.

6. Forget to edit your `/etc/dosemu.conf` file.

7. Forget to run "`FDISK /mbr`" on your hdimage.

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 DOSEMU on a multi-user linux Internet Service Provider.

2.3 How can I build a single (non-library) executable?

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

If you want to build one executable with QMAGIC, define STATIC in the makefile. Otherwise there's a library/executable combination.

2.4 How do I make ELF binaries?

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

If you want to make ELF binaries, define ELF in the "`Makefile`". You need to make and install the slang library separately. Slang works well as a shared ELF library.

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

Marty Leisner (`leisner@sdsp.mc.xerox.com`) reported (4/8/95) 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 a times when it has no swap space.

2.6 How can I speed up compilation?

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

The default optimization is -O2. You may want edit the makefile to use -O (compiled somewhat faster/smaller).

2.7 How can I compile non-interactively?

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

If you define `do_DEBUG` in the makefile, you'll get `-Wall -g` and a non-tex, non-interactive make.

2.8 More compilation tips from Marty...

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

You need to have build the kernel on your system to get the current version. If not, you may want to hand modify KERNEL_VERSION in the top level Makefile. The number is of the form, "`nmmmppp`", where "`n`" is the version, "`mmm`" is the minor version, and "`ppp`" is the patchlevel. For example, kernel 1.1.88 corresponds to "1001088" and kernel 1.2.1 to "1002001".

Begin all makes at the top level for best results. At the top level, entering "`make subdirectory`" will make the subdirectory. Each directory (and the top), has targets "`clean`" and "`realclean`". "`clean`" will remove the objects, "`realclean`" will also remove dependencies and other files.

2.9 Do I need to compile dosemu as root?

(4/8/95)

No. You must install it as root, though.

Marty Leisner (`leisner@sdsp.mc.xerox.com`) adds

In order to access I/O ports (including the console) dosemu needs to run as root. Running dosemu on an xterm or in X windows and requiring now direct hardware access allows you to run dosemu as a user. The security/setuid implications will be worked on in development releases.

2.10 The makefile is in an infinite loop...

James B. MacLean (`jmaclean@fox.nstn.ns.ca`) reported (4/12/95) that

We have seen these at certain times, usually when a timestamp plays an issue. Some people fix it by upgrading their kernel, while others (myself included) just "`make realclean`" then "`make most`".

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 hard disk 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`. Now you can add a line like

```
lredir d: linux\fs/dos
```

to the AUTOEXEC.BAT file in your hdimage (see the comments on LREDIR below). On a multi-user system you may want to use

```
lredir d: linux\fs\${home}
```

where "home" is the name of an environmental variable that contains the location of the dos directory (/dos in this example).

——————

Tim Bird (Tim_R_Bird@Novell.COM) states that LREDIR users should

be careful when they use LREDIR in the autoexec, because COMMAND.COM will continue parsing the autoexec.bat from the redirected drive as the same file offset where it left off in the autoexec.bat on the physical drive. For this reason, it is safest to have the autoexec.bat on the redirected drive and the physical drive (diskimage) be the same.

——————

Robert D. Warren (`rw11258@xx.acs.appstate.edu`) reported (4/28/94) that

I boot off a small hdimage file (less than 1 MB - and twice as large as needs be at that), and the next to last line in my config.sys file on the hdimage boot image is:

```
install=c:\lredir.exe c: LINUX\FS\home/dos
```

This will execute lredir just before the command interpreter runs. And I have successfully run it with both command.com and 4DOS. This eliminates the offset problem using lredir in autoexec.bat.

Uwe Bonnes (`bon@elektron.ikp.physik.th-darmstadt.de`) adds (8/11/95) that

It is usefull to do:

```
install=C:\subst.exe g: c:
```

before that, so you have still access to your hdimage as drive g: Another useful tip in that circumstance is to configure dosemu to use "`autoexec.emu`" to keep dos and dosemu apart.

3.2 Can I use my stacked/double-spaced/super-stored disk?

At this time, compressed drives cannot be accessed via the redirector (lredir or emufs). However, many people have had success by simply uncommenting the

```
disk { wholedisk "/dev/hda" }        # 1st partition on 1st disk
```

line in their dosemu config file. Others have had success using

```
disk { partition "/dev/hda1" }
```

If your dos partition is already mounted with write access and you try to run dosemu with partition or whole disk 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.

——————

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

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

——————

Holger Schemel (`q99492@pbhrzx.uni-paderborn.de`) reported (2/10/94) 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 (3/27/94)

"...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."

4 Parallel ports, serial ports and mice

4.1 Where are the (microsoft compatible) mouse drivers?

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

4.2 Why doesn't the mouse driver work?

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

4.3 Why does dosemu clobber COM4?

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

4.4 How do I use dosemu over the serial ports?

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

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

4.6 How can I get the parallel ports to work?

Dennis Flaherty (`dennisf@flaherty.elk.miles.com`) reported (3/2/95) that

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 { 0x3b8 0x3b9 0x3ba 0x3bb 0x3bc 0x3bd 0x3be 0x3bf } # lpt0
```

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

```
ports { 0x378 0x379 0x37a 0x37b 0x37c 0x37d 0x37e 0x37f } # lpt1
ports { 0x278 0x279 0x27a 0x27b 0x27c 0x27d 0x27e 0x27f } # lpt2
```

for LPT1 (/dev/lp1) and LPT2 (/dev/lp2) respectively.

5 Multiple users and Non-interactive sessions

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

Corey Sweeney (`corey@amiganet.xnet.com`) reported (12/8/93) that

If you are running dosemu on a system in which more then one person may want to run dosemu, then you may want to change the directory of your hard drive image. Currently in the `/etc/dosemu.conf` file there exists the line saying that the hard drive image is "hdimage". If you change this to `/var/lib/dosemu/hdimage` then people do not have to worry about what directory they are in when they run dosemu, and hdimage does not have to be moved each time you upgrade to the next patch level.

If you do do this for multi-user dosemu, then you will want to make the hdimage in `/var/lib/dosemu` read-only for everyone but the dosemu administrator.

Note that you can use the new emufs.sys thing to mount a "public" directory and/or a "private" directory (a sub-directory in each person's home directory).

[Note: Users may also create a personal configuration file named `~/.dosrc` (same format as `/etc/dosemu.conf`) to run their own copy of dos.]

5.2 How can I run dos commands non-interactively?

I have been meaning to write an article on this for quite some time but have not gotten around to it. Here are some hints from others:

Dan Newcombe (`newcombe@aa.csc.peachnet.edu`) reported (1/27/94) that

Here is an idea (untested) to be able to run a DOS command from the command line (or menu choice, etc...) without modifying the actual emulator. [Your dos partition is assumed to be mounted under Linux, already.]

Suppose you wanted to run wp60.exe with the parameter "`wp60 d:\doc\paper.txt`". You would do something like "`dosrun wp60 d:\doc\paper.txt`". "`dosrun`" would be a linux shell program that would a) edit/modify/recreate the dos `autoexec.bat` from your dos partition and b) simply run dosemu (e.g., "`dos -C >/dev/null`". Step a) would somehow keep all the stuff you'd normally want in `autoexec.bat` (e.g., mouse.com) and the last line would be "`wp60 d:\doc\paper.txt`".

On the dosemu side, beforehand, you would have to modify the `config.sys` file (located in hdimage) so that it 1) uses emufs to access the dos partition as `D:`, 2) sets "`COMPSEC=D:\` (I think. I don't have a DOS manual around.), and 3) sets "`shell=c:\command.com /p`".

The idea is that for each time that you load the DOS emulator, you will recreate an autoexec.bat that is specific to that session. What makes it specific is that the last line will execute the program you want. The modifications on the hdimage are to tell the emulator/DOS that you want to use (and effectively) boot off of D:, which will be the actual DOS partition.

If you do not use hdimage and access the DOS filesystem directly upon boot-up of dosemu, then this will work, and you don't have to go through the hdimage part of this all.

———————

Daniel T. Schwager (`danny@dragon.s.bawue.de`) reported (7/2/94) 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 (7/4/94) 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?

James B. MacLean (jmaclean@fox.nstn.ns.ca) reported (11/28/94) that

Dosemu now supports pdipx (an IPX over pktdrvr) and pdether (uses Novell's MLID spec) to access Novell LAN's via the built in packet driver. The packet driver sits at interrupt 0x60, and abids by the normal packet driver rules. That said, beware of trying any DOS TCP/IP just yet. Single access can be made by:

```
1) cd ./net
2) cp libpacket.c.single libpacket.c
3) cp pktnew.c.single pktnew.c
4) recompile dosemu
5) run dosemu
6) load pdether as described by its docs (pdipx is another method)
7) load netx
8) enjoy netware access :-)
```

If you need special access to your NIC, read on. By default dosemu will not get interrupts from the kernel. That said, if you'd like to give your NIC to dosemu for it to control, maybe for access to Netware on the network through a NETX client, I do have a driver (Silly Interrupt Generator) to put in the kernel that any program, like dosemu can use to get at the interrupt for your NIC. I use it in dosemu to access a Novell Lite network in the past until the packet driver existed.

Any interested parties should E-mail me (`jmaclean@fox.nstn.ns.ca`) and I'll pass along some directions.

Want multiple dosemu's access to Novell?

```
1) compile current [pre-release] dosemu
2) follow directions in ./v-net/dosnet.README
3) carry on from 5) above.
```

6.2 Netware HOWTO

(4/8/95)

The Netware-HOWTO by Lauri Tischler (`ltischler@fipower.pp.fi`) is now a separate document. It is included with the dosemu distribution and may also be found at your favorite HOWTO sites (e.g., `http://sunsite.unc.edu/mdw/linux.html`).

7 dosemu and X-windows

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

Ronald Schalk (`R.Schalk@uci.kun.nl`) reported (1/17/94) 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.]

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

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

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 (X_SUPPORT=1 in the Makefile).

  2. Installed the VGA font.  You can do this by running the
     'xinstallvgafont' script in the dosemu-0.60 source directory:

         sh xinstallvgafont

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

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

These lines fixes the backspace and delete keys respectively.
```

```
4. Configured 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. Installed the VGA font.  You can do this by running the
    'xinstallvgafont' script in the dosemu-0.60 source directory:

       sh xinstallvgafont

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

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

   These lines fixes the backspace and delete keys, respectively.

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

Marty Leisner (`leisner@sdsp.mc.xerox.com`) reported (3/31/95) 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 Does ansi emulation work properly?

Marty Leisner (`leisner@sdsp.mc.xerox.com`) reported (3/31/95) 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 are 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 `README` 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!!!   *
***************************************************************
```

What, you're still reading? Okay, it is possible to boot WINOS2 (the modified version of Windows 3.1 that OS/2 uses) under dosemu. Many kudos to Lutz and Dong!

There are many known problems. Windows is prone to crash and could take data with it. Large programs will not load. The mouse may be painfully sluggish, 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.) Your program groups are all likely to disappear. Basically, it's a pain.

On the other hand, if you're dying to see the little Windows screen running under Linux and you have read this CAREFULLY and PROMISE NOT TO BOMBARD THE DOSEMU DEVELOPERS WITH "MS Word 6.0 doesn't run!!!" MESSAGES...

```
1.  Get dosemu & the Linux source distributions.
2.  Unpack dosemu.
3.  Patch the linux kernel with the file kernel.diff in the dosemu ./dpmi
    directory.
4.  Recompile the kernel.
5.  Compile dosemu.
6.  Reboot the kernel.
7.  Get the WINOS2.ZIP distribution from tsx-11.mit.edu
8.  Unpack the WINOS2 files into your WINDOWS\SYSTEM directory.
9.  Reboot linux, and startup dosemu (make certain that DPMI is "ON")
10. Copy the file winemu.bat to your c: drive.
11. Cross your fingers.
```

Good luck!

```
REMEMBER:  THIS IS NOT AT ALL RECOMMENDED!!!  THIS IS NOT RECOMMENDED!!!
           WE DO NOT RECOMMEND YOU TRY THIS!!!
```

9 Video and sound

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

Mark Rejhon (`mdrejhon@magi.com`) reported (4/8/95) 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. If you have successfully run graphics programs in dosemu, and are prepared to take the risk of a possible system crash (this is because you are letting dosemu run with root access to the video card, and leaves the possibility of putting the video card in a bad state that is difficult to recover from) then you can go ahead and try running the video game.

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. Please send Email to the EMUsuccess.txt maintainer if the game works successfully!

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

(4/8/95)

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/svgalib125.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.

9.3 How do I get dosemu to work with my Trident/Actix/other video card?

[The screen flickers violently, displays the video BIOS startup message, and hangs.]

Andrew Tridgell (`tridge@nimbus.anu.edu.au`) reported (1/29/94) that

I found with early versions it would work if I used:

```
ports { 0x42 }
```

but that sometimes my machine would crash when it was cycling the video BIOS in dosemu. This is because you're allowing the VGA BIOS to re-program your clock, which severely stuffs with Linux.

This prompted me to write the read-only and masking patches for dosemu, which I believe are still in the latest version. I now use:

```
ports { readonly 0x42 }
```

and it boots dosemu more slowly, but more reliably.

——————

Tim Shnaider (`tims@kcbbs.gen.nz`) also reported (1/18/94) that

One way of fixing this is to use the GETROM program to dump your video BIOS to a file and edit the config file in the `/etc/dosemu` directory There will be a few video lines. Here is my video line

```
video { vga console graphics chipset trident memsize 1024 vbios_file
/etc/dosemu/vbios }
```

where vbios is the file generated by typing

```
getrom > vbios
```

——————

Douglas Gleichman (`p86884@tcville.edsg.hac.com`) reported (9/1/94) that (with the ATI Graphics Ultra)

For dosemu 0.52 you need to add this line to your dosemu.conf file:

```
ports  { 0x1ce 0x1cf 0x238 0x23b 0x23c 0x23f 0x9ae8 0x9ae9 0x9aee 0x9aef }
```

The board self test will list a failure but graphics programs will run fine.

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

Hannu Savolainen (`hsavolai@cs.Helsinki.FI`) reported (3/21/94) that

The dosemu and any DOS program with it run under control of a protected mode operating system. This means that the memory is not mapped as the program expects. If it somehow manages to start DMA based recording with SB, the recorded sound doesn't find it's way to the application. It just destroys some data in the memory.

James B. MacLean (`jmaclean@fox.nstn.ns.ca`) reported (6/19/94) that

Sorry to disappoint, but at this time dosemu does not support directly the necessary interception of interrupts or DMA generally required for sound card access via dosemu :-(.

It's bound to happen at some future date though :-),

10 Other Hardware

10.1 How do I get my xxxxx device working under dosemu?

Corey Sweeney (`corey@bbs.xnet.com`) reported (5/30/94) that

Here is a log of my adventures trying to get devices working under dosemu. So far I've gotten my voice mail system working and my scanner half working. Here's how:

1. Look in your manual and find if your card uses any ports. If your manual gives you some, put them in your config file at the "ports" line. Remember that sometimes you need to have several ports in a row, and the first one might be the only one documented.

2. Try it out. If it doesn't work, or you don't have a manual (or your manual is as crappy as my AT&T manual:) then run dosemu with "`dos -D+i 2> /tmp/io.debug`". Run your device software, then exit dosemu. Look through `/tmp/io.debug` and find any port numbers it might give you. Try adding those to the port lines and try running dosemu again.

3. If you still fail then you may need interrupts. Find out what interrupt the card uses and get the SIG.tgz (silly interrupt generator) from somewhere on tsx-11.mit.edu. Install it as specified in the instructions.

and that's about it...

Question: What if my card uses DMA? Answer: Your screwed.

11 Problems and fixes

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

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

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

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

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

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

(8/11/94)

Grab and install `klogd`. Try

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

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

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

You should disable your video and/or BIOS caching.

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

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

11.6 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 (4/8/95) that

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

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

Vinod G Kulkarni (`vinod@cse.iitb.ernet.in`) reported (4/7/94) 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 (8/10/94) 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.

11.8 How do I see debugging output?

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

11.9 Why are my keystrokes echoed ttwwiiccee??

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

12 Contributing to the dosemu project

12.1 Who is responsible for dosemu?

(3/18/94)

Dosemu is built upon the work of Matthias Lautner and Robert Sanders. James B. MacLean (`jmaclean@fox.nstn.ns.ca`) 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

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 `dspsun.eas.asu.edu:/pub/dosemu`.