

Section 6. Solutions to common miscellaneous problems

- Q6.1 Setuid scripts don't seem to work.
- Q6.2 Free memory as reported by free keeps shrinking.
- Q6.3 When I add more memory it slows to a crawl.
- Q6.4 Some programs (e.g. xdm) won't let me log in.
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- Q6.10 Emacs just dumps core.
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- Q6.12 lpr and/or lpd aren't working.

Question 6.1. Setuid scripts don't seem to work.

That's right. This feature has been deliberately disabled in the Linux kernel because setuid scripts are almost always a security hole. If you want to know why read the FAQ for comp.unix.questions.

Question 6.2. Free memory as reported by free keeps shrinking.

The 'free' figure printed by free doesn't include memory used as a disk buffer cache - shown in the 'buffers' column. If you want to know how much memory is really free add the 'buffers' amount to 'free'.

The disk buffer cache tends to grow soon after starting Linux up, as you load more programs and use more files and the contents get cached. It will stabilise after a while.

Question 6.3. When I add more memory it slows to a crawl.

This is quite a common symptom of a failure to cache the additional memory. The exact problem depends on your motherboard.

Sometimes you have to enable caching of certain regions in your BIOS setup. Look in the CMOS setup and see if there is an option to cache the new memory area which is currently switched off. This is apparently most common on a 486.

Sometimes the RAMs have to be in certain sockets to be cached.

Sometimes you have to set jumpers to enable the caching.

Some motherboards don't cache all the RAM if you have more RAM per amount of cache than they expect. Usually a full 256K cache will solve this problem.

If in doubt, check your motherboard manual. If you still can't fix it because the documentation is inadequate you might like to post a message giving *all* the details - make, model number, date code, etc. so that other Linux users can avoid it.

Question 6.4. Some programs (e.g. xdm) won't let me log in.

You are probably using non-shadow-password programs but are using shadow passwords.

If so, you have to get or compile a shadow password version of the program(s) in question. The shadow password suite can be found in (amongst other places):

tsx-11.mit.edu:/pub/linux/sources/usr.bin/shadow-*

This is the source code; you will probably find the binaries in .../linux/binaries/usr.bin.

Question 6.5. Some programs let me log in with no password.

You probably have the same problem as in Q6.4 'Some programs (e.g. xdm) won't let me log in.', with an added wrinkle:

If you are using shadow passwords you should put an asterisk in the password field of /etc/passwd for each account, so that if a program doesn't know about the shadow passwords it won't think it's a passwordless account and let anyone in.

Question 6.6. My machine runs very slowly when I run GCC / X / ...

You may not have any swap enabled. You need to enable swapping to allow Linux to page out bits of data programs aren't using at the moment to disk to make more room for other programs and data. If you don't Linux has to keep data in memory and throw away in-memory copies of programs (which are paged straight from the filesystem) and so less and less program is in memory and everything runs very slowly.

See the Installation HOWTO and the Installation and Getting Started Guide [Q2.1 'Where can I get the HOWTOs and other documentation?'] for details of how to set up a swap partition or swapfile; see also Q4.5 'My swap area isn't working.'.

Alternatively you may have too little real memory. If you have less RAM than all the programs you're running at once use Linux will use your hard disk instead and thrash horribly. The solution in this case is to not run so many things at once or to buy more memory. You can also reclaim some memory by compiling and using a kernel with less options configured. See Q7.6 'How do I upgrade/recompile my kernel?'.

You can tell how much memory and/or swap you're using by using the free command, or by typing

```
cat /proc/meminfo
```

If your kernel is configured with a ramdisk this is probably wasted space and will cause things to go slowly. Use LILO or rdev to tell the kernel not to allocate a ramdisk (see the LILO documentation or type man rdev).

Question 6.7. I can only log in as root.

You probably have some permission problems, or you have a file /etc/nologin.

If the latter put rm -f /etc/nologin in your /etc/rc or /etc/rc.local.

Otherwise check the permissions on your shell, and any filenames which appear in error messages, and also the directories containing these files all the way back up the tree to the root directory.

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Question 6.8. My screen is all full of weird characters instead of letters.

You probably sent some binary data to your screen by mistake. Type `echo ^V^c` (that's `e c h o` space control-V escape `c` return) to fix it. Many Linux distributions have a command `reset` that does this.

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Question 6.9. I have screwed up my system and can't log in to fix it.

Reboot from an emergency floppy or floppy pair, for example the Slackware boot- and root-disk pair (in the `install` subdirectory of the Slackware mirrors) or the MCC installation boot floppy. There are also two diy rescue disk creation packages on sunsite.unc.edu in `/pub/Linux/system/Recovery`. These are better as they'll have your own kernel on them, so that you don't run the risk of missing devices, filesystems, etc.

Get to a shell prompt and mount your hard disk with something like
`mount -t ext2 /dev/hda1 /mnt`

Then your filesystem is available under the directory `/mnt` and you can fix the problem. Remember to unmount your hard disk before rebooting (`cd` back down to `/` first or it will say it's busy).

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Question 6.10. Emacs just dumps core.

You probably have the X version of Emacs that comes with SLS. It doesn't work without the X libraries. The solution is to install X Windows or get a newer Emacs binary without any X Windows support.

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Question 6.11. I've discovered a huge security hole in `rm` !

No you haven't. You are obviously new to Unix and need to read a good book on it to find out how things work. Clue: ability to delete files under Unix depends on permission to write the directory they are in.

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Question 6.12. `lpr` and/or `lpd` aren't working.

Check the Printing HOWTO [Q2.1 `Where can I get the HOWTOs and other documentation ?'].

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Section 7. How do I do this or find out that ... ?

- Q7.1 How can I get scrollback in text mode ?
- Q7.2 How do I switch virtual consoles ? How do I enable them ?
- Q7.3 How do I set the timezone ?
- Q7.4 What version of Linux and what machine name am I using ?

- Q7.5 How can I enable or disable core dumps ?
- Q7.6 How do I upgrade/recompile my kernel ?
- Q7.7 Can I have more than 3 serial ports by sharing interrupts ?
- Q7.8 How do I make a bootable floppy ?
- Q7.9 How do I remap my keyboard to UK, French, etc. ?
- Q7.10 How do I get NUM LOCK to default to on ?

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Question 7.1. How can I get scrollbar in text mode ?

With the default US keymap you can use Shift with the PageUp and PageDown keys (NB these must be the grey ones, not the ones on the numeric keypad !). With other keymaps check the maps in /usr/lib/keytables; you can remap the scroll up and down keys to be whatever you like --- for example, in order to remap them to keys that exist on an 84-key AT keyboard.

You can't increase the amount of scrollbar, because of the way it is implemented using the video memory to store the scrollbar text, though you may be able to get more scrollbar in each virtual console by reducing the total number of VC's --- see <linux/tty.h>.

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Question 7.2. How do I switch virtual consoles ? How do I enable them ?

In text mode, press (Left) Alt-F1 to Alt-F12 to select the consoles tty1 to tty12. To switch out of X windows you must press Ctrl-Alt-F1 etc; Alt-F5 or whatever will switch back.

Your kernel probably doesn't have all 12 compiled in; the default is 8. This is controlled by NR_CONSOLES in linux/include/linux/tty.h.

If you want to use a VC for ordinary login you need to list it in /etc/inittab, which controls which terminals and virtual consoles have login prompts. NB: X needs at least one free VC in order to start.

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Question 7.3. How do I set the timezone ?

Change directory to /usr/lib/zoneinfo; get the timezone package if you don't have this directory. The source can be found on sunsite.unc.edu in /pub/Linux/system/Admin/timesrc-1.2.tar.gz.

Then make a symbolic link named localtime pointing to one of the files in this directory (or a subdirectory), and one called posixrules pointing to localtime. For example:

```
ln -sf US/Mountain localtime
ln -sf localtime posixrules
```

This change will take effect immediately - try date.

Don't try to use the TZ variable - leave it unset.

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Question 7.4. What version of Linux and what machine name am I using ?

Type:

```
uname -a
```

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Question 7.5. How can I enable or disable core dumps ?

Since 0.99pl14 Linux has had corefiles turned off by default for all processes.

You can turn them on or off by using the `ulimit` command in `bash`, or the `limit` command in `tcsh`. See the `manpage` for the shell for more details.

That command affects all programs run from that shell (directly or indirectly), not the whole system.

If you wish to enable or disable coredumping for all processes by default you can change the default setting in `<linux/sched.h>` - see the definition of `INIT_TASK`.

Question 7.6. How do I upgrade/recompile my kernel ?

See the README which comes with the kernel release on `ftp.funet.fi`, in `/pub/OS/Linux/PEOPLE/Linus` and mirrors thereof. Try to get it from a closer site if possible; `ftp.funet.fi` is a very busy site and therefore slow -- see Q2.5 'Where can I get Linux material by FTP?'. You may already have a version of the kernel source code installed on your system, but if you got it as part of a standard distribution it is likely to be somewhat out of date (this is not a problem if you only want a custom-configured kernel, but it probably is if you need to upgrade.)

Remember that to make the new kernel boot you must run `LILO` after copying the kernel into your root partition -- the Makefile in recent kernels has a special `zliilo` target for this; try `make zliilo`.

Russel Nelson posts summaries of what changes in recent kernel patches to `comp.os.linux.development`, and these are archived on `ftp.emlist.com` in `/pub/kchanges`.

Question 7.7. Can I have more than 3 serial ports by sharing interrupts ?

Not without some trickery. This is a limitation of the ISA bus architecture.

See the Serial HOWTO for information about how to work around this problem.

Question 7.8. How do I make a bootable floppy ?

Make a filesystem on it with `bin`, `etc` and `lib` directories -- everything you need. Install a kernel on it and arrange to have `LILO` boot it from the floppy (see the `LILO` documentation, in `lilo.u.*.ps`).

If you build the kernel (or tell `LILO` to tell the kernel) to have a `ramdisk` the same size as the floppy the `ramdisk` will be loaded at boot-time and mounted as `root` in place of the floppy.

Question 7.9. How do I remap my keyboard to UK, French, etc. ?

For recent kernels, get `kbd*.tar.gz` from the same place as you got the

kernel source. Make sure you get the appropriate version; you have to use the right keyboard-mapping package to go with your kernel version. The latest at the time of writing is kbd-0.85.tar.gz, which works with kernel versions from 1.0.

For older kernels you have to edit the top-level kernel Makefile, in /usr/src/linux.

You may find more helpful information in the Keystroke FAQ, on ftp.funet.fi in /pub/OS/Linux/doc/kbd.FAQ.

Question 7.10. How do I get NUM LOCK to default to on ?

Use the setleds program, for example (in /etc/rc.local):
for t in 1 2 3 4 5 6 7 8
do
 setleds +num < /dev/tty\$t > /dev/null
done

setleds is part of the kbd-0.8x package (see Q7.9 'How do I remap my keyboard to UK, French, etc. ?').

Alternatively, patch your kernel. You need to arrange for KBD_DEFLEDS to be defined to (1 << VC_NUMLOCK) when compiling drivers/char/keyboard.c.

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Section 8. Miscellaneous information and questions answered

- Q8.1 What is a .gz file ? And a .tgz ? And ... ?
- Q8.2 What does VFS stand for ?
- Q8.3 What is a BogoMip ?
- Q8.4 What is the Linux Journal and where can I get it ?
- Q8.5 How many people use Linux ?
- Q8.6 How should I pronounce Linux ?

Question 8.1. What is a .gz file ? And a .tgz ? And ... ?

.gz (and .z) files have been compressed using GNU gzip. You need to use gunzip (which is as a symlink to the gzip command which comes with most Linux installations) to unpack the file.

.taz and .tz are tarfiles (made with Unix tar) compressed using standard Unix compress.

.tgz (or .tpz) is a tarfile compressed with gzip.

.lsm is a Linux Software Map entry, in the form of a short text file. Details about the LSM and the LSM itself are available in the docs subdirectory on sunsite.unc.edu.

The file command can often tell you what a file is.

If you find that gzip complains when you try to uncompress a gzipped file you probably downloaded it in ASCII mode by mistake. You must download most things in binary mode - remember to type binary as a command in FTP before using get to get the file.

Question 8.2. What does VFS stand for ?

Virtual File System. It's the abstraction layer between the user and real filesystems like ext2, minix and msdos. Amongst other things, its job is to flush the read buffer when it detects a disk change on the floppy disk drive:

VFS: Disk change detected on device 2/0

Question 8.3. What is a BogoMip ?

'BogoMips' is a contraction of 'Bogus MIPS'. MIPS stands for (depending who you listen to) Millions of Instructions per Second, or Meaningless Indication of Processor Speed.

The number printed at boot-time is the result of a kernel timing calibration, used for very short delay loops by some device drivers.

As a very rough guide the BogoMips will be approximately:

386SX	clock * 0.14
386DX	clock * 0.18
486Cyrix/IBM	clock * 0.33
486SX/DX/DX2	clock * 0.50
586	clock * 0.39

If the number you're seeing is wildly lower than this you may have the Turbo button or CPU speed set incorrectly, or have some kind of caching problem [as described in Q6.3 'When I add more memory it slows to a crawl.'.]

For values people have seen with other, rarer, chips, see the BogoMips Mini-HOWTO, on sunsite.unc.edu in /pub/Linux/docs/howto/mini/BogoMips.

Question 8.4. What is the Linux Journal and where can I get it ?

Linux Journal is a monthly magazine (printed on paper) that is available on newsstands and via subscription worldwide. Email <linux@ssc.com> for details.

Question 8.5. How many people use Linux ?

Linux is freely available, and no one is required to register their copies with any central authority, so it is difficult to know. Several businesses are now surviving solely on selling and supporting Linux, and very few Linux users use those businesses, relatively speaking. The Linux newsgroups are some of the most heavily read on the Net, so the number is likely in the hundreds of thousands, but firm numbers are hard to come by.

However, one brave soul, Harald T. Alvestrand <Harald.T.Alvestrand@uninett.no>, has decided to try, and asks that if you use Linux, you send a message to <linux-counter@uninett.no> with one of the following subjects: 'I use Linux at home', 'I use Linux at work', or 'I use Linux at home and at work'. He will also accept 'third-party' registrations - ask him for details.

He posts his counts to comp.os.linux.misc each month; alternatively look on aun.uninett.no in /pub/misc/linux-counter.

Question 8.6. How should I pronounce Linux ?

This is a matter of religious debate, of course !

If you want to hear the Linus himself say how he pronounces it download english.au or swedish.au from ftp.funet.fi (in /pub/OS/Linux/PEOPLE/Linus/SillySounds). If you have a soundcard or the PC-speaker audio driver you can hear them by typing
cat english.au >/dev/audio

The difference isn't in the pronunciation of Linux but in the language Linus uses to say hello. The English version was parodied very well by Jin Choi as "Hi, my name is Leenoos Torvahlds and I pronounce Leenooks as Leenooks."

For the benefit of those of you who don't have the equipment or inclination: Linus pronounces Linux approximately as Leenus, where the ee is as in feet but rather shorter and the u is like a much shorter version of the French eu sound in peur (pronouncing it as the u in put is probably passable).

When speaking English I pronounce it Lie-nucks (u as in bucket) --- this is an anglicised pronunciation based on the analogy with Linus' name, which in English is usually pronounced Lie-nus (u as in put). It is of course quite acceptable and common to modify the pronunciation of a proper noun when it changes languages.

I think I can safely say that the pronunciation Linnucks (short i as in pit, short u as in bucket) is wrong in English, as it is not the original Swedish pronunciation, not a sensible direct anglicisation of it, and not based on the anglicised version of Linus' name.

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Section 9. Frequently encountered error messages

- Q9.1 During linking I get Undefined symbol _mcount
- Q9.2 lp1 on fire
- Q9.3 INET: Warning: old style ioctl(IP_SET_DEV) called!
- Q9.4 ld: unrecognized option '-m486'
- Q9.5 GCC says Internal compiler error
- Q9.6 make says Error 139
- Q9.7 shell-init: permission denied when I log in.
- Q9.8 No utmp entry. You must exec ... when I log in.
- Q9.9 Warning - bdfush not running
- Q9.10 Warning: obsolete routing request made.
- Q9.11 EXT2-fs: warning: mounting unchecked filesystem
- Q9.12 EXT2-fs warning: maximal count reached
- Q9.13 EXT2-fs warning: checktime reached
- Q9.14 df says Cannot read table of mounted filesystems
- Q9.15 fdisk says Partition X has different physical/logical ...
- Q9.16 fdisk: Partition 1 does not start on cylinder boundary
- Q9.17 fdisk says cannot use nnn sectors of this partition
- Q9.18 fdisk says partition n has an odd number of sectors
- Q9.19 mtools says cannot initialise drive XYZ

Question 9.1. During linking I get Undefined symbol _mcount

This is usually due to a bad interaction between a brokenness in SLS and

the C library release notes. Your libc.a has been replaced by the profiling library. You should remove libc.a, libg.a and libc_p.a and once again install the new libraries (following the release notes, of course).

Question 9.2. lp1 on fire

This is a joke/traditional error message indicating that some sort of error is being reported by your printer, but it isn't offline or out of paper. It may be that you have some kind of I/O or IRQ conflict - check your cards' settings. Hopefully it isn't really on fire ...

Question 9.3. INET: Warning: old style ioctl(IP_SET_DEV) called!

You are trying to use the old network configuration utilities; the new ones can be found on tsx-11.mit.edu in /pub/linux/packages/net/net-2/binaries.

Note that they cannot be used just like the old-style programs; see the NET-2 HOWTO for instructions on how to set up networking correctly.

Question 9.4. ld: unrecognized option '-m486'

You have an old version of ld. Install a newer binutils package -- this will contain an updated ld. Look on tsx-11.mit.edu in /pub/linux/packages/GCC for binutils.tar.z.

Question 9.5. GCC says Internal compiler error

If the fault is repeatable (ie, it always happens at the same place in the same file --- even after rebooting and trying again, using a stable kernel) you have discovered a bug in GCC. See the GCC Info documentation (type Control-h i in Emacs, and select GCC from the menu) for details on how to report this -- make sure you have the latest version though.

Note that this is probably not a Linux-specific problem; unless you were compiling a program many other Linux users also compile you should not post your bug report to any of the comp.os.linux groups.

If the problem is not repeatable you are very probably experiencing memory corruption --- see Q9.6 'make says Error 139'.

Question 9.6. make says Error 139

Your compiler driver (gcc) dumped core. You probably have a corrupted, buggy or old version of GCC --- get the latest release. Alternatively you may be running out of swap space --- see Q6.6 'My machine runs very slowly when I run GCC / X / ...' for more info.

If this doesn't fix the problem you are probably having problems with memory or disk corruption. Check that the clock rate, wait states and refresh timing for your SIMMs are correct. If so you may have some dodgy SIMMs or a faulty motherboard or hard disk or controller.

Linux, like any Unix, is a very good memory tester --- much better than DOS-based memory test programs.

Reportedly some clone x87 maths coprocessors can cause problems; try compiling a kernel with maths emulation [Q7.6 'How do I upgrade/recompile my kernel?']; you may need to use the no387 kernel command line flag on the LILO prompt to force the kernel to use it, or it may be able to work and still use the 387, with the maths emulation compiled in but mainly unused.

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Question 9.7. shell-init: permission denied when I log in.

Your root directory and all the directories up to your home directory must be readable and executable by everybody. See the manpage for chmod or a book on Unix for how to fix the problem.

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Question 9.8. No utmp entry. You must exec ... when I log in.

Your /etc/utmp is screwed up. You should have
 > /etc/utmp
in your /etc/rc or /etc/rc.local. See Q6.9 'I have screwed up my system and can't log in to fix it.' for how to be able to do this.

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Question 9.9. Warning - bdflush not running

The development kernel series now uses a better strategy for writing cached disk blocks. In addition to the kernel changes, this involves replacing the old update program which used to write everything every 30 seconds with a more subtle daemon (actually a pair), known as bdflush.

Get bdflush-n.n.tar.gz from the same place as the kernel source code [Q7.6 'How do I upgrade/recompile my kernel?'] and compile and install it; it should be started before the usual boot-time filesystem checks. It will work fine with older kernels as well, so there's no need to keep the old update around.

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Question 9.10. Warning: obsolete routing request made.

This is nothing to worry about; it just means that the version of route you have is a little out of date compared to the kernel. You can make the message go away by getting a new version of route from the same place as the kernel source code [Q7.6 'How do I upgrade/recompile my kernel?'].

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Question 9.11. EXT2-fs: warning: mounting unchecked filesystem

You need to run e2fsck (or fsck -t ext2 if you have the fsutils package) with the -a option to get it to clear the 'dirty' flag, and then cleanly unmount the partition during each shutdown.

The easiest way to do this is to get the latest fsck, umount and shutdown commands, available in Rik Faith's util-linux package [Q2.5 'Where can I get Linux material by FTP?']. You have to make sure that your /etc/rc scripts use them correctly.

NB don't try to check a filesystem that's mounted read-write - this includes the root partition if you don't see

VFS: mounted root ... read-only
at boot time. You must arrange for to initially mount the root filesystem readonly, check it if necessary, and then remount it read-write. Read the documentation that comes with util-linux to find out how to do this.

Note that you need to specify the -n option to mount to get it not to try to update /etc/mtab, since the root filesystem is still read-only and this will otherwise cause it to fail !

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Question 9.12. EXT2-fs warning: maximal count reached

This message is issued by the kernel when it mounts a filesystem that's marked as clean, but whose 'number of mounts since check' counter has reached the predefined value. The solution is to get the latest version of the ext2fs utilities (e2fsprogs-0.5a.tar.gz at the time of writing) from the usual sites [Q2.5 'Where can I get Linux material by FTP ?'].

The maximal number of mounts value can be examined and changed using the tune2fs program from this package.

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Question 9.13. EXT2-fs warning: checktime reached

Kernels from 1.0 onwards support checking a filesystem based on the elapsed time since the last check as well as by the number of mounts. Get the latest version of the ext2fs utilities [see Q9.12 'EXT2-fs warning: maximal count reached'].

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Question 9.14. df says Cannot read table of mounted filesystems

There is probably something wrong with your /etc/mtab or /etc/fstab files. If you have a reasonably new version of mount, /etc/mtab should be emptied or deleted at boot time (in /etc/rc or /etc/rc.local), using something like

```
rm -f /etc/mtab*
```

Some versions of SLS have an entry for the root partition in /etc/mtab made in /etc/rc by using rdev. This is incorrect -- the newer versions of mount do this automatically.

Other versions of SLS have a line in /etc/fstab that looks like:

```
/dev/sdb1 /root ext2 defaults
```

This is wrong. /root should read simply /.

- - - - -
Question 9.15. fdisk says Partition X has different physical/logical ...

If the partition number (X, above) is 1 this is the same problem as Q9.16 'fdisk: Partition 1 does not start on cylinder boundary'.

If the partition begins or ends on a cylinder numbered beyond 1024, this is because standard DOS disk geometry information format in the partition table can't cope with cylinder numbers with more than 10 bits.

This will cause DOS to be unable to access the partition correctly, and will make booting a Linux kernel from that partition using LILO problematic at best.

You can still use the partition for Linux or other operating systems that use linear addressing (ie, number the disk blocks sequentially without looking at heads, tracks and sectors).

I'd recommend creating at least one Linux partition entirely under the 1024-cylinder limit and booting off that; the other partitions will then be OK.

Question 9.16. fdisk: Partition 1 does not start on cylinder boundary

The version of fdisk that comes with many Linux systems creates partitions that fail its own validity checking. Unfortunately if you've already installed your system there's not much you can do about this, apart from copying the data off the partition, deleting and remaking it, and copying the data back.

You can avoid the problem by getting the latest version of fdisk, from Rik Faith's util-linux package (available on all good FTP sites). Alternatively, if you are creating a new partition 1 that starts in the first cylinder, you can do the following to get a partition that fdisk likes.

1. Create partition 1 in the normal way. A p listing will produce the mismatch complaint.
2. Type u to set sector mode and do p again. Copy down the number from the "End" column.
3. Delete partition 1.
4. While still in sector mode recreate partition 1. Set the first sector to match the number of sectors per track. This is the sector number in the first line of the p output. Set the last sector to the value noted in 2. above.
5. Type u to reset cylinder mode and continue with other partitions.

Ignore the message about unallocated sectors - they refer to the sectors on the first track apart from the Master Boot Record, which are not used if you start the first partition in track 2.

Question 9.17. fdisk says cannot use nnn sectors of this partition

Originally Linux only supported the Minix filesystem, which cannot use more than 64Mb per partition. This limitation is not present in the more advanced filesystems now available, such as ext2fs (the 2nd version of the Extended Filesystem) and xiafs (Qi Xia's filesystem).

If you intend to use ext2fs or xiafs you can ignore the message.

Question 9.18. fdisk says partition n has an odd number of sectors

The PC disk partitioning scheme works in 512-byte sectors, but Linux uses

1K blocks. If you have a partition with an odd number of sectors the last sector is wasted. Ignore the message.

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Question 9.19. mtools says cannot initialise drive XYZ

This means that mtools is having trouble accessing the drive. This can be due to several things.

Often this is due to the permissions on floppy drive devices (/dev/fd0* and /dev/fd1*) being incorrect --- the user running mtools must have the appropriate access. See the manpage for chmod for details.

Most versions of mtools distributed with Linux systems (not the standard GNU version) use the contents of a file /etc/mtools to discover which devices and densities to use, in place of having this information compiled into the binary. Mistakes in this file often cause problems. There is often no documentation about this --- distribution packagers please note that this is *evil*.

For the easiest way to access your DOS files (especially those on a hard disk partition) see Q3.2 'How do I access files on my DOS partition or floppy?'. Note - you should never use mtools to access files on an msdosfs mounted partition or disk !

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Section 10. The X Window System

- Q10.1 Does Linux support X Windows ?
- Q10.2 Where can I get an XF86Config for my system ?
- Q10.3 xterm logins show up strangely in who, finger
- Q10.4 I can't get X Windows to work right.

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Question 10.1. Does Linux support X Windows ?

Yes. Linux uses XFree86 (the current version is 3.1, which is based on X11R6). You need to have a video card which is supported by XFree86. See the Linux XFree86 HOWTO for more details.

Some of the Linux releases -- MCC, for example -- don't come with X Windows already included; however you can easily download and install it from /pub/Linux/X11/Xfree86-* on sunsite.unc.edu and its mirror sites. Read the XFree86 HOWTO for installation instructions.

Other releases -- Slackware, Debian, TAMU and SLS, for example -- come with X Windows already included

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Question 10.2. Where can I get an XF86Config for my system ?

See the Linux XFree86 HOWTO.

You'll need to put together your own XF86Config file, because it depends on the exact combination of video card and monitor you have. It's not that hard to do -- read the instructions that came with XFree86, in /usr/X11R6/lib/X11/etc. The file you probably most need to look at is README.Config.

Please don't post to comp.os.linux.help asking for an Xconfig.

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Question 10.3. xterm logins show up strangely in who, finger

The xterm that comes with XFree86 2.1 and earlier doesn't correctly understand the format that Linux uses for the /etc/utmp file, where the system records who is logged in. It therefore doesn't set all the information correctly.

XFree86 3.1 fixes this problem.

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Question 10.4. I can't get X Windows to work right.

Read the XFree86 HOWTO - note the question and answer section.

Try reading comp.windows.x.i386unix -- specifically read the the FAQ for that group.

Please don't post X Windows or XFree86 related questions to comp.os.linux.help unless they are Linux-specific.

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Section 11. Questions applicable to very out-of-date software

- Q11.1 How can I have more than 16Mb of swap ?
- Q11.2 GCC sometimes uses huge amounts of virtual memory and thrashes
- Q11.3 My keyboard goes all funny after I switch VC's.

The questions in this section are only relevant to users of software that is at least 3 months old.

Please let me know if you find the answer to a problem you had here, as unused questions in this section will eventually disappear [Q13.1 'Feedback is invited'].

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Question 11.1. How can I have more than 16Mb of swap ?

Use a recent kernel -- from at least 0.99.14 Linux can use swap partitions of up to 128Mb.

If you use an older kernel which only supports swap area sizes up to 16Mb you have to set up more than one swap partition or swapfile.

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Question 11.2. GCC sometimes uses huge amounts of virtual memory and thrashes

Older versions of GCC had a bug which made them use lots of memory if you tried to compile a program which had a large static data table in it.

You can either upgrade your version of GCC to at least version 2.5, or add more swap if necessary and just grin and bear it; it'll work in the end.

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Question 11.3. My keyboard goes all funny after I switch VC's.

This is a bug in kernel versions before 0.99pl14-alpha-n. Sometimes Linux loses track of what modifier keys (Shift, Alt, Control etc.) are pressed or not, and believes that one or more are pressed when they are not. The solution is to press and release each of the modifier keys (without pressing any other keys) --- this will ensure that Linux knows what state the keyboard is actually in.

This problem often occurs when switching out of X windows; it can sometimes be avoided by releasing Ctrl and Alt very quickly after pressing the F-key of the VC you are switching to.

Section 12. How to get further assistance

- Q12.1 You still haven't answered my question !
Q12.2 What to put in a posting to comp.os.linux.help

Question 12.1. You still haven't answered my question !

Please read all of this answer before posting. I know it's a bit long, but you may be about to make a fool of yourself in front of 50000 people and waste hundreds of hours of their time. Don't you think it's worth it to spend some of your time reading and following these instructions ?

If you think an answer is incomplete or inaccurate, please mail Ian Jackson at <ijackson@nyx.cs.du.edu>.

Read the appropriate Linux Documentation Project books - see Q2.1 'Where can I get the HOWTOs and other documentation ?'.

If you're a Unix newbie read the FAQ for comp.unix.questions, and those for any of the other comp.unix.* groups that may be relevant.

Linux is a Unix clone, so almost everything you read there will apply to Linux. Those FAQs can, like all FAQs, be found on rtfm.mit.edu in /pub/usenet/news.answers (the mail-server@rtfm.mit.edu can send you these files, for those who don't have FTP access). There are mirrors of rtfm's FAQ archives on various sites - check the Introduction to *.answers posting, posted, or look in news-answers/introduction in the directory above.

Check the relevant HOWTO for the subject in question, if there is one, or an appropriate old-style sub-FAQ document. Check the FTP sites.

Try experimenting --- that's the best way to get to know Unix and Linux.

Read the documentation. Check the manpages (type man man if you don't know about manpages. Try man -k <subject> --- it often lists useful and relevant manpages.

Check the Info documentation (type C-h i, i.e. Control H followed by I in Emacs) --- NB this isn't just for Emacs; for example the GCC documentation lives here as well.

There will also often be a README file with a package giving installation and/or usage instructions.

Make sure that you don't have a corrupted or out-of-date copy of the program in question. If possible, download it again and reinstall it ---

perhaps you made a mistake the first time.

Read comp.os.linux.announce --- this often contains very important information for all Linux users.

X-Windows questions belong in comp.windows.x.i386unix, not in comp.os.linux.help. But read the group first (including the FAQ), before you post !

Only if you have done all of these things and are still stuck should you post to comp.os.linux.help. Make sure you read the next question, Q12.2 'What to put in a posting to comp.os.linux.help', first.

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Question 12.2. What to put in a posting to comp.os.linux.help

Please read carefully the following advice about how to write your posting. Taking heed of it will greatly increase the chances that an expert and/or fellow user reading your posting will have enough information and motivation to reply.

Make sure you give full details of the problem, including:

- * What program, exactly, you are having problems with. Include the version number if known and say where you got it. Many standard commands tell you their version number if you give them a --version option.
- * Which Linux release you're using (MCC, Slackware, Debian or whatever) and what version of that release.
- * The **exact** and **complete** text of any error messages printed.
- * Exactly what behaviour you were expecting, and exactly what behaviour you observed. A transcript of an example session is a good way of showing this.
- * The contents of any configuration files used by the program in question and any related programs.
- * What version of the kernel and of the shared libraries you are using. The kernel version can be found by typing `uname -a`, and the shared library version by typing `ls -l /lib/libc.so.4`.
- * Details of what hardware you're running on, if it seems appropriate.

You are in little danger of making your posting too long unless you include large chunks of source code or uuencoded files, so err on the side of giving too much information.

Use a clear, detailed Subject line. Don't put things like 'doesn't work', 'Linux', 'help' or 'question' in it --- we already knew that ! Save the space for the name of the program, a fragment of the error message, summary of the unusual behaviour, etc.

If you are reporting an 'unable to handle kernel paging request' message, follow the instructions in the Linux kernel sources README for turning the numbers into something more meaningful. If you don't do this noone who reads your post will be able to do it for you, as the mapping from numbers to function names varies from one kernel to another.

Put a summary paragraph at the top of your posting.

At the bottom of your posting, ask for responses by email and say you'll post a summary. Back this up by using Followup-To: poster. Then, do actually post a summary in a few days or a week or so. Don't just concatenate the replies you got --- summarise. Putting the word SUMMARY in your summary's Subject line is also a good idea. Consider submitting the summary to comp.os.linux.announce.

Make sure your posting doesn't have an inappropriate References header line. This marks your article as part of the thread of the article referred to, which will often cause it to be junked by the readers with the rest of a boring thread.

You might like to say in your posting that you've read this FAQ and the appropriate HOWTOs - this may make people less likely to skip your posting.

Remember that you should not post email sent to you personally without the sender's permission.

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Section 13. Administrative information and acknowledgements

- Q13.1 Feedback is invited
- Q13.2 Formats in which this FAQ is available
- Q13.3 Authorship and acknowledgements
- Q13.4 Disclaimer and Copyright

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Question 13.1. Feedback is invited

Please send me your comments on this FAQ.

I accept submissions for the FAQ in any format; All contributions comments and corrections are gratefully received.

Please send them to <ijackson@nyx.cs.du.edu>.

By the way, if you wish to refer to a question(s) in the FAQ it's most useful for me if you do so by the question heading, rather than the number, as the question numbers are generated automatically and I don't see them in the source file I edit.

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Question 13.2. Formats in which this FAQ is available

This document is available as an ASCII text file, an Emacs Info document, an HTML World Wide Web page, PostScript and as a USENET news posting.

The ASCII, Emacs Info, HTML and posted versions and a Lout typesetter file (from which the PostScript is produced) are generated automatically by a Perl script which takes as input a file in the Bizarre Format with No Name.

The output files linux-faq.ascii, .info and .ps and a tarfile linux-faq.source.tar.gz, containing the BFNN source and Perl script converter, are available in the docs directories of the major Linux FTP sites.

The HTML version of this FAQ is available as

<http://www.cl.cam.ac.uk/users/iwj10/linux-faq/index.html>.

The USENET version is posted regularly to comp.os.linux.announce, comp.os.linux.help, comp.answers and news.answers.

Question 13.3. Authorship and acknowledgements

This FAQ was compiled by Ian Jackson <ijackson@nyx.cs.du.edu>, with assistance and comments from others too numerous to mention. It was loosely based on the original Linux FAQ by Marc-Michel Corsini.

Special thanks are due to Matt Welsh, who coordinates the HOWTOs and has written substantial portions of many of them, and to Marc-Michel Corsini. Thanks also to the contributors to the previous Linux FAQ, and to those sent me comments about this FAQ, and who answered questions on the newsgroup.

Last but not least, thanks to Linus Torvalds and the other contributors to Linux for giving us something to write about !

Question 13.4. Disclaimer and Copyright

Note that this document is provided as is. The information in it is *not* warranted to be correct; you use it at your own risk.

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