

Please email any comments to rdzidlic@geocities.com

Overview

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This document covers installation of Linux on a Q40/Q60 using the Q40-Linux CD.

Preparation

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Disk Partitions:

You should make a complete backup of all your precious data at first!

There are two possibilities how to create partitions.

1) Mkpart

Mkpart is an extra program provided with SMSQ/E for Q40 that lets you partition up to 2 GB of your hard disk. You can only prepare for a maximum of 4 partitions with mkpart. Further partitions can be set up with atari-fdisk later on. Mkpart uses 512 byte blocks.

use of mkpart is not advised for disks over 2GB in size

2) Atari-fdisk

Alternatively atari-fdisk supplied here can do it. If you repartition using atari-fdisk it may complain about errors in the partition table, say 'y' to let it correct and 'n' if it wants to assume the disk unpartitioned (..unless it is unpartitioned of course).

IMPORTANT NOTES:

- Don't use mkpart after you've installed Linux.
- SMSQ does not recognise when partition size does not match information stored in QXL filesystem - do not change size assigned to SMSQ partitions
- Extreme care is required when formatting SMSQ partitions.
- SMSQ may have problems with very big partitions, extended partitions or partitions at a large offset from disk start. Currently SMSQ can use only first 3 partitions for SMSQ data
- store images of your empty SMSQ partitions shortly after formatting them, using SMSQ 'format' is a security hazard

It is a good idea to leave a small SMSQ partition for data exchange than 128MB)

Linux can be configured 1 main partition + swap or with separate /usr,/home /var.. whatever else partitions.

Having /usr or /home on separate partitions can be a big win for security, reduces fschk times and allows for much easier backup policy but there are also small pitfalls for unexperienced users. Having /usr/local and /home on separate partitions also usually helps in case of upgrades.

Recommended sizes:

```
swap 128MB min, even if that much is used only rarely it can really
hurt not having enough
/usr/local: min 60 MB required + your needs
/usr/share: 600 MB minimum required
/usr: 2 GB required minus 600 MB if /usr/share is used
/var: 100 MB required
/tmp: some MB..
```

If you want only one root partition this boils down to allocating a partition big enough for the 2GB of the installation and your working needs.

Using correct partition tags is essential: QWA for SMSQ, LNX Linux, SWP swap
The installation program (and SMSQ) may not work correctly otherwise.

SMSQ partitions should not exceed 256 MB per partition, this would correspond to a blocksize of $256\text{MB}/65536=4096$. Having much more is simply too much waste

and the 65534 file limit may become a real limitation (I have 74067 files on a 1.4 GB e2fs filesystem). Otoh with the limitations of SMSQ (max 3 partitions) you probably don't have the choice not to waste the place..

atari-fdisk offers options to save (backup) and restore partition information, it is a good idea to backup this.

some atari-fdisk options

```
-----
-r : read only mode, test and learn mode for paranoid users
-O file : save partition table to file
-I file : read ..... from file
-x : expert mode can also be switched on/off anytime
-f force: will repartition even disk with mounted partitions, use with care
```

-O and -I options work a little counterintuitive as that they drop you in the main menu instead of exiting after having done the work. For -I you have to 'w' to actually write the restored partition table.

Creation of a new partition typically works like this:

```
n - new partition, accept default for start, eg +600M for size
t - enter partition number, set TAG (QWA,LNX,SWP)
i - enter partition number, marks partition valid
w - write table
q - quit
```

Partition/disk names:

```
-----
drive 1 on ide0 is /dev/hda
drive 2 on ide0 is /dev/hdb
drive 1 on ide1 is /dev/hdc
drive 2 on ide1 is /dev/hdd
```

<<if anyone has worked out how this relates to SMSQ's scheme please email me the info>>

partition 1 of /dev/hda is /dev/hda1 etc...

example settings: Throughout this document I use 1 drive and this partitions:

```
1,2 SMSQ,   QWA    not further mentioned /dev/hda1,/dev/hda2
3 SWAP      SWP    /dev/hda3
4 linux     LNX    /dev/hda4  # root and everything
```

Extra Tools

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memtest [megabytes]

runs infinitely trying to test memory

setcd

set various cd reader parameters. If your reader has problems with the CD do 'setcd -x 1 /dev/hdX'

ide-smart /dev/hdX

display some diagnostics about IDE drives reliability.. somewhat overcautious

Hardware

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CD reader is required for installation.

Make sure that the parport IRQ jumper is not connected or SPP mode is configured. So far SMSQ seems to have the same requirement so there is little to worry about currently.

Ethernet cards (NE2K) should be configured to use io base 0x300 and irq 5, otherwise change /etc/modules.conf

Installation

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All examples below assume 32 MB ram, just change the number..

total time required: 1 hour 15 on a Q60

Booting Linux

first boot linux with the installation CD.

You will need:

```
vmlinux - unzip from /cdrom/boot/CPU/vmlinux.zip
lxx - loader from /cdrom/boot/lxboot????_zip
this CD
```

all of which should be in the B00T subdir of the CD or on supplemental floppies.

With a 32MB q40 type this to start the thing:

```
ex lxx;"-r 32 -k vmlinux -- root=/dev/hdX"
```

hdX should be the name of your CD reader.

For a Q60 the command would be

```
ex lxx;"-r 32 -c 060 -k vmlinux -- root=/dev/hdX"
resp for 68060LC version
ex lxx;"-r 32 -c 060FEMU -k vmlinux -- root=/dev/hdX"
```

(vmlinux extracted from corresponding archive) it should be up and running now, otherwise see loader docs for trouble shooting.

Installation

During boot you might be presented with the choice to use old configuration information from some old root partition if one was detected. Not much of that information is reused currently. Otherwise you will be asked to select the keyboard, prefer nodeadkeys (or 'nd')variants where available.

Network is setup, the Q40 has 172.16.0.2 if an ethernet card was detected. No servers are started but you may mount NFS volumes from other computers on your local network. PPP an pppoe should be useable as well but require extra configuration.

login as root

you may verify partition sizes:

```
cat proc/partitions
```

if the sizes don't match with what you have written down earlier you are out of luck - but this has never happened to me so far. However be warned that SMSQ mkpart isn't perfect yet.

Now type

```
xinstall
```

and proceed with the suggested steps. Please pay good attention to the displayed hints, the GUI may look nice but it is very simple and not very robust.

If you need a more complicated setup or want to control the progress you can get another console anytime by pressing alt-Fn and login there.

Repartition:

```
this runs atari-fdisk for selected HD's
```

Create/Redefine Swap:

hopefully you have a partition for this already, just select it.
 You may type 'meminfo' on another console to verify it is available

Define Filesystems and Partitions:

in the simple case you will just select the partition for the root fs.
 You may also assign other partitions here, but it is not much tested yet.

Install Packages:

completely boring, just takes a very long time (1 hour on a Q60)

Configure Installation:

this will do most of the fine tuning. It does

- write fstab: '/', swap, 'cdrom' and floppy entries are written.
- select mouse port and protocol.
- select keyboard nationality for X11/xkb. Irrelevant for X11\kbd
- select whether to use xkb or not by default (*)
- configure (default) timezone and system clock
 Writes /etc/sysconfig/clock and links /etc/localtime
- network configuration. It is important to enter some 'valid looking' values here even if you do not intend to go online in the next future.
- Enable network if you want to use apache which is necessary if you want to use dillo or netscape for the local documentation - currently this is very highly recommended.
 This will write /etc/sysconfig/network and /etc/hosts
- runlevel editor. I have manipulated the defaults so they ought to be mostly reasonable.
 Press F1 to get info about services.

(*) Xkb may cause some problems in rare cases because it doesn't fit very well into the design of X11. I had to fix its keycode mappings but what is worse, it breaks key translation for a few cases in very subtle ways that may not be immediately noticeable but can drive you crazy later.
 Whether or not it will work for you is a different question..it is a good idea to test both alternatives and also play around with .Xmodmap

Exit Installation Procedure:

gives you the chance to save current configuration to floppy, though not everything is saved yet.

Load Configuration from Floppy:

see above

Shutdown System:

tries to shutdown system cleanly which currently doesn' quite work.

Toggle Display of Hidden Entries:

use if you need to repeat some step you've already completed. Similar works in some submenus

Linux keyboard:

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useful linux console keys:

- alt-F1..alt-F4: switch to console 1-4
- shift-PgUp, shift-PgDn: scroll screen back and forth, sometimes displays garbage that can be "cleared" by using the keys repeatedly
- shift-ScrollLock displays memory statistics.
- ctrl-ScrollLock displays processes
- shift-left,right: move word left/right (shell and a few programs only)
- ctrl-shift-left,right: delete word left/right (shell and a few programs only)

tricks for bash-newbies and non-english keyboard users:

don't type full command/file names, instead do TAB for completion.
 TAB TAB shows list of possible completions
 line editing and history work :-)
 use '/', '*' etc from numeric keypad
 ctrl-r to search backwards in command history, searches substring
 as you type it (ENTER or cursor exit search mode, ctrl-r next match)

Running System

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next you can boot the system with the real root. If /dev/hda4 is your root type

```
ex lxx;"-k vmlinux -r 32 -- root=/dev/hda4"
(plus CPU options if not 040)
```

If you have CD and hdb, use an additional 'hdb=ide-scsi' parameter.

The first boot will take a long time and the machine will feel very sluggish for the first half an hour or so, because anacron builds all system databases.

ctrl-alt-del is by default bound to safely reboot.

Login as root.

add users with 'adduser -m newusername' and 'passwd newusername'

That was it. Now comes the normal system management. If you have very playful family members set the root password.
 In any case create a user account for yourself, the root account should be used only for system administration. Also RH linux won't allow rlogin, telnet or ftp to root accounts.
 Many services (eg ftp) will also refuse to work for a user if no password is set.

Installation without CDrom

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**** very unsupported atm ****

best you could do is 'cp -dpR' the CD to a harddisk on another machine and put this into the Q40. You could also copy everything except the RedHat subdir to a ide flashcard and use that for installation if you mount the RedHat subdir over NFS.

Linux-Q40 actually currently recognizes PC partitions as well (with hdX=swapdata kernel parameter) but SMSQ probably won't - you have to use 2 drives at least temporary.

b) network: really for hackers only - the only tested network device is ETH, SLIP or CSLIP over serial port. Pppd needs too many additional stuff and is much slower (on compressed data) anyway.
 To buildup a null-modem connection over ttyS0 (ser1), q40=172.16.0.2, remote=172.16.0.1 :

```
slattach -p cslip -s 115200 /dev/ttyS0
ifconfig sl0 172.16.0.2 pointopoint 172.16.0.1 netmask 255.255.255.0 mtu 1600 up &
```

On the remote computer you must do something similar, often you have to 'modprobe slip' for it to work, some kernels have even to be recompiled.

It should be possible to use rpm's ftp access features to do the installation.
 To nfs mount a cdrom from the remote computer, export it there as '/cdrom' and do

```
mount -o wsize=1024,rsize=1024 172.16.0.1:/cdrom /cdrom
```

ignore messages that result from portmap and other progs not running.
 It can take a while to install it this way..