

## FQA 5 – Building the System from Source



### 5.1 – Why should I build my system from source?

Some reasons why you might actually wish or need to build from source:

- Updates have been committed since you performed the installation.
- Test or develop new features.

### 5.2 – Building 9front from source

#### 5.2.1 – Update sources

9front uses git(1) to synchronize the system with the 9front repository:

```
cd /
bind -ac /dist/plan9front /
git/pull -u gits://git.9front.org/plan9front/plan9front
```

which is consolidated in the command:

```
sysupdate
```

After the tree is updated, recompile/build the updated programs as needed.



for the target architecture need to be built and installed (Read *FQA 5.2.2.1 – Cross compiling*).

*Build the kernel for 386:*

```
cd /sys/src/9/pc
mk install
```

*Build the kernel for amd64:*

```
cd /sys/src/9/pc64
mk install
```

*Build the kernel for arm / Raspberry Pi:*

```
cd /sys/src/9/bcm
mk 'CONF=pi' install
mk 'CONF=pi2' install
```

*Build the kernel for arm64 / Raspberry Pi 3:*

```
cd /sys/src/9/bcm64
mk install
```

Read: *FQA 7.2.5 – How do I install a new kernel?*

### 5.2.2.1 – Cross compiling

To cross compile, simply set the `objtype` environment variable prior to running the build. For example, to build all the amd64 binaries on a 386 system:

```
# create any missing directories needed for the build
cd /
. /sys/lib/rootstub
cd /sys/src
objtype=amd64 mk install
```

## 5.3 – Building an ISO

The 9front ISO is a livecd that also serves as install media.

**Note:** Currently, only the 386 and amd64 architectures have downloadable ISOs (rpi has a bootable image). Read: *FQA 8.9 – Bootstrapping architectures not included on the ISO* for more information on booting other architectures.

```
# put your root file system into /n/src9
bind /root /n/src9

# put your hg repository there
bind -ac /dist/plan9front /n/src9

# build the iso
cd /sys/lib/dist
mk /tmp/9front.$objtype.iso
```

## 5.4 – Common Problems when Compiling and Building

Most of the time problems in the build process are caused by not following the above directions carefully.

People who complained about this section of the FQA have so far not submitted anything better.

Good luck.

### 5.4.1 – Updating compilers

Changes to the compilers may necessitate updating the compiler before rebuilding the rest of the system:

```
cd /sys/src/cmd/cc; mk install
# choose the appropriate compiler for your architecture
cd /sys/src/cmd/6c; mk install
```

### 5.4.2 – Trouble updating the compilers

From the 9front mailing list:

If you didn't 'mk nuke' your libc you can build the assembler and linker first:

```
for(i in (6a 6l))@{ cd /sys/src/cmd/^\$i && mk install }
```

Then you may rebuild the rest of the system.

If you did 'mk nuke':

- \* if you use cwfs, copy older libc from dump and then do the above  
9fs dump cp /n/dump/2024/...
- \* if you use hjfs, copy updated binaries from the iso box.  
9fs iso && cp /n/iso/amd64/bin/^(6a 6c 6l) /amd64/bin/

It would be nice to have a way of these updates notifying people of such manual steps. But for the time being I would suggest perusing the mailing lists when doing large updates.

Thanks,  
moody

Read: *Re: [9front] Error compiling libc/amd64/main9.s and/or main9p.s*