

Source Tree: <#>

```
qfuse
|---trunk
|   |---setenv.sh
|   |---lib
|       |---fuse, ublio, uuid
|   |---utils
|       |---n
|           |---ntfs-3g, ntfsprogs
|       |---e
|           |---ext2fuse, e2fsprogs
|       |---z
|           |---zfsfuse
|   |---qa
|       |---pjd-fstest
|---vendor
|   |---trunk
|       |---lib
|           |---fuse-2.7.4, libublio-20070103
|       |---utils
|           |---n
|               |---ntfs-3g-2009.4.4, ntfsprogs-2.0.0
|           |---e
|               |---ext2fuse-src-0.8.1, e2fsprogs-1.41.5
|           |---z
|               |---zfsfuse
|       |---qa
|           |---pjd-fstest-20090130-RC
```

How to build libfuse and other fs daemon?<#>

1. Enter qfuse/trunk and run ". ./setenv.sh"
2. on QNX host, cd lib/fuse and run "make install" or "CPULIST=x86 make install" if you only want to build libfuse for x86 target.
This will install libfuse to qfuse/trunk/install/cpudir/lib and fuse headers to qfuse/trunk/install/include.
On other hosts, for example: cd lib/fuse/x86-o, sh ./run.sh, make
3. cd lib/ublio and make install./* default ntfs-3g needs ublio but you can change*/
4. cd utils/n/ntfs-3g and run "make" or "make install". This will install ntfs-3g and libntfs to qfuse/trunk/install/cpudir too.

How to run filesystem daemon?<#>

1. copy libfuse to /usr/local/lib
2. copy filesystem daemon's own library to /usr/local/lib, for example: ntfs-3g needs libntfs-3g.
3. copy filesystem daemon executable file to /usr/local/bin
4. run the fs daemon with arguments. For example: ntfs-3g -o debug,no_detach /dev/hd1t7 /ntfs

How to port other filesystem to QNX?<#>

1. Get filesystem source code
2. Write a run.sh to try on QNX host. If configure complains something like you have to rerun automake or autoconf, then you have to install these on QNX(pkgsrc QNX port project you could try) or you can try on Linux host with QNX development tools installed. There is run.sh example in ntfs-3g.

3. If previous step succeeded then you can take a look at ext2fuse or ntfs-3g to see what you need to modify. Most likely you have to modify getopt because QNX doesn't support "--" long option yet.
4. If the filesystem registers FUSE lowlevel API then you have to modify its *_read function to use qfuse's buffer. There is example in libfuse or ext2fuse's op_read function. Because ntfs-3g registers highlevel API it doesn't care, necessary modification is in libfuse's default lowlevel API.
5. Try to port it to QNX' recursive compiling environment with multi-platform support.

How to test?<#>

1. There is a posix filesystem test suite I ported from [FreeBSD](#) in trunk/qa/pjd-fstest. Please read README file to see how to run it.

Benchmark <#>

```
/* below is test no fs daemon using ublio library*/
$ uname -a
QNX localhost 6.3.2 2006/03/16-14:19:50EST x86pc x86
#ext2fuse /home/ext2_256M.fs /ext2
#ntfs-3g /home/ntfs_256M.fs /ntfs
#mount -t qnx4 /home/qnx4_256M.fs /qnx4

/* default 8k record testing*/
# rw -t 128M -k /ext2/rw.tmp
Sequential File Write/Read Benchmark
OS:   QNX 6.3.2 x86pc
Filesys: disk, fsys
Config: 128MiB file, 8KiB record, fd, malloc
Create:   10 msec
Write:   7783 msec, 475 usec/write(), 89% CPU, 16.83 MiB/sec
Read:   9538 msec, 582 usec/read(), 72% CPU, 13.74 MiB/sec
# rw -t 128M -k /ntfs/rw.tmp
Sequential File Write/Read Benchmark
OS:   QNX 6.3.2 x86pc
Filesys: disk, fsys
Config: 128MiB file, 8KiB record, fd, malloc
Create:   4 msec
Write:   8774 msec, 535 usec/write(), 100% CPU, 14.93 MiB/sec
Read:   7164 msec, 437 usec/read(), 61% CPU, 18.29 MiB/sec
# rw -t 128M -k /qnx4/rw.tmp
Sequential File Write/Read Benchmark
OS:   QNX 6.3.2 x86pc
Filesys: ST340014A, UDMA5, qnx4, 1% full
Config: 128MiB file, 8KiB record, fd, fsync, malloc
Create:  11 msec
Write:   5624 msec, 343 usec/write(), 43% CPU, 23.30 MiB/sec
Read:   3812 msec, 232 usec/read(), 58% CPU, 34.38 MiB/sec
```

I am disappointed with ext2fuse's performance as ntfs-3g is using FUSE's high level API, every read/write will do inode(resmgr)->pathname(fuse)->inode(ntfs). But ext2fuse has a lot which can be improved also ext2 is not a difficult filesystem.

Wireless:<#>

1. ifconfig run0 list wme

```
AC_BE cwmin 4 cwmax 10 aifs 3 txopLimit 0
```

```

    cwmin 4 cwmax 10 aifs 3 txopLimit 0
AC_BK cwmin 4 cwmax 10 aifs 7 txopLimit 0
    cwmin 4 cwmax 10 aifs 7 txopLimit 0
AC_VI cwmin 3 cwmax 4 aifs 2 txopLimit 94
    cwmin 3 cwmax 4 aifs 2 txopLimit 94
AC_VO cwmin 2 cwmax 3 aifs 2 txopLimit 47
    cwmin 2 cwmax 3 aifs 2 txopLimit 47

```

2. ifconfig run0 list chan

```

Channel 1 : 2412 Mhz 11g      Channel 102 : 5510 Mhz 11a
Channel 2 : 2417 Mhz 11g      Channel 104 : 5520 Mhz 11a
Channel 3 : 2422 Mhz 11g      Channel 108 : 5540 Mhz 11a
Channel 4 : 2427 Mhz 11g      Channel 110 : 5550 Mhz 11a
Channel 5 : 2432 Mhz 11g      Channel 112 : 5560 Mhz 11a
Channel 6 : 2437 Mhz 11g      Channel 116 : 5580 Mhz 11a
Channel 7 : 2442 Mhz 11g      Channel 118 : 5590 Mhz 11a
Channel 8 : 2447 Mhz 11g      Channel 120 : 5600 Mhz 11a
Channel 9 : 2452 Mhz 11g      Channel 124 : 5620 Mhz 11a
Channel 10 : 2457 Mhz 11g     Channel 126 : 5630 Mhz 11a
Channel 11 : 2462 Mhz 11g     Channel 128 : 5640 Mhz 11a
Channel 12 : 2467 Mhz 11g     Channel 132 : 5660 Mhz 11a
Channel 13 : 2472 Mhz 11g     Channel 134 : 5670 Mhz 11a
Channel 14 : 2484 Mhz 11g     Channel 136 : 5680 Mhz 11a
Channel 36 : 5180 Mhz 11a     Channel 140 : 5700 Mhz 11a
Channel 38 : 5190 Mhz 11a     Channel 149 : 5745 Mhz 11a
Channel 40 : 5200 Mhz 11a     Channel 151 : 5755 Mhz 11a
Channel 44 : 5220 Mhz 11a     Channel 153 : 5765 Mhz 11a
Channel 46 : 5230 Mhz 11a     Channel 157 : 5785 Mhz 11a
Channel 48 : 5240 Mhz 11a     Channel 159 : 5795 Mhz 11a
Channel 52 : 5260 Mhz 11a     Channel 161 : 5805 Mhz 11a
Channel 54 : 5270 Mhz 11a     Channel 165 : 5825 Mhz 11a
Channel 56 : 5280 Mhz 11a     Channel 167 : 5835 Mhz 11a
Channel 60 : 5300 Mhz 11a     Channel 169 : 5845 Mhz 11a
Channel 62 : 5310 Mhz 11a     Channel 171 : 5855 Mhz 11a
Channel 64 : 5320 Mhz 11a     Channel 173 : 5865 Mhz 11a
Channel 100 : 5500 Mhz 11a

```

3. ifconfig run0 list caps

```
run0=0x583c50b<WEP,TKIP,AES_CCM,IBSS,HOSTAP,SHSLOT,SHPREAMBLE,MONITOR,TKIPMIC,WPA1,WPA2,WPA3
```

4. How do you capture wireless packets with QNX?

1).ifconfig run0 mediaopt monitor

2).tcpdump -L

Data link types (use option -y to set):

EN10MB (Ethernet)

IEEE802_11 (802.11)

IEEE802_11_RADIO (802.11 plus BSD radio information header)

3).tcpdump -i run0 -y IEEE802_11_RADIO -s0 -vvvv

tcpdump: data link type IEEE802_11_RADIO

tcpdump: listening on run0, link-type IEEE802_11_RADIO (802.11 plus BSD radio information header), capture size 65535 bytes
06:59:12.559480 6.0 Mb/s 2412 MHz (0x04e0) -23dB signal antenna 1 21dB signal 0us Beacon () [6.0* 9.0 12.0* 18.0 24.0* 30.0]

Note: mediaopt monitor is not necessary for all the cases. If you want to see all packets in this channel and closed channels then

FAQ:#

1. Can I compile them on Linux or Windows HOST with QNX development tools installed?

Answer: You can run ". ./run.sh" to make it on Linux or Windows host and there is an example in ntfs-3g or fuse. And you'd better not to mix QNX' makefile and GNU's makefile together so I create nto-cpu-endian for QNX multi arch compiling and cpu-endian for GNU multi arch compiling so put run.sh to corresponding directory. If want to switch between GNU makefile.gnu and QNX makefile.qnx, you can run "make -f Makefile.gnu distclean" to clean it with GNU makefile.

Resources:

1. [FUSE project](#)
2. [ntfs-3g project](#)