QNX Image (IFS and SysFS) Mounting on Linux Host

This document provides the information on mounting the QNX IFS and Root file system images on Linux Host. Purpose of mounting the QNX tagert images on Linux host could be prodcution image verification or secure configuration analysis.Currently there are two approch to acheive this feature:

1. QNX6 filesystem driver for LinuxHost
2. Dumpifs utility for LinuxHost

QNX6 filesystem driver

Blackberry provides LinuxHost drivers for supporting the QNX filesystem on Linux machine. The QNX filesystem drivers (QNX6 and QNX4) are by default exist on linux kernel as a module. We have to load drivers at runtime and utilize driver's functionaliity using mount command. Here is a step by step guide to do the same.

1. Check weather QNX filesystem modules are loadable or not (By default they are loadable)

```
yocto@ubuntu:~$ sudo grep QNX /boot/config-$(uname -r)
 [sudo] password for yocto:
 CONFIG_QNX4FS_FS=m
 CONFIG_QNX6FS_FS=m
 # CONFIG_QNX6FS_DEBUG is not set
 yocto@ubuntu:~$
```

2. Check the path of loadable modules in kernel

```
yocto@ubuntu:~$ modinfo qnx6
 filename:       /lib/modules/4.15.0-74-generic/kernel/fs/qnx6/qnx6.ko
 license:        GPL
 alias:          fs-qnx6
 srcversion:     C9E5CC55C4C74A4063CF3FD
 depends:
 retpoline:      Y
 intree:         Y
 name:           qnx6
 vermagic:       4.15.0-74-generic SMP mod_unload
 signat:         PKCS#7
 signer:
 sig_key:
 sig_hashalgo:   md4
 yocto@ubuntu:~$
```

3. Check weather QNX filesystem modules are already loaded

```
 yocto@ubuntu:~$ cat /proc/filesystems
  nodev   sysfs
  nodev   rootfs
  nodev   ramfs
  nodev   bdev
  nodev   proc
  nodev   cpuset
  nodev   cgroup
  nodev   cgroup2
  nodev   tmpfs
  nodev   devtmpfs
  nodev   configfs
  nodev   debugfs
  nodev   tracefs
  nodev   securityfs
  nodev   sockfs
  nodev   dax
  nodev   bpf
  nodev   pipefs
  nodev   hugetlbfs
  nodev   devpts
          ext3
          ext2
          ext4
          squashfs
          vfat
  nodev   ecryptfs
          fuseblk
  nodev   fuse
  nodev   fusectl
  nodev   pstore
  nodev   mqueue
  nodev   autofs
```

4. If not loaded, Please load it with the command

```
yocto@ubuntu:~$ sudo modprobe fs_qnx6
[sudo] password for yocto:
yocto@ubuntu:~$
```

5. Check module successfully loaded or not

```
yocto@ubuntu:~$ cat /proc/filesystems | grep qnx
qnx6
qnx4
yocto@ubuntu:~$
```

6. Now we can use the mount command to extract the QNX image on LinuxHost

```
yocto@ubuntu:~$ sudo mount -t qnx6 -o loop $image_path $mount_path
```

Image will be mounted on $mount_path with RO (read only) permissions.

7. Now we can apply verification or testing process on mounted filesystem.

Dumifs Utility

Blackberry provides an utility to dump the information from IFS image using `dumifs` utiltiy. The `dumpifs` utiltiy is available for both QNX and Linux machines. This document focuses on how to utilize `dumpifs` on LinuxHost.

The `dumpifs` utility can be get from QNX Software centre for both QNX and Linux target.