

Linux Kernel Drivers

Watchdog Timers

```
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

usb0    Link encap:Ethernet  HWaddr 72:00:A5:80:2B:E8
        BROADCAST MULTICAST  MTU:1500  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
```

Attached the cable with Win7 and Configure RNDIS interface in windows under "Control Panel -> Network and Internet -> Network Connections" and set IP Address

Set IP Address in Platform and start Ping

```
root@ls1021aqds:/home# ifconfig usb0 10.232.1.11
root@ls1021aqds:/home#
root@ls1021aqds:/home#
root@ls1021aqds:/home# ping usb 10.232.1.10
PING 10.232.1.10 (10.232.1.10): 56 data bytes
64 bytes from 10.232.1.10: seq=0 ttl=128 time=5.294 ms
64 bytes from 10.232.1.10: seq=1 ttl=128 time=6.101 ms
64 bytes from 10.232.1.10: seq=2 ttl=128 time=4.170 ms
64 bytes from 10.232.1.10: seq=3 ttl=128 time=4.233 ms
```

Known Bugs, Limitations, or Technical Issues

- Some issue with Pen drives from Kingston/Transcend. This have noticed some patches floating in open-source for these issues, and also found that open-source USB community trying to fix.
- Linux allow only one peripheral at one time. Please make sure When DWC3 set as Peripheral the other should not be set in same mode.
- Erratum:A-009116 (Frame length of USB3 controller for USB2.0 and USB3.0 operation is incorrect) impacts some socs like LS1020A/LS1021A because of which some USB2.0 and USB3.0 devices may not work properly, and hence, a sw workaround is needed. This sw workaround involves programing following registers of XHCI controller as: GFLADJ[5:0] = 20H and GFLADJ[7] = 1. This is already done via u-boot and linux codebase.

8.19 Watchdog Timers

8.19.1 Watchdog Device Driver User Manual

Description

Watchdog driver description here.

Module Loading

Watchdog device driver support kernel built-in mode.

U-Boot Configuration

Runtime options

| Env Variable | Env Description | Sub option | Option Description |
|--------------|---|----------------------------------|--|
| bootargs | Kernel command line argument passed to kernel | setenv othbootargs wdt_period=35 | Sets the watchdog timer period timeout |

Kernel Configure Options

Kernel Configure Tree View Options

| Kernel Configure Tree View Options | Description |
|---|-------------------------------|
| <pre>Device Drivers ---> [*] Watchdog Timer Support ---> [*] Disable watchdog shutdown on close [*] PowerPC Book-E Watchdog Timer</pre> | PowerPC Book-E Watchdog Timer |

Compile-time Configuration Options

| Option | Values | Default Value | Description |
|------------------|--------|---------------|-------------------------------|
| CONFIG_BOOKE_WDT | y/n | y | PowerPC Book-E Watchdog Timer |

Source Files

The driver source is maintained in the Linux kernel source tree.

| Source File | Description |
|-----------------------------------|-------------------------------|
| drivers/char/watchdog/booke_wdt.c | PowerPC Book-E Watchdog Timer |

User Space Application

The following applications will be used during functional or performance testing. Please refer to the SDK UM document for the detailed build procedure.

| Command Name | Description | Package Name |
|--------------|---|--------------|
| watch | watchdog is a daemon for watchdog feeding | watchdog |

Verification in Linux

· set nfs rootfs

```
build a rootfs image which includes watchdog daemon.
```

Linux Kernel Drivers

Watchdog Timers

· et booting parameter

on the u-boot prompt, set following parameter

```
set nfsargs "setenv bootargs wdt_period=35 root=/dev/nfs rw nfsroot=$serverip:$rootpath ip=
$ipaddr:$serverip:$gatewayip:$netmask:$hostname:$netdev:off
```

```
console=$consoledev,$baudrate $othbootargs"
```

```
set nfsboot "run nfsargs;tftp $loadaddr $bootfile;tftp $fdtaddr $fdtfile;bootm $loadaddr -
$fdtaddr"
```

```
run nfsboot
```

Note: wdt_period is watchdog timeout period, set it with proper value depending on your board bus frequency.

Also wdt_period is inversely proportional to watchdog expiry time ie. Higher the wdt_period, lower the watchdog expiry time.

So if we increase wdt_period to high, watchdog will expiry early.

· check watchdog feeding operation

after system boots up, check the screen output, if you see

```
...
```

```
PowerPC Book-E Watchdog Timer Enabled (wdt_period=35)
```

```
...
```

it means watchdog module loads successfully

```
login in system, run command "watchdog /dev/watchdog"
```

```
root@p1020rdb:~# watchdog /dev/watchdog
```

```
root@p1020rdb:~# ps -ae | grep watchdog
```

```
3285 ?          00:00:00 watchdog
```

```
root@p1020rdb:~#
```

```
wait for some minutes, if system is still alive, watchdog feeding is OK
```

· check watchdog reboot operation

```
run command "killall"
```

```
root@p1020rdb:~# killall -9 watchdog
```

```
root@p1020rdb:~#
```

```
root@p1020rdb:~# ps -ae | grep watchdog
```

```
root@p1020rdb:~#
```

```
root@p1020rdb:~# PowerPC Book-E Watchdog Exception
```

```
wait for some seconds, if system reboots, watchdog reboot operation is OK
```

Known Bugs, Limitations, or Technical Issues

· On the T4240RDB board, if you will use watchdog, please disable the following menu configuration in kernel

Location:

```
    |--> Device  
Drivers  
    |--> Hardware Monitoring support (HWMON [=n])  
Or they are conflicting with each other.
```

8.20 Miscellaneous Drivers

8.20.1 SPE Floating Point User Manual

Linux SDK for QorIQ Processors

Description

This document explains the procedure to test the Floating point support of e500 for scalar Single Precision Floating Point (SPFP), vector SPFP and Double Precision Floating Point (DPFP).

U-Boot Configuration

Compile time options

N/A

Runtime options

N/A

Kernel Configure Tree View Options

Tree View

Below are the configure options which needs to be set while doing "make menuconfig" for kernel