Release Notes of the QNX 6.4.0 BSP for IBM PowerPC 970FX Evaluation Board Trunk#

System requirements#

Target system

- QNX Neutrino RTOS 6.4.0
- Board version: IBM PowerPC 970FX EVB
- ROM Monitor version:PowerPC Initialization and Boot Software (PIBS) Version 1.07.0000

Host development system

- QNX Momentics 6.4.0
- Terminal emulation program (Qtalk, Momentics IDE Terminal, tip, HyperTerminal, etc.)
- RS-232 serial port and Straight-through serial cable
- Ethernet link

System Layout#

The tables below depict the memory layout for the image and for the flash.

Item	Address
OS image loaded at:	0x008000
Flash base address	0xF4000000

Getting Started#

Starting Neutrino#

Step 1: Build the BSP
You can build a BSP OS image from the source code. For instructions about building a BSP OS image, please refer to the chapter Working with a BSP in the Building Embedded Systems manual.

Step 2: Connect your hardware

1.Connect the power cable to J41 and J40.

2.Connect the serial cable to the serial port J35 (J35: Used by PPC970FX PIBS/EPOS shell) on the PPC970 board to the first serial port of your host machine (e.g. ser1 on a Neutrino host).

Note: If you have a Neutrino host with a serial mouse, you may have to move the mouse to the second serial port on your host, because some terminal programs require the first serial port.

3.Connect an RJ-45 Ethernet cable to ethernet port J15 (J15: PPC970FX PIBS (10/100Mbps)) on your target.

On your host machine, start your favorite terminal program with these settings:

- Baud: 115200
- Bits: 8

- Stop bits: 1
- Parity: none
- Flow control: none

Then, apply power to the target. You should see output similar to the following:

```
#
Memory test starting...OK
..
-----------------------------------------------------
PowerPC Initialization and Boot Software (PIBS)
COPYRIGHT   I B M    CORPORATION 2001, 2006
LICENSED MATERIAL  -  PROGRAM PROPERTY OF I B M
Version 1.07.0000 06/27/2006
-----------------------------------------------------
        XX   XXX               XXXX
           XX              XX  XX
XX XXX    XXX    XX    XXXXXXX         XX
 XX  XX    XX    XXXXX  XX           XX
 XX  XX    XX    XX  XX  XXXXXXX       XX
 XXXXX     XX    XX  XX     XX       XX  X
 XX      XXXX  XXXXXX  XXXXXXX  XXXXX  XXXXXXX
XXXX
-----------------------------------------------------
board config data version: 1.1
processor name          : 970FX
processor PVR value     : 0x003c0300
timer clock frequency   : 250000000
total SDRAM memory      : 1073741824
SDRAM frequency         : 266666666
system clk frequency (Hz): 250000000
CPU frequency           : 2000000000
CPU frequency ind. est. : 2000001100
CPU to EI speed ratio   : 2:1
frequency scaling divider: 1
serial clk frequency    : 1843200
HID0 value              : 0011008180000000
HID1 value              : fd3c200000000000
HID4 value              : 0000001000000000
HID5 value              : 0000000000000080
SDR1 value              : 0000000000d00000
PIR  value              : 00000000
Ethernet hardware addr 0 : 0003CC3C02D9
-------------------------------------------
status: starting Ethernet configuration
status: DHCP configuration completed
add net default: gateway 10.42.96.1
enet0: flags=63<UP,BROADCAST,NOTRAILERS,RUNNING> metric 0
       inet 10.42.97.30 netmask fffff000 broadcast 10.42.111.255
status: autoboot "ide" in 5 seconds
tus: ready for boot from IDE disk
IDE: no IDE disk drive detected
error: unrecognized file format
status: autoboot failed
Very simple shell for PIBS
type "help" for help
PIBS-970FX $ help
Very simple shell for PIBS can be used to:
1.Execute following commands:
```

```
 alias     : assigns an alias to a command
 boardinfo : displays board information
 bootfile  : loads a file and jumps to file's entry point
 chipclk   : sets chip clocking information
 display   : displays memory
 echo      : displays value of the PIBS variable
 help      : displays help information
 ifconfig  : configures/displays network interface info
 mt        : runs memory test
 pci_dump  : displays results of PCI bus enumeration
 pci_dump_header : displays config. regs of a PCI device
 ping      : sends an echo request to a network host
 reset     : resets the board
 route     : manipulates routing tables
 set       : sets/displays value of the PIBS variable
 storefile : stores file in flash
 unalias   : removes command alias
 version   : displays PIBS version string
2.Set and display PIBS variables. PIBS variable values
 are preserved across reboots.  PIBS variables are:
 autoboot, autobootdelay, boot_hid0, boot_hid1,
 boot_hid4, boot_hid5, bootfilename, chipclkcmd,
 dhcp0, dirname, hwdaddr0, ide80wire, ifconfigcmd0,
 img_addr, initide, initrd_name, ipdstaddr0,
 mask_cpc925_excp, openfirmware, opthtlink, routecmd,
 sync_flood, use_p_paddr, userdata. PIBS variables are
 assigned using the set PIBS variables are assigned
 using the set command, and dispayed using echo command.
3.Display command help.  For example: help bootfile
```

Step 3: Setup the environment

Please refer to the documentation about PIB.

On your target, type the following, filling in the appropriate IP addresses and ifs file:

```
PIBS-970FX $ set bootfilename=/root/ifs-ppc970.elf
status: writing PIBS variable value to FLASH
IBS-970FX $ set ipdstaddr0=10.42.97.136
status: writing PIBS variable value to FLASH
```

Step 4: Boot the IFS image

You can use TFTP download (the default) to transfer the image from your host to the target:

Once the above setup is complete, you can run the load command at the => prompt to download the image:

```
=> bootfile eth
```

At this point you should see the ROM monitor download the boot image, indicated by a series of number signs. You'll also see output similar to this when it completes downloading:

```
PIBS-970FX $ bootfile eth
status: ready for TFTP binary file transfer
status: requesting file /root/ifs-ppc970.elf
status: from 10.42.97.136
status: block=03091
status: jumping to addr. 0x000000000000a01c
```

```
Welcome to Neutrino Trunk on the PPC970 Evaluation Board Kit
#
#
```

You can now test the OS simply by executing any shell builtin command or any command residing within the OS image (e.g. ls).

Once the initial image is running, you can update the OS image using the network and flash drivers. For sample command lines, please see the "Summary of driver commands" section.

Driver Command Summary#

The following table summarizes the commands to launch the various drivers.

Component	Buildfile Command	Required Binaries	Required Libraries	Source Location
Startup	`startup-970ebk`	.	.	`src/hardware/startup/boards/970ebk`
Serial	`devc-ser8250 -e -c1843200 -b115200 0xf40003f8,10 0xf40002f8,9`	devc-ser8250	.	`src/hardware/devc/ser8250`

Known Issues#