RD4755 CETUS Quick Start

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北京君正集成电路股份有限公司
Ingenic Semiconductor Co., Ltd.

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Release history

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Sep 2009	1.0	First release

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Ingenic Semiconductor Co., Ltd.

Junzheng Bld, Zhongguancun Software Park 2 Dongbeiwang West Road, Haidian District Beijing,China,100193
Tel: 86-10-56345000
Fax: 86-10-56345001
Http: //www.ingenic.cn

Content

1 Overview

JZ4755 is an embedded processor introduced by Ingenic Semiconductor Co., Ltd, which integrates a high performance and low power 32-bit MIPS core. Its main frequency is 360MHz. JZ4755 supports MMU, with 16K instruction cache and 16K data cache, and also integrates many peripherals. JZ4755 supports many Embedded Operating Systems such as Linux™, WinCE™, etc. This document will introduce how to use the reference design board CETUS and help readers gain a quick start of Linux and WinCE.

2 Quick start Linux

2.1 Compile U-Boot

Compile as the following step and generate the **u-boot-nand.bin:**

Firstly, prepare the U-Boot source:

```
# tar –xjf u-boot-1.1.6.tar.bz2
# cd u-boot-1.1.6
# gzip –cd ../u-boot-1.1.6-jz-yyyymmdd.patch.gz | patch –p1
```

And then Compile as following steps:

```
$ make cetus _nand_config
$ make
```

2.1.1 Use usb boot tool program u-boot

Before programming u-boot, now introduce the way of CETUS board boot from usb device:

1） Press **SW10,SW8 move to right** and **reset** key, if success you can see a new usb device on PC.

2） The SDRAM is 64MB on CETUS board. The NandFlash type is K9GAG08U0M. Rename **USBBoot_CETUS.cfg** to **USBBoot.cfg** in the toolkit. **USBBoot_CETUS.cfg** includes default configuration of the CETUS board.

3） Run **usb_boot.exe**, if the connection is correct, execute **list** command you can see the number of device is not zero.

4） Execute **boot** command, the following information can be seen：

```
USBBoot :> boot 0
Checking state of No.0 device: Unboot
Now booting No.0 device:
Download stage one program and execute at 0x80002000: Pass
Download stage two program and execute at 0x80c00000: Pass
Boot success!
Now configure No.0 device:
Now checking whether all configure args valid:
Current device information: CPU is Jz4755
Crystal work at 24MHz, the CCLK up to 336MHz and PMH_CLK up to 112MHz
Total SDRAM size is 16 MB, work in 4 bank and 16 bit mode
Nand page size 4096, ECC offset 24, bad block ID 127, use 1 plane mode
Configure success!
```

Execute programming command:

```
USBBoot :> nerase 0 8 0 0
USBBoot :> nprog 0 u-boot-nand.bin 0 0 -n
```

To here, the U-Boot has been programmed to target board.

The serial port's configuration is ： 57600bps, 8N1

Connect the serial port of target board to PC, start HyperTerminal and set parameters. And then hardware reset the target board, start the U-Boot, there will be start message of U-Boot on HyperTerminal console.

2.2 Compile and start Linux

Firstly, compile and generate uImage as following step:

```
$ tar xjf linux-2.6.24.3.tar.bz2
$ cd linux-2.6.24.3
$ gzip -cd ../linux-2.6.24.3-jz-yyyymmdd.patch.gz | patch –p1
$ make cetus_defconfig
$ make uImage
```

2.2.1 Use USB tool program uImage

Use usb boot tool program uImage is similar to program u-boot. Because reading uImage from NAND to SDRAM is through u-boot, so please be sure that the corresponding of the NAND configuration file between u-boot and USB boot tool.

Execute programming command:

```
USBBoot :> nprog 1024 uImage 0 0 –n
```

To here, the uImage has been programmed to target board too.

Execute as following to program YAFFS2 file:

```
USBboot :> nprog 2048 root.yaffs2 0 0 -o
```

After power on the board, there will be output on the console via serial port and LCD panel. After a moment, the demo of a QTOPIA application will be launched.

3 Quick start WINCE

3.1 Use USB download Bootloader

1. When you get BSP，in the PLATFORM\VENUS\Bin\USBBOOT\JZ4755 directory, there is a compiled boot.nb0,execute USB_Boot.exe, you will see a command window, the following information can be seen：

```
Welcome!
USB Boot Host Software!
USB Boot Software current version: 1.4b
Handling user command.
USBBoot :>
```

2. Insert USB. if the device is not recognized，you need to install the driver that is placed in this director. Press **SW10** key and **move SW8 to right**，then press **reset** key，then loosen **reset** key，you will see the device icon on the PC. Enter “Boot 0” in the command line，then press enter key, the following information can be seen：

```
USBBoot :> boot 0
Checking state of No.0 device: Unboot
Now booting No.0 device:
Download stage one program and execute at 0x80002000: Pass
Download stage two program and execute at 0x80c00000: Pass
Boot success!
Now configure No.0 device:
Now checking whether all configure args valid:
Current device information: CPU is Jz4755
Crystal work at 24MHz, the CCLK up to 336MHz and PMH_CLK up to 112MHz
Total SDRAM size is 16 MB, work in 4 bank and 16 bit mode
Nand page size 4096, ECC offset 3, bad block ID 127, use 1 plane mode
Configure success!
```

3. Enter “nprog 0 boot.nb0 0 0 –n” in the command line, the following information can be seen：

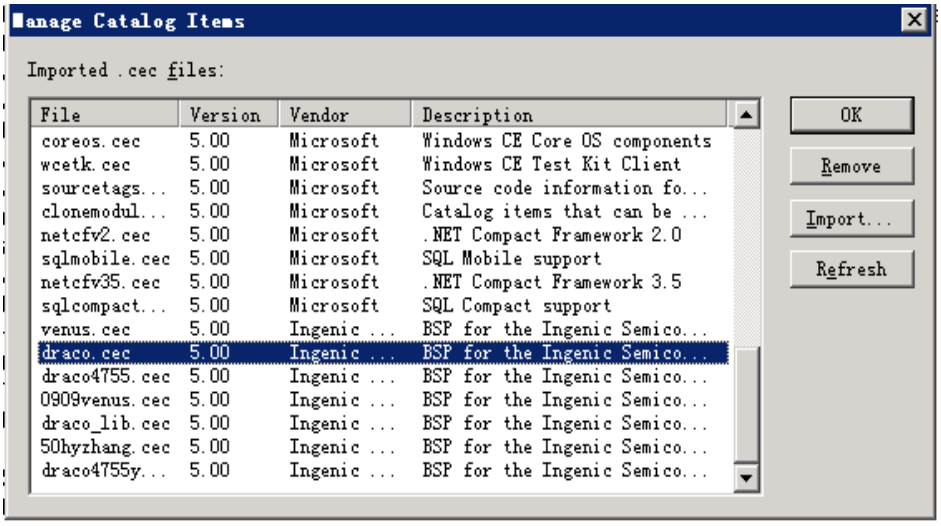
```
USBBoot :> nprog 0 boot.nb0 0 0 -n
Programing No.0 device...
Erasing No.0 device No.0 flash..... Finish!
Operation end position : 1
Force erase ,no bad block infomation !
Total size to send in byte is :262144
Image type : without oob
It will cause 2 times buffer transfer.
No.1 Programming... Finish! Checking...
```

Now, we have already downloaded the boot.nb0 to the JZ4755 board successfully.

3.2 Start WinCE

1. first we can use **x x x.msi.msi** or **VENUS.cec** file to install BSP, if we use **VENUS.cec** file ,the step is followed :

Select Manage Catalog Items from the File toolbar in the PB environment, you will see a dialog box, then import relevant cec file.



2. Open **VENUS.bat** file, define project name:

SET BSP_BASED_CHIP=JZ4755

SET BSP_BASED_BOARD=CETUS

Open **JZ4755_CETUS.bat** file in the **\ VENUS \Files\SCRIPT** directory, you can add some driver selectively, for example:

SET BSP_CETUS_WAVEDEV_INTERNAL=1

SET BSP_CETUS_MEDIA_PLAYER=1

After modification, select **"Open Release Directory"** from PB menu "**Build OS**" to enter PB50 command line, execute "**set bsp"** command to confirm whether the environment variable is right.

3. When the setting is OK we execute Sysgen, there is a NK.bin in the **WINCE500\PBWorkspaces\VENUS\RelDir\VENUS_MIPSII_Release** directory. Then select **"Open Release Directory**" from PB menu "**Build OS**" to enter PB50 command line, we don't need to change this directory, execute **"getnb0.bat"** command directly, then **Nk.nb0** is generated in this directory. We copy the **NK.nb0** from the directory to the SD card, and then reset the development board after insert the SD card to the slot.

Note: Here VENUS is project name.