FreeBSD/arm on the Intel IXP425

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Outline

- Introduction
- Target hardware environment
- Development of FreeBSD/arm
- Current status

Introduction

Background:

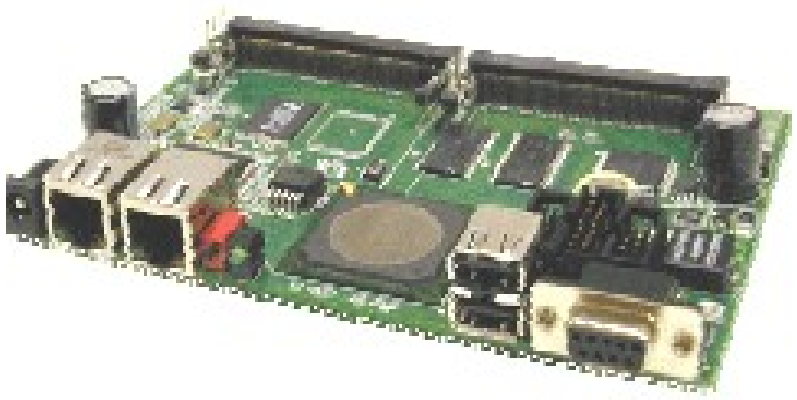
IXP425 development boards with a discount were offered to FreeBSD developers by Sam Leffler.

Target Hardware Environment

Develop the target hardware environment of the IXP425 FreeBSD platform:

- Gateworks Avila GW2348-4 Network Platform.

Avila GW2348-4 Network Platform



- Intel Xscale IXP425 533Mhz.
- 64MB SDRAM.
- 16MB Flash
- 2 x 10/100 Base-TX Ethernet Ports.
- Four Mini-PCI Slots.
- CF Socket.
- 2 x RS-232.

Development of FreeBSD IXP425

- Cross-tools
- Porting FreeBSD to the Intel IXP425

Cross-tools

- To start the port, normally you have to cross-compile.
- Use the GNU tools (gcc, binutils, gdb ...etc).
- “make TARGET=arm TARGET_ARCH=arm kernel-toolchain” is aid the porter.

Porting FreeBSD to the Intel IXP425

- DO NOT reinvent the wheel, codes taken from NetBSD.
- Architecture dependent portions
  - src/sys/arm/xscale/ixp425
- locore.S is shared between arm platforms:
  - calls the C language function initarm().
- Create avila_machdep.c with initarm().

Porting FreeBSD to the IXP425 (Cont.)

- Write device drivers:
  - serial port
  - clock and interrupt controller.
  - machine-dependent bus drivers, such as ixp.

Current Status

- Kernel:
  - FreeBSD 7.x
- Source codes:
  - http://perforce.freebsd.org/depotTreeBrowser.cgi?FSPC=//depot/projects/arm/src/sys/arm/xscale/ixp425&HIDEDEL=NO
- Device drivers:
  - serial driver
  - pci bus
  - I2C-GPIO driver
- TODO:
  - network driver – sam@
  - CF

Thanks

- Knight for giving me the opportunity to demo.
- Other FreeBSD developers who have been worked on it:
  - Toolchain:
    - Olivier Houchard <cognet@>
    - Warner Losh <imp@>
    - David O'Brien <obrien@>
  - PCI bus:
    - John-Mark Gurney <jmg@>

Thanks (Cont.)

- NPE (Network Processing Engine):
  - Sam Leffler <sam@>
- Various bug fixes:
  - Olivier Houchard <cognet@>