FreeBSD/embedded summary

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ARM – current state

• Highlights
  – Official FreeBSD/arm appearance: 7.0-RELEASE
  – Considered very good condition overall: “almost” Tier-1

• CVS
  – AVILA, BWCT, CRB, EP80219, HL200, IQ31244, KB920X, SIMICS, SKYEYE

• P4
  – Additionally: DB-88F5XXX, FS2410, GUMSTIX, KBRAM, SLUG, TS7200, TSC4370

• Problems with LINT: so many arch variations

• Coming soon
  – Better support for Orion 5x
  – Newcoming: Kirkwood 6x, Discovery (MV-78xxx)
MIPS – current state

• Highlights
  - FreeBSD/mips first appearance in CURRENT
  - Targets: mips32, mips64
  - Kernel reaches multiuser, builds world

• CVS/P4
  - ADM5120, IDT, MALTA, QEMU, SENTRY5

• Coming soon
  - More improvements
PowerPC – current state

• Highlights
  – e500/MPC85xx
  – SMP PowerPC
  – Very promising WIP: G5 (Nathan Whitehorn) – bridge-mode is the first step towards 64-bit PowerPC support
  – http://wiki.freebsd.org/powerpc/BookE (TODO list etc.)
  – http://wiki.freebsd.org/powerpc/ToDo

• CVS/P4
  – MAC, MPC85XX

• Coming soon
  – dual-core MPC8572 (2x e500)
GSoC 2008 – FreeBSD embedded projects

• Optimizing build system for embedded environments
  - Minimal installation footprint
  - Non-i386 architectures
  - [http://wiki.freebsd.org/JamesAndrewHarrison](http://wiki.freebsd.org/JamesAndrewHarrison)

• Port to Efika
  - PowerPC: MPC5200B SoC, e300 core CPU
  - [http://wiki.freebsd.org/Porting_FreeBSD_to_Efika_%28PPC_bring_up%29](http://wiki.freebsd.org/Porting_FreeBSD_to_Efika_%28PPC_bring_up%29)
  - Previous work (Andrew Turner)
Embedded TODO highlights

• Flash file system (NOR, NAND)
  – NOR: cfi(4) available, but no FS
  – NAND: only some older pieces, no FS

• Improve build system
  – Not fully cross (building FreeBSD kernel/world on Linux, MacOS etc.)
  – Not convenient/easy to integrate out-of-the tree toolchain

• Better system/kernel configuration

• Kernel infrastructure
  – Generic on-chip peripherals bus: ocp(4) – Marcel
  – sys/dev [lack of] hierarchy: maintenance/naming more difficult with many new drivers coming to the tree
  – bus_dma(9): not up-to-date WRT NetBSD reference