

FreeBSD/arm summary

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FreeBSD/arm - past development

- FreeBSD/arm
 - Since 7.0-RELEASE (2008)
- ARMv5TE
 - Mostly ARM9 CPU (ARM9EJS typical)
- Several platforms (boards families) supported
 - Based on Atmel, Marvell, Xscale, NXP (latest)
- Used in production environment
- Around for a couple of years

FreeBSD/arm - recent development

- projects/armv6 branch
 - Started mid-2011
 - Merged with HEAD in Aug 2012
- Fundamental ARMv6/ARMv7 kernel support
 - locore routines (asm etc.)
 - pmap, new cache architecture (non-virtual)
 - New atomic ops
- Generic SMP layer for FreeBSD/arm
- Improved thread-local storage for \geq ARMv6

FreeBSD/arm - recent development

- Improved build environment (armv6, armv6eb)
- Contemporary systems support
 - Marvell MV78x60 (Armada XP) support (multiuser, quad core), PJ4B core
 - TI OMAP4, AM335x support (multiuser, no GPU or graphics), Pandaboard and Beaglebone platforms, Cortex-A8, Cortex-A9
 - Initial Nvidia Tegra2 support (timers, interrupts and UART)
- Common peripherals (Generic Interrupt Controller, Timers etc.)
- VFP / NEON support

GSoC 2012 – FreeBSD/arm related

- FreeBSD/arm infrastructure optimizations
 - <http://wiki.freebsd.org/SummerOfCode2012/ARMCleanup>
- Port FreeBSD/arm to BeagleBoard-xM
 - TI DM3730
 - Cortex-A8 core
 - <http://wiki.freebsd.org/SummerOfCode2012/FreeBSDonBeagleBoardxM>

FreeBSD/arm - WIP

- Cortex-A15 core
 - ARM Fast model simulator
 - Basic set of peripherals (UART, GIC, Timers)
 - Single user
 - SMP
- RaspberryPi
 - ARM11
 - Multi user, decent set of peripherals
 - Merging with HEAD in progress
- Packages (pkgng) for FreeBSD/arm
 - <http://wiki.freebsd.org/PackagesOnArm>

FreeBSD/arm - TODO

- Short term
 - Cache coherency issues
 - ARMv6/v7 stability
- Long term
 - Optimizations, scalability (multi-core), performance
 - all ARMv7 features (MMU, pmap)
 - beyond quad core
 - ULE on ARM SMP
 - LPAE
 - Superpages
 - Virtualization (BHyVe)

FreeBSD/arm - TODO (long term)

- ARM servers
 - Dell (Armada XP), HP (Calxeda), Codethink (Baserock, Armada XP)
- UEFI integration
- ARMv8
 - 64-bit
 - Documentation
 - ARM Fast model