



# Fedora on ARM(v7)

## State of the Union

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# Today's Topics

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1. To Primary Architecture and beyond
2. Package / Software Status
3. Hardware Support
  - a. SoC support
  - b. Boards
  - c. GPU / Graphics
  - d. General HW
4. AArch64 (brief update)

# Primary Architecture



# Details

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- We're Approved!!! (well provisional approval)
- Still a long way to go... the end of the race is just beginning!
- Standard Fedora primary procedures now (koji/bodhi etc) and QA
  - Better for end users as simultaneous updates
  - Saves me time as not having to deal with koji-shadow (more time for issues & maint help)
  - Quicker break/fix cycle on ARM as maintainer knows it's broken and can engage

# Package/Software Status

# Package overview

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- Quick Fedora 19 stats
  - ~13611 source packages in mainline
  - All but 233 built on ARM (some x86/PPC/s390 only)
- Missing functionality
  - Some bits broken (llvmpipe)
  - Some languages need bring up
  - Some sub package/functions missing/reduced
- With 13K packages we need help to ensure we identify anything that is missing as it's impossible for us to get it all



# Brief missing overview



- Full Stack protection: actively working with u/s
- Languages
  - D (ldc and sub packages) due to land u/s
  - ADA – Is supportable but needs bringup using other distros ADA. Not been high prio
  - Pascal (fpc) – Needs bring up (Hans has vol)
  - Other small bits (slisp/sblc) and poss other minors
- Random packages – numbers reducing quickly, some just incorrect distro compiler flags, x86 instructions, bugs etc plus ARM optimisation

# Hardware Support



# SoC Support

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- Single multi platform unified kernel!
  - Like i386 we have a standard and PAE kernel
- SoCs enabled currently are highbank, OMAP/AM33xx, i.MX, Vexpress, Tegra, Exynos, Rockchips, SunXi
- Some supported better than others but changes quickly with each new kernel
- SoC and driver support expanding constantly
- Some still a way off like msm

# Device Support

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- Four devices supported in Fedora 19
  - PandaBoards, Trimslice, Highbank, Vexpress qemu
- Fedora support 20 will bring a few more:
  - Calxeda: highbank and midway (A15)
  - i.MX: Wandboard (3 boards), utilite and others
  - Tegra: Trimslice (pos others: AC100, tegra 3/4 dev)
  - Vexpress: improved qemu experience and speed
  - TI: Panda, Beagle xM, BeagleBones (B/W)
  - Exynos: Chromebook, Arndale, Odriod etc (hoped)
  - AllWinner/Rockchips: (initial basic support)

# GPU Support

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- Basic 2D support for OMAP/Exynos (armsoc)
- Reverse engineering efforts under way
  - LIMA (ARM Mali – many and varied SoCs)
  - Freedreno (Qualcomm Snapdragon SoCs)
  - Etnaviv (Vivante GCxxx GPU – i.MX, Marvell, others)
  - SGX... status unknown!
- Open drivers being written or specs released
  - Tegra: 2D/3D drivers in progress
  - Rumours of others (watch this space)



# Other HW Support

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- We've been concentrating on core support but there's lots more to work on:
  - HW Virtualisation, virtio
  - Media offload engines
  - Sound including offload/HW compression
  - i2c/GPIO/input, FPGAs (ZYNQ-7000) etc
  - Sensors inc gyro/compass/temp/barometer etc
  - BBone Capes and other expansion
  - Crypto / RNG
  - Lots of others....



AArch64

# AArch64

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- Over 11,800 source packages built (out of 14,059)
- A Fedora 19 test image
- Moving to koji RSN
- Pace continues a pace across multiple arenas both within Fedora and cross distro being lead by Linaro
- Testing on Applied Micro's "Mustang" X-C1 board with a F19 remix for it available soon

# Summary

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- We've come a LONG way in the three years since Seneca took over from Marvell for F-13
- Still a long way to go
- Fedora 20 is going to be a major milestone
- How can you help?
  - Test & play with HW, document your HW
  - Drivers and other components of working systems
  - QA, Software testing and optimisation
  - Do what you'd do on x86 :-)



# Questions?



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