White Rabbit Switch: the software distribution

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Booting the switch, version 3 (final)

The system is based on AT91SAM9G45 (arm9 cpu core)

The IPL is at91bootstrap
  - Version 3.3, released by the vendor
  - Stock distro, with fixes by Alessandro, Tomasz, Benoit
  - Boot from DataFlash (SPI) or NAND

It uses "barebox" as boot loader
  - Stock distribution, with minor patches by Alessandro
  - Barebox is the unofficial child of U-Boot (was "V2")
  - Currently version 2011.09
  - It supports shell-like scripting
  - Configured to boot from Ethernet or NAND flash
The OS kernel is Linux

- Currently version 2.6.39
- Vanilla, with patches by Alessandro and Tomasz
- Support for NFS-Root or local NAND filesystem

It runs some additional device drivers

- WR-VIC, interrupt controller for in-FPGA irq sources
- WR-NIC, a set of network interfaces one per switch port
- WR-RTU by Integrasys, the engine of routing learning
User Space

The user space in the switch is "buildroot"

- Currently version 2011.11
- Custom configuration, with DHCP and ssh
- Support for LUA and Python within the switch
- Currently 15s from powerup to operation
- Complete source in wr-switch-sw package
- Includes user space utilities by Integrasys

White Rabbit support added as an overlay

- All files are installed in /wr, to kept them separate
- Our users may replace core software and keep /wr
The Synchronization engine

The White Rabbit protocol is an extended PTP
  • Compliant with IEEE1588 standard

Currently, ptp-noposix
  • On github, by Alessandro, Tomasz, Maciej, Grzegorz
  • A derivative of official ptpd-2.1
  • Extended to support White Rabbit
  • Same code base for WR-Switch and WR-Node

Will be replaced by ppsi (currently blessed as pptp)
  • Descendant of ptp-proposal document and prototype
  • Clean and maintainable code on ohwr by Aurelio
  • Portable and extensible design (WR and more)
Thank you for your attention

http://www.ohwr.org/projects/wr-switch-sw/

git://git.ohwr.org/white-rabbit/wr-switch-sw.git
git://git.ohwr.org/white-rabbit/pptp.git
git://github.com/a-rubini/ptp-noposix.git
git://gnudd.com/ptp-proposal.git

Alessandro, Integrasys, Aurelio, CERN BE-CO-HT