OpenWrt: 10 years of fun with Embedded Devices

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Early days of OpenWrt

- Built for WRT54G
- Created from uClibc Buildroot
- Used Linksys GPL tarball directly
- Later reworked for standalone build
- Linux 2.4 kernel updated
- Build system rewrite
10 years of OpenWrt

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Current development

OpenWrt and the Embedded Linux Ecosystem

WHITE RUSSIAN (0.9) -------------------------------

* 2 oz Vodka  Mix the Vodka and Kahlua together
* 1 oz Kahlua  over ice, then float the cream or
* 1/2 oz cream  milk on the top.
Development after White Russian

- Focus shifts away from Broadcom 47xx
- Multiplatform support
- Build system rewrite
- New config system: UCI
- New web interface: LuCI
KAMIKAZE (8.09.2, r18961) -------------------------------

* 10 oz Vodka      Shake well with ice and strain
* 10 oz Triple sec mixture into 10 shot glasses.
* 10 oz lime juice  Salute!

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Development after Kamikaze

- Main focus: stabilization
- More targets
- More packages
- GCC updates
Backfire (10.03.1, r29592) ------------------------
* 1/3 shot Kahlua    In a shot glass, layer Kahlua
* 1/3 shot Bailey’s  on the bottom, then Bailey’s,
* 1/3 shot Vodka     then Vodka.
Development after Backfire

- Linux 2.4 support dropped
- Big user space overhaul begins
- Work on IPv6 integration
ATTITUDE ADJUSTMENT (12.09, r36088)

* 1/4 oz Vodka   Pour all ingredients into mixing tin with ice, strain into glass.
* 1/4 oz Gin
* 1/4 oz Amaretto
* 1/4 oz Triple sec
* 1/4 oz Peach schnapps
* 1/4 oz Sour mix
* 1 splash Cranberry juice
User space overhaul

- Components
  - ubus - system RPC service
  - netifd - network setup daemon
  - procd - process monitoring

- Features:
  - System wide config reload support
  - Automatic service restart
  - Config validation in backend
  - Web API via JSON-RPC
IPv6 integration

- New user space stack, written from scratch
- Small code size
- netifd tracks prefixes and delegations
- odhcp6c - RA / DHCPv6 client
- odhcpd - routing & address announcement / delegation
LuCI2 - New Web UI

- Incremental rewrite of existing LuCI code
- CGI + Lua Templating $\Rightarrow$ Javascript + JSON-RPC
- Faster code
- Better modularity
BARRIER BREAKER

* 1/2 oz Galliano
* 4 oz cold Coffee
* 1 1/2 oz Dark Rum
* 2 tsp. Creme de Cacao

Pour all ingredients into an irish coffee mug filled with crushed ice. Stir.
Collaboration with industry vendors

- Some talks with router vendors (e.g. Linksys)
- Strange adoption by a few ODMs
- Better approach: collaboration with chip vendors
  - Qualcomm Atheros
  - Lantiq
  - MediaTek/Ralink
Collaboration with chip vendors

- Differences in motivation
  - OpenWrt: Code quality, long term health
  - Vendors: Cost reduction, time to market
- Red tape, bureaucracy
- Licensing / IP issues
- Development process issues
Related project activity

- Upstream integration of our patches
- Freifunk and other mesh network communities
- Bufferbloat.net (CeroWrt)
- IETF IPv6 integration projects (HIPnet, HomeNet)
Thank you for listening

Questions?