OpenWrt: 10 years of fun with Embedded Devices

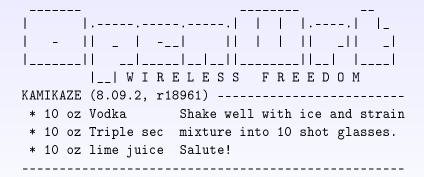Mirko Vogt / Felix Fietkau

QCon 2014, Shanghai, China

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

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         |__| W I R E L E S S   F R E E D O M
WHITE RUSSIAN (0.9) -------------------------------
 * 2 oz Vodka   Mix the Vodka and Kahlua together
 * 1 oz Kahlua  over ice, then float the cream or
 * 1/2oz cream  milk on the top.
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Development after White Russian

- Focus shifts away from Broadcom 47xx
- Multiplatform support
- Build system rewrite
- New config system: UCI
- New web interface: LuCI

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         |__| W I R E L E S S   F R E E D O M
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

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         |__| W I R E L E S S   F R E E D O M
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.
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Development after Backfire

- Linux 2.4 support dropped
- Big user space overhaul begins
- Work on IPv6 integration

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          |__| W I R E L E S S   F R E E D O M
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ATTITUDE ADJUSTMENT (12.09, r36088)
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 * 1/4 oz Vodka      Pour all ingredients into mixing
 * 1/4 oz Gin        tin with ice, strain into glass.
 * 1/4 oz Amaretto
 * 1/4 oz Triple sec
 * 1/4 oz Peach schnapps
 * 1/4 oz Sour mix
 * 1 splash Cranberry juice
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10 years of OpenWrt
Current development
OpenWrt and the Embedded Linux Ecosystem

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

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         |__| W I R E L E S S   F R E E D O M
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BARRIER BREAKER
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 * 1/2 oz Galliano        Pour all ingredients into
 * 4 oz cold Coffee       an irish coffee mug filled
 * 1 1/2 oz Dark Rum      with crushed ice. Stir.
 * 2 tsp. Creme de Cacao
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Collaboration with industry vendors

- Talks with router vendors
- Strange adoption by a few ODMs
- Another approach: collaboration with chip vendors
  - Qualcomm Atheros
  - Lantiq
  - MediaTek/Ralink
- Talk to us!

Thank you for listening

Questions?
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