BESIP build system

- On top of OpenWrt buildroot

- Helps to prepare buildroot

- Patch needed patches

- Prepare sources

- Prepare config

- Build

- Create repository

Embedding Kamailio

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OpenWRT

- Linux distribution for embedded devices
- Sophisticated, modular build system
- Hardware independent
- Can run on small SOHO device
- Can run on big virtual platform
- Package based
- Highly configurable build

BESIP

- **B**right **E**mbedded **S**olution for **IP** **T**elephony
- "Be SIP"
- Build system on top of OpenWRT buildroot
- Making glue between packages
- Kamailio, Asterisk, Rtpproxy, Mediaproxy, …
- NETCONF as primary configuration backend

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BESIP goals

- Should be "easy to use" PBX

- Primary goal **is not** "web based"

- We want to configure by text file/NETCONF

- In future, it can act as SBC or PBX

- SIP routing based by Kamailio

- PBX functions by Asterisk

- One config for all engines

BESIP today

- We cooperate with OpenWRT community

- We create, build and test packages

- After it, we submit them to OpenWRT community

- We use our build system to help testing and build

- Image and packages creation is done, we are working on NETCONF and glue

- Our packages repository should be usable by any OpenWRT AA device.

BESIP meta packages

- Besip-lite (essential set of packages, Asterisk only)

- Besip (more asterisk modules, kamailio plus packages)

- Besip-huge (more tools and user commands)

BESIP Packages

- We created and maintain OpenWRT package feeds.

- Anybody can use our feeds for his OpenWRT build

- When package is completed and tested, we send patch to OpenWRT.

- Today, we maintain telephony packages and submit them to community

OpenWRT buildroot

- Downloadable via SVN

- Extensible (via feeds)

- Highly configurable

- "Independent" on build host.

- Can build very small image (hundreds of kB) up to hundreds od MB based only on config

- Many types of images (ext3, ext4, jffs, squashfs, vmdk, ...)

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BESIP build system

- Prepare BESIP build system

    - Get BESIP build system

    - Build first target

svn co https://liptel.vsb.cz/svn/besip
cd besip/Trunk
./autobuild.sh virtual-x86-trunk

BESIP build system

- Possible commands

  ./autobuild.sh
  # Will show all possible targets and options

  ./autobuild.sh clean virtual-x86-trunk
  # Will clean target (clean feeds, make clean)

  ./autobuild.sh update virtual-x86-trunk
  # Will update feeds and patch needed patches

  ./autobuild.sh prepare virtual-x86-trunk
  # Will prepare toolchains and tools

  ./autobuild.sh config virtual-x86-trunk
  # Create .config in openwrt buildroot
  respecting target settings

BESIP build system

- Target config example

```
TARGET_CPU=x86
OWRT_NAME=trunk
TARGET_NAME=virtual_$(BESIP_VERSION)-owrt_$(OWRT_NAME)

KAMPKG=kamailio4
ASTPKG=asterisk11

OWRT_PATCHES += sqlite2.diff

BESIPPKG=y
BESIPPKG_LITE=y
BESIPPKG_HUGE=y
BESIPPKG_DEV=m

BESIP_PACKAGES= kmod-usb-ohci=y

OWRT_CONFIG_SET += TARGET_ROOTFS_ISO=y

EMBEDED_MODULES += SATA_AHCI
```

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Kamailio3 package

- Modular, modules easy to add

- Completely rewritten

- Highly configurable (features, modules)

- Tested and compiled on most platforms

- Only default config file inside

Mediaproxy package

- Huge python dependencies
- Working
- Sent to community
- Not accepted now

kamailio3-uci package

- Should generate config file based on UCI

- Best way to not change config, only directives?

- Init script should read uci config and run kamailio based on it

- Basic settings (domain to serve, what services to serve,...)

- Extended settings (mapping to external db,sqlite, routing of prefixes)

- Suggestions and developers are welcome:)

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Kamailio4 package

- Based mainly on kamailio3 package

- Is not in OpenWRT now, only in our feeds

- It is working now (partialy tested)

- We will redesign kamailio4-uci package

- Anybody here who want to test? :)

Asterisk11package

- Completely rewriten

- Modular

- Problems with cross-compiling (solved)

- Working for most of architectures

Sipml5 package

- For testing
- Client accessible directly from OpenWRT web
- Maybe uci configurable in future?

Libnetconf package

- Developed by CESNET

- Including Chunked Framing Mechanism

- NETCONF Writable-running capability (RFC 6241)

- NETCONF Candidate configuration capability (RFC 6241)

- NETCONF Distinct startup capability (RFC 6241)

- NETCONF Event Notifications (RFC 5277 and RFC 6470)

- NETCONF With-defaults capability (RFC 6243)

- NETCONF Access Control (RFC 6536)

- NETCONF CLI client for GNU/Linux

Conclusions

- We are working on NETCONF implementation

- We are trying to make glue between NETCONF and UCI

- We are able to build many targets for almost any architecture supported by OpenWRT

- Anybody is welcomed to test and use our build system

- We maintain telephony packages and submit them to OpenWRT

- We want to be in touch with all VoIP specialists to make BESIP better

- We are still working :)

- Be SIP :)

Thank you

- Lukas Macura, CESNET

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- Start here: http://besip.cesnet.cz/