

OpenR2 in Asterisk

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Outline

- 1 MFC/R2 signaling
- 2 R2 in Asterisk
- 3 OpenR2 in Asterisk
- 4 OpenR2 Features
- 5 Closing

What is it?

- MFC/R2 or just R2 for its friends.
- Old days telephony signaling for trunks.
- Analog and digital versions.
- Digital version defined by ITU Q.421.
- Lots of variants around the world.

Where is being used?

- Old, but widely used.
- Heavily used in Central and South America (México, Colombia, Argentina, Brazil etc).
- Cheaper than ISDN PRI lines.
- R2 is not going anywhere anytime soon.

How does the digital version work?

- Uses E1 facilities.
- Inband MF tones for register signaling.
- CAS for line supervision signaling.

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- Some countries do not even regulate its variant.

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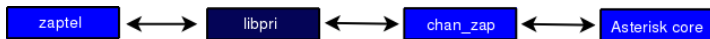
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Asterisk approach for PSTN signaling.

- One channel driver to rule them all.
- Most signaling implemented right into zaptel/chan_zap (now DAHDI/chan_dahdi).
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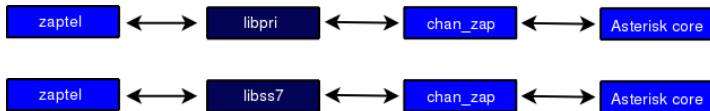
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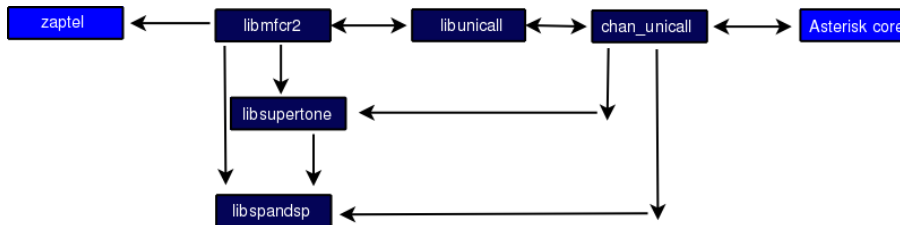


Unicall R2 architecture.

- A different approach.
- Unicall is an abstraction layer in the form of a simple library.
- All signaling details are hidden in protocol modules.
- The channel driver (`chan_unicall`), ideally, interacts with a single signaling interface (`libunicall`).
- Ideally, adding a new signaling protocol requires no changes to the Asterisk channel driver.

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Unicall issues. Sad but true.

- Versioning hell.
- Multiple components, multiple user errors.
- GPL license can be sometimes a show-stopper.
- You need a whole new driver (patching) and libraries just to get R2 working.
- Poor support.

Digivoice R2. The Brazilian solution.

- R2 implementation included in Digivoice library Voicerlib.
- Support for 3 variants (Brazil, Argentina, México).
- Voicerlib Just works with Digivoice cards.
- Echo issues in their boards.

PIKA technologies solution.

- Recent support on their GrandPrix suite.
- Support for 3 variants (Brazil, Argentina, México).
- No 64 bit support.
- Just works with PIKA boards.

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- All previous solutions do not work with FreeSwitch at all.
- All previous solutions are not integrated seamlessly into Asterisk.
- All previous solutions are not what I wanted.

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- Flexible.

The library. Small and functional.

- LGPL license.
- LGPL SpanDSP detector embedded into OpenR2.
- r2test program provided to test R2 links.
- Works with Zaptel 1.2, 1.4 and DAHDI.
- No other libraries required (other than libc and libpthread).

Where to get it?

- Branches for Asterisk 1.2, 1.4 and 1.6
- Branches available from 'moy' team branch.
- Testing of the 3 branches has been done with success in several countries.
- Plan to merge with trunk someday (Digium decides).
- Need feedback!

How does it fit in Asterisk?

- OpenR2 fits the same way libpri and libss7 fit into chan_zap.
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- chan_zap support for R2 only compiled if OpenR2 is present.

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OpenR2 variants implemented so far.

- ITU
- Argentina
- Brasil
- China
- Colombia
- Czech
- Ecuador
- México
- Philippines
- Venezuela

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- Block collect calls with double answer or MF tone.
- Forced release.
- Immediate accept.
- Get ANI first.
- Advanced protocol configuration file.

More coming...

- Windows.
- OpenZAP.
- FreeSwitch.
- DTMF/R2.
- DiscOS.
- Trixbox (Already announced by Fonality).
- More R2 variants.

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Give OpenR2 a try

- The time for MFC/R2 to stop being a problem in Asterisk is coming.
- Despite being still under development, people has used OpenR2 in production.
- I will implement any missing feature you may suggest.
- I will fix any bug you find.

Time for that question you were holding on.

Where to find more information?

- <http://www.libopenr2.org/> (Don't mistake it with openr2.org)
- <http://svn.digium.com/view/asterisk/team/moy/>

Drop me a line. Thanks!

- Blog: <http://www.moythreads.com/>
- E-mail && Google Talk && MSN: moises.silva@gmail.com
- Notice I am not from Brazil, even though I can read Portuguese, try using Spanish or English please :)