



A Private Cellphone Network

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Overview

- How
- Hardware
- Software
- Purpose
- Fallback Plan



Approach

- Previous approaches have used a USRP (Universal Software Radio Peripheral)



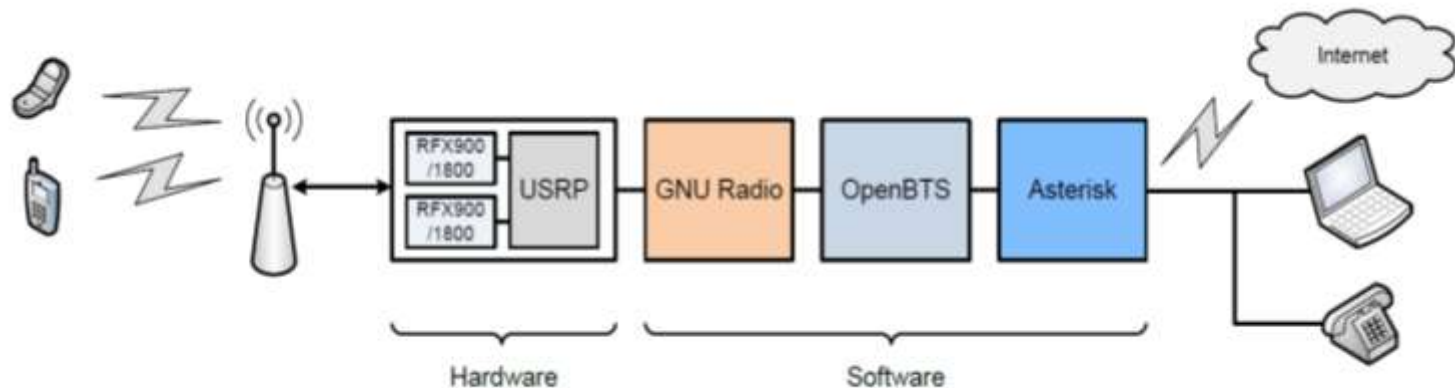
Definitions

- OpenBTS
- GSM
- GNU Radio
- Asterisk



Together...

- OpenBTS+USRP+GNU Radio+Asterisk = mini cellphone network
- Ubuntu



All the hardware and software is open-source.

Equipment

- USRP
- 2x RFX900 daughterboards
- 2x VERT900 Antennas
- External clock

50m range



The External Clock

- Trouble registering some phones
- Onboard clock ~ 64MHz
- GSM clocks derived from 13MHz
- Set external clock to 52MHz
- ClockTamer

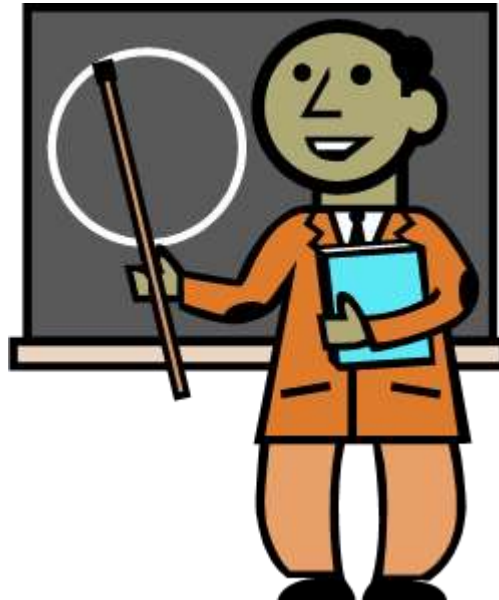


Connecting the clock

- Solder an SMA connector into J2001. This is the clock input. Be careful when soldering the SMA connector so you don't break the delicate trace from J2001 to C927.
- Move R2029 to R2030. This disables the onboard clock. R2029/R2030 is a 0-ohm resistor.
- Move C925 to C926.
- Remove C924.
- If you use external clock with CMOS output, then you have to add terminating 50 Ohm resistor to the USRP clock input

Next...

- Part 1 = setting up the network (SMS capability)
- Part 2 = what the network will be used for
- The Lecture Theatre System



Timeframe

- Network up and running by exam time
- Second term to build the lecture theatre system
- Fallback plan: SMS gateway





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