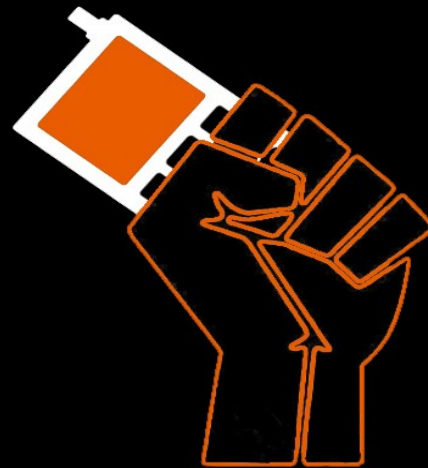


# Rhizomatica

OpenBSC



# OsmoNITB

- OsmoNITB implements part of GSM network (BSC, SMSC, MSC, VLR, HLR, AUC) in one element
- OsmoNITB implements ETSI/3GPP A-bis interface
- A-bis as spec TS 08.56(LAPD) TS08.58 (RSL) TS12.21(OML)
- In addition the A-bis supports multiple vendor specific implementation to connect with different BTSs.

# OsmoNITB - BSC

- BSC implements GSM Base Station Controller functionality
- Configuring and bringing up BTSs and their TRXs and TSs
- Implementing A-bis protocol and signalling for voice data
- Processing management results of MSs, performing handover decision
- Terminating the Radio Resource from the MS

# OsmoNITB - MSC

- Implements mobility management MM functions of the TS04.08
- It can handle Call Control, with an internal MNCC handler
- Or using an external MNCC agent

# OsmoNITB - SMSC

- Minimal store-and-forward server for SMS
- Supports MO (Mobile Originating) and MT (Mobile Terminating) SMS
- Supports multi-part messages

# OsmoNITB – HLR/AUC

- Implements subscriber database (HLR)
- Implements subscriber secret key storage for authentication (AUC)
- Contains IMSI and phone number of the subscribers
- Data stored in file-based SQLite3 database

# OsmoBTS

- Implements the layer 2 (LADPm)
- Implements the A-bis interface including RSL and OML protocols
- Minimal configuration, most of the configuration for the BTS is loaded from the BSC

# Osmo-TRX

- Specific to the umTRX
- Handles the low level interface Um protocol
- Based on the original OpenBTS transceiver



# Configuration

- NiTB provides a file based or a VTY ( Virtual Tele Type) interface for configuration and administration
- The BTS VTY is accessible with telnet 127.0.0.1 4241
- The BSC VTY is accessible with telnet 127.0.0.1 4242
- The VTY has an “enable” mode to access to privileged configurations

# OsmoBTS Configuration

- Basic configuration for the BTS includes:
  - GSM band type
  - OML address to connect to (BSC) and bind address for RTP
  - Transceiver related configuration
  - Clock calibration

# OsmoBTS Configuration

- Edit osmo-bts.cfg

```
bts 0
band GSM850
ipa unit-id ID 0
oml remote-ip IPBSC
rtp bind-ip LOCALIP
rtp jitter-buffer 0
paging lifetime 0
fn-advance 20
ms-power-loop -10
timing-advance-loop
trx 0
rxgain 12
power 10
```

# OsmoBTS Configuration

- **band**: set the frequency band of this BTS
- **ipa unit-id**: Set the unit ID of this BTS. SiteID and UnitID
- **oml remote-ip**: OML IP address
- **rtp bind-ip**: RTP local bind address

# OsmoBTS Configuration

- **trx**: Transceiver related configuration
- **rxgain**: Reception gain in db
- **power**: Transmission power in db

# OsmoNITB Configuration

- Basic configuration for the BSC includes:
  - Set the ARFCN
  - MCC/MNC
  - Channel configuration
  - Codec selection

# OsmoNITB Configuration

- Edit the osmo-bsc.cfg

network

network country code 1

mobile network code 1

short name MyNetwork

long name MyNetwork

auth policy token

location updating reject cause 13

encryption a5 0

neci 1

paging any use tch 0

rrlp mode none

mm info 1

handover 0

# OsmoNITB Configuration

bts 0

type sysmobts

band GSM850

cell\_identity 0

location\_area\_code 2

training\_sequence\_code 7

base\_station\_id\_code 63

ip.access unit\_id 1801 0

oml ip.access stream\_id 255 line 0

neighbor-list mode automatic

codec-support fr hr efr afs



# OsmoNITB Configuration

```
trx 0
rf_locked 0
arfcn 235
nominal power 23
max_power_red 0
rsl e1 tei 0
timeslot 0
  phys_chan_config CCCH+SDCCH4
  hopping enabled 0
timeslot 1
  phys_chan_config SDCCH8
  hopping enabled 0
timeslot 2
  phys_chan_config TCH/F
  hopping enabled 0
timeslot 3
  phys_chan_config TCH/F
  hopping enabled 0
timeslot 4
  phys_chan_config TCH/F
  hopping enabled 0
timeslot 5
  phys_chan_config TCH/F
  hopping enabled 0
timeslot 6
  phys_chan_config TCH/F
  hopping enabled 0
timeslot 7
  phys_chan_config TCH/F
  hopping enabled 0
```

# OsmoNITB Configuration

- **network country code**: Set the GSM network country code
- **mobile network code**: Set the GSM mobile network code
- **short name**: Set network name
- **auth policy**: Set authentication policy, accept-all / closed / token

# OsmoNITB Configuration

- **encryption a5**: 1 Enable/ 0 Disable A5 encryption
- **paging any use tch**: 1 Enable / 0 Disable. Assign a TCH when a paging any request
- **handover**: Handover specific configurations
- **ip.access unit**: Under bts settings. The ID has to match with the BTS configuration
- **codec-support**: Codec support selection

# OsmoNITB Configuration

- **arfcn**: Set the Absolute Radio Frequency Channel Number for the `trx`
- **timeslot**: Select the timeslot on the
- **phys\_chan\_config**: Configure the channel type for the specific timeslot

# OsmoNITB Configuration

- **network country code**: Set the GSM network country code
- **mobile network code**: Set the GSM mobile network code
- **short name**: Set network name
- **auth policy**: Set authentication policy, accept-all / closed / token