Reporting and Investigating issues in Osmocom

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April 21, 2017

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Logging

- Logging destinations file, syslog, stderr
- Filter by IMSI
- Colorization, timestamps
- Different log-levels for different categories:
  debug, info, notice, error, fatal

```
log {file <file>,syslog <facility>,stderr}
 logging filter {all 1,imsi <imsi>}
 logging timestamp {0,1}
 logging color {0,1}
 logging print category 1
 logging level <category> <level>
```

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Logging (cont'd)

```
DRSL <0004> abis_rsl.c:1464 (bts=0,trx=0,ts=0,ss=0) Activating ←
    ARFCN(514) SS(0) lctype SDCCH r=LOCATION_UPDATE ra=0x08 ta=0
DRSL <0004> abis_rsl.c:1198 (bts=0,trx=0,ts=0,ss=0) CHANNEL ←
    ACTIVATE ACK
DRLL <0000> abis_rsl.c:1652 (bts=0,trx=0,ts=0,ss=0) SAPI=0 ←
    ESTABLISH INDICATION
[...]
DMM <0002> gsm_subscriber.c:361 Subscriber Daniel GSM ATTACHED ←
    LAC=10
DMM <0002> gsm_04_08.c:1071 TMSI Reallocation Completed. ←
    Subscriber: Daniel GSM
```

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VTY Interface Basics

- Human Interface via telnet
- Auto-completion through 'Tab'
- Help anytime with '?'
- enable for privileged commands
- Configuration and status information

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VTY Interface

```
OpenBSC > show network
BSC is on Country Code 1, Network Code 1 and has 1 BTS
  Long network name: 'OpenBSC'
  Short network name: 'OpenBSC'
  Authentication policy: closed
  Location updating reject cause: 13
  Encryption: A5/0
  Use TCH for Paging any: 0
  MM Info: On
  Handover: Off
  Current Channel Load:
              CCCH+SDCCH4:  25% (1/4)
                    TCH/F:  33% (2/6)
                   SDCCH8:   0% (0/8)
```

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Logging in VTY

Minimal logging example (VTY)

```
$ telnet localhost 4242
Connected to localhost.
Escape character is '^]'.
Welcome to the OpenBSC control interface
[...]
OpenBSC> logging enable
OpenBSC> logging filter all 1
OpenBSC> logging level all debug
```

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GSMtap

- Packets "transceived" on the BTS Um interface are copied to localhost UDP port 4729
- GSMtap header with information about ARFCN, direction, channel type
- Configuration in osmo-bts.cfg: gsmtap-sapi

```
bts 0
 [...]
 trx 0
  [...]
  gsmtap-sapi bcch
  gsmtap-sapi agch
  gsmtap-sapi sacch
  gsmtap-sapi sdcch
[...]
```

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Wireshark Config

.wireshark/preferences:

```
gprs-ns.udp.ports: 2157,19999,23000
gsm_abis_oml.oml_dialect: ip.access
gsm_abis_rsl.use_ipaccess_rsl: TRUE
```

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Wireshark Filters

- Filter out the noise
- Colorize interesting packets
- Remote wireshark:

```
wireshark -k -i <( ssh -l root $IP /usr/sbin/tcpdump -U -i ↩
    lo -l -w - port 4729)
```

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Demo time

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Reporting Redmine Issues

- Use the correct project at `https://projects.osmocom.org/projects`
- Detailed description of the issue, steps to reproduce
- Attach logs, pcap traces
- Screendumps, not screenshots
- Provide exact version (VTY `show version`, `opkg list-installed`)

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Thank You

Questions?

- https://osmocom.org/projects/

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