



osmocom

No.	Time	Source	Destination	Protoc	Length	SAPI	Info
413	7.70855	127.0.0.1	127.0.0.1	RSL	98		IMMEDIATE ASSIGN COMMAND (CCCH) (RR) Immediate Assignment
434	8.01202	127.0.0.1	127.0.0.1	RSL	87		ESTablish INDication (DTAP) (MM) IMSI Detach Indication
451	8.20852	127.0.0.1	127.0.0.1	RSL	81		DATA REQuest (DTAP) (RR) Channel Release
453	8.21382	127.0.0.1	127.0.0.1	RSL	73		DEACTIVATE SACCH
458	8.24764	127.0.0.1	127.0.0.1	RSL	95		DATA INDication (DTAP) (RR) Classmark Change
476	8.48283	127.0.0.1	127.0.0.1	RSL	91		DATA INDication (DTAP) (RR) GPRS Suspension Request
493	8.71857	127.0.0.1	127.0.0.1	RSL	78		RELease INDication

Frame 476: 91 bytes on wire (728 bits), 91 bytes captured (728 bits) on interface 0	0000	00	00	00	00	00	00	00	00
Ethernet II, Src: 00:00:00 00:00:00 (00:00:00:00:00:00), Dst: 00:00:00 00:00:00 (00:00:00:00:00:00)	0010	00	4d	87	49	40	00	40	06
Internet Protocol Version 4, Src: 127.0.0.1 (127.0.0.1), Dst: 127.0.0.1 (127.0.0.1)	0020	00	01	96	d9	0b	bb	6f	6b
Transmission Control Protocol, Src Port: 38617 (38617), Dst Port: 3003 (3003), Seq: 164, Ac	0030	05	77	fe	41	00	00	01	01
IP Access Protocol, Src Port: 3003 (3003), Dst Port: 38617 (38617), Seq: 164, Ac	0040	e5	0e	00	16	00	03	02	01
Radio Signalling Link (RSL)	0050	f3	ce	9b	28	62	f2	24	00

- ▶ GSM A-I/F DTAP - GPRS Suspension Request
 - Protocol Discriminator: Radio Resources Management messages (6)
 - ... 0110 = Protocol discriminator: Radio Resources Management messages (0x06)
 - 0000 ... = Skip Indicator: No indication of selected PLMN (0)
 - DTAP Radio Resources Management Message Type: GPRS Suspension Request (0x34)
 - ▶ TLLI - 0xf3ce9b28
 - ▶ Routing Area Identification - RAI: 262-42-1-1
 - Suspension Cause
 - Suspension cause value: Other procedure which can be completed with an SDCCH (3)

Reporting and Investigating issues in Osmocom

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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>
```

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
```

VTY Interface Basics

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

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)
```

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
```

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  
[...]
```


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
```

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

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`)

Thank You

Questions?

- <https://osmocom.org/projects/>