

OsmoBTS - Feature #1648

Verify Multi-TRX support for osmo-bts-trx

03/11/2016 09:28 AM - laforge

Status: Closed	Start date: 03/11/2016
Priority: Normal	Due date:
Assignee: msuraev	% Done: 100%
Category: osmo-bts-trx	
Target version: osmo-bts-trx refresh	
Spec Reference:	
Description OsmoTRX supports multiple transceivers for a long time, but let's make sure it still works with the new phy_link/phy_instance abstraction in OsmoBTS. A resulting test case should be part of continuous integration setup, preferably for all BTS hardware models that support such configurations.	
Related issues:	
Related to OsmoPCU - Bug #1775: LC15: No PDCH allocation across two TRX	Stalled 07/12/2016
Related to OsmoPCU - Feature #1553: Multi-TRX support of PCU	Closed 02/23/2016
Related to OsmoPCU - Bug #1524: PACCH on the wrong timeslot	Stalled 02/22/2016
Related to OsmoBTS - Bug #1853: validate dynamic TCH/PDCH support in osmo-bts...	Resolved 11/18/2016
Blocks OsmoBTS - Bug #1750: DTXu/DTXd support for osmo-bts-trx	Stalled 06/13/2016
Blocked by OsmoTRX - Bug #1963: multiplexing trx is not working	Closed 03/03/2017

History

#1 - 06/13/2016 12:58 PM - laforge

- Assignee set to msuraev
- Priority changed from Normal to High

#2 - 06/13/2016 01:02 PM - laforge

- Checklist item [] set-up osmo-bts-trx locally for testing added
- Checklist item [] do some manual testing with different codecs and gprs added
- Checklist item [] verify multi-trx functionality (with two trx) added

please make sure that Lazlo joins you for setting up a network with osmo-bts-trx, so he can use this information to subsequently integrate osmo-bts-trx into the osmo-gsm-tester setup.

#3 - 06/14/2016 09:38 AM - laforge

- Priority changed from High to Urgent

#4 - 06/16/2016 03:03 PM - msuraev

- Status changed from New to In Progress

Waiting for suitable hw.

#5 - 06/18/2016 08:16 AM - laforge

msuraev wrote:

Waiting for suitable hw.

A B210 will be with you on monday.

#6 - 06/22/2016 11:00 AM - msuraev

The following issue was observed:
trx_if.c:380 transceiver (phy0.1) rejected TRX command with response: 'RSP SETTSC 1 7'

#7 - 06/22/2016 02:58 PM - msuraev

Disabling SETTSC command for all phy except 0 allows bts to start but calls do not go through.
Test commands:

```
sudo chrt 20 ./Transceiver52M/osmo-trx -c 2
sudo chrt 15 ./src/osmo-bts-trx/osmo-bts-trx -t 2 -c ~/.config/osmocom/osmo-bts-mtrx.cfg -d DRTP:DCC:DRSL:DL1C
```

Tested on USRP B210.

#8 - 06/24/2016 07:49 AM - msuraev

- Related to Bug #1750: DTXu/DTXd support for osmo-bts-trx added

#9 - 06/24/2016 10:26 AM - msuraev

- Related to deleted (Bug #1750: DTXu/DTXd support for osmo-bts-trx)

#10 - 06/24/2016 10:26 AM - msuraev

- Blocks Bug #1750: DTXu/DTXd support for osmo-bts-trx added

#11 - 07/12/2016 10:12 AM - msuraev

- Status changed from In Progress to New

#12 - 07/12/2016 05:21 PM - laforge

- Status changed from New to Stalled

waiting for a response from osmo-bts-trx maintainer

#13 - 08/12/2016 06:05 PM - msuraev

There are 2 ways to run multi-trx with osmo-trx:

- 1) use "-c 2" option (each arfcn get it's own channel)
- 2) use "-m" option (arfcns are multiplexed on same channel)

Unfortunately neither works for me. Also multiplexing (or maybe both) requires latest uhd master.

It's also unclear what kind of configuration changes are necessary for both modes both for osmo-bts and for openbsc. See on-going discussion in openbsc ML "multiple phy with osmo-trx".

#14 - 08/13/2016 10:44 AM - msuraev

- File ggsn.conf added
- File openbsc.cfg added
- File openbsc-mc.cfg added
- File osmo-bts.cfg added
- File osmo-bts-mc.cfg added
- File osmo-pcu.cfg added
- File osmo-sgsn.cfg added
- File README.txt added

Attaching sample configuration files and description provided by maintainer in ML.

#15 - 10/13/2016 01:52 PM - msuraev

- Related to Bug #1775: LC15: No PDCH allocation across two TRX added

#16 - 10/13/2016 02:28 PM - msuraev

- % Done changed from 0 to 10

With recent UHD_003.010.000.000-release, mTRX is working using following commands:

```
./src/osmo-bts-trx/osmo-bts-trx -c ~/.config/osmocom/osmo-bts-mtrx.cfg -t 2
```

a) same-channel multiplex
./Transceiver52M/osmo-trx -m -c 2 -l INFO

- 1) voice is working on any of trx0, trx1 (tested by configuring TCH/F channels on single trx only)
- 2) gprs working (tested by configuring PDCH channels on single trx only)

b) separate channels
./Transceiver52M/osmo-trx -c 2 -l INFO

neither voice nor gprs are working - phone either fails to camp to network or loses connection after some time.

#17 - 11/09/2016 09:25 AM - laforge

- Priority changed from Urgent to High

#18 - 11/18/2016 09:44 PM - laforge

- Target version set to osmo-bts-trx refresh

#19 - 01/05/2017 04:20 PM - msuraev

- % Done changed from 10 to 50

With external 10MHz reference, using B210 and UHD_003.009.005-0-unknown on ubuntu 16.10 following was observed:

```
sudo ./Transceiver52M/osmo-trx -l INFO -x -c 2
sudo ./src/osmo-bts-trx/osmo-bts-trx -c ~/config/osmoccom/osmo-bts-mtrx.cfg -t 2
```

- 1) both trx have PDCH and TCH/F timeslots: both test phones camp without problems, voice call is ok, voice slightly degraded.
- 2) TCH ts on trx0, PDCH on trx1 - iphone camps to network, acer fails to see it
- 3) TCH ts on trx1, PDCH on trx0 - both test phones camp to network, voice call goes through but quality is badly degraded: delays, skipped frames.

Following error was on OpenBSC side:

```
<0000> abis_rsl.c:1950 (bts=0,trx=1,ts=0,ss=0) ERROR INDICATION cause=SABM frame with information not allowed in this state in state=ACTIVE
```

On osmo-bts-trx:

```
<0006> scheduler.c:270 Prim for trx=1 ts=0 at fn=966278 is out of range, or channel already disabled. If this happens in conjunction with PCU,
increase 'rts-advance' by 5. (current fn=966297)
was seen multiple times (no PCU were running)
also
```

```
<0006> scheduler_trx.c:477 TCH/F Transmitting 'bad FR frame' trx=1 ts=7 at fn=963274.
<0011> lapd_core.c:1511 N(S) sequence error: N(S)=6, V(R)=7
<0006> scheduler_trx.c:477 TCH/F Transmitting 'bad FR frame' trx=1 ts=7 at fn=963313.
<0011> lapd_core.c:1511 N(S) sequence error: N(S)=6, V(R)=7
were seen often.
```

On osmo-trx:

```
INFO 140188128442112 17:00:35.7 Transceiver.cpp:1021:driveTxFIFO: new latency: 0:8
INFO 140188126574336 17:00:35.8 Transceiver.cpp:1054:writeClockInterface: ClockInterface: sending IND CLOCK 940004
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1039:check_rx_md_err: An internal receive buffer has filled at 6.74236 sec.
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1039:check_rx_md_err: An internal receive buffer has filled at 6.74236 sec.
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1039:check_rx_md_err: An internal receive buffer has filled at 6.74991 sec.
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1039:check_rx_md_err: An internal receive buffer has filled at 6.74991 sec.
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1576:write: Skipping buffer data: timestamp=1833002 time_end=1827648
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1576:write: Skipping buffer data: timestamp=1833002 time_end=1827648
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1576:write: Skipping buffer data: timestamp=1833002 time_end=1827648
ERR 140188126574336 17:00:35.8 UHDDDevice.cpp:1576:write: Skipping buffer data: timestamp=1833002 time_end=1827648
INFO 140188128442112 17:00:36.7 Transceiver.cpp:1031:driveTxFIFO: reduced latency: 7:7
INFO 140188126574336 17:00:36.7 Transceiver.cpp:1054:writeClockInterface: ClockInterface: sending IND CLOCK 940223
INFO 140188128442112 17:00:37.7 Transceiver.cpp:1031:driveTxFIFO: reduced latency: 6:7
INFO 140188126574336 17:00:37.7 Transceiver.cpp:1054:writeClockInterface: ClockInterface: sending IND CLOCK 940441
INFO 140188128442112 17:00:38.7 Transceiver.cpp:1031:driveTxFIFO: reduced latency: 5:7
INFO 140188126574336 17:00:38.7 Transceiver.cpp:1054:writeClockInterface: ClockInterface: sending IND CLOCK 940658
INFO 140188128442112 17:00:39.7 Transceiver.cpp:1031:driveTxFIFO: reduced latency: 4:7
```

Not sure if upgrading to newer UHD will help (there are no pre-build packages available for 16.10 ATM). Also it's unclear why swapping PDCH and TCH timeslots between TRXes affect network visibility for some phones.

In all tests ARFCN distance between TRX was 4.

#20 - 01/05/2017 04:50 PM - msuraev

Same configurations with GPRS and iphone:

- 1) works after some initial delay due to multitude of errors on OsmoPCU

20170105173301926 <0002> tbf.cpp:593 TBF poll timeout for FN=1914254, TS=6 (curr FN 1914315)
20170105173301927 <0002> tbf.cpp:648 - Timeout for polling PACKET CONTROL ACK for PACKET DOWNLINK ASSIGNMENT.
20170105173301927 <0002> tbf.cpp:1008 - Assignment was on PACCH
20170105173301927 <0002> tbf.cpp:1016 - No downlink ACK received yet
20170105173302403 <0002> tbf.cpp:593 TBF poll timeout for FN=1914358, TS=6 (curr FN 1914419)
20170105173302884 <0002> tbf.cpp:593 TBF poll timeout for FN=1914462, TS=6 (curr FN 1914523)
20170105173303014 <0005> bts.cpp:1318 Got RACH from TLLI=0xa8d7baea while TBF still exists. Release pending DL TBF
20170105173303014 <0002> tbf.cpp:447 TBF Software error: Pending downlink assignment. This may not happen, because the assignment message never gets transmitted. Please be sure not to free in this state. PLEASE FIX!
20170105173303014 <0002> bts.cpp:1347 MS supports EGPRS multislot class 10.
20170105173310078 <0002> bts.cpp:1347 MS supports EGPRS multislot class 10.
20170105173311345 <0002> tbf.cpp:593 TBF poll timeout for FN=1916295, TS=6 (curr FN 1916356)
20170105173311345 <0002> tbf.cpp:648 - Timeout for polling PACKET CONTROL ACK for PACKET DOWNLINK ASSIGNMENT.
20170105173311345 <0002> tbf.cpp:1008 - Assignment was on PACCH
20170105173311345 <0002> tbf.cpp:1016 - No downlink ACK received yet
20170105173311826 <0002> tbf.cpp:593 TBF poll timeout for FN=1916399, TS=6 (curr FN 1916460)
20170105173312303 <0002> tbf.cpp:593 TBF poll timeout for FN=1916503, TS=6 (curr FN 1916564)
20170105173312783 <0002> tbf.cpp:593 TBF poll timeout for FN=1916607, TS=6 (curr FN 1916668)
20170105173312846 <0002> tbf.cpp:947 TBF releasing due to PACCH assignment timeout.
20170105173312846 <0002> tbf.cpp:447 TBF Software error: Pending downlink assignment. This may not happen, because the assignment message never gets transmitted. Please be sure not to free in this state. PLEASE FIX!
20170105173340681 <0002> bts.cpp:1347 MS supports EGPRS multislot class 10.

2) iphone indicates gprs connectivity but it doesn't work

3) works with errors on OsmoPCU

20170105174205658 <0002> bts.cpp:1347 MS supports EGPRS multislot class 10.
20170105174207477 <0002> bts.cpp:1392 RX: [PCU <- BTS] TBF FIXME: Packet resource request
20170105174211889 <0004> tbf_dl.cpp:423 - Restarting at BSN 83, because the window is stalled.
20170105174214633 <0004> tbf_dl.cpp:423 - Restarting at BSN 106, because the window is stalled.

acer phone fails in all configurations.

#21 - 01/06/2017 03:00 PM - msuraev

- Related to Feature #1553: Multi-TRX support of PCU added

#22 - 01/12/2017 08:19 PM - laforge

- Priority changed from High to Normal

#23 - 01/17/2017 03:01 PM - msuraev

Checked with external bts tester: all tests pass except for leakage to neighbor frequencies which is expected and should not result in phones not seeing network. Btw, ports on olifantasia enclosure were printed incorrectly.

Notable thing is huge (40 db) difference between trx in transmission power - either smth is misconfigured by osmo-trx/osmo-bts-trx or hw failure (amplifier?). Not sure if it could be the reason for the effects described above.

#24 - 01/17/2017 04:34 PM - ipse

We've independently looked at issues with the 2nd channel in master version of osmo-bts-trx and found that "power" and "rxgain" commands are not sent to the 2nd channel (TRX1), because relevant VTY configuration commands and associated with a phy and not with an instance. Ivan is currently looking at this and some other issues with osmo-bts-trx VTY configuration like failure to set maxdly from a configuration file.

#25 - 01/17/2017 04:34 PM - ipse

And yes, this could leave to the effects you saw above.

#26 - 01/18/2017 07:15 AM - laforge

Hi Alexander,

On Tue, Jan 17, 2017 at 04:34:12PM +0000, ipse [REDMINE] wrote:

We've independently looked at issues with the 2nd channel in master version of osmo-bts-trx and found that "power" and "rxgain" commands are not sent to the 2nd channel (TRX1), because relevant VTY configuration commands and associated with a phy and not with an instance. Ivan is currently looking at this and some other issues with

osmo-bts-trx VTY configuration like failure to set maxdly from a configuration file.

We are happy to work on the related code for integration with the osmo-bts phy_link data model and vty, if you could document what kind of setting osmo-trx needs in what sequence.

#27 - 01/18/2017 10:13 AM - kluchnikov

Hi Harald,

Actually we have multiple related issues:

1. osmo-bts doesn't set RXGAIN and POWER for second channel of osmo-trx (TRX1)

We use the following osmo-bts config:

```
phy 0
instance 0
osmotrx rx-gain 10
osmotrx tx-attenuation 10
instance 1
osmotrx rx-gain 2
osmotrx tx-attenuation 12

bts 0
band 900
ipa unit-id 1801 0
oml remote-ip 127.0.0.1
rtp jitter-buffer 0
paging lifetime 0
ms-power-loop -50
timing-advance-loop
setts
gsmtap-sapi ccch
gsmtap-sapi pdtch
trx 0
phy 0 instance 0
trx 1
phy 0 instance 1
```

And if we start osmo-trx with INFO log level, we can see that osmo-bts sends RXGAIN and POWER commands only for the first channel, but these parameters should be set for second channel too, otherwise TRX1 is configured incorrectly and can't work properly:

```
2017-01-18_09:05:21.73985 INFO 139850878134016 09:05:21.6 Transceiver.cpp:740:driveControl: command is CMD POWEROFF
2017-01-18_09:05:21.73997 INFO 139850878134016 09:05:21.6 Transceiver.cpp:740:driveControl: command is CMD POWEROFF
2017-01-18_09:05:21.74007 INFO 139850878134016 09:05:21.6 Transceiver.cpp:740:driveControl: command is CMD RXTUNE 904800
2017-01-18_09:05:21.94325 INFO 139850878134016 09:05:21.7 Transceiver.cpp:740:driveControl: command is CMD TXTUNE 949800
2017-01-18_09:05:22.35494 INFO 139850878134016 09:05:21.9 Transceiver.cpp:740:driveControl: command is CMD SETTSC 7
2017-01-18_09:05:22.35508 INFO 139850878134016 09:05:21.9 Transceiver.cpp:740:driveControl: command is CMD POWERON
2017-01-18_09:05:22.35714 INFO 139850878134016 09:05:22.0 Transceiver.cpp:740:driveControl: command is CMD SETRXGAIN 2
2017-01-18_09:05:22.35724 INFO 139850878134016 09:05:22.0 Transceiver.cpp:740:driveControl: command is CMD SETPOWER 12
2017-01-18_09:05:22.35797 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 0 5
2017-01-18_09:05:22.35807 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 1 7
2017-01-18_09:05:22.35815 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 2 7
2017-01-18_09:05:22.35923 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 3 7
2017-01-18_09:05:22.35947 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 4 7
2017-01-18_09:05:22.35955 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 5 7
2017-01-18_09:05:22.35961 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 6 7
2017-01-18_09:05:22.35969 INFO 139850878134016 09:05:22.1 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 7 1
2017-01-18_09:05:22.35972 INFO 139850876937984 09:05:22.2 Transceiver.cpp:740:driveControl: command is CMD RXTUNE 910000
2017-01-18_09:05:38.09708 INFO 139850876937984 09:05:22.3 Transceiver.cpp:740:driveControl: command is CMD TXTUNE 955000
2017-01-18_09:05:38.09735 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETTSC 7
2017-01-18_09:05:38.09739 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 0 1
2017-01-18_09:05:38.09742 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 1 1
2017-01-18_09:05:38.09744 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 2 1
2017-01-18_09:05:38.09746 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 3 1
2017-01-18_09:05:38.09748 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 4 1
2017-01-18_09:05:38.09750 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 5 1
2017-01-18_09:05:38.09754 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 6 1
2017-01-18_09:05:38.09757 INFO 139850876937984 09:05:22.5 Transceiver.cpp:740:driveControl: command is CMD SETSLOT 7 1
```

2. Incorrect handling of osmo-trx configuration parameters on phy and instance levels

As you can see above in osmo-bts config, we set "osmotrx rx-gain" and "osmotrx tx-attenuation" for each instance, because we should be able to set these parameters for each osmo-trx channel separately.

But if we execute show running config command from vty, we can see:

```
phy 0
  osmotrx ip 127.0.0.1
  osmotrx fn-advance 20
  osmotrx rts-advance 5
  osmotrx rx-gain 2
  osmotrx tx-attenuation 12
  instance 0
  instance 1
bts 0
  band GSM900
  ipa unit-id 1801 0
  oml remote-ip 127.0.0.1
  rtp jitter-buffer 0
  paging queue-size 200
  paging lifetime 0
  uplink-power-target -75
  gsmtap-sapi ccch
  gsmtap-sapi pdtch
  min-qual-rach 50
  min-qual-norm -5
  ms-power-loop -50
  timing-advance-loop
  settsc
  trx 0
    power-ramp max-initial 23000 mdBm
    power-ramp step-size 2000 mdB
    power-ramp step-interval 1
    ms-power-control dsp
    phy 0 instance 0
  trx 1
    power-ramp max-initial 23000 mdBm
    power-ramp step-size 2000 mdB
    power-ramp step-interval 1
    ms-power-control dsp
    phy 0 instance 1
end
```

As you can see osmotrx rx-gain and osmotrx tx-attenuation parameters are on the phy level, but they should be moved to the instance level. Actually I think that it could be the cause of the first issue too.

3. Setting "osmotrx maxdly" and "osmotrx maxdlynb" parameters from config file doesn't work

We get following error from osmo-bts:

```
2017-01-18_09:55:32.14230 There is no such command.
2017-01-18_09:55:32.14244 Error occurred during reading below line:
2017-01-18_09:55:32.14249 osmotrx maxdly 20
```

But we can set these parameters from vty, so it seems like configuration handling issue.

If you need more tests or feedback from our side, please let us know.

#28 - 01/31/2017 08:22 PM - ipse

Update: Ivan has developed patches to fix these issues. We will submit to Gerrit after a bit more testing and clean up.

#29 - 02/06/2017 09:45 AM - msuraev

Please add me as reviewer for those patches on gerrit once they are ready to speedup review process.

#30 - 03/02/2017 01:57 PM - msuraev

- Checklist item [x] set-up osmo-bts-trx locally for testing set to Done
Checklist item [x] do some manual testing with different codecs and gprs set to Done

#31 - 03/03/2017 11:03 AM - msuraev

- File open-bsc.cfg-mtrx1-f-gprs added
- File open-bsc.cfg-mtrx0-f-gprs added
- File osmo-pcu.cfg added
- File osmo-bts.cfg-mtrx added

Re-testing after recent updates to osmo-trx and osmo-bts-trx:

```
sudo ./Transceiver52M/osmo-trx -l INFO -x -c 2 -m
linux; GNU C++ version 6.2.0 20161005; Boost_106100; UHD_003.009.006-release
...
-- Asking for clock rate 3.200000 MHz...
UHD Warning:
  The requested master_clock_rate 3.200000 MHz exceeds bounds imposed by UHD.
  The master_clock_rate has been forced to 5.000000 MHz.

-- Actually got clock rate 5.000000 MHz.
-- Performing timer loopback test... pass
-- Performing timer loopback test... pass
ALERT 139849313479552 11:54:38.8 UHDDevice.cpp:548:set_master_clk: Failed to set master clock rate
ALERT 139849313479552 11:54:38.8 UHDDevice.cpp:548:set_master_clk: Failed to set master clock rate
ALERT 139849313479552 11:54:38.8 UHDDevice.cpp:549:set_master_clk: Requested clock rate 3.2e+06
ALERT 139849313479552 11:54:38.8 UHDDevice.cpp:549:set_master_clk: Requested clock rate 3.2e+06
ALERT 139849313479552 11:54:38.8 UHDDevice.cpp:550:set_master_clk: Actual clock rate 5e+06
ALERT 139849313479552 11:54:38.8 UHDDevice.cpp:550:set_master_clk: Actual clock rate 5e+06
ALERT 139849313479552 11:54:38.8 osmo-trx.cpp:530:main: Failed to create radio device
```

Doesn't work at all, so we have to use

```
sudo ./Transceiver52M/osmo-trx -l INFO -x -c 2
```

But in both cases I've tried (tch on on trx0, gprs on trx1 and vice versa) the phone fails to see the network:

```
./openbsc/src/osmo-nitb/osmo-nitb -c ~/.config/osmoccom/open-bsc.cfg-mtrx0-f-gprs -l ~/.config/osmoccom/hlr.sqli
te3 -P -d DGPRS:DGSUP:DSNDCEP
sudo ./src/osmo-bts-trx/osmo-bts-trx -c ~/.config/osmoccom/osmo-bts.cfg-mtrx -t 2 -r 99
sudo ./src/osmo-pcu -c ~/.config/osmoccom/osmo-pcu.cfg -r 99
```

Am I missing smth?

#32 - 03/03/2017 12:13 PM - msuraev

- Blocked by Bug #1963: multiplexing trx is not working added

#33 - 03/31/2017 06:50 AM - keith

Ivan, Does the resolution of [#1963](#) also resolve this?

#34 - 05/31/2017 10:56 AM - msuraev

- Checklist item deleted (verify multi-trx functionality (with two trx))
 Checklist item [x] verify multi-trx functionality with multiplexing (-m) added
 Checklist item [] verify multi-trx functionality without multiplexing added

#35 - 05/31/2017 11:20 AM - msuraev

- Related to Bug #1524: PACCH on the wrong timeslot added

#36 - 05/31/2017 11:24 AM - msuraev

- Checklist item [x] verify multi-trx functionality without multiplexing set to Done

#37 - 05/31/2017 11:28 AM - msuraev

- Status changed from Stalled to Resolved
 - % Done changed from 50 to 100

Verified (using latest master) that both TRX work for gprs (with issues outlined in [#1524](#)) and voice, with and without multiplexing. To test this I've set all TS on one TRX to TCH/F on other to PDCH, than swapped this TS config between TRXs.

Dynamic TS configurations are tracked via separate issue [#1853](#).

#38 - 05/31/2017 11:29 AM - msuraev

- Related to Bug #1853: validate dynamic TCH/PDCH support in osmo-bts-trx added

#39 - 08/08/2017 07:06 PM - laforge

- Status changed from Resolved to Closed

Files

ggsn.conf	535 Bytes	08/13/2016	msuraev
openbsc.cfg	2.48 KB	08/13/2016	msuraev
openbsc-mc.cfg	3.31 KB	08/13/2016	msuraev
osmo-bts.cfg	615 Bytes	08/13/2016	msuraev
osmo-bts-mc.cfg	692 Bytes	08/13/2016	msuraev
osmo-pcu.cfg	245 Bytes	08/13/2016	msuraev
osmo-sgsn.cfg	1.09 KB	08/13/2016	msuraev
README.txt	6.77 KB	08/13/2016	msuraev
open-bsc.cfg-mtrx1-f-gprs	4.47 KB	03/03/2017	msuraev
open-bsc.cfg-mtrx0-f-gprs	4.47 KB	03/03/2017	msuraev
osmo-pcu.cfg	559 Bytes	03/03/2017	msuraev
osmo-bts.cfg-mtrx	927 Bytes	03/03/2017	msuraev