

OsmoGSMTester - Bug #3560

nanoBTS multiTRX tests in osmo-gsm-tester Prod setup failing

09/17/2018 02:26 PM - laforge

Status: Stalled	Start date: 09/17/2018
Priority: High	Due date:
Assignee: pespin	% Done: 0%
Category:	
Target version:	
Spec Reference:	
Description	
A sysmocom customer has reported that operating with two TRX used to work some weeks/months ago, but is failing with current master of osmo-trx/bts/bsc.	
It's not clear in which component exactly the bug was introduced, but my guess would be probably the many BSC FSM related changes that were introduced.	
This may also be related to the issue discovered in context with osmo-gsm-tester, where the 2nd TRX of a two-trx nanoBTS setup wasn't operating as expected	
Related issues:	
Related to OsmoGSMTester - Feature #2760: osmo-gsm-tester: Add support for se...	In Progress 12/15/2017
Related to OsmoGSMTester - Bug #2761: osmo-gsm-tester: add test case: Test 2n...	Resolved 12/15/2017
Related to Cellular Network Infrastructure - Feature #3628: document nanoBTS ...	New 10/04/2018
Is duplicate of OsmoBSC - Bug #3475: neels/inter_bsc_ho branch for osmo-bsc 2...	Resolved 08/20/2018

History

#1 - 09/17/2018 02:30 PM - laforge

- Related to Feature #2760: osmo-gsm-tester: Add support for several (osmo-)trx to OsmoBtsTrx added

#2 - 09/17/2018 02:30 PM - laforge

- Related to Bug #2761: osmo-gsm-tester: add test case: Test 2nd trx is correctly used added

#3 - 09/17/2018 02:30 PM - laforge

#4 - 09/17/2018 02:32 PM - pespin

#5 - 09/17/2018 02:37 PM - pespin

I recently patches to enable testing multiTRX support in osmo-gsm-tester with nanoBTS with osmo-bsc.git.

I think only the first TRX is checked for channels, despite configuring the BTS with 2 TRX and using "channel allocator descending".

2 RSL links seems to be set up fine, one on each TRX IP addr:

```
20180823165020902 DLINP <0015> input/ipa.c:265 accept()ed new link from 10.42.42.121 to port 3002
20180823165020906 DLINP <0015> bts_ipaccess_nanobts.c:481 Identified BTS 10/0/0
20180823165037242 DNM <0004> abis_nm.c:2653 OC=BASEBAND-TRANSCEIVER(04) INST=(00,00,ff): IPACCESS(0xe1): RSL C
ONNECT ACK IP=10.42.42.7 PORT=3003 STREAM=0x00
20180823165037730 DLINP <0015> input/ipa.c:265 accept()ed new link from 10.42.42.121 to port 3003
20180823165037734 DLINP <0015> bts_ipaccess_nanobts.c:481 Identified BTS 10/0/0
...
BTS 0: Failure Event Report: Type=communication failure, Severity=failure ceased, Probable cause=Manufacturer
specific values: unknown 0x306, Additional Text=Network Failure.
20180823165224354 DNM <0004> abis_nm.c:218 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): STATE CHG: OP_STATE=Di
sabled AVAIL=Not installed(07) ADM=Locked
...
20180823165240748 DNM <0004> abis_nm.c:218 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): STATE CHG: OP_STATE=Di
sabled AVAIL=Dependency(05) ADM=Unlocked
```

```
20180823165240924 DNM <0004> abis_nm.c:702 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): bts=0 trx=0 Opstart ACK
20180823165240944 DNM <0004> abis_nm.c:2653 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): IPACCESS(0xe1): RSL CON
CONNECT ACK IP=10.42.42.7 PORT=3003 STREAM=0x00
20180823165240962 DNM <0004> abis_nm.c:837 OC=RADIO-CARRIER(02) INST=(00,01,ff): Set Radio Carrier Attributes
ACK
20180823165241172 DNM <0004> abis_nm.c:1992 OC=RADIO-CARRIER(02) INST=(00,01,ff): Sending OPSTART
20180823165241445 DNM <0004> abis_nm.c:702 OC=RADIO-CARRIER(02) INST=(00,01,ff): bts=0 trx=0 Opstart ACK
20180823165241576 DLINP <0015> input/ipa.c:265 accept()ed new link from 10.42.42.122 to port 3003
20180823165241579 DLINP <0015> bts_ipaccess_nanobts.c:481 Identified BTS 10/0/1
20180823165241579 DRSL <0003> osmo_bsc_main.c:282 bootstrapping RSL for BTS/TRX (0/1) on ARFCN 52 using MCC-MN
C 901-70 LAC=58 CID=58 BSIC=63
```

I still need to check what's going on with following message:

```
BTS 0: Failure Event Report: Type=communication failure, Severity=failure ceased, Probable cause=Manufacturer
specific values: unknown 0x306, Additional Text=Network Failure.
```

It may be just the message I think we use to send the BTS version.

And then it seems only channels from 1st TRX are available:

```
20180823165336688 DMSC <0007> osmo_bsc_bssap.c:726 Found matching audio type: half rate SPEECH_AMR for channel
_type = { ch_indctr=0x1, ch_rate_type=0xa, perm_s
pch=[ 42 21 11 01 25 05 ] }
20180823165336688 DMSC <0007> osmo_bsc_bssap.c:757 SUBSCR_CONN(conn4) [0x612000006820] {ACTIVE}: Received Event
ASSIGNMENT_START
20180823165336689 DMSC <0007> bsc_subscr_conn_fsm.c:342 SUBSCR_CONN(conn4) [0x612000006820] {ACTIVE}: state_chg
to ASSIGNMENT
20180823165336689 DMSC <0007> assignment_fsm.c:304 Assignment: incrementing rate counter: assignment:attempted
Assignment attempts.
20180823165336689 DAS <0012> fsm.c:299 assignment(conn4) [0x6120000063a0] {WAIT_LCHAN_ACTIVE}: Allocated
20180823165336689 DAS <0012> fsm.c:329 assignment(conn4) [0x6120000063a0] {WAIT_LCHAN_ACTIVE}: is child of SUBSC
R_CONN(conn4) [0x612000006820]
20180823165336689 DRLI <0000> lchan_select.c:159 (bts=0) lchan_select_by_type(TCH_H)
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=7,pchan=PDCH,state=UN
USED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=6,pchan=PDCH,state=UN
USED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=5,pchan=TCH/F,state=U
NUSED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=4,pchan=TCH/F,state=U
NUSED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=3,pchan=TCH/F,state=U
NUSED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=2,pchan=TCH/F,state=U
NUSED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=1,pchan=SDCCH8,state=
IN_USE) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/H: (bts=0,trx=0,ts=0,pchan=CCCH+SDCCH4,s
tate=UNUSED) is != TCH/H
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/F: (bts=0,trx=0,ts=7,pchan=PDCH,state=UN
USED) is != TCH/F
20180823165336689 DRLI <0000> lchan_select.c:71 looking for lchan TCH/F: (bts=0,trx=0,ts=6,pchan=PDCH,state=UN
USED) is != TCH/F
20180823165336689 DRLI <0000> lchan_select.c:86 looking for lchan TCH/F: (bts=0,trx=0,ts=5,pchan=TCH/F,state=U
NUSED) ss=0 is available
20180823165336689 DCHAN <0010> lchan_select.c:253 lchan(0-0-5-TCH_F-0) [0x612000007720] {UNUSED}: (type=TCH_F) S
elected
```

#6 - 09/29/2018 08:35 PM - laforge

#7 - 09/29/2018 08:38 PM - laforge

I would have loved to have a look at a pcap file and share my thoughts, but unfortunately there is none attached to this issue (nor to the sysmocom internal one where this first came up) :(

pespin wrote:

I still need to check what's going on with following message:

```
BTS 0: Failure Event Report: Type=communication failure, Severity=failure ceased, Probable cause=Manufacturer
specific values: unknown
```

Well, the event report indicates "failure ceased". So basically the BTS is informing you that at some previous time, it was unable to connect to the BSC, but that this failure has now been ceased and the communication has been established again. So nothing surprising. OsmoBSC should not interpret such a message or handle it in any other way than to log it in the log file. It shouldn't change the behavior of OsmoBSC.

#8 - 09/29/2018 08:42 PM - laforge

- Assignee changed from *sysmocom* to *pespin*

When I look at this snippet:

```
20180823165240748 DNM <0004> abis_nm.c:218 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): STATE CHG: OP_STATE=Dis
sabled AVAIL=Dependency(05) ADM=Unlocked
20180823165240924 DNM <0004> abis_nm.c:702 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): bts=0 trx=0 Opstart AC
K
20180823165240944 DNM <0004> abis_nm.c:2653 OC=BASEBAND-TRANSCEIVER(04) INST=(00,01,ff): IPACCESS(0xel): RSL C
ONNECT ACK IP=10.42.42.7 PORT=3003 STREAM=0x00
20180823165240962 DNM <0004> abis_nm.c:837 OC=RADIO-CARRIER(02) INST=(00,01,ff): Set Radio Carrier Attributes
ACK
20180823165241172 DNM <0004> abis_nm.c:1992 OC=RADIO-CARRIER(02) INST=(00,01,ff): Sending OPSTART
20180823165241445 DNM <0004> abis_nm.c:702 OC=RADIO-CARRIER(02) INST=(00,01,ff): bts=0 trx=0 Opstart ACK
20180823165241576 DLINP <0015> input/ipa.c:265 accept()ed new link from 10.42.42.122 to port 3003
20180823165241579 DLINP <0015> bts_ipaccess_nanobts.c:481 Identified BTS 10/0/1
20180823165241579 DRSL <0003> osmo_bsc_main.c:282 bootstrapping RSL for BTS/TRX (0/1) on ARFCN 52 using MCC-MN
C 901-70 LAC=58 CID=58 BSIC=63
```

What stands out is:

- a) I don't see that the individual timeslots are initialized at all. we see the radio carrier is opstart'ed, but its state is still "Dependency", as the individual timeslots haven't gone through the OML state machine dance of setting attributes (mainly the channel combination), starting them individually, ...
- b) We see OML initialization for TRX 1, but then a few lines later we see that a new OML link for exactly that transceiver 10/0/1 is established. So either the link is dropped in between (which might hint us to where/when the bug happens), or we have multiple TRXs that identify themselves using the same unit-id to us?

In any case, a pcap file should contain answers to all those questions... Please share!

#9 - 09/30/2018 10:41 AM - laforge

- Is duplicate of Bug #3475: *neels/inter_bsc_ho* branch for *osmo-bsc 2TRX* configured but *OSMO-BSC* only uses the first TRX configuration added

#10 - 10/03/2018 02:51 PM - pespin

Attaching trial-157-run.tgz containing all recorded information while running test "gprs:nanobts+band-900+mod-bts0-numtrx2+mod-bts0-chanalloccdescend" with multiTRX (2) nanobts.

pcap file with Abis is in directory "run.2018-10-03_16-16-09/gprs:nanobts+band-900+mod-bts0-numtrx2+mod-bts0-chanalloccdescend/ping.py/osmo-bsc_10.42.42.9/pcap". I picked this one instead of voicecall due to test being more simple (only 1 MS being used). It can be seen that it searches in descending order but only checks TRX0 while trying to allocate chan to do location update.

See "run.2018-10-03_16-16-09/gprs:nanobts+band-900+mod-bts0-numtrx2+mod-bts0-chanalloccdescend/ping.py/osmo-bsc_10.42.42.9/stderr":

```
20181003162423278 DRSL <0003> abis_rsl.c:1359 (bts=0) CHAN RQD: reason: Location updating (ra=0x04, neci=0x01,
chreq_reason=0x03)
20181003162423278 DRLI <0000> lchan_select.c:159 (bts=0) lchan_select_by_type(SDCCH)
20181003162423278 DRLI <0000> lchan_select.c:71 looking for lchan SDCCH8: (bts=0,trx=0,ts=7,pchan=PDCH,state=U
NUSED) is != SDCCH8
20181003162423278 DRLI <0000> lchan_select.c:71 looking for lchan SDCCH8: (bts=0,trx=0,ts=6,pchan=PDCH,state=U
NUSED) is != SDCCH8
20181003162423278 DRLI <0000> lchan_select.c:71 looking for lchan SDCCH8: (bts=0,trx=0,ts=5,pchan=TCH/F,state=
UNUSED) is != SDCCH8
20181003162423278 DRLI <0000> lchan_select.c:71 looking for lchan SDCCH8: (bts=0,trx=0,ts=4,pchan=TCH/F,state=
UNUSED) is != SDCCH8
20181003162423278 DRLI <0000> lchan_select.c:71 looking for lchan SDCCH8: (bts=0,trx=0,ts=3,pchan=TCH/F,state=
UNUSED) is != SDCCH8
20181003162423278 DRLI <0000> lchan_select.c:71 looking for lchan SDCCH8: (bts=0,trx=0,ts=2,pchan=TCH/F,state=
UNUSED) is != SDCCH8
20181003162423278 DRLI <0000> lchan_select.c:86 looking for lchan SDCCH8: (bts=0,trx=0,ts=1,pchan=SDCCH8,state
=UNUSED) ss=0 is available
```

```
20181003162423278 DCHAN <0010> lchan_select.c:253 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{UNUSED}: (type=SDCCH) Selected
20181003162423278 DCHAN <0010> abis_rsl.c:1423 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{UNUSED}: (type=SDCCH) MS: Channel Request: reason=LOCATION_UPDATE ra=0x04 ta=0
20181003162423278 DCHAN <0010> lchan_fsm.c:316 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{UNUSED}: Received Event LCHAN_EV_ACTIVATE
20181003162423278 DCHAN <0010> lchan_fsm.c:495 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{UNUSED}: state_chg to WAIT_TS_READY
20181003162423279 DCHAN <0010> lchan_fsm.c:521 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_TS_READY}: (type=SDCCH) Activation requested: FOR_MS_CHANNEL_REQUEST voice=no MGW-ci=none type=SDCCH tch-mode=SIGNALLING
20181003162423279 DTS <0011> lchan_fsm.c:525 timeslot(0-0-1-SDCCH8) [0x612000008f20]{UNUSED}: Received Event TS_EV_LCHAN_REQUESTED
20181003162423279 DTS <0011> timeslot_fsm.c:328 timeslot(0-0-1-SDCCH8) [0x612000008f20]{UNUSED}: state_chg to IN_USE
20181003162423279 DCHAN <0010> timeslot_fsm.c:104 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_TS_READY}: Received Event LCHAN_EV_TS_READY
20181003162423279 DCHAN <0010> lchan_fsm.c:539 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_TS_READY}: state_chg to WAIT_ACTIV_ACK
20181003162423279 DRSL <0003> abis_rsl.c:475 (bts=0,trx=0,ts=1,pchan=SDCCH8,state=IN_USE) Tx RSL Channel Activate with act_type=INITIAL
20181003162423279 DLMI <0017> input/ipaccess.c:343 TX 2: 08 21 01 41 03 00 06 04 00 03 01 00 05 06 64 41 e0 32 72 00 04 00 0d 05 18 00
20181003162423284 DLMI <0017> input/ipaccess.c:243 RX 2: 08 22 01 41 08 93 82
20181003162423284 DCHAN <0010> abis_rsl.c:1126 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_ACTIV_ACK}: (type=SDCCH) Rx CHAN_ACTIV_ACK
20181003162423284 DCHAN <0010> abis_rsl.c:1138 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_ACTIV_ACK}: Received Event LCHAN_EV_RSL_CHAN_ACTIV_ACK
20181003162423284 DCHAN <0010> lchan_fsm.c:663 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_ACTIV_ACK}: (type=SDCCH) Tx RR Immediate Assignment
20181003162423284 DCHAN <0010> lchan_fsm.c:712 lchan(0-0-1-SDCCH8-0) [0x6120000066a0]{WAIT_ACTIV_ACK}: state_chg to WAIT_RLL_RTP_ESTABLISH
```

#11 - 10/03/2018 03:17 PM - pespin

- File trial-157-run.tgz added

#12 - 10/03/2018 04:22 PM - pespin

Looking at the pcap trace (OML+RSL) it seems it takes several rounds of turning on the 2nd TRX, but it finally is turned on and at around frame 895 we can see RF Resource INDication coming from each TRX (trx0=10.42.42.121:35893, trx1=10.42.42.122:31662), and that's a few frames before the channel allocation is processed.

So most probably indeed something is messed up during the several activation retries of the 2nd TRX.

#13 - 10/03/2018 05:57 PM - pespin

Submitted:

<https://gerrit.osmocom.org/#/c/osmo-bsc/+11221> abis_nm_get_ts: Return TS of correct TRX, not always TRX0

Hopefully it will fix it, testing now.

#14 - 10/03/2018 06:08 PM - pespin

- File trial-158-run.tgz added

After that patch, channel allocation for Location Update looks first for channels in TRX1, so that part is fixed. However test is failing now later when trying to send a USSD code (used "s_ussd:trx=b200+mod-bts0-numtrx2+mod-bts0-chanallocdescend" now). I'll continue looking at this tomorrow. [totally wrong test run initially, don't look at crossed text].

#15 - 10/04/2018 09:36 AM - pespin

- File deleted (trial-158-run.tgz)

#16 - 10/04/2018 09:44 AM - pespin

- File trial-161-run.tgz added

Test "gprs:nanobts+band-900+mod-bts0-numtrx2+mod-bts0-chanallocdescend" passes fine now.

However, "voice:nanobts+band-900+mod-bts0-numtrx2+mod-bts0-chanallocdescend" is still failing. I attach a test run with all the information.

It seems most of the call setup is working fine, but it fails finally because we receive an "Assignment Failure" from nanobts RSL TRX0 in frame 1117,

as response from Assignment Command in frame 1103.

#17 - 10/04/2018 02:45 PM - pespin

- File trial-165-run.tgz added

I submitted following patch for osmo-gsm-tester to add SDCCH8 in TRX1, this way we also test if SDCCH chans are correctly allocated in TRX1:
<https://gerrit.osmocom.org/#/c/osmo-gsm-tester/+11225>

I actually had to fix the example configuration for nanoBTS because it used to set it in TS0, but nanoBTS seems to allow it in TS1:
<https://gerrit.osmocom.org/#/c/openbsc/+11234/>

After that, I run a ussd test and now it fails before time with similar lower layer issues. It fails now when trying to assign the SDCCH8 in TRX1 to do the location update. "Immediate Assignment" is sent to the BTS, but the MS/BTS never answers to it and the BSC times out after 3 seconds and sends an "Immediate Assignment Reject" message.

So indeed it looks like some kind of time sync issue between TRX?

Related: Harald created this ticket to document/implement nanoBTS calibration procedure: [#3628](#)

#18 - 10/04/2018 02:45 PM - pespin

- Related to Feature #3628: document nanoBTS calibration procedure using ipaccess-config tool added

#19 - 10/04/2018 02:54 PM - pespin

- Subject changed from 2nd TRX of 2-TRX osmo-bts-trx setup not working anymore to 2nd TRX of 2-TRX osmo-bsc setup not working anymore

#20 - 11/01/2018 05:49 PM - pespin

- Project changed from OsmoBSC to OsmoGSMTester

- Subject changed from 2nd TRX of 2-TRX osmo-bsc setup not working anymore to nanoBTS multiTRX tests in osmo-gsm-tester Prod setup failing

General issue with multiTRX is fixed now, see last comments in [#3475](#).

However, multiTRX tests using nanoBTS in osmo-gsm-tester are still failing, so I rename this task to look at that specific issue.

#21 - 11/09/2018 03:46 PM - pespin

- Status changed from New to Resolved

Closing after more than 1 week of stating issue is fixed.

#22 - 11/09/2018 03:49 PM - pespin

- Status changed from Resolved to In Progress

#23 - 04/01/2019 09:14 AM - pespin

- Status changed from In Progress to Stalled

Files

trial-157-run.tgz	239 KB	10/03/2018	pespin
trial-161-run.tgz	291 KB	10/04/2018	pespin
trial-165-run.tgz	202 KB	10/04/2018	pespin