

## OsmoBTS - Feature #1562

### Uplink DTX support

02/23/2016 03:18 PM - laforge

<b>Status:</b> Closed	<b>Start date:</b> 02/23/2016
<b>Priority:</b> Urgent	<b>Due date:</b> 06/10/2016
<b>Assignee:</b> laforge	<b>% Done:</b> 100%
<b>Category:</b>	
<b>Target version:</b>	
<b>Spec Reference:</b>	
<b>Description</b>	
This was never tested and we should check the status + fix it with OsmoBTS.	
Uplink DTX is important to reduce possible uplink interference, but even more so to conserve battery power of the mobile station.	
<b>Related issues:</b>	
Related to OpenBSC - Feature #22: Add DTXu/DRX support	<b>Closed</b> 06/10/2016
Related to OsmoBTS - Feature #1563: Downlink DTX support	<b>Closed</b> 05/09/2016 06/10/2016
Related to OsmoBTS - Bug #1744: 1-way voice between sismobts and nanobts if D...	<b>New</b> 06/03/2016
Related to OsmoBTS - Bug #1750: DTXu/DTXd support for osmo-bts-trx	<b>Resolved</b> 06/13/2016

#### Associated revisions

##### Revision 92db1504 - 05/31/2016 10:11 AM - max

Add helper functions for AMR codec

- add functions to encode/decode various codec paramters from RTP payload with AMR frame according to RFC 4867
- those functions are extended version based on code from osmo-bts' amr.c by Andreas Eversberg
- add corresponding enum types and strings for logging
- add regression tests

It's useful both to replace manual parsing in osmo-bts with fuctions covered by test suite and as a debugging helpers for issues related to AMR.

Change-Id: Ia217679a07d3fbc970f435e20f6eac33d34bd597

Related: OS#1562

Reviewed-on: <https://gerrit.osmocom.org/118>

Tested-by: Jenkins Builder

Reviewed-by: Holger Freyther <[holger@freyther.de](mailto:holger@freyther.de)>

##### Revision 73b9bc72 - 06/06/2016 10:03 AM - max

Extend RTP frame sending API

Add osmo\_rtp\_send\_frame\_ext() which accept boolean parameter in addition to arguments of osmo\_rtp\_send\_frame() to explicitly set marker bit in RTP header. Previously it was always unset which resulted in degradation of speech quality for codecs with explicit talkspurt events (was tested with AMR's ONSET).

Related: OS#1562

Change-Id: I23e6dccfad5643e662391a0a2abebbb45597ffd9

Reviewed-on: <https://gerrit.osmocom.org/82>

Tested-by: Jenkins Builder

Reviewed-by: Harald Welte <[laforge@numonks.org](mailto:laforge@numonks.org)>

##### Revision c42c2ca8 - 06/06/2016 10:05 AM - max

Add defines for FN to SAMPLE conversion

Add defines necessary to correctly convert number of TDMA frames into number of voice samples. Defines are proposed by Harald in comments on gerrit.

Change-Id: I1d8345352fb2ac76f71e88cb40f089fe3f9aae7e  
Related: OS#1562  
Reviewed-on: <https://gerrit.osmocom.org/200>  
Tested-by: Jenkins Builder  
Reviewed-by: Harald Welte <[laforge@numonks.org](mailto:laforge@numonks.org)>

#### Revision 51bfebec - 06/07/2016 03:32 PM - max

Fix RTP timestamps in case of DTX

Compute RTP user\_ts adjustment based on the difference between current and previous FN instead of hard-coded value.

Change-Id: If1677ddcf754b29990ff7cd846e11c32e3d30b33  
Related: OS#1562  
Reviewed-on: <https://gerrit.osmocom.org/196>  
Tested-by: Jenkins Builder  
Reviewed-by: Harald Welte <[laforge@numonks.org](mailto:laforge@numonks.org)>

#### Revision ec744655 - 06/12/2016 03:43 PM - max

Add talkspurt indicator for gsm\_lchan

Add bit which can be set on BTS side to indicate that next RTP frame should be marked as a beginning of speech.

Change-Id: I355a5ae275a2743b29071924c916c4f68c3b3e80  
Related: OS#1562

#### Revision f05e96d4 - 06/12/2016 03:43 PM - max

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Change-Id: I355a5ae275a2743b29071924c916c4f68c3b3e80  
Related: OS#1562

#### Revision a10ac248 - 06/14/2016 10:19 AM - max

DTXu: mark beginning of speech burst in RTP

Set Marker bit in RTP header to mark the beginning of talkspurt.

Change-Id: I3dd70ad8ff94356e3c3cc5458255f6c23534783e  
Related: OS#1562

#### Revision c3fb0dcc - 06/18/2016 11:34 AM - max

DTX: add support for AMR/HR

Change-Id: Id744b67904011eb328b24c46a645b3eb53525c04  
Fixes: OS#1562

## History

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### #3 - 04/29/2016 01:46 PM - laforge

- Assignee set to msuraev

### #4 - 05/04/2016 02:15 PM - laforge

- Priority changed from Normal to High

### #5 - 05/04/2016 02:23 PM - laforge

- Related to Feature #22: Add DTXu/DRX support added

### #6 - 05/04/2016 03:30 PM - laforge

To be more specific, this feature includes:

- parsing of the DTX related RSL/OML bits/IEs (DTX is under control from the BSC, and it can chose to activate/deactivate it dynamically, AFAIR)
- activation of the logical channel towards the MS with DTX enabled or disabled (if BTS needs to do something here; might also be the case that all messages are fully provided by the BSC)

- ensure that the processing of uplink measurements (signal quality / BER) into RSL uplink measurement reports is handled correctly
- ensure that LAPDm is working correctly. LAPDm should *not* be notified that bad frames have been received during periods where DTXu has muted some bursts/blocks. If we did that, it would look like a much higher actual error rate than we have.
- ensure that signalling in both direction works as expected, for both SAPI0 on FACCH as well as SAPI3 (SMS) on SACCH
- ensure that voice handling on the traffic channels works as expected, particularly in terms of the RTP integration for both HR and FR
  - AMR e.g. will transmit SID frames and change the transmission interval of RTP frames

It might make sense to compare our behavior with that of an ip.access nanoBTS in order to have protocol-level compatibility.

**#7 - 05/04/2016 03:40 PM - laforge**

- Related to Feature #1563: Downlink DTX support added

**#8 - 05/09/2016 12:04 PM - msuraev**

- Status changed from New to In Progress

**#9 - 05/09/2016 12:46 PM - msuraev**

Related specs:

3GPP TS 46.031 - FR

3GPP TS 46.012 - SID frames

3GPP TS 06.93 - AMR

3GPP TS 05.08 § 8.3 - Aspects of discontinuous transmission

3GPP TS 48.060 § 6.6.2 - Procedures for Discontinuous Transmission

**#10 - 05/09/2016 06:49 PM - laforge**

- Due date set to 06/10/2016

**#11 - 05/09/2016 07:38 PM - laforge**

- Priority changed from High to Urgent

**#12 - 06/01/2016 01:52 PM - laforge**

there hasn't been any update for 23 days, please update the ticket with some status.

**#13 - 06/01/2016 03:42 PM - msuraev**

- % Done changed from 0 to 20

done:

- parsing of the DTX related RSL/OML bits/IEs..
- ensure that the processing of uplink measurements..

not necessary (at least for uplink):

- activation of the logical channel towards the MS with DTX enabled or disabled..

currently working on:

- change the transmission interval of RTP frames

**#14 - 06/03/2016 04:36 PM - msuraev**

With RTP ts patches (currently under review) DTXu is working fine on sysmobts.

Remaining items:

- check lapdm
- check signaling
- fix interoperability with nanobts

**#15 - 06/03/2016 04:39 PM - msuraev**

- Related to Bug #1744: 1-way voice between sysmobts and nanobts if DTX is enabled added

**#16 - 06/10/2016 02:09 PM - msuraev**

- % Done changed from 20 to 80

The patches are pushed to gerrit/users/max/dtx-test branch and are ready for review/testing. Note support is implemented for sysmoBTS (updated firmware required for AMR tests) and LC15 BTS models. AMR-HR support is incomplete which might result in audible disturbances while testing.

**#17 - 06/10/2016 02:11 PM - msuraev**

Note: testing require fix for libosmo-abis which is under review in gerrit: 217.

**#18 - 06/13/2016 01:24 PM - msuraev**

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

**#19 - 06/20/2016 08:06 AM - msuraev**

- *Status changed from In Progress to Resolved*

- *Assignee changed from msuraev to laforge*

- *% Done changed from 80 to 100*

Last missing bits have been merged to master.

**#20 - 06/22/2016 10:18 PM - laforge**

- *Status changed from Resolved to Closed*