OsmoBTS - Feature #4941
VAMOS support in OsmoBTS

01/12/2021 02:05 PM - laforge

<table>
<thead>
<tr>
<th>Status:</th>
<th>Stalled</th>
</tr>
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<tbody>
<tr>
<td>Priority:</td>
<td>Normal</td>
</tr>
<tr>
<td>Assignee:</td>
<td>fixeria</td>
</tr>
<tr>
<td>Category:</td>
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<tr>
<td>Target version:</td>
<td></td>
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<tr>
<td>Spec Reference:</td>
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**Start date:** 01/12/2021  
**Due date:**  
**% Done:** 90%

**Description**

This ticket should document what needs to be done in terms of supporting VAMOS from OsmoBTS, and to track its status via check-lists and possibly sub-issues.

Our implementation will be focusing on osmo-bts-trx as none of the "proprietary PHY" we support implement any VAMOS support.

This likely includes (at least)

1. Indication of [which level of] VAMOS support the BTS has via OML attributes to BSC
2. Implementation of "shadow TRX" concept in data structures
3. Implementation of VAMOS related RSL extensions on Abis
4. Implementation of a new TRXDv2 protocol from/to the TRX
5. VAMOS-aware uplink + downlink power control
6. Generation of one set of downlink symbols from the real + shadow timeslot/lchan

The corresponding BSC related work is tracked in #4940

```
Related issues:
Related to OsmoBSC - Feature #4940: VAMOS support in OsmoBSC Stalled 01/12/2021
Related to Cellular Network Infrastructure - Feature #4006: TRX protocol: win... Stalled 05/17/2019
Blocked by Cellular Network Infrastructure - Bug #5112: osmo-gsm-manuals: bui... Resolved 04/10/2021
```

**History**

#1 - 01/12/2021 02:05 PM - laforge
- Related to Feature #4940: VAMOS support in OsmoBSC added

#2 - 01/12/2021 05:15 PM - Hoernchen

According to [https://opus4.kobv.de/opus4-fau/files/5533/DissertationMichaelRuder.pdf](https://opus4.kobv.de/opus4-fau/files/5533/DissertationMichaelRuder.pdf) chapter 4 random pairings with scpir=0 should be fine for the time being.

#3 - 01/12/2021 06:49 PM - fixeria
- Status changed from New to In Progress

#4 - 02/17/2021 02:10 PM - fixeria
- Related to Feature #4006: TRX protocol: wind of change added

#5 - 04/10/2021 01:58 AM - fixeria
- Blocked by Bug #5112: osmo-gsm-manuals: build verification is broken added

#6 - 04/20/2021 11:47 PM - fixeria
- % Done changed from 0 to 20

I've submitted a bunch of TRXDv2 related changes to Gerrit:

[https://gerrit.osmocom.org/c/osmo-bts/+/23823](https://gerrit.osmocom.org/c/osmo-bts/+/23823) osmo-bts-trx: remove outdated TRXD protocol documentation
[https://gerrit.osmocom.org/c/osmo-bts/+/23824](https://gerrit.osmocom.org/c/osmo-bts/+/23824) osmo-bts-trx: cosmetic: use '#pragma once' in trx_if.h

09/17/2022 1/2
osmo-bts-trx: reduce and share TRXC message buffer size
osmo-bts-trx: move TRXD message length to tx_if.h
osmo-bts-trx: 'burst type' is actually modulation type
osmo-bts-trx: move MTS parser into trx_data_parse_mts()
osmo-bts-trx: discard TRXD PDUs with unexpected version
osmo-bts-trx: move TDMA frame number check to trx_data_read_cb()
osmo-bts-trx: cosmetic: get rid of TRX_CHDR_LEN macro
osmo-bts-trx: refactor handling of version specific TRXD parts
osmo-bts-trx: implement TRXDv2 protocol support
together with other L1SAP/RSL related changes (all of them have been merged):

https://gerrit.osmocom.org/c/libosmocore/+/23788 protocol/gsm_08_58.h: add RSL_CMOD_SP_{GSM4,GSM5,GSM6}
https://gerrit.osmocom.org/c/libosmocore/+/23789 protocol/gsm_08_58.h: add more 'Channel rate and type' values
https://gerrit.osmocom.org/c/libosmocore/+/23790 protocol/gsm_08_58.h: add asymmetric CSD data rates

https://gerrit.osmocom.org/c/osmo-bts/+/23787 l1sap: fix incorrect pointer cast in l1sap_chan_act()
https://gerrit.osmocom.org/c/osmo-bts/+/23791 rsl: rename, fix and refactor lchan_tchmode_from_cmode()
https://gerrit.osmocom.org/c/osmo-bts/+/23792 rsl: add missing Channel Mode values to rsl_handle_chan_mod_ie()

#7 - 05/21/2021 03:17 PM - fixeria
- % Done changed from 20 to 60

For some reason, the related changes are not appearing here automatically, so adding manually:

remote: https://gerrit.osmocom.org/c/osmo-bts/+/24323 [VAMOS] osmo-bts-trx: rework and split up bts_sched_fn() [NEW]
remote: https://gerrit.osmocom.org/c/osmo-bts/+/24324 [VAMOS] osmo-bts-trx: implement and enable PDU batching for TRXDv2 [NEW]
remote: https://gerrit.osmocom.org/c/osmo-bts/+/24325 [VAMOS] osmo-bts-trx: indicate MTS in Downlink TRXDv2 PDUs [NEW]
remote: https://gerrit.osmocom.org/c/osmo-bts/+/24326 [VAMOS] common/scheduler: unify symbol names for training sequences [NEW]
remote: https://gerrit.osmocom.org/c/osmo-bts/+/24153 [VAMOS] Implement the concept of 'shadow' transceiver [WIP]
remote: https://gerrit.osmocom.org/c/osmo-bts/+/24329 [VAMOS] l1sap_chan_act(): handle Osmocom specific Training Sequence IE [NEW]

#8 - 06/03/2021 02:04 PM - fixeria
- Status changed from In Progress to Feedback
- % Done changed from 60 to 90

Everything is implemented except "VAMOS-aware uplink + downlink power control", but some patches got stuck in Gerrit:

https://gerrit.osmocom.org/q/topic:%22VAMOS%22+(status:open%20OR%20status:wip)

#9 - 07/03/2021 01:46 PM - fixeria
- Status changed from Feedback to Stalled
- Priority changed from Urgent to Normal

#10 - 03/18/2022 01:19 AM - fixeria
- Checklist item [ ] CMI mapping as per 3GPP TS 45.009, section 3.2.1.3 added

3GPP TS 45.009, section 3.2.1.3 defines different TDMA frame numbers for channels in VAMOS mode. See tables 3.2.1.3-[3,4].