OsmoBTS - Feature #2557
extend osmo-bts-virtual + GSMTAP with voice frame (TCH) support

10/06/2017 02:51 PM - laforge

Status: Resolved
Priority: Urgent
Assignee: neels
Category: osmo-bts-virtual
Target version: Virtual GSM Load Testing
Spec Reference:

Description
In order to have actual voice call user plane between osmo-bts-virt and virt_phy, we need to extend GSMTAP with a way to transport voice codec frames, and implement scheduling of rx/tx of such frames in osmo-bts-virtual.

Related issues:
Related to Cellular Network Infrastructure - Feature #2558: Scripts to manage... Stalled 10/06/2017
Precedes OsmocomBB - Feature #2556: Extend virt_phy and "mobile" with support... Resolved 10/09/2017 10/09/2017

History
#1 - 10/06/2017 02:51 PM - laforge
- Related to Feature #2556: Extend virt_phy and "mobile" with support for voice frames added

#2 - 10/06/2017 02:53 PM - laforge
- Related to Feature #2558: Scripts to manage thousands of "mobile" and hundreds of osmo-bts-virtual instances added

#3 - 10/29/2017 07:05 PM - laforge
- Target version set to Virtual GSM Load Testing

#4 - 11/07/2017 08:29 PM - laforge
- Assignee set to laforge

#5 - 11/07/2017 08:30 PM - laforge
- Priority changed from Normal to High

#6 - 02/26/2018 02:17 PM - laforge
- Priority changed from High to Normal

reducing priority as trxcon + osmo-bts-trx support voice.

#7 - 07/18/2019 06:08 AM - laforge
- Priority changed from Normal to Low

#8 - 02/26/2020 11:35 PM - laforge

There are already GSMTAP channel type enum values for TCHF and TCHH. They have just not been used so far in any of the related programs (Osmocom, wireshark, ...) - at least not that I know of.

We could simply put the RTP codec payload in those frames and use the length to determine the type (33 bytes for FR, 31 bytes for EFR, ...). However, I think that's a bit ugly.

So I'd vote for using the first octet as "sub-sub-type" field, which would then tell us

- HR
- FR
- AMR (including AMR frame type like SID_FIRST, SID_UPDATE, ...)

followed by the actual payload in exactly the same order/length as we would have it in the payload of RTP frames. This way we can easily convert between RTP and GSMTAP-voice frames by siply stripping the GSMTAP header and pushing the RTP header or vice-versa.

05/16/2020
I was wondering a bit if it made sense to include other parts of the RTP header, but sequence number or timestamp are already expressed in some form as the GSM frame number...

#9 - 02/26/2020 11:42 PM - laforge
- Category set to osmo-bts-virtual

#10 - 02/27/2020 02:46 PM - laforge
- Priority changed from Low to Urgent

Actually, we cannot use the existing TCHF/TCHH types, as those are already used [without further discrimination] for FACCH + SACCH Data on those channels.

Instead, we will introduce a new GSMTAP_CHANNEL_VOICE type, which then will have the first byte for specifying the payload. My current proposal looks like this:

diff --git a/include/osmocom/core/gsmtap.h b/include/osmocom/core/gsmtap.h
index 35ba7e5..21b94433 100644
--- a/include/osmocom/core/gsmtap.h
+++ b/include/osmocom/core/gsmtap.h
@@ -82,8 +82,8 @@
 #define GSMTAP_CHANNEL_SDCCH6 0x06
 #define GSMTAP_CHANNEL_SDCCH7 0x07
 #define GSMTAP_CHANNEL_SDCCH8 0x08
-#define GSMTAP_CHANNEL_TCH_F 0x09
-#define GSMTAP_CHANNEL_TCH_H 0x0a
+#define GSMTAP_CHANNEL_TCH_F 0x09    /* Actually, it's FACCH/F (signaling) */
+#define GSMTAP_CHANNEL_TCH_H 0x0a    /* Actually, it's FACCH/H (signaling) */
 #define GSMTAP_CHANNEL_PACCH 0x0b
 #define GSMTAP_CHANNEL_CBCH52 0x0c
 #define GSMTAP_CHANNEL_PDTCH 0x0d
@@ -91,6 +91,7 @@
 #define GSMTAP_CHANNEL_PDCH GSMTAP_CHANNEL_PDTCH
 #define GSMTAP_CHANNEL_CBCH51 0x0f
 +#define GSMTAP_CHANNEL_VOICE 0x10    /* voice codec payload (HR/FR/EFR/AMR) */
 /* GPRS Coding Scheme CS1..4 */
 #define GSMTAP_GPRS_CS_BASE 0x20
@@ -318,3 +319,26 @@ struct gsmtap_osmocore_log_hdr {
     uint32_t line_nr;/*!< line number */
 } src_file;
 }
___attribute__((packed));
+
+/*! First byte of type==GSMTAP_TYPE_UM sub_type==GSMTAP_CHANNEL_VOICE payload */
+enum gsmtap_um_voice_type {
+    GSMTAP_UM_VOICE_HR,
+    GSMTAP_UM_VOICE_FR,
+    GSMTAP_UM_VOICE_EFR,
+    GSMTAP_UM_VOICE_AMR,
+    GSMTAP_UM_VOICE_AMR_SID_BAD,
+    GSMTAP_UM_VOICE_AMR_ONSET,
+    GSMTAP_UM_VOICE_AMR_RATSCCH,
+    GSMTAP_UM_VOICE_AMR_RATSCCH_MARKER,
+    GSMTAP_UM_VOICE_AMR_RATSCCH_DATA,
+};

#11 - 02/27/2020 02:57 PM - laforge
- Assignee changed from laforge to neels

pushed the patch as https://gerrit.osmocom.org/c/libosmocore/+/17289

05/16/2020
I doubt I'll have time to work on it any time soon, assigning to neels to take over

#12 - 02/27/2020 02:58 PM - laforge
- Related to deleted (Feature #2556: Extend virt_phy and "mobile" with support for voice frames)

#13 - 02/27/2020 02:59 PM - laforge
- Precedes Feature #2556: Extend virt_phy and "mobile" with support for voice frames added

#14 - 03/05/2020 12:35 PM - neels
- Status changed from New to In Progress
- % Done changed from 0 to 90

https://gerrit.osmocom.org/c/libosmocore/+/17289
https://gerrit.osmocom.org/c/osmo-bts/+/17377

also related:
https://gerrit.osmocom.org/c/osmocom-bb/+/17380

#15 - 05/10/2020 09:43 PM - neels
- Status changed from In Progress to Resolved
- % Done changed from 90 to 100