Ademco ContactID support added in Switchfin

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Hi Guys,

In a typical alarm system scenario there are numerous **alarm panels** spread in a different armed premises.
Those premises are often spread in a very different geographical locations within a town or even country.
The best practice is to collect all the 'alarm events' from all **alarm panels** in a single **central station** .
So the question is what is the best communication media and protocol used for this.
Thanking into account the old infrastructure heritage it is not a surprise that the POTS analog telephone lines
have been widely used in the past and even now. And the protocol is **Contact ID** invented by a company called
Ademco which become de-facto a standard for this kind of **alarm panel <-> central station** communication.
It uses based on a sequence of **DTMF** tones with handshake and a control sum incorporated.
Here we go we have **AlarmSender()** Asterisk application implemented in **Switchfin**. (Note that **AlarmReceiver()**
supporting **Contact ID** protocol is available in Asterisk mainstream since Asterisk 1.2)

To test please build **Switchfin** with **AlarmSender** enabled in the **Switchfin** menuconfig.
Then in Asterisk **CLI** you can do

```
switchfini1*CLI> originate  DAHDI/g1/phone_number application AlarmSender 111118162601000
```

```
 -- Executing AlarmSender("DAHDI/phone_number", "111118162601000") in new stack
 > AlarmSender: Setting read and write formats to u-law
 > AlarmSender: Sending ademco contact ID
 > AlarmSender: Determining protocol ademco contact ID...
 > AlarmSender: Protocol ademco contact ID determined !
 > AlarmSender: Trying to send for 1 time (max 4)
 > AlarmSender : digits_to_send : 1111181626010006 with checksum : 6
 > AlarmSender: Verifying 1400Hz 100ms burst (ACK)
 > AlarmSender : Launching receving loop
 > AlarmSender: Verifying 2300Hz 100ms burst (ACK)
 > AlarmSender : Launching receving loop
 AlarmSender: Sending DTMF digits successful !!
 > AlarmSender : Launching receving loop
 > AlarmSender : Not a Voice frame, trying with next frame
 > AlarmSender: Ademco Contact ID sent successfully !
 -- Executing [DAHDI@alarm:3] Hangup("DAHDI/phone_number", "") in new stack
```

You should have **AlarmReceiver** (either commercial **alarm central** station or Asterisk box with **AlarmReceiver** application) listening on the phone_number side. The message is actually the last 15 digits.
For more information about the protocol itself please check Contact ID recommendation

The **Asterisk AlarmReceiver** application from the remote side responds:

```
switchfini2*CLI>
 -- Executing [6000@alarm:4] AlarmReceiver("DAHDI/Channel 1", "") in new stack
 > AlarmReceiver: Answering channel
 > AlarmReceiver: Waiting for connection to stabilize
 > AlarmReceiver: Waiting for first event from panel...
 > AlarmReceiver: Sending 1400Hz 100ms burst (ACK)
 > AlarmReceiver: Waiting for first event from panel...
 > AlarmReceiver: Sending 1400Hz 100ms burst (ACK)
 > AlarmReceiver: Sending 2300Hz 100ms burst (ACK)
 > AlarmMonitoring: Detected format ADEMCO_CONTACT_ID.
 == AlarmReceiver: Received Event 1111181626010006
```

This open the door for a few interesting applications based on IP0x as a component in the smart alarm systems.