DTMF OPERATION ON *GPON*

1 Goals

Show the available configuration to set the operation mode of the DTMF (Dual-Tone-Multiple-Frequency) tones on VoIP calls using GPON Furukawa ONTs.

2 Context

This document is valid for the following OLTs:

- G2500;
- G8S;
- G4S.

When they are working with the following ONT models:

- G420R;
- G420W;
- G421W.

That is, ONTs that use voip-profile to configure their FXS (Foreign eXchange Subscriber) ports, also known as “pots”.

3 Application

This configuration is essential when there is, on the network, some application that requires user interaction through DTMF technology. A good example is the interaction using IVR (Interactive Voice Response).

4 Configuration

4.1 Possibilities

There are three configuration modes for the DTMF:

- In-band DTMF;
- Out-of-band DTMF (using SIP INFO message);
- Out-of-band DTMF (RFC2833 – using RTP-Event);

The configuration of DTMF operation mode is always done on the voip-profile and no changes outside this profile are required. The picture below shows a voip-profile that this document will be based on.

```
voip-profile exemplo_SIP create
 codec-nego 1 codec g722 packet-period 20 silence-suppression 1
 codec-nego 2 codec g722 packet-period 20 silence-suppression 1
 codec-nego 3 codec g722 packet-period 20 silence-suppression 1
 codec-nego 4 codec g722 packet-period 20 silence-suppression 1
 protocol sip
  proxy-server 10.56.21.2
  outbound-proxy-server 10.56.21.2
  register-server 10.56.21.2
  host-part-server 10.56.21.2
  dns primary 10.60.250.16
  soft-switch SIEM
  dial-plan table 1 X.T
  end-of-digit disable
  apply
```

Figure 1 – Voip-profile example (In-band DTMF).

4.1.1 In-band DTMF

In this configuration, all the DTMF flow goes inside the audio flow.

The voip-profile example (figure 1) is already configured for the In-band DTMF mode. Therefore, we do not need to set it.

4.1.2 Out-of-band DTMF (using SIP INFO message)

This configuration allows DTMF commands to be sent separately from audio traffic (commonly RTP), using the SIP INFO messages.

To set this mode, just insert the command “oob-dtmf enable” directly on the voip-profile root. See the result below:

```
voip-profile exemplo_SIP create
 codec-nego 1 codec g722 packet-period 20 silence-suppression 1
 codec-nego 2 codec g722 packet-period 20 silence-suppression 1
 codec-nego 3 codec g722 packet-period 20 silence-suppression 1
 codec-nego 4 codec g722 packet-period 20 silence-suppression 1
 oob-dtmf enable
 protocol sip
  proxy-server 10.56.21.2
  outbound-proxy-server 10.56.21.2
  register-server 10.56.21.2
  host-part-server 10.56.21.2
  dns primary 10.60.250.16
  soft-switch SIEM
  dial-plan table 1 X.T
  end-of-digit disable
  apply
```

Figure 3 – Voip-profile Out-of-band DTMF (SIP INFO)

4.1.3 *Out-of-band DTMF* (RFC 2833 – using *RTP-Event*)

In this case, the ONT sends a “Telephony/Event” message, to start a SDP negotiation.

If that negotiation is successful, “RFC-2833 Event” or “*RTP*-Event” messages are sent when the user presses a DTMF button. However, if it fails, the ONT sends the DTMF inside the audio flow (In-band DTMF).

To do this configuration, just insert the commands “oob-dtmf enable” and “rtp-dtmf-event enable” directly into the voip-profile root. See the result below:

```
voip-profile exemplo_SIP create
 codec-nego 1 codec g722 packet-period 20 silence-suppression 1
 codec-nego 2 codec g722 packet-period 20 silence-suppression 1
 codec-nego 3 codec g722 packet-period 20 silence-suppression 1
 codec-nego 4 codec g722 packet-period 20 silence-suppression 1
 oob-dtmf enable
 rtp-dtmf-event enable
 protocol sip
  proxy-server 10.56.21.2
  outbound-proxy-server 10.56.21.2
  register-server 10.56.21.2
  host-part-server 10.56.21.2
  dns primary 10.60.250.16
  soft-switch SIEM
  dial-plan table 1 X.T
  end-of-digit disable
  apply
```

Figure 4 – Voip-profile Out-of-band DTMF (RFC 2833)

5 Conclusion

The change of these parameters (*oob-dtmf* e *rtp-dtmf-event*) defines the DTMF operation mode of the ONTs. To use it correctly, is necessary to know the SIP server (or PBX) specs.

If you have problems or questions about this procedure, please contact us using our support portal. Fill the form and send us your questions.

http://support.furukawalatam.com/formulario/

On that link, you also can find documents and information to keep your equipment updated.