iLBC Support for SIP and H.323

The internet Low Bitrate Codec (iLBC) is a standard, high-complexity speech codec suitable for robust voice communication over IP. The iLBC has built-in error correction functionality that helps the codec perform in networks with high-packet loss. This codec is supported on both Session Initiation Protocol (SIP) and H.323.

Prerequisites

**Cisco Unified Border Element**

- Cisco IOS Release 12.2(11)T or a later release must be installed and running on your Cisco Unified Border Element.

**Cisco Unified Border Element (Enterprise)**

- Cisco IOS XE Release 2.5 or a later release must be installed and running on your Cisco ASR 1000 Series Router.

Restrictions

The iLBC Support for SIP and H.323 feature is supported on the following:

- IP-to-IP gateways with no transcoding and conferencing
- All c5510 DSP-based platforms

Information About iLBC Support for SIP and H.323

The internet Low Bit Rate Codec (iLBC) is designed for narrow band speech and results in a payload bit rate of 13.33 kbits per second for 30-millisecond (ms) frames and 15.20 kbits per second for 20 ms frames.

When the codec operates at block lengths of 20 ms, it produces 304 bits per block, which is packetized as defined in RFC 3952. Similarly, for block lengths of 30 ms it produces 400 bits per block, which is packetized as defined in RFC 3952.

The iLBC has built-in error correction functionality to provide better performance in networks with higher packet loss.

How to Configure an iLBC Codec

This section includes the following tasks:

- Configuring an iLBC Codec on a Dial Peer, page 68
- Configuring an iLBC Codec in the Voice Class, page 70

Configuring an iLBC Codec on a Dial Peer

The iLBC is intended for packet-based communication. Perform the following steps to configure the iLBC codec on a dial peer.
**SUMMARY STEPS**

1. enable
2. configure terminal
3. dial-peer voice *tag voip*
4. rtp payload-type cisco-codec-ilbc [*number*]
5. codec ilbc [mode *frame_size* [*bytes payload_size*]]
6. exit

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router&gt; enable</td>
<td>- Enter your password if prompted.</td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
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<tr>
<td><strong>Example:</strong> Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> dial-peer voice <em>tag voip</em></td>
<td>Enters dial-peer configuration mode for the VoIP dial peer designated by <em>tag</em>.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config)# dial-peer voice 10 voip</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> rtp payload-type cisco-codec-ilbc [<em>number</em>]</td>
<td>Identifies the payload type of a Real-Time Transport Protocol (RTP) packet. Keyword and argument are as follows:</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config-dial-peer)# rtp payload-type cisco-codec-ilbc 100</td>
<td>- <strong>cisco-codec-ilbc [<em>number</em>]</strong>—Payload type is for internet Low Bit Rate Codec (iLBC). Range: 96 to 127. Default: 116.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>Do not use the following numbers because they have preassigned values: 96, 97, 100, 117, 121 to 123, and 125 to 127. If you use these values, the command will fail. You must first reassign the value in use to a different unassigned number, for example:</td>
</tr>
<tr>
<td></td>
<td>- rtp payload-type nse 105</td>
</tr>
<tr>
<td></td>
<td>- rtp payload-type cisco-codec-ilbc 100</td>
</tr>
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</table>
Configuring an iLBC Codec in the Voice Class

When using multiple codecs, you must create a voice class in which you define a selection order for codecs; then, you can apply the voice class to VoIP dial peers. The `voice-class codec` global configuration command allows you to define the voice class that contains the codec selection order. Then, use the `voice-class codec` dial-peer configuration command to apply the class to individual dial peers.

To configure an iLBC in the voice class for multiple-codec selection order, perform the following steps.

You can configure more than one voice class codec list for your network. Configure the codec lists and apply them to one or more dial peers based on which codecs (and the order) you want supported for the dial peers. Define a selection order if you want more than one codec supported for a given dial peer.

**SUMMARY STEPS**

1. enable
2. configure terminal
3. voice-class codec tag
4. codec preference value ilbc [mode frame_size] [bytes payload_size]
5. exit
6. dial-peer voice tag voip
7. voice-class codec tag
8. exit

**Example:**

Router(config-dial-peer)# codec ilbc mode 30 bytes 200

<table>
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<tr>
<td>Step 5</td>
<td>codec ilbc [mode frame_size] [bytes payload_size]</td>
</tr>
<tr>
<td>Example:</td>
<td>Router(config-dial-peer)# codec ilbc mode 30 bytes 200</td>
</tr>
</tbody>
</table>

| Step 6           | exit |
| Example:         | Router(config-dial-peer)# exit |

Specifies the voice coder rate of speech for a dial peer. Keywords and arguments are as follows:

- **mode frame_size**—The iLBC operating frame mode that will be encapsulated in each packet. Valid entries are 20 (20ms frames for 15.2kbps bit rate) or 30 (30ms frames for 13.33 kbps bit rate). Default is 20.
- **bytes payload_size**—Number of bytes in an RTP packet. For mode 20, valid values are 38 (default), 76, 114, 152, 190, and 228. For mode 30, valid values are 50 (default), 100, 150, and 200.

Exits the current mode.
### Detailed Steps

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</tr>
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<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enters privileged EXEC mode. Enter your password if prompted.</td>
</tr>
</tbody>
</table>
| **Example:**
  
  Router> enable |
| **Step 2** configure terminal | Enters global configuration mode. |
| **Example:**
  
  Router# configure terminal |
| **Step 3** voice class codec tag | Enters voice-class configuration mode and assigns an identification tag number for a codec voice class. The argument is as follows: |
| **Example:**
  
  Router(config)# voice class codec 99 |
| **Step 4** codec preference value ilbc [mode frame size] [bytes payload size] | Specifies a list of preferred codecs to use on a dial peer. Keywords and arguments are as follows: |
| **Example:**
  
  Router(config-voice-class)# codec preference 1 ilbc 30 200 |
| **Step 5** exit | Exits the current mode. |
| **Example:**
  
  Router(config-voice-class)# exit |
| **Step 6** dial-peer voice tag voip | Enters dial-peer configuration mode for the specified VoIP dial peer. |
| **Example:**
  
  Router(config)# dial-peer voice 16 voip |
### Step 7

**voice-class codec tag**

**Example:**

```
Router(config-dial-peer)# voice-class codec 99
```

- **Purpose:** Assigns a previously configured codec selection preference list (the codec voice class that you defined in step 3) to the specified VoIP dial peer.

**Note** The **voice-class codec** command in dial-peer configuration mode contains a hyphen. The **voice class** command in global configuration mode does not contain a hyphen.

### Step 8

**exit**

**Example:**

```
Router(config-dial-peer)# exit
```

- **Purpose:** Exits the current mode.

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**Verifying iLBC Support for SIP and H.323**

You can use the following commands to check iLBC status:

- `show voice call summary`
- `show voice call status`
- `show voice dsmp stream`
- `show call active voice`
- `show call history voice`
- `show voice dsp and its extensions`
- `show dial-peer voice`
- `show voice dsp channel operational-status`