The call flow diagram presents the flow of an H.323 call. The following steps are covered:
- H.225/Q.931 Call Setup
- H.245 Negotiation and Voice Path Setup
- RTP/RTCP Based Voice Communication

This call flow diagram was generated with EventStudio System Designer 2.5 (http://www.EventHelix.com/EventStudio).

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### H.323 Call Setup (H.323 Call Setup Involving H.224, Q.931, H.245, RTP and RTCP Protocols)

<table>
<thead>
<tr>
<th>Called PC</th>
<th>Called H.225 Port</th>
<th>Called H.245 Port</th>
<th>Called RTP Port</th>
<th>Called RTCP Port</th>
<th>Caller H.245 Port</th>
<th>Caller RTP Port</th>
<th>Caller H.225 Port</th>
<th>Caller RTCP Port</th>
<th>Caller PC</th>
</tr>
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</tbody>
</table>

#### Q.931 CONNECT

- **H.245_IP_Address**
- **H.245_Port** = Called H.245 Port
- **q931.call_ref** = 77:14
- **h225.t35CountryCode** = 0

The Q.931 connect is sent to the caller. The message contains information about the H.245 negotiation port.

#### Open Socket for H.245 negotiation

The caller opens the socket for H.245 negotiation. The calling H.245 port information is extracted from the connect message.

#### Establish TCP Connection with Called_H.245_Port

Now establish a TCP connection for H.245 negotiation.

- **Called party negotiates terminal capability.** G.711 A-law 64Kbps codec is requested.
- **Called party negotiates master-slave.**
- **Calling party also negotiates terminal capability.** G.711 A-law 64Kbps codec is requested.
- **Caller also initiates a Master Slave determination request.**

- **Caller replies with a combined "terminal capability" and "master-slave" ack.**

- **Called party responds with terminal capability ack.**

- **Called party becomes the master.**

#### Voice Path Setup

- **Open Socket for RTCP**

The calling party opens a RTCP socket for controlling the RTP stream.

- **Open Socket for RTP**

The calling party opens a RTP socket for voice communication over the Internet.
H.323 Call Setup (H.323 Call Setup Involving H.224, Q.931, H.245, RTP and RTCP Protocols)

<table>
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<tr>
<th>Called PC</th>
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<th>Internet</th>
<th>Caller Segment</th>
<th>Caller PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Called</td>
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<td>Called H245</td>
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<td>Called RTP Port</td>
<td>Caller H225</td>
<td>Caller H225</td>
<td>Caller</td>
</tr>
</tbody>
</table>

### H.245 Open Logical Channel Request

- channelNumber = 101,
- audio_data = (G.711, A-law), 64Kbps,
- media_control_ip_address,
- tsap_identifier = Caller RTCP Port,
- silence_suppression = TRUE

Send channel open request to the called party. RTCP port number is included in the message. The G.711 A-law 64Kbps will be used on the audio path.

### Open Socket for RTCP

The called party opens a RTCP socket for controlling the RTP stream.

### Create Open Socket for RTP

The called party opens a RTP socket for voice communication over the Internet.

### H.245 Open Logical Channel Request

- channelNumber = 61,
- audio_data = (G.711, A-law), 64Kbps,
- media_control_ip_address,
- tsap_identifier = Called RTCP Port,
- silence_suppression = TRUE

Send channel open request to the calling party. RTCP port number is included in the message. The G.711 A-law 64Kbps will be used on the audio path.

### H.245 Open Logical Channel Ack

- media_control_ip_address,
- media_control_tsap_identifier = Caller RTCP Port,
- media_ip_address,
- media_tsap_identifier = Caller RTP Port

Caller acknowledges the message. The RTP and RTCP port numbers are included in the message.

### H.245 Open Logical Channel Ack

- media_control_ip_address,
- media_control_tsap_identifier = Called RTCP Port,
- media_ip_address,
- media_tsap_identifier = Called RTP Port

Called party acknowledges the message. The RTP and RTCP port numbers are included in the message.

### RTP/RTCP Based Voice Communication

- Payload type: ITU-T G.711 PCMA,
- Synchronization Source identifier: 3739283087,
- Sequence number: 59133,
- Timestamp: 240

The voice is compressed and packed into RTP packets and transported to the called party.

The called party decompresses the voice.
Voice from called party is compressed and transmitted in RTP packets to the caller.
The calling party decompresses the voice.

An RTCP packet is transmitted to monitor the quality of the RTP path. These statistics are used to adjust the buffering and transmission of RTP packets.