IANA Considerations for IAX: Inter-Asterisk eXchange Version 2

Abstract

This document establishes the IANA registries for IAX, the Inter-Asterisk eXchange protocol, an application-layer control and media protocol for creating, modifying, and terminating multimedia sessions over Internet Protocol (IP) networks. IAX was developed by the open source community for the Asterisk PBX and is targeted primarily at Voice over Internet Protocol (VoIP) call control, but it can be used with streaming video or any other type of multimedia.

Status of This Memo

This document is not an Internet Standards Track specification; it is published for informational purposes.

This is a contribution to the RFC Series, independently of any other RFC stream. The RFC Editor has chosen to publish this document at its discretion and makes no statement about its value for implementation or deployment. Documents approved for publication by the RFC Editor are not a candidate for any level of Internet Standard; see Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc5457.

IESG Note

The IESG thinks that this work is related to IETF work done in SIP, MMUSIC, and AVT WGs, but this does not prevent publishing.
1. Introduction

IAX (Inter-Asterisk eXchange) is an "all-in-one" protocol for handling multimedia in IP networks. It combines both control and media services in the same protocol. In addition, IAX uses a single UDP data stream on a static port greatly simplifying Network Address Translation (NAT) gateway traversal, eliminating the need for other protocols to work around NAT, and simplifying network and firewall management. IAX employs a compact encoding that decreases bandwidth usage and is well suited for Internet telephony service. In addition, its open nature permits new payload type additions needed to support additional services.
This document specifies and provides the initial values for the creation of the IAX-related IANA registries as per [RFC5226].

2. IANA Considerations

The IAX protocol, as defined in [RFC5456], defines 15 namespaces that have been registered. These namespaces are described below.

Each of these namespaces utilizes an 'Expert Review' for extension. Documentation of new values is not mandated as RFCs. The Expert Review should be guided by a few common sense considerations. For example, new values should not be specific to a country, region, organization, or company; they should be well-defined and widely recognized.

2.1. Meta Command

Registry Name: IAX Meta Commands

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.1.3.2 of [RFC5456].

Valid Range: 0x01-x7F.

Display format: hex.

The following table specifies the initial assignments of Meta Command values:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>Trunk Meta Frame</td>
<td>Indicates that frame is a trunk meta frame.</td>
</tr>
</tbody>
</table>

2.2. Frame Types

Registry Name: IAX Frame Types

Required Information for New Values: Name, description, and relevant security considerations, if any. In addition, the definition and description of subclasses.

Description: See Section 8.2 of [RFC5456].
Valid Range: 0x01-xFF.

Display format: hex.

The following table specifies the initial assignments of Frame Type Values:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Description</th>
<th>Subclass Description</th>
<th>Data Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>DTMF</td>
<td>0-9, A-D, *, #</td>
<td>Undefined</td>
</tr>
<tr>
<td>0x02</td>
<td>Voice</td>
<td>Audio Compression Format</td>
<td>Data</td>
</tr>
<tr>
<td>0x03</td>
<td>Video</td>
<td>Video Compression Format</td>
<td>Data</td>
</tr>
<tr>
<td>0x04</td>
<td>Control</td>
<td>See Control Frame</td>
<td>Varies with subclass</td>
</tr>
<tr>
<td>0x05</td>
<td>Null</td>
<td>Undefined</td>
<td>Undefined</td>
</tr>
<tr>
<td>0x06</td>
<td>IAX Control</td>
<td>See IAX Protocol</td>
<td>Information Elements</td>
</tr>
<tr>
<td>0x07</td>
<td>Text</td>
<td>Always 0</td>
<td>Raw Text</td>
</tr>
<tr>
<td>0x08</td>
<td>Image</td>
<td>Image Compression Format</td>
<td>Raw image</td>
</tr>
<tr>
<td>0x09</td>
<td>HTML</td>
<td>See HTML Frame Types</td>
<td>Message Specific</td>
</tr>
<tr>
<td>0x0A</td>
<td>Comfort</td>
<td>Level in -dBoV of comfort noise</td>
<td>None</td>
</tr>
</tbody>
</table>

2.3. Control Frame Subclass

Registry Name: IAX Control Frame Subclass

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.3 of [RFC5456].

Valid Range: 0x00-x7F.

Display format: hex.
The following table specifies the initial assignments of Control Frame Subclasses:

<table>
<thead>
<tr>
<th>VALUE</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>Hangup</td>
<td>The call has been hungup at the remote end</td>
</tr>
<tr>
<td>0x02</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x03</td>
<td>Ringing</td>
<td>Remote end is ringing (ring-back)</td>
</tr>
<tr>
<td>0x04</td>
<td>Answer</td>
<td>Remote end has answered</td>
</tr>
<tr>
<td>0x05</td>
<td>Busy</td>
<td>Remote end is busy</td>
</tr>
<tr>
<td>0x06</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x07</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x08</td>
<td>Congestion</td>
<td>The call is congested</td>
</tr>
<tr>
<td>0x09</td>
<td>Flash Hook</td>
<td>Flash hook</td>
</tr>
<tr>
<td>0x0a</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x0b</td>
<td>Option</td>
<td>Device-specific options are being transmitted</td>
</tr>
<tr>
<td>0x0c</td>
<td>Key Radio</td>
<td>Key Radio</td>
</tr>
<tr>
<td>0x0d</td>
<td>Unkey Radio</td>
<td>Unkey Radio</td>
</tr>
<tr>
<td>0x0e</td>
<td>Call Progress</td>
<td>Call is in progress</td>
</tr>
<tr>
<td>0x0f</td>
<td>Call Proceeding</td>
<td>Call is proceeding</td>
</tr>
<tr>
<td>0x10</td>
<td>Hold</td>
<td>Call is placed on hold</td>
</tr>
<tr>
<td>0x11</td>
<td>Unhold</td>
<td>Call is taken off hold</td>
</tr>
</tbody>
</table>
2.4. IAX Control Frames

Registry Name: IAX Control Frames

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.4 of [RFC5456].

Valid Range: 0x01-x7F.

Display format: hex.

The following table specifies the initial assignments of IAX Control Frame values:

<table>
<thead>
<tr>
<th>Hex</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>NEW</td>
<td>Initiate a new call</td>
</tr>
<tr>
<td>0x02</td>
<td>PING</td>
<td>Ping request</td>
</tr>
<tr>
<td>0x03</td>
<td>PONG</td>
<td>Ping or poke reply</td>
</tr>
<tr>
<td>0x04</td>
<td>ACK</td>
<td>Explicit acknowledgment</td>
</tr>
<tr>
<td>0x05</td>
<td>HANGUP</td>
<td>Initiate call tear-down</td>
</tr>
<tr>
<td>0x06</td>
<td>REJECT</td>
<td>Reject a call</td>
</tr>
<tr>
<td>0x07</td>
<td>ACCEPT</td>
<td>Accept a call</td>
</tr>
<tr>
<td>0x08</td>
<td>AUTHREQ</td>
<td>Authentication request</td>
</tr>
<tr>
<td>0x09</td>
<td>AUTHREP</td>
<td>Authentication reply</td>
</tr>
<tr>
<td>0x0a</td>
<td>INVAL</td>
<td>Invalid message</td>
</tr>
<tr>
<td>0x0b</td>
<td>LAGRQ</td>
<td>Lag request</td>
</tr>
<tr>
<td>0x0c</td>
<td>LAGRP</td>
<td>Lag reply</td>
</tr>
<tr>
<td>0x0d</td>
<td>REGREQ</td>
<td>Registration request</td>
</tr>
<tr>
<td>0x0e</td>
<td>REGAUTH</td>
<td>Registration authentication</td>
</tr>
<tr>
<td>0x0f</td>
<td>REGACK</td>
<td>Registration acknowledgement</td>
</tr>
<tr>
<td>0x10</td>
<td>0x11</td>
<td>0x12</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>REGREJ</td>
<td>REGREL</td>
<td>VNAK</td>
</tr>
</tbody>
</table>
2.5. HTML Command Subclasses

Registry Name: IAX HTML Command Subclasses

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.2 of [RFC5456].

Valid Range: 0x01-x7F.

Display format: hex.

The following table specifies the initial assignments of IAX HTML Command Subclasses:

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>Sending a URL</td>
</tr>
<tr>
<td>0x02</td>
<td>Data frame</td>
</tr>
<tr>
<td>0x04</td>
<td>Beginning frame</td>
</tr>
<tr>
<td>0x08</td>
<td>End frame</td>
</tr>
<tr>
<td>0x10</td>
<td>Load is complete</td>
</tr>
<tr>
<td>0x11</td>
<td>Peer does not support HTML</td>
</tr>
<tr>
<td>0x12</td>
<td>Link URL</td>
</tr>
<tr>
<td>0x13</td>
<td>Unlink URL</td>
</tr>
<tr>
<td>0x14</td>
<td>Reject Link URL</td>
</tr>
</tbody>
</table>

2.6. Information Elements

Registry Name: IAX Information Elements

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6 of [RFC5456].

Valid Range: 0x01-xFF.
Display format: hex.

The following table specifies the Initial Assignments of Information Element Definitions:

<table>
<thead>
<tr>
<th>HEX</th>
<th>NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>CALLED NUMBER</td>
<td>Number/extension being called</td>
</tr>
<tr>
<td>0x02</td>
<td>CALLING NUMBER</td>
<td>Calling number</td>
</tr>
<tr>
<td>0x03</td>
<td>CALLING ANI</td>
<td>Calling number ANI for billing</td>
</tr>
<tr>
<td>0x04</td>
<td>CALLING NAME</td>
<td>Name of caller</td>
</tr>
<tr>
<td>0x05</td>
<td>CALLED CONTEXT</td>
<td>Context for number</td>
</tr>
<tr>
<td>0x06</td>
<td>USERNAME</td>
<td>Username (peer or user) for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>authentication</td>
</tr>
<tr>
<td>0x07</td>
<td>PASSWORD</td>
<td>Password for authentication</td>
</tr>
<tr>
<td>0x08</td>
<td>CAPABILITY</td>
<td>Actual CODEC capability</td>
</tr>
<tr>
<td>0x09</td>
<td>FORMAT</td>
<td>Desired CODEC format</td>
</tr>
<tr>
<td>0x0a</td>
<td>LANGUAGE</td>
<td>Desired language</td>
</tr>
<tr>
<td>0x0b</td>
<td>VERSION</td>
<td>Protocol version</td>
</tr>
<tr>
<td>0x0c</td>
<td>ADSICPE</td>
<td>CPE ADSI capability</td>
</tr>
<tr>
<td>0x0d</td>
<td>DNID</td>
<td>Originally dialed DNID</td>
</tr>
<tr>
<td>0x0e</td>
<td>AUTHMETHODS</td>
<td>Authentication method(s)</td>
</tr>
<tr>
<td>0x0f</td>
<td>CHALLENGE</td>
<td>Challenge data for MD5/RSA</td>
</tr>
<tr>
<td>0x10</td>
<td>MD5 RESULT</td>
<td>MD5 challenge result</td>
</tr>
<tr>
<td>0x11</td>
<td>RSA RESULT</td>
<td>RSA challenge result</td>
</tr>
<tr>
<td>0x12</td>
<td>APPARENT ADDR</td>
<td>Apparent address of peer</td>
</tr>
<tr>
<td>0x13</td>
<td>REFRESH</td>
<td>When to refresh registration</td>
</tr>
<tr>
<td>0x14</td>
<td>DPSTATUS</td>
<td>Dialplan status</td>
</tr>
<tr>
<td>0x15</td>
<td>CALLNO</td>
<td>Call number of peer</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>---------------------</td>
</tr>
<tr>
<td>0x16</td>
<td>CAUSE</td>
<td>Cause</td>
</tr>
<tr>
<td>0x17</td>
<td>IAX UNKNOWN</td>
<td>Unknown IAX command</td>
</tr>
<tr>
<td>0x18</td>
<td>MSGCOUNT</td>
<td>How many messages waiting</td>
</tr>
<tr>
<td>0x19</td>
<td>AUTOANSWER</td>
<td>Request auto-answering</td>
</tr>
<tr>
<td>0x1a</td>
<td>MUSICONHOLD</td>
<td>Request musiconhold with QUELCH</td>
</tr>
<tr>
<td>0x1b</td>
<td>TRANSFERID</td>
<td>Transfer Request Identifier</td>
</tr>
<tr>
<td>0x1c</td>
<td>RDNIS</td>
<td>Referring DNIS</td>
</tr>
<tr>
<td>0x1d</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x1e</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x1f</td>
<td>DATETIME</td>
<td>Date/Time</td>
</tr>
<tr>
<td>0x20</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x21</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x22</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x23</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x24</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x25</td>
<td>Reserved</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>0x26</td>
<td>CALLINGPRES</td>
<td>Calling presentation</td>
</tr>
<tr>
<td>0x27</td>
<td>CALLINGTON</td>
<td>Calling type of number</td>
</tr>
<tr>
<td>0x28</td>
<td>CALLINGTNS</td>
<td>Calling transit network select</td>
</tr>
<tr>
<td>0x29</td>
<td>SAMPLINGRATE</td>
<td>Supported sampling rates</td>
</tr>
<tr>
<td>0x2a</td>
<td>CAUSECODE</td>
<td>Hangup cause</td>
</tr>
<tr>
<td>0x2b</td>
<td>ENCRYPTION</td>
<td>Encryption format</td>
</tr>
<tr>
<td>0x2c</td>
<td>ENCKEY</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>METHOD</td>
<td>DESCRIPTION</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>0x2d</td>
<td>CODEC PREFS</td>
<td></td>
</tr>
<tr>
<td>0x2e</td>
<td>RR JITTER</td>
<td></td>
</tr>
<tr>
<td>0x2f</td>
<td>RR LOSS</td>
<td></td>
</tr>
<tr>
<td>0x30</td>
<td>RR PKTS</td>
<td></td>
</tr>
<tr>
<td>0x31</td>
<td>RR DELAY</td>
<td></td>
</tr>
<tr>
<td>0x32</td>
<td>RR DROPPED</td>
<td></td>
</tr>
<tr>
<td>0x33</td>
<td>RR OOO</td>
<td></td>
</tr>
<tr>
<td>0x34</td>
<td>OSPTOKEN</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1: Information Element Definitions**

### 2.7. Authentication Methods

Registry Name: IAX Authentication Methods

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.13 of [RFC5456].

Valid Range: 0x0001-xFFFF bitmask, values must be a power of two.

Display format: hex.

The following table specifies the initial assignments of IAX Authentication Methods:

<table>
<thead>
<tr>
<th>METHOD</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0001</td>
<td>Reserved (was Plaintext)</td>
</tr>
<tr>
<td>0x0002</td>
<td>MD5</td>
</tr>
<tr>
<td>0x0004</td>
<td>RSA</td>
</tr>
</tbody>
</table>
2.8. Dialplan Status Flags

Registry Name: IAX Dialplan Status Flags

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.19 of [RFC5456].

Valid Range: 0x0001-xFFFF bitmask, values must be a power of two.

Display format: hex.

The following table specifies the initial assignments of IAX dialplan status flags:

<table>
<thead>
<tr>
<th>FLAG</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0001</td>
<td>Exists</td>
</tr>
<tr>
<td>0x0002</td>
<td>Can exist</td>
</tr>
<tr>
<td>0x0004</td>
<td>Non-existent</td>
</tr>
<tr>
<td>0x4000</td>
<td>Retain dialtone (ignorepat)</td>
</tr>
<tr>
<td>0x8000</td>
<td>More digits may match number</td>
</tr>
</tbody>
</table>

2.9. Calling Presentation

Registry Name: IAX Calling Presentation

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.29 of [RFC5456].

Valid Range: 0x00-xFF.

Display format: hex.
The following table specifies the initial assignments of calling presentation values:

<table>
<thead>
<tr>
<th>FLAG</th>
<th>PRESENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>Allowed user/number not screened</td>
</tr>
<tr>
<td>0x01</td>
<td>Allowed user/number passed screen</td>
</tr>
<tr>
<td>0x02</td>
<td>Allowed user/number failed screen</td>
</tr>
<tr>
<td>0x03</td>
<td>Allowed network number</td>
</tr>
<tr>
<td>0x20</td>
<td>Prohibited user/number not screened</td>
</tr>
<tr>
<td>0x21</td>
<td>Prohibited user/number passed screen</td>
</tr>
<tr>
<td>0x22</td>
<td>Prohibited user/number failed screen</td>
</tr>
<tr>
<td>0x23</td>
<td>Prohibited network number</td>
</tr>
<tr>
<td>0x43</td>
<td>Number not available</td>
</tr>
</tbody>
</table>

NOTE: The values in this table are derived from Q.931; however, future values may be from other sources.

2.10. Calling Type of Number (CALLINGTON)

Registry Name: IAX Calling Type of Number

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.30 of [RFC5456].

Valid Range: 0x00–0xFF.

Display format: hex.
The following table specifies the initial assignments of valid calling type of number values:

<table>
<thead>
<tr>
<th>VALUE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>Unknown</td>
</tr>
<tr>
<td>0x10</td>
<td>International Number</td>
</tr>
<tr>
<td>0x20</td>
<td>National Number</td>
</tr>
<tr>
<td>0x30</td>
<td>Network Specific Number</td>
</tr>
<tr>
<td>0x40</td>
<td>Subscriber Number</td>
</tr>
<tr>
<td>0x60</td>
<td>Abbreviated Number</td>
</tr>
<tr>
<td>0x70</td>
<td>Reserved for extension</td>
</tr>
</tbody>
</table>

NOTE: The values in this table are derived from Q.931; however, future values may be from other sources.

2.11. IAX Transit Network Identification

Registry Name: IAX Transit Network Identification Plan

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.31 of [RFC5456].

Valid Range: 0000-1111 (four bits).

Display format: binary.
The following table specifies the initial assignments of IAX Calling Type of Number values:

<table>
<thead>
<tr>
<th>BITS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>Unknown</td>
</tr>
<tr>
<td>0001</td>
<td>Caller Identification Code</td>
</tr>
<tr>
<td>0011</td>
<td>Data Network Identification Code</td>
</tr>
</tbody>
</table>

NOTE: The values in this table are derived from Q.931; however, future values may be from other sources.

2.12. IAX Type of Network

Registry Name: IAX Type of Network

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.30 of [RFC5456].

Valid Range: 000-111 (three bits).

Display format: binary.

The following table specifies the initial assignments of IAX Calling Type of Network values:

<table>
<thead>
<tr>
<th>BITS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>User Specified</td>
</tr>
<tr>
<td>010</td>
<td>National Network Identification</td>
</tr>
<tr>
<td>011</td>
<td>International Network Identification</td>
</tr>
</tbody>
</table>

NOTE: The values in this table are derived from Q.931, however, future values may be from other sources.
2.13. Cause Codes

Registry Name: IAX Cause Codes

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.30 of [RFC5456].

Valid Range: 1-255.

Display format: decimal.

The following table specifies the initial assignments of IAX Cause Code values:

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unassigned/unallocated number</td>
</tr>
<tr>
<td>2</td>
<td>No route to specified transit network</td>
</tr>
<tr>
<td>3</td>
<td>No route to destination</td>
</tr>
<tr>
<td>6</td>
<td>Channel unacceptable</td>
</tr>
<tr>
<td>7</td>
<td>Call awarded and delivered</td>
</tr>
<tr>
<td>16</td>
<td>Normal call clearing</td>
</tr>
<tr>
<td>17</td>
<td>User busy</td>
</tr>
<tr>
<td>18</td>
<td>No user response</td>
</tr>
<tr>
<td>19</td>
<td>No answer</td>
</tr>
<tr>
<td>21</td>
<td>Call rejected</td>
</tr>
<tr>
<td>22</td>
<td>Number changed</td>
</tr>
<tr>
<td>27</td>
<td>Destination out of order</td>
</tr>
<tr>
<td>28</td>
<td>Invalid number format/incomplete number</td>
</tr>
<tr>
<td>29</td>
<td>Facility rejected</td>
</tr>
<tr>
<td>30</td>
<td>Response to status enquiry</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>31</td>
<td>Normal, unspecified</td>
</tr>
<tr>
<td>34</td>
<td>No circuit/channel available</td>
</tr>
<tr>
<td>38</td>
<td>Network out of order</td>
</tr>
<tr>
<td>41</td>
<td>Temporary failure</td>
</tr>
<tr>
<td>42</td>
<td>Switch congestion</td>
</tr>
<tr>
<td>43</td>
<td>Access information discarded</td>
</tr>
<tr>
<td>44</td>
<td>Requested channel not available</td>
</tr>
<tr>
<td>45</td>
<td>Preempted (causes.h only)</td>
</tr>
<tr>
<td>47</td>
<td>Resource unavailable, unspecified (Q.931 only)</td>
</tr>
<tr>
<td>50</td>
<td>Facility not subscribed (causes.h only)</td>
</tr>
<tr>
<td>52</td>
<td>Outgoing call barred (causes.h only)</td>
</tr>
<tr>
<td>54</td>
<td>Incoming call barred (causes.h only)</td>
</tr>
<tr>
<td>57</td>
<td>Bearer capability not authorized</td>
</tr>
<tr>
<td>58</td>
<td>Bearer capability not available</td>
</tr>
<tr>
<td>63</td>
<td>Service or option not available (Q.931 only)</td>
</tr>
<tr>
<td>65</td>
<td>Bearer capability not implemented</td>
</tr>
<tr>
<td>66</td>
<td>Channel type not implemented</td>
</tr>
<tr>
<td>69</td>
<td>Facility not implemented</td>
</tr>
<tr>
<td>70</td>
<td>Only restricted digital information bearer capability is available (Q.931 only)</td>
</tr>
<tr>
<td>79</td>
<td>Service or option not available (Q.931 only)</td>
</tr>
<tr>
<td>81</td>
<td>Invalid call reference</td>
</tr>
<tr>
<td>82</td>
<td>Identified channel does not exist (Q.931 only)</td>
</tr>
<tr>
<td>83</td>
<td>A suspended call exists, but this call identity does not (Q.931 only)</td>
</tr>
<tr>
<td></td>
<td>Call identity in use (Q.931 only)</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>85</td>
<td>No call suspended (Q.931 only)</td>
</tr>
<tr>
<td>86</td>
<td>Call has been cleared (Q.931 only)</td>
</tr>
<tr>
<td>88</td>
<td>Incompatible destination</td>
</tr>
<tr>
<td>91</td>
<td>Invalid transit network selection (Q.931 only)</td>
</tr>
<tr>
<td>95</td>
<td>Invalid message, unspecified</td>
</tr>
<tr>
<td>96</td>
<td>Mandatory information element missing (Q.931 only)</td>
</tr>
<tr>
<td>97</td>
<td>Message type nonexistent/not implemented</td>
</tr>
<tr>
<td>98</td>
<td>Message not compatible with call state</td>
</tr>
<tr>
<td>99</td>
<td>Information element nonexistent</td>
</tr>
<tr>
<td>100</td>
<td>Invalid information element contents</td>
</tr>
<tr>
<td>101</td>
<td>Message not compatible with call state</td>
</tr>
<tr>
<td>102</td>
<td>Recovery on timer expiration</td>
</tr>
<tr>
<td>103</td>
<td>Mandatory information element length error (causes.h only)</td>
</tr>
<tr>
<td>111</td>
<td>Protocol error, unspecified</td>
</tr>
<tr>
<td>127</td>
<td>Internetworking, unspecified</td>
</tr>
</tbody>
</table>

2.14. Encryption Methods

Registry Name: IAX Encryption Methods

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.6.34 of [RFC5456].

Valid Range: 0x0001-x8000 bitmask, values must be a power of two.

Display format: hex.
The following table specifies the initial assignments of IAX encryption methods:

<table>
<thead>
<tr>
<th>METHOD</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0001</td>
<td>AES-128</td>
</tr>
</tbody>
</table>

2.15. Media Formats

Registry Name: IAX Media Formats

Required Information for New Values: Name, description, and relevant security considerations, if any.

Description: See Section 8.7 of [RFC5456].

Valid Range: 0x0001-x8000 bitmask, values must be a power of two.

Display format: hex.

The following table specifies the initial assignments of IAX Media Format Values:

<table>
<thead>
<tr>
<th>SUBCLASS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000001</td>
<td>G.723.1</td>
</tr>
<tr>
<td>0x00000002</td>
<td>GSM Full Rate</td>
</tr>
<tr>
<td>0x00000004</td>
<td>G.711 mu-law</td>
</tr>
<tr>
<td>0x00000008</td>
<td>G.711 a-law</td>
</tr>
<tr>
<td>0x00000010</td>
<td>G.726</td>
</tr>
<tr>
<td>0x00000020</td>
<td>IMA ADPCM</td>
</tr>
<tr>
<td>0x00000040</td>
<td>16-bit linear little-endian</td>
</tr>
<tr>
<td>0x00000080</td>
<td>LPC10</td>
</tr>
<tr>
<td>0x00000100</td>
<td>G.729</td>
</tr>
<tr>
<td>0x00000200</td>
<td>Speex</td>
</tr>
</tbody>
</table>
3. Security Considerations

This document defines IAX registries and as such does not raise security issues beyond those discussed in [RFC5456].

4. Acknowledgments

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5. Normative References


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