

# Troubleshooting ISDN Call Failures Originated from NetMeeting or Similar 3rd Party H.323 Devices

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## Introduction

There is a reported problem with calls that originate from NetMeeting or a similar third party H.323 devices through a Cisco IOS® gateway to the Public Switched Telephone Network (PSTN) using ISDN. These calls fail during the setup stage. This issue is commonly seen after a Cisco IOS software upgrade is performed on the gateway.

The bearer capability (bearer cap) is an ISDN Layer 3 service indication that defines the characteristics of a given call. The bearer cap of a call is indicated in the Q.931 SETUP message and it is used to distinguish among the different types of voice and data calls.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

This document is not restricted to specific software and hardware versions.

### Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

## Problem

In this case, calls fail because the bearer cap in the ISDN Q.931 SETUP message incorrectly indicates that the Information Transfer Capability is set for *Unrestricted Digital Information*. The reason this occurs is because the originating H.323 device sets the bearer cap in the H.225 SETUP message for *Unrestricted Digital Information*. The gateway transparently passes that information to the ISDN switch/PBX in the Q.931 SETUP message. The Switch/PBX is unable to handle this bearer cap and rejects the call.

In earlier Cisco IOS Software releases, the gateway overwrites the bearer cap to indicate speech/audio. However, in later releases, the gateway does not overwrite the bearer cap.

Common bearer caps for voice calls are shown in the first four rows of this table. The remaining three rows show common bearer caps that can cause a call that originates from a third party H.323 device to fail.

This table summarizes some common bearer caps:

Bearer Cap	Information Transfer Capability	User Information Layer 1 Protocol
0x8090A2	Speech	G.711 u-Law Speech
0x8090A3	Speech	G.711 A-law
0x9090A2	3.1 KHz Audio	G.711 u-Law Speech
0x9090A3	3.1 KHz Audio	G.711 A-law
0x8890A2	Unrestricted digital information	G.711 u-Law Speech
0x8890A3	Unrestricted digital information	G.711 A-law
0x8890	Unrestricted digital information	64 Kbps (64k data call)

This is an example of a **debug isdn q931** output that shows a failed call. It indicates that the switch/PBX clears the call immediately after the CALL PROCEEDING message. The DISCONNECT message cause code can vary. Common cause codes include *Invalid information element contents* and *Incompatible destination*.

```

!--- Action: A NetMeeting call is placed
!--- to the PSTN through a Cisco IOS gateway.

!--- Outgoing Q.931 SETUP message.

Aug  8 19:29:59.546: ISDN Se0:23: TX -> SETUP pd = 8  callref = 0x0001

Aug  8 19:29:59.546:          Bearer Capability i = 0x8890A2

!--- Bearer cap indicates the call carries the "Unrestricted Digital Information"
!--- transfer capability.

Aug  8 19:29:59.550:          Channel ID i = 0xA98397
Aug  8 19:29:59.550:          Calling Party Number i = 0x00, 0x80, '3555',
Plan:Unknown, Type:Unknown
Aug  8 19:29:59.550:          Called Party Number i = 0x80, '95551212',
Plan:Unknown, Type:Unknown
Aug  8 19:29:59.610: ISDN Se0:23: RX <- CALL_PROC pd = 8  callref = 0x8001
Aug  8 19:29:59.610:          Channel ID i = 0xA98397
Aug  8 19:29:59.806: ISDN Se0:23: RX <- DISCONNECT pd = 8  callref = 0x8001

!--- Call is cleared by the switch or PBX.

Aug  8 19:29:59.810:          Cause i = 0x82E4 - Invalid information element contents
Aug  8 19:29:59.814: ISDN Se0:23: TX -> RELEASE pd = 8  callref = 0x0001
Aug  8 19:29:59.850: ISDN Se0:23: RX <- RELEASE_COMP pd = 8  callref = 0x81

```

*!--- Call is cleared for the cause Incompatible destination.*

```
Aug 8 20:30:11.820:          Cause i = 0x80D8 - Incompatible destination
Aug 8 20:30:11.836: ISDN Se0:23: TX -> RELEASE pd = 8  callref = 0x0001
Aug 8 20:30:11.852: ISDN Se0:23: RX <- RELEASE_COMP pd = 8  callref = 0x81
```

## Solutions

### Solution 1

Configure the originating H.323 device to set the appropriate bearer cap in the H.225 SETUP message.

### Solution 2

If the originating H.323 device cannot be reconfigured, modify the Cisco IOS gateway configuration to overwrite the bearer cap in the ISDN Q.931 SETUP message. Use the **voice-port** configuration mode command **bearer-cap** to set it for **speech** or **3100 hz audio** as appropriate.

*!--- This is an example of how to configure the bearer cap parameter  
!--- on a Cisco AS5300.*

```
esc-5300-2(config)#voice-port 0:D
esc-5300-2(config-voiceport)#bearer-cap ?
  3100hz  enable 3100hz
  speech  enable speech
esc-5300-2(config-voiceport)#bearer-cap speech
```

*!--- Sample output of the IOS configuration  
!--- <some output omitted>.*

```
!
voice-port 0:D
  bearer-cap Speech
!
```

**Note:** If you run Cisco IOS Software Release 12.2(11)T, where H.323 version 4 runs on your router, you can experience trouble with NetMeeting. The details are enclosed in Cisco bug ID CSCdw49975 ( registered customers only) .

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## Related Information

- [How-to Configure Microsoft NetMeeting with Cisco IOS Gateways](#)
  - [Voice Technology Support](#)
  - [Voice and IP Communications Product Support](#)
  - [Recommended Reading: Troubleshooting Cisco IP Telephony](#)
  - [Technical Support & Documentation – Cisco Systems](#)
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