

# 700 – ISDN Issues

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## Questions

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**Related Information**

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## Introduction

This document contains Frequently Asked Questions about the Cisco 700 Series routers, specifically ISDN issues. Refer to Cisco 700 Series ISDN Access Routers for more information on this product. In addition, many sample configurations are available in the Sample Configurations for 7XX Products document.

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

**Q. Can I have multiple Dial Numbers (DNs) terminating at my 700 Series router so that customers can call one number and get my fax machine, the other number and get the analog phone, and have two other numbers for my data calls?**

A. Yes. It is very common these days for each SPID to have two DNs. Then you can assign the devices, such as the phone to phone1 and the fax to phone2. The other two DNs can be used for data calls.

### **Q. Can the 760/770 do a semi-permanent ISDN connection?**

A. Yes, as of release 4.0(1). Be sure to use the latest release in order to pick up bug fixes.

### **Q. What does Log Errors: 1006 No opened link for the received data on connection mean?**

A. This error message typically means that the 765 thinks that it does not have a PPP link (up/opened), but it received data over a B-Channel. One common situation in which this occurs is when a link is opened then closed shortly thereafter, but the remote device still sends data over it. In order to tell exactly what happened, you need to see the output of **diag ppp on**, **log tr ve** (invoked from within a profile), **log ca**, and **log err**.

### **Q. I can't get Call Hold, Call Transfer, and so forth to work on my 700 Series router. Why?**

A. Call hold, transfer, and so forth are usually additional cost features that need to be specifically ordered from the telephone company. Unfortunately, the 700 Series router has no control over this.

### **Q. How can I force the 700 Series router to drop one of the B channels when a call comes into my analog phone or my ISDN phone?**

A. For voice priority on the POTS port, as long as you have additional call offering (ACOU) available (third call appearance) and **SET VOICEPRIORITY INCOMING INTERFACE PHONE1 ALWAYS**, the router should always drop an existing data call if a voice call comes in. If this does not work, your telco has not properly provisioned third call appearance (ACOU).

As for voice priority with an ISDN phone that shares the S/T bus of the 76x, this is not supported. The reason is that the ISDN phone is an entirely separate device from the 76x router. The ISDN phone is assigned an entirely different SPID than the router, so it is separately addressable by the telephone company. When a call is placed to an ISDN phone, the call is sent directly to the ISDN phone and does not touch the router. Therefore, the router has no way to know to disconnect one of its current B channels. This is a limitation of three different ISDN devices that share the same S/T bus, two SPIDS on the router and one SPID on the phone, that compete for two B channels. If you want to ensure that the ISDN phone is guaranteed connectivity, then you have to limit the router to use one B channel only.

POTS is a different story. The voice call is placed to the 76x router, then mapped to one of the analog ports. Therefore, the router has the capability to make the logical decision on whether to drop a Data call that exists or not.

### **Q. How is the S/T bus terminated in the 700 Series routers?**

A. The S/T bus specification calls for two 100 ohm resistors in order to terminate the S/T bus, one on each end of the bus. The 766's S/T port should be terminated, and it is, *and* if a device is the last S/T device on the S/T bus, it should also be terminated.

## Q. What soft buttons can the 760 use when someone activates caller ID, call waiting, call transfer, and conference calling?

A. Transfer:9, conference:8 for DMS and NI1 only.

## Q. Do I need to have authentication in order to use ISDN leased line?

A. No. For 64K or 128K leased line connections, the previous versions of the 760/770 software required PAP/CHAP authentication when the connection is made. In release 4.0(1) and later, the authentication sequence is no longer required for leased line connections. You can create a profile named leasedline, the name is not case-sensitive, or rename a profile that exists in order to eliminate the need for authentication. Use the **set user** command in order to create a new profile:

```
765>set user leasedline
```

If a profile for a leased line is already defined with a different name, change to the profile and rename the profile to leasedline in order to use the **set profile** command:

```
765>cd profilename
765:profilename>set profile user leasedline
```

If the leasedline profile is not present upon call connect, the router requires authentication in order to select the correct profile. If the call cannot be authenticated, the router defaults to the standard profile. Within the leasedline profile, verify that PPP authentication is set to none (the default) to use the **show security** command:

```
765>show security
```

The switch types that support this feature are PERM64 and PERM128. All you have to do is set the switch type to PERM128 to use the **set sw perm128** command in order to use ISDN leased line.

## Q. How does subaddressing work with a VN3 switch?

A. The behavior required by q.931 compatibility checking states that if a call gets placed and the TE have subaddresses, the 700 Series matches them. If the subaddresses is missed in either one, then it ignores the field. This is the specified subaddress:

```
SET 1 DIRECTORYNUMBER 6820.55
```

## Q. How is the use of the command set number different than setting two individual numbers to call?

A. In Cisco IOS-700, there are two logical links so that the second link can have/call a different ISDN number than the first one. This is very useful when there are two numbers on an ISDN line, and the caller must call both of them to use both B-Channels, which is often the case with US ISDN BRI lines. The use of hunt-group and single number for PRI becomes more popular, in which case you can call a single number twice to bring up both links.

## Q. What are call appearances?

A. A directory number can be associated with a call appearance or, more briefly, a call. A call appearance is a connection between two or more directory numbers, for example, when one telephone user places a call to another. Directory numbers can carry several call appearances concurrently, such as when a telephone has a call waiting feature or a conference feature.

At any time, each call appearance is in one particular state. For example, a call appearance might be in an alerting state (ringing or flashing), a held state (on hold), or an active state, which means voice or data can flow end to end. The Telephone Manager provides a large number of functions that you can use in order to initiate, answer, or otherwise manipulate call appearances.

A call appearance can have some or all of a large number of capabilities or features. In fact, there are so many features that can be applied to a call appearance that the Telephone Manager uses two-bit fields in a call appearance structure to store information about the features of a call appearance, the feature Flags and other Features fields.

## Q. If I have four SPIDs for my BRI and a video device connected to my 760, does the 760 drop the B channel so the video device can use it?

A. It is possible to have an ISDN line with eight SPIDs, since you can have up to eight ISDN devices on a S/T multidrop interface. So you can have a four-SPID line with two that are assigned to the 7xx and two that are assigned to a video-conferencing device. But, in regards to bandwidth contention such as if the video device wants to use the B-channel, the 700 Series router does not currently release that channel. This is true for code releases 4.0(2) and earlier.

## Q. What does Inband inactivity timeout mean?

A. This error basically means that the router has not been able to start either a PPP or CPP session on the B channel. It is normally associated with CPP encapsulation. Make sure you call from the correct profile that uses PPP encapsulation. Another thing to look for is the SPEED. Try to set the SPEED to either 64 Kbps or 56 kbps. Sometimes the local end thinks it has a 56 kbps connection whereas the far end thinks it has a 64 kbps connection, which, of course, renders the connection unusable, which causes this message to be logged.

## Q. What does Error 51 mean?

A. You should only see this error over a WAN/ISDN connection, as opposed to the LAN side. This error indicates that the unit has received a data packet that is bigger than 1800 bytes, so the packet was dropped. When this happens in release 4.0(1) code, the unit loses some buffer. But, with 4.0(2), this problem no longer exists.

## Q. Can the 700 Series router do CLI callback to call back a different number than the one that called?

A. Yes. This is the configuration for a remote user named test:

```
SET USER test
SET 1 NUMBER 3339693          # first called number is just a fake number
SET 2 NUMBER 5763360        #
SET 1 BACKUPNUMBER 5763360  # backup number we will call when first fails.
```

```

SET 1 RINGBACK 5763361
SET 2 RINGBACK 9539696
SET CLICALLBACK ON 4 # we match on the last 4 digits of the
fake number
TIMEOUT 1 DURATION 0
SET PPP CALLBACK REQUEST OFF
SET PPP CALLBACK REPLY OFF
SET COMPRESSION OFF
SET PPP ADDRESS NEGOTIATION LOCAL ON
SET IP ROUTING ON
SET IP ADDRESS 0.0.0.0
SET IP NETMASK 0.0.0.0
SET IP FRAMING NONE
SET IP ROUTE DEST 192.168.50.0/24 GATEWAY 0.0.0.0 PROPAGATE ON COST 1

```

## Q. How do I use a PicTel Device with the 700 series routers?

A. The PictureTel VideoConferencing device connects to a 766 through the 766's S/T port. PicTel is very finicky with the SPIDs. Give the PicTel unit the first two SPIDs, then give the router two different SPIDs. Also make sure that the router does not have the B channels in use.

## Q. What does Inband Timeout Violation mean?

A. This error message typically indicates that the 7xx is not able to communicate with the remote device after an ISDN connection had been established. This can happen if:

- ◆ The 7xx uses CPP encapsulation in order to talk to a device such as Cisco IOS that uses PPP encapsulation, if you try to "call" from the system prompt, which by default uses CPP encapsulation, and the remote device is a Cisco IOS router. So, the two devices speak different languages, which causes this error message.
- ◆ It has to do with the SPEED of the connection. Under some conditions, the 7xx thinks it has a 56kbps ISDN connection, whereas the remote device thinks it has a 64kbps ISDN connection. This corrupts the data over the connection and renders the connection unusable. So, the 7xx logs this error message.

## Q. Why does my Cisco 700 Series router that runs 4.1(1) code not respond to Cisco Fast Step Version 1.00 when I am configured to use an NI-1 ISDN Switch?

A. For NI-1 switch types, IOC compliance dictates that when an ISDN device is first powered on, the device must wait a random interval ranging between 1 and 300 seconds before registering its SPIDs. This interval, known as the T-WAIT time, exists to protect the telco switch from a flood of SPID registrations if devices all power on at the same time (as in a power outage situation).

Corrective Actions:

1. Cisco Fast Step version 1.01 places an outgoing call to force the router in order to bypass the T-WAIT period if you configure the 700 Series router for an NI-1 switch type.
  2. Possible engineering fix in 4.2 to implement T-WAIT upon power-up only and not force T-WAIT on simple switch-type configuration changes. Refer to Cisco 700 Not Responding to Cisco Fast Step Version 1 Technical Tip for more details.
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## Related Information

- **Section 2 – IP/IPX PPP Issues**
  - **Section 4 – PAT, DHCP, NetBIOS, and so on**
  - **Technical Support & Documentation – Cisco Systems**
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