

Troubleshooting ISDN BRI SPIDs

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Introduction

Some service providers use service profile identifiers (SPIDs) to define the services subscribed to by the Integrated Services Digital Network (ISDN) device that is accessing the ISDN service provider. The service provider assigns the ISDN device one or more SPIDs when you first subscribe to the service. If you are using a service provider that requires SPIDs, your ISDN device cannot place or receive calls until it sends a valid assigned SPID to the service provider when accessing the switch to initialize the connection.

Currently, only the DMS-100 and NI-1 switch types require SPIDs. The AT&T 5ESS switch type may support a SPID, but you should contact your provider for information on what the SPID must be configured as. Remember that SPIDs are only required in North America and are configured only if required by your telco/provider.

Use the **show isdn status** command to check if the SPID is valid. For more information on using the **show isdn status** command, refer to Using the **show isdn status** Command for BRI Troubleshooting.

Prerequisites

Requirements

There are no specific prerequisites for this document.

Components Used

The information in this document is based on the software and hardware versions below.

- Cisco IOS® Software Release 12.0

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

SPID Format

A SPID is usually a ten-digit telephone number with some optional numbers. However, service providers may use different numbering schemes. For the DMS-100 and NI-1 switch types, two SPIDs are assigned, one for each B-channel. For more information on the SPID format, refer to Known SPID Formats .

The format for the SPID configuration command is **isdn spid1** *spid-number* [*ldn*] . For example:

```
isdn spid1 51255544440101 5554444
```

The SPID format is shown below:

Three Digit Area Code	Seven Digit Telephone Number	Additional Digits (Optional)	Local Directory Number (LDN) (Optional)
512	5554444	0101	5554444

In this case, 51255544440101 is the SPID number, and the following seven digit number (5554444) is the optional LDN. Although the LDN is optional, it must be configured if it is required by the telco.

The LDN is not necessary for establishing outgoing connections, but it must be specified if you want to receive incoming calls on the B-channel 2. The LDN is required only when two SPIDs are configured (for example, when connecting to a DMS-100 or NI1 switch). Each SPID is associated with a LDN. Configuring the LDN causes incoming calls to the second B-channel to be answered properly. If the LDN is not configured, incoming calls to the B-channel 2 will fail.

Common SPID Configuration Problems

Use the **show running-config** command to check the SPID configuration under the Basic Rate Interface (BRI). Reference the SPID format above and verify the following points in the SPID configuration:

- The area code in the SPID should not be preceded by a 1.
- The LDN should not include the area code.
- The additional digits following the area code and telephone number are configured correctly as prescribed by the telco. In the example above, these digits are **0101**.

Removing and Reentering the SPIDs

Sometimes it is beneficial to remove and reenter the SPIDs to clear the terminal endpoint identifier (TEI) related problems. Follow the steps outlined below:

1. Shutdown the BRI using the **shutdown** command in the BRI configuration mode.
2. Remove the SPIDs using the commands **no isdn spid1** and **no isdn spid2**.
3. If possible, reload the router.

The Cisco IOS software normally requests the same TEI it previously had. However, if the router is

reloaded, it will request a new TEI. If you cannot reload the router, use the **clear interface bri bri_number** or **clear controller bri bri_number** command.

4. Configure the SPIDs using the commands **isdn spid1 spid-number [ldn]** and **isdn spid2 spid-number [ldn]** in BRI configuration mode.
5. Bring up the BRI using the **no shutdown** command in BRI configuration mode.
6. Use the **clear interface bri bri_number** or **clear controller bri bri_number** command.
7. Use the **show isdn status** command to verify that the BRI is up. Refer to Using the **show isdn status** Command for BRI Troubleshooting for more information.

Multiple BRIs in a Hunt Group Without LDNs

Some DMS-100 and National ISDN switch installations may be configured as a "hunt group" whereby all calls are initially forwarded to the primary number. Under these circumstances, you may not have to configure the LDN. The telco should be able to provide you more information on whether you need LDNs for a hunt group. You can determine whether you need LDNs by enabling the **debug isdn q931** command. If the ENDPOINT IDent is present in the incoming setup message, then the switch is addressing the TEIs with the EID, instead of the LDN. In this case, the LDN should not be configured. An example is shown below:

```
SETUP pd = 8 callref = 0x14
  Bearer Capability i = 0x8890
  Channel ID i = 0x89
  Signal i = 0x40 - Alerting on - pattern 0
  ENDPOINT IDent i = 0x8183
  Called Party Number i = 0xC1, '5551212'
```

The ENDPOINT IDent above is 0x8183 (in hex) where the 0x81 identifies the User Service IDentifier (usid) and 83 identifies the Terminal Identifier (tid). By converting the digits (0x81 or 83) from hex to binary and dropping the most significant bit, we get a usid=1 and tid=3. Use the **show isdn status** command to check which B-channel will answer the call. For more information on correlating the usid and tid to a particular B-channel, refer to Using the **show isdn status** Command for BRI Troubleshooting.

The above situation is also indicated by the **debug isdn q931** messages:

```
%ISDN-4-INVALID_CALLEDNUMBER: Interface BR1, Ignoring call,
  LDN and Called Party Number mismatch
ISDN BR1: Ignoring incoming call, Called Party Number mismatch
```

If you see the above messages, remove the SPIDs and reenter them without the LDN.

Multiple BRIs in a Hunt Group with LDNs

The telco may configure multiple BRIs in a hunt group using LDNs to signal which B-channel should answer the call. In such a configuration, the LDNs must be included in the SPID configuration. The BRIs should be configured with SPIDs, and each SPID must have a *unique* LDN number. If you observe that the second channel for each BRI is not accepting calls, then verify that you have the LDN configured correctly.

Cisco IOS Software Release 12.0(7)T Displays SPID NOT valid

There is a Cisco IOS bug with the id CSCdp20454 in Cisco IOS Software version 12.0(7)T that displays "SPID NOT valid" in the **show isdn status** output. This is a cosmetic bug and should not affect the performance of your BRI circuit. There is no current workaround, but a Cisco IOS upgrade should solve this issue.

Related Information

- [Using the show isdn status Command for BRI Troubleshooting](#)
 - [Troubleshooting ISDN BRI Layer 1](#)
 - [Troubleshooting BRI Layer 2](#)
 - [Dialup Technology: Troubleshooting Techniques](#)
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