

Configuring the ISDN Line

This appendix describes how to order and configure an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) line for use with a Cisco 1600 series router with an ISDN BRI interface or a Cisco 1600 series router with an ISDN BRI WAN interface card installed.

This appendix contains the following sections:

- ISDN BRI Line Configuration Requirements
- ISDN BRI Switch Types
- ISDN BRI Provisioning by Switch Type
- Defining ISDN Service Profile Identifiers
- ISDN Configuration Options

ISDN BRI Line Configuration Requirements

Before using a Cisco 1600 series router with an ISDN BRI interface or a Cisco 1600 series router with an ISDN BRI WAN interface card installed, you must order a correctly configured ISDN BRI line from your local telecommunications service provider.

This process varies significantly from provider to provider on a national and international basis. However, following are some general guidelines:

- Ask for two channels to be called by one number.
- Ask for delivery of calling line identification. This is also known as *Caller ID* or *Automatic Number Identification* (ANI).

ISDN BRI Switch Types

- If the router is going to be the only device attached to the ISDN BRI line, ask for point-to-point service and a data-only line.
- If you will be connecting another ISDN device (such as an ISDN telephone) to the ISDN BRI line through the router, ask for point-to-multipoint service (subaddressing is required) and a voice-and-data line.

ISDN BRI Switch Types

ISDN BRI supports a variety of service provider switches. Table B-1 lists, by geographic areas, the ISDN switch types supported by the Cisco 1600 series routers ISDN BRI interface. When configuring the router, use the **isdn switch-type** command followed by the corresponding keyword.

Table B-1 ISDN BRI Switch Types

Switch Type	Keywords
Australia	
Australian TS013 switches	basic-ts013
Europe	
German 1TR6 ISDN switches	basic-1tr6
Norway NET3 switches (phase 1)	basic-nwnet3
NET3 ISDN switches (UK and others)	basic-net3
French VN2 ISDN switches	vn2
French VN3 ISDN switches	vn3
Japan	
Japanese NTT ISDN switches	ntt

Table B-1 ISDN BRI Switch Types (Continued)

Switch Type	Keywords
North America	
AT&T basic rate switches	basic-5ess
NT DMS-100 basic rate switches	basic-dms100
National ISDN-1 switches	basic-ni1
New Zealand	
New Zealand Net3 switches	basic-nznet3

ISDN BRI Provisioning by Switch Type

The ISDN BRI line is configured (*provisioned*) for different types of services by the ISDN BRI service provider. The person ordering the ISDN line must also order the provisioning described in this section.

Table B-2 lists the provisioning that should be ordered for the router, based on the switch type.

Table B-2 ISDN Provisioning by Switch Type

Switch Type	Provisioning
5ESS Custom BRI	For data only Two B channels for data. Point to point. Terminal type = E. One directory number (DN) assigned by service provider. MTERM = 1. Request delivery of calling line ID on Centrex lines. Set speed for ISDN calls to 56 kbps outside local exchange.

ISDN BRI Provisioning by Switch Type

Table B-2 ISDN Provisioning by Switch Type (Continued)

Switch Type	Provisioning
5ESS Custom BRI	For voice and data (Use these values only if you have an ISDN telephone connected.) Two B channels for voice or data. Multipoint. Terminal type = D. Two directory numbers assigned by service provider. Two service profile identifiers (SPIDs) required, assigned by service provider. MTERM = 2. Number of call appearances = 1. Display = No. Ringing/idle call appearances = idle. Autohold= no. Onetouch = no. Request delivery of calling line ID on Centrex lines. Set speed for ISDN calls to 56 kbps outside local exchange. Directory number 1 can hunt to directory number 2.
5ESS National ISDN (NI-1) BRI	Terminal type = A. Two B channels for voice and data. Two directory numbers assigned by service provider. Two SPIDs required; assigned by service provider. Set speed for ISDN calls to 56 kbps outside local exchange. Directory number 1 can hunt to directory number 2.
DMS-100 BRI	Two B channels for voice and data. Two directory numbers assigned by service provider. Two SPIDs required; assigned by service provider. Functional signaling. Dynamic terminal endpoint identifier (TEI) assignment. Maximum number of keys = 64. Release key = no, or key number = no. Ringing indicator = no. EKTS = no. PVC = 2. Request delivery of calling line ID on Centrex lines. Set speed for ISDN calls to 56 kbps outside local exchange. Directory number 1 can hunt to directory number 2.

Defining ISDN Service Profile Identifiers

An ISDN service provider, usually a telephone company, can offer a variety of services. Many providers use service profile identifiers (SPIDs) to identify the device that is using the ISDN service, similar to the way that the telephone company uses a telephone number to identify your standard telephone service. If you use a service provider that requires SPIDs, the provider assigns your ISDN device one or more SPIDs when you first subscribe to the service. Providers use different numbering schemes, but a SPID is usually a seven-digit telephone number, plus some optional numbers. The provider also assigns your device one or two local directory numbers (LDNs), which function as the router telephone numbers. The LDN is the number that a remote router dials to make a call to the router.

Note SPIDs have significance only at the local-access ISDN interface. The remote router is assigned a SPID when the ISDN BRI services are ordered for that router.

When your ISDN device accesses the switch to initialize the connection, first it must send any assigned SPID(s) to the service provider. Otherwise, your ISDN device cannot place or receive calls. Use the **isdn spid** command to define the SPID and the LDN on the router for both ISDN BRI B channels, as follows:

```
Router(config-if)# isdn spid1 spid-number [ldn]
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Router(config-if)# isdn spid2 spid-number [ldn]
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Note Although the LDN is usually optional, it might be required so that the router answers calls made to the second directory number.

ISDN Configuration Options

For information on how to configure Cisco 1600 series routers to dial into a central site router over ISDN, refer to the *Cisco 1600 Series Software Configuration Guide* that came with your router.

For more advanced information on configuring ISDN for Cisco 1600 series routers, refer to the chapter “Configuring ISDN” in the *Wide-Area Networking Configuration Guide* publication, which is on the Documentation CD-ROM that came with your router. This document includes the information on the following topics:

- Defining ISDN TEI Negotiation
- Configuring Calling Line Identification (CLI) Screening
- Configuring Called Party Number Verification
- Configuring ISDN Calling Number Identification
- Configuring the Line Speed for Calls Not ISDN End-To-End
- Enabling PPP on VTY Lines
- Configuring Encapsulation for Frame Relay or X.25 Networks
- Configuring Network Addressing
- Configuring Semipermanent Connections (optional, for Germany only)
- Performing Configuration Self-Tests
- Monitoring and Maintaining ISDN Interfaces

Snapshot Routing over ISDN

You can also configure *snapshot routing* for the router ISDN interface. Snapshot routing is a method of learning remote routes dynamically and keeping the routes available for a specified period of time, even though routing updates are not exchanged during that period. See the chapter “Configuring DDR” in the *Wide-Area Networking Configuration Guide* publication for detailed information about snapshot routing.

Dial-on-Demand Routing Over ISDN

To place calls on the ISDN interface, you must configure it with dial-on-demand routing (DDR). See the chapter “Configuring DDR” in the *Wide-Area Networking Configuration Guide* publication for detailed information about DDR.

Bandwidth on Demand and Dial Backup over ISDN

See the chapter “Configuring DDR” in the *Wide-Area Networking Configuration Guide* publication for detailed information about *bandwidth on demand* and *dial backup*.

ISDN Configuration Options
