APPENDIX B

Configuring the ISDN Line

This appendix describes how to order and configure an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) line for operation with a Cisco 1600 series router that has an ISDN BRI interface or a Cisco 1600 series router that has an ISDN BRI WIC 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 WIC installed, you must order a correctly configured ISDN BRI line from your local telecommunications service provider.

This process varies dramatically 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).

- 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. The corresponding keywords are used when configuring the router with the **isdn switch-type** command.

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**
North America	
AT&T basic rate switches	**basic-5ess**
NT DMS-100 basic rate switches	**basic-dms100**
National ISDN-1 switches	**basic-ni1**

Switch Type	Keywords
New Zealand	
New Zealand Net3 switches	**basic-nznet3**

ISDN BRI Provisioning by Switch Type

The term ISDN BRI *provisioning* refers to the types of services that the ISDN BRI line is configured for. Although the ISDN BRI provisioning is performed by your ISDN BRI service provider, the person who orders the ISDN BRI line must indicate to the service provider the desired provisioning.

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

Table B-2 ISDN Provisioning by Switch Type

Switch Type	Provisioning
5ESS Custom BRI	**For data only** 2 B channels for data Point to point Terminal type = E 1 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 K outside local exchange

Switch Type	Provisioning
5ESS Custom BRI	**For voice and data** (Use these values only if you have an ISDN telephone connected.) 2 B channels for voice or data Multipoint Terminal type = D 2 directory numbers assigned by service provider 2 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 K outside local exchange Directory number 1 can hunt to directory number 2
5ESS National ISDN (NI-1) BRI	Terminal type = A 2 B channels for voice and data 2 directory numbers assigned by service provider 2 SPIDs required; assigned by service provider Set speed for ISDN calls to 56 K outside local exchange Directory number 1 can hunt to directory number 2
DMS-100 BRI	2 B channels for voice and data 2 directory numbers assigned by service provider 2 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 K outside local exchange Directory number 1 can hunt to directory number 2

Defining ISDN Service Profile Identifiers

All ISDN devices subscribe to services provided by an ISDN service provider, usually a telephone company. However, only some service providers use service profile identifiers (SPIDs) to define the services subscribed to by the 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 we recommend that you set up that ISDN service without SPIDs. In addition, SPIDs have significance at the local access ISDN interface only. Remote routers are never sent the SPID.

A SPID is usually a seven-digit telephone number with some optional numbers. However, service providers may use different numbering schemes. For the DMS-100 switch type, two SPIDs are assigned, one for each B channel. After your service provider has assigned you SPIDs, you must define these SPIDs on the router so that when access to the switch is attempted, the router has the valid information available.

To define the SPIDs and the local directory number (LDN) on the router for both both ISDN BRI B channels, use the **isdn spid** command as follows:

```
Router(config-if)# isdn spid1 spid-number [ldn]

Router(config-if)# isdn spid2 spid-number [ldn]
```

Note Although the LDN is optional,it might be required so that the router answers calls made to the second directory number.

ISDN Configuration Options

For more information on configuring ISDN for Cisco 1600 series routers, refer to the chapter "Configuring ISDN" in the *Wide-Area Networking Configuration Guide* publication, which includes the following sections in addition to the information in this chapter:

- Define ISDN TEI Negotiation
- Configure Calling Line Identification (CLI) Screening
- Configure Called Party Number Verification
- Configure ISDN Calling Number Identification
- Configure the Line Speed for Calls Not ISDN End-To-End
- Enable PPP on VTY Lines
- Configure Encapsulation for Frame Relay or X.25 Networks
- Configure Network Addresssing
- Configure Semipermanent Connections (optional, for Germany only)
- Perform Configuration Self-Tests
- Monitor and Maintain ISDN Interfaces

Snapshot Routing over ISDN

You can also optionally configure *snapshot routing* for the router's 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*.