



Leased and Switched BRI Interfaces for ETSI NET3

Feature History

Release	Modification
12.2(4)T	This feature was introduced on the Cisco 800 series routers.

This document describes the Leased and Switched BRI Interfaces for ETSI NET3 feature. It includes the following sections:

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Feature Overview

In most BRI configurations, both B channels of a leased-line service are used as point-to-point leased lines with the D channel disabled. Data transmission over the B channels is no different than data transmission over point-to-point leased lines.

A new feature available in Cisco IOS Release 12.2(4)T, Leased and Switched BRI Interfaces for ETSI NET3, allows one BRI B channel on a European Telecommunications Standards Institute (ETSI) NET3 switch to be configured as a leased line, and the second B channel to be configured as a standard ISDN or dial interface and used as a switched channel to the Public Switched Telephone Network (PSTN). When the Leased and Switched BRI Interfaces for ETSI NET3 feature is configured, one B channel functions as a point-to-point 64-kbps leased line and the other B channel functions as a circuit-switched channel using the D channel to provide the signaling features available for the ETSI NET3 signaling protocol.

Benefits

The Leased and Switched BRI Interfaces for ETSI NET3 feature allows Internet service providers to split one ISDN line into a leased-line interface and a dialer interface, thereby increasing connection capability without increasing cost.

Restrictions

The following restrictions apply to the Leased and Switched BRI Interfaces for ETSI NET3 feature:

- Only the ETSI NET3 signaling protocol is supported at a line speed of 64 kbps.
- Only one ISDN call can be active at any time, and the call must verify that the leased line is not used to bring up a second call.
- The ETSI NET3 switch cannot be configured for a leased line when the U interface is used instead of the S/T interface; doing so prevents the line protocol from coming up.

Related Documents

- *Cisco IOS Dial Technologies Command Reference*, Release 12.2
- *Cisco IOS Dial Technologies Configuration Guide*, “ISDN Configuration” part, Release 12.2

Supported Platforms

- Cisco 800 series

Platform Support Through Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Feature Navigator. Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at <http://www.cisco.com/register>.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. As of May 2001, Feature Navigator supports M, T, E, S, and ST releases. You can access Feature Navigator at the following URL:

<http://www.cisco.com/go/fn>

Supported Standards, MIBs, and RFCs

Standards

None

MIBs

The fillin_isdnBearerEntry() – isdnBearerTable manipulation MIB function is supported. See the “RFCs” section for more information.

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

RFCs

- RFC 2127, *ISDN Management Information Base using SMIPv2*

RFC 2127 states that the following be reported for the leased line B channel: The isdnBearerTable MIB entry for the leased line B channel will need to be altered, specifically the value of isdnBearerChannelType MIB will be set to leased(2). This alteration involves a function in isdn/sr_ietf_isdmib.c, namely the fillin_isdnBearerEntry() — isdnBearerTable manipulation MIB function.

- RFC 1573, *Evolution of the Interfaces Group of MIB-II*

RFC 1573 makes no explicit mention of changes to the ifEntry for a B channel set to leased line. It is proposed that the ifAdminStatus and ifOperStatus functions remain in the UP(1) state.

Prerequisites

Before starting the configuration tasks in this document, review the chapter “Configuring ISDN BRI” and the section “Configuring ISDN BRI for Leased-Line Service,” for more complete details on configuring a BRI. This chapter is in the part “ISDN Configuration” in the *Cisco IOS Dial Technologies Configuration Guide*, Release 12.2.

Configuration Tasks

See the following sections for configuration tasks for the Leased and Switched BRI Interfaces for ETSI NET3 feature. Each task in the list is identified as either required or optional:

- [Configuring Leased and Switched BRI Interfaces for ETSI NET3](#) (required)
- [Verifying Leased and Switched BRI Interfaces for ETSI NET3](#) (optional)

Configuring Leased and Switched BRI Interfaces for ETSI NET3

To configure a BRI for both an ISDN connection and leased-line service, use the following commands in global configuration mode:

	Command	Purpose
Step 1	Router(config)# isdn switch-type basic-net3	Configures the ETSI NET3 BRI switch type.
Step 2	Router(config)# isdn leased-line brinumber/number {b1 b2}	Splits a line for both ISDN and 64-kbps leased-line service.

Verifying Leased and Switched BRI Interfaces for ETSI NET3



Note

In the following verification procedure, BRI channel B1 (the BRI0:1 interface) is configured for leased-line service and channel B2 (the BRI0:2 interface) is configured for ISDN.

To verify that each BRI channel is configured correctly, perform the following steps:

- Step 1** Enter the **show isdn status EXEC** command and check the value in The Free Channel Mask field to verify that only one channel has been allocated for ISDN. The Free Channel Mask field displays 0x80000000 when there is an active call. If no call is active, The Free Channel Mask field displays 0x80000001 and 0x80000002 for the B1 and B2 leased line configurations, respectively.

```
Router# show isdn status
```

```
Global ISDN Switchtype = basic-net3
ISDN BRI0 interface
  dsl 0, interface ISDN Switchtype = basic-net3
  Layer 1 Status:
    ACTIVE
  Layer 2 Status:
    TEI = 124, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
    I_Queue_Len 0, UI_Queue_Len 0
  Layer 3 Status:
    1 Active Layer 3 Call(s)
    CCB:callid=8001, sapi=0, ces=1, B-chan=2, calltype=DATA
  Active dsl 0 CCBs = 1
  The Free Channel Mask: 0x80000000
  Total Allocated ISDN CCBs = 1
```

- Step 2** Enter the **show dialer EXEC** command to display dialer interface statistics. Check that there is no entry for the BRI0:1 interface in the display:

```
Router# show dialer
```

```
BRI0 - dialer type = ISDN

Dial String      Successes  Failures  Last DNIS  Last status
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.

BRI0:2 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is idle
```

```

Dil - dialer type = DIALER PROFILE
Idle timer (6000 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is idle
Number of active calls = 0

Dial String      Successes  Failures  Last DNIS  Last status
5552000          0          0         never      -   Default

```

Troubleshooting Tips

To test the BRI configurations, use the following commands in EXEC mode, as needed:

Command	Purpose
Router# show controllers bri number	Checks Layer 1 of the BRI.
Router# debug q921	Checks Layer 2 of the BRI.
Router# debug dialer	Checks dialer events on the BRI.
Router# debug isdn events	Checks call control events on the BRI.
Router# debug q931	Checks Layer 3 of the BRI.

Refer to the *Cisco IOS Debug Command Reference* for more information about the **debug** commands.

Monitoring and Maintaining Leased and Switched BRI Interfaces for ETSI NET3

To monitor and maintain the BRI configurations, use the following commands in EXEC mode, as needed:

Command	Purpose
Router# show isdn status	Displays Layer 1, Layer 2, and Layer 3 status of the D channel and channel mask information.
Router# show interfaces bri x:y status	Displays status of the ISDN BRI channel configured as either a leased line or dialer B-channel interface.
Router# show dialer	Displays status of the ISDN BRI channel configured as a dialer interface.

Configuration Examples

This section provides an example of how to configure the Leased and Switched BRI Interfaces for ETSI NET3 feature.

Leased and Switched BRI Interfaces for ETSI NET3 Example

The following example configures BRI channel B2 for 64-kbps leased-line service and channel B1 for ISDN service:

```
isdn leased-line bri0/0 b2
!
interface bri0/0
 ip address 10.1.1.1 255.255.255.0
 no ip address
 dialer pool-member 1

interface bri0/0:2
 ip address 10.1.1.2 255.255.255.0
 encapsulation ppp
 no ip address
```

Command Reference

This section documents the modified **isdn leased-line bri** command that configures the Leased and Switched BRI Interfaces for ETSI NET3 feature. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications.

isdn leased-line bri

To configure an ISDN BRI for leased-line service, or to configure both 64-kbps leased-line and ISDN service on the same BRI, use the **isdn leased-line bri** global configuration command. To remove or change channel configurations, use the **no** form of this command.

```
isdn leased-line brinumber/number {128 | 144 | <Return>} [{b1 | b2}]
```

```
no isdn leased-line brinumber/number {128 | 144 | <Return>} [{b1 | b2}]
```

Syntax Description

<i>number</i>	BRI interface numbers (enter the slash to separate the physical interface numbers).
128	Combines B1 and B2 channels for 128-kbps leased-line service.
144	Combines B1 and B2 channels for 144-kbps leased-line service.
<Return>	Press the Return or Enter key at the end of the command instead of entering a keyword to configure two 64-kbps leased lines instead of two B channels.
b1	(Optional) Uses channel B1 as a 64-kbps leased line and channel B2 for ISDN.
b2	(Optional) Uses channel B2 as a 64-kbps leased line and channel B1 for ISDN.

Defaults

Disabled

Command Modes

Global configuration

Command History

Release	Modification
11.2 F	This command was introduced.
12.2(4)T	The b1 and b2 keywords were added to allow the BRI channels on a European Telecommunications Standards Institute (ETSI) NET3 switch on a Cisco 800 series router to be split into leased-line and ISDN services.

Usage Guidelines

Use the **isdn leased-line bri** command to aggregate two BRI B channels into a single pipe at a speed of 128 or 144 kbps, or to configure both a 64-kbps leased line and ISDN service on a single ETSI NET3 switch on Cisco 800 series routers.

This command also supports two separate 64-kbps leased lines, where the BRI interface is configured as two separate leased lines instead of two B channels. No keyword is required; just press the Return or Enter key at the end of the **isdn leased-line brinumber/number** command string. This configuration is different than using the **128** keyword, which configures a single 128-kbps leased line.

When you use the **no isdn leased-line bri** command to change the channel configuration, you must also perform a system reload in order for the change to take effect.

When you use an ISDN BRI interface for access over leased lines, configure the ISDN BRI as a synchronous serial interface and do not configure ISDN calling and called numbers.

Examples

The following example configures the BRI interface for leased-line access at 128 kbps in Japan:

```
isdn leased-line bri0/0 128
```

Because of the leased-line—not dialed—environment, configuration of ISDN called and calling numbers is not needed and not used. The BRI 0 interface is henceforth treated as a synchronous serial interface, with the default High-Level Data Link Control (HDLC) encapsulation.

The following example configures BRI channel B1 for 64-kbps leased-line service and channel B2 for ISDN service:

```
isdn switch-type basic-net3
isdn leased-line bri0/0 b1
!
interface bri0/0
 ip address 10.1.1.1 255.255.255.0
 no ip address
 dialer pool-member 1

interface bri0/0:1
 ip address 10.1.1.2 255.255.255.0
 encapsulation ppp
 no ip address
```

Related Commands

Command	Description
isdn switch-type (BRI)	Specifies the central office switch type on the ISDN BRI interface.

Glossary

European Telecommunications Standards Institute—See ETSI.

ETSI—European Telecommunications Standards Institute. Organization created by European Post, Telephone, and Telegraph (PTT) groups and the European Community (EC) to propose telecommunications standards for Europe.

leased line—Transmission line reserved by a communications carrier for the private use of a customer.

switched—General term applied to an electronic or mechanical device that allows a connection to be established as necessary and terminated when there is no longer a session to support.

