

# Configuring ISDN BRI and PRI in Australia

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## Introduction

This document covers ISDN issues specific to Australia. It includes sample configurations and information on various BRI and PRI services that can be obtained from the Telco.

## Prerequisites

## Requirements

There are no specific requirements for this document.

## Components Used

This document is not restricted to specific software or hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Related Products

This configuration can be used on any router with a BRI or PRI interface.

## Conventions

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

# Configure

In this section, you are presented with the information to configure the features described in this document.

**Note:** Use the Command Lookup Tool (registered customers only) to find more information on the commands used in this document.

## BRI Switchtype Information

BRIs in Australia require no service profile identifiers (SPIDs).

There are two ISDN switch-types that can be used:

- `basic-net3` Currently the most commonly used.
- `basic-ts013` For older ISDN switches such as MicroLink.

## PRI Switchtype and Service Information

In Australia there are two switch-types that can be used:

- `primary-net5` Currently the most commonly used ( Onramp ).
- `primary-ts015` For older ISDN switches such as MacroLink.

With PRI there are also many types of services provided:

- **10 B-channels** (10 × 64 kbps) Commonly known as ONRAMP 10 with `primary-net5`.

```
!  
controller E1 0  
pri-group timeslots 1-10,16  
!  
interface Serial0:15  
isdn switch-type primary-net5  
!
```

- **20 B-channels** (20 × 64 kbps) Commonly known as ONRAMP 20 with `primary-net5`.

```
!  
controller E1 0  
pri-group timeslots 1-21  
!  
interface Serial0:15  
isdn switch-type primary-net5  
!
```

- **30 B-channels** (30 × 64 kbps) Commonly known as ONRAMP 30 with `primary-net5`.

```
!  
controller E1 0  
pri-group timeslots 1-31  
!  
interface Serial0:15  
isdn switch-type primary-net5  
!
```

## Network Diagram

This document uses this network setup:



## Configurations

This document shows the configuration for ISDN in Australia. The first configuration is a BRI while the next two are for PRI.

- BRI with basic-net3 switch-type
- PRI with primary-net5 switch-type
- PRI 20 B-channels used for Analog Dialup to Cisco Mica Modems

### BRI with basic-net3 switch-type

```

!--- Configuration uses BRI0 linked to a dialer profile 1
!--- via dialer pool to dial out.

!
!
ip routing
!
isdn switch-type basic-net3
!
interface loopback0
ip address 10.10.10.1 255.255.255.0
!
interface BRI0
 ip unnumbered loopback0
 encapsulation ppp
 dialer pool-member 1
 isdn switch-type basic-net3
 ppp authentication chap pap
!
interface Dialer1
 ip address 192.168.12.1 255.255.255.0
 encapsulation ppp
 dialer remote-name AROP
 dialer string 0291191111
 dialer pool 1
 dialer-group 1
 ppp authentication chap pap callin
!
ip classless
ip route 0.0.0.0 0.0.0.0 Dialer1
!
dialer-list 1 protocol ip permit
!

```

### PRI with primary-net5 switch-type

```

!--- Configuration uses PRI 30 x B-channels linked to a
!--- dialer profile 1 via dialer pool to dial out.

```

```

!
ip routing
!
isdn switch-type primary-net5
!
interface loopback0
 ip address 10.10.10.1 255.255.255.0
!
controller E1 0
 pri-group timeslots 1-31
!
interface Serial0:15
 ip unnumbered loopback0
 encapsulation ppp
 dialer pool-member 1
 isdn switch-type primary-net5
 ppp authentication chap pap
!
interface Dialer1
 ip address 192.168.12.1 255.255.255.0
 encapsulation ppp
 dialer remote-name AROP
 dialer string 0291191111
 dialer pool 1
 dialer-group 1
 ppp authentication chap pap callin
!
ip classless
ip route 0.0.0.0 0.0.0.0 Dialer1
!
dialer-list 1 protocol ip permit
!

```

### PRI 20 B-channels used for Analog Dialup to Cisco Mica Modems

```

!--- Configuration uses PRI 20 x B-channels
!--- to terminate up to 20 modem calls
!--- even though we have 30 modems. We are restricted
!--- by the amount of B-channels.

!
!
ip routing
!
isdn switch-type primary-net5
!
interface loopback0
 ip address 10.10.10.1 255.255.255.0
!
controller E1 0
 pri-group timeslots 1-21
!
interface Serial0:15
 ip unnumbered loopback0
 encapsulation ppp
 isdn switch-type primary-net5
 isdn incoming voice-modem
 ppp authentication chap pap
!
interface Group-Async 1
 ip unnumbered loopback0
 encapsulation ppp
 ppp authentication chap pap

```

```
async mode dedicated
peer default ip pool swim
group-range 1 30
!
ip local pool swim 192.168.1.1 192.168.1.20
!
line 1 30
modem inout
transport input all
```

## Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- **show isdn status** Ensures that the router is properly communicating with the ISDN switch. In the output, verify that `Layer 1 Status` is `ACTIVE`, and that the `Layer 2 Status state = MULTIPLE_FRAME_ESTABLISHED` appears. This command also displays the number of active calls. Refer to [Using the show isdn status Command for BRI Troubleshooting](#) for more information.
- **show dialer [interface type number]** Displays general diagnostic information for interfaces configured for dial-on-demand routing (DDR). If the dialer came up properly, the `Dialer state is data link layer up` message should appear. If `physical layer up` appears, then the line protocol came up, but the Network Control Protocol (NCP) did not. The source and destination addresses of the packet that initiated the dialing are shown in the `Dial reason` line. This **show** command also displays the timer's configuration and the time before the connection times out.
- **show caller user username detail** Shows parameters for the particular user such as the IP address assigned, PPP and PPP bundle parameters, and so on. If your version of the Cisco IOS® software does not support this command, use the **show user** command.
- **show dialer map** Displays configured dynamic and static dialer maps. This command can be used to see if a dynamic dialer map was created. You cannot route packets without a dialer map.

## Troubleshoot

Use this section to troubleshoot your configuration.

## Troubleshooting Resources

Use the following troubleshooting resources as required:

- [Incoming Modem Call Troubleshooting For Analog call failure troubleshooting.](#)
- [PRI Async Modem Callin Additional information on troubleshooting Analog call failures.](#)
- [Incoming ISDN Call Troubleshooting For ISDN call failure troubleshooting.](#)
- [PRI ISDN Callin Additional information on troubleshooting ISDN call failures.](#)
- [Loopback Tests for T1/56K Lines To verify that the T1 port on the router is functioning correctly.](#)

## Troubleshooting Commands

**Note:** Refer to [Important Information on Debug Commands](#) before you use **debug** commands.

- **debug dialer** Displays DDR debugging information about the packets received on a dialer interface. This information can help to ensure there is interesting traffic that can use the dialer interface.
- **debug isdn q931** Shows call setup and tear down of the ISDN network connection (Layer 3).

- **debug modem** Displays modem line activity on an access server. The output shows when the modem line changes state.
- **debug modem csm** An EXEC command to troubleshoot Call Switching Module (CSM) problems on routers with internal digital modems. With this command, you can trace the complete sequence of switching incoming and outgoing calls.
- **debug ppp negotiation** Displays information on the PPP traffic and exchanges while negotiating Link Control Protocol (LCP) and Authentication, and NCP. A successful PPP negotiation will first open the LCP state, then authenticate, and finally negotiate NCP. Multilink parameters such as Maximum Receive Reconstructed Unit (MRRU) are established during LCP negotiation.
- **debug ppp authentication** Displays PPP authentication protocol messages, including Challenge Handshake Authentication Protocol (CHAP) packet exchanges and Password Authentication Protocol (PAP) exchanges.
- **debug ppp error** Displays protocol errors and error statistics associated with PPP connection negotiation and operation.

## Related Information

- [Configuring an Access Server with PRIs for Incoming Async and ISDN Calls](#)
  - [Configuring ISDN DDR with Dialer Profiles](#)
  - [Configuring BRI-to-BRI Dialup with DDR Dialer Maps](#)
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