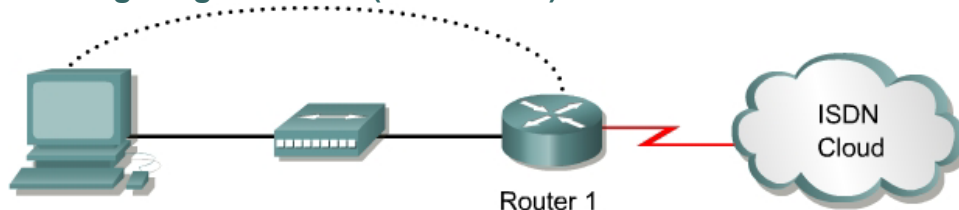


Lab 4.2.1 Configuring ISDN BRI (U-Interface)



Router Designation	Router Name	Enable Password	Secret Password	FastEthernet 0 Address/Subnet Mask	BRI 0 Address	Adtran Connection
Router 1	Ottawa	class	cisco	192.168.14.1/24	NA	BRI 1

Straight-through cable	—————
Serial cable	————— ⚡
Console (rollover)	
Crossover cable	- - - - -

Objective

- Configure an ISDN router to make a successful connection to a local ISDN switch.

Background/Preparation

This lab assumes that a router with an ISDN BRI U interface is available. An Adtran Atlas550 ISDN emulator is used to simulate the ISDN switch and cloud. If an ISDN router is not available, review the lab and perform as many noninterface commands as possible.

Cable a network similar to the one in the diagram above. Any router that meets the interface requirements displayed on the above diagram may be used. This includes the following and any of their possible combinations:

- 800 series routers
- 1600 series routers
- 1700 series routers
- 2500 series routers
- 2600 series routers

Please refer to the chart at the end of the lab to correctly identify the interface identifiers to be used based on the equipment in the lab. The configuration output used in this lab is produced from 1721 series routers. Any other router used may produce slightly different output. Conduct the following steps on each router unless specifically instructed otherwise.

Start a HyperTerminal session.

Note: Refer to the erase and reload instructions at the end of this lab. Perform those steps on all routers in this lab assignment before continuing.

Step 1 Configure the routers

Configure all of the following according to the chart:

- The hostname
- The console
- The virtual terminal
- The enable passwords

Step 2 Verifying the ISDN BRI switch type

a. Not all ISDN switch types are the same worldwide and the first step is to configure the following:

- The ISDN TE1 device
- The router
- What ISDN switch type is in use

This information will be provided by the ISDN telco provider. In this case, the ISDN Switch type, supported by the Adtran simulator, is National ISDN-1, North America. It is configured, on the router, using the keyword `basic-ni`. To check the ISDN BRI status, issue the following command before issuing any configuration commands:

```
Ottawa#show isdn status
```

b. What is the Layer 1 status?

c. What is the ISDN switch type? _____

Step 3 Specifying the switch type

a. To specify the ISDN switch type use the `isdn switch-type` command at the global configuration mode prompt. The different switch types available may be reviewed using the `isdn switch-type ?` command:

```
Ottawa#configure terminal
Ottawa(config)#isdn switch-type ?
```

b. How many different switch types are available? _____

c. To configure the router to communicate with a National ISDN-1 switch type:

```
Ottawa(config)#isdn switch-type basic-ni
```

Step 4 Verifying switch status

a. Check the state of the ISDN Interface again.

```
Ottawa#show isdn status
```

b. What is the Layer 1 status?

- c. What is the ISDN switch type? _____

Step 5 Activate the BRI connection

Activate the ISDN BRI using the `no shutdown` command at the interface configuration prompt.

```
Ottawa#configure terminal
Ottawa(config)#interface bri 0
Ottawa(config-if)#no shutdown
```

Step 6 Review switch status

- a. At this stage the ISDN BRI should be physically active and one TEI should have been negotiated.

```
Ottawa#show isdn status
```

- a. What is the Layer 1 status?

- b. What is the ISDN switch type? _____

- c. Has the Layer 2 status changed? _____

Step 7 Configuring ISDN SPIDs

Depending on region, ISDN service profile identifiers (SPIDs) may have to be specified for the ISDN Switch to respond to the ISDN TE1 correctly. The SPIDs, supported by the Adtran simulator, are specified as `isdn spid1` and `isdn spid2`. To configure the SPIDs issue the following commands:

```
Ottawa(config)#interface bri 0
Ottawa(config-if)#isdn spid1 51055510000001 5551000
Ottawa(config-if)#isdn spid2 51055510010001 5551001
```

Step 8 Review switch status

- a. Check the state of the ISDN Interface again:

```
Ottawa#show isdn status
```

- b. What does the output specify about spid1? _____

- c. What does the output specify about spid2? _____

- d. Careful examination of this output shows that the assigned SPID values have not been sent to the ISDN switch and verified. The reason for this is that they were specified after the ISDN interface was enabled. To send the SPID values the interface must be reset.

Step 9 Resetting the interface

- a. To manually reset the ISDN BRI interface issue the command `clear interface bri 0`. This will cause all ISDN parameters to be renegotiated. Issue the clear command on the router and then check the ISDN interface status. SPID1 and SPID2 will now be sent and validated:

```
Ottawa#clear interface bri 0
```

```
Ottawa#show isdn status
```

- b. Have SPID1 and SPID2 been sent and verified?
-

Step 10 Save the configuration and reboot

- a. Save the configuration and reboot the router. This time, verify that the ISDN Interface has correctly negotiated with the ISDN switch. Review activity on the ISDN Interface using the `show isdn active` command:

```
Ottawa#copy running-config startup-config
Ottawa#reload
Ottawa#show isdn active
```

- b. The history table has a maximum of how many entries?
-

- c. History table data is retained for how long?
-

Upon completion of the previous steps, finish the lab by doing the following:

- Logoff by typing `exit`
- Turn the router off
- Remove and store the cables and adapter

Erasing and reloading the router

Enter into the privileged EXEC mode by typing **enable**.

If prompted for a password, enter **class** (if that does not work, ask the instructor).

```
Router>enable
```

At the privileged EXEC mode, enter the command **erase startup-config**.

```
Router#erase startup-config
```

The responding line prompt will be:

```
Erasing the nvram filesystem will remove all files! Continue? [confirm]
```

Press **Enter** to confirm.

The response should be:

```
Erase of nvram: complete
```

Now at the privileged EXEC mode, enter the command **reload**.

```
Router(config)#reload
```

The responding line prompt will be:

```
System configuration has been modified. Save? [yes/no]:
```

Type **n** and then press **Enter**.

The responding line prompt will be:

```
Proceed with reload? [confirm]
```

Press **Enter** to confirm.

In the first line of the response will be:

```
Reload requested by console.
```

After the router has reloaded the line prompt will be:

```
Would you like to enter the initial configuration dialog? [yes/no]:
```

Type **n** and then **Enter**.

The responding line prompt will be:

```
Press RETURN to get started!
```

Press **Enter**.

Now the router is ready for the assigned lab to be performed.

Router Interface Summary				
Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2
800 (806)	Ethernet 0 (E0)	Ethernet 1 (E1)		
1600	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
1700	FastEthernet 0 (FA0)	FastEthernet 1 (FA1)	Serial 0 (S0)	Serial 1 (S1)
2500	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
2600	FastEthernet 0/0 (FA0/0)	FastEthernet 0/1 (FA0/1)	Serial 0/0 (S0/0)	Serial 0/1 (S0/1)
In order to find out exactly how the router is configured, look at the interfaces. This will identify what type and how many interfaces the router has. There is no way to effectively list all of the combinations of configurations for each router class. What is provided are the identifiers for the possible combinations of interfaces in the device. This interface chart does not include any other type of interface even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in an IOS command to represent the interface.				