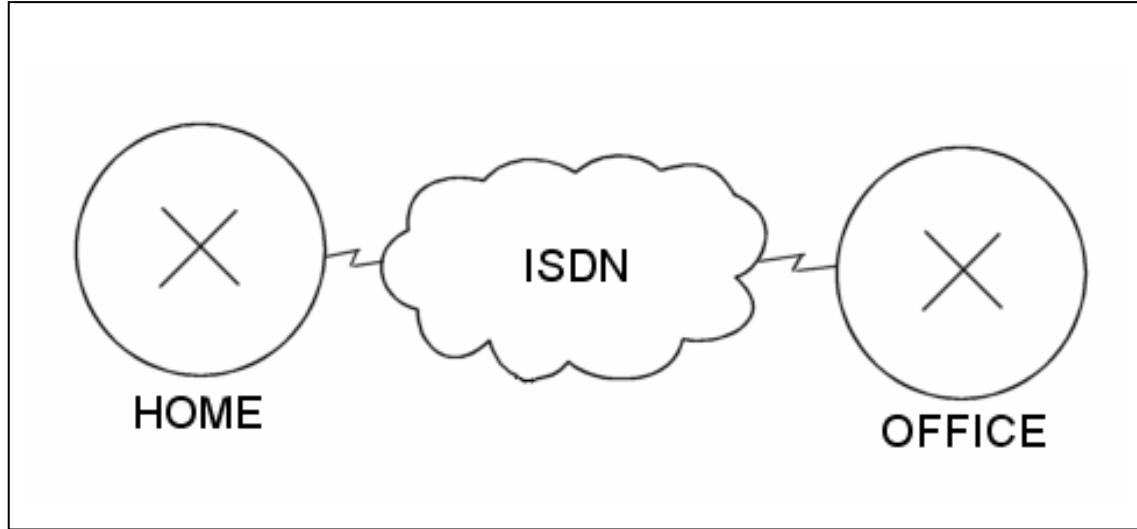


ISDN With POTS (Plain Old Telephone Service)



Scenario:

You have been hired by a small real estate company to connect a manager's home LAN to the network at the place of business. The business would also like to have the ISDN lines serve as POTS lines when they are needed for that purpose. Because of these requirements you have chosen ISDN as the best way to address the need for connectivity. You will also use PPP and multilink support to bring up both ISDN channels if the extra bandwidth is necessary.

Information:

OFFICE

LAN Interface (E0)	152.7.1.1
ISDN Interface (BRI0)	152.7.107.1
SPID1	51055512340001
LDN1	5551234
SPID2	51055512350001
LDN2	5551235

HOME

LAN Interface (E0)	152.7.6.1
ISDN Interface (BRI0)	152.7.107.2
SPID1	51055540000001
LDN1	5554000
SPID2	51055540010001
LDN2	5554001

*The Subnet Mask for both locations is: **255.255.255.0***

Lab Tasks:

1. Connect the routers to Adtran and connect the telephone to a POTS port on the either router. The **OFFICE** router should have its ISDN U port connected to port **1** of the ISDN module of the Adtran. The **HOME** router should be connected to port **2**.
2. Configure the **OFFICE** ethernet interface with the given information and set the hostname and password.
3. Configure the ISDN port (BRI0) using the information provided above.

```
OFFICE(config)# interface bri0
OFFICE(config-if)# ip address 152.7.107.1 255.255.255.0
OFFICE(config-if)# encapsulation ppp
OFFICE(config-if)# ppp multilink
OFFICE(config-if)# isdn switch-type basic-ni
OFFICE(config-if)# isdn spid1 51055512340001 5551234
OFFICE(config-if)# isdn spid2 51055512350001 5551235
```

4. While still on the BRI0 interface, configure the dialer and its dialer maps to point to the HOME LAN router. Also set the dialer to use dial-group 1 for its access permissions and configure load-balancing to bring up the second channel when 1% of the bandwidth is utilized (this is to simulate lots of traffic and to force the second line to come up).

```
OFFICE(config-if)# dialer idle-timeout 60
OFFICE(config-if)# dialer map ip 152.7.107.2 name HOME 5554001
OFFICE(config-if)# dialer map ip 152.7.107.2 name HOME 5554000
OFFICE(config-if)# dialer load-threshold 1 either
OFFICE(config-if)# dialer-group 1
```

5. Configure the same interface to forward incoming voice calls and then setup the dial peer groups to forward these calls to the appropriate POTS interfaces.

```
OFFICE(config-if)# isdn incoming-voice modem
OFFICE(config-if)# dial-peer voice 1 pots
OFFICE(config-dial-peer)# no call-waiting
OFFICE(config-dial-peer)# port 1
OFFICE(config-dial-peer)# destination-pattern 5551234
OFFICE(config-if)# isdn incoming-voice modem
OFFICE(config-if)# dial-peer voice 2 pots
OFFICE(config-dial-peer)# no call-waiting
OFFICE(config-dial-peer)# port 2
OFFICE(config-dial-peer)# destination-pattern 5551235
```

6. Configure the dialer list to permit any IP traffic over the link.

```
OFFICE(config-dial-peer)# exit
OFFICE(config)# dialer-list 1 protocol ip permit
```

7. Finally, configure the static route to route only the appropriate traffic to the manager's home LAN (don't forget to bring up the BRI0 and E0 interfaces).
8. Issue a *show isdn status* command and record your findings of the 3 layers and the SPID status.

9. Issue a *show dialer* command and record the status of the two ISDN channels.

10. Configure the **HOME** ethernet interface with the given information and set the hostname and password.

11. Configure the ISDN port (BRI0) using the information provided above.

```
OFFICE(config)# interface bri0
OFFICE(config-if)# ip address 152.7.107.2 255.255.255.0
OFFICE(config-if)# encapsulation ppp
OFFICE(config-if)# ppp multilink
OFFICE(config-if)# isdn switch-type basic-ni
OFFICE(config-if)# isdn spid1 51055540000001 5554000
OFFICE(config-if)# isdn spid2 51055540010001 5554001
```

12. While still on the BRI0 interface, configure the dialer and its dialer maps to point to the OFFICE LAN router. Also set the dialer to use dial-group 1 for its access permissions and configure load-balancing to bring up the second channel when 1% of the bandwidth is utilized (this is to simulate lots of traffic and to force the second line to come up).

```
OFFICE(config-if)# dialer idle-timeout 60
OFFICE(config-if)# dialer map ip 152.7.107.1 name OFFICE 5551235
OFFICE(config-if)# dialer map ip 152.7.107.1 name OFFICE 5551234
OFFICE(config-if)# dialer load-threshold 1 either
OFFICE(config-if)# dialer-group 1
```

13. Configure the same interface to forward incoming voice calls and then setup the dial peer groups to forward these calls to the appropriate POTS interfaces.

```
OFFICE(config-if)# isdn incoming-voice modem
OFFICE(config-if)# dial-peer voice 1 pots
OFFICE(config-dial-peer)# no call-waiting
OFFICE(config-dial-peer)# port 1
OFFICE(config-dial-peer)# destination-pattern 5554000
OFFICE(config-if)# isdn incoming-voice modem
OFFICE(config-if)# dial-peer voice 2 pots
OFFICE(config-dial-peer)# no call-waiting
OFFICE(config-dial-peer)# port 2
OFFICE(config-dial-peer)# destination-pattern 5554001
```

14. Configure the dialer list to permit any IP traffic over the link.

```
OFFICE(config-dial-peer)# exit
OFFICE(config)# dialer-list 1 protocol ip permit
```

15. Configure the static route to route all traffic from the HOME router to the OFFICE router (Don't forget to make sure all interfaces are up).
16. From the HOME router ping the ethernet interface of the OFFICE router. You may see one or two packets drop before the connection is established between the routers.
17. If necessary, connect a workstation to the HOME LAN and transmit packets across the ISDN link to bring up the second channel. (In windows, a command that works well is *ping -t -l 65500 -w 1 <ip address>* The packets will timeout in transit, however, they will produce large amounts of traffic on the link).

18. Pick up the phone attached to one of the POTS ports.

Do you hear a dial tone? _____

Did one of the ISDN channels go down? _____

19. Place the phone back on the hook.

If a line went down earlier, did it come back up? _____

If so, how long did it take? _____

20. With at least one channel up, issue the *show dialer* and *show isdn status* commands again. What changes have occurred since you issued the command previously?
