

Configuration Example 11

Multiple Asynchronous Dial-In Connections

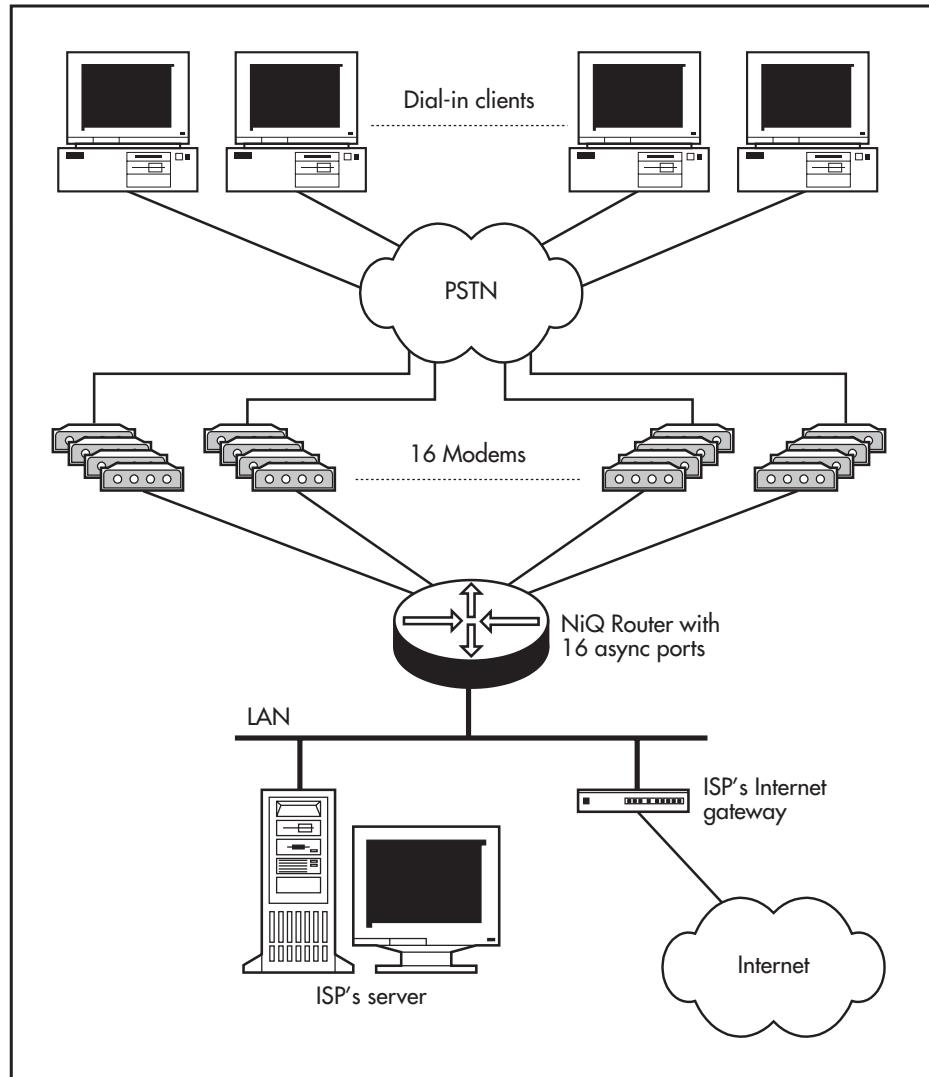
AR Series and Network iQ Series routers can be used as an asynchronous dial-in server. This configuration is used extensively by Internet Service Providers (ISPs)—several modems are connected to asynchronous ports on the router and client PCs dial in via the modems. The router handles the negotiation of PPP with the clients, the forwarding of authentication information to a TACACS server and routing of traffic to and from the clients.

This example illustrates how to configure a dial-in server using a Network iQ router with 16 asynchronous ports. This may be either a Network iQ 2800 Series router with an ASYNC16 expansion card installed, or a Network iQ 3000 Series router with four ASYN4 IOM cards installed.—two on the base unit and two 4-port asynchronous PIC. Similar setups can be created using an AR720 router with ASYN4 PIC cards installed.

The router is configured to create a dynamic interface over an asynchronous port when an incoming call arrives at the port (i.e. when the port's CD line goes high). The router will accept authentication information from the client PC and verify that authentication information with a TACACS server. If the authentication information is valid, the router obtains an IP address for the client from a Domain Name Server (DNS) and starts routing data to and from the client.

The router samples the initial packets arriving from the client to determine the type of interface to create over the asynchronous port. If the initial packets from the client are PPP packets, the router will create a dynamic PPP interface; if the initial packets are SLIP packets, the router will create a SLIP interface.

Figure 1: Setup Diagram



Configuration Script for Router [ex11.scp]

1. Set the system name. The prompt will change to "Manager EX11_A".

```
set sys name=EX11_A
```

2. Inform the router of the address of the TACACS server.

```
add tacacs server=202.36.148.67
```

3. Set the parameters on all the asynchronous ports. The parameters are:

- `flowcontrol=hardware` tells the router to use the CTS/RTS lines rather than XOFF/XON for flow control, for compatibility with modems which typically use CTS/RTS.
- `cdcontrol=connect` ensures that the router will terminate connections when the CD line is taken low by the modem.
- `speed=115200` sets the DTE speed at which the router communicates with the modem's DTE port.

```
set port=2 speed=115200 flow=hard cd=connect
```

```
set port=3 speed=115200 flow=hard cd=connect
```

```
set port=4 speed=115200 flow=hard cd=connect
```

```
set port=5 speed=115200 flow=hard cd=connect
set port=6 speed=115200 flow=hard cd=connect
set port=7 speed=115200 flow=hard cd=connect
set port=8 speed=115200 flow=hard cd=connect
set port=9 speed=115200 flow=hard cd=connect
set port=10 speed=115200 flow=hard cd=connect
set port=11 speed=115200 flow=hard cd=connect
set port=12 speed=115200 flow=hard cd=connect
set port=13 speed=115200 flow=hard cd=connect
set port=14 speed=115200 flow=hard cd=connect
set port=15 speed=115200 flow=hard cd=connect
set port=16 speed=115200 flow=hard cd=connect
set port=17 speed=115200 flow=hard cd=connect
```

4. Set up the ACC call definition. The parameters are:

- `dir=answer` specifies that the ACC call definition will only answer incoming calls; it will not initiate outgoing calls.
- `encap=auto` specifies that the router will automatically detect the encapsulation that the client is using—PPP or SLIP.
- `authen=auto` specifies that the router will accept the authentication sent by the client in whatever form it is sent—PAP, CHAP or login prompt.
- `port=2` specifies that the call is initially attached to asynchronous port 2.

```
add acc call=dialin dir=answer encap=auto auth=auto port=2
```

5. Add the same ACC call definition to all the other asynchronous ports.

```
add acc call=dialin port=2
add acc call=dialin port=3
add acc call=dialin port=4
add acc call=dialin port=5
add acc call=dialin port=6
add acc call=dialin port=7
add acc call=dialin port=8
add acc call=dialin port=9
add acc call=dialin port=10
add acc call=dialin port=11
add acc call=dialin port=12
add acc call=dialin port=13
add acc call=dialin port=14
add acc call=dialin port=15
add acc call=dialin port=16
add acc call=dialin port=17
```

6. Enable IP routing.

```
enable ip
```

7. Assign an IP address to the router's Ethernet port.

```
add ip int=eth0 ip=202.36.148.86
```

8. Set up the DNS. After the router has received a positive response from the TACACS server for a client's login details, it must obtain an IP address for that client. It does this by appending a domain name to the client's username and sending that to a domain name server in order to obtain an IP address. First, specify the domain name to append to the client's username. Then inform the router of the address of the DNS.

```
add acc domainname=isp.com
```

```
set ip nameserver=202.36.148.65
```

9. Configure the OSPF routing protocol. The router has to use some routing protocol to inform other devices on the ISP's LAN of the routes to the dial-in clients. OSPF is probably the most efficient protocol. The parameters are:

- `routerid` assigns the router an ID to use when exchanging OSPF data with other routers
- `asexternal=on` means that the router will import into the OSPF cloud routes that it knows about via interfaces that are external to the OSPF cloud.
- `dyninterface=asexternal` means that when the router creates a dynamic IP interface, any routes created that are via that interface will be advertised into the OSPF cloud as external LSAs.

```
set ospf routerid=202.36.148.86 asexternal=on  
dyninterface=asexternal
```

```
add ospf area=backbone stubarea=off
```

```
add ospf range=200.36.148.0 area=backbone  
mask=255.255.255.0
```

```
add ospf interface=eth0 area=backbone
```

```
enable ospf
```