Connecting a SLIP/PPP Device to a Router's AUX Port

Document ID: 10349

Contents

Introduction

This document describes how to connect a SLIP or PPP client to the AUX port of a router.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on the Cisco IOS® Software Release10.0, and later 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.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Background Information

You must follow two main steps when you connect a SLIP or PPP client to the AUX port of a router:

- Physical setup.
- Logical setup.

This document explains both the steps.

Physical Setup

The physical portion of the configuration includes the modem and the wiring.

To set up the physical portion of the configuration, complete these steps:

1. Set the modem serial interface connection to the highest speed that the modem supports. For instance, 38400.

   ```
   line aux 0
   rxspeed 38400
   txspeed 38400
   ```

2. Configure the AUX port for modem inout. This means that you must set the modem to provide CD, because the router disconnects when its CD signal drops. Also, the router drops the Data Terminal Ready (DTR) if it wants the modem to disconnect. Program the modem to hang up when DTR drops.

   ```
   modem inout
   ```

3. Use hardware flow control (RTS/CTS). The AUX port drops Request To Send (RTS) when it wants the modem to disconnect, and the modem must drop Clear To Send (CTS) if it wants flowcontrol on the AUX port. Program the modem for RTS/CTS.

   ```
   flowcontrol hardware
   ```

4. Specify no time out when no input is received for a time.

   ```
   exec-timeout 0 0
   ```

5. Give yourself a prompt when you connect to the router.

   ```
   exec
   ```

In order to configure the modem, enter the appropriate AT commands from the fax document Modem−Router Connection Guide. One way to do this is to issue the **telnet** command to the AUX port using the IP address of the Ethernet + 2001. For example, if the IP address of your Ethernet is 156.32.4.1, issue **telnet** to 156.32.4.1 2001. Type **AT**, and you should see an OK. After you enter all the commands, type **Crtl−Shft−6**, then **x**. This will return you to a router prompt. Type **disc** to disconnect your session. Now the DTE speed of your modem is set, and the connection to the modem is verified.

Use an async VT100 terminal emulation to dial in. If you see NO PROMPT, verify whether your wiring is correct (straight through cable for A/M/CGS, 7000, 4000 and 3000 series; 8 pin modular cable and 8 pin to 25 pin adapter for 2500 series). See the fax document Cabling Guide for RJ−45 Console and AUX Ports for details.

Ensure that flowcontrol of the line is working. Issue the command **term length 0**, followed by **show memory**. You should see perfectly aligned columnar output. If the data does not line up, the implication is that characters are being dropped. Check the flowcontrol settings on your AUX port and modem, and on your dial−in modem and terminal.

Now verify whether modem control works when you issue the **quit** command at the `exec` prompt. If your modem loses carrier, the DTR portion of the modem control is set properly. If the modem does not hang up, check the modem on the AUX port to make sure it is set to hang up on loss of DTR. Also ensure that you have set modem inout on the AUX port. In order to test the CD portion of the modem control, enter into the enable mode, and force your local modem to hang up. When you reconnect, you must not be in enable mode. If you are back in the enable mode, the AUX port does not recognize the loss of carrier. Check the wiring and modem settings, and ensure that you have set modem inout on the AUX port.

Of course, the modem could also be configured from an attached terminal. Set this terminal to 38400 in order to set the port speed.

When you are sure of the physical link integrity, move on to the SLIP/PPP configuration

Logical Setup

The logical portion of the configuration includes the SLIP or PPP connection.

To configure SLIP/PPP, complete these steps:

1. Enable IP connectivity on AUX 0. Issue the **show line** command to see the AUX port tty numbering for your router. The numbering varies based on the router model and modules installed.

   Ensure that the customer knows how to identify the async port numbering for any router.

   ```
   branch1#show line
   Tty Typ Tx/Rx A Modem Roty AccO AccI Uses Noise Overruns Int
   *  0 CTY - - - - - 0 0 0/0 -
   I  4 AUX 9600/9600 - - - - - 0 0 0/0 -<==!!
      5 VTY - - - - - 0 0 0/0 -
      6 VTY - - - - - 0 0 0/0 -
      7 VTY - - - - - 0 0 0/0 -
      8 VTY - - - - - 0 0 0/0 -
      9 VTY - - - - - 0 0 0/0 -
   ```

   Line(s) 1–3 are not in async mode, or do not have hardware support.

   You must configure int async 4 to configure your AUX port.

   ```
   interface async 4
   ```
2. Set the address of the AUX port to the local Ethernet port. This allows the end device to have a phantom presence on the Ethernet.

   ```
   ip unnumbered ethernet 0
   ```
3. Use TCP header compression if the connecting system uses it.

   ```
   ip tcp header-compression passive
   ```
4. Return to default PPP encapsulation.

   ```
   encapsulation PPP
   ```
5. Set a default IP address in case the user does not specify one when it dials in. Use the same subnet as the unnumbered reference (int E 0). This is the address of the node that is calling in.

   ```
   peer default ip address 131.108.75.2
   ```
6. Allow the user to use SLIP or PPP.

   ```
   async mode interactive
   ```

The end device that dials in should issue the command **SLIP** or **PPP** to start up SLIP or PPP services. Most packages have a scripting language that will allow you to issue text commands before going into SLIP or PPP mode.

When you have issued the command, the router reports a text message that contains the IP address that it expects the remote end to have. One way you can set the address of the node calling in, is to manually read that address and program it in. Some packages automatically read that message. A better way to set this

address is to use **BOOTP** for SLIP or **IPCP** for PPP. This must be configured on the dial−in client. If you use IPCP with PPP, you can set the end node address to 0.0.0.0. Then it will dynamically learn the address that you have set through **async default ip address**.

To test connectivity, ping the address of the Ethernet port. If that works, start to ping some hosts. If this works, your connectivity is fine. If it does not work, the address may be set wrongly on your end host. The other possibilities are that you have a noisy connection or poor physical connectivity. Ensure that you have performed all the steps in part 1. Also enure that the package you use knows the address that you programmed with async default IP address. If it does not, check with the package manufacturer whether the package is configured correctly.

Troubleshoot

This section provides tips to troubleshoot some common problems.

Problem: The modem does not answer.

Solution:Set the S0 register (ATS0=1), or the auto−answer dipswitch (if it is present). DTR may not be present at the modem because of a modem inout or cable problem.

Problem: The modem answers, but does not return a router prompt (VT100 mode).

Solution: Check the DTE port speeds of the modem, router, and PC. Also verify whether modem inout is set, and that the router recognizes an active session on the AUX port.

Problem: The SLIP or PPP connection is made, but the **telnet** or **ping** command cannot be issued to the Ethernet interface.

Solution: Check IP addresses for PC and async interface. Use the **show interface** command to check the async interface protocol state.

Problem: The **ping** or **telnet** command can be issued to the Ethernet interface, but nothing else is possible.

Solution: The PC does not have default−gateway. There could be some other IP routing problem.

Related Information

- **Access Technology Support Pages**
- **Technical Support – Cisco Systems**

Updated: Feb 04, 2010   Document ID: 10349