Q&A

How do I configure an Atlas 550/800 Plus/810 Plus for frame relay to an external router?

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A:

Introduction

Frame relay is a packet-switched service that allows efficient transfer of bursty traffic in a wide area network (WAN) environment. It offers lower-cost data transfer, when compared to typical point-to-point applications, by using virtual connections within the frame relay network and by combining those connections into a single physical connection at each location. Frame relay providers use a frame relay switch to route the data on each virtual circuit to the appropriate destination. This technical support note will discuss the configurations necessary to enable frame relay on an ATLAS 550/800^{PLUS}/810^{PLUS}.

Before you begin

Before configuring the ATLAS 550/800^{PLUS}/810^{PLUS}, the following information must be obtained from the frame relay service provider:

1. Frame relay signaling method (Annex D, Annex A, or LMI)
2. Data Link Connection Identifiers (DLCI) for each site

You must also have an ATLAS 800^{PLUS}/810^{PLUS} with active frame relay software. The ATLAS 550 comes with the frame relay software already active.

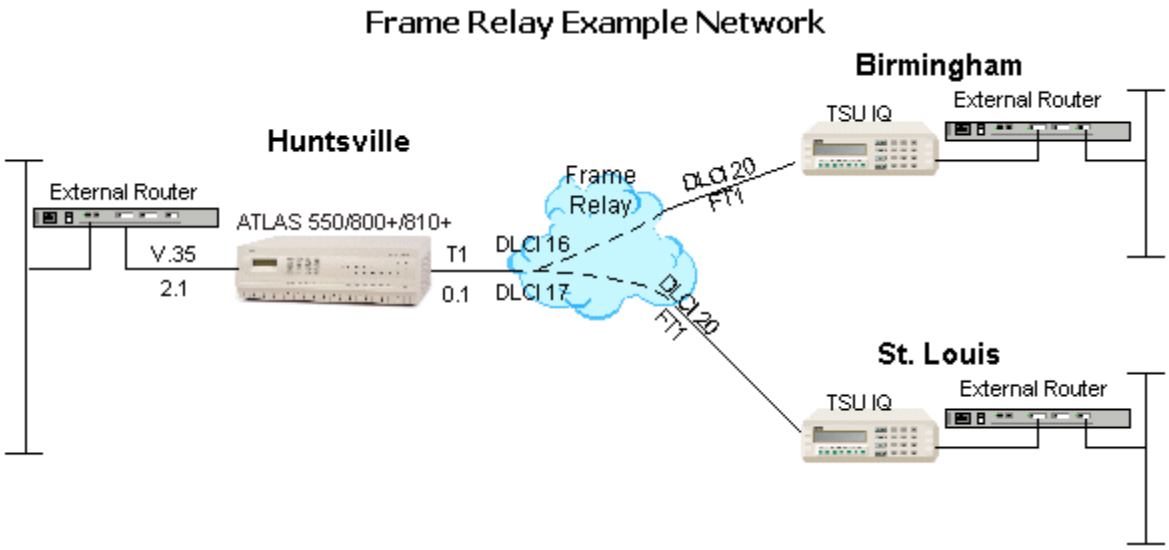

Figure 1

Configuring Timing

Under the **System Config** menu, **Primary Timing Source** must be changed so that the ATLAS is taking timing from the frame relay network. In the example network of Figure 1, timing will be taken from the frame relay network on Slot: 0 Port: 1 which is one of the built in T1/PRI ports. This configuration is shown in Figure 2 below.

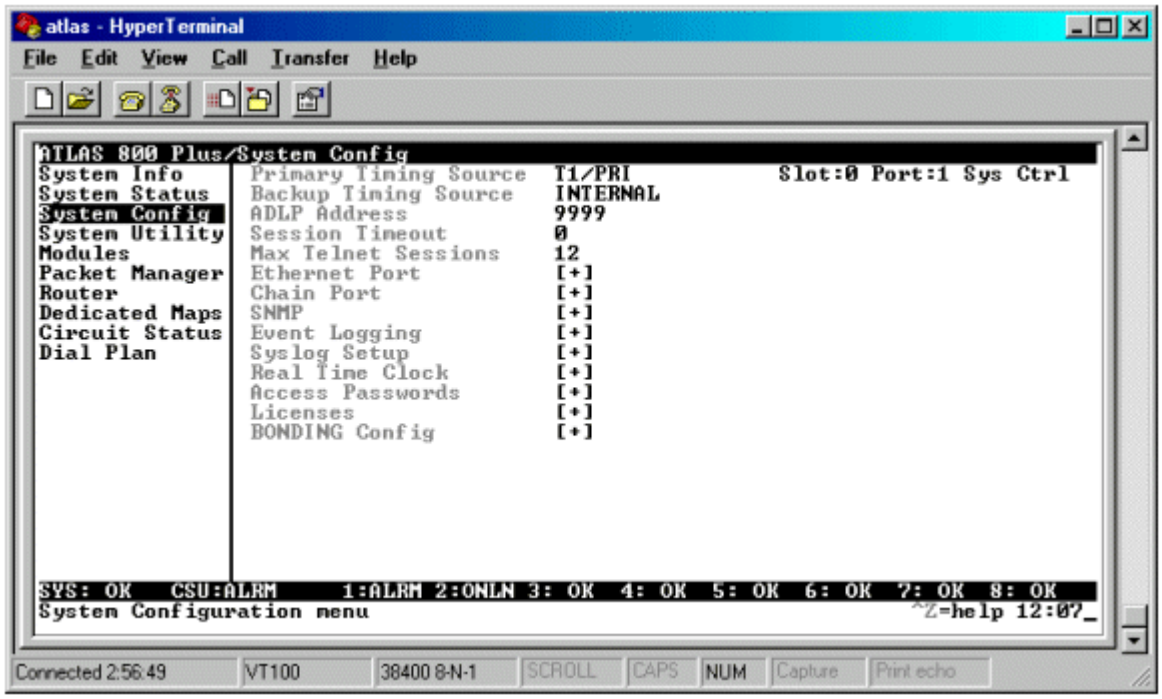

Figure 2

Configuring Packet Endpoints

A **Packet Endpoint** is a virtual port within the ATLAS into which a specified physical port (a T1 or a Nx56/64) terminates its data for further routing for the system. Each physical port doing frame relay must have a **Packet Endpoint**.

1. Under **Packet Manager**, **Packet Endpoints**, and **Config**, create an endpoint for each physical port. For this application there will be an endpoint for the T1 interface, and also a separate endpoint for the V.35 Nx56/64 interface. Choose **Frame Relay** as the **Protocol** for all endpoints as shown in Figure 3. Both endpoints will use RFC 1490 frame relay encapsulation.

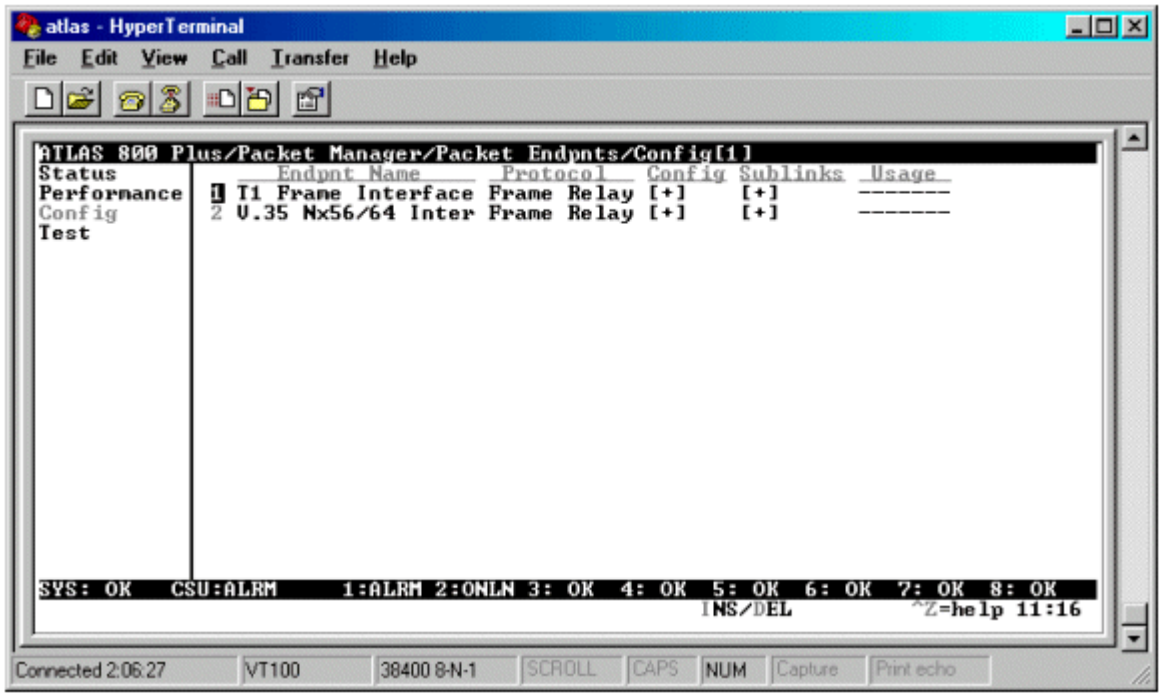

Figure 3

2. Configure the T1 frame relay endpoint by pressing **ENTER** on **Config** for that endpoint. Select **User** for the **Signaling Role** of this endpoint. Select the appropriate **Signaling Type**, either **Annex D** or **LMI**, to match what the frame relay Provider is using on their frame relay switch. In this example, the frame relay switch is using **Annex D** signaling as shown in Figure 4. If the signaling type is not known, it may be set to **Auto**.

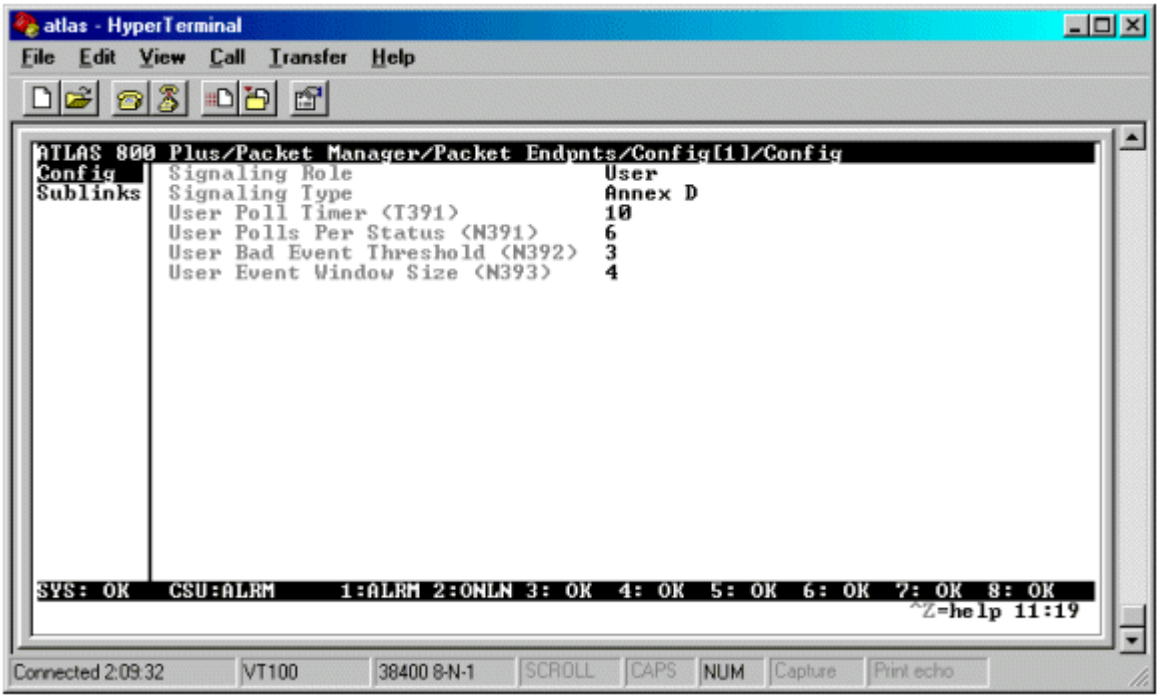

Figure 4

3. Configure the V.35 Nx56/64 endpoint by pressing **ENTER** on **Config** for that endpoint and selecting **Network** for the **Signaling Role**. The **Signaling Type** should be set to match the signaling type of the router connected to the V.35 Nx56/64 interface. If this is not known, you may set this option to **Auto**. Figure 5 shows the configuration for the V.35 Nx56/64 interface.

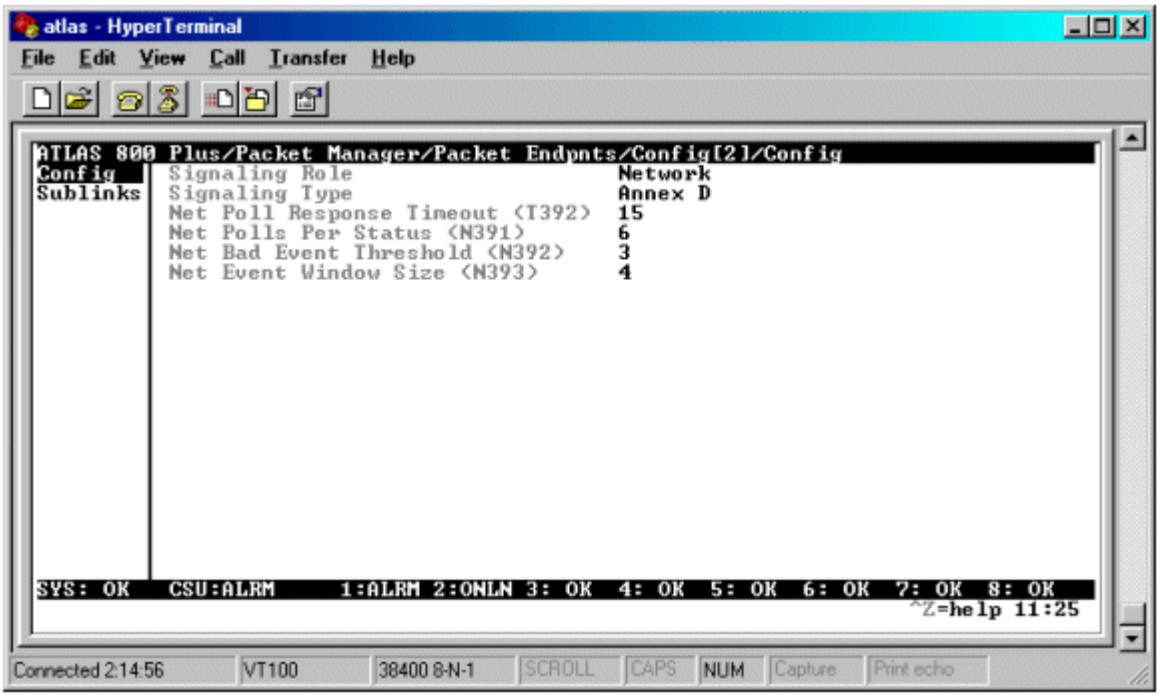

Figure 5

4. Configure the Permanent Virtual Circuits (PVCs) under **Sublinks** for each of these endpoints. Start with the T1 packet endpoint by pressing **ENTER** on the **Sublinks** option for that endpoint. Name the PVC and ENTER the locally significant DLCI for each as shown in Figure 6. In this example, the PVCs are named for the remote site location that the PVC is mapped to on the far end of the frame relay network. Press **ENTER** on the Config option of the **Sublinks menu**. By default, the **Primary | Backup Selection** should be **Primary**.

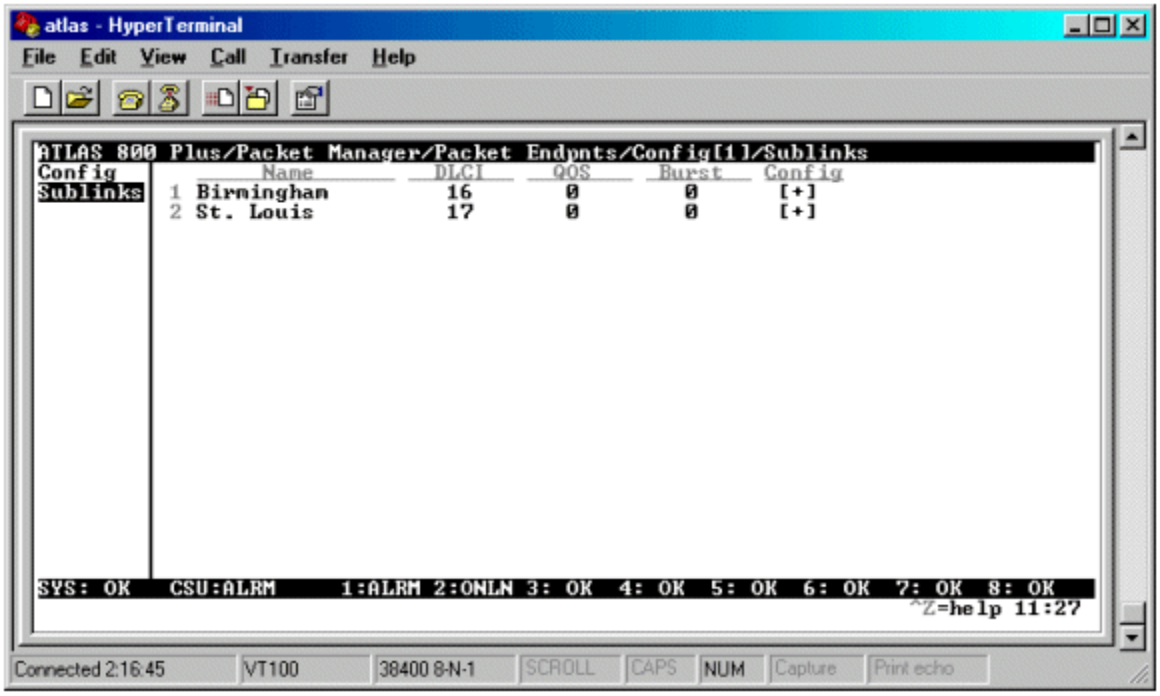

Figure 6

5. Configure the PVC for the V.35 Nx56/64 endpoint by going to the **Sublinks** menu for that endpoint. Figure 7 shows the **Sublink** configuration for this endpoint.

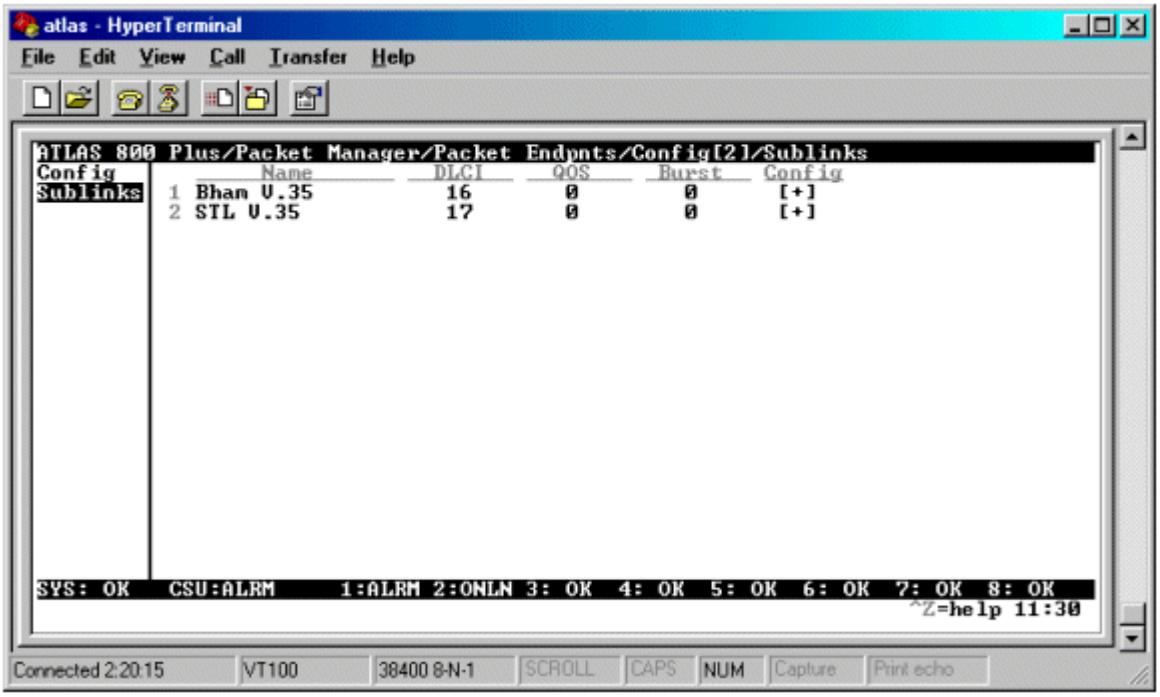

Figure 7

After all **Packet Endpoints** have been configured, the next step is to link these endpoints to each other. This is done in the **Packet Connects** menu.

Configuring Packet Connects

In this example, we are using an external router that is connected to the ATLAS via the V.35 Nx56/64 module. This will require a packet connect from the T1 endpoint, *Birmingham* sublink, to the V.35 Nx56/64 endpoint, *Bham V.35* sublink. We will also need a packet connect from the T1 endpoint, *St. Louis* sublink, to the V.35 Nx/56/64 endpoint, *STL V.35* sublink, as shown in Figure 8. The **Protocol** option should be set to **All**.

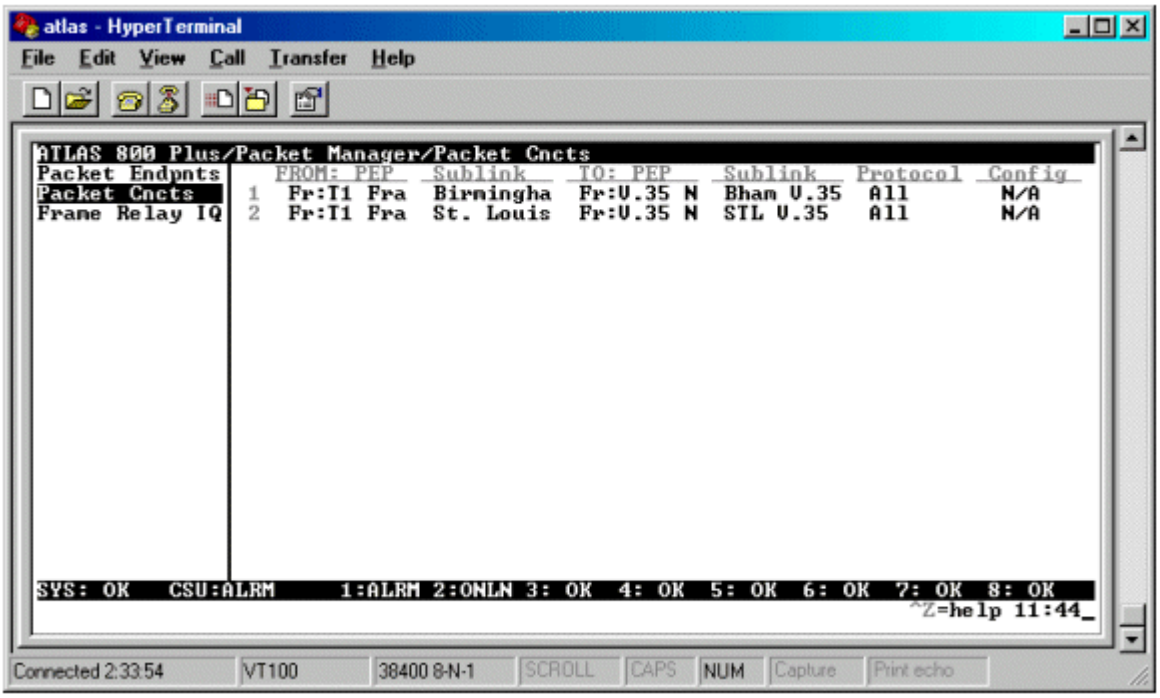

Figure 8

The next step is to map these virtual connections to actual physical ports on the ATLAS. This is done in the **Dedicated Maps** menu.

Configuring Dedicated Maps

Under **Dedicated Maps**, press **ENTER** on **Create/Edit Maps**, then **Connects**. For the **FROM Slt** and **Port fields**, select the physical slot and port to which the frame relay T1 line will be connected. For the **TO Slt/S** field, select **PktEndpt**. For the **Port/PEP** field, select the primary frame relay endpoint. Press **ENTER** on the **From Config** field and designate the number of channels to be used on the T1. In the example, 24 channels are being used. Figure 9 shows how the **Connects** menu looks as configured for the example in Figure 1, which uses an external router.

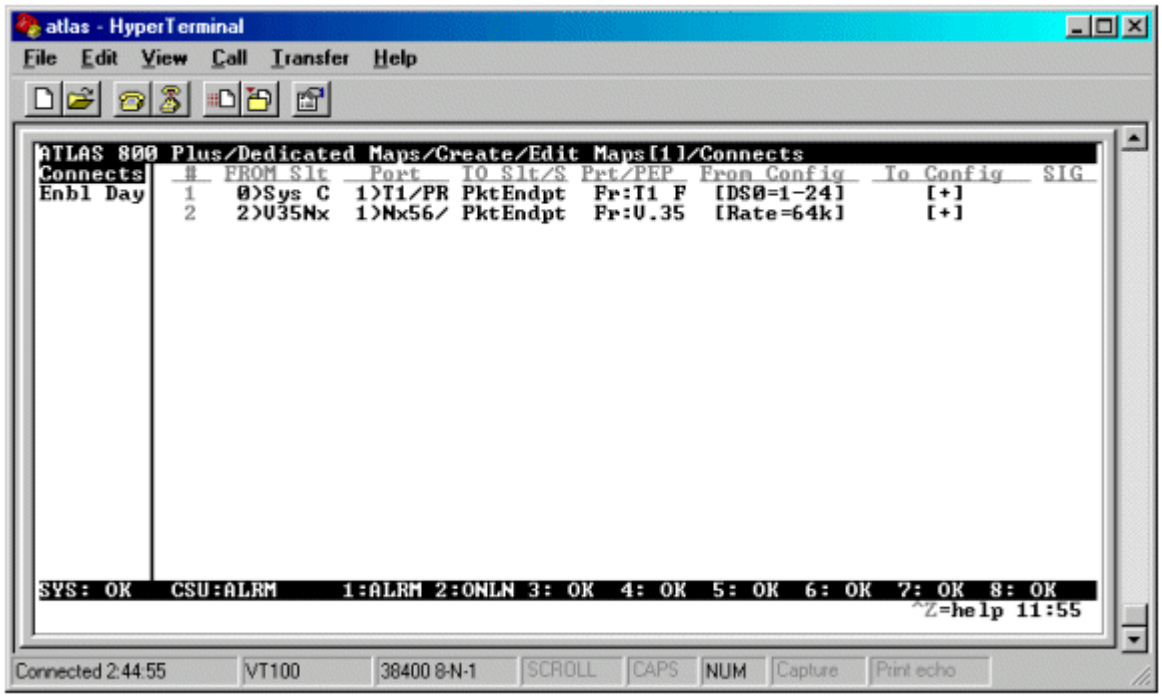

Figure 9

Completing the Application

The frame relay configuration for the example in Figure 1 is now complete. To make sure that your frame relay is active, go to **Packet Manager/Packet Endpts/Status** and make sure that **SigState** says **Active**. Figure 10 shows the active status.

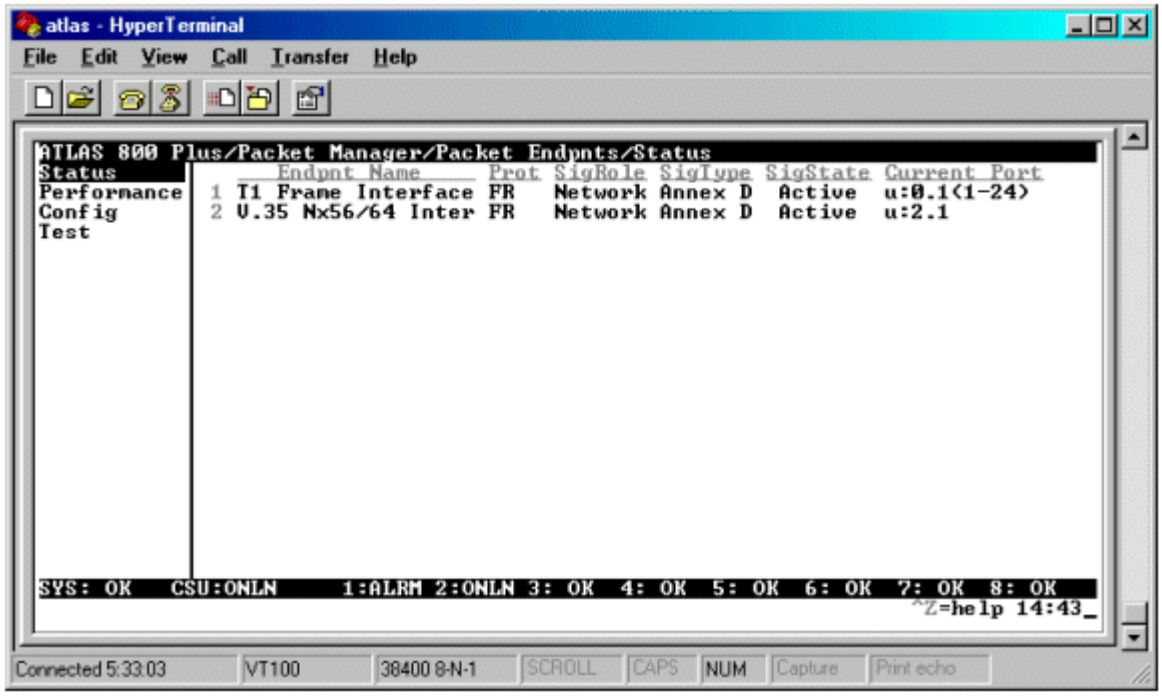

Figure 10

To make sure that the individual sublinks are up, go to **Packet Manager/Packet Endpts/Performance/Sublink Stats**. Each sublink will be listed and the **Stat** should be *Up*. Figure 11 shows two active sublinks.

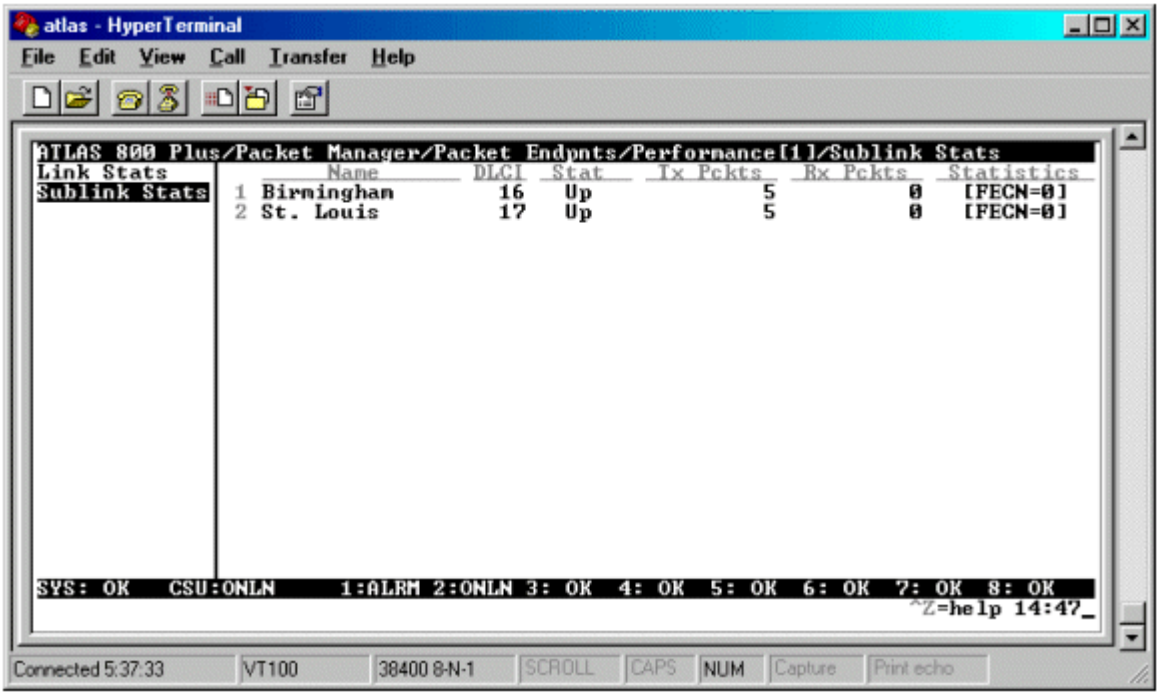

Figure 11

Possible Problems and Troubleshooting Tips

If you are not able to get the frame relay connection up, there are several things to check. This section will describe possible problems and steps to eliminate them.

Frame Relay Link is down

Cabling:

- On the **T1 Module menu**, check the **Alarm Status**. If you have a LOS alarm, verify that your straight through RJ-45 cable is plugged into the correct port.
- On the V.35 Nx56/64 module menu, check the **DTE Status** and verify that DTR and RTS are active. If they are inactive, verify V.35 cable is connected to the correct port. If the cable is connected, verify that the external DTE is powered on.

Packet Endpoint not mapped:

- Go to **Packet Manager/Packet Endpts/Status/Current Port** and make sure that a physical port is indicated.

Signaling Mismatch:

- Go to **Packet Manager/Packet Endpts/Config/Signaling Type** and verify that the signaling type matches that provided by the carrier and the external DTE.

Link is Active but not passing data

DLCI not active:

- Go to **Packet Manager/Packet Endpts/Performance** and verify that the DLCI shows active. If the DLCI is shown as inactive and the packet endpoint is configured as the **USER** side of UNI, the frame relay network has not activated this DLCI.

No data on DLCI:

- Go to **Packet Manager/Packet Endpts/Performance/Link Stats** and watch the **TX Packets and RX Packets**. If no packets are being received, verify that external equipment is configured to transmit data on this DLCI.
- Go to **Packet Manager/Packet Cncts** and verify that this DLCI is mapped.

If you experience any problems using your ADTRAN product, please contact ADTRAN Technical Support.