Preparing to Configure ATM Traffic Management and QoS Features

Before you begin to configure traffic shaping and implement QoS, there are several areas of the network design that you should consider.

Several of these tasks should be implemented as a regular and ongoing assessment of your network. Most networks and their traffic usage patterns are dynamic. Network designs that work initially often need to be adjusted as usage increases and loads and requirements change.

This chapter includes the following guidelines for preparing to configure ATM traffic management and QoS features:

Defining the Service Model

To properly design your network, you need to define the business model, goals and requirements that the network needs to support. This serves as a basis for establishing the proper criteria for the traffic shaping and QoS.

Basically, you need to know the objectives of the network so that you can measure whether or not you are meeting those objectives, and assess where design changes might need to occur.

Analyzing the Network Traffic

Analyzing your network traffic is a key task throughout the design and maintenance of your network.

When you analyze your network traffic, obtain the following information:

- Assess the traffic mix—Classify the different types of traffic being handled and determine service levels for the different types of traffic to be supported. Be sure to identify any traffic that is vital to the support of your business applications. This is called *mission critical traffic*.
- Assess the load—Determine how much of the bandwidth is used, and by what types of traffic, over the network links.
- Assess the performance—Does the current network design optimize the flow of different traffic types and minimize loss or latency? During periods of congestion, is mission critical traffic adversely affected?
- Assess CPU utilization—During busy periods, monitor the CPU utilization on network devices. Be aware of any impact that QoS configuration might have on CPU utilization.

In addition to analyzing your network, you should gather other information about your network, including network topology diagrams, device configurations, and software versions.

Considering the Traffic Contract

The traffic contract establishes the criteria for policing of ATM virtual connections on the network to ensure that violations of the agreed-upon service levels do not occur.

Therefore, if you already have established an agreement with your service provider, you want to be sure that your ATM network design conforms to the service levels for which you are paying, and also so that you can understand where adjustments to the contract might need to be made.

Be sure that you understand how your service provider is policing your ATM network connections.

For more information about the traffic contract, see the "Traffic Contract" section on page 1-3.

Evaluating the PVC Configuration Over the Physical Interface

Consider the following areas when evaluating your PVC configuration over the physical interface:

- Verify the appropriate framing between the router and the switch.
- Verify whether you are using payload scrambling on the PVC. Both ends of a VC must have the same scrambling setting. For more information, refer to the TAC Tech Note, When Should Scrambling Be Enabled on ATM Virtual Circuits?.
- Determine the rate supported by the physical interface and evaluate PVC performance.
- Determine the Layer 2 and Layer 3 overhead for the classes of traffic to be supported over the physical interface when evaluating bandwidth.
- Determine the maximum delay tolerable for mission critical traffic and adjust burst parameters for traffic shaping accordingly.
- Determine if the PVC requires any bandwidth guarantees for its applications.

- If you are limited to a certain type of PVC, configure the closest service category supported by the ATM port adapter.
- Anticipate PVC growth in both load (amount of bandwidth consumption) and number of PVCs that you might need to support. For multiple PVCs, consider the following:
  - Project the maximum number of PVCs that you need to support.
  - Consider whether you need to implement individual PVCs or a VC bundle.

Related Documentation

The following table provides information about additional resources that you can read to learn more about some of the topics discussed in this chapter:

For more information about:	Refer to the following publications:
Payload Scrambling	When Should Scrambling Be Enabled on ATM Virtual Circuits? (TAC Tech Note)

Next Steps

After you evaluate your network by assessing your traffic and defining your business and service models, you are ready to begin shaping your traffic and configuring your QoS service policies to meet your network and business objectives.

For guidelines on configuring traffic shaping to effectively manager your ATM traffic, read Chapter 5, "Configuring Traffic Shaping on the PA-A3 and PA-A6 ATM Port Adapters."

For guidelines on configuring IP to ATM Class of Service (CoS) features and information about queue limits, read Chapter 6, "Configuring QoS on the Layer 3 Queues for the PA-A3 and PA-A6 ATM Port Adapters."