Byte Adjustment for ADSL and VDSL Traffic Overview

You can associate a parameter definition with a byte adjustment application to adjust the shaping rates for ADSL and VDSL traffic on E Series Broadband Services Routers.

The byte adjustment differs for interfaces with cell shaping mode and frame shaping mode. For ADSL traffic, JUNOSe software supports a byte adjustment application (**qos-byte-adjustment**) to adjust rates for cell shaping mode. For VDSL traffic, JUNOSe software supports a frame byte-adjustment application (**qos-frame-byte-adjustment**) to adjust rates for frame shaping mode.

Frame is the default shaping mode for Ethernet interfaces on E Series routers. To configure the cell shaping mode, issue the **qos-shaping-mode** command or by specifying the **qos-cell-mode** application with a parameter definition.

Byte Adjustment for Cell Shaping of ADSL Traffic Overview

Managing the bandwidth of downstream ATM traffic to Ethernet interfaces is difficult because of the different layer 2 encapsulations. To reduce the number of packet drops in the Ethernet network, you can use the byte adjustment applications to account for the different encapsulations.

To adjust the shaping rates to account for different layer 2 encapsulations as well as the ATM cell pad, header, and trailer on interfaces, apply a parameter with the cell byte-adjustment application (**qos-byte-adjustment**).

When you apply a parameter with the **qos-byte-adjustment** application to an interface with frame shaping mode, you adjust shaping rates to account for different layer 2 encapsulations only.

Calculation and Example of Byte Adjustment for Cell Shaping

The system counts the bytes transmitted to track the shaping rate. Instead of counting the actual packet size, the system uses the CPE packet size. You can configure the byte adjustment so that the shaping rate matches the CPE bandwidth.

By default, the byte adjustment is set to 0. If the overhead between the access node and CPE is 0, you do not need to configure the byte adjustment value.

Figure 1 displays an example of an Ethernet encapsulation and an ATM encapsulation.

Figure 1: Byte Adjustment Calculation for Ethernet and ATM Encapsulations

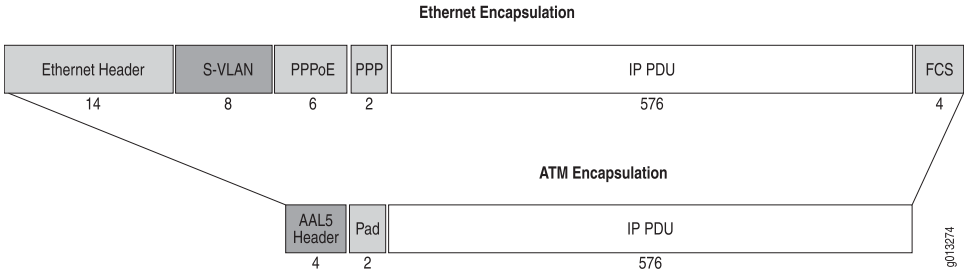

Table 1 lists the header lengths for the Ethernet encapsulation, which represents the CPE protocol overhead. The hierarchy is PPPoE over S-VLAN over Ethernet.

Table 1: Header Lengths for Ethernet Encapsulation

Header	Number of Bytes
EnetHeader	14 bytes (6-SA, 6-DA, 2-ethertype)
Vstack	8 bytes (2-vmanTci, 2-ethertype, 2-vlanTci, 2-ethertype)
PppoeHeader	6 bytes (1-version/type, 1-code, 2-session id, 2-length)
Ppp	2 bytes (2-protocol id)
FCS	4 bytes
Total	34 bytes

Table 2 lists the header lengths for the ATM encapsulation, which represents the B-RAS protocol overhead. The interface stack is PPPoA over ATM 1483 with LLC Mux. The ATM AAL5 trailer is considered cell tax and is not part of the byte adjustment calculation.

Table 2: Header Lengths for ATM Encapsulation

Header	Number of Bytes
ATM AAL5 LLC	4 bytes
PPP	2 bytes (2-protocol id)
Total	6 bytes

The byte adjustment calculation for these encapsulations is:

Byte Adjustment for Frame Shaping of VDSL Traffic Overview

Packet fragmentation can occur at a DSLAM because of the associated segment header that is added for VDSL2 in frame mode. Because the segment header is not included in the ANCP rate report, the forwarding rate on an E Series router can be higher than the DSLAM rate, which can result in packet loss.

You can use a QoS parameter expression with the frame byte-adjustment application to reduce the forwarding rate so that it matches the rate at the DSLAM. To adjust rates for interfaces with frame shaping mode, apply the frame byte-adjustment application (**qos-frame-byte-adjustment**).

When you apply a parameter with the **qos-byte-adjustment** application to an interface with frame shaping mode, you adjust shaping rates to account for different layer 2 encapsulations only.

System Calculation for Byte Adjustment of ADSL and VDSL Traffic

You can create parameter instances for the cell byte-adjustment application and the frame byte-adjustment application on the same system. The system performs the byte adjustment calculation based on the shaping mode specified. The byte adjustment can have both a positive and negative value.

Table 3 lists the final byte adjustment value that the system uses depending on the configured shaping mode and the value that you configured for the byte adjustment applications.

Table 3: Byte Adjustment Values for Frame and Cell Shaping Modes

Shaping Mode on Port 0	Configured qos-frame-byte-adjustment Value	Configured qos-byte-adjustment Value	Final Byte Adjustment Value
Cell	Any value	-4	-4
Cell	Any value	Undefined	0
Frame	Undefined	Undefined	0
Frame	8	-4	8
Frame	Undefined	8	8

Related Topics

- Configuring a Parameter Definition to Adjust Cell Shaping Rates for ADSL Traffic
- Configuring a Parameter Definition to Adjust Frame Shaping Rates for VDSL Traffic
- Example: QoS Parameter Configuration for QoS Cell Mode and Byte Adjustment for Cell Shaping

- For more information about configuring shaping modes for Ethernet, see QoS Shaping Mode for Ethernet Interfaces Overview and Cell Shaping Mode Using QoS Parameters Overview
- For more information about shaping the downstream rate using QoS parameter instances that were created dynamically by ANCP, see QoS Downstream Rate Application Overview

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