

## Hierarchical CoS Shaping-Rate Adjustments Overview

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This overview describes how an MX-series router installed as an edge router in a subscriber access network can adjust hierarchical class-of-service (CoS) policy to prevent bandwidth contention at subscriber interfaces on Enhanced Queuing Dense Port Concentrator (EQ DPC) ports.

High-speed data service subscribers typically receive some combination of voice, data, and video services from an access network. Subscriber traffic is delivered from the access network, through a router, through a switched Ethernet network, to an Ethernet digital subscriber line access multiplexer (DSLAM). The DSLAM, in turn, forwards the subscriber's traffic to the residential gateway over a digital subscriber line (DSL). An MX-series router that is installed in a subscriber access network as an edge router can perform subscriber management functions that include subscriber identification and per-subscriber CoS.

To an MX-series router in a subscriber access network, a subscriber is an authenticated user—a user that has logged into the access network at a subscriber interface and then been verified by the configured authentication server and subsequently granted initial CoS services. Subscribers can be identified statically or dynamically. You can create a subscriber interface over a static VLAN interface, a static IP demux interface, a static interface set, or a dynamic IP demux interface that is created when a subscriber logs in using a Dynamic Host Configuration Protocol (DHCP) access method.

Hierarchical, per-subscriber CoS is supported only for subscriber interfaces on EQ DPC ports operating in hierarchical scheduler mode. These types of subscriber interfaces can be static VLAN interfaces or static interface sets. Hierarchical CoS enables you to apply traffic shaping parameters (which can include a delay-buffer bandwidth) and packet transmission scheduling parameters (which can include buffer management parameters) to an individual subscriber interface rather than to all interfaces configured on the port.

The characteristics of voice, data, and video applications vary widely in their requirements for traffic throughput, bandwidth management, delay and jitter tolerance, and buffer depth. To enhance the flexibility of the hierarchical CoS implementation in a subscriber access network, you can configure the MX-series router to perform real-time adjustments to the shaping rate configured for subscriber interfaces for residential gateways. Enabling a shaping-rate adjustment option on the router can prevent bandwidth contention at the interface from causing degradation of the subscriber's voice, data, or video services.

- Related Topics**
- CoS Shaping-Rate Adjustments for Subscriber Local Loops Overview
  - Guidelines for Configuring CoS Shaping-Rate Adjustments for Subscriber Local Loops
  - Enabling CoS Shaping-Rate Adjustments for Subscriber Local Loops
  - Disabling CoS Shaping-Rate Adjustments for Subscriber Local Loops

- Disabling Hierarchical Bandwidth Adjustment for Subscriber Interfaces with Reverse-OIF Mapping
- Example: Configuring Hierarchical CoS Shaping-Rate Adjustments for Subscriber Local Loops