

## Chapter 13

# Configuring an Adaptive Shaper for a Frame Relay Interface

For J-series Services Routers, you can configure adaptive shapers, which allow you to shape Frame Relay logical interfaces to a maximum rate, based on congestion. Adaptive shaping is triggered by the backward explicit congestion notification (BECN) bit in Frame Relay packet headers. Thus, adaptive shaping allows you to use the information provided in Frame Relay packet headers to detect possible congestion and to adjust your bandwidth limitation accordingly.

Adaptive shaping is triggered when the last ingress packet on the logical interface has its BECN bit set to 1. When adaptive shaping is triggered, the output queues on the logical interface are shaped according to the adaptive shaper configuration.

If the last ingress packet has its BECN bit set to 0, the logical interface queues are shaped according to the `shaping-rate` statement at the `[edit class-of-service interfaces interface-name unit logical-unit-number]` hierarchy level, which should be configured at a higher rate than the rate you configure for the adaptive shaper. If you do not include the `shaping-rate` statement in the configuration, the default logical interface bandwidth is the average of unused bandwidth for the number of logical interfaces that require default bandwidth treatment. For more information about the `shaping-rate` statement, see “Associating a Scheduler Map with a DLCI or VLAN” on page 77.

To configure an adaptive shaper, you can include the following statements at the `[edit class-of-service]` hierarchy level of the configuration:

```
class-of-service {
  adaptive-shapers {
    adaptive-shaper-name {
      trigger type shaping-rate (percent percent | rate);
    }
  }
  interfaces {
    interface-name {
      unit logical-unit-number {
        adaptive-shaper adaptive-shaper-name;
      }
    }
  }
}
```

This chapter discusses the following topics:

- Configuring an Adaptive Shaper on page 120
- Applying an Adaptive Shaper to a Logical Interface on page 120

For more information, see the *J-series Services Router Configuration Guide*.

## Configuring an Adaptive Shaper

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To configure an adaptive shaper, include the `adaptive-shapers` statement at the [edit class-of-service] hierarchy level:

```
[edit class-of-service]
adaptive-shapers {
  adaptive-shaper-name {
    trigger type shaping-rate (percent percent | rate);
  }
}
```

The trigger type can be `becn` only. If the last ingress packet on the logical interface has its BECN bit set to 1, the output queues on the logical interface are shaped according to the associated shaping rate.

The associated shaping rate can be a percentage of the available interface bandwidth from 0 through 100 percent. Alternatively, you can configure the shaping rate to be an absolute peak rate, in bits per second (bps) from 3200 through 32,000,000,000 bps. You can specify the value either as a complete decimal number or as a decimal number followed by the abbreviation `k` (1000), `m` (1,000,000), or `g` (1,000,000,000).

## Applying an Adaptive Shaper to a Logical Interface

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To apply an adaptive shaper to a logical interface, include the `adaptive-shaper` statement at the [edit class-of-service interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit class-of-service interfaces interface-name unit logical-unit-number]
adaptive-shaper adaptive-shaper-name;
```