Configuring the ATM2 IQ EPD Threshold

The EPD threshold is a limit on the number of transmit cells that can be queued. Cells that exceed the limit are discarded. When a beginning of packet (BOP) cell is received, the VC's queue depth is checked against the EPD threshold. If the VC's queue depth exceeds the EPD threshold, the BOP cell and all subsequent cells in the packet are discarded. This prevents a single queue from draining all the buffers on the PIC.

By default, for UBR the EPD threshold is approximately 1 percent of the available cell buffers. If shaping is enabled, the default EPD threshold is proportional to the shaping rate according to the following formula:

default epd-threshold = number of buffers * shaping rate / line rate

By default, the software estimates how much buffer space is needed for each PVC. However, you can configure the per-VC buffer space. In general, ATM PVCs need larger buffers for data traffic and smaller buffers for time-sensitive applications. Unnecessarily deep buffers might cause excessive delays on congested PVCs. Overly shallow buffers might cause premature random early detection (RED) or tail packet drops in bursty conditions.

The minimum EPD threshold value is 48 cells. If the default EPD threshold formula results in an EPD threshold of less than 48 cells, the result will be ignored, and the minimum value of 48 cells will be used.

To set the EPD threshold of a PVC, include the epd-threshold statement:

[Unresolved xref] *cells*;

For a list of hierarchy levels at which you can include this statement, see [Unresolved xref].

The allowable range for EPD threshold varies by interface type, as shown in Table 1.

Table 1: EPD Threshold Range by Interface Type

Interface Type	EPD Range
1-port OC48	48 through 425,984 cells
1-port and 2-port OC12	48 through 425,984 cells
2-port OC3, DS3, and E3	48 through 212,992 cells
4-port DS3 and E3	48 through 106,496 cells

You should include the epd-threshold statement in the configuration of all the PVCs that you configure on an ATM2 IQ PIC. The epd-threshold statement performs two functions:

- It prevents head-of-line blocking because it limits the number of packets and therefore buffers that can be consumed by each configured PVC.
- It sets the maximum lifetime that can be sustained by packets over the PVC when traffic has oversubscribed the configured shaping contract.

If you add or change the EPD threshold on the VC, the logical interface associated with the VC is deleted and re-added.

On ATM2 IQ DS3 and E3 interfaces, you might be able to enter an EPD threshold or shaping parameter that exceeds the maximum threshold for these interfaces. If the configuration commits, the physical interface might indicate that it is up, but the logical interface fails. As a workaround, configure shaping parameters and EPD thresholds that do not exceed the bandwidth of the interface.

For information about configuring dual EPD thresholds on interfaces configured to use Layer 2 circuit trunk mode, see Configuring Two EPD Thresholds per Queue.

Example: Configuring the ATM2 IQ EPD Threshold

Configure the EPD threshold for a point-to-point ATM2 interface and a point-to-multipoint ATM2 interface.

On a Point-to-Point ATM2 Interface

```
[edit interfaces at-1/0/0]
unit 0 {
   vci 0.123;
   epd-threshold 1300;
   ...
}
```

On a Point-to-Multipoint ATM2 Interface

```
[edit interfaces at-1/0/1]
unit 0 {
   multipoint;
   family inet address 10.0.12.12/24 {
      multipoint-destination 10.0.12.14 vci 0.123 epd-threshold 1300;
      ...
   }
}
```