

Chapter 17

Summary of Link Services Intelligent Queuing Configuration Statements

The following sections explain each of the Link Services Intelligent Queuing (IQ) statements. The statements are organized alphabetically.

forwarding-class

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| Syntax | <pre>forwarding-class <i>class-name</i> { (fragment-threshold <i>bytes</i> no-fragmentation); multilink-class <i>number</i>; }</pre> |
| Hierarchy Level | [edit class-of-service fragmentation-maps] |
| Description | For AS PIC link services IQ (lsq) interfaces only, define a forwarding class name and associated fragmentation properties within a fragmentation map. |
| Options | <i>class-name</i> —Name of the forwarding class. The remaining statements are explained separately. |
| Default | If you do not include this statement, the traffic in forwarding class <i>class-name</i> is fragmented. |
| Usage Guidelines | See “AS PIC Link Services IQ CoS Components” on page 189. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

fragment-threshold

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|---------------------------------|---|
| Syntax | fragment-threshold <i>bytes</i> ; |
| Hierarchy Level | [edit class-of-service fragmentation-maps forwarding-class <i>class-name</i>] |
| Description | For AS PIC link services IQ (Isq) interfaces only, set the fragmentation threshold for an individual forwarding class. |
| Options | <i>bytes</i> —Maximum size, in bytes, for multilink packet fragments. Any nonzero value must be a multiple of 64 bytes. Range: 128 through 16,320 bytes |
| Default | If you do not include this statement, the fragmentation threshold you set at the [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] or [edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options] hierarchy level is the default for all forwarding classes. If you do not set a maximum fragment size anywhere in the configuration, packets are fragmented if they exceed the smallest maximum transmission unit (MTU) of all the links in the bundle. |
| Usage Guidelines | See “AS PIC Link Services IQ CoS Components” on page 189. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

fragmentation-map

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| Syntax | fragmentation-map <i>map-name</i> ; |
| Hierarchy Level | [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] |
| Description | For AS PIC link services (Isq) IQ interfaces only, associate a fragmentation map with a multilink PPP interface or MLFR FRF.16 DLCI. |
| Options | <i>map-name</i> —Name of the fragmentation map. |
| Default | If you do not include this statement, traffic in all forwarding classes is fragmented. |
| Usage Guidelines | See “Configuring Fragmentation by Forwarding Class” on page 191. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

fragmentation-maps

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|---------------------------------|--|
| Syntax | <pre>fragmentation-maps { map-name { forwarding-class class-name { fragment-threshold bytes; no-fragmentation; } } }</pre> |
| Hierarchy Level | [edit class-of-service] |
| Description | For Adaptive Services (AS) Physical Interface Card (PIC) link services IQ (Isq) interfaces only, define fragmentation properties for individual forwarding classes. |
| Options | <p><i>map-name</i>—Name of the fragmentation map.</p> <p>The remaining statements are explained separately.</p> |
| Default | If you do not include this statement, traffic in all forwarding classes is fragmented. |
| Usage Guidelines | See “AS PIC Link Services IQ CoS Components” on page 189. |
| Required Privilege Level | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p> |

link-layer-overhead

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|---------------------------------|---|
| Syntax | link-layer-overhead <i>percent</i> ; |
| Hierarchy Level | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>interface-name</i> mlfr-uni-nni-bundle-options], [edit logical-routers <i>logical-router-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] |
| Description | For AS PIC link services IQ (Isq) interfaces only, configure the percentage of total bundle bandwidth to be set aside for link-layer overhead. Link-layer overhead accounts for the bit stuffing on serial links. Bit stuffing is used to prevent data from being interpreted as control information. Overhead resulting from link-layer encapsulation and framing is computed automatically. |
| Options | <p><i>percent</i>—Percentage of total bundle bandwidth to be set aside for link-layer overhead.</p> <p>Range: 0 through 50 percent</p> <p>Default: 0 percent</p> |
| Usage Guidelines | See “AS PIC Link Services IQ CoS Components” on page 189. |
| Required Privilege Level | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p> |

multilink-class

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| Syntax | multilink-class <i>number</i> ; |
| Hierarchy Level | [edit class-of-service fragmentation-maps forwarding-class <i>class-name</i>] |
| Description | For AS PIC link services IQ (Isq) interfaces only, map a forwarding class into a multiclass MLPPP (MCML). The multilink-class statement and no-fragmentation statements are mutually exclusive. |
| Options | <i>number</i> —The multilink class assigned to this forwarding class. Range: 0 through 7 Default: None |
| Usage Guidelines | See “Configuring Multiclass MLPPP” on page 193. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |
| See Also | multilink-max-classes on page 228 |

multilink-max-classes

| | |
|---------------------------------|---|
| Syntax | multilink-max-classes <i>number</i> ; |
| Hierarchy Level | [edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-routers <i>logical-router-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] |
| Description | For AS PIC link services IQ (Isq) interfaces only, configure the number of multilink classes to be negotiated when a link joins the bundle. |
| Options | <i>number</i> —The number of multilink classes to be negotiated when a link joins the bundle. Range: 1 through 8 Default: None |
| Usage Guidelines | See “Configuring Multiclass MLPPP” on page 193. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

no-fragmentation

| | |
|---------------------------------|--|
| Syntax | no-fragmentation; |
| Hierarchy Level | [edit class-of-service fragmentation-maps forwarding-class <i>class-name</i>] |
| Description | <p>For AS PIC link services IQ (Isq) interfaces only, set traffic on a particular forwarding class to be interleaved, rather than fragmented. This statement specifies that no extra fragmentation header is prepended to the packets received on this queue and that static-link load balancing is used to ensure in-order packet delivery.</p> <p>Static-link load balancing is done based on packet payload. For IP version 4 (IPv4) and IP version 6 (IPv6) traffic, the link is chosen based on a hash computed from the source address, destination address, and protocol. If the IP payload is Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) traffic, the hash also includes source port and destination port. For Multiprotocol Label Switching (MPLS) traffic, the hash includes all MPLS labels and fields in the payload, whether the MPLS payload is IPv4 or IPv6.</p> |
| Default | If you do not include this statement, the traffic in forwarding class <i>class-name</i> is fragmented. |
| Usage Guidelines | See “AS PIC Link Services IQ CoS Components” on page 189. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

per-unit-scheduler

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|---------------------------------|---|
| Syntax | per-unit-scheduler; |
| Hierarchy Level | [edit interfaces <i>interface-name</i>] |
| Description | For channelized OC12 IQ, channelized T3 IQ, channelized E1 IQ, E3 IQ, and Gigabit Ethernet IQ interfaces only, enable association of scheduler map names with logical interfaces. |
| Usage Guidelines | See “CoS Configuration Tasks” on page 195. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

