

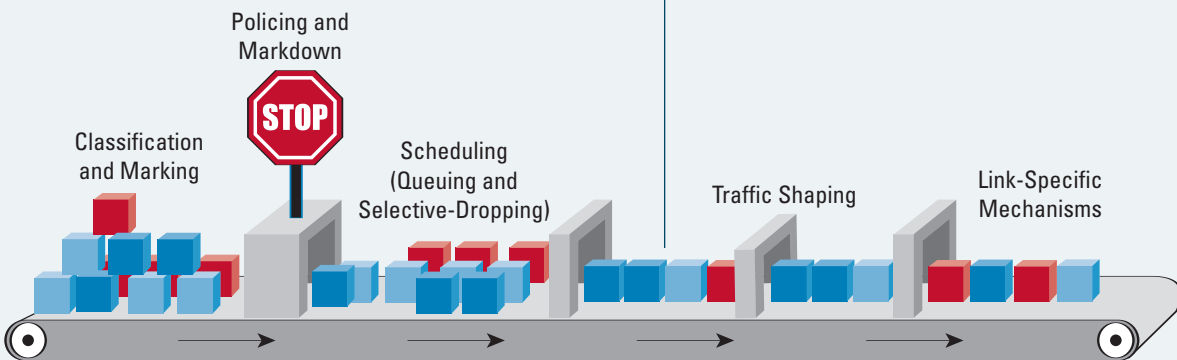
Quality of Service (QoS) is the measure of transmission quality and service availability of a network (or internetworks). The transmission quality of the network is determined by the following factors: Latency, Jitter, and Loss.



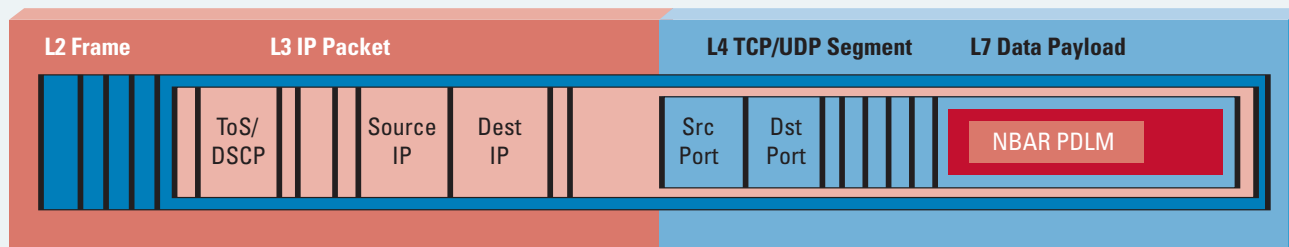
QoS technologies refer to the set of tools and techniques to manage network resources and are considered the key enabling technologies for the transparent convergence of voice, video, and data networks. Additionally, QoS tools can play a strategic role in significantly mitigating DoS/worm attacks.

Cisco QoS toolset consists of the following:

- Classification and Marking tools
- Policing and Markdown tools
- Scheduling tools
- Link-specific tools
- AutoQoS tools



Classification can be Done at Layers 2-7

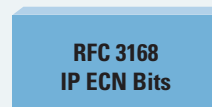
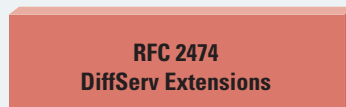


Marking can be done at Layers 2 or Layer 3:

- Layer 2: 802.1Q/p CoS, MPLS EXP
- Layer 3: IP Precedence, DSCP and/or IP ECN

Layer 3 (IP ToS Byte) Marking Options

7	6	5	4	3	2	1	0
IP Precedence				Unused			
DiffServ Code Point (DSCP)						IP ECN	



Cisco recommends end-to-end marking at Layer 3 with standards-based DSCP values.

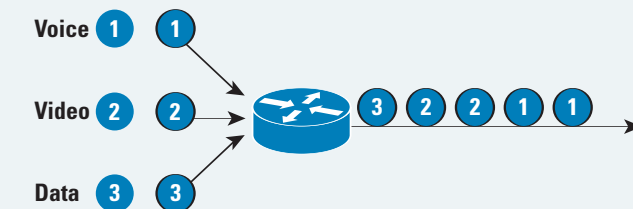
Policing tools can complement marking tools by marking metering flows and marking-down out-of-contract traffic.



Policers Meter Traffic Into Three Categories:

- Violate: No More Traffic is Allowed Beyond This Upper-Limit (Red Light)
- Exceed: Moderate Bursting is Allowed (Yellow Light)
- Conform: Traffic is Within the Defined Rate (Green Light)

Scheduling tools re-order and selectively-drop packets whenever congestion occurs.



Link-Specific tools are useful on slow-speed WAN/VPN links and include shaping, compression, fragmentation, and interleaving.

AutoQoS features automatically configure Cisco recommended QoS on Cisco Catalyst® switches and Cisco IOS® Software routers with just one or two commands.

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