



QoS Notes

Overview

Definition

QoS is not the miracle solution to resolve all the issues you are experiencing on the network. If an infrastructure link is dropping 10% of the traffic none of the QoS configuration available is going to resolve the problem.

QoS is working well on an error free network and therefore the first thing to do is to put in place a tool to identify any infrastructure issue.

You can use 6 different technologies to classify and mark traffic on the network

- Class based packet marking
- Network based application recognition NBAR
- Policy based routing PBR
- Class based policing and committed access rate CAR
- QoS policy propagation via BGP
- QoS for virtual private network VPN

Layer 3 QoS configuration

You can mark at the layer 3 three different ways by using:

IP precedence

IP precedence has 8 possible decimal values that range from 0 to 7 (rfc. 791) with 0 being the lowest priority value and 7 being the highest.

IP Precedence

Value	Name
0	routine
1	priority
2	immediate
3	flash
4	flash override
5	critical
6	Internet, should not be used
7	Network, should not be used

You can mark IP precedence using the following configuration

- Policy-Based Routing
- QoS Policy Propagation via Border Gateway Protocol
- Committed Access Rate and Class-Based Policing
- Network-Based Application Recognition
- Class-Based Packet Marking

DSCP values

To use the DSCP values to mark your traffic you need to use class based marking method.

DSCP value	Service Name	IETF Description
0	Best effort	Best effort (default)
8	Class 1	Class 1 (CS1)
10	Class 1, gold	AF11
12	Class 1, silver	AF12
14	Class 1, bronze	AF13
16	Class 2	Class 2 (CS2)
18	Class 2, gold	AF21
20	Class 2, silver	AF22
22	Class 2, bronze	AF23
24	Class 3	Class 3 (CS3)
26	Class 3, gold	AF31
28	Class 3, silver	AF32
30	Class 3, bronze	AF33
32	Class 4	Class 4 (CS4)
34	Class 4, gold	AF41
36	Class 4, silver	AF42
38	Class 4, bronze	AF43
40	Express forwarding	Express forwarding (CS5)
46	Expedited forwarding	Expedited forwarding (EF)
48	Control	Control (CS6)
56	Control	Control (CS7)

DSCP to IP precedence mapping

DSCP Value	IP Precedence	Used for
0	0	Best effort (default)
0	1	Class 1 (CS2)
8, 10	2	Class 2 (CS2)
16, 18	3	Class 3 (CS3)
24, 36	4	Class 4 (CS4)
32, 34	5	Express forwarding (CS5)

48	6	Control (CS6)
56	7	Control (CS7)

QoS group values