

IPv6 QoS Test Scenario for 1st Multi-sites Remote IPv6 Interoperability Test Event

Draft Proposal v1.0

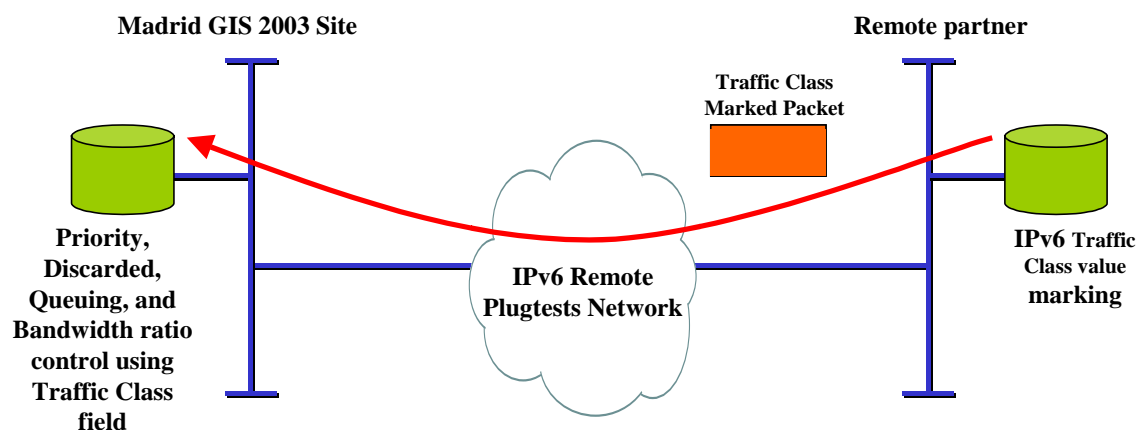
Cesar Olvera (Consulintel)

Objective

This test set aims to evaluate several IPv6 QoS functionalities related to IPv6 Traffic Class field usage for DiffServ architectures. The proposed issues include mark/clear DSCP values in host/router, and evaluation of priority, discard and queue controls in a simulate DiffServ Core router. Others tests with bandwidth ratios can be done.

These functional tests can be done with few changes from the topology of IPv6 Core Protocol Test Scenario proposed by TAHI. The idea here is to add value and increase the scope of this Remote IPv6 Plugtests extending its areas toward QoS functionalities.

Setup



Test procedure

- Use a Host/router to mark IPv6 Traffic Class (or DSCP) packets. Some Ping applications can be use, see Annex A.
- Send marked packets from a remote partners host/router to Madrid router.
- Madrid router is configured for priority, discard, queue and bandwidth ratio controls using the IPv6 Traffic Class value.
- Other sources-destinations can be use according to partners' resources/devices ready for QoS.

Test issues

Test	Purpose	Results
Marking of DSCP	Verify that the packets are marked/cleared correctly, depending of their characteristics (IPv6 address, protocols, port, IPv6 DSCP value, etc.)	
Priority Selection	Verify that the DSCP packets run through the right priority depending on its values	
Discard Policies	Verify that the DSCP marked packets are discard correctly when it is necessary	
Queue Selection	Verify that the packets run through the right queues depending on the classification	
Scheduling for IPv6:	Verify if the configured bandwidth ratios are met at the output interface	
Mapping of v4/v6 DSCP	Verify the mapping of DSCP from IPv4 to IPv6 and vice versa	
Flow Label	Verify that the Flow Label marked packets are managed correctly (very rough implementation)	

Annex A

Marking IPv6 QoS field in a Ping messages

Some Linux boxes, trough “iputils” package, can generate ICMP pings with configurable Traffic Class and Flow Label values. We can use this function on Traffic Class field for tests on priority and discard controls.

There exists several IPv6 routers that can mark/clear Traffic Class field, but this ping usage is the simplest tool for several tests.

This ping could be use for set up Flow Label values for some rough test, but until now there are not an accessible device (router, host or application) able to manage the Flow Label marked packets. We will search more information.

In “iputils-20020124-3” we have

```
[linux_box_]# ping6
```

```
Usage: ping6 [-LUdfnqrVvA] [-c count] [-i interval] [-w deadline]
        [-p pattern] [-s packetsize] [-t ttl] [-I interface]
        [-M mtu discovery hint] [-S sndbuf]
        [-F flow label] [-Q traffic class] [hop1 ...] destination
```

Note: Set values for Traffic Class and Flow Label in Hexadecimal