

MPLS FAQ: Does "no mpls ip propagate-ttl" on the ingress PE router also apply to IPv6 packets in 6PE or 6VPE networks?



Document ID: 118697

Contributed by Luc De Ghein, Cisco TAC Engineer.

Dec 23, 2014

Contents

Introduction

Does "no mpls ip propagate-ttl" on the ingress PE router also apply to IPv6 packets in 6PE or 6VPE networks?

Introduction

This document describes the impact of the command "mpls ip propagate-ttl" on IPv6 traffic.

Does "no mpls ip propagate-ttl" on the ingress PE router also apply to IPv6 packets in 6PE or 6VPE networks?

Answer: Yes, it does.

This command hides the P routers from both an IPv4 and an IPv6 traceroute. Here is an IPv6 traceroute with "no mpls ip propagate-ttl" configured on the ingress Provider Edge (PE) router.

```
CE1#trace
Protocol [ip]: ipv6
Target IPv6 address: 2001:10:100:1::7
Source address: 2001:10:100:1::5
Insert source routing header? [no]:
Numeric display? [no]:
Timeout in seconds [3]:
Probe count [3]:
Minimum Time to Live [1]:
Maximum Time to Live [30]:
Priority [0]:
Port Number [0]:
Type escape sequence to abort.
Tracing the route to 2001:10:100:1::7

 1 2001:10:1:5::1 1 msec 1 msec 1 msec
 2 2001:10:1:7::2 [AS 1] [MPLS: Label 23 Exp 0] 2 msec 1 msec 1 msec
 3 2001:10:1:7::7 [AS 1] 2 msec 1 msec 2 msec
```

The P routers are not present in the output of the traceroute. This proves that the propagation of Time To Live (TTL) from the IPv6 header to the Multiprotocol Label Switching (MPLS) header does not occur on the ingress PE router for IPv6 packets.

Here is a traceroute with the default behavior. This means that you have "mpls ip propagate-ttl" on the ingress PE router.

```
CE1#trace
Protocol [ip]: ipv6
Target IPv6 address: 2001:10:100:1::7
Source address: 2001:10:100:1::5
Insert source routing header? [no]:
Numeric display? [no]:
Timeout in seconds [3]:
Probe count [3]:
Minimum Time to Live [1]:
Maximum Time to Live [30]:
Priority [0]:
Port Number [0]:
Type escape sequence to abort.
Tracing the route to 2001:10:100:1::7

 1 2001:10:1:5::1 1 msec 1 msec 1 msec
 2 ::FFFF:10.1.2.4 [MPLS: Labels 17/23 Exp 0] 2 msec 2 msec 2 msec
 3 2001:10:1:7::2 [AS 1] [MPLS: Label 23 Exp 0] 2 msec 1 msec 1 msec
 4 2001:10:1:7::7 [AS 1] 2 msec 1 msec 2 msec
```

The P router replies with an Internet Control Message Protocol (ICMP) error message (with the IPv4-mapped IPv6 address ::FFFF:10.1.2.4 as the source address of the ICMPv6 error message) to the traceroute.