THE BEGINNING OF THE TRIMMING!

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THE WARNING!

- Dec 07, 2011

- Foundry: CAM IP partition warning: total 393216, free 13450, slot 1, ppcr 0

- Cisco: "%MLSCEF-SP-4-FIB_EXCEPTION_THRESHOLD: Hardware CEF entry usage is at 95% capacity for IPv6 unicast protocol."

SELF-PRESERVATION

- Jan 27 2012:

  - Rancid: "+ mls rate-limit unicast cef receive 10000 100 "

  - The Ciscos protected themselves from crashing

WHAT'S HAPPENING

```
br1.scl1#sh mls cef maximum-routes
FIB TCAM maximum routes :
==========================
Current :-
------
  IPv4                    - 1007k
  MPLS                    - 1k (default)
  IPv6 + IP Multicast     - 8k (default)
```

```
br1.scl1#sh mls cef summary

Total routes:                                   394422
    IPv4 unicast routes:                        387565
        IPv4 non-vrf routes:                    387565
        IPv4 vrf routes:                        0
    IPv4 Multicast routes:                      4
    MPLS routes:                                1
    IPv6 unicast routes:                        6848
        IPv6 non-vrf routes:                    6848
        IPv6 vrf routes:                        0
    IPv6 multicast routes:                      3
    EoM routes:                                 1
br1.scl1#
```

SOLUTION?

- Unfortunately striking a balance between IPv4 and IPv6

  - unicast and multicast..

  - 2 slots v4 slots per v6 entry

BAD NEWS...

- The router tells me I cannot expand the TCAM:

```
br1.scl1(config)#mls cef maximum-routes ipv6 ?
   <1-7>   number of 1K entries

br1.scl1(config)#mls cef maximum-routes ipv6 ▌
```

NOT SO SIMPLE..

- Time to trim IPv4 unicast to make room for IPv6...

- and of course a reload required.

```
br1.scl1(config)#mls cef maximum-routes ip 750
Maximum routes set to 768000. Configuration will be effective on reboot.

br1.scl1(config)#mls cef maximum-routes ipv6 ?
  <1-135>  number of 1K entries

br1.scl1(config)#mls cef maximum-routes ipv6
```

SMALLER EXAMPLES

- Cisco 3750G: (at a cost)

```
core1.scz(config)#sdm prefer ?
  access              Access bias
  default             Default bias
  dual-ipv4-and-ipv6  Support both IPv4 and IPv6
  routing             Unicast bias
  vlan                VLAN bias

core1.scz(config)#sdm prefer du
core1.scz(config)#sdm prefer dual-ipv4-and-ipv6 ?
  default  Default bias
  routing  Unicast bias
  vlan     VLAN bias

core1.scz(config)#sdm prefer dual-ipv4-and-ipv6 
```

TAKE AWAY

- We are being forced to play with the scales in a nasty way

- IPv6 and IPv4 tables continue to grow

- Default (limits) are being exceeded in IPv6

  - Who would have ever thought 480K base mem wouldn't have been enough?

- Going forward tuning the balance is going to require reloads and trimming at netmasks etc..

- Where and how much…. Time will tell.

QUESITONS?

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