

## Case K: BGP forwarding with edge and core queuing.

### K6. Test Results.

#### Step K4.2.0:

```
semtec#sh int p5/3 rate
POS5/3
  Input
    matches: dscp 46
    params: 20000000 bps, 3750000 limit, 7500000 extended limit
    conformed 506756 packets, 57770184 bytes; action: set-mpls-exp-transmit 5
    exceeded 0 packets, 0 bytes; action: drop
    last packet: 73548ms ago, current burst: 1938 bytes
    last cleared 00:02:47 ago, conformed 2760000 bps, exceeded 0 bps
```

```
semtec#sh int p3/3 rand
POS3/3
cos-queue-group: GetThereFast
RED Drop Counts
```

RED Label	Tx Link Random	Threshold	To Fabric Random	Threshold
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0

Tx-queue-limit drops: 0

#### Queue Lengths

Tx Queue (DRR configured) GetThereFast

Queue	Average	High Water Mark	Weight
0	0.000	0.000	10
1	0.000	0.000	10
2	0.000	0.000	10
3	0.000	0.000	10
4	0.000	0.000	10
5	0.000	0.000	10
6	0.000	0.000	10
Low latency	0.000	0.000	0

#### Tx RED config

```
Precedence 0: 10 min threshold, 21 max threshold, 1/1 mark weight
Precedence 1: not configured for drop
Precedence 2: not configured for drop
Precedence 3: not configured for drop
Precedence 4: not configured for drop
Precedence 5: not configured for drop
Precedence 6: not configured for drop
Precedence 7: not configured for drop
weight 1/2
```

```
RTP-7505-A#sh int f0/1/0 rate
FastEthernet0/1/0
```

```
  Input
    matches: access-group 101
    params: 20000000 bps, 3750000 limit, 7500000 extended limit
    conformed 506756 packets, 62837744 bytes; action: set-dscp-transmit 46
    exceeded 0 packets, 0 bytes; action: transmit
    last packet: 137288ms ago, current burst: 2604 bytes
    last cleared 00:04:19 ago, conformed 1940000 bps, exceeded 0 bps
```

```
RTP-7505-A#sh pol int p2/0/0
```

```
POS2/0/0
  service-policy output: core-link
```

queue stats for all priority classes:

```
  queue size 0, queue limit 1464
  packet output 506756, packet drop 0
  tail/random drop 0, no buffer drop 0, other drop 0
  class-map: class-default (match-any)
    1013512 packets, 115540368 bytes
    5 minute rate 1643000 bps
```

```

match: any
      1013512 packets, 115540368 bytes
      5 minute rate 1643000 bps
class-map: EF (match-all)
      506756 packets, 57770184 bytes
      5 minute rate 811000 bps
match: ip dscp 46
priority: kbps max 20000, bandwidth exceed drops: 0

```

Smartbits Output:

Name	Frame Size	Load (%)	Sent	Received	Lost	Loss (%)
Total		20	1013512	1013512	0	0
BE Destined Traffic		20	506756	506756	0	0
EF Destined Traffic		20	506756	506756	0	0
BE to 7505B	128	20	253378	253378	0	0
BE to 7200	128	20	253378	253378	0	0
EF to 7505B	128	20	253378	253378	0	0
EF to 7200	128	20	253378	253378	0	0

```

semtec#sh run
Building configuration...

```

Current configuration:

```

!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname semtec
!
boot system flash slot0:gsr-p-mz.eft1018
enable password
!
!
!
!
!
!
ip subnet-zero
no ip domain-lookup
mpls traffic-eng tunnels
!
!
interface Loopback0
bandwidth 1000
ip address 10.130.255.3 255.255.255.255
no ip directed-broadcast
!
interface Loopback1
bandwidth 1000
ip address 10.130.255.253 255.255.255.255
no ip directed-broadcast
!
interface Tunnel 1
ip unnumbered Loopback0
no ip directed-broadcast
tunnel destination 10.130.255.2
tunnel mode mpls traffic-eng
tunnel mpls traffic-eng priority 0 0
tunnel mpls traffic-eng bandwidth 10000
tunnel mpls traffic-eng path-option 1 dynamic
!
interface Tunnel 2
ip unnumbered Loopback0
no ip directed-broadcast
tunnel destination 10.130.255.2
tunnel mode mpls traffic-eng

```

```

tunnel mpls traffic-eng priority 0 0
tunnel mpls traffic-eng bandwidth sub-pool 5000
tunnel mpls traffic-eng path-option 1 dynamic
!
interface POS3/0
no ip address
no ip directed-broadcast
no keepalive
shutdown
crc 32
clock source internal
!
interface POS3/1
ip address 10.130.2.2 255.255.255.0
no ip directed-broadcast
no keepalive
mpls traffic-eng tunnels
crc 32
clock source internal
tx-cos GetThereFast
ip rsvp bandwidth 20000 20000 sub-pool 5000
!
interface POS3/2
ip address 10.130.4.1 255.255.255.0
no ip directed-broadcast
no keepalive
crc 32
clock source internal
!
interface POS3/3
ip address 10.130.49.1 255.255.255.0
no ip directed-broadcast
no ip mroute-cache
no keepalive
mpls traffic-eng tunnels
crc 32
clock source internal
tx-cos GetThereFast
ip rsvp bandwidth 20000 20000 sub-pool 5000
!
interface POS5/0
no ip address
no ip directed-broadcast
no ip mroute-cache
no keepalive
shutdown
crc 16
clock source internal
!
interface POS5/1
no ip address
no ip directed-broadcast
no keepalive
shutdown
crc 16
clock source internal
!
interface POS5/2
no ip address
no ip directed-broadcast
no keepalive
shutdown
crc 16
clock source internal
!
interface POS5/3
ip address 172.16.1.1 255.255.255.0
no ip directed-broadcast
rate-limit input dscp 46 20000000 3750000 7500000 conform-action
set-mpls-exp-t
transmit 5 exceed-action drop
load-interval 180
no keepalive
crc 16
clock source internal
!
interface Ethernet0
description Utility subnet - do not remove...
ip address 192.168.1.13 255.255.255.0
no ip directed-broadcast

```

```

no ip route-cache
no ip mroute-cache
load-interval 30
shutdown
!
router ospf 100
log-adjacency-changes
passive-interface POS5/3
network 10.130.255.3 0.0.0.0 area 0
network 10.130.0.0 0.0.255.255 area 0
network 172.16.1.0 0.0.0.255 area 0
mpls traffic-eng router-id Loopback0
mpls traffic-eng area 0
!
router bgp 1000
no synchronization
bgp router-id 10.130.255.3
bgp cluster-id 176357373
bgp log-neighbor-changes
network 10.130.255.3 mask 255.255.255.255
network 172.16.1.0 mask 255.255.255.0
redistribute connected
neighbor 10.130.255.1 remote-as 1000
neighbor 10.130.255.1 update-source Loopback0
neighbor 10.130.255.2 remote-as 1000
neighbor 10.130.255.2 update-source Loopback0
neighbor 172.16.1.2 remote-as 2000
no auto-summary
!
ip classless
ip route 10.150.1.128 255.255.255.128 Tunnel 1
ip route 10.160.1.128 255.255.255.128 Tunnel 2
!
!
cos-queue-group GetThereFast
precedence 0 random-detect-label 0
precedence 5 queue low-latency
random-detect-label 0 10 21 1
queue low-latency strict-priority
!
!
line con 0
transport input none
line aux 0
line vty 0 4
password
login
!
end

RTP-7505-A#sh run
Building configuration...

Current configuration:
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname RTP-7505-A
!
boot system flash slot0:rsp-pv-mz.eft1018
enable password lake
!
!
class-map match-all EF
match ip dscp 46
!
!
policy-map core-link
class EF
priority 20000
!
ip subnet-zero
ip cef distributed

```

```

no ip domain-lookup
!
!
interface Loopback0
 ip address 10.140.255.1 255.255.255.255
 no ip directed-broadcast
 no ip route-cache
 no ip mroute-cache
!
interface Ethernet0/0/0
 ip address 192.168.1.25 255.255.255.0
 no ip directed-broadcast
 no ip route-cache cef
 ip route-cache distributed
 shutdown
!
interface Ethernet0/0/1
 no ip address
 no ip directed-broadcast
 no ip route-cache cef
 ip route-cache distributed
 shutdown
!
interface Ethernet0/0/2
 ip address 10.140.33.1 255.255.255.0
 no ip directed-broadcast
 no ip route-cache cef
 ip route-cache distributed
 shutdown
!
interface Ethernet0/0/3
 no ip address
 no ip directed-broadcast
 no ip route-cache cef
 ip route-cache distributed
 shutdown
!
interface FastEthernet0/1/0
 ip address 10.140.1.1 255.255.255.0
 no ip directed-broadcast
 rate-limit input access-group 101 20000000 3750000 7500000 conform-action
 set-dscp-transmit 46 exceed-action transmit
 no ip route-cache cef
 ip route-cache distributed
 load-interval 180
 full-duplex
!
interface FastEthernet1/1/0
 ip address 10.140.2.1 255.255.255.0
 no ip directed-broadcast
 ip route-cache distributed
 full-duplex
!
interface POS2/0/0
 ip address 172.16.1.2 255.255.255.0
 no ip directed-broadcast
 ip route-cache distributed
 no keepalive
 service-policy output core-link
!
router ospf 200
 passive-interface POS2/0/0
 network 10.140.255.1 0.0.0.0 area 0
 network 10.140.0.0 0.0.255.255 area 0
 network 172.16.1.0 0.0.0.255 area 0
!
router bgp 2000
 no synchronization
 bgp router-id 10.140.255.1
 bgp log-neighbor-changes
 network 10.140.1.0 mask 255.255.255.0
 network 10.140.2.0 mask 255.255.255.0
 network 10.140.33.0 mask 255.255.255.0
 network 10.140.255.1 mask 255.255.255.255
 network 10.140.0.0 mask 255.255.0.0
 neighbor 172.16.1.1 remote-as 1000
!
ip classless
!

```

```
access-list 101 permit ip any 10.160.3.128 0.0.0.127
access-list 101 permit ip any 10.150.1.128 0.0.0.127
access-list 120 permit ip host 10.140.2.3 any
!
!
line con 0
  transport input none
line aux 0
line vty 0 4
  password ww
  login
!
end
```

**Verdict:**

Pass. The total EF traffic seen on the Smartbits matches that seen as conforming to the input rate limit on interface pos3a (506756 packets). This also agrees with the amount of traffic seen as conforming to the rate limit set on the ingress interface on ARx (from Smartbits) and on the egress interface on ARx (POS to GSR A).

**Comments:**

None.