

Case L: BGP forwarding with edge and core queuing, and QPPB.

L1. Test Results.

```
Step L4.3.0:

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: 85508ms ago, current burst: 228 bytes
  last cleared 00:03:02 ago, conformed 2528000 bps, exceeded 0 bps

semtec#sh int p3/3 rand
POS3/3
cos-queue-group: GetThereFast
RED Drop Counts
  Tx Link
  Random      Threshold    To Fabric
  Random      Threshold
  0            0            0            0
  1            0            0            0
  2            0            0            0
  3            0            0            0
  4            0            0            0
  5            0            0            0
  6            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

semtec#sh conf
Using 3897 out of 520184 bytes
!
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 lake
!
!
!
!
!
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 Tunnel1
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 Tunnel2
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
bgp-policy destination ip-qos-map
rate-limit input dscp 46 20000000 3750000 7500000 conform-action
set-mps-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
table-map precedence-map
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
ip bgp-community new-format
ip community-list 1 permit 4000:1
!
!
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
route-map precedence-map permit 10
match community 1
set ip qos-group 5
!
!
!
line con 0
transport input none
line aux 0

```

```

line vty 0 4
 password ww
 login
 !
end

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 1013512, packet drop 0
    tail/random drop 0, no buffer drop 0, other drop 0
  class-map: class-default (match-any)
    1520694 packets, 173336842 bytes
    5 minute rate 1695000 bps
  match: any
    1520693 packets, 173336842 bytes
    5 minute rate 1695000 bps
  class-map: EF (match-all)
    1013512 packets, 115540368 bytes
    5 minute rate 839000 bps
  match: ip dscp 46
  priority: kbps max 20000, bandwidth exceed drops: 0

RTP-7505-A#sh conf
Using 2389 out of 126968 bytes
!
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

nitro#sh conf
Using 3467 out of 520184 bytes
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname nitro
!
boot system flash slot0:gsr-p-mz.eft1018
```

```
enable password lake
!
!
!
!
!
ip subnet-zero
no ip domain-lookup
mpls traffic-eng tunnels
!
!
interface Loopback0
bandwidth 1000
ip address 10.130.255.2 255.255.255.255
no ip directed-broadcast
!
interface Loopback1
bandwidth 1000
ip address 10.130.255.254 255.255.255.255
no ip directed-broadcast
!
interface POS0/0
ip address 172.16.3.1 255.255.255.0
no ip directed-broadcast
load-interval 180
no keepalive
crc 16
clock source internal
!
interface POS0/1
no ip address
no ip directed-broadcast
shutdown
crc 16
!
interface POS0/2
no ip address
no ip directed-broadcast
shutdown
crc 16
!
interface POS0/3
no ip address
no ip directed-broadcast
shutdown
crc 16
!
interface POS1/0
no ip address
no ip directed-broadcast
no keepalive
shutdown
crc 32
clock source internal
!
interface POS1/1
ip address 10.130.6.1 255.255.255.0
no ip directed-broadcast
no keepalive
crc 32
clock source internal
!
interface POS1/2
ip address 10.130.1.2 255.255.255.0
no ip directed-broadcast
no keepalive
mpls traffic-eng tunnels
crc 32
clock source internal
ip rsvp bandwidth 20000 20000 sub-pool 5000
!
interface POS1/3
ip address 10.130.49.2 255.255.255.0
no ip directed-broadcast
no keepalive
mpls traffic-eng tunnels
crc 32
clock source internal
ip rsvp bandwidth 20000 20000 sub-pool 5000
```

```

!
interface POS4/0
no ip address
no ip directed-broadcast
no keepalive
shutdown
crc 16
clock source internal
!
interface POS4/1
ip address 10.130.7.1 255.255.255.0
no ip directed-broadcast
no keepalive
shutdown
crc 16
clock source internal
!
interface POS4/2
no ip address
no ip directed-broadcast
shutdown
crc 16
!
interface POS4/3
ip address 172.16.2.1 255.255.255.0
no ip directed-broadcast
load-interval 180
no keepalive
crc 16
clock source internal
tx-cos GetThereFast
!
interface Ethernet0
description Utility Subnet - don't remove...
ip address 192.168.1.16 255.255.255.0
no ip directed-broadcast
shutdown
!
router ospf 100
log-adjacency-changes
 redistribute connected
 redistribute bgp 1000
 passive-interface POS4/3
 network 10.130.255.2 0.0.0.0 area 0
 network 10.130.0.0 0.0.255.255 area 0
 network 172.16.2.0 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 10.130.255.2
bgp cluster-id 176357374
bgp log-neighbor-changes
network 10.130.255.2 mask 255.255.255.255
network 10.130.0.0 mask 255.255.0.0
network 172.16.2.0 mask 255.255.255.0
network 172.16.3.0 mask 255.255.255.0
 redistribute connected
 neighbor 10.130.255.1 remote-as 1000
 neighbor 10.130.255.1 update-source Loopback0
 neighbor 10.130.255.1 send-community
 neighbor 10.130.255.3 remote-as 1000
 neighbor 10.130.255.3 update-source Loopback0
 neighbor 10.130.255.3 next-hop-self
 neighbor 10.130.255.3 send-community
 neighbor 172.16.2.2 remote-as 3000
 neighbor 172.16.3.2 remote-as 4000
no auto-summary
!
!
ip classless
ip route 10.150.255.2 255.255.255.255 172.16.2.2
ip bgp-community new-format
ip community-list 1 permit 4000:1
!
!
cos-queue-group GetThereFast
precedence 5 queue low-latency
queue low-latency alternate-priority 1
route-map precedence-map permit 20

```

```

!
!
!
!
line con 0
  transport input none
line aux 0
line vty 0 4
  password ww
  login
!
end

RTP-7200VXR-A#sh conf
Using 1622 out of 129016 bytes
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname RTP-7200VXR-A
!
boot system flash slot1:c7200-p-mz.eft1016
enable password lake
!
!
!
!
!
!
ip subnet-zero
ip cef
!
!
!
!
interface Loopback0
  ip address 10.160.255.1 255.255.255.255
  no ip directed-broadcast
!
interface FastEthernet0/0
  ip address 192.168.1.150 255.255.255.0
  no ip directed-broadcast
  no ip mroute-cache
  shutdown
  full-duplex
!
interface FastEthernet2/0
  ip address 10.160.3.1 255.255.255.0
  no ip directed-broadcast
  no ip route-cache cef
  full-duplex
!
interface POS4/0
  ip address 172.16.3.2 255.255.255.0
  no ip directed-broadcast
  no ip route-cache cef
  no keepalive
  clock source internal
!
router ospf 400
  passive-interface POS4/0
  network 10.160.0.0 0.0.255.255 area 0
  network 172.16.3.0 0.0.0.255 area 0
!
router bgp 4000
  no synchronization
  table-map precedence-map
  bgp router-id 10.160.255.1
  bgp log-neighbor-changes
  network 10.160.1.0 mask 255.255.255.0
  network 10.160.255.1 mask 255.255.255.255
  redistribute connected
  neighbor 172.16.3.1 remote-as 1000
  neighbor 172.16.3.1 send-community
  neighbor 172.16.3.1 route-map precedence-map out
  no auto-summary
!
!
!
ip classless
ip bgp-community new-format
ip community-list 1 permit 4000:1
!

```



```
access-list 9 permit 10.160.255.1
access-list 10 permit 10.160.3.0 0.0.0.255
route-map precedence-map permit 10
  match ip address 10
  set community 4000:1
!
route-map precedence-map permit 20
  match community 1
!
!
!
line con 0
  exec-timeout 0 0
  transport input none
line aux 0
line vty 0 4
  password ww
  login
!
end
```

```
RTP-7505-B#sh conf
Using 2834 out of 126968 bytes
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service udp-small-servers
service tcp-small-servers
!
hostname RTP-7505-B
!
boot system flash slot0:rsp-pv-mz.eft1018
enable password lake
!
!
!
ip subnet-zero
ip cef distributed
no ip domain-lookup
!
!
!
interface Loopback0
  ip address 10.150.255.1 255.255.255.255
  no ip directed-broadcast
!
interface Loopback1
  ip address 10.150.255.2 255.255.255.255
  no ip directed-broadcast
!
interface POS0/0/0
  ip address 172.16.2.2 255.255.255.0
  no ip directed-broadcast
  ip route-cache distributed
  no keepalive
!
interface Ethernet2/1/0
  ip address 192.168.1.57 255.255.255.0
  no ip directed-broadcast
  ip route-cache distributed
  shutdown
!
interface Ethernet2/1/1
  ip address 10.150.23.1 255.255.255.0
  no ip directed-broadcast
  ip route-cache distributed
  load-interval 180
!
interface Ethernet2/1/2
  no ip address
  no ip directed-broadcast
  ip route-cache distributed
  shutdown
!
interface Ethernet2/1/3
  no ip address
```

```

no ip directed-broadcast
ip route-cache distributed
shutdown
!
interface FastEthernet3/0/0
ip address 10.150.1.1 255.255.255.0
ip access-group 101 out
no ip directed-broadcast
ip route-cache distributed
load-interval 180
full-duplex
!
router ospf 300
passive-interface POS0/0/0
network 10.150.0.0 0.0.255.255 area 0
network 172.16.2.0 0.0.0.255 area 0
!
router bgp 3000
no synchronization
bgp router-id 10.150.255.1
bgp cluster-id 177667842
bgp log-neighbor-changes
network 10.150.1.0 mask 255.255.255.0
network 10.150.23.0 mask 255.255.255.0
network 10.150.255.1 mask 255.255.255.255
network 10.150.255.2 mask 255.255.255.255
neighbor 172.16.2.1 remote-as 1000
neighbor 172.16.2.1 send-community
neighbor 172.16.2.1 route-map set-community out
no auto-summary
!
ip classless
ip bgp-community new-format
!
access-list 1 permit 10.150.23.0 0.0.0.255
access-list 2 permit 10.150.165.0 0.0.0.255
access-list 8 permit 10.150.1.0 0.0.0.255
access-list 9 permit 10.150.255.1
access-list 101 permit ip any host 10.150.1.11
access-list 101 permit ip any host 10.150.1.12
access-list 101 permit ip any host 10.150.1.13
access-list 101 permit ip any host 10.150.1.14
access-list 101 permit ip any host 10.150.1.15
access-list 101 permit ip any any
snmp-server engineID local 00000009020000D0BC504448
snmp-server community public RO
no snmp-server ifindex persist
route-map set-community permit 11
match ip address 1
set community 3000:1
!
route-map set-community permit 22
match ip address 8
set community 3000:8 additive
!
route-map set-community permit 33
match ip address 9
set community 3000:9 additive
!
!
!
line con 0
exec-timeout 0 0
transport input none
line aux 0
modem Printer
line vty 0 4
password ww
login
!
ip cache 5000
no scheduler max-task-time
end

```

```

gunpowder#sh run
Building configuration...

```

```

Current configuration:

```

```

!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service upgrade all
!
hostname gunpowder
!
boot system flash slot0:gsr-p-mz.eft1018
enable password lake
!
!
!
!
!
!
ip subnet-zero
no ip domain-lookup
mpls traffic-eng tunnels
!
!
!
interface Loopback0
bandwidth 1000
ip address 10.130.255.1 255.255.255.255
no ip directed-broadcast
no ip mroute-cache
!
interface POS3/0
ip address 10.130.2.1 255.255.255.0
no ip directed-broadcast
no keepalive
mpls traffic-eng tunnels
crc 32
clock source internal
ip rsvp bandwidth 1000 1000
!
interface POS3/1
ip address 10.130.1.1 255.255.255.0
no ip directed-broadcast
no keepalive
mpls traffic-eng tunnels
crc 32
clock source internal
ip rsvp bandwidth 20000 20000 sub-pool 10000
!
interface POS3/2
no ip address
no ip directed-broadcast
shutdown
crc 32
!
interface POS3/3
no ip address
no ip directed-broadcast
shutdown
crc 32
!
interface Ethernet0
description Utility Subnet - don't remove...
ip address 192.168.1.15 255.255.255.0
no ip directed-broadcast
no ip mroute-cache
shutdown
!
router ospf 100
 redistribute connected
 network 10.130.255.1 0.0.0.0 area 0
 network 10.130.0.0 0.0.255.255 area 0
 mpls traffic-eng router-id Loopback0
 mpls traffic-eng area 0
!
router bgp 1000
no synchronization
bgp router-id 10.130.255.1
bgp log-neighbor-changes
network 10.130.255.1 mask 255.255.255.255
neighbor 10.130.255.2 remote-as 1000
neighbor 10.130.255.2 update-source Loopback0

```

```

neighbor 10.130.255.3 remote-as 1000
neighbor 10.130.255.3 update-source Loopback0
no auto-summary
!
ip classless
ip bgp-community new-format
!
no logging trap
snmp-server engineID local 00000009010000A10A820101
no snmp-server ifindex persist
!
!
line con 0
transport input none
line aux 0
line vty 0 4
password ww
login
!
end

```

Verdict:

Pass. CLI verifies routers are correctly configured. QPPB community advertisements are heard by AS1000. MDRR is configured in the core.

Comments:

None.

Step L4.4.0:

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
EF to 7200	128	20	253378	253378	0	0
BE2 to 7505B	128	20	253378	253378	0	0
EF2 to 7200	128	20	253378	253378	0	0

Verdict:

Pass. Communities are passed correctly and it appears the eligible subnet is remapped into MPLS for tunnel and MDRR use.

Comments:

None.

Step L4.5.0:

50% Offered Load

Smartbits Output: 50% Offered Load

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
EF to 7200	128	20	253378	253378	0	0
BE2 to 7505B	128	20	253378	253378	0	0
EF2 to 7200	128	20	253378	253378	0	0

semtec#sh int p5/3 rate

```
Input
  matches: dscp 46
  params: 20000000 bps, 3750000 limit, 7500000 extended limit
  conformed 506756 packets, 57770184 bytes; action:
set-mls-exp-transmit 5
  exceeded 0 packets, 0 bytes; action: drop
  last packet: 26028ms ago, current burst: 3192 bytes
  last cleared 00:02:53 ago, conformed 2667000 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)
  1013511 packets, 115540254 bytes
  5 minute rate 2268000 bps
  match: any
  1013512 packets, 115540368 bytes
  5 minute rate 2268000 bps
  class-map: EF (match-all)
  506756 packets, 57770184 bytes
  5 minute rate 1134000 bps
  match: ip dscp 46
  priority: kbps max 20000, bandwidth exceed drops: 0
```

75% Offered Load

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
EF to 7200	128	20	253378	253378	0	0
BE2 to 7505B	128	20	253378	253378	0	0
EF2 to 7200	128	20	253378	253378	0	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-mps-exp-transmit 5
  exceeded 0 packets, 0 bytes; action: drop
  last packet: 21132ms ago, current burst: 912 bytes
  last cleared 00:02:28 ago, conformed 3114000 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)
  1013511 packets, 115540254 bytes
  5 minute rate 2268000 bps
  match: any
  1013512 packets, 115540368 bytes
  5 minute rate 2268000 bps
  class-map: EF (match-all)
  506756 packets, 57770184 bytes
  5 minute rate 1134000 bps
  match: ip dscp 46
  priority: kbps max 20000, bandwidth exceed drops: 0

```

100% Offered Load

Smartbits Output:

Name	Frame Size	Load (%)	Sent	Received	Lost	Loss (%)
Total		20	1013512	1001135	12377	1.2212
BE Destined Traffic		20	506756	500572	6184	1.22031
EF Destined Traffic		20	506756	500563	6193	1.22209
BE to 7505B	128	20	253378	247194	6184	2.44062
EF to 7200	128	20	253378	253378	0	0
BE2 to 7505B	128	20	253378	247185	6193	2.44417
EF2 to 7200	128	20	253378	253378	0	0

SmartCounters	Events	
	3A-01 PS-6500B	3B-01 PS-6500B
Tx Frames	57,937,026	56,384,866
Rx Frames	56,384,864	57,086,838
Rx Bytes	7,217,262,092	7,307,114,762
CRC Errors	0	0
OverSize	0	0
Frag/UnderSize	0	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-mps-exp-transmit 5
  exceeded 0 packets, 0 bytes; action: drop
  last packet: 22060ms ago, current burst: 1254 bytes
  last cleared 00:04:07 ago, conformed 1868000 bps, exceeded 0 bps

```

<pre> 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) 1013511 packets, 115540254 bytes 5 minute rate 1514000 bps match: any 1013512 packets, 115540368 bytes 5 minute rate 1514000 bps class-map: EF (match-all) 506756 packets, 57770184 bytes 5 minute rate 748000 bps match: ip dscp 46 priority: kbps max 20000, bandwidth exceed drops: 0 </pre>
Verdict:
Pass. Communities are passed correctly and it appears the eligible subnet is remapped into MPLS for tunnel and MDRR use.
Comments:
None.

Step L4.5.0:																																																								
<p>50% Offered Load</p> <p>Smartbits Output: 50% Offered Load</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Frame Size</th> <th>Load (%)</th> <th>Sent</th> <th>Received</th> <th>Lost</th> <th>Loss (%)</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td></td> <td>20</td> <td>1013512</td> <td>1013512</td> <td>0</td> <td>0</td> </tr> <tr> <td>BE Destined Traffic</td> <td></td> <td>20</td> <td>506756</td> <td>506756</td> <td>0</td> <td>0</td> </tr> <tr> <td>EF Destined Traffic</td> <td></td> <td>20</td> <td>506756</td> <td>506756</td> <td>0</td> <td>0</td> </tr> <tr> <td>BE to 7505B</td> <td>128</td> <td>20</td> <td>253378</td> <td>253378</td> <td>0</td> <td>0</td> </tr> <tr> <td>EF to 7200</td> <td>128</td> <td>20</td> <td>253378</td> <td>253378</td> <td>0</td> <td>0</td> </tr> <tr> <td>BE2 to 7505B</td> <td>128</td> <td>20</td> <td>253378</td> <td>253378</td> <td>0</td> <td>0</td> </tr> <tr> <td>EF2 to 7200</td> <td>128</td> <td>20</td> <td>253378</td> <td>253378</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <pre> semtec#sh int p5/3 rate 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: 26028ms ago, current burst: 3192 bytes last cleared 00:02:53 ago, conformed 2667000 bps, exceeded 0 bps </pre> <pre> 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 </pre>	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	EF to 7200	128	20	253378	253378	0	0	BE2 to 7505B	128	20	253378	253378	0	0	EF2 to 7200	128	20	253378	253378	0	0
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```

class-map: class-default (match-any)
  1013511 packets, 115540254 bytes
  5 minute rate 2268000 bps
  match: any
    1013512 packets, 115540368 bytes
    5 minute rate 2268000 bps
class-map: EF (match-all)
  506756 packets, 57770184 bytes
  5 minute rate 1134000 bps
  match: ip dscp 46
  priority: kbps max 20000, bandwidth exceed drops: 0

```

75% Offered Load

Smartbits Output:

Name	Frame	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
EF to 7200	128	20	253378	253378	0	0
BE2 to 7505B	128	20	253378	253378	0	0
EF2 to 7200	128	20	253378	253378	0	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: 21132ms ago, current burst: 912 bytes
  last cleared 00:02:28 ago, conformed 3114000 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)
    1013511 packets, 115540254 bytes
    5 minute rate 2268000 bps
    match: any
      1013512 packets, 115540368 bytes
      5 minute rate 2268000 bps
  class-map: EF (match-all)
    506756 packets, 57770184 bytes
    5 minute rate 1134000 bps
    match: ip dscp 46
    priority: kbps max 20000, bandwidth exceed drops: 0

```

100% Offered Load

Smartbits Output:

BE Destined Traffic	20	506756	500572	6184	1.22031
EF Destined Traffic	20	506756	500563	6193	1.22209
BE to 7505B	128	20	253378	247194	6184 2.44062
EF to 7200	128	20	253378	253378	0 0
BE2 to 7505B	128	20	253378	247185	6193 2.44417
EF2 to 7200	128	20	253378	253378	0 0
SmartCounters		Events		Events	
		3A-01 PS-6500B		3B-01 PS-6500B	
Tx Frames		57,937,026		56,384,866	
Rx Frames		56,384,864		57,086,838	
Rx Bytes		7,217,262,092		7,307,114,762	
CRC Errors		0		0	
OverSize		0		0	
Frag/UnderSize		0		0	
<pre> 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: 22060ms ago, current burst: 1254 bytes last cleared 00:04:07 ago, conformed 1868000 bps, exceeded 0 bps </pre>					
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Verdict:					
<p>Pass. MDRR was disabled so no traffic was protected in the backbone. The SmartsBits results show very similar loss characteristics.</p>					
Comments:					
None.					