



CHAPTER 10

Configuring Destination Sensitive Services on the Optical Services Modules

This chapter describes how to configure Destination Sensitive Services (DSS) on the Optical Services Modules (OSMs).

This chapter consists of these sections:

- [Understanding Destination Sensitive Services, page 10-1](#)
- [Configuring Destination Sensitive Services, page 10-2](#)

Understanding Destination Sensitive Services

DSS allows traffic accounting and traffic shaping to known autonomous system numbers in order to engineer and plan network circuit peering and transit agreements. DSS is supported on ingress WAN ports on the following OSMs:

- OC-3 POS:
 - OSM-4OC3-POS-SI
 - OSM-8OC3-POS-SI, SL
 - OSM-16OC3-POS-SI, SL
 - OSM-4OC3-POS-SI+
 - OSM-8OC3-POS-SI+, SL+
 - OSM-16OC3-POS-SI+, SL+
- OC-12 POS:
 - OSM-2OC12-POS-MM, SI, SL
 - OSM-4OC12-POS-MM, SI, SL
 - OSM-2OC12-POS-MM+, SI+, SL+
 - OSM-4OC12-POS-MM+, SI+, SL+
- OC-48 POS:
 - OSM-1OC48-POS-SS, SI, SL
 - OSM-1OC48-POS-SS+, SI+, SL+
- Channelized:

- OSM-1CHOC48/T3-SS
- OSM-1CHOC12/T3-SI
- OSM-1CHOC12/T1-SI
- OSM-12CT3/T1
- OC-48 POS/DPT:
 - OSM-2OC48/1DPT-SS, SI, SL
- Gigabit Ethernet
 - OSM-4GE-WAN-GBIC
 - OSM-2+4GE-WAN+

DSS supports two separate services:

- Destination Sensitive Billing (DSB)

DSB allows accounting based on destination traffic indexes and provides a means of classifying customer traffic according to the route that the traffic travels. Trans-Pacific, Trans-Atlantic, satellite, domestic, and other provider traffic can be identified and accounted for on a destination network basis when the customer traffic is on a unique software interface. DSB provides packet and byte counters, which represent counts for IP packets per destination network. DSB is implemented using route-maps to classify the traffic into one of seven possible indexes, which represent a traffic classification.
- Destination Sensitive Traffic Shaping (DSTS)

DSTS performs inbound traffic shaping based on the destination traffic index configuration. See the “[Configuring Destination Sensitive Services](#)” section on page 10-2 for configuration information.



Note

Although the CLI allows it, DSB and DSTS should not be applied to the same interface.

Configuring Destination Sensitive Services

When you configure ingress DSS and DSB on a WAN interface, the traffic coming in over the WAN interface is classified and accounted for.

These sections describe how to configure ingress DSS and DSB:

- [Configuring Ingress DSS, page 10-2](#)
- [Configuring Ingress DSB, page 10-6](#)

Configuring Ingress DSS

To configure ingress DSS on your OSM, perform this task:

	Command	Purpose
Step 1	Router(config)# route-map <i>map-tag</i> [permit deny] [<i>sequence-number</i>]	Defines the conditions for redistributing routes from one routing protocol into another.
Step 2	Router(config-route-map)# match community-list <i>community-list-number</i>	Matches a BGP community.
Step 3	Router(config-route-map)# set traffic-index 1-8	Creates the BGP traffic index.
Step 4	Router(config)# router bgp <i>autonomous-system</i>	Configures BGP routing.
Step 5	Router(config-router)# table-map <i>route-map-name</i>	Modifies metric and tag values when the IP routing table is updated with BGP learned routes.
Step 6	Router(config)# ip bgp-community <i>new-format</i>	Displays BGP communities in the format AA:NN (autonomous system-community number/2-byte number).
Step 7	Router(config)# ip community-list 40 100:120	Creates a community list for BGP and controls access to it.
Step 8	Router(config-pmap)# class-map [match-all match-any]	Creates a class map to be used for matching packets to a class you define and specifies the criteria to match on.
Step 9	Router(config-pmap-c)# match bgp-index <i>bgp-index</i>	Identifies a specific BGP index to match on.
Step 10	Router(config)# policy-map <i>policy_map</i>	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
Step 11	Router(config-pmap)# class <i>class-name</i>	Defines the classes you want the service policy to contain.
Step 12	Router(config-pmap-c)# shape [average peak] <i>mean-rate</i> [[<i>burst-size</i>] [<i>excess-burst-size</i>]]	Shapes traffic to the indicated bit rate.
Step 13	Router(config)# interface	Specifies the WAN interface to which the policy map will be applied.
Step 14	Router(config-if)# service-policy input <i>policy-map</i>	Attaches the specified policy map to the input interface.

To configure ingress DSS, perform this task:

Step 1 Classify the BGP routes by creating BGP traffic indexes:

```
Router(config)# route-map dss-map1 permit 1
Router(config-route-map)# match community 40
Router(config-route-map)# set traffic-index 1
Router(config-route-map)# exit
Router(config)# route-map dss-map3
Router(config-route-map)# match community 50
Router(config-route-map)# set traffic-index 3
Router(config-route-map)# exit
Router(config)# route-map dss-map7
Router(config-route-map)# match community 60
Router(config-route-map)# set traffic-index 7
Router(config-route-map)# exit
```

Step 2 Enable BGP routing for the autonomous system and apply the route-maps:

```
Router(config)# router bgp 100
Router(config-router)# table-map dss-map1
Router(config)# ip bgp-community new-format
Router(config)# ip community-list 10 100:120
Router(config-router)# exit
```

Step 3 Map the BGP index to the traffic index classes:

```
Router(config)# class-map dss1
Router(config-cmap)# match bgp-index 1
Router(config-cmap)# exit
Router(config)# class-map dss3
Router(config-cmap)# match bgp-index 3
Router(config-cmap)# exit
Router(config)# class-map dss7
Router(config-cmap)# match bgp-index 7
Router(config-cmap)# exit
```

Step 4 Configure the policy-maps and traffic shaping parameters:

```
Router(config)# policy-map dss-policy
Router(config-pmap)# class dss1
Router(config-pmap-c)# shape average 64000
Router(config-pmap-c)# exit
Router(config-pmap)# class dss3
Router(config-pmap-c)# shape average 1024000
Router(config-pmap-c)# exit
Router(config-pmap)# class dss7
Router(config-pmap-c)# shape average 384000
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)#
```

Step 5 Apply the policy configuration to the appropriate WAN interface:

```
Router(config)# interface ge-wan 4/1
Router(config-if)# service-policy input dss-policy
Router(config-if)# exit
Router(config)
```

Step 6 Display DSS configuration information:

```
Router# show ip cef 8.1.1.0
8.1.1.0/24, version 340, cached adjacency 19.1.1.3
0 packets, 0 bytes, Precedence critical (5), traffic_index 1
  via 19.1.1.3, 0 dependencies, recursive
    next hop 19.1.1.3, Vlan19 via 19.1.1.3/32
    valid cached adjacency

Router# show ip bgp 8.1.1.0
BGP routing table entry for 8.1.1.0/24, version 14
Paths: (1 available, best #1, table Default-IP-Routing-Table)
  Not advertised to any peer
  12
    19.1.1.3 from 19.1.1.3 (19.1.1.3)
      Origin IGP, metric 0, localpref 100, valid, external, best
      Community: 100:120

Router# show class-map dss1
Class Map match-all dss1 (id 8)
  Match bgp-index 1

Router# show policy-map interface ge-wan 4/1

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  service-policy input: dss-policy

    class-map: dss1 (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      match: bgp-index 1
      queue size 0, queue limit 2
      packets input 0, packet drops 0
<output truncated>

Router(config)#
```

Configuring Ingress DSB

To configure ingress DSB on your OSM, display the BGP policy accounting configuration, and clear the ingress DSB counters, perform this task:

Step 1 Enable ingress DSB on the port:

```
Router(config)# interface GE-WAN6/2
Router(config-if)# ingress-dsb
```

Step 2 Enable BGP policy accounting on the interface:

```
Router(config-if)# bgp-policy accounting
Router(config-if)# end
```

Step 3 Display the BGP policy accounting configuration on the input interface:

```
Router# show cef interface GE-WAN6/2 policy
GE_WAN6/2 is up (if_number 18)
  Corresponding hwidb fast_if_number 18
  Corresponding hwidb firstsw->if_number 18
BGP based Policy accounting is enabled
  Index      Packets      Bytes
  1          5259200     315552000
  2          5259300     315558000
  3          5259300     315558000
  4          5258900     315534000
  5          5258916     315534960
  6          5259000     315540000
  7          5259100     315546000
  8          0           0
Router#
```

Step 4 Clear all ingress DSB counters:

```
Router# clear cef interface policy-statistics
```

Step 5 Clear the ingress DSB counter for a specific interface:

```
Router# clear cef interface GE-WAN6/2 policy-statistics
```