CHAPTER 8

Configuring SDM Templates

This chapter describes how to configure the Switch Database Management (SDM) templates on the Catalyst 3560 switch.

Note For complete syntax and usage information for the commands used in this chapter, see the command reference for this release.

This chapter consists of these sections:

Understanding the SDM Templates

You can use SDM templates to configure system resources in the switch to optimize support for specific features, depending on how the switch is used in the network. You can select a template to provide maximum system usage for some functions or use the default template to balance resources. For example, you could use access template to obtain maximum ACL usage.

To allocate ternary content addressable memory (TCAM) resources for different usages, the switch SDM templates prioritize system resources to optimize support for certain features. You can select SDM templates for IP Version 4 (IPv4) to optimize these features:

Access—The access template maximizes system resources for access control lists (ACLs) to accommodate a large number of ACLs.

Default—The default template gives balance to all functions.

Routing—The routing template maximizes system resources for unicast routing, typically required for a router or aggregator in the center of a network.

VLANs—The VLAN template disables routing and supports the maximum number of unicast MAC addresses. It would typically be selected for a Layer 2 switch.

In addition, the dual IPv4 and IPv6 templates enable a dual stack environment. See the "Dual IPv4 and IPv6 SDM Templates" section on page 8-2.

Table 8-1 lists the approximate numbers of each resource supported in each of the three templates for a desktop switch.

Table 8-1 Approximate Number of Feature Resources Allowed by Each Template

Resource	Access	Default	Routing	VLAN
	4 K	6 K	3 K	12 K
IGMP groups and multicast routes	1 K	1 K	1 K	1 K
Unicast routes	6 K	8 K	11 K	0
Directly connected hosts	4 K	6 K	3 K	0
Indirect routes	2 K	2 K	8 K	0
Policy-based routing ACEs	512	0	512	0
QoS classification ACEs	512	512	512	512
Security ACEs	2 K	1 K	1 K	1 K
Layer 2 VLANs	1 K	1 K	1 K	1 K

The first eight rows in the tables (unicast MAC addresses through security ACEs) represent approximate hardware boundaries set when a template is selected. If a section of a hardware resource is full, all processing overflow is sent to the CPU, seriously impacting switch performance. The last row is a guideline used to calculate hardware resource consumption related to the number of Layer 2 VLANs on the switch.

Dual IPv4 and IPv6 SDM Templates

This software release does not support Policy-Based Routing (PBR) when forwarding IPv6 traffic. The software supports IPv4 PBR only when the **dual-ipv4-and-ipv6 routing**

ual IPv4 and IPv6 default template—supports Layer 2, multicast, routing, QoS, and ACLs for IPv4; and Layer 2, routing, and ACLs for IPv6 on the switch

Dual IPv4 and IPv6 routing template—supports Layer 2, multicast, routing (including policy-based routing), QoS, and ACLs for IPv4; and Layer 2, routing, and ACLs for IPv6 on the switch

Dual IPv4 and IPv6 VLAN template—supports basic Layer 2, multicast, QoS, and ACLs for IPv4, and basic Layer 2 and ACLs for IPv6 on the switch

An IPv4 route requires only one TCAM entry. Because of the hardware compression scheme used for IPv6, an IPv6 route can take more than one TCAM entry, reducing the number of entries forwarded in hardware. For example, for IPv6 directly connected IP addresses, the desktop template might allow less than two thousand entries.

Table 8-2 defines the approximate feature resources allocated by each new template. Template estimations are based on a switch with 8 routed interfaces and approximately 1000 VLANs.

Table 8-2 Approximate Feature Resources Allowed by Dual IPv4-IPv6 Templates

	IPv4-and-IPv6 Default	IPv4-and-IPv6 Routing	IPv4-and-IPv6 VLAN
•			
•			
•			
•			
[1]	0	255	0
IPv6 QoS ACEs	510	510	510
IPv6 security ACEs	510	510	510

1. IPv6 policy-based routing is not supported.

Configuring the Switch SDM Template

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Default SDM Template

SDM Template Configuration Guidelines

- When you select and configure SDM templates, you must reload the switch for the configuration to take effect.

sdm prefer vlan

sdm prefer

routing

Setting the SDM Template

Beginning in privileged EXEC mode, follow these steps to use the SDM template to maximize feature usage:

	Command	Purpose
Step 1	**configure terminal**	
Step 2	{ | | { | | } | | }	Specify the SDM template to be used on the switch: The keywords have these meanings: —Maximizes system resources for ACLs. —Gives balance to all functions. —Select a template that supports both IPv4 and IPv6 routing. – – –
Step 3		
Step 4		

After the system reboots, you can use the **show sdm prefer**

show sdm prefer **reload**

show sdm prefer

```
Switch# show sdm prefer
 The current template is "desktop routing" template.
 The selected template optimizes the resources in
 the switch to support this level of features for
 8 routed interfaces and 1024 VLANs.

  number of unicast mac addresses:            3K
  number of igmp groups + multicast routes:   1K
  number of unicast routes:                   11K
    number of directly connected hosts:       3K
    number of indirect routes:                8K
  number of qos aces:                         512
 number of security aces:                    1K

 On next reload, template will be “desktop vlan” template.
```

```
Switch(config)# sdm prefer routing
                end
        reload
Proceed with reload? [confirm]
```

```
Switch(config)#     prefer dual-ipv4-and-ipv6 default
                exit
        reload
```

Displaying the SDM Templates

[| | { | } | |]
privileged EXEC command to display the resource numbers supported by the specified template.

This is an example of output from the command, displaying the template in use.

```
  number of unicast mac addresses:             6K
  number of igmp groups + multicast routes:    1K
  number of unicast routes:                    8K
    number of directly connected hosts:        6K
    number of indirect routes:                 2K
  number of policy based routing aces:         0
  number of qos aces:                          512
  number of security aces:                     1K
```

This is an example of output from the command entered on a switch:

```
"desktop IPv4 and IPv6 default" template:
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 1024 VLANs.

 number of unicast mac addresses:                  2K
 number of IPv4 IGMP groups + multicast routes:    1K
 number of IPv4 unicast routes:                    3K
   number of directly-connected IPv4 hosts:        2K
   number of indirect IPv4 routes:                 1K
 number of IPv6 multicast groups:                  1K
 number of directly-connected IPv6 addresses:      2K
 number of indirect IPv6 unicast routes:           1K
 number of IPv4 policy based routing aces:         0
 number of IPv4/MAC qos aces:                      512
 number of IPv4/MAC security aces:                 1K
 number of IPv6 policy based routing aces:         0
 number of IPv6 qos aces:                          510
 number of IPv6 security aces:                     510
```