



Configuring SDM Templates

This chapter describes how to configure the Switch Database Management (SDM) templates on the Catalyst 3750 switch. Unless otherwise noted, the term *switch* refers to a standalone switch and a switch stack.



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, page 7-1](#)
- [Configuring the Switch SDM Template, page 7-3](#)
- [Displaying the SDM Templates, page 7-5](#)

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 to use the default template to balance resources.

The templates prioritize system resources to optimize support for these types of features:

- **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.
- **Default**—The default template gives balance to all functions.

There are two versions of each template: a desktop template and an aggregator template. The Catalyst 3750-12S switch can use the larger ternary content addressable memory (TCAM) size available in the aggregator templates or can use the standard desktop templates. All other Catalyst 3750 switches support only the desktop templates. If you do not enter the **desktop** keyword on an aggregator switch, the aggregator templates are selected.

[Table 7-1](#) lists the approximate numbers of each resource supported in each of the three templates for a desktop or an aggregator switch.

Table 7-1 Approximate Number of Feature Resources Allowed by Each Template

Resource	Desktop Templates			Aggregator Templates		
	Default	Routing	VLAN	Default	Routing	VLAN
Unicast MAC addresses	6 K	3 K	12 K	6 K	6 K	12 K
IGMP groups and multicast routes	1 K	1 K	1 K	1 K	1 K	1 K
Unicast routes	8 K	11 K	0	12 K	20 K	0
• Directly connected hosts	6 K	3 K	0	6 K	6 K	0
• Indirect routes	2 K	8 K	0	6 K	14 K	0
Policy-based routing ACEs	0	512	0	0	512	0
QoS classification ACEs	512	512	512	896	512	896
Security ACEs	1 K	1 K	1 K	1 K	1 K	1 K
Layer 2 VLANs	1 K	1 K	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.

SDM Templates and Switch Stacks

All stack members use the same SDM desktop or aggregator template that is stored on the stack master. When a new switch is added to a stack, as with the switch configuration and VLAN database files, the SDM configuration that is stored on the stack master overrides the template configured on an individual switch.



Note

For more information about stacking, see [Chapter 4, “Managing Switch Stacks.”](#)

If the stack master is a desktop switch and a Catalyst 3750-12S running the aggregator template is added as a stack member, the stack operates with the desktop template selected on the stack master. This could result in configuration losses on the Catalyst 3750-12S if the number of TCAM entries on it exceeds desktop template sizes.

If the stack master is a Catalyst 3750-12S switch using an aggregator template and a new stack member is not a Catalyst 3750-12S, the stack member is not able to support the template that is running on the stack master. The switch attempting to join the stack goes into SDM mismatch mode, the stack master does not attempt to change the SDM template, and the switch cannot be a functioning member of the stack.

You can use the **show switch** privileged EXEC command to see if any stack members are in SDM mismatch mode. This example shows the output from the **show switch** privileged EXEC command when an SDM mismatch exists:

```
Switch# show switch

Switch# Role      Mac Address      Priority    Current
-----
*2      Master    000a.fdfd.0100   5          Ready
4       Slave    0003.fd63.9c00   5          SDM Mismatch
```

If the stack master is a Catalyst 3750-12S, changing the template can create these results:

- If you change the template from an aggregator template to a desktop template and reload the switch, the entire stack operates with the selected desktop template. This could cause configuration losses if the number of TCAM entries exceeds the desktop template sizes.
- If you change the template from a desktop template to an aggregator template and reload the switch, any desktop switches that were part of the stack go into the SDM mismatch mode. When this occurs, a syslog message is sent to the stack master indicating that a stack member has gone into the SDM mismatch mode and suggesting the steps to take to bring the switch out of the mismatch mode.

This is an example of a syslog message notifying the stack master that a stack member is in SDM mismatch mode:

```
2d23h:%STACKMGR-6--SWITCH_ADDED_SDM:Switch 2 has been ADDED to the stack (SDM_MISMATCH)

2d23h:%SDM-6-MISMATCH_ADVISE:
2d23h:%SDM-6-MISMATCH_ADVISE:
2d23h:%SDM-6-MISMATCH_ADVISE:System (#2) is incompatible with the SDM
2d23h:%SDM-6-MISMATCH_ADVISE:template currently running on the stack and
2d23h:%SDM-6-MISMATCH_ADVISE:will not function unless the stack is
2d23h:%SDM-6-MISMATCH_ADVISE:downgraded. Issuing the following commands
2d23h:%SDM-6-MISMATCH_ADVISE:will downgrade the stack to use a smaller
2d23h:%SDM-6-MISMATCH_ADVISE:compatible desktop SDM template:
2d23h:%SDM-6-MISMATCH_ADVISE:
2d23h:%SDM-6-MISMATCH_ADVISE:      "sdm prefer vlan desktop"
2d23h:%SDM-6-MISMATCH_ADVISE:      "reload"
```

Configuring the Switch SDM Template

This section describes how to configure the SDM template to be used on the switch. This section contains this configuration information:

- [Default SDM Template, page 7-3](#)
- [SDM Template Configuration Guidelines, page 7-4](#)
- [Setting the SDM Template, page 7-4](#)

Default SDM Template

The default template for desktop switches is the default desktop template; the default template for the Catalyst 3750-12S is the default aggregator template.

SDM Template Configuration Guidelines

You must reload the switch for the configuration to take effect.

Use the **sdm prefer vlan [desktop]** global configuration command only on switches intended for Layer 2 switching with no routing. When you use the VLAN template, no system resources are reserved for routing entries, and any routing is done through software. This overloads the CPU and severely degrades routing performance.

Do not use the routing template if you do not have routing enabled on your switch. The **sdm prefer routing [desktop]** global configuration command prevents other features from using the memory allocated to unicast routing in the routing template.

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	Enter global configuration mode.
Step 2	sdm prefer {default routing vlan} [desktop]	Specify the SDM template to be used on the switch: The keywords have these meanings: <ul style="list-style-type: none"> • default—Visible only on Catalyst 3750-12S switches to use with the desktop keyword to set the switch to the default desktop template. (Use the no sdm prefer command to set a desktop switch to the default desktop template or to set an aggregator switch to the default aggregator template.) • routing—Maximizes routing on the switch. • vlan—Maximizes VLAN configuration on the switch with no routing supported in hardware. • desktop—Supported only on Catalyst 3750-12S switches. Sets the switch to the default, routing, or VLAN desktop template. The default templates balance the use of system resources.
Step 3	end	Return to privileged EXEC mode.
Step 4	reload	Reload the operating system.

After the system reboots, you can use the **show sdm prefer** privileged EXEC command to verify the new template configuration. If you enter the **show sdm prefer** command before you enter the **reload** privileged EXEC command, the **show sdm prefer** command shows the template currently in use and the template that will become active after a reload.

This is an example of an output display when you have changed the template and have not reloaded the switch:

```
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 "aggregate routing" template.

To return to the default template, use the **no sdm prefer** global configuration command.

This example shows how to configure a switch with the routing template (the desktop routing template for a desktop switch or the aggregator routing template for a Catalyst 3750-12S).

```

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

```

This example shows how to configure the desktop routing template on a Catalyst 3750-12S switch:

```

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

```

Displaying the SDM Templates

Use the **show sdm prefer** privileged EXEC command with no parameters to display the active template.

Use the **show sdm prefer [default | routing | vlan [desktop]]** privileged EXEC command to display the resource numbers supported by the specified template.



Note

The **desktop** keyword is available only on Catalyst 3750-12S aggregator switches.

This is an example of output from the **show sdm prefer** command, displaying the template in use.

```

Switch# show sdm prefer
The current template is "desktop 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:      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 **show sdm prefer routing** command entered on an aggregator switch:

```
Switch# show sdm prefer routing
"aggregate 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:          6K
number of igmp groups + multicast routes: 1K
number of unicast routes:                20K
  number of directly connected hosts:     6K
  number of indirect routes:              14K
number of policy based routing aces:      512
number of qos aces:                       512
number of security aces:                  1K
```

This is an example of output from the **show sdm prefer routing** command entered on a desktop switch:

```
Switch# show sdm prefer routing
"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 policy based routing aces:      512
number of qos aces:                       512
number of security aces:                  1K
```