



Configuring SDM Templates

The Catalyst 2960, 2960-S, and 2960-C switch command reference has command syntax and usage information about the Switch Database Management (SDM) templates. Different platform support different SDM templates.

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Understanding the SDM Templates

**Note**

The SDM template used by Catalyst 2960-C Gigabit Ethernet switch and by the Catalyst 2960-S running LAN Lite image is a default templates and is not configurable. Catalyst 2960-S switches running the LAN base image support a default template and the lanbase-routing template.

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.

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 one of these SDM templates to optimize features on the Catalyst 2960 switch and on the Catalyst 2960-C Fast Ethernet switch: :

- **Default**—The default template gives balance to all functions.
- **Dual**—The dual IPv4 and IPv6 template allows the switch to be used in dual stack environments (supporting both IPv4 and IPv6). Using the dual stack templates results in less TCAM capacity allowed for each resource. Do not use them if you plan to forward only IPv4 traffic.

**Note**

The dual IPv4 and IPv6 template is not supported on Catalyst 2960 switches running the LAN Lite image and is not required on Catalyst 2960-S switches.

- **LAN base routing**—The lanbase-routing template supports IPv4 unicast routes for configuring static routing SVIs



Note The lanbase-routing template is supported only on Catalyst 2960 and 2960-S switches running Cisco IOS Release 12.2(55)SE or later and only with the LAN base image.

- QoS—The QoS template maximizes system resources for quality of service (QoS) access control entries (ACEs).

Table 8-1 *Approximate Feature Resources Allowed on 2960-S Switch Templates*

Resource	Default	LAN base routing
Unicast MAC addresses	8K	4 K
IPv4 IGMP groups	256	256
IPv4 unicast routes	256	.75 K
• Directly connected hosts		.75 K
• Indirect routes		16
IPv6 multicast groups		0
Directly connected IPv6 addresses		0
Indirect IPv6 unicast routes		0
IPv4 policy-based routing aces		0
IPv4 MAC QoS ACEs	384	128
IPv4 MAC security ACEs	384	384
IPv6 policy-based routing aces		0
IPv6 QoS ACEs		0
IPv6 security ACEs	128	0

Table 8-2 *Approximate Feature Resources Allowed on Catalyst 2960-C Fast Ethernet Switch Templates*

Resource	Default	QoS	Dual	LAN base routing
Unicast MAC addresses	8 K	8 K	8 K	4 K
IPv4 IGMP groups and multicast routes	.25 K	.25 K	.25 K	.25 K
IPv4 unicast routes	0	0	0	4.25 K
• Directly connected hosts	0	0	0	4 K
• Indirect routes	0	0	0	.25 K
IPv6 multicast groups	0	0	.375 K	0
Directly connected IPv6 addresses	0	0	0	0
Indirect IPv6 unicast routes	0	0	0	0
IPv4 policy-based routing aces	0	0	0	0
IPv4 MAC QoS ACEs	.125 K	.375 K	.125 K	.125 K

Table 8-2 *Approximate Feature Resources Allowed on Catalyst 2960-C Fast Ethernet Switch Templates*

Resource	Default	QoS	Dual	LAN base routing
IPv4 MAC security ACEs	.375 K	.125 K	.375 K	.375 K
IPv6 policy-based routing aces	0	0	0	0
IPv6 QoS ACEs	0	0	20	0
IPv6 security ACEs	0	0	77	0

Table 8-3 *Approximate Feature Resources Allowed on 2960-C Gigabit Ethernet Switch Templates*

Resource	Default
Unicast MAC addresses	8K
IPv4 IGMP groups	.25 K
IPv6 multicast groups	.25 K
Directly connected IPv6 addresses	
Indirect IPv6 unicast routes	
IPv4 policy-based routing aces	
IPv4 MAC QoS ACEs	.125 K
IPv4 MAC security ACEs	.375 K
IPv6 policy-based routing aces	0
IPv6 QoS ACEs	60
IPv6 security ACEs	.125

The rows in the tables 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.

SDM Templates and Switch Stacks



Note

Stacking is supported only on Catalyst 2960-S switches running the LAN base image.

All stack members use the same SDM 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. For more information about stacking, see [Chapter 7, “Managing Switch Stacks.”](#)

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# Role      Mac Address      Priority    Current
          State

```

```
-----
*2      Master      000a.fdfd.0100    5      Ready
4       Member      0003.fd63.9c00    5      SDM Mismatch
```

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:
!!!!!!! SDM MISMATCH !!!!!!!
Master Template is lanbase-routing & Local Template is default
Reloading because of sdm template mismatch
Please reboot the switch
```

Configuring the Switch SDM Template

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- [SDM Template Configuration Guidelines, page 8-4](#)
- [Setting the SDM Template, page 8-5](#)

Default SDM Template

The default template for the Catalyst 2960 and 2960-S switches is the default desktop template.

SDM Template Configuration Guidelines

- You configure multiple SDM templates on Catalyst 2960 switches and on Catalyst 2960-C Fast Ethernet switches. A Catalyst 2960-S switch running the LAN base image supports the desktop default template that includes maximum resources for all supported features and the lanbase-routing template for static routing. The Catalyst 2960-C Gigabit Ethernet switch supports only a default template.
- When you select and configure SDM templates, you must reload the switch for the configuration to take effect.
- Do not use the routing template if you do not have routing enabled on your switch. The **sdm prefer lanbase routing** global configuration command prevents other features from using the memory allocated to unicast routing in the routing template.
- If you try to configure IPv6 features without first selecting a dual IPv4 and IPv6 template, a warning message appears.



Note The dual template is not supported on switches running the LAN lite image and is not required on Catalyst 2960-S switches.

- Using the dual stack templates results in less TCAM capacity allowed for each resource, so do not use it if you plan to forward only IPv4 traffic.

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 dual-ipv4-and-ipv6 default lanbase-routing qos }	Specify the SDM template to be used on the switch: The keywords have these meanings: <ul style="list-style-type: none"> • default—Gives balance to all functions. • dual-ipv4-and-ipv6 default—Allows the switch to be used in dual stack environments (supporting both IPv4 and IPv6). • lanbase-routing—Supports configuring unicast routes for static routing on SVIs. • qos—Maximizes system resources for QoS ACEs. Use the no sdm prefer command to set the switch to the default template. The default template balances the use of system resources. Note The Catalyst 2960-S switch supports only the default and lanbase-routing templates. Catalyst 2960-C Gigabit Ethernet switches support only a default template.
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 in use and the template that becomes active after a reload.

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 | dual-ipv4-and-ipv6 default | lanbase-routing | qos]** privileged EXEC command to display the resource numbers supported by the specified template.



Note

The Catalyst 2960-S switch supports only the default and lanbase-routing templates. The Catalyst 2960-C Gigabit Ethernet switch supports only a default template.

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 "lanbase-routing" template.
The selected template optimizes the resources in
the switch to support this level of features for
8 routed interfaces and 255 VLANs.

number of unicast mac addresses:          4K
number of IPv4 IGMP groups + multicast routes: 0.25K
number of IPv4 unicast routes:           0.75K
  number of directly-connected IPv4 hosts: 0.75K
  number of indirect IPv4 routes:         1K
number of IPv4 policy based routing aces: 0
number of IPv4/MAC qos aces:             0.125k
number of IPv4/MAC security aces:        0.375k
```