Configuring SDM Templates

Restrictions for Switch Device Manager Template

- If the device is operating with NAT template, Switch Device Manager (SDM) templates can't be customized.

- The combined limit for multicast entries for layer 2 and layer 3 is 48K (K = 1024 entries).

- It's mandatory to assign a priority value to each of the features when customizing an SDM template. The priority value decides the resource allocation for the features.

- The priority value of each feature should be unique. You can't assign the same priority value to different features.

Note In case of RMA or Supervisor replacement, restoring the backup configuration doesn't restore the customized template. You'll have to reconfigure the customized template.

Information About SDM Templates

You can use SDM templates to configure system resources to optimize support for specific features, depending on how your device is used in the network. You can select a template to provide maximum system usage for some functions.

Cisco Catalyst 9600 Series Switches support the following templates:

- Core

- NAT

- Distribution

After you change the template and 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.

Customizable SDM Template

Overview of Customizable SDM Template

Switch Device Manager (SDM) templates can be used to configure system resources and optimize support for specific features. However standard SDM templates are defined based on how the device is deployed in the network.

A custom SDM template will allow you to configure the features of the template based on your requirements and not the location of the device in the network. A custom SDM template for forwarding features can be configured using the command **sdm prefer custom fib**.

A Customizable SDM template supports the following features:

- Unicast MAC addresses

- Layer 3 Unicast forwarding

- Layer 2 Multicast forwarding

- Layer 3 Multicast forwarding

- Ingress Netflow

- Egress Netflow

- SGT/DGT Index space / MPLS VPN Label space

The following table shows the minimum and maximum scale values that can be configured for each of the features, the step units and the default values that will be applied when no custom values are chosen for a feature.

Table 1: Scale values and Default values for features

Feature name	Scale Values (Min-Max)	Step Units	Default Values
MAC addresses	32768 - 131072	16384	32768
Unicast routes	65536 - 262144	16384	65536
Layer 2 Multicast	0, 16384 - 32768	16384	16384
Layer 3 Multicast	0, 16384 - 32768	16384	16384
SG Hash/MPLS	0, 32768 - 65536	32768	32768
Ingress Netflow	0, 32768 - 65536	32768	32768

Feature name	Scale Values (Min-Max)	Step Units	Default Values
Egress NetFlow	0, 32768 - 65536	32768	0

You can determine which features are allocated the resources first by assigning them a priority using the **priority** keyword.The lower the priority-value assigned to a feature the higher its priority in resource allocation. The total value that is assigned to all the features can exceed the maximum supported resource value of 416K, where K is equal to 1024 entries. The resource allocation algorithm will use the priority-values to determine the number of resources assigned to each feature.

Once you have configured a customized template the device will have to be reloaded for the template to take effect.

Note

- NetFlow FIB entries consume twice as many hardware entries as configured, and SG Hash FIB entries consume half as many hardware entries as configured when NetFlow allocation is less than the allowed maximum value of 128K.

- For features where the scale value can be set to zero, you need to specify the scale value as zero. If not, the default value will be assigned as the scale value.

System resource allocation for Customizable SDM Template

The total number of system resources assigned to a Customizable SDM Template is 416K. If the total number of all the resources specified exceeds 416K, the system starts to lower the number of allotted resources starting with the feature assigned the lowest priority.

When the total number of resources assigned in the Customizable SDM Template is less than 416K:

- All the features specified in the template are allotted resources as customized in the template. Any features not specified in the template are allotted the default number of resources.

- If the total number of resources assigned to multicast layer 2 and layer 3 exceeds 48K, then the scale of the multicast feature assigned the lower priority is reduced until the total number of resources assigned is equal to 48K.

- Resources that aren't allotted won't be distributed.

When the total number of resources assigned in the Customizable SDM Template is more than 416K:

- All the features for which a custom scale isn't specified are allotted the default values.

- If the total number of resources assigned to multicast layer 2 and layer 3 exceeds 48K, then the scale of the multicast feature that is assigned the lower priority is reduced until the total number of resources assigned is less than or equal to 48K.

- The number of resources allotted to the feature with the highest priority value are decreased by the step value.

- If the total number of resources still exceeds 416K, the resources allotted to the next feature with the highest priority value are decreased by the step value.

- While lowering the resources allotted to a feature, the scale is lowered only until the default value for that feature. If further adjustment is required, the resources allotted to the next feature on the priority list are reduced.

The custom value entered by you for any feature is rounded up to the next step value. For example, if you enter a value of 40K for SGT it's rounded up to 64K.

Customizable SDM Template and High Availability

On a device which supports High Availability, when a Customizable SDM Template is configured on the active Supervisor it also takes effect on the standby Supervisor.

If the standby Supervisor is configured with a different custom template than the active Supervisor, the Customizable SDM Template of the active Supervisor is configured on the standby Supervisor during initialization.

Customizable SDM Template and StackWise Virtual

On a device which supports StackWise Virtual, when an SDM Template is configured on the active Supervisor it also takes effect on the standby chassis.

If the standby chassis is configured with a different custom template than the active Supervisor, the SDM Template of the active Supervisor is configured on the standby chassis during initialization. The standby chassis undergoes an extra reload for the template to take effect.

Customizable SDM Template and ISSU

When a device undergoes an In-Service Software Upgrade (ISSU) to a higher release and there's a change in the resource allocation algorithm, this upgrade can result in a different scale for the same user input. The change in scale is detected and notified via a syslog message. The system continues to operate with the earlier scale.

You can view the change in scale by using the **show sdm prefer custom scale-change** command. You can apply this change in scale by using the **sdm prefer custom commit** command. The device has to be reloaded for the change to take effect.

When a device undergoes a downgrade to a release earlier than the Cisco IOS XE Amsterdam 17.3.1 release, you need to change the SDM template to a static SDM template before the downgrade.

How to Configure SDM Templates

Setting the SDM Template

Follow these steps to use the SDM template to maximize feature usage:

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.
	Example:	Enter your password if prompted.

	Command or Action	**Purpose**
	Device> **enable**	
Step 2	**configure terminal**	Enters global configuration mode.
	Example:	
	Device# **configure terminal**	
Step 3	**sdm prefer** { **core** | **nat** | **distribution** }	Specifies the SDM template to be used on the switch. The keywords have these meanings:
	Example:	• **core** —Sets the Core template.
	Device(config)# **sdm prefer nat**	• **nat** —Maximizes the NAT configuration on the switch.
		• **distribution** —Sets the Distribution template.
		Note The **no sdm prefer** command and a default template is not supported.
Step 4	**end**	Returns to privileged EXEC mode.
	Example:	
	Device(config)# **end**	
Step 5	**reload**	Reloads the operating system.
	Example:	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.
	Device# **reload**	

Configuring a Customizable SDM Template for FIB Features

To create a customizable SDM Template for FIB features, perform this procedure:

Procedure

	Command or Action	**Purpose**
Step 1	**enable** **Example:** Device> **enable**	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 3	**sdm prefer custom fib** **Example:** Device(config)#**sdm prefer custom fib**	Creates a customizable SDM template for FIB features. Enters a sub-mode for customizing features.
Step 4	**mac-address** *number-of-entries* **priority** *priority-value* **Example:** Device(config-sdm-fib)#**mac-address 128 priority 1**	Specifies the number of entries allotted for MAC addresses. The value ranges from 32K to 128K. The value is rounded up to the next 16K unit. The priority values range 1–7.
Step 5	**ipv4_and_ipv6 unicast** *number-of-entries* **priority** *priority-value* **Example:** Device(config-sdm-fib)#**ipv4_and_ipv6 unicast 256 priority 2**	Specifies the number of entries allotted for IPv4 and IPv6 Unicast. The value ranges from 64K to 256K.The priority values range 1–7.
Step 6	**ipv4_and_ipv6 multicast l3** *number-of-entries* **priority** *priority-value* **Example:** Device(config-sdm-fib)#**ipv4_and_ipv6 multicast l3 32 priority 3**	Specifies the number of entries allotted for layer 3 IPv4 and IPv6 Multicast. The value ranges from 16 to 32, 0 (zero) can also be entered as the value. The priority values range 1–7.
Step 7	**ipv4_and_ipv6 multicast l2** *number-of-entries* **priority** *priority-value* **Example:** Device(config-sdm-fib)#**ipv4_and_ipv6 multicast l2 32 priority 4**	Specifies the number of entries allotted for layer 2 IPv4 and IPv6 Multicast. The value ranges from 16 to 32, 0 (zero) can also be entered as the value.The priority values range 1–7.
Step 8	**netflow_out** *number-of-entries* **priority** *priority-value* **Example:** Device(config-sdm-fib)#**netflow_out 64 priority 5**	Specifies the number of entries allotted for Netflow egress. The value ranges from 32K to 64K, 0 (zero) can also be entered as the value.The priority values range 1–7.

	Command or Action	**Purpose**
Step 9	**netflow-in** *number-of-entries* **priority** *priority-value*	Specifies the number of entries allotted for Netflow ingress. The value ranges from 32K to 64K, 0 (zero) can also be entered as the value.The priority values range 1–7.
	Example:	
	Device(config-sdm-fib)# **netflow_in 64 priority 6**	
Step 10	**sgt_or_mpls_vpn** *number-of-entries* **priority** *priority-value*	Specifies the number of entries allotted for SGT or MPLS VPN. The value ranges from 32K to 64K, 0 (zero) can also be entered as the value.The priority values range 1–7.
	Example:	
	Device(config-sdm-fib)# **sgt_or_mpls_vpn 64 priority 7**	
Step 11	**end**	Returns to privileged EXEC mode.
	Example:	
	Device(config-sdm-fib)# **end**	
Step 12	**show sdm prefer custom**	Displays the custom values that will be applied to the features in the customizable SDM template.
	Example:	
	Device# **show sdm prefer custom**	
Step 13	**configure terminal**	Enters global configuration mode.
	Example:	
	Device# **configure terminal**	
Step 14	**sdm prefer custom commit**	Changes the running SDM preferences to the values in the customized template. The new template takes effect on the next reload.
	Example:	
	Device(config)# **sdm prefer custom commit**	
Step 15	**end**	Returns to privileged EXEC mode.
	Example:	
	Device(config)# **end**	
Step 16	**reload**	Reloads the device and applies the customized SDM template.
	Example:	
	Device# **reload**	

What to do next

Once you view the custom values that will be applied to the features in the customizable SDM template using the **show sdm prefer custom** command, if required you can make changes to the values. To clear all the custom values that you have assigned to the features in the customized SDM template use the **sdm prefer custom fib clear** command.

If you want to change the custom value assigned to a feature without changing its priority value, you can simply overwrite the custom value assigned to the feature. For example, if you have assigned `mac-address 128 priority 1` you can overwrite this to `mac-address 32 priority 1`. If you want to change the priority value assigned to a feature, and if that priority value is already assigned to another feature you'll have to clear the custom value assigned to the other feature by using the **no** form of the command for that feature. You can then assign the priority value to the first feature. You'll have to reconfigure the other feature for it to have a non-default value.

The current customization context is valid only until **sdm prefer custom commit** command is issued. If you want to change any value after the commit CLI is issued, it will be considered as a new customization context. You will need to re-enter all the required feature values.

Clearing the customized values of the SDM Template

To clear the custom values that have been assigned to the features in the customized SDM template use the **sdm prefer custom fib clear** command.

This command will clear the customization configuration that is not committed yet.

Once you issue this command, all the custom values for the features have to be reconfigured.

Monitoring and Maintaining SDM Templates

Verifying SDM Templates

Use the following commands to monitor and maintain SDM templates.

Command	Purpose
show sdm prefer	Displays the SDM template in use.
reload	Reloads the switch to activate the newly configured SDM template.

Note
The SDM templates contain only those commands that are defined as part of the templates. If a template enables another related command that is not defined in the template, then this other command will be visible when the **show running config** command is entered. For example, if the SDM template enables the **switchport voice vlan** command, then the **spanning-tree portfast edge** command may also be enabled (although it is not defined on the SDM template).

If the SDM template is removed, then other such related commands are also removed and have to be reconfigured explicitly.

Verifying Customizable SDM Templates

Use the following commands to verify the customizable SDM Template that will be applied.

Table 2: Commands to verify the customizable SDM template

Command	Description
show sdm prefer custom	Displays the custom values that will be applied to the features in the customizable SDM template.
show sdm prefer custom user-input	Displays the values that were entered by the user in the customizable SDM template.
show sdm prefer	Displays the customized SDM template that is currently active.

If any feature in the Customizable SDM template has been assigned a scale value of zero, the feature will not be listed in the output of the **show sdm prefer custom** command after the device is reloaded.

Configuration Examples for SDM Templates

Examples: Displaying SDM Templates

The following example output shows the core template information:

```
Device# show sdm prefer core
This is the Core template.
  Security Ingress IPv4 Access Control Entries*:      7168  (current) - 7168  (proposed)
  Security Ingress Non-IPv4 Access Control Entries*:  5120  (current) - 5120  (proposed)
  Security Egress IPv4 Access Control Entries*:       7168  (current) - 7168  (proposed)
  Security Egress Non-IPv4 Access Control Entries*:   8192  (current) - 8192  (proposed)
  QoS Ingress IPv4 Access Control Entries*:           4096  (current) - 4096  (proposed)
  QoS Ingress Non-IPv4 Access Control Entries*:       4096  (current) - 4096  (proposed)
  QoS Egress IPv4 Access Control Entries*:            4096  (current) - 4096  (proposed)
  QoS Egress Non-IPv4 Access Control Entries*:        4096  (current) - 4096  (proposed)
  Netflow Input Access Control Entries*:               512  (current) -  512  (proposed)
  Netflow Output Access Control Entries*:              512  (current) -  512  (proposed)
  Flow SPAN Input Access Control Entries*:             512  (current) -  512  (proposed)
  Flow SPAN Output Access Control Entries*:            512  (current) -  512  (proposed)
  Number of VLANs:                                    4094
  Unicast MAC addresses:                              32768
  Overflow Unicast MAC addresses:                     768
  Overflow L2 Multicast entries:                      2304
  L3 Multicast entries:                               32768
  Overflow L3 Multicast entries:                      768
  Ipv4/Ipv6 shared unicast routes:                    212992
  Overflow shared unicast routes:                     1536
  Policy Based Routing ACEs / NAT ACEs:               3072
  Tunnels:                                            2816
  LISP Instance Mapping Entries:                      2048
  Control Plane Entries:                               512
  Input Netflow flows:                                32768
  Output Netflow flows:                               32768
  SGT/DGT (or) MPLS VPN entries:                      32768
  SGT/DGT (or) MPLS VPN Overflow entries:             768
  Wired clients:                                      2048
```

```
    MACSec SPD Entries:                                 256
    MPLS L3 VPN VRF:                                    1024
    MPLS Labels:                                        45056
    MPLS L3 VPN Routes VRF Mode:                        209920
    MPLS L3 VPN Routes Prefix Mode:                     32768
    MVPN MDT Tunnels:                                   1024
    L2 VPN EOMPLS Attachment Circuit:                   1024
    MAX VPLS Bridge Domains :                           1000
    MAX VPLS Peers Per Bridge Domain:                   128
    MAX VPLS/VPWS Pseudowires :                         16384
Ipv4/Ipv6 Direct and Indirect unicast routes share same space
* values can be modified by sdm cl
```

The following example output shows the NAT template information:

```
Device# show sdm prefer nat
This is the NAT template.
  Security Ingress IPv4 Access Control Entries*:      7168  (current) - 7168  (proposed)
  Security Ingress Non-IPv4 Access Control Entries*:  5120  (current) - 5120  (proposed)
  Security Egress IPv4 Access Control Entries*:       3072  (current) - 3072  (proposed)
  Security Egress Non-IPv4 Access Control Entries*:   5120  (current) - 5120  (proposed)
  QoS Ingress IPv4 Access Control Entries*:           2560  (current) - 2560  (proposed)
  QoS Ingress Non-IPv4 Access Control Entries*:       1536  (current) - 1536  (proposed)
  QoS Egress IPv4 Access Control Entries*:            3072  (current) - 3072  (proposed)
  QoS Egress Non-IPv4 Access Control Entries*:        1024  (current) - 1024  (proposed)
  Netflow Input Access Control Entries*:              1024  (current) - 1024  (proposed)
  Netflow Output Access Control Entries*:             1024  (current) - 1024  (proposed)
  Flow SPAN Input Access Control Entries*:            512   (current) - 512   (proposed)
  Flow SPAN Output Access Control Entries*:           512   (current) - 512   (proposed)
  Number of VLANs:                                    4094
  Unicast MAC addresses:                              32768
  Overflow Unicast MAC addresses:                     768
  Overflow L2 Multicast entries:                      2304
  L3 Multicast entries:                               32768
  Overflow L3 Multicast entries:                      768
  Ipv4/Ipv6 shared unicast routes:                    212992
  Overflow shared unicast routes:                     1536
  Policy Based Routing ACEs / NAT ACEs:               15872
  Tunnels:                                            1792
  LISP Instance Mapping Entries:                      1024
  Control Plane Entries:                              1024
  Input Netflow flows:                                32768
  Output Netflow flows:                               32768
  SGT/DGT (or) MPLS VPN entries:                      32768
  SGT/DGT (or) MPLS VPN Overflow entries:             768
  Wired clients:                                      2048
  MACSec SPD Entries:                                 256
  MPLS L3 VPN VRF:                                    1024
  MPLS Labels:                                        45056
  MPLS L3 VPN Routes VRF Mode:                        209920
  MPLS L3 VPN Routes Prefix Mode:                     32768
  MVPN MDT Tunnels:                                   1024
  L2 VPN EOMPLS Attachment Circuit:                   1024
  MAX VPLS Bridge Domains :                           1000
  MAX VPLS Peers Per Bridge Domain:                   128
  MAX VPLS/VPWS Pseudowires :                         16384
Ipv4/Ipv6 Direct and Indirect unicast routes share same space
* values can be modified by sdm cli
```

The following example output shows the distribution template information:

```
Device# show sdm prefer distribution
This is the Distribution template.
  Security Ingress IPv4 Access Control Entries*:      7168  (current) - 7168  (proposed)
  Security Ingress Non-IPv4 Access Control Entries*:  5120  (current) - 5120  (proposed)
```

```
        Security Egress IPv4 Access Control Entries*:         7168   (current) - 7168   (proposed)
        Security Egress Non-IPv4 Access Control Entries*:     8192   (current) - 8192   (proposed)
        QoS Ingress IPv4 Access Control Entries*:             5632   (current) - 5632   (proposed)
        QoS Ingress Non-IPv4 Access Control Entries*:         2560   (current) - 2560   (proposed)
        QoS Egress IPv4 Access Control Entries*:              6144   (current) - 6144   (proposed)
        QoS Egress Non-IPv4 Access Control Entries*:          2048   (current) - 2048   (proposed)
        Netflow Input Access Control Entries*:                1024   (current) - 1024   (proposed)
        Netflow Output Access Control Entries*:               1024   (current) - 1024   (proposed)
        Flow SPAN Input Access Control Entries*:              512    (current) - 512    (proposed)
        Flow SPAN Output Access Control Entries*:             512    (current) - 512    (proposed)
        Number of VLANs:                                      4094
        Unicast MAC addresses:                                81920
        Overflow Unicast MAC addresses:                       768
        Overflow L2 Multicast entries:                        2304
        L3 Multicast entries:                                 16384
        Overflow L3 Multicast entries:                        768
        Ipv4/Ipv6 shared unicast routes:                      114688
        Overflow shared unicast routes:                       1536
        Policy Based Routing ACEs / NAT ACEs:                 3072
        Tunnels:                                              2816
        LISP Instance Mapping Entries:                        1024
        Control Plane Entries:                                1024
        Input Netflow flows:                                  49152
        Output Netflow flows:                                 49152
        SGT/DGT (or) MPLS VPN entries:                        32768
        SGT/DGT (or) MPLS VPN Overflow entries:               768
        Wired clients:                                        2048
        MACSec SPD Entries:                                   256
        MPLS L3 VPN VRF:                                      1024
        MPLS Labels:                                          45056
        MPLS L3 VPN Routes VRF Mode:                          112640
        MPLS L3 VPN Routes Prefix Mode:                       32768
        MVPN MDT Tunnels:                                     1024
        L2 VPN EOMPLS Attachment Circuit:                     1024
        MAX VPLS Bridge Domains :                             1000
        MAX VPLS Peers Per Bridge Domain:                     128
        MAX VPLS/VPWS Pseudowires :                           16384
Ipv4/Ipv6 Direct and Indirect unicast routes share same space
* values can be modified by sdm cli
```

Examples: Configuring SDM Templates

```
Device(config)# sdm prefer distribution
Device(config)# exit
Device# reload
  Proceed with reload? [confirm]
```

Example: Configuring a customized SDM template

The following example output shows how to configure a customized SDM template. In this example, as the SG Hash/MPLS and Ingress Netflow features haven't been assigned any resources in the customized template they are allotted resources according to their default values.

```
Device(config)# sdm prefer custom fib
Device(config-sdm-fib)# mac-address 128 priority 1
Device(config-sdm-fib)# ipv4_and_ipv6 unicast 256 priority 2
Device(config-sdm-fib)# ipv4_and_ipv6 multicast l3 32 priority 3
```

```
Device(config-sdm-fib)# ipv4_and_ipv6 multicast l2 32 priority 4
Device(config-sdm-fib)# netflow_out 64 priority 5
Device(config-sdm-fib)# end
```

In the following examples as the SGT/ MPLS VPN features are assigned zero resources, no resources will be allotted to these features.

```
Device(config)# sdm prefer custom fib
Device(config-sdm-fib)# ipv4_and_ipv6 unicast 164 priority 1
Device(config-sdm-fib)# mac-address 80 priority 2
Device(config-sdm-fib)# ipv4_and_ipv6 multicast l2 16 priority 4
Device(config-sdm-fib)# ipv4_and_ipv6 multicast l3 16 priority 3
Device(config-sdm-fib)# sgt_or_mpls_vpn 0
Device(config-sdm-fib)# netflow_in 32 priority 5
Device(config-sdm-fib)# netflow_out 32 priority 6
Device(config-sdm-fib)# end
```

Example: Displaying the customized SDM template

The following example output shows the proposed values in the customized SDM template:

```
Device# show sdm prefer custom
Showing SDM Template Info

This is the Custom template
<SNIP>
Unicast MAC addresses*:                        32768  (current) - 131072 (proposed)
Overflow Unicast MAC addresses*:               768    (current) - 1536   (proposed)
L2 Multicast entries*:                          0     (current) - 16384  (proposed)
Overflow L2 Multicast entries*:                2304   (current) - 768    (proposed)
L3 Multicast entries*:                         32768  (current) - 16384  (proposed)
Overflow L3 Multicast entries*:                768    (current) - 768    (proposed)
Ipv4/Ipv6 shared unicast routes*:              212992 (current) - 180224 (proposed)
Overflow shared unicast routes*:               1536   (current) - 2304   (proposed)
<SNIP>
Input Netflow flows*:                          32768  (current) - 32768  (proposed)
Output Netflowflows:                           32768  (current) - 0      (proposed)
SGT/DGT (or) MPLS VPN entries*:                32768  (current) - 32768  (proposed)
SGT/DGT (or) MPLS VPN Overflow entries*:       768    (current) - 768    (proposed)
<SNIP>
MPLS L3 VPN Routes VRF Mode*:                  114688 (current) - 180224 (proposed)
MPLS L3 VPN Routes Prefix Mode*:                32768 (current) - 32768  (proposed)
<SNIP>
```

The following example output shows the values and priorities specified by the user in the custom template. As the SG Hash/MPLS and Ingress Netflow features haven't been assigned any resources in the customized template, they will be allotted resources according to their default values.

```
Device# show sdm prefer custom user-input
User Input values
========================

  FEATURE NAME                                    PRIORITY    SCALE
  ----------------------------------------------------------------------
  Unicast MAC addresses:                          1           128*1024
  L2 Multicast entries:                           4           32*1024
  L3 Multicast entries:                           3           32*1024
  Ipv4/Ipv6 shared unicast routes:                2           256*1024
  Output Netflow flows:                           5           64*1024
```

```
System Default values
==========================

  FEATURE NAME                                          PRIORITY   SCALE
  ----------------------------------------------------------------------
  Input Netflow flows:                                  NA         32768
  SGT/DGT (or) MPLS VPN entries:                        NA         32768
```

The following example output shows the proposed values in the customized SDM template. As the SGT/ MPLS VPN features are assigned zero resources, no resources will be allotted to these features.

```
Device#show sdm prefer custom
Showing SDM Template Info

This is the Custom template
<SNIP>
  Unicast MAC addresses*:                      32768  (current) - 81920  (proposed)
  Overflow Unicast MAC addresses*:             768    (current) - 1536   (proposed)
  L2 Multicast entries*:                       0      (current) - 16384  (proposed)
  Overflow L2 Multicast entries*:              2304   (current) - 768    (proposed)
  L3 Multicast entries*:                       32768  (current) - 16384  (proposed)
  Overflow L3 Multicast entries*:              768    (current) - 768    (proposed)
  Ipv4/Ipv6 shared unicast routes*:            212992 (current) - 180224 (proposed)
  Overflow shared unicast routes*:             1536   (current) - 2304   (proposed)
<SNIP>
  Input Netflow flows*:                        32768  (current) - 32768  (proposed)
  Output Netflow flows*:                       32768  (current) - 32768  (proposed)
  SGT/DGT (or) MPLS VPN entries*:              32768  (current) - 0      (proposed)
  SGT/DGT (or) MPLS VPN Overflow entries*:     768    (current) - 768    (proposed)
<SNIP>
  MPLS L3 VPN Routes VRF Mode*:                209920 (current) - 180224 (proposed)
  MPLS L3 VPN Routes Prefix Mode*:             32768  (current) - 0      (proposed)
```

The following example output shows the values and priorities specified by the user in the custom template. No resources have been alloted to SGT/MPLS VPN features.

```
Device#show sdm prefer custom user-input
User Input values
==========================

  FEATURE NAME                                          PRIORITY    SCALE
  ------------------------------------------------------------------------
Unicast MAC addresses:                                  2           80*1024
L2 Multicast entries:                                   4           16*1024
L3 Multicast entries:                                   3           16*1024
Ipv4/Ipv6 shared unicast routes:                        1           164*1024
Input Netflow flows:                                    5           32*1024
Output Netflow flows:                                   6           32*1024
SGT/DGT (or) MPLS VPN entries:                          NA          0
```

Example: Applying the customized SDM template

The following example output shows how to apply a customized SDM template:

```
Device(config)# sdm prefer custom commit
Changes to the running SDM preferences have been stored and will take effect on the next
reload.
Device(config)# exit
Device# reload
```

Example: Clearing the customized values of the SDM template

The following example output shows how to clear a customized SDM template after which the template can be recustomized:

```
Device(config)# sdm prefer custom fib clear
FIB customization changes, not yet committed will be cleared
Device(config-sdm-fib)# end
```

Additional References for SDM Templates

Related Documents

Related Topic	Document Title
For complete syntax and usage information for the commands used in this chapter.	*Command Reference (Catalyst 9600 Series Switches)*

Feature History for SDM Templates

This table provides release and related information for features explained in this module.

These features are available on all releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Gibraltar 16.11.1	SDM Template	Standard SDM templates can be used to configure system resources to optimize support for specific features.
Cisco IOS XE Amsterdam 17.3.1	Customizable SDM Template for FIB Features	Support for customizable SDM templates for FIB features was introduced. Customizable SDM templates can be used to configure the features of the template as per the user's requirements.

Use Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn.