# Filtering Flows

This chapter contains the following sections:

# Cisco Monitor Manager Networks

A Cisco Monitor Manager network consists of one or more Cisco Nexus 3000 Series switches with Cisco Agent for OpenFlow dedicated for connecting multiple spanned ports and network taps from the production network infrastructure. Cisco XNC programs the switches using the OpenFlow protocol. Cisco Monitor Manager filters the packets that travel the network and delivers them to a pool of connected monitoring devices.

# Cisco Monitor Manager Forwarding Path Options

Cisco Monitor Manager supports the following forwarding path options:

### Point-to-Multipoint

With the Point-to-Multipoint (P2MP) forwarding path option, both the ingress edge port where SPAN or TAP traffic is coming in to the monitor network and the egress delivery ports are defined. Cisco Monitor Manager uses the delivery ports to direct traffic from that ingress port to one or more devices.

### Any-to-Multipoint

With the Any-to-Multipoint (A2MP) forwarding path option, the ingress edge port of the monitor network is not known, but the egress delivery ports are defined. Cisco Monitor Manager automatically calculates a loop-free forwarding path from the root node to all other nodes using the Single Source Shortest Path (SSSP) algorithm.

# Cisco Monitor Manager Filters and Rules

### Filters

You can use a filter to define the Layer 2 (L2), Layer 3 (L3), and Layer 4 (L4) criteria used by Cisco Monitor Manager to filter traffic. Traffic that matches the criteria in the filter is routed to the delivery ports and from there to the attached monitor devices.

Each filter has a priority that can be configured. Flows with a higher priority are given precedence over flows with a lower priority.

### Rules

You can use rules to associate filters to configured monitor devices. You can configure rules with or without a source. Rules with a source node and port use the Point-to-Multipoint forwarding path option. Rules without a source port on a node use the loop-free Any-to-Multipoint forwarding path option.

# Adding a Filter

**Step 1**   In the **Configure Filters** tab, click **Add Filter**.

**Step 2**   In the **Filter Description** section of the **Add Filter** dialog box, complete the following fields:

| Name | Description |
| --- | --- |
| **Name** field | The name of the filter. |
| | This name can be between 1 and 100 alphanumeric characters. You cannot use spaces or any special characters, and you cannot change this name after the object has been saved. |
| **Priority** field | The priority that you want to apply to the filter. The default priority is 500. Flows with a higher priority are given precedence over flows with a lower priority. |
| | **Note**     The priority is considered only when all of the Layer 2, Layer 3, and Layer 4 match fields are equal. |

**Step 3**   In the **Layer 2** section of the **Add Filter** dialog box, complete the following fields:

| Name | Description |
|------|-------------|
| **Ethernet Type** field | Required. The Ethernet type of the Layer 2 traffic. The default value is IPv4. |
| **VLAN Identification Number** field | The VLAN ID for the Layer 2 traffic. |
| **VLAN Priority** field | The VLAN priority for the Layer 2 traffic. |
| **Source MAC Address** field | The source MAC address of the Layer 2 traffic. |
| **Destination MAC Address** field | The destination MAC address of the Layer 2 traffic. |

**Step 4**  In the **Layer 3** section of the **Add Filter** dialog box, complete the following fields:

| Name | Description |
|------|-------------|
| **Source IP Address** field | The source IP address of the Layer 3 traffic. This can be one of the following:<br><br>• The host IP address, for example, 10.10.10.10<br><br>• The IP subnet, for example, 10.10.10.0/24 |
| **Destination IP Address** field | The destination IP address of the Layer 3 traffic. This can be one of the following:<br><br>• The host IP address. For example, 10.10.10.10.<br><br>• The IP subnet. For example, 10.10.10.0/24. |
| **Protocol** field | The Internet protocol of the Layer 3 traffic. This can be one of the following:<br><br>• **ICMP**<br><br>• **TCP**<br><br>• **UDP**<br><br>• **Enter Protocol**<br><br>   If you choose Enter Protocol as the type, enter the IP protocol number in decimal, hex, or octal format. |
| **ToS Bits** field | The Type of Service (ToS) bits in the IP header of the Layer 3 traffic. Only the Differentiated Services Code Point (DSCP) values are used. |

**Step 5**  In the **Layer 4** section of the **Add Filter** dialog box, complete the following fields:

| Name | Description |
|------|-------------|
| **Source Port** field | The source port of the Layer 4 traffic. |
| **Destination Port** field | The destination port of the Layer 4 traffic. |

**Step 6**     In the **Actions** section of the **Add Filter** dialog box, complete the following fields:

| Name | Description |
|------|-------------|
| **Set VLAN** field | The VLAN ID for the filter. |

**Step 7**     Click **Add Filter**.

# Viewing Filter Properties

The filter name and priority are displayed in the **Filters** table on the **Configure Filters** tab. All other properties are displayed in the **Filter Description** dialog box.

**Step 1**     On the **Configure Filters** tab, click the filter whose properties you want to view.

**Step 2**     Click **Close** to close the **Filter Description** dialog box.

# Deleting a Filter

You can delete filters that are not assigned to a rule.

**Step 1**     On the **Configure Filters** tab, click the filter that you want to delete.

**Step 2**     On the **Filter Description** dialog box, click **Remove Filter**.

# Adding a Rule

### Before You Begin

- Configure a monitoring device.

- Add a filter to be assigned to the rule.

**Step 1**    On the **Apply Filters** tab, click **Add Rule**.

**Step 2**    In the **Add Rule** dialog box, complete the following fields:

| Field | Description |
|---|---|
| **Rule Name** field | The name of the rule.<br><br>This name can be between 1 and 100 alphanumeric characters. You cannot use spaces or any special characters, and you cannot change this name after the object has been saved. |
| **Select Filter** drop-down list | Choose the filter that you want to assign to the rule. |
| **Select Destination Devices** field | The devices that you want to associate with the filter. You can choose one or more devices. |
| **Select Source Node** drop-down list | Choose the source node that you want to assign.<br><br>**Note**   If you do not choose a source node, the Any-to-Multipoint loop-free forwarding path option is used, and traffic from all nondelivery ports is evaluated against the filter. |
| **Select Source Port** drop-down list | Choose the port on the source node that you want to assign.<br><br>**Note**   Only edge ports can be used as source ports. |

**Step 3**    Click **Add Rule**.

# Viewing and Modifying Rules

After you have created a rule, you can modify the devices associated with the rule or delete the rule.

**Step 1**    Navigate to the **Apply Filters** tab.

**Step 2**    The **Rules** table displays the following information for each rule:

| Field | Description |
|---|---|
| **Rule Name** field | The name that you assigned to the rule. |
| **Filter Name** field | The filter that you assigned to the rule. |
| **Port Name** field | The source port that you assigned to the rule, if any. |
| **Switch Name** field | The source node that you assigned to the rule, if any. |
| **Devices** field | The monitor devices that are associated with the filter. |
| **Created by** field | The name and role of the user who created the rule. |

**Step 3**    Click a rule to view the forwarding path for that rule in the topology diagram.
The path is highlighted in red.

**Step 4**    Click a filter to modify the rule.

**Step 5**    In the **Modify Rule** dialog box, perform one of the following tasks:

- Add or remove devices and click **Submit**.

- Click **Remove Rule** to delete the rule.

- Click **Close** to close the dialog box without making any changes.

# Deleting a Rule

**Step 1**    Navigate to the **Apply Filters** tab.

**Step 2**    Click the radio button for the rule that you want to delete.

**Step 3**    Click **Remove Rule(s)**.