



## Managing Flows

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### About Flow Programming

With Cisco Extensible Network Controller (XNC), you can configure individual flows in each network device. Flows are identified based on Layer 1 through Layer 4 criteria. After the flow is identified, you can specify the actions to be performed on the packets that match the flow specification. The criteria for matching and actions varies depending upon the switch. Possible actions are as follows:

- Dropping or forwarding the packet to one or more interfaces.
- Setting the VLAN ID and priority of the packets.
- Modifying the source and destination MAC addresses of the packets.
- Modifying the source and destination IP addresses of the packets.

All flows that you create are listed in the **Flow Entries** table on the **Flows** tab. Flows become active when you install them in the device.

### Adding a Flow Entry

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- Step 1** On the menu bar, choose **Flows**, and then click the **Flow Entries** tab.
- Step 2** Click **Add Flow Entry**.
- Step 3** In the **Flow Description** area of the **Add Flow Entry** dialog box, complete the following fields:

Name	Description
<b>Name</b> field	The name that you want to assign to the flow. The name can contain between 1 and 256 alphanumeric characters including the following special characters: underscore ("_"), hyphen ("-"), plus ("+"), equals ("="), open parenthesis ("("), closed parenthesis (")"), vertical bar (" "), period ("."), or at sign ("@").
<b>Node</b> drop-down list	Choose the ID or node name for the device.
<b>Input Port</b> drop-down list	Choose the port on the node where traffic enters the flow.
<b>Priority</b> field	The priority that you want to apply to the flow. The default priority is 500. Flows with a higher priority are given precedence over flows with a lower priority. <b>Note</b> The priority is considered only when all of the Layer 2, Layer 3, and Layer 4 match fields are equal.
<b>Hard Timeout</b> field	The amount of time in milliseconds for the flow to be installed before it is removed from the flow table.
<b>Idle Timeout</b> field	The amount of time in milliseconds that the flow can be idle before it is removed from the flow table.
<b>Cookie</b> field	An identifier added to the flow. Cookies are specified by the controller when the flow is installed and are returned as part of each flow status and flow expired message.

**Step 4**

In the **Layer 2** area, complete the following fields:

Name	Description
<b>Ethernet Type</b> field	The Ethernet type for the Layer 2 traffic. The Ethernet type for IPv4, in hexadecimal format, is displayed by default. Either accept the default value, or enter one of the following, in hexadecimal format: <ul style="list-style-type: none"> <li>• <b>IPv6</b></li> <li>• <b>ARP</b></li> <li>• <b>LLDP</b></li> </ul>
<b>VLAN Identification Number</b> field	The VLAN ID for the Layer 2 traffic.
<b>VLAN Priority</b> field	The VLAN priority for the Layer 2 traffic.
<b>Source MAC Address</b> field	The source MAC address for the Layer 2 traffic.
<b>Destination MAC Address</b> field	The destination MAC address for the Layer 2 traffic.

**Step 5** In the **Layer 3** area, complete the following fields:

Name	Description
Source IP Address field	The source IP address of the Layer 3 traffic. <b>Note</b> The format of the source IP address must match the Ethernet type that you entered in the <b>Ethernet Type</b> field for Layer 2.
Destination IP Address field	The destination IP address of the Layer 3 traffic. <b>Note</b> The format of the destination IP address must match the Ethernet type that you entered in the <b>Ethernet Type</b> field for Layer 2.
ToS Bits field	The Type of Service (ToS) bits in the IP header of the Layer 3 traffic. <b>Note</b> Only the DSCP bits are supported on Cisco Nexus 3000 Series switches.

**Step 6** In the **Layer 4** area, 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.
Protocol field	The Internet protocol number of the Layer 4 traffic. Enter the IP protocol number in decimal, hexadecimal, or octal format.

**Step 7** In the **Actions** area, select one or more actions:

- Drop
- Loopback
- Flood
- Software Path
- Hardware Path
- Controller
- Add Output Ports
- Set VLAN ID
- Set VLAN Priority
- Strip VLAN Header
- Modify Datalayer Source Address
- Modify Datalayer Destination Address

- **Modify Network Source Address**
- **Modify Network Destination Address**
- **Modify ToS Bits**
- **Modify Transport Source Port**
- **Modify Transport Destination Port**
- **Flood All**
- **Enqueue**
- **Set VLAN CFI**
- **Push VLAN**
- **Set EtherType**

**Step 8** Click **Install Flow** to install the flow into the device.

**Step 9** Click **Save Flow** to save the flow to the **Flow Entries** table but not to install the flow in the flow table of the device.

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## Viewing Flow Details

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**Step 1** On the menu bar, choose **Flows**, and then click the **Flow Entries** tab.

**Step 2** Locate the flow that you want to view.  
Enter a value in the **Search** combo box and click the search icon to limit the number of entries that appear.

**Step 3** In the **Flow Overview** area of the **Flow Detail** tab, perform one of the following tasks:

- Click **Remove Flow** to remove the flow from the **Flow Entries** table.
  - Click **Edit Flow** to edit the flow in the flow table of the device.
  - Click **Uninstall Flow** to remove the flow from the flow table of the device.
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