



# MLDP Filtering

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The MDLP Filtering feature adds filtering capabilities to the Cisco Multicast Label Distribution Protocol (MLDP) label-based Multicast Virtual Private Network (MVPN) solution.

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## Finding Feature Information

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# Prerequisites for MLDP Filtering

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- MDT must be configured.
- MLDP-based MVPN must be configured.

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## Information about MLDP Filtering

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## MLDP Filtering

MLDP Filtering prevents multicast traffic that is distributed to different sites via MVPNs from traveling on sections of the network by providing the following capabilities:

- Prevent MLDP traffic from traversing interconnections
- Map flows to MLDP data Multicast Distribution Tree (MDT) numbers
- Filter label mappings based on a particular range of MLDP tree numbers per VRF

The filtering feature uses FEC (Forward Equivalence Class) definitions to filter specified FECs on a per-peer basis. The list of peers for which a FEC is to be filtered is defined in an access control list (ACL). FEC-based filtering per peer is supported only for outbound filtering. If an MLDP stream is denied by the filter, then the router will not advertise label mappings to the filtered peer.

MLDP Filtering also enables you to filter label mappings based on a particular range of MLDP tree numbers per VRF. If a source and group (S,G) MVPN entry matches more than one data MDT configuration, all data MDT configurations are examined and the first configuration that contains an ACL that matches the (S,G) is picked. If none of the ACLs match the (S,G), then the tree number with the lowest ref\_count among all the remaining no-ACL data MDT configurations is selected. If an (S,G) flow in the vrf is on a data MDT without an ACL and a new data MDT configuration with a matching ACL is configured, the (S,G) flow will not switch to the newly configured scope. The (S,G) flows which are already on the data MDT will switch only if the vrf mroutes are cleared.

Traffic can flow on the default MDT or it can be switched immediately to the data MDT after the (S,G) state is created on the ingress Provider Edge (PE) router. Immediate switch works for source specific-multicast (SSM) groups in the VRF only if the MDT data threshold is 0. As long as the (S,G) SSM state exists on the ingress PE router, traffic will stay on the data MDT.

## MLDP Disable on an Interface

Multicast Label Distribution Protocol (MLDP) is automatically enabled on all interfaces on which Multiprotocol Label Switching (MPLS) dynamic label switching is enabled. Disabling MLDP on an interface prevents that interface from being used in path selection even if it is advertised as a path by route watch. If the only path returned by route watch is one on which MLDP is disabled, then the route to that peer or root is considered unreachable. If a router receives a label mapping on a particular interface on which MLDP is disabled, the router installs the label mapping and builds a tree upstream.

If there are two links to a given peer and one of them is MLDP-disabled, it is possible that the MPLS Forwarding Infrastructure (MFI) will use the disabled link for forwarding if recursive forwarding is configured. To ensure that the MLDP-disabled interface is not used by MFI, you must disable recursive forwarding.

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## How to Configure MLDP Filtering

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- [Disabling MLDP on an Interface, page 6](#)
- [Filtering MLDP Traffic, page 7](#)
- [Mapping S and G Flows to MDT Trees, page 8](#)
- [Verfiying MLDP Filtering, page 9](#)

### Disabling MLDP on an Interface

MLDP is enabled by default on all MPLS-enabled interfaces. Perform this task to disable MDLP on the specified interface. We recommend that you disable MLDP on both sides of a link.

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface *type number***
4. **no mpls mldp**
5. **end**

#### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>

Command or Action	Purpose
<b>Step 2</b> <code>configure terminal</code>  <b>Example:</b> <code>Router# configure terminal</code>	Enters global configuration mode.
<b>Step 3</b> <code>interface type number</code>  <b>Example:</b> <code>Router(config)# interface gigabitethernet 1/1</code>	Enters interface configuration mode for configuring an interface.
<b>Step 4</b> <code>no mpls mldp</code>  <b>Example:</b> <code>Router(config-if)# no mpls mldp</code>	Disables MLDP on the interface being configured.
<b>Step 5</b> <code>end</code>  <b>Example:</b> <code>Router(config-if)# end</code>	Returns to privileged EXEC mode.

## Filtering MLDP Traffic

### SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `mpls mldp fec fec_id opaque-type mdt vpn-id {vpn_id | any} scope {scope_id | any}`
4. `mpls mldp filter fec_id peer-list acl`
5. `exit`

### DETAILED STEPS

Command or Action	Purpose
<b>Step 1</b> <code>enable</code>  <b>Example:</b> <code>Router&gt; enable</code>	Enters privilege EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>

Command or Action	Purpose
<b>Step 2</b> <code>configure terminal</code>  <b>Example:</b> <pre>Router# configure terminal</pre>	Enters global configuration mode.
<b>Step 3</b> <code>mpls mldp fec fec_id opaque-type mdt vpn-id {vpn_id   any} scope {scope_id   any}</code>  <b>Example:</b> <pre>Router(config-term)# mpls mldp fec 1 opaque-type mdt vpn-id any scope any</pre>	Defines an MLDP FEC. Repeat this step for each FEC to be defined.
<b>Step 4</b> <code>mpls mldp filter fec_id peer-list acl</code>  <b>Example:</b> <pre>Router(config-term)# mpls mldp filter 1 peer-list 50</pre>	Filters out all MLDP trees that match the specified FEC definition to the peers in the specified peer-list standard ACL.
<b>Step 5</b> <code>exit</code>  <b>Example:</b> <pre>Router(config-term)# exit</pre>	Exits to privileged EXEC mode.

## Mapping S and G Flows to MDT Trees

Extended access list (ACL) of range of (S,G) entries in VRF to be filtered must be configured.

### SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `vrf definition vrf`
4. `mdt data mpls mldp num_tree [list acl] [scope scope_id] [immediate-switch]`
5. `end`



## DETAILED STEPS

Command or Action	Purpose
<b>Step 1</b> <code>enable</code>  <b>Example:</b> <pre>PE&gt; enable</pre>	Enters privilege EXEC mode. <ul style="list-style-type: none"> <li>Enter your password if prompted.</li> </ul>
<b>Step 2</b> <code>configure terminal</code>  <b>Example:</b> <pre>PE# configure terminal</pre>	Enters global configuration mode.
<b>Step 3</b> <code>vrf definition vrf</code>  <b>Example:</b> <pre>PE(config-term)# vrf definition blue</pre>	Configures a VRF address family and enters VRF address family configuration mode.  <b>Note</b> You can use the <code>ip vrf</code> command to configure a VRF instance and enter VRF configuration mode.
<b>Step 4</b> <code>mdt data mpls mldp num_tree [list acl] [scope scope_id] [immediate-switch]</code>  <b>Example:</b> <pre>PE(config-vrf-af)# mdt data mpls mldp 100 peer-list 100 scope 1 immediate-switch</pre>	Configures MLDP data MDTs. Repeat this step for each data MDT to be configured.
<b>Step 5</b> <code>end</code>  <b>Example:</b> <pre>PE(config-vrf-af)# end</pre>	Returns to privileged EXEC mode.

## Verifying MLDP Filtering

## SUMMARY STEPS

1. `enable`
2. `show mpls mldp interface`
3. `show mpls mldp neighbors`
4. `show mpls mldp filter [fec-id]`
5. `show mpls mldp database`

## DETAILED STEPS

Command or Action	Purpose
<b>Step 1</b> <code>enable</code>  <b>Example:</b> <code>Router&gt; enable</code>	Enters privilege EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b> <code>show mpls mldp interface</code>  <b>Example:</b> <code>Router# show mpls mldp interface</code>	Displays whether MPLS and MLDP are enabled on the interfaces.
<b>Step 3</b> <code>show mpls mldp neighbors</code>  <b>Example:</b> <code>Router# show mpls mldp neighbors</code>	Displays the parameters by which a peer is filtered.
<b>Step 4</b> <code>show mpls mldp filter [fec-id]</code>  <b>Example:</b> <code>Router# show mpls mldp filter</code>	Displays information about filters and the peers associated with the filters.
<b>Step 5</b> <code>show mpls mldp database</code>  <b>Example:</b> <code>Router# show mpls mldp database</code>	Displays the MLDP paths label information for each MDT.

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## Configuration Examples for MLDP Filtering

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- [Example: MLDP Filtering, page 11](#)
- [Example: S and G Mappings to Data MDT Tree Numbers, page 12](#)

### Example: MLDP Filtering

The following example configuration shows the following:

- Peer P4 will be denied for all FECs (matches FEC 1).
- For FECs having VPN id 1:1 and any scope, peers P4 (matches FEC 1) and P2 (matches FEC 2) will be denied. Additionally peer P3 will be denied if FEC VPN id is 1:1 and scope 2 (matches FEC 4).
- For FECs having VPN id 2:2 and scope 1, peers P4 (matches FEC 1) and P2 (matches FEC 3) will be denied. Additionally peer P3 will be denied if FEC VPN id is 2:2 and scope 2 (matches FEC 4).
- For FECs having any VPN id and scope 2, peers P4 (matches FEC 1) and P3 (matches FEC 4) will be denied.
- Peer P4 will be denied for FEC with VPN id 3:3 and scope 3.

```
access-list 50 deny 4.4.4.4
access-list 50 permit any
access-list 51 deny 2.2.2.2
access-list 51 permit any
access-list 52 deny 3.3.3.3
access-list 52 permit any
.
.
.
mpls mldp fec 1 opaque-type mdt vpn-id any scope any
mpls mldp fec 2 opaque-type mdt vpn-id 1:1 scope any
mpls mldp fec 3 opaque-type mdt vpn-id 2:2 scope 1
mpls mldp fec 4 opaque-type mdt vpn-id all scope 2

mpls mldp filter 1 peer-list 50
mpls mldp filter 2 peer-list 51
mpls mldp filter 3 peer-list 51
mpls mldp filter 4 peer-list 52
```



## Example: S and G Mappings to Data MDT Tree Numbers

This example shows the (S,G) mappings on the ingress PE for a given VRF (blue). Group range 232.1.1.0/24 is confined withing local scope 1 with traffic switching immediately to the data MDT. Group range 232.1.2.0/24 is confined to regional scope 2.

```
access-list 100 permit ip any 232.1.1.0 0.0.0.255
access-list 101 permit ip any 232.1.2.0 0.0.0.255

ip vrf blue
mdt data mpls mldp 100 list 100 scope 1 immediate-switch
mdt data mpls mldp 200 list 101 scope 2 immediate-switch
```

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## Additional References

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### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>
IP Multicast commands	<a href="#">Cisco IOS IP Multicast Command Reference</a>

### Standards and RFCs

Standard/RFC	Title
No new or modified standards are supported, and support for existing standards has not been modified.	--
No new or modified RFCs are supported, and support for existing RFCs has not been modified.	--

### MIBs

MIB	MIBs Link
No new or modified MIBs are supported, and support for existing MIBs has not been modified.	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>



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## Feature Information for MLDP Filtering

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The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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**Table 1**      *Feature Information for MLDP Filtering*

Feature Name	Releases	Feature Information
MLDP Filtering	15.1(3)S 15.1(1)SY	<p>The MDLP Filtering feature adds filtering capabilities to the Cisco Multicast Label Distribution Protocol (MLDP) label-based Multicast Virtual Private Network (MVPN) solution.</p> <p>The following commands were introduced or modified: <b>mdt data mpls mldp</b>, <b>mlps mldp</b>, <b>mlps mldp fec</b>, <b>mlps mldp filter</b>, <b>show mpls mldp filter</b>, <b>show mpls mldp interface</b>, <b>show mpls mldp neighbors</b>.</p>

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