



## OTV Loopback Join Interface

This chapter describes the Overlay Transport Virtualization (OTV) Loopback Join Interface feature on Cisco NX-OS devices.

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### Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <https://cfng.cisco.com/>. An account on Cisco.com is not required.

### Information About OTV Loopback Join Interface

The Overlay Transport Virtualization (OTV) Loopback Join interface feature, for the Cisco Nexus 7000 and Nexus 7700 platforms, adds the capability of an Overlay using a loopback interface as the Join interface. The Loopback Join Interface adds a PIM-based control plane, where the Loopback interface has PIM configured and acts as a first-hop/last-hop multicast router into the multicast core. This gives the capability for the Loopback Join interface to have multiple Uplinks into the provider Multicast core.

Prior to Release 8.0(1), OTV supports only one uplink interface to connect to the core, which is an IGMP host interface. PIM cannot be enabled on this join-interface. Beginning with Release 8.0(1), PIM routing is supported on the core uplinks through the loopback interfaces. Therefore, the OTV edge device behaves as a first hop or last hop multicast router towards the core device. This enables multiple core uplinks to be operational concurrently for OTV traffic. The PIM Routing support on uplinks utilizes the dynamic unicast routing-based convergence on the core network topology changes. This feature facilitates support for a loopback interface for sourcing OTV traffic; and therefore, the core physical topology changes does not impact Overlay states,

negating the control plane churn for OTV databases. PIM on OTV supports the loopback join interface loopback configuration under Overlay mode, similar to the existing join interface. You must configure PIM in Sparse mode on the loopback interface to use the interface for transmitting and receiving OTV traffic.

The loopback join-interface is used to facilitate the following:

- to source the OTV traffic from the edge device into the core device.
- to source multicast traffic into the core device, in order to receive OTV traffic from the core device.

The loopback will be operational irrespective of the physical network topology changes.




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**Note** A physical Layer 3 interface cannot be used with the PIM method as an OTV join interface.

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The same loopback can be used by multiple Overlays to source their traffic. For a given Overlay, if the join interface changes to a physical interface, Ethernet, then the behavior for that Overlay will revert to the older IGMP-host model.

## Guidelines and Limitations for OTV Loopback Join Interface

### Guidelines for OTV Loopback Join Interface

Loopback Join Interface has the following configuration guidelines:

- For optimal configuration, ensure that you use the multiple uplink interfaces.
- If all the uplink interfaces are down, the OTV connectivity to the core will be broken. You must ensure that the connection to the core is operational always.
- If the loopback join interface configuration is modified, all the OTV overlay states will be altered, which impacts the traffic.

### Limitations for OTV Loopback Join Interface

Loopback Join Interface has the following configuration limitations:

- This feature is available only on the Nexus 70xx Series and Nexus 77xx Series Switches.
- Unicast and Adjacency Server features are not supported on Loopback Join Interface.
- PIM bidirectional mode is not supported for loopback join interface for Release 8.0(1).
- Loopback join interface IP address cannot be the same as AnyCast-Rp IP address.
- If two OTV overlays are configured on the same Layer 3 join interface and packet flow is enabled, IPv6 packets will loop between the OTV overlay interfaces. This is applicable to scenarios in which the OTV overlays are stitched to VXLAN overlays.

# Prerequisites for OTV Loopback Join Interface

Loopback Join Interface has the following prerequisites:

- The transport network must support the Protocol Independent Multicast (PIM) sparse mode (Any Source Multicast [ASM]) for the provider multicast group and Source Specific Multicast (SSM) for the delivery group.

## How to Configure OTV Loopback Join Interface

### Configuring Uplink Interfaces

To configure uplink interfaces, perform the steps below.

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**Step 1** Enter global configuration mode.

```
switch# configure terminal
```

**Step 2** Create an uplink interface and enter interface configuration mode.

```
switch(config)# interface interface_type slot/port
```

**Step 3** Configure the uplink interface.

```
switch(config-if)# ip address ip_address
```

**Step 4** Add the interface to the OSPFv2 instance and area.

```
switch(config-if)# ip router ospf instance-tag area area-id
```

**Step 5** Enable PIM sparse mode on loopback interface and on the uplink Layer3 interface. The default is disabled.

```
switch(config-if)# ip pim sparse-mode
```

**Note** You must configure PIM in sparse-mode on the uplink Layer3 interfaces, to use it for transmitting and receiving OTV traffic.

**Step 6** Enable the interface.

```
switch(config-if)# no shutdown
```

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#### Example: Configuring Uplink Interfaces

This example shows a running configuration, followed by a verification command that displays the Cisco Uplink Interfaces configuration details. Replace the *placeholders* with relevant values for your setup.

```
configure terminal  
feature pim
```

```
interface Ethernet1/2
 ip address 2.2.2.2/24
 ip router ospf 100 area 0.0.0.0
 ip pim sparse-mode
 no shutdown

interface Ethernet1/3
 ip address 5.5.5.2/24
 ip router ospf 100 area 0.0.0.0
 ip pim sparse-mode
 no shutdown
```

## Configuring Loopback Interface

To configure loopback interface, perform the steps below.

### Before you begin

By default, the OTV feature is disabled on the device. You must explicitly enable the OTV feature to access the configuration and verification commands.

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**Step 1** Enter global configuration mode.

switch# **configure terminal**

**Step 2** Create a loopback interface and enter interface configuration mode.

switch(config)# **interface** *loopback\_interface*

**Step 3** Configure the loopback interface.

switch(config-if)# **ip address** *ip\_address*

**Step 4** Add the interface to the OSPFv2 instance and area.

switch(config-if)# **ip router ospf** *instance-tag* **area** *area-id*

**Step 5** Enable PIM sparse mode on loopback interface and on the uplink Layer3 interface. The default is disabled.

switch(config-if)# **ip pim sparse-mode**

**Note** You must configure PIM in sparse-mode on the uplink Layer3 interface, to use it for transmitting and receiving OTV traffic.

**Step 6** Enable the interface.

switch(config-if)# **no shutdown**

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### Example: Configuring Loopback Interface

This example shows a running configuration, followed by a verification command that displays the Cisco Loopback interface configuration details. Replace the *placeholders* with relevant values for your setup.

```
configure terminal
feature pim

interface loopback1
 ip address 10.10.10.2/32
 ip router ospf 100 area 0.0.0.0
 ip pim sparse-mode
```

## Configuring Interface Overlay

To configure interface overlay, perform the steps below.

### Before you begin

By default, the OTV feature is disabled on the device. You must explicitly enable the OTV feature to access the configuration and verification commands.

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- Step 1** Enter global configuration mode.
- ```
switch# configure terminal
```
- Step 2** Enable OTV.
- ```
switch(config)# feature otv
```
- Step 3** Create an OTV overlay interface and enter interface configuration mode. The range is from 0 to 65535.
- ```
switch(config)# interface overlay interface_number
```
- Step 4** Join the OTV overlay interface with a loopback interface.
- ```
switch(config-if)# otv join-interface loopback1_interface
```
- Step 5** Configure a multicast group address for the OTV control plane for this OTV overlay network.
- ```
switch(config-if)# otv control-group multicast-address
```
- Step 6** Configure one or more ranges of local IPv4 multicast group prefixes used for multicast data traffic.
- ```
switch(config-if)# otv data-group multicast-address/mask
```
- Enable SSM for the groups by using the `ip pim ssm` command in global configuration mode.
  - Use SSM multicast groups 232.0.0.0/8.
  - The multicast group address is an IPv4 address in dotted decimal notation.
  - A subnet mask is used to indicate ranges of addresses.
  - You can define up to 8 data-group ranges.

**Step 7** Extend the OTV Overlay to the VLAN interface, use the following command.

```
switch(config-if)# otv extend-vlan range
```

**Step 8** Enable the interface.

```
switch(config-if)# no shutdown
```

### Example: Configuring OTV Loopback Join Interface

This example shows a running configuration, followed by a verification command that displays the Cisco OTV Loopback Join Interface configuration details. Replace the *placeholders* with relevant values for your setup.

```
configure terminal
feature otv
Interface Overlay config:
interface Overlay1
  otv join-interface loopback1
  otv control-group 224.1.1.1
  otv data-group 232.1.1.0/24
  otv extend-vlan 201-205
  no shutdown

switch(config)# show otv overlay1
VPN name : Overlay1
VPN state : UP
Extended vlans : 200 (Total:1)
Control group : 224.1.1.1
Data group range(s) : 232.0.0.1/24
Broadcast group : 224.0.0.1
Join interface(s) : Lo1 (10.10.10.2)
Site vlan : 1 (up)
AED-Capable : Yes
Capability : Multicast-Reachable
```

## Additional References for OTV Loopback Join Interface

### Related Documents

Related Topic	Document Title
command syntax	<i>Cisco Nexus 7000 Series Command Reference</i>

**MIBs**

MIB	MIBs Link
• <a href="#">CRCMB</a>	To locate and download MIBs for selected platforms, Cisco IOS 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>

**Technical Assistance**

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for OTV Loopback Join Interface

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.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1: Feature Information for OTV Loopback Join Interface**

Feature Name	Releases	Feature Information
OTV Loopback Join Interface	8.0(1)	<p>The Overlay Transport Virtualization (OTV) Loopback Join interface feature adds the capability of an Overlay using a loopback interface as the Join interface. Loopback Join Interface adds a PIM-based control plane, where the Loopback interface has PIM configured and acts as a first-hop/last-hop multicast router into the multicast core.</p> <p>The following commands were modified by this feature: <b>otv join-interface</b> command has been expanded to allow for 'loopbackx' under overlay configuration.</p>

