



## Cisco SD-Access Commands

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# broadcast-underlay

To configure the underlay in a LISP network to use a multicast group to send encapsulated broadcast packets and link local multicast packets, use the **broadcast-underlay** command in the service submode. To remove the broadcast functionality, use the **no** form of this command.

**broadcast-underlay** *multicast-ip*

**no broadcast-underlay** *multicast-ip*

## Syntax Description

*multicast-ip* IP address of the multicast group that sends the encapsulated broadcast packets

## Command Default

None.

## Command Modes

LISP Instance Service Ethernet (router-lisp-inst-serv-eth)  
LISP Service Ethernet (router-lisp-serv-eth)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

## Usage Guidelines

Use this command to enable the broadcast functionality on the fabric edge node in a LISP network. Ensure that this command is used in the router-lisp-service-ethernet mode or router-lisp-instance-service-ethernet mode.

## Example

The following example shows how to configure broadcast on a fabric edge node:

```
device(config)#router lisp
device(config-router-lisp)#instance-id 3
device(config-router-lisp-inst)#service ethernet
device(config-router-lisp-inst-serv-eth)#eid-table vlan 250
device(config-router-lisp-inst-serv-eth)#broadcast-underlay 225.1.1.1
device(config-router-lisp-inst-serv-eth)#database-mapping mac locator-set rloc2
device(config-router-lisp-inst-serv-eth)#exit-service-ethernet
```

# database-mapping

To configure an IPv4 or IPv6 endpoint identifier-to-routing locator (EID-to-RLOC) mapping relationship and an associated traffic policy for Location Identifier Separation Protocol (LISP), use the **database-mapping** command in LISP EID-table configuration mode. To remove the configured database mapping, use the **no** form of this command.

```
database-mapping eid-prefix / prefix-length { locator-set RLOC-name [ proxy | default-etr | default-etr-route-map | route-tag | silent-host-detection ] | ipv6-interface interface-name | ipv4-interface interface-name | auto-discover-rlocs | limit }
```

```
no database-mapping eid-prefix / prefix-length { locator-set RLOC-name [ proxy | default-etr | default-etr-route-map | route-tag | silent-host-detection ] | ipv6-interface interface-name | ipv4-interface interface-name | auto-discover-rlocs | limit }
```

## Syntax Description

<i>eid-prefix / prefix-length</i>	IPv4 or IPv6 endpoint identifier prefix and length that is advertised by the router.
<b>locator-set</b> <i>RLOC-name</i>	Routing Locator (RLOC) associated with the value specified for the <i>eid-prefix</i> . Use the following keyword options for database mapping: <ul style="list-style-type: none"> <li>• <b>proxy</b>: Enables configuration of static proxy database mapping.</li> <li>• <b>default-etr</b>: Enables configuration of default Egress Tunnel Router (ETR) database mapping.</li> <li>• <b>route-tag</b> <i>route-tag</i>: Monitors the RIB entry for a match with the <i>route-tag</i> specified.</li> <li>• <b>default-etr-route-map</b> <i>route-map</i>: Enables the route map to look for <b>default-etr</b> RIB route updates, and dynamically changes the locator set for this database mapping.</li> <li>• <b>silent-host-detection</b>: Enables silent host detection for hosts under the EID prefix.</li> </ul>
<b>ipv4 interface</b> <i>interface-name</i>	IPv4 address and name of the interface that is used as the RLOC for the EID prefix.
<b>ipv6 interface</b> <i>interface-name</i>	IPv6 address and name of the interface that is used as the RLOC for the EID prefix.
<b>auto-discover-rlocs</b>	Configures the ETR to discover the locators of all the routers configured to function as both an ETR and an Ingress Tunnel Router (ITR)—such routers are referred to as xTRs—in the ETR LISP site when the site uses multiple xTRs, and each xTR is configured to use DHCP-learned locators or configured with only its own locators.
<b>limit</b>	Specifies the maximum size of local EID prefixes database.

## Command Default

No LISP database entries are defined.

**Command Modes** LISP-instance-service (router-lisp-instance-service)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.
	Cisco IOS XE Bengaluru 17.5.1	This command was modified. Introduced support for the keyword <b>default-etr-route-map</b> .
	Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the keyword <b>silent-host-detection</b> .

**Usage Guidelines** In the LISP-instance-service configuration mode, the **database-mapping** command configures LISP database parameters with a specified IPv4 or IPv6 EID prefix block. The *locator* is the IPv4 or IPv6 address of any interface used as the RLOC address for the *eid-prefix* assigned to the site but can also be the loopback address of the interface.

When a LISP site has multiple locators associated with the same EID prefix block, multiple **database-mapping** commands are used to configure all of the locators for a given EID prefix block.

In a MultiSite scenario, the LISP border node advertises about the site EID that it is attached to on the transit map server to attract site traffic. To advertise, the border node has to obtain the route from the internal border and proxy register with the transit site map server accordingly. The **database-mapping eid-prefix locator-set RLOC-name proxy** command enables the configuration of a static proxy database mapping.

In Cisco IOS XE Bengaluru 17.5.1 and later releases, the **database-mapping eid-prefix locator-set RLOC-name default-etr-route-map route-map** command monitors the specified *route-map* for route updates corresponding to the *eid-prefix*. If there is an update from the route map, and if the route map has a defined LISP locator set, the **locator-set** of this database mapping is changed to the one specified in the *route-map*.

By default, RIB metric (BGP MED attribute) information for the specified **default-etr eid-prefix** is obtained. You can disable the default, by using the **default-etr disable-metric** command.

Enabling the **default-etr-route-map** option allows you to match other BGP attributes such as AS\_PATH, COMMUNITIES, and so on, and modify the locator set of the database mapping accordingly.

If the **silent-host-detection** option is enabled, LISP triggers silent host detection for the traffic destined for the host that is not present in the site table. SISF then sends probes for silent hosts, if any, in the network, and if a response is received, a site entry is added to the LISP database and traffic is forwarded accordingly.

## Examples

The following example shows how to map the EID prefix with the locator-set RLOC, in the EID configuration mode on an external border. Ensure that the locator-set RLOC is already configured.

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)#eid-table vrf red
device(config-router-lisp-inst-serv-ipv4-eid-table)# database-mapping 172.168.0.0/16
locator-set RLOC proxy
device(config-router-lisp-inst-serv-ipv4-eid-table)# database-mapping 173.168.0.0/16
locator-set RLOC proxy
device(config-router-lisp-inst-serv-ipv4-eid-table)# map-cache 0.0.0.0/0
map-requestdevice(config-router-lisp-inst-serv-ipv4-eid-table)#exit
device(config-router-lisp-inst-serv-ipv4)#
```

The following example shows how to dynamically change the EID prefix and locator set RLOC mapping, using the **default-etr-route-map** keyword:

```

device(config)# router lisp
device(config-router-lisp)# instance-id 1
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)#eid-table default
device(config-router-lisp-inst-serv-ipv4-eid-table)# database-mapping 0.0.0.0/0 locator-set
RLOC default-etr-route-map abc
device(config-router-lisp-inst-serv-ipv4-eid-table)#exit
device(config-router-lisp-inst-serv-ipv4)#

```

**Related Commands**

Command	Description
<b>eid-table vrf</b> <i>vrf-name</i>	Associates the instance-service instantiation with a virtual routing and forwarding (VRF) table or default table through which the endpoint identifier address space is reachable.

# dynamic-eid

To create a dynamic End Point Identifier (EID) policy and enter the dynamic-eid configuration mode on an xTR, use the **dynamic-eid** command.

**dynamic-eid** *eid-name*

<b>Syntax Description</b>	<i>eid-name</i> If <i>eid-name</i> exists, it enters <i>eid-name</i> configuration mode. Else, a new dynamic-eid policy with name <i>eid-name</i> is created and it enters the dynamic-eid configuration mode.
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<b>Command Default</b>	No LISP dynamic-eid policies are configured.
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<b>Command Modes</b>	LISP EID-table (router-lisp-eid-table)
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

<b>Usage Guidelines</b>	To configure LISP mobility, create a dynamic-EID roaming policy that can be referenced by the <b>lisp mobility</b> interface command. After you execute the <b>dynamic-eid</b> command, the referenced LISP dynamic-EID policy is created and the device goes to dynamic-EID configuration mode. In this mode, all attributes that are associated with the referenced LISP dynamic-EID policy can be configured. When you configure a dynamic-EID policy, you must specify the dynamic-EID-to-RLOC mapping relationship and its associated traffic policy.
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## Example

The following example shows how to configure the **dynamic-eid** command:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# dynamic-eid Eng.mod
device(config-router-lisp-inst-dynamic-eid)#
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>lisp mobility</b>	Configures the interface of an ITR to participate in LISP mobility (dynamic-EID roaming).

# dynamic-eid detection multiple-addr

To enable the detection of multiple IP addresses for a single MAC address, use the **dynamic-eid detection multiple-addr** command in the LISP Service mode or in the LISP Instance Service mode. To disable the detection of multiple IP addresses per MAC address, use the **no** form of this command.

**dynamic-eid detection multiple-addr** [ **bridged-vm** ]

**no dynamic-eid detection multiple-addr** [ **bridged-vm** ]

## Syntax Description

**bridged-vm** Enables specific features of bridge-mode virtual machines (VM).

## Command Default

Support for multiple IP addresses per MAC is not enabled.

## Command Modes

LISP Service (router-lisp-serv)

LISP Instance Service (router-lisp-instance-serv)

## Command History

Release	Modification
Cisco IOS XE Cupertino 17.8.1	This command was introduced.

## Usage Guidelines

The VMs on a wireless host are networked in a bridge mode. Each VM has its own IP address that is associated with the host MAC address. This leads to a situation where several IP addresses (one on each of the VMs) are associated with a single MAC address (of the host). Use the **dynamic-eid detection multiple-addr** command on the fabric edge node to enable the detection of multiple IP addresses for a single MAC address.

In Cisco IOS XE Cupertino 17.8.1, 105 IP addresses, which are a mix of both IPv4 and IPv6, are supported for one MAC address.

In an SD-Access network, when a wireless host roams, a LISP roaming notification carries the Security Group Tag (SGT) for each IP address in the host. To enable SGT propagation during wireless host mobility, configure the edge node with the **dynamic-eid detection multiple-addr bridged-vm** command .

## Example

The following example shows how to configure an edge node to detect multiple IP addresses in a wireless host, at a global level:

```
Device(config)# router lisp
Device(config-router-lisp)# service ethernet
Device(config-lisp-srv-eth)# dynamic-eid detection multiple-addr bridged-vm
```



# eid-record-provider

To define an extranet policy table for the provider instance use the **eid-record-provider** command in the LISP Extranet configuration mode. To negate the EID-record-provider configuration, use the **no** form of this command.

**eid-record-provider instance-id** *instance id* { *ipv4 address prefix* | *ipv6 address prefix* } **bidirectional**

**no eid-record-provider instance-id** *instance id* { *ipv4 address prefix* | *ipv6 address prefix* } **bidirectional**

<b>Syntax Description</b>	<b>instance-id</b> <i>instance id</i> Instance ID of the LISP instance for which the extranet provider policy applies.				
	<i>ipv4 address prefix</i> IPv4 EID prefixes to be leaked. Prefix specified in <i>a.b.c.d/mn</i> form.				
	<i>ipv6 address prefix</i> IPv6 EID prefixes to be leaked. Prefix specified in <i>X:X:X:X:&lt;0-128&gt;</i> form.				
	<b>bidirectional</b> Specifies that the extranet communication between the provider and subscriber EID prefixes are bidirectional.				
<b>Command Default</b>	None.				
<b>Command Modes</b>	LISP Extranet (router-lisp-extranet)				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.11.1c</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.				

## Example

The following example shows how to configure an extranet policy for the provider instance with ID 5000:

```
device(config)#router lisp
device(config-router-lisp)#extranet ext1
device(config-router-lisp-extranet)#eid-record-provider instance-id 5000 10.0.0.0/8
bidirectional
device(config-router-lisp-extranet)#eid-record-subscriber instance-id 1000 3.0.0.0/24
bidirectional
```

## eid-record-subscriber

To define an extranet policy table for the subscriber instance, use the **eid-record-subscriber** command in the LISP Extranet mode. To negate the EID-record-subscriber configuration, use the **no** form of this command

**eid-record-subscriber instance-id** *instance id* { *ipv4 address prefix* | *ipv6 address prefix* }  
**bidirectional**

**no eid-record-subscriber instance-id** *instance id* { *ipv4 address prefix* | *ipv6 address prefix* }  
**bidirectional**

Syntax Description		
<b>instance-id</b> <i>instance id</i>	Instance ID of the LISP instance for which the extranet provider policy is applicable.	
<i>ipv4 address prefix</i>	IPv4 EID prefixes to be leaked. Prefix specified in <i>a.b.c.d/nm</i> form.	
<i>ipv6 address prefix</i>	IPv6 EID prefixes to be leaked. Prefix specified in <i>X:X:X:X::X/&lt;0-128&gt;</i> form.	
<b>bidirectional</b>	Specifies that the extranet communication between the provider and subscriber EID prefixes are bidirectional.	
<b>Command Default</b>	None.	
<b>Command Modes</b>	LISP Extranet (router-lisp-extranet)	
Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

### Example

The following example shows how to configure an extranet policy for two subscriber instances with IDs 1000 and 2000:

```
device(config)#router lisp
device(config-router-lisp)#extranet ext1
device(config-router-lisp-extranet)#eid-record-provider instance-id 5000 10.0.0.0/8
bidirectional
device(config-router-lisp-extranet)#eid-record-subscriber instance-id 1000 3.0.0.0/24
bidirectional
device(config-router-lisp-extranet)#eid-record-subscriber instance-id 2000 20.20.0.0/8
bidirectional
```

# eid-table

To configure a Locator ID Separation Protocol (LISP) instance ID for association with a virtual routing and forwarding (VRF) table or default table through which the endpoint identifier (EID) address space is reachable, use the **eid-table** command in LISP Service Instance configuration mode. To remove this association, use the **no** form of this command.

```
eid-table { vrf-name | default | vrf vrf-name }
```

```
no eid-table { vrf-name | default | vrf vrf-name }
```

<b>Syntax Description</b>	<b>default</b>	Selects the default (global) routing table for association with the configured instance-service.
	<b>vrf</b> <i>vrf-name</i>	Selects the named VRF table for association with the configured instance.
<b>Command Default</b>	Default VRF is associated with instance-id 0.	
<b>Command Modes</b>	LISP Service Instance (router-lisp-inst-serv)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** Use this command only in the LISP Instance Service mode.

For Layer 3 (service ipv4 / service ipv6), a VRF table is associated with the instance-service. For Layer 2 (service ethernet), a VLAN is associated with the instance-service.



**Note** For Layer 2, ensure that you have defined a VLAN before configuring the eid-table.  
For Layer 3, ensure that you have defined a VRF table before you configure the eid-table.

## Examples

In the following example, an xTR is configured to segment traffic using VRF named vrf-table. The EID prefix associated with vrf-table is connected to instance ID 3.

```
device(config)#vrf definition vrf-table
device(config-vrf)#address-family ipv4
device(config-vrf-af)#exit
device(config-vrf)#exit
device(config)#router lisp
device(config-router-lisp)#instance-id 3
device(config-router-lisp-inst)#service ipv4
device(config-router-lisp-inst-serv-ipv4)#eid-table vrf vrf-table
```

In the following example, the EID prefix that is associated with a VLAN, Vlan10, is connected to instance ID 101.

```
device(config)#interface Vlan10
device(config-if)#mac-address ba25.cdf4.ad38
device(config-if)#ip address 10.1.1.1 255.255.255.0
device(config-if)#end
device(config)#router lisp
device(config-router-lisp)#instance-id 101
device(config-router-lisp-inst)#service ethernet
device(config-router-lisp-inst-serv-ethernet)#eid-table Vlan10
device(config-router-lisp-inst-serv-ethernet)#database-mapping mac locator-set set
device(config-router-lisp-inst-serv-ethernet)#exit-service-etherne
device(config-router-lisp-inst)#exit-instance-id
```

# encapsulation

To configure the type of encapsulation of the data packets in the LISP network, use the **encapsulation** command in the LISP Service mode. To remove the encapsulation on the packets, use the **no** form of this command.

```
encapsulation { vxlan | lisp }
```

```
no encapsulation { vxlan | lisp }
```

## Syntax Description

**encapsulation vxlan** Specifies VXLAN-based encapsulation

**encapsulation lisp** Specifies LISP-based encapsulation

## Command Default

None.

## Command Modes

LISP Service IPv4 (router-lisp-serv-ipv4)

LISP Service IPv6 (router-lisp-serv-ipv6)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

## Usage Guidelines

Use the **encapsulation vxlan** command in the LISP Service Ethernet mode to encapsulate Layer 2 packets. Use the **encapsulation vxlan** command in the LISP Service IPv4 or LISP Service IPv6 mode to encapsulate the Layer 3 packets.

## Example

The following example shows how to configure an xTR for data encapsulation:

```
device(config)#router lisp
device(config-router-lisp)#service ipv4
device(config-router-lisp-serv-ipv4)#encapsulation vxlan
device(config-router-lisp-serv-ipv4)#map-cache-limit 200
device(config-router-lisp-serv-ipv4)#exit-service-ipv4
```

# etr

To configure a device as an Egress Tunnel Router (ETR) use the **etr** command in the LISP Instance Service mode or LISP Service submode. To remove the ETR functionality, use the **no** form of this command.

**etr**

**no etr**

---

**Command Default** The device is not configured as ETR by default.

---

**Command Modes** LISP Instance Service (router-lisp-instance-service)  
LISP Service (router-lisp-service)

---

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

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---

**Usage Guidelines** Use this command to enable a device to perform the ETR functionality.

A router configured as an ETR is also typically configured with database-mapping commands so that the ETR knows what endpoint identifier (EID)-prefix blocks and corresponding locators are used for the LISP site. In addition, the ETR should be configured to register with a map server with the **etr map-server** command, or to use static LISP EID-to-routing locator (EID-to-RLOC) mappings with the **map-cache** command to participate in LISP networking.

## Example

The following example shows how to configure a device as an ETR:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)# etr
```

## etr map-server

To configure a map server to be used by the Egress Tunnel Router (ETR) when configuring the EIDs, use the **etr map-server** command in the LISP Instance mode or LISP Instance Service mode. To remove the configured locator address of the map-server, use the **no** form of this command.

```
etr map-server map-server-address { key [ 0 | 6 | 7 ] authentication-key | proxy-reply }
```

```
no etr map-server map-server-address { key [ 0 | 6 | 7 ] authentication-key | proxy-reply }
```

### Syntax Description

<i>map-server-address</i>	Locator address of the map server.
<b>key</b>	Specifies the key type.
<b>0</b>	Indicates that password is entered as clear text.
<b>6</b>	Indicates that password is in the AES encrypted form.
<b>7</b>	Indicates that password is a weak encrypted one.
<i>authentication-key</i>	The password used for computing the SHA-1 HMAC hash that is included in the header of the map-register message.
<b>proxy-reply</b>	Specifies that the map server answer the map-requests on behalf the ETR.

### Command Default

None.

### Command Modes

LISP Instance Service (router-lisp-inst-serv)

LISP Service (router-lisp-serv)

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

### Usage Guidelines

Use the **etr map-server** command to configure the locator of the map server to which the ETR will register for its EIDs. The authentication key argument in the command syntax is a password that is used for a SHA-1 HMAC hash (included in the header of the map-register message). The password used for the SHA-1 HMAC may be entered in unencrypted (cleartext) form or encrypted form. To enter an unencrypted password, specify 0. To enter an AES encrypted password, specify 6.

Use the **no** form of the command to remove the map server functionality.

### Example

The following example shows how to configure a map server located at 2.1.1.6 to act as a proxy in order to answer the map-requests on the ETR:

```
device(config)#router lisp
device(config-router-lisp)#instance-id 3
```

```
device(config-router-lisp-inst)#service ipv4
device(config-router-lisp-inst-serv-ipv4)#etr map-server 2.1.1.6 key foo
device(config-router-lisp-inst-serv-ipv4)#etr map-server 2.1.1.6 proxy-reply
```



# extranet

To enable inter-VRF communication in a LISP network, use the **extranet** command in the LISP configuration mode on the Map Server Map Resolver (MSMR).

**extranet** *name-extranet*

<b>Syntax Description</b>	<i>name-extranet</i> Specifies the name of the extranet created.				
<b>Command Default</b>	None.				
<b>Command Modes</b>	LISP (router-lisp)				
<b>Command History</b>	<table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Gibraltar 16.11.1c</td><td>This command was introduced.</td></tr></tbody></table>	Release	Modification	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.				

## Example

This example shows how to use the **extranet** command:

```
device(config)# router lisp
device(config-router-lisp)# extranet ext1
device(config-router-lisp-extranet)#
```

# extranet-config-from-transit

To specify that extranet configuration must be learnt from the Transit Control Plane, use the **extranet-config-from-transit** command in the extranet configuration mode. To remove the configuration, use the **no** form of this command.

**extranet-config-from-transit**

**no extranet-config-from-transit**

**Command Default** The local device can configure its own extranet policy.

**Command Modes** Extranet Configuration (config-router-lisp-extranet)

Command History	Release	Modification
	Cisco IOS XE Cupertino 17.9.1	This command was introduced.

**Usage Guidelines** In multi-site deployment of an SD-Access fabric, an extranet policy is propagated from the transit map server map resolver (MSMR) to all the site map servers. In such cases, run the **extranet-config-from-transit** command on the local map server to allow the extranet policy propagation from the transit MSMR to the site local map server. After configuring this command, do not add or delete the policy on the local map server.

## Example

The following example shows how to configure the **extranet-config-from-transit** command:

```
Device(config)# router lisp
Device(config-router-lisp)# extranet internet
Device(config-router-lisp-extranet)# extranet-config-from-transit
Device(config-router-lisp-extranet)# eid-record-provider instance-id 4097
Device(config-router-lisp-extranet-eid)# exit-eid-record-provider
```

# first-packet-petr

To prevent the loss of the first packet (and subsequent packets until map-cache is resolved), use the **first-packet-petr** command on the Map Server, in the LISP-service or the LISP-instance-service configuration mode. To disable the configuration of this command, use its **no** form.

Configuring this command ensures that even the first packet that is sent out from the fabric edge device reaches its destination through a first-packet-handler border that is available.

```
first-packet-petr remote-locator-set fpetr-RLOC
```

```
no first-packet-petr remote-locator-set fpetr-RLOC
```

<b>Syntax Description</b>	<b>remote-locator-set</b> <i>fpetr-RLOC</i>	Specifies a remote locator-set, which is a set of IP addresses of remote devices, that connect to an external network or to networks across sites or to Data Center through remote or local sites.
<b>Command Default</b>	None.	
<b>Command Modes</b>	LISP-instance-service  LISP-service	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Amsterdam 17.3.1	The command was introduced.

**Usage Guidelines**

The ITR or the fabric edge device drops the initial packets sent to it until it learns the destination EID reachability from the local MSMR. To prevent the drop of the first packet, configure the **first-packet-petr** command on the local MSMR.

Configure the **first-packet-petr** command on the local map server to ensure that when the fabric edges boots up and resolves the 0/0 map-cache entry, it gets the first packet forwarding RLOCs.

When an MSMR receives a request to connect to an external network (like internet), it first checks for the availability of an external border. If the map server does not find the default-ETR border or the internet service providing border, it responds with the remote RLOCs that are configured with the **first-packet-petr** command.



**Note** You can configure the **first-packet-petr** command only on a control plane that is within a fabric site. You cannot configure this command on the control plane of a transit site.

## Examples

The following example first defines a remote locator set and associates the remote RLOCs with the first-packet-petr command:

```
Device(config)#router lisp
Device(config-router-lisp)#remote-locator-set fpetr
Device(config-router-lisp-remote-locator-set)#23.23.23.23 priority 1 weight 1
Device(config-router-lisp-remote-locator-set)#24.24.24.24 priority 1 weight 1
Device(config-router-lisp-remote-locator-set)#exit-remote-locator-set

Device(config-router-lisp)#service ipv4
Device(config-lisp-srv-ipv4)#first-packet-petr remote-locator-set fpetr
Device(config-lisp-srv-ipv4)#map-server
Device(config-lisp-srv-ipv4)#map-resolver
Device(config-lisp-srv-ipv4)#exit-service-ipv4
Device(config-router-lisp)#
```

The configured behavior is inherited by all instances under service ipv4.

To override the behavior for a particular instance, configure the first-packet-petr command for that instance. In the following example, instance 101 disables the first-packet-petr command.

```
Device(config-router-lisp)#instance-id 101
Device(config-router-lisp-inst)#service ipv4
Device(config-router-lisp-inst-service-ipv4)#no first-packet-petr remote-locator-set
Device(config-router-lisp-inst-service-ipv4)#exit-service-ipv4
```

# import-database-publication locator-set

To configure the import of map server publications to the database, use the **import database publication locator-set** command in the LISP Service mode or LISP Instance Service mode. To remove the import of publications into the database, use the **no** form of this command.

**import database publication locator-set** *locator-set-name* [ **preserve-priority** ]

<b>Syntax Description</b>	<b>preserve-priority</b> Specifies that the locator-set priority should be retained while importing the publication to the database.
---------------------------	--

<b>Command Default</b>	None.
------------------------	-------

<b>Command Modes</b>	LISP Service (router-lisp-serv) LISP Instance Service (router-lisp-inst-serv)
----------------------	--

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Bengaluru 17.6.1	This command was introduced
	Cisco IOS XE Dublin 17.12.1	<b>preserve-priority</b> keyword was added to the command.

**Usage Guidelines**

In a LISP multisite topology wherein multiple fabric sites are connected through a transit, you can choose the point from where traffic can egress the multisite domain. This is done by assigning a priority to the RLOCs when registering them with the map server. An RLOC with a higher priority is chosen for the traffic to egress. (A lower value indicates higher priority. An RLOC with a priority value of 1 has the highest priority.)

In a fabric site, when a map server receives a registration for a prefix, it publishes the prefix and its RLOC. To import this publication to the database on an external border, use the **import database publication locator-set** command. To employ the priority value from the publication while importing to the database, use the **preserve-priority** keyword. The external border registers this database entry to the Transit Map Server with the priority which is preserved. The Transit Map Server receives registrations of the prefixes from all the fabric sites that it is connected to.

To reach a particular destination, traffic from each fabric site (in a multisite topology) chooses an RLOC with a higher priority as the egress point.

## Example

The following configuration on a fabric border node imports the publications but does not derive the RLOC priority from the LISP publication.

```
Device(config)# router lisp
Device(config-router-lisp)# locator-set RLOC
Device(config-router-lisp-locator-set)# ipv4-interface Loopback0 priority 10 weight 50
Device(config-router-lisp-locator-set)# auto-discover-rlocs
Device(config-router-lisp-locator-set)# exit-locator-set
Device(config-router-lisp)# instance-id 4100
Device(config-router-lisp)# service ipv4
Device(config-lisp-srv-ipv4)# import database publication locator-set RLOC
Device(config-lisp-srv-ipv4)# exit
```

Note that the **preserve-priority** keyword is not used. When the border node imports publications, the priority of the locator set (which is 10 in this case) is applied, as you can see in the output of the **show lisp ipv4 database** command:

```
Device # show lisp instance-id 4100 ipv4 database 10.1.1.0/24
LISP ETR IPv4 Mapping Database for LISP 0 EID-table vrf red (IID 4100), LSBs: 0x3F
Entries total 1, no-route 0, inactive 0, do-not-register 0
10.1.1.0/24, import from publication, inherited from default locator-set RLOC,
auto-discover-rlocs, proxy
Uptime: 00:00:51, Last-change: 00:00:51   Domain-ID: 1, tag: 101
  Service-Insertion: N/A
    Locator      Pri/Wgt  Source      State
100.88.88.88    10/50    cfg-intf    site-self, reachable

locator-set RLOC
IPv4-interface Loopback0 priority 10 weight 50
auto-discover-rlocs
exit-locator-set
```

The following configuration on a fabric border node imports the publications and applies the priority value derived from the LISP publication to the RLOC.

```
Device(config-router-lisp)# instance-id 4100
Device(config-router-lisp)# service ipv4
Device(config-lisp-srv-ipv4)# import database publication locator-set RLOC preserve-priority

Device(config-lisp-srv-ipv4)# exit
```

```
Device# show lisp instance-id 4100 ipv4 publication 10.1.1.0/24
Publication Information for LISP 0 EID-table vrf red (IID 4100)
* Indicates the selected rlocs used by consumers
EID-prefix: 10.1.1.0/24
EID-prefix: 10.1.1.0/24
  First published:      00:01:37
  Last published:       00:01:37
  State:                 complete
  Exported to:          local-eid, prefix-list, map-cache

Publisher 100.77.77.77:4342
  last published 00:01:37, TTL never, Expires: never
  publisher epoch 0, entry epoch 0
  entry-state complete
  routing table tag 101
  xTR-ID 0xB45EB5A1-0x5C311B49-0x4E2C14F1-0x391BBD0A
  site-ID unspecified
  Domain-ID 1
  Multihoming-ID 1
  Locator      Pri/Wgt  State      Encap-IID  RDP
100.88.88.88   10/50    up         -          [1]
100.99.99.99   2/50    up         -          [1]
100.110.110.110 3/50    up         -          [2]
100.120.120.120 10/50   up         -          [3]
100.133.133.133 10/50   up         -          [3]
100.165.165.165 10/50   up         -          [2]

Publisher 100.78.78.78:4342
  last published 00:01:37, TTL never, Expires: never
  publisher epoch 0, entry epoch 0
  entry-state complete
  routing table tag 101
  xTR-ID 0xB45EB5A1-0x5C311B49-0x4E2C14F1-0x391BBD0A
  site-ID unspecified
  Domain-ID 1
```

```

Multihoming-ID 1
Locator          Pri/Wgt  State   Encap-IID  RDP
100.88.88.88    10/50  up      -           [1]
100.99.99.99    2/50   up      -           [1]
100.110.110.110 3/50   up      -           [2]
100.120.120.120 10/50  up      -           [3]
100.133.133.133 10/50  up      -           [3]
100.165.165.165 10/50  up      -           [2]

Publisher 100.55.55.55:4342
last published 00:01:37, TTL never, Expires: never
publisher epoch 0, entry epoch 0
entry-state complete
routing table tag 101
xTR-ID 0xF8491B6E-0x3AD27B56-0xA78802EF-0xA869EFC5
site-ID unspecified
Domain-ID 1
Multihoming-ID unspecified
Locator          Pri/Wgt  State   Encap-IID  RDP
100.154.154.154 2/50   up      -           [-]

Publisher 100.44.44.44:4342
last published 00:01:37, TTL never, Expires: never
publisher epoch 0, entry epoch 0
entry-state complete
routing table tag 101
xTR-ID 0xF8491B6E-0x3AD27B56-0xA78802EF-0xA869EFC5
site-ID unspecified
Domain-ID 1
Multihoming-ID unspecified
Locator          Pri/Wgt  State   Encap-IID  RDP
100.154.154.154 2/50   up      -           [-]

Merge Locator Information
Locator          Pri/Wgt  State   Encap-IID  RDP-Len  Src-Address
100.88.88.88    10/50  up      -           1         100.77.77.77
100.99.99.99    2/50   up      -           1         100.77.77.77
100.110.110.110 3/50   up      -           1         100.77.77.77
100.120.120.120 10/50  up      -           1         100.77.77.77
100.133.133.133 10/50  up      -           1         100.77.77.77
100.154.154.154* 2/50   up      -           0         100.55.55.55
100.165.165.165 10/50  up      -           1         100.77.77.77

```

Device# **show lisp instance-id 4100 ipv4 database 10.1.1.0/24**

LISP ETR IPv4 Mapping Database for LISP 0 EID-table vrf red (IID 4100), LSBs: 0x3F  
 Entries total 1, no-route 0, inactive 0, do-not-register 0

10.1.1.0/24, import from publication, inherited from default locator-set RLOC,  
 auto-discover-rlocs, proxy

Uptime: 00:03:37, Last-change: 00:00:04

Domain-ID: 1, tag: 101

Service-Insertion: N/A

```

Locator          Pri/Wgt  Source      State
100.88.88.88    2/50   cfg-intf    site-self, reachable

```

# instance-id

To create a LISP EID instance under the router-lisp configuration mode and enter the instance-id submode, use the **instance-id** command.

**instance-id** *iid*

<b>Syntax Description</b>	<i>iid</i>	Specifies the instance ID
---------------------------	------------	---------------------------

<b>Command Default</b>	None.
------------------------	-------

<b>Command Modes</b>	LISP (router-lisp)
----------------------	--------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

<b>Usage Guidelines</b>	Use the <b>instance-id</b> command to create a LISP EID instance to group multiple services. Configuration under this instance applies to all the services underneath it.
-------------------------	---

## Example

This example shows how to create a LISP instance:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)#
```



## ip pim lisp core-group-range

To configure the core range of address of a Protocol Independent Multicast (PIM) Source Specific Multicast (SSM) on a LISP sub-interface, use the **ip pim lisp core-group-range** command in interface configuration mode. To remove SSM address range, use the **no** form of this command.

**ip pim lisp core-group-range** *start-SSM-address range-size*  
**no ip pim lisp core-group-range** *start-SSM-address range-size*

### Syntax Description

*start-SSM-address* Specifies the start of the SSM IP address range.

*number-of-groups* Specifies the size of group range.

### Command Default

By default the group range 232.100.100.1 to 232.100.100.255 is assigned if a core range of addresses is not configured.

### Command Modes

LISP Interface Configuration (config-if)

### Command History

Release	Modification
Cisco IOS XE 16.9.1	This command was introduced.

### Usage Guidelines

Native multicast transport supports only PIM SSM in the underlay or the core. Multicast transport uses a grouping mechanism to map the end-point identifiers (EID) entries to the RLOC space SSM group entries. By default, the group range 232.100.100.1 to 232.100.100.255 is used as the SSM range of addresses on a LISP interface to transport multicast traffic. Use the **ip pim lisp core-group-range** command to manually change this SSM core group range of IP addresses on the LISP interfaces.

The following example defines a group of 1000 IP addresses starting from 232.0.0.1 as the SSM range of addresses on the core for multicast traffic.

```
Device(config)#interface LISP0.201
Device(config-if)#ip pim lisp core-group-range 232.0.0.1 1000
```

# ip pim lisp transport multicast

To enable multicast as the transport mechanism on LISP interface and sub-interface, use the **ip pim lisp transport multicast** command in the LISP Interface Configuration mode. To disable multicast as the transport mechanism on the LISP interface, use the **no** form of this command.

**ip pim lisp transport multicast**

**no ip pim lisp transport multicast**

## Syntax Description

This command has no keywords or arguments.

**Command Default** If this command is not configured, head-end replication is used for multicast.

**Command Modes** LISP Interface Configuration (config-if)

Command History	Release	Modification
	Cisco IOS XE 16.9.1	This command was introduced.

## Example

The following example configures multicast as the transport mechanism on a LISP Interface:

```
Device(config)#interface LISP0
Device(config-if)#ip pim lisp transport multicast
```

## Related Commands

Command	Description
<b>ip multicast routing</b>	Enables IP multicast routing or multicast distributed switching.

## ip pim rp-address

To configure the address of a Protocol Independent Multicast (PIM) rendezvous point (RP) for a particular group, use the **ip pim rp-address** command in global configuration mode. To remove an RP address, use the **no** form of this command.

```
ip pim [ vrf vrf-name ] rp-address rp-address [ access-list ]
no ip pim [ vrf vrf-name ] rp-address rp-address [ access-list ]
```

<b>Syntax Description</b>	<b>vrf</b>	Specifies the multicast Virtual Private Network (VPN) routing and forwarding (VRF) instance.
	<i>vrf-name</i>	Name assigned to the VRF.
	<i>rp-address</i>	IP address of a router to be a PIM RP. This is a unicast IP address in four-part dotted-decimal notation.
	<i>access-list</i>	Number or name of an access list that defines the multicast groups for which the RP should be used.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global Configuration (config)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE 16.8.1s	This command was introduced.

**Usage Guidelines** Use the **ip pim rp-address** command to statically define the RP address for multicast groups that are to operate in sparse mode or bidirectional mode.

You can configure the Cisco IOS XE software to use a single RP for more than one group. The conditions specified by the access list determine the groups for which an RP can be used. If no access list is configured, the RP is used for all groups. A PIM router can use multiple RPs, but only one per group.

### Example

The following example sets the PIM RP address to 185.1.1.1 for all multicast groups:

```
Device(config)#ip pim rp-address 185.1.1.1
```

## ip pim sparse mode

To enable sparse mode of operation of Protocol Independent Multicast (PIM) on an interface, use the **ip pim sparse-mode** command in the Interface Configuration mode. To disable the sparse mode of operation use the **no** form of this command.

**ip pim sparse mode**  
**no ip pim sparse mode**

### Syntax Description

This command has no keywords or arguments.

**Command Default** None.

**Command Modes** Interface Configuration (config-if)

Command History	Release	Modification
	Cisco IOS XE 16.8.1s	This command was introduced.

**Usage Guidelines** The NetFlow **collect** commands are used to configure nonkey fields for the flow monitor record and to enable capturing the values in the fields for the flow created with the record. The values in nonkey fields are added to flows to provide additional information about the traffic in the flows. A change in the value of a nonkey field does not create a new flow.

### Example

The following example configures PIM sparse mode of operation:

```
Device(config)#interface Loopback0
Device(config-if)#ip address 170.1.1.1 255.255.255.0
Device(config-if)#ip pim sparse-mode
```

### Related Commands

Command	Description
<b>ip multicast routing</b>	Enables ip multicast routing or multicast distributed switching.

# ipv4 multicast mult topology

To enable Multicast-Specific RPF topology support for IP Multicast routing, use the **ipv4 multicast mult topology** command in the VRF configuration mode. To disable the Multicast-Specific RPF Topology support, use the **no** form of this command.

**ipv4 multicast mult topology**  
**no ipv4 multicast mult topology**

## Syntax Description

This command has no arguments or keywords.

---

### Command Default

None

---

### Command Modes

VRF Configuration (config-vrf)

---

### Command History

Release	Modification
Cisco IOS XE Fuji 16.8.1a	This command was introduced.

## Example

The following example shows how to configure Multicast-Specific RPF Topology:

```
Device(config)# vrf definition VRF1
Device(config-vrf)# ipv4 multicast mult topology
```

## ip pim ssm

To define the Source Specific Multicast (SSM) range of IP multicast addresses, use the **ip pim ssm** command in global configuration mode. To disable the SSM range, use the **no** form of this command.

```
ip pim [ vrf vrf-name ] ssm { default | range access-list }
no ip pim [ vrf vrf-name ] ssm { default | range access-list }
```

### Syntax Description

<b>vrf</b>	Specifies the multicast Virtual Private Network (VPN) routing and forwarding (VRF) instance.
<i>vrf-name</i>	Name assigned to the VRF.
<b>range</b> <i>access-list</i>	Specifies the standard IP access list number or name defining the SSM range.
<b>default2</b>	Defines the SSM range access list to 232/8.

### Command Default

None.

### Command Modes

Global Configuration (config)

### Command History

Release	Modification
Cisco IOS XE 16.8.1s	This command was introduced.

### Usage Guidelines

When an SSM range of IP multicast addresses is defined by the **ip pim ssm** command, no Multicast Source Discovery Protocol (MSDP) Source-Active (SA) messages will be accepted or originated in the SSM range.

### Example

The following example sets the SSM range of IP multicast address to default:

```
Device(config)#ip pim ssm default
```

### Related Commands

Command	Description
<b>ip multicast routing</b>	Enables IP multicast routing or multicast distributed switching..

## ipv4-interface Loopback affinity-id

To configure an Affinity ID for a Locator, use the **ipv4-interface Loopback affinity-id** command in the Locator-Set configuration mode. To remove the configuration, use the **no** form of this command.

**ipv4-interface Loopback** *loopback-interface-id* [ **priority** *locator-priority* **weight** *locator-weight* | **affinity-id** *x-dimension* [ , *y-dimension* ] ]

**no ipv4-interface Loopback** *loopback-interface-id* [ **priority** *locator-priority* **weight** *locator-weight* | **affinity-id** *x-dimension* [ , *y-dimension* ] ]

<b>Syntax Description</b>	<b>priority</b> <i>locator-priority</i>	Configures a preferred Locator. Locator with a lower priority value takes preference. Values range from 0 to 255.
	<b>weight</b> <i>locator-weight</i>	Configures the load-balance on the device. Values range from 0 to 100.
	<b>affinity-id</b> <i>x-dimension</i> [ , <i>y-dimension</i> ]	Configures an Affinity ID, which is specified by the x dimension and an optional y dimension values.
<b>Command Default</b>	None	
<b>Command Modes</b>	Locator-Set (config-router-lisp-locator-set)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	<b>ipv4-interface Loopback priority</b> was introduced as part of locator-set configuration.
	Cisco IOS XE Cupertino 17.9.1	<b>affinity-id</b> keyword was added to the command.

### Usage Guidelines

First define a locator-set and then configure an affinity ID for its locator.

Affinity ID with its x and y dimensions identifies a particular site or region. Affinity ID is a part of the locator information, like priority and weight. Locator publications and map replies carry affinity ID. A border node uses the affinity ID and priority values to determine the remote site with backup internet which is closest to its local site. Affinity ID takes precedence over the priority value. If both affinity ID and priority values are defined for a locator, the site with a closer affinity-id is preferred.

### Example

The following example configures a locator-set, RLOC, with affinity-id and priority values:

```
Device# configure terminal
Device(config)# router lisp
Device(config-router-lisp)# locator-set RLOC
Device(config-router-lisp-locator-set)# ipv4-interface Loopback 0 priority 10 weight 50
```

```
affinity-id 5 ,10
Device(config-router-lisp-locator-set) # exit-locator-set
```

**Related Commands**

Command	Description
<b>locator-set</b>	Specifies a locator-set and enters the locator-set configuration mode.



# itr

To configure a device as an Ingress Tunnel Router (ITR) use the **itr** command in the LISP Service submode or LISP Instance Service mode. To remove the ITR functionality, use the **no** form of this command.

**itr**  
**no itr**

**Command Default** The device is not configured as ITR by default.

**Command Modes** LISP Instance Service (router-lisp-instance-service)  
LISP Service (router-lisp-service)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** Use this command to enable a device to perform the ITR functionality. A device configured as an ITR helps find the EID-to-RLOC mapping for all traffic that is destined to LISP-capable sites.

## Example

The following example shows how to configure a device as an ITR.

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)# itr
```

## itr map-resolver

To configure a device as a map resolver to be used by an Ingress Tunnel Router (ITR) when sending map-requests, use the **itr map-resolver** command in the service submode or instance-service mode. To remove the map-resolver functionality, use the **no** form of this command.

```
itr [ map-resolver map-address ] prefix-list prefix-list-name
```

```
no itr [ map-resolver map-address ] prefix-list prefix-list-name
```

### Syntax Description

**map-resolver** *map-address* Configures map-resolver address for sending map requests, on the ITR.

**prefix-list** *prefix-list-name* Specifies the prefix list to be used.

### Command Default

None.

### Command Modes

router-lisp-instance-service

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

### Usage Guidelines

Use this command to enable a device to perform the ITR map-resolver functionality.

A device configured as a Map Resolver accepts encapsulated Map-Request messages from ITRs, decapsulates those messages, and then forwards the messages to the Map Server responsible for the egress tunnel routers (ETRs) that are authoritative for the requested EIDs. In a multi-site environment, the site border relies on Map Resolver prefix-list to determine whether to query the transit site MSMR or site MSMR.

### Examples

The following example shows how to configure an ITR to use the map-resolver located at 2.1.1.6 when sending map request messages.

```
device(config)#router lisp
device(config-router-lisp)#prefix-list wired
device(config-router-lisp-prefix-list)#2001:193:168:1::/64
device(config-router-lisp-prefix-list)#192.168.0.0/16
device(config-router-lisp-prefix-list)#exit-prefix-list

device(config-router-lisp)#service ipv4
device(config-router-lisp-serv-ipv4)#encapsulation vxlan
device(config-router-lisp-serv-ipv4)#itr map-resolver 2.1.1.6 prefix-list wired
device(config-router-lisp-serv-ipv4)#
```

## locator default-set

To mark a locator-set as default, use the **locator default-set** command at the router-lisp level. To remove the locator-set as default, use the **no** form of this command.

**locator default-set** *rloc-set-name*  
**no locator default-set** *rloc-set-name*

<b>Syntax Description</b>	<i>rloc-set-name</i> Name of locator-set that is set as default.				
<b>Command Default</b>	None				
<b>Command Modes</b>	LISP (router-lisp)				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.11.1c</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.
Release	Modification				
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.				
<b>Usage Guidelines</b>	The locator-set configured as default with the <b>locator default-set</b> command applies to all services and instances.				

### Example

The following example shows how to use the **locator default-set** command:

```
device(config)# router lisp
device(config-router-lisp)# locator-set rloc1
device(config-router-lisp)# locator default-set rloc1
```

# locator-set

To specify a locator-set and enter the locator-set configuration mode, use the **locator-set** command at the router-lisp level. To remove the locator-set, use the **no** form of this command.

**locator-set** *loc-set-name*  
**no locator-set** *loc-set-name*

<b>Syntax Description</b>	<i>loc-set-name</i> Name of locator-set.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	LISP (router-lisp)
----------------------	--------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

<b>Usage Guidelines</b>	You must first define the locator-set before referring to it.
-------------------------	---

## Example

The following example shows how to use the **locator-set** command:

```
Device(config)# router lisp
Device(config-router-lisp)# locator-set rloc2
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>ipv4-interface Loopback</b> { <b>affinity-id</b>   <b>priority</b> }	Configures an affinity ID and a priority value for the locator-set.

# map-cache

To configure a static endpoint identifier (EID) to routing locator (RLOC) (EID-to-RLOC) mapping relationship, use the **map-cache** command in the LISP Instance Service IPv4 or LISP Instance Service IPv6 mode. To remove the configuration, use the **no** form of this command.

```
map-cache destination-eid-prefix/prefix-len { ipv4-address { priority priority weight weight }
| ipv6-address | map-request | native-forward }
no map-cache destination-eid-prefix/prefix-len { ipv4-address { priority priority weight weight
} | ipv6-address | map-request | native-forward }
```

Syntax Description		
<i>destination-eid-prefix/prefix-len</i>		Destination IPv4 or IPv6 EID-prefix/prefix-length. The slash is required in the syntax.
<i>ipv4-address</i> <b>priority</b> <i>priority</i> <b>weight</b> <i>weight</i>		IPv4 Address of loopback interface. Associated with this locator address is a priority and weight that are used to define traffic policies when multiple RLOCs are defined for the same EID-prefix block.  <b>Note</b> Lower priority locator takes preference.
<i>ipv6-address</i>		IPv6 Address of loopback interface.
<b>map-request</b>		Send map-request for LISP destination EID
<b>native-forward</b>		Natively forward packets that match this map-request.

**Command Default** None.

**Command Modes** LISP Instance Service (router-lisp-instance-service)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** The first use of this command is to configure an Ingress Tunnel Router (ITR) with a static IPv4 or IPv6 EID-to-RLOC mapping relationship and its associated traffic policy. For each entry, a destination EID-prefix block and its associated locator, priority, and weight are entered. The value in the EID-prefix/prefix-length argument is the LISP EID-prefix block at the destination site. The locator is an IPv4 or IPv6 address of the remote site where the IPv4 or IPv6 EID-prefix can be reached.

## Example

The following example shows how to configure an EID-to-RLOC mapping using the **map-cache** command:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)# map-cache 1.1.1.1/24 map-request
```

# map-cache extranet

To install all configured extranet prefixes into map-cache, use the **map-cache extranet** command in the Instance Service IPv4 or Instance Service IPv6 mode.

## map-cache extranet-registration

### Syntax Description

This command has no arguments or keywords.

---

**Command Default** None.

---

**Command Modes** LISP Instance Service (router-lisp-instance-service)

---

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

---



---

**Usage Guidelines** To support inter-VRF communication, use the **map-cache extranet** command on the Map Server Map Resolver (MSMR). This command generates map requests for all fabric destinations. Use this command in the service-ipv4 or service-ipv6 mode under the extranet instance.

### Example

The following example shows how to configure the **map-cache extranet** command:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)# map-cache extranet-registration
```

# prefix-list

To define a named LISP prefix set and to enter the LISP prefix-list configuration mode, use the **prefix-list** command in the Router LISP configuration mode. Use the **no** form of the command to remove the prefix list.

**prefix-list** *prefix-list-name*

**no prefix-list** *prefix-list-name*

<b>Syntax Description</b>	<b>prefix-list</b> <i>prefix-list-name</i> Specifies the prefix list to be used and enters the prefix-list configuration mode. Specifies IPv4 EID-prefixes or IPv6 EID-prefixes in the prefix-list mode.
---------------------------	---

<b>Command Default</b>	No prefix list is defined.
------------------------	----------------------------

<b>Command Modes</b>	LISP (router-lisp)
----------------------	--------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
		Cisco IOS XE Gibraltar 16.11.1c

<b>Usage Guidelines</b>	Use the <b>prefix-list</b> command to configure an IPV4 or IPV6 prefix list. This command places the router in prefix-list configuration mode, in which you can define IPV4 prefix list, or IPV6 prefix list. Use the <b>exit-prefix-list</b> command to exit the prefix-list-configuration mode.
-------------------------	---

## Example

The following example shows how to configure an IPV6 prefix-list:

```
device(config)#router lisp
device(config-router-lisp)#prefix-list wired
device(config-router-lisp-prefix-list)#2001:193:168:1::/64
device(config-router-lisp-prefix-list)#192.168.0.0/16
device(config-router-lisp-prefix-list)#exit-prefix-list
```

## route-export destinations-summary

To export the LISP destination summary routes into the Routing Information Base (RIB), use the **route-export destinations-summary** command in the LISP Service or LISP Instance Service mode. Use the **no** form of this command to stop the export of destination summary routes to RIB.

**route-export destinations-summary** [ **route-tag** *route-tag-value* ]

**no route-export destinations-summary** [ **route-tag** *route-tag-value* ]

Syntax Description	<b>route-tag</b> <i>route-tag-value</i>	A tag that is assigned to the exported RIB entry. The <i>route-tag-value</i> ranges between 0 to 4294967295.
--------------------	---	---

**Command Default** LISP summary route of destinations is not exported to RIB.

**Command Modes** LISP Service (router-lisp-service)  
LISP Instance Service (router-lisp-instance-service)

Command History	Release	Modification
	Cisco IOS XE Cupertino 17.8.1	This command was introduced.

**Usage Guidelines** When you configure the **route-export destinations-summary route-tag route-tag-value** command, the static endpoint ID to routing locator (EID-to-RLOC) mappings are exported to RIB as routes with a specified route tag.

If you use this command in the LISP Service mode, all the EID instances that are enabled for Layer 3 services export the map-cache mappings to the RIB.

### Example

The following example shows how to export LISP destination summary to RIB:

```
Device(config)# router lisp
Device(config-router-lisp)# service ipv4
Device(config-lisp-srv-ipv4)# route-export destinations-summary route-tag 10
```



## route-import database

To configure the import of Routing Information Base (RIB) routes to define local endpoint identifier (EID) prefixes for database entries and associate them with a locator set, use the **route-import database** command in the instance service submode. To remove this configuration, use the **no** form of this command.

```
route-import database { bgp | connected | eigrp | isis | maximum-prefix | ospf | ospfv3 | rip |
static } { [ route-map ] locator-set locator-set-name proxy }
```

```
no route-import database { bgp | connected | eigrp | isis | maximum-prefix | ospf | ospfv3 |
rip | static } { [ route-map ] locator-set locator-set-name proxy }
```

Syntax Description		
<b>bgp</b>		Border Gateway Protocol. Imports RIB routes into LISP using BGP protocol.
<b>connected</b>		Connected routing protocol
<b>eigrp</b>		Enhanced Interior Gateway Routing Protocol. Imports RIB routes into LISP using EIGRP protocol.
<b>isis</b>		ISO IS-IS. Imports RIB routes into LISP using IS-IS protocol.
<b>ospf</b>		Open Shortest Path First
<b>ospfv3</b>		Open Shortest Path First version 3
<b>maximum-prefix</b>		Configures the maximum number of prefixes to pick up from the RIB.
<b>rip</b>		Routing Information Protocol
<b>static</b>		Defines static routes.
<b>locator-set</b> <i>locator-set-name</i>		Specifies the Locator Set to be used with created database mapping entries.
<b>proxy</b>		Enables the dynamic import of RIB route as proxy database mapping.

**Command Default** None.

**Command Modes** LISP Instance Service (router-lisp-instance-service)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** Use the **route-import database** command with the **proxy** option to enable the dynamic import of RIB route as proxy database mapping. When RIB import is in use, the corresponding RIB map-cache import, using **route-import map-cache** command must also be configured, else the inbound site traffic will not pass the LISP eligibility check due to the presence of RIB route.

## Example

The following example shows how to configure the dynamic import of RIB route as proxy database:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)# eid-table default
device(config-router-lisp-inst-serv-ipv4)# database-mapping 193.168.0.0/16 locator-set RLOC
proxy
device(config-router-lisp-inst-serv-ipv4)# route-import map-cache bgp 65002 route-map
map-cache-database
device(config-router-lisp-inst-serv-ipv4)# route-import database bgp 65002 locator-set RLOC
proxy
```

# service

To create a configuration template for all instance-service instantiations of a particular service, use the **service** command in the LISP Instance or the LISP configuration mode. To exit the service submode, use the **no** form of this command.

```
service { ipv4 | ipv6 | ethernet }
```

```
no service { ipv4 | ipv6 | ethernet }
```

## Syntax Description

<b>service ipv4</b>	Enables Layer 3 network services for the IPv4 address family.
<b>service ipv6</b>	Enables Layer 3 network services for the IPv6 address family.
<b>service ethernet</b>	Enables Layer 2 network services.

## Command Default

None.

## Command Modes

LISP Instance (router-lisp-instance)

LISP (router-lisp)

## Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

## Usage Guidelines

The **service** command creates a service instance under the instance-id and enters the instance-service mode. You cannot configure **service ethernet** for the same instance where **service ipv4** or **service ipv6** is configured.

## Examples

The following examples show how to configure Service IPv4 and Service Ethernet modes:

```
device(config)# router lisp
device(config-router-lisp)# instance-id 3
device(config-router-lisp-inst)# service ipv4
device(config-router-lisp-inst-serv-ipv4)#

device(config)# router lisp
device(config-router-lisp)# instance-id 5
device(config-router-lisp-inst)# service ethernet
device(config-router-lisp-inst-serv-ethernet)#
```

# sgt

To configure the propagation of security group tag (SGT) information through the LISP packets, use the **sgt** command in the LISP Service or LISP Instance Service configuration mode. To remove the configuration, use the **no** form of this command.

**sgt** [ **distribution** ]

**no sgt** [ **distribution** ]

<b>Syntax Description</b>	<b>distribution</b>	SGT information is distributed through the LISP packets.
<b>Command Default</b>	SGT information is not propagated.	
<b>Command Modes</b>	LISP Instance Service (router-lisp-inst-serv) LISP Service (router-lisp-serv)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1	This command was introduced.
	Cisco IOS XE Amsterdam 17.2.1	The keyword <b>distribution</b> was added.

## Example

This example shows how to configure SGT distribution for all EID instances:

```
Device# configure terminal
Device(config)# router lisp
Device(config-router-lisp)# service ipv4
Device(config-router-lisp-serv-ipv4)# sgt distribution
Device(config-router-lisp-serv-ipv4)# sgt
Device(config-router-lisp-serv-ipv4)# exit-service-ipv4
```

The following example shows how to configure SGT distribution for a specific EID instance:

```
Device# configure terminal
Device(config)# router lisp
Device(config-router-lisp)# instance-id 101
Device(config-router-lisp-inst)# service ipv4
Device(config-router-lisp-inst-serv-ipv4)# eid-table vrf green
Device(config-router-lisp-inst-serv-ipv4)# sgt distribution
Device(config-router-lisp-inst-serv-ipv4)# sgt
Device(config-router-lisp-inst-serv-ipv4)# exit-service-ipv4
```

# show lisp instance-id ipv4 database

To display the operational status of the IPv4 address family and the database mappings on a device, use the **show lisp instance-id ipv4 database** command in privileged EXEC mode.

```
show lisp instance-id instance-id ipv4 database [ silent-host-detection ]
```

<b>Syntax Description</b>	<b>silent-host-detection</b> (Optional) Displays the silent host detection database entry on the tunnel router (xTR).						
<b>Command Default</b>	None						
<b>Command Modes</b>	Privileged EXEC (#)						
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.11.1c</td> <td>This command was introduced.</td> </tr> <tr> <td>Cisco IOS XE Dublin 17.11.1</td> <td>This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.	Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.
Release	Modification						
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.						
Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.						

## Examples

The following is a sample output of the **show lisp instance-id id ipv4 database** command, displaying the EID prefixes configured for a site:

```
device# show lisp instance-id 101 ipv4 database

LISP ETR IPv4 Mapping Database for EID-table vrf red (IID 101), LSBs: 0x1
Entries total 1, no-route 0, inactive 0

172.168.0.0/16, locator-set RLOC, proxy
  Locator          Pri/Wgt Source      State
  100.110.110.110  1/100 cfg-intf   site-self, reachable

device#

device# show lisp instance-id 101 ipv4

Instance ID:                101
Router-lisp ID:             0
Locator table:              default
EID table:                  vrf red
Ingress Tunnel Router (ITR): disabled
Egress Tunnel Router (ETR): enabled
Proxy-ITR Router (PITR):   enabled RLOCs: 100.110.110.110
Proxy-ETR Router (PETR):   disabled
NAT-traversal Router (NAT-RTR): disabled
Mobility First-Hop Router: disabled
Map Server (MS):           enabled
Map Resolver (MR):         enabled
Mr-use-petr:               enabled
Mr-use-petr locator set name: site2
Delegated Database Tree (DDT): disabled
Site Registration Limit:    0
Map-Request source:        derived from EID destination
                             100.77.77.77
ITR Map-Resolver(s):       100.78.78.78
```

## show lisp instance-id ipv4 database

```

100.110.110.110 prefix-list site2
ETR Map-Server(s):      100.77.77.77 (11:25:01)
                        100.78.78.78 (11:25:01)
xTR-ID:                 0xB843200A-0x4566BFC9-0xDAA75B2D-0x8FBE69B0
site-ID:                 unspecified
ITR local RLOC (last resort): 100.110.110.110
ITR Solicit Map Request (SMR): accept and process
  Max SMRs per map-cache entry: 8 more specifics
  Multiple SMR suppression time: 20 secs
ETR accept mapping data: disabled, verify disabled
ETR map-cache TTL:      1d00h
Locator Status Algorithms:
  RLOC-probe algorithm: disabled
  RLOC-probe on route change: N/A (periodic probing disabled)
  RLOC-probe on member change: disabled
  LSB reports: process
  IPv4 RLOC minimum mask length: /0
  IPv6 RLOC minimum mask length: /0
Map-cache:
  Static mappings configured: 1
  Map-cache size/limit: 1/32768
  Imported route count/limit: 0/5000
  Map-cache activity check period: 60 secs
  Map-cache FIB updates: established
  Persistent map-cache: disabled
Database:
  Total database mapping size: 1
  static database size/limit: 1/65535
  dynamic database size/limit: 0/65535
  route-import database size/limit: 0/5000
  import-site-reg database size/limit: 0/65535
  proxy database size: 1
  Inactive (deconfig/away) size: 0
Encapsulation type: vxlan

```

The following is a sample output of the **show lisp instance-id id ipv4 database silent-host-detection** command, displaying the silent host detection database entry on the xTR:

```

device# show lisp instance-id 101 ipv4 database silent-host-detection

LISP ETR IPv4 Mapping Database for LISP 0 EID-table vrf red (IID 101), LSBs: 0x1
Entries total 2, no-route 0, inactive 0, do-not-register 0

10.168.0.0/16, inherited from default locator-set RLOC
  Uptime: 1d10h, Last-change: 1d10h, Last-Silent-Host-Probe: 1d02h
  Domain-ID: local
  Service-Insertion: N/A
  Locator      Pri/Wgt  Source      State
  10.11.11.11  50/50  cfg-intf   site-self, reachable
10.169.0.0/16, inherited from default locator-set RLOC
  Uptime: 2d11h, Last-change: 2d11h, Last-Silent-Host-Probe: never
  Domain-ID: local
  Service-Insertion: N/A
  Locator      Pri/Wgt  Source      State
  10.11.11.11  50/50  cfg-intf   site-self, reachable

```

## show lisp instance-id ipv6 database

To display the operational status of the IPv6 address family and the database mappings on a device, use the **show lisp instance-id ipv6 database** command in privileged EXEC mode.

```
show lisp instance-id instance-id ipv6 database [ silent-host-detection ]
```

<b>Syntax Description</b>	<b>silent-host-detection</b> (Optional) Displays the silent host detection database entry on the xTR.						
<b>Command Default</b>	None						
<b>Command Modes</b>	Privileged EXEC (#)						
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Gibraltar 16.11.1c</td> <td>This command was introduced.</td> </tr> <tr> <td>Cisco IOS XE Dublin 17.11.1</td> <td>This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.	Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.
Release	Modification						
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.						
Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.						

### Examples

The following is a sample output of the **show lisp instance-id ipv6 database** command, displaying the EID prefixes configured for a site:

```
device# show lisp instance-id 101 ipv6 database

LISP ETR IPv6 Mapping Database, LSBs: 0x1

EID-prefix: 2001:D0:1209::/48
  172.16.156.222, priority: 1, weight: 100, state: up, local
```

The following is a sample output of the **show lisp instance-id ipv6 database silent-host-detection** command:

```
device# show lisp instance-id 2 ipv6 database silent-host-detection

LISP ETR IPv6 Mapping Database for LISP 0 EID-table vrf guest_vrf (IID 2), LSBs: 0x1
Entries total 1, no-route 0, inactive 0, do-not-register 0

2001::/64, inherited from default locator-set RLOC
  Uptime: 00:02:31, Last-change: 00:02:31, Last-Silent-Host-Probe: 00:01:15
  Domain-ID: local
  Service-Insertion: N/A
  Locator      Pri/Wgt  Source      State
  10.1.1.11    10/100    cfg-intf    site-self, reachable
```

# show lisp instance-id ipv4 publication config-propagation

To display the config-propagation type of LISP-mapping notifications or publications for extranet policy, use the **show lisp instance-id ipv4 publication config-propagation** command in the privileged EXEC mode.

**show lisp instance-id** *instance-id* **ipv4 publication config-propagation** [ **detail** | *ipv4-prefix* ]

Syntax Description	detail
	EID prefix details from all publications
	<i>ipv4-prefix</i>
	IPv4 EID prefix of a particular publication

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Cupertino 17.9.1	This command was introduced.

**Usage Guidelines** Use the **show lisp instance-id ipv4 publication config-propagation detail** command on the border node to see a detailed report of all the extranet policy publications. Use the **show lisp instance-id ipv4 publication config-propagation** *ipv4-prefix* command to view the extranet policy publication for the particular EID prefix specified by *ipv4-prefix*.

## Example

The following sample output shows the publication information for a specified instance ID:

```
Device# show lisp instance-id 4097 ipv4 publication config-propagation

Publication Information for LISP 0 EID-table default (IID 4097)
Entries total 6
Publisher      Last          EID Prefix          Locators          Encap-IID
  Published
100.78.78.78   00:07:55     172.168.0.0/16     -                 4100
100.78.78.78   00:07:55     173.168.0.0/16     -                 4101
100.78.78.78   00:07:55     182.168.0.0/16     -                 4100
100.78.78.78   00:07:55     183.168.0.0/16     -                 4101
100.78.78.78   00:07:55     192.168.0.0/16     -                 4100
100.78.78.78   00:07:55     193.168.0.0/16     -                 4101
```



# show lisp instance-id ipv4 publisher config-propagation

To display the config-propagation type of LISP publications that a publisher propagates, use the **show lisp instance-id ipv4 publisher config-propagation** command in the privileged EXEC mode.

```
show lisp instance-id instance-id ipv4 publisher config-propagation [ ipv4-address | ipv6-address ]
```

Syntax Description		
	<i>ipv4-address</i>	IPv4 address of the publisher
	<i>ipv6-address</i>	IPv6 address of the publisher

**Command Default** None

**Command Modes** Privileged Exec (#)

Command History	Release	Modification
	Cisco IOS XE Cupertino 17.9.1	This command was introduced.

**Usage Guidelines** Use the **show lisp instance-id ipv4 publisher config-propagation** command on the border node to see a report of all the publishers. Use the **show lisp instance-id ipv4 publisher config-propagation ip-address** command to view the information for the publisher that is specified by the IP address.

## Examples

The following sample output shows the config-propagation state of all the publishers under the 4097 instance-id:

```
Device# show lisp instance-id 4097 ipv4 publisher config-propagation

LISP Publisher Information
Publisher           State           Session         PubSub State
100.77.77.77       Reachable       Up              Established
100.78.78.78       Reachable       Up              Established
100.110.110.110    Reachable       Up              Established
100.165.165.165    Reachable       Up              Established
pxtr22#
```

The following sample output shows the Publisher Table for a publisher with 100.77.77.77 IP address:

```
Device# show lisp instance-id 4097 ipv4 publisher config-propagation 100.77.77.77

LISP ETR IPv4 Publisher Table for LISP 0 EID-table default (IID 4097)
Publisher state: Established, Publisher epoch 2, Entries total 13

172.168.0.0/16, Epoch: 2, Last Published: 1w6d
                    TTL: never, State unknown
173.168.0.0/16, Epoch: 2, Last Published: 1w6d
                    TTL: never, State unknown
182.168.0.0/16, Epoch: 2, Last Published: 1w6d
                    TTL: never, State unknown
183.168.0.0/16, Epoch: 2, Last Published: 1w6d
```

**show lisp instance-id ipv4 publisher config-propagation**

```
TTL: never, State unknown
192.168.0.0/16, Epoch: 2, Last Published: 1w6d
TTL: never, State unknown
193.168.0.0/16, Epoch: 2, Last Published: 1w6d
TTL: never, State unknown
```

## show lisp instance-id ipv4 map-cache

To display the IPv4 end point identifier (EID) to the Resource Locator (RLOC) cache mapping on an ITR, use the **show lisp instance-id ipv4 map-cache** command in the privileged Exec mode.

**show lisp instance-id** *instance-id* **ipv4 map-cache** [*destination-EID* | *destination-EID-prefix* | **detail**]

Syntax Description	
<i>destination-EID</i>	(Optional) Specifies the IPv4 destination end point identifier (EID) for which the EID-to-RLOC mapping is displayed.
<i>destination-EID-prefix</i>	(Optional) Specifies the IPv4 destination EID prefix (in the form of <i>a.b.c.d/nn</i> ) for which to display the mapping.
<b>detail</b>	(Optional) Displays detailed EID-to-RLOC cache mapping information.

**Command Default** None

**Command Modes** Privileged Exec (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** This command is used to display the current dynamic and static IPv4 EID-to-RLOC map-cache entries. When no IPv4 EID or IPv4 EID prefix is specified, summary information is listed for all current dynamic and static IPv4 EID-to-RLOC map-cache entries. When an IPv4 EID or IPv4 EID prefix is included, information is listed for the longest-match lookup in the cache. When the detail option is used, detailed (rather than summary) information related to all current dynamic and static IPv4 EID-to-RLOC map-cache entries is displayed.

The following are sample outputs from the **show lisp instance-id ipv4 map-cache** commands:

```
device# show lisp instance-id 102 ipv4 map-cache
LISP IPv4 Mapping Cache for EID-table vrf blue (IID 102), 4008 entries

0.0.0.0/0, uptime: 2d14h, expires: never, via static-send-map-request
  Negative cache entry, action: send-map-request
128.0.0.0/3, uptime: 00:01:44, expires: 00:13:15, via map-reply, unknown-eid-forward
  PETR      Uptime   State    Pri/Wgt  Encap-IID
  55.55.55.1 13:32:40 up       1/100    103
  55.55.55.2 13:32:40 up       1/100    103
  55.55.55.3 13:32:40 up       1/100    103
  55.55.55.4 13:32:40 up       1/100    103
  55.55.55.5 13:32:40 up       5/100    103
  55.55.55.6 13:32:40 up       6/100    103
  55.55.55.7 13:32:40 up       7/100    103
  55.55.55.8 13:32:40 up       8/100    103
150.150.2.0/23, uptime: 11:47:25, expires: 00:06:30, via map-reply, unknown-eid-forward
  PETR      Uptime   State    Pri/Wgt  Encap-IID
  55.55.55.1 13:32:40 up       1/100    103
  55.55.55.2 13:32:40 up       1/100    103
  55.55.55.3 13:32:40 up       1/100    103
  55.55.55.4 13:32:40 up       1/100    103
  55.55.55.5 13:32:40 up       5/100    103
```

## show lisp instance-id ipv4 map-cache

```

55.55.55.6 13:32:40 up          6/100    103
55.55.55.7 13:32:43 up          7/100    103
55.55.55.8 13:32:43 up          8/100    103
150.150.4.0/22, uptime: 13:32:43, expires: 00:05:19, via map-reply, unknown-eid-forward
PETR      Uptime    State    Pri/Wgt  Encap-IID
55.55.55.1 13:32:43 up       1/100    103
55.55.55.2 13:32:43 up       1/100    103
55.55.55.3 13:32:43 up       1/100    103
55.55.55.4 13:32:43 up       1/100    103
55.55.55.5 13:32:43 up       5/100    103
55.55.55.6 13:32:43 up       6/100    103
55.55.55.7 13:32:43 up       7/100    103
55.55.55.8 13:32:43 up       8/100    103
150.150.8.0/21, uptime: 13:32:35, expires: 00:05:27, via map-reply, unknown-eid-forward
PETR      Uptime    State    Pri/Wgt  Encap-IID
55.55.55.1 13:32:43 up       1/100    103
55.55.55.2 13:32:43 up       1/100    103
55.55.55.3 13:32:43 up       1/100    103
55.55.55.4 13:32:43 up       1/100    103
55.55.55.5 13:32:43 up       5/100    103
55.55.55.6 13:32:43 up       6/100    103
55.55.55.7 13:32:43 up       7/100    103
55.55.55.8 13:32:45 up       8/100    103
171.171.0.0/16, uptime: 2d14h, expires: never, via dynamic-EID, send-map-request
Negative cache entry, action: send-map-request
172.172.0.0/16, uptime: 2d14h, expires: never, via dynamic-EID, send-map-request
Negative cache entry, action: send-map-request
178.168.2.1/32, uptime: 2d14h, expires: 09:27:13, via map-reply, complete
Locator   Uptime    State    Pri/Wgt  Encap-IID
11.11.11.1 2d14h    up       1/100    -
178.168.2.2/32, uptime: 2d14h, expires: 09:27:13, via map-reply, complete
Locator   Uptime    State    Pri/Wgt  Encap-IID
11.11.11.1 2d14h    up       1/100    -
178.168.2.3/32, uptime: 2d14h, expires: 09:27:13, via map-reply, complete
Locator   Uptime    State    Pri/Wgt  Encap-IID
11.11.11.1 2d14h    up       1/100    -
178.168.2.4/32, uptime: 2d14h, expires: 09:27:13, via map-reply, complete
Locator   Uptime    State    Pri/Wgt  Encap-IID
11.11.11.1 2d14h    up       1/100    -
178.168.2.5/32, uptime: 2d14h, expires: 09:27:13, via map-reply, complete
Locator   Uptime    State    Pri/Wgt  Encap-IID
11.11.11.1 2d14h    up       1/100    -
178.168.2.6/32, uptime: 2d14h, expires: 09:27:13, via map-reply, complete
Locator   Uptime    State    Pri/Wgt  Encap-IID

```

## device#show lisp instance-id 102 ipv4 map-cache detail

LISP IPv4 Mapping Cache for EID-table vrf blue (IID 102), 4008 entries

```

0.0.0.0/0, uptime: 2d15h, expires: never, via static-send-map-request
Sources: static-send-map-request
State: send-map-request, last modified: 2d15h, map-source: local
Exempt, Packets out: 30531(17585856 bytes) (~ 00:01:36 ago)
Configured as EID address space
Negative cache entry, action: send-map-request
128.0.0.0/3, uptime: 00:02:02, expires: 00:12:57, via map-reply, unknown-eid-forward
Sources: map-reply
State: unknown-eid-forward, last modified: 00:02:02, map-source: local
Active, Packets out: 9(5184 bytes) (~ 00:00:36 ago)
PETR      Uptime    State    Pri/Wgt  Encap-IID
55.55.55.1 13:32:58 up       1/100    103
55.55.55.2 13:32:58 up       1/100    103
55.55.55.3 13:32:58 up       1/100    103
55.55.55.4 13:32:58 up       1/100    103
55.55.55.5 13:32:58 up       5/100    103
55.55.55.6 13:32:58 up       6/100    103

```

```

55.55.55.7 13:32:58 up          7/100    103
55.55.55.8 13:32:58 up          8/100    103
150.150.2.0/23, uptime: 11:47:43, expires: 00:06:12, via map-reply, unknown-eid-forward
Sources: map-reply
State: unknown-eid-forward, last modified: 11:47:44, map-source: local
Active, Packets out: 4243(2443968 bytes) (~ 00:00:38 ago)
PETR      Uptime    State    Pri/Wgt  Encap-IID
55.55.55.1 13:33:00 up       1/100    103
55.55.55.2 13:33:00 up       1/100    103
55.55.55.3 13:33:00 up       1/100    103
55.55.55.4 13:33:00 up       1/100    103
55.55.55.5 13:33:00 up       5/100    103
55.55.55.6 13:33:00 up       6/100    103
55.55.55.7 13:33:00 up       7/100    103
55.55.55.8 13:33:00 up       8/100    103
150.150.4.0/22, uptime: 13:33:00, expires: 00:05:02, via map-reply, unknown-eid-forward
Sources: map-reply
State: unknown-eid-forward, last modified: 13:33:00, map-source: local
Active, Packets out: 4874(2807424 bytes) (~ 00:00:38 ago)
PETR      Uptime    State    Pri/Wgt  Encap-IID
55.55.55.1 13:33:00 up       1/100    103
55.55.55.2 13:33:00 up       1/100    103
55.55.55.3 13:33:00 up       1/100    103
55.55.55.4 13:33:00 up       1/100    103
55.55.55.5 13:33:00 up       5/100    103
55.55.55.6 13:33:00 up       6/100    103
55.55.55.7 13:33:01 up       7/100    103
55.55.55.8 13:33:01 up       8/100    103
150.150.8.0/21, uptime: 13:32:53, expires: 00:05:09, via map-reply, unknown-eid-forward
Sources: map-reply
State: unknown-eid-forward, last modified: 13:32:53, map-source: local
Active, Packets out: 4874(2807424 bytes) (~ 00:00:39 ago)
PETR      Uptime    State    Pri/Wgt  Encap-IID
55.55.55.1 13:33:01 up       1/100    103
55.55.55.2 13:33:01 up       1/100    103
55.55.55.3 13:33:01 up       1/100    103
55.55.55.4 13:33:01 up       1/100    103
55.55.55.5 13:33:01 up       5/100    103
55.55.55.6 13:33:01 up       6/100    103
55.55.55.7 13:33:01 up       7/100    103
55.55.55.8 13:33:01 up       8/100    103
171.171.0.0/16, uptime: 2d15h, expires: never, via dynamic-EID, send-map-request
Sources: NONE
State: send-map-request, last modified: 2d15h, map-source: local
Exempt, Packets out: 2(1152 bytes) (~ 2d14h ago)
Configured as EID address space
Configured as dynamic-EID address space
Encapsulating dynamic-EID traffic
Negative cache entry, action: send-map-request
172.172.0.0/16, uptime: 2d15h, expires: never, via dynamic-EID, send-map-request
Sources: NONE
State: send-map-request, last modified: 2d15h, map-source: local
Exempt, Packets out: 2(1152 bytes) (~ 2d14h ago)
Configured as EID address space
Configured as dynamic-EID address space
Encapsulating dynamic-EID traffic
Negative cache entry, action: send-map-request
178.168.2.1/32, uptime: 2d14h, expires: 09:26:55, via map-reply, complete
Sources: map-reply
State: complete, last modified: 2d14h, map-source: 48.1.1.4
Active, Packets out: 22513(12967488 bytes) (~ 00:00:41 ago)
Locator   Uptime    State    Pri/Wgt  Encap-IID
11.11.11.1 2d14h    up       1/100    -
Last up-down state change:          2d14h, state change count: 1

```

## show lisp instance-id ipv4 map-cache

```

Last route reachability change: 2d14h, state change count: 1
Last priority / weight change: never/never
RLOC-probing loc-status algorithm:
  Last RLOC-probe sent: 2d14h (rtt 92ms)
178.168.2.2/32, uptime: 2d14h, expires: 09:26:55, via map-reply, complete
Sources: map-reply
State: complete, last modified: 2d14h, map-source: 48.1.1.4
Active, Packets out: 22513(12967488 bytes) (~ 00:00:45 ago)
Locator      Uptime      State      Pri/Wgt      Encap-IID
11.11.11.1  2d14h      up         1/100        -
  Last up-down state change: 2d14h, state change count: 1
  Last route reachability change: 2d14h, state change count: 1
  Last priority / weight change: never/never
  RLOC-probing loc-status algorithm:
    Last RLOC-probe sent: 2d14h (rtt 91ms)
178.168.2.3/32, uptime: 2d14h, expires: 09:26:51, via map-reply, complete
Sources: map-reply
State: complete, last modified: 2d14h, map-source: 48.1.1.4
Active, Packets out: 22513(12967488 bytes) (~ 00:00:45 ago)
Locator      Uptime      State      Pri/Wgt      Encap-IID
11.11.11.1  2d14h      up         1/100        -
  Last up-down state change: 2d14h, state change count: 1
  Last route reachability change: 2d14h, state change count: 1
  Last priority / weight change: never/never
  RLOC-probing loc-status algorithm:
    Last RLOC-probe sent: 2d14h (rtt 91ms)
178.168.2.4/32, uptime: 2d14h, expires: 09:26:51, via map-reply, complete
Sources: map-reply
State: complete, last modified: 2d14h, map-source: 48.1.1.4

device#show lisp instance-id 102 ipv4 map-cache 178.168.2.3/32
LISP IPv4 Mapping Cache for EID-table vrf blue (IID 102), 4008 entries

178.168.2.3/32, uptime: 2d14h, expires: 09:26:25, via map-reply, complete
Sources: map-reply
State: complete, last modified: 2d14h, map-source: 48.1.1.4
Active, Packets out: 22519(12970944 bytes) (~ 00:00:11 ago)
Locator      Uptime      State      Pri/Wgt      Encap-IID
11.11.11.1  2d14h      up         1/100        -
  Last up-down state change: 2d14h, state change count: 1
  Last route reachability change: 2d14h, state change count: 1
  Last priority / weight change: never/never
  RLOC-probing loc-status algorithm:
    Last RLOC-probe sent: 2d14h (rtt 91ms)

device#show lisp instance-id 102 ipv4 map-cache 178.168.2.3
LISP IPv4 Mapping Cache for EID-table vrf blue (IID 102), 4008 entries

178.168.2.3/32, uptime: 2d14h, expires: 09:26:14, via map-reply, complete
Sources: map-reply
State: complete, last modified: 2d14h, map-source: 48.1.1.4
Active, Packets out: 22519(12970944 bytes) (~ 00:00:22 ago)
Locator      Uptime      State      Pri/Wgt      Encap-IID
11.11.11.1  2d14h      up         1/100        -
  Last up-down state change: 2d14h, state change count: 1
  Last route reachability change: 2d14h, state change count: 1
  Last priority / weight change: never/never
  RLOC-probing loc-status algorithm:
    Last RLOC-probe sent: 2d14h (rtt 91ms)
OTT-LISP-C3K-4-xTR2#show lisp instance-id 102 sta
OTT-LISP-C3K-4-xTR2#show lisp instance-id 102 stat
OTT-LISP-C3K-4-xTR2#show lisp instance-id 102 ipv4 stat
OTT-LISP-C3K-4-xTR2#show lisp instance-id 102 ipv4 statistics
LISP EID Statistics for instance ID 102 - last cleared: never
Control Packets:

```

```

Map-Requests in/out: 5911/66032
  Map-Request receive rate (5 sec/1 min/5 min): 0.00/ 0.00/ 0.00
  Encapsulated Map-Requests in/out: 0/60600
  RLOC-probe Map-Requests in/out: 5911/5432
  SMR-based Map-Requests in/out: 0/0
  Extranet SMR cross-IID Map-Requests in: 0
  Map-Requests expired on-queue/no-reply 0/0
  Map-Resolver Map-Requests forwarded: 0
  Map-Server Map-Requests forwarded: 0
Map-Reply records in/out: 64815/5911
  Authoritative records in/out: 12696/5911
  Non-authoritative records in/out: 52119/0
  Negative records in/out: 8000/0
  RLOC-probe records in/out: 4696/5911
  Map-Server Proxy-Reply records out: 0
WLC Map-Subscribe records in/out: 0/4
  Map-Subscribe failures in/out: 0/0
WLC Map-Unsubscribe records in/out: 0/0
  Map-Unsubscribe failures in/out: 0/0
Map-Register records in/out: 0/8310
  Map-Register receive rate (5 sec/1 min/5 min): 0.00/ 0.00/ 0.00
  Map-Server AF disabled: 0
  Authentication failures: 0
WLC Map-Register records in/out: 0/0
  WLC AP Map-Register in/out: 0/0
  WLC Client Map-Register in/out: 0/0
  WLC Map-Register failures in/out: 0/0
Map-Notify records in/out: 20554/0
  Authentication failures: 0
WLC Map-Notify records in/out: 0/0
  WLC AP Map-Notify in/out: 0/0
  WLC Client Map-Notify in/out: 0/0
  WLC Map-Notify failures in/out: 0/0
Publish-Subscribe in/out:
  Subscription Request records in/out: 0/6
  Subscription Request failures in/out: 0/0
  Subscription Status records in/out: 4/0
    End of Publication records in/out: 4/0
  Subscription rejected records in/out: 0/0
  Subscription removed records in/out: 0/0
  Subscription Status failures in/out: 0/0
  Solicit Subscription records in/out: 0/0
  Solicit Subscription failures in/out: 0/0
  Publication records in/out: 0/0
  Publication failures in/out: 0/0
Errors:
  Mapping record TTL alerts: 0
  Map-Request invalid source rloc drops: 0
  Map-Register invalid source rloc drops: 0
  DDT Requests failed: 0
  DDT ITR Map-Requests dropped: 0 (nonce-collision: 0, bad-xTR-nonce:
0)
Cache Related:
  Cache entries created/deleted: 200103/196095
  NSF CEF replay entry count 0
  Number of EID-prefixes in map-cache: 4008
  Number of rejected EID-prefixes due to limit : 0
  Number of negative entries in map-cache: 8
  Total number of RLOCs in map-cache: 4000
  Average RLOCs per EID-prefix: 1
Forwarding:
  Number of data signals processed: 199173 (+ dropped 5474)
  Number of reachability reports: 0 (+ dropped 0)
  Number of SMR signals dropped: 0

```

## show lisp instance-id ipv4 map-cache

```

ITR Map-Resolvers:
  Map-Resolver          LastReply  Metric ReqsSent  Positive  Negative  No-Reply  AvgRTT (5
sec/1 min/5 min)
  44.44.44.44          00:03:11      6    62253    19675    8000      0    0.00/
0.00/10.00
  66.66.66.66          never        Unreach    0         0         0         0    0.00/ 0.00/
0.00
ETR Map-Servers:
  Map-Server            AvgRTT(5 sec/1 min/5 min)
  44.44.44.44          0.00/ 0.00/ 0.00
  66.66.66.66          0.00/ 0.00/ 0.00
LISP RLOC Statistics - last cleared: never
Control Packets:
  RTR Map-Requests forwarded:      0
  RTR Map-Notifies forwarded:      0
  DDT-Map-Requests in/out:         0/0
  DDT-Map-Referrals in/out:        0/0
Errors:
  Map-Request format errors:      0
  Map-Reply format errors:        0
  Map-Referral format errors:     0
LISP Miscellaneous Statistics - last cleared: never
Errors:
  Invalid IP version drops:        0
  Invalid IP header drops:         0
  Invalid IP proto field drops:    0
  Invalid packet size drops:       0
  Invalid LISP control port drops: 0
  Invalid LISP checksum drops:     0
  Unsupported LISP packet type drops: 0
  Unknown packet drops:            0

```



# show lisp instance-id ipv6 map-cache

To display the IPv6 end point identifier (EID) to the Resource Locator (RLOC) cache mapping on an ITR, use the **show lisp instance-id ipv6 map-cache** command in the privileged EXEC mode.

**show lisp instance-id** *instance-id* **ipv6 map-cache** [*destination-EID* | *destination-EID-prefix* | **detail**]

Syntax Description	
<i>destination-EID</i>	(Optional) Specifies the IPv4 destination end point identifier (EID) for which the EID-to-RLOC mapping is displayed.
<i>destination-EID-prefix</i>	(Optional) Specifies the IPv4 destination EID prefix (in the form of <i>a.b.c.d/nn</i> ) for which to display the mapping.
<b>detail</b>	(Optional) Displays detailed EID-to-RLOC cache mapping information.

**Command Default** None.

**Command Modes** Privileged Exec (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** This command is used to display the current dynamic and static IPv6 EID-to-RLOC map-cache entries. When no IPv6 EID or IPv6 EID prefix is specified, summary information is listed for all current dynamic and static IPv4 EID-to-RLOC map-cache entries. When an IPv6 EID or IPv6 EID prefix is included, information is listed for the longest-match lookup in the cache. When the detail option is used, detailed (rather than summary) information related to all current dynamic and static IPv6 EID-to-RLOC map-cache entries is displayed.

The following is a sample output from the **show lisp instance-id ipv6 map-cache** command:

```
device# show lisp instance-id 101 ipv6 map-cache
LISP IPv6 Mapping Cache, 2 entries

::/0, uptime: 00:00:26, expires: never, via static
  Negative cache entry, action: send-map-request
2001:DB8:AB::/48, uptime: 00:00:04, expires: 23:59:53, via map-reply, complete
  Locator   Uptime   State    Pri/Wgt
  10.0.0.6  00:00:04  up       1/100
```

The following sample output from the **show lisp instance-id x ipv6 map-cache detail** command displays a detailed list of current dynamic and static IPv6 EID-to-RLOC map-cache entries:

```
device#show lisp instance-id 101 ipv6 map-cache detail
LISP IPv6 Mapping Cache, 2 entries

::/0, uptime: 00:00:52, expires: never, via static
  State: send-map-request, last modified: 00:00:52, map-source: local
  Idle, Packets out: 0
  Negative cache entry, action: send-map-request
2001:DB8:AB::/48, uptime: 00:00:30, expires: 23:59:27, via map-reply, complete
  State: complete, last modified: 00:00:30, map-source: 10.0.0.6
  Active, Packets out: 0
  Locator   Uptime   State    Pri/Wgt
```

**show lisp instance-id ipv6 map-cache**

```

10.0.0.6 00:00:30 up          1/100
  Last up-down state change:      never, state change count: 0
  Last priority / weight change:  never/never
  RLOC-probing loc-status algorithm:
    Last RLOC-probe sent:         never

```

The following sample output from the `show ipv6 lisp map-cache` command with a specific IPv6 EID prefix displays detailed information associated with that IPv6 EID prefix entry.

```

device#show lisp instance-id 101 ipv6 map-cache 2001:DB8:AB::/48
LISP IPv6 Mapping Cache, 2 entries

2001:DB8:AB::/48, uptime: 00:01:02, expires: 23:58:54, via map-reply, complete
State: complete, last modified: 00:01:02, map-source: 10.0.0.6
Active, Packets out: 0
Locator  Uptime    State    Pri/Wgt
10.0.0.6 00:01:02 up       1/100
  Last up-down state change:      never, state change count: 0
  Last priority / weight change:  never/never
  RLOC-probing loc-status algorithm:
    Last RLOC-probe sent:         never

```

## show lisp instance-id ipv4 server

To display the Location Identifier Separation Protocol (LISP) site registration information, use the **show lisp instance-id ipv4 server** command in privileged EXEC mode.

**show lisp instance-id** *instance-id* **ipv4 server** [ *EID-address* | *EID-prefix* | **detail** | **name** | **rloc** | **summary** | **silent-host-detection** ]

Syntax Description	
<i>EID-address</i>	(Optional) Site registration information for this end point.
<i>EID-prefix</i>	(Optional) Site registration information for this IPv4 EID prefix.
<b>detail</b>	(Optional) Displays detailed site information.
<b>name</b>	(Optional) Displays site registration information for the named site.
<b>rloc</b>	(Optional) Displays the routing locator endpoint identifier (RLOC-EID) instance membership details.
<b>summary</b>	(Optional) Displays summary information for each site.
<b>silent-host-detection</b>	(Optional) Displays the silent host detection registration information on the Map Server Map Resolver (MSMR).

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
		This command was introduced.
	Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.

**Usage Guidelines** When a host is detected by the tunnel router (xTR), it registers the host with the map server. Use the **show lisp instance-id ipv4 server** command to see the site registration details. TCP registrations display the port number, whereas UDP registrations do not display the port number. The port number is 4342 by default for UDP registrations.

### Examples

The following are the sample outputs of the **show lisp instance-id ipv4 server** command:

```
device# show lisp instance-id 100 ipv4 server

LISP Site Registration Information
* = Some locators are down or unreachable
# = Some registrations are sourced by reliable transport

Site Name      Last      Up        Who Last      Inst      EID Prefix
Register
XTR            00:03:22  yes*#    172.16.1.4:64200  100      101.1.0.0/16
              00:03:16  yes#     172.16.1.3:19881  100      101.1.1.1/32
```

## show lisp instance-id ipv4 server

```
device# show lisp instance-id 100 ipv4 server 101.1.0.0/16
```

```
LISP Site Registration Information
```

```
Site name: XTR
```

```
Allowed configured locators: any
```

```
Requested EID-prefix:
```

```
EID-prefix: 101.1.0.0/16 instance-id 100
```

```
First registered: 00:04:24
```

```
Last registered: 00:04:20
```

```
Routing table tag: 0
```

```
Origin: Configuration, accepting more specifics
```

```
Merge active: No
```

```
Proxy reply: No
```

```
TTL: 1d00h
```

```
State: complete
```

```
Registration errors:
```

```
Authentication failures: 0
```

```
Allowed locators mismatch: 0
```

```
ETR 172.16.1.4:64200, last registered 00:04:20, no proxy-reply, map-notify
```

```
TTL 1d00h, no merge, hash-function sha1, nonce 0xc1ED8EE1-0x553D05D4
```

```
state complete, no security-capability
```

```
xTR-ID 0x46B2F3A5-0x19B0A3C5-0x67055A44-0xF5BF3FB8
```

```
site-ID unspecified
```

```
sourced by reliable transport
```

Locator	Local	State	Pri/Wgt	Scope
172.16.1.4	yes	admin-down	255/100	IPv4 none

The following is a sample output showing a UDP registration (without port number):

```
device# show lisp instance-id 100 ipv4 server 101.1.1.1/32
```

```
LISP Site Registration Information
```

```
Site name: XTR
```

```
Allowed configured locators: any
```

```
Requested EID-prefix:
```

```
EID-prefix: 101.1.1.1/32 instance-id 100
```

```
First registered: 00:00:08
```

```
Last registered: 00:00:04
```

```
Routing table tag: 0
```

```
Origin: Dynamic, more specific of 101.1.0.0/16
```

```
Merge active: No
```

```
Proxy reply: No
```

```
TTL: 1d00h
```

```
State: complete
```

```
Registration errors:
```

```
Authentication failures: 0
```

```
Allowed locators mismatch: 0
```

```
ETR 172.16.1.3:46245, last registered 00:00:04, no proxy-reply, map-notify
```

```
TTL 1d00h, no merge, hash-function sha1, nonce 0x1769BD91-0x06E10A06
```

```
state complete, no security-capability
```

```
xTR-ID 0x4F5F0056-0xAE270416-0x360B42D6-0x6FCD3F5B
```

```
site-ID unspecified
```

```
sourced by reliable transport
```

Locator	Local	State	Pri/Wgt	Scope
172.16.1.3	yes	up	100/100	IPv4 none

```
ETR 172.16.1.3, last registered 00:00:08, no proxy-reply, map-notify
```

```
TTL 1d00h, no merge, hash-function sha1, nonce 0x1769BD91-0x06E10A06
```

```
state complete, no security-capability
```

```
xTR-ID 0x4F5F0056-0xAE270416-0x360B42D6-0x6FCD3F5B
```

```

                                site-ID unspecified
Locator      Local  State      Pri/Wgt  Scope
172.16.1.3  yes   up         100/100  IPv4 none

```

Use the **silent-host-detection** option to view the silent host detection registration information on the MSMR.

```
device# show lisp instance 101 ipv4 server silent-host-detection
```

```
LISP Site Registration Information
```

```
* = Some locators are down or unreachable
```

```
# = Some registrations are sourced by reliable transport
```

Site Name	Last Register	Up	Who Last Registered	Inst ID	EID Prefix
multisite	never	no	--	101	0.0.0.0/0
	never	no	--	101	10.1.2.0/24
	never	no	--	101	172.168.0.0/16
	never	no	--	101	10.168.0.0/16
	1d10h	yes#	10.22.22.22:30118	101	10.160.0.0/16
	2d11h	yes#	10.11.11.11:23346	101	10.161.0.0/16
	never	no	--	101	10.162.0.0/16
	never	no	--	101	10.163.0.0/16
	never	no	--	101	10.164.0.0/16

# show lisp instance-id ipv6 server

To display the Location Identifier Separation Protocol (LISP) site registration information, use the **show lisp instance-id ipv6 server** command in privileged EXEC mode.

**show lisp instance-id** *instance-id* **ipv6 server** [ *EID-address* | *EID-prefix* | **detail** | **name** | **rloc** | **summary** | **silent-host-detection** ]

Syntax Description	
<i>EID-address</i>	(Optional) Site registration information for this end point.
<i>EID-prefix</i>	(Optional) Site registration information for this IPv6 EID prefix.
<b>detail</b>	(Optional) Displays detailed site information.
<b>name</b>	(Optional) Displays the site registration information for the named site.
<b>rloc</b>	(Optional) Displays the routing locator endpoint identifier (RLOC-EID) instance membership details.
<b>summary</b>	(Optional) Displays summary information for each site.
<b>silent-host-detection</b>	(Optional) Displays the silent host detection registration information on the Map Server Map Resolver (MSMR).

**Command Default** None

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.
	Cisco IOS XE Dublin 17.11.1	This command was modified. Introduced support for the <b>silent-host-detection</b> keyword.

**Usage Guidelines** When a host is detected by the tunnel router (xTR), it registers the host with the map server.

## Examples

The following is a sample output of the **show lisp instance-id ipv6 server** command:

```
device# show lisp instance-id 2 ipv6 server
```

```
LISP Site Registration Information
* = Some locators are down or unreachable
# = Some registrations are sourced by reliable transport
```

Site Name	Last Register	Up	Who Last Registered	Inst ID	EID Prefix
Shire	never	no	--	2	2001::/64
	00:18:21	yes#	100.1.1.1:22590	2	2001::101/128

The following is a sample output of the **show lisp instance-id ipv6 server silent-host-detection** command:

```
device# show lisp instance-id 101 ipv6 server silent-host-detection
```

```
LISP Site Registration Information
```

```
* = Some locators are down or unreachable
```

```
# = Some registrations are sourced by reliable transport
```

Site Name	Last Register	Up	Who Last Registered	Inst ID	EID Prefix
multisite	never	no	--	101	::/0
	never	no	--	101	2001:172:168:1::/64
	never	no	--	101	2001:191:168:1::/64
	2d14h	yes#	100.11.11.11:23346	101	2001:192:168:1::/64
	2d14h	yes#	100.11.11.11:23346	101	2001:193:168:1::/64
	never	no	--	101	2001:195:168:1::/64
	never	no	--	101	2001:196:168:1::/64
	never	no	--	101	2001:197:168:1::/64

# show lisp instance-id ipv4 statistics

To display Locator/ID Separation Protocol (LISP) IPv4 address-family packet count statistics, use the **show lisp instance-id ipv4 statistics** command in the privileged EXEC mode.

**show lisp instance-id *instance-id* ipv4 statistics**

## Syntax Description

This command has no keywords or arguments.

**Command Default** None

**Command Modes** Privileged Exec (#)

Command History	Release	Modification
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** This command is used to display IPv4 LISP statistics related to packet encapsulations, de-encapsulations, map requests, map replies, map registers, and other LISP-related packets.

The following is a sample output of the **show lisp instance-id 4099 ipv4 statistics** command:

```
device# show lisp instance-id 4099 ipv4 statistics
LISP EID Statistics for instance ID 4099 - last cleared: never
Control Packets:
  Map-Requests in/out:                                0/0
  Map-Requests in (5 sec/1 min/5 min):                0/0/0
  Encapsulated Map-Requests in/out:                  0/0
  RLOC-probe Map-Requests in/out:                    0/0
  SMR-based Map-Requests in/out:                     0/0
  Extranet SMR cross-IID Map-Requests in:            0
  Map-Requests expired on-queue/no-reply             0/0
  Map-Resolver Map-Requests forwarded:               0
  Map-Server Map-Requests forwarded:                 0
Map-Reply records in/out:                            0/0
  Authoritative records in/out:                      0/0
  Non-authoritative records in/out:                   0/0
  Negative records in/out:                           0/0
  RLOC-probe records in/out:                          0/0
  Map-Server Proxy-Reply records out:                 0
WLC Map-Subscribe records in/out:                    2/2
  Map-Subscribe failures in/out:                     0/0
WLC Map-Unsubscribe records in/out:                  1/1
  Map-Unsubscribe failures in/out:                   0/0
Map-Register records in/out:                         11/11
  Map-Registers in (5 sec/1 min/5 min):              0/0/0
  Map-Server AF disabled:                            0
  Not valid site eid prefix:                          2
  Authentication failures:                           0
  Disallowed locators:                               0
  Miscellaneous:                                     0
WLC Map-Register records in/out:                     0/0
  WLC AP Map-Register in/out:                        0/0
  WLC Client Map-Register in/out:                    0/0
```



```

WLC Map-Register failures in/out:          0/0
Map-Notify records in/out:                 14/7
  Authentication failures:                 0
WLC Map-Notify records in/out:             0/0
  WLC AP Map-Notify in/out:                0/0
  WLC Client Map-Notify in/out:            0/0
  WLC Map-Notify failures in/out:          0/0
Publish-Subscribe in/out:
  Subscription Request records in/out:      1/1
    IID subscription requests in/out:       1/1
    Pub-refresh subscription requests in/out: 0/0
    Policy subscription requests in/out:    0/0
  Subscription Request failures in/out:     0/0
  Subscription Status records in/out:       5/5
    End of Publication records in/out:       5/5
    Subscription rejected records in/out:    0/0
    Subscription removed records in/out:    0/0
  Subscription Status failures in/out:     0/0
  Solicit Subscription records in/out:      2/1
  Solicit Subscription failures in/out:     0/0
  Publication records in/out:               13/13
  Publication failures in/out:              0/0
Errors:
  Mapping record TTL alerts:                0
  Map-Request invalid source rloc drops:    0
  Map-Register invalid source rloc drops:   0
  DDT Requests failed:                      0
  DDT ITR Map-Requests dropped:              0 (nonce-collision: 0, bad-xTR-nonce:
0)
Cache Related:
  Cache entries created/deleted:            2/2
  Cache full:                               no
  Cache entry limit:                        32768
  NSF replay entry count                     0
  NSF CEF replay entry count                 0
  Number of EID-prefixes in map-cache:      0
  Number of native EID forward entries:     0
  Number of unknown EID forward entries:    0
  Number of mappings skipped due to RLOC watch: 0
  Number of rejected EID-prefixes due to limit: 0
  Number of times signal suppression was turned on: 0
  Time since last signal suppressed change:  never
  Number of negative entries in map-cache:   0
  Total number of RLOCs in map-cache:        0
  Total number of RLOCs as last resort source: 0
  Average RLOCs per EID-prefix:              0
  Policy active entries:                     0
  Idle entries:                              0
Forwarding:
  Number of data signals processed:          1 (+ dropped 0)
  Number of reachability reports:            0 (+ dropped 0)
  Number of SMR signals dropped:              0
LISP RLOC Statistics - last cleared: never
Control Packets:
  RTR Map-Requests forwarded:                0
  RTR Map-Notifies forwarded:                0
  DDT-Map-Requests in/out:                   0/0
  DDT-Map-Referrals in/out:                  0/0
Errors:
  Map-Request format errors:                 0
  Map-Reply format errors:                   0
  Map-Referral format errors:                0
LISP Miscellaneous Statistics - last cleared: never
Errors:

```

**show lisp instance-id ipv4 statistics**

```
Invalid IP version drops:          0
Invalid IP header drops:           0
Invalid IP proto field drops:      0
Invalid packet size drops:         0
Invalid LISP control port drops:   0
Invalid LISP checksum drops:       0
Unsupported LISP packet type drops: 0
Unknown packet drops:              0
device#
```

# show lisp instance-id ipv6 statistics

To display Locator/ID Separation Protocol (LISP) IPv6 address-family packet count statistics, use the **show lisp instance-id ipv6 statistics** command in the privileged EXEC mode.

**show lisp instance-id** *instance-id* **ipv6 statistics**

## Syntax Description

This command does not have any keywords or arguments.

### Command Default

None.

### Command Modes

Privileged Exec (#)

### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

### Usage Guidelines

This command is used to display IPv6 LISP statistics related to packet encapsulations, de-encapsulations, map requests, map replies, map registers, and other LISP-related packets.

The following is a sample output of the **show lisp instance-id 4099 ipv6 statistics** command :

```
device# show lisp instance-id 4099 ipv6 statistics
LISP EID Statistics for instance ID 4099 - last cleared: never
Control Packets:
  Map-Requests in/out:                               2/2
  Map-Requests in (5 sec/1 min/5 min):              0/0/0
  Encapsulated Map-Requests in/out:                 2/2
  RLOC-probe Map-Requests in/out:                   0/0
  SMR-based Map-Requests in/out:                    0/0
  Extranet SMR cross-IID Map-Requests in:           0
  Map-Requests expired on-queue/no-reply            0/0
  Map-Resolver Map-Requests forwarded:              0
  Map-Server Map-Requests forwarded:                0
Map-Reply records in/out:                            2/2
  Authoritative records in/out:                     2/2
  Non-authoritative records in/out:                  0/0
  Negative records in/out:                          0/0
  RLOC-probe records in/out:                        0/0
  Map-Server Proxy-Reply records out:                0
WLC Map-Subscribe records in/out:                   2/2
  Map-Subscribe failures in/out:                    0/0
WLC Map-Unsubscribe records in/out:                 1/1
  Map-Unsubscribe failures in/out:                  0/0
Map-Register records in/out:                        9/9
  Map-Registers in (5 sec/1 min/5 min):            0/0/0
  Map-Server AF disabled:                           0
  Not valid site eid prefix:                         2
  Authentication failures:                          0
  Disallowed locators:                              0
  Miscellaneous:                                    0
WLC Map-Register records in/out:                    0/0
  WLC AP Map-Register in/out:                       0/0
  WLC Client Map-Register in/out:                   0/0
```

## show lisp instance-id ipv6 statistics

```

WLC Map-Register failures in/out:          0/0
Map-Notify records in/out:                 10/5
  Authentication failures:                 0
WLC Map-Notify records in/out:             0/0
  WLC AP Map-Notify in/out:                0/0
  WLC Client Map-Notify in/out:            0/0
  WLC Map-Notify failures in/out:          0/0
Publish-Subscribe in/out:
  Subscription Request records in/out:      1/1
  IID subscription requests in/out:         1/1
  Pub-refresh subscription requests in/out: 0/0
  Policy subscription requests in/out:      0/0
  Subscription Request failures in/out:     0/0
  Subscription Status records in/out:       5/5
  End of Publication records in/out:        5/5
  Subscription rejected records in/out:     0/0
  Subscription removed records in/out:      0/0
  Subscription Status failures in/out:      0/0
  Solicit Subscription records in/out:      1/1
  Solicit Subscription failures in/out:     0/0
  Publication records in/out:               11/11
  Publication failures in/out:              0/0
Errors:
  Mapping record TTL alerts:                0
  Map-Request invalid source rloc drops:    0
  Map-Register invalid source rloc drops:   0
  DDT Requests failed:                      0
  DDT ITR Map-Requests dropped:             0 (nonce-collision: 0, bad-xTR-nonce:
0)
Cache Related:
  Cache entries created/deleted:            4/4
  Cache full:                               no
  Cache entry limit:                        32768
  NSF replay entry count                     0
  NSF CEF replay entry count                 0
  Number of EID-prefixes in map-cache:      0
  Number of native EID forward entries:     0
  Number of unknown EID forward entries:    0
  Number of mappings skipped due to RLOC watch: 0
  Number of rejected EID-prefixes due to limit: 0
  Number of times signal suppression was turned on: 0
  Time since last signal suppressed change:  never
  Number of negative entries in map-cache:   0
  Total number of RLOCs in map-cache:        0
  Total number of RLOCs as last resort source: 0
  Average RLOCs per EID-prefix:             0
  Policy active entries:                     0
  Idle entries:                              0
Forwarding:
  Number of data signals processed:          1 (+ dropped 0)
  Number of reachability reports:           0 (+ dropped 0)
  Number of SMR signals dropped:            0
LISP RLOC Statistics - last cleared: never
Control Packets:
  RTR Map-Requests forwarded:                0
  RTR Map-Notifies forwarded:                0
  DDT-Map-Requests in/out:                   0/0
  DDT-Map-Referrals in/out:                  0/0
Errors:
  Map-Request format errors:                 0
  Map-Reply format errors:                   0
  Map-Referral format errors:                0
LISP Miscellaneous Statistics - last cleared: never
Errors:

```

```
Invalid IP version drops:           0
Invalid IP header drops:            0
Invalid IP proto field drops:       0
Invalid packet size drops:          0
Invalid LISP control port drops:    0
Invalid LISP checksum drops:        0
Unsupported LISP packet type drops: 0
Unknown packet drops:               0
device#
```

# show lisp prefix-list

To display the LISP prefix-list information, use the **show lisp prefix-list** command in the privileged EXEC mode.

**show lisp prefix-list** [*name-prefix-list*]

<b>Syntax Description</b>	<i>name-prefix-list</i> (Optional) Specifies the prefix-list whose information is displayed.	
<b>Command Default</b>	None	
<b>Command Modes</b>	Privileged Exec (#)	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

## Example

The following is a sample output from the **show lisp prefix-list** command:

```
device# show lisp prefix-list
Lisp Prefix List information for router lisp 0

Prefix List: set
  Number of entries: 1
  Entries:
  1.2.3.4/16
  Sources: static
```

# show lisp session

To display the current list of reliable transport sessions in the fabric, use the **show lisp session** command in the privileged EXEC mode.

**show lisp session** [**all** | **established**]

<b>Syntax Description</b>	<b>all</b> (Optional) Displays transport session information for all the sessions.
	<b>established</b> (Optional) Displays transport session information for established connections.

**Command Default** None.

**Command Modes** Privileged Exec

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

**Usage Guidelines** The **show lisp session** command displays only those sessions that are in Up or Down state. Use the **show lisp session all** command to see all sessions in any state.

The following is a sample output of the command **show lisp session** on an MSMR:

```
device# show lisp session
Sessions for VRF default, total: 4, established: 2
Peer                               State      Up/Down      In/Out      Users
172.16.1.3:22667                    Up         00:00:52     4/8         2
172.16.1.4:18904                    Up         00:22:15     5/13        1

device# show lisp session all
Sessions for VRF default, total: 4, established: 2
Peer                               State      Up/Down      In/Out      Users
172.16.1.3                          Listening  never        0/0         0
172.16.1.3:22667                    Up         00:01:13     4/8         2
172.16.1.4                          Listening  never        0/0         0
172.16.1.4:18904                    Up         00:22:36     5/13        1
```

## use-petr

To configure a router to use an IPv4 or IPv6 Locator/ID Separation Protocol (LISP) Proxy Egress Tunnel Router (PETR), use the **use-petr** command in LISP Instance configuration mode or LISP Instance Service configuration mode. To remove the use of a LISP PETR, use the **no** form of this command.

**use-petr** *locator-address* [ **priority** *priority* **weight** *weight* ]

**no use-petr** *locator-address* [ **priority** *priority* **weight** *weight* ]

### Syntax Description

<i>locator-address</i>	The name of locator-set that is set as default.
<b>priority</b> <i>priority</i>	(Optional) Specifies the priority (value between 0 and 255) assigned to this PETR. A lower value indicates a higher priority.
<b>weight</b> <i>weight</i>	(Optional) Specifies the percentage of traffic to be load-shared (value between 0 and 100).

### Command Default

The router does not use PETR services.

### Command Modes

LISP Service (router-lisp-service)  
LISP Instance-Service (router-lisp-instance-service)

### Command History

#### Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1c	This command was introduced.

### Usage Guidelines

Use the **use-petr** command to enable an Ingress Tunnel Router (ITR) or Proxy Ingress Tunnel Router (PITR) to use IPv4 Proxy Egress Tunnel Router (PETR) services. When the use of PETR services is enabled, instead of natively forwarding LISP endpoint identifier (EID) (source) packets destined to non-LISP sites, these packets are LISP-encapsulated and forwarded to the PETR. Upon receiving these packets, the PETR decapsulates them and then forwards them natively toward the non-LISP destination.

Do not use **use-petr** command in Service-Ethernet configuration mode.

PETR services may be necessary in several cases:

1. By default when a LISP site forwards packets to a non-LISP site natively (not LISP encapsulated), the source IP address of the packet is that of an EID. When the provider side of the access network is configured with strict unicast reverse path forwarding (uRPF) or an anti-spoofing access list, it may consider these packets to be spoofed and drop them since EIDs are not advertised in the provider core network. In this case, instead of natively forwarding packets destined to non-LISP sites, the ITR encapsulates these packets using its site locator(s) as the source address and the PETR as the destination address.



**Note** The use of the **use-petr** command does not change LISP-to-LISP or non-LISP-to-non-LISP forwarding behavior. LISP EID packets destined for LISP sites will follow normal LISP forwarding processes and be sent directly to the destination ETR as normal. Non-LISP-to-non-LISP packets are never candidates for LISP encapsulation and are always forwarded natively according to normal processes.



2. When a LISP IPv6 (EID) site needs to connect to a non-LISP IPv6 site and the ITR locators or some portion of the intermediate network does not support IPv6 (it is IPv4 only), the PETR can be used to traverse (hop over) the address family incompatibility, assuming that the PETR has both IPv4 and IPv6 connectivity. The ITR in this case can LISP-encapsulate the IPv6 EIDs with IPv4 locators destined for the PETR, which de-encapsulates the packets and forwards them natively to the non-LISP IPv6 site over its IPv6 connection. In this case, the use of the PETR effectively allows the LISP site packets to traverse the IPv4 portion of network using the LISP mixed protocol encapsulation support.

## Examples

The following example shows how to configure an ITR to use the PETR with the IPv4 locator of 10.1.1.1. In this case, LISP site IPv4 EIDs destined to non-LISP IPv4 sites are encapsulated in an IPv4 LISP header destined to the PETR located at 10.1.1.1:

```
device(config)# router lisp
device(config-router-lisp)#service ipv4
device(config-router-lisp-serv-ipv4)# use-petr 10.1.1.1
```

The following example configures an ITR to use two PETRs: one has an IPv4 locator of 10.1.1.1 and is configured as the primary PETR (priority 1 weight 100), and the other has an IPv4 locator of 10.1.2.1 and is configured as the secondary PETR (priority 2 weight 100). In this case, LISP site IPv4 EIDs destined to non-LISP IPv4 sites will be encapsulated in an IPv4 LISP header to the primary PETR located at 10.1.1.1 unless it fails, in which case the secondary will be used.

```
Router(config-router-lisp-serv-ipv4)# use-petr 10.1.1.1 priority 1 weight 100
Router(config-router-lisp-serv-ipv4)# use-petr 10.1.2.1 priority 2 weight 100
```

