



Locator/ID Separation Protocol Commands

This module describes the commands used to configure and monitor Locator/ID Separation Protocol (LISP) on Cisco IOS XR.

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Locator/ID Separation Protocol on Cisco IOS XR

Locator/ID Separation Protocol (LISP) is a simple, incremental, network-based protocol designed to implement separation of Internet addresses into Endpoint Identifiers (EIDs) and Routing Locators (RLOCs).

LISP stands for Locator/ID Separation Protocol and is a next-generation IP routing feature that creates a new paradigm in how IP addressing is assigned and interpreted by splitting the device identity, known as an

endpoint identifier (EID), and its location, known as its routing locator (RLOC), into two different namespaces. Creating separate IP addresses for EID and RLOC functions yields several advantages, including improved scalability of the routing system through greater aggregation of RLOCs and improved multihoming efficiency and ingress traffic engineering. Hosts do not have to change IP addresses and therefore, no IP address numbering costs are involved with the LISP implementation.

LISP sites use IP addresses in the EID namespace to address hosts and in Domain Name System (DNS) in exactly the same way they are currently used. These addresses are not advertised within the non-LISP RLOC namespace (that is, the Internet), but instead are advertised by the LISP mapping services. The LISP site router supports the LISP functionality of Ingress Tunnel Router (ITR) and Egress Tunnel Router (ETR).

LISP is a pull model analogous to DNS and is massively scalable. LISP is address family agnostic and can be deployed incrementally.

LISP creates a Level of indirection with two namespaces: EID and RLOC. The EID (Endpoint Identifier) is the IP address of a host. The RLOC (Routing Locator) is the IP address of the LISP router for the host. EID-to-RLOC mapping is the distributed architecture that maps EIDs to RLOCs. The LISP Map Lookup is analogous to a DNS lookup. DNS resolves IP addresses for URLs. LISP resolves locators for queried identifiers or EID prefix.

LISP in Cisco IOS XR supports:

- Proxy Ingress Tunnel Router (PITR) and Proxy Egress Tunnel Router (PETR). PITR must be configured using map resolver (no ALT support).
- Default table support for EID and RLOC space.
- CRS-3 hardware supports IPv4 over IPv4 and IPv6 over IPv4 topologies.
- The **router lisp** command in global configuration mode enables LISP configuration mode.


Note

The LISP command line interface, show commands output, and schema is to be changed in Cisco IOS XR Release 4.3.1 to be similar to the LISP command line interface on Cisco IOS.

address-family (LISP)

To enter Locator ID and separation protocol (LISP) address family configuration mode, use the **address-family** command in LISP configuration mode. To exit the LISP address family configuration mode, use the **no** form of this command.

```
address-family {ipv4 | ipv6} unicast
no address-family {ipv4 | ipv6} unicast
```

Syntax Description

ipv4 Selects IPv4 address family.

ipv6 Select IPv6 address family.

unicast Selects unicast address prefixes.

Command Default

LISP address family configuration is disabled.

Command Modes LISP configuration

Command History	Release	Modification
	Release 4.2.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to enable IPv6 address family configuration for LISP:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-afi)#
```

Related Commands	Command	Description
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.
	proxy-etr, on page 22	Configures a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR).
	proxy-itr, on page 23	Configures a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR).
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

eid-mtu

To configure MTU sizes for IPv4 or IPv6 LISP payloads, use the **eid-mtu** command in the LISP address family configuration mode. To remove the configured the eid-mtu size, use the **no** form of this command.

eid-mtu {**ipv4-locator** *ipv4_bytes* | **ipv6-locator** *ipv6_bytes*}
no eid-mtu

Syntax Description

ipv4-locator	Specifies the MTU for packets transported through IPv4 RLOC space.
<i>ipv4_bytes</i>	Specifies the MTU in bytes for packets transported through IPv4 RLOC space. The value ranges from 68 to 65535.
ipv6-locator	Specifies the MTU for packets transported through IPv6 RLOC space.
<i>ipv6_bytes</i>	Specifies the MTU in bytes for packets transported through IPv6 RLOC space. The value ranges from 1280 to 65535.

Command Default

None

Command Modes

LISP IPv4 address family
 LISP IPv6 address family

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
lisp	read, write

This example shows how to configure MTU size of 1300 bytes for the IPv6 LISP payloads:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router (config)#router lisp
```

```
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#eid-mtu ipv4-locator 1320 ipv6-locator 1300
```

Related Commands	Command	Description
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.

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 the LISP configuration mode. To remove this association, use the **no** form of this command.

```
eid-table {default | [vrf vrf_name]} instance-id instance_id
no eid-table {default | vrf vrf_name} instance-id instance_id
```

Syntax Description	default	Selects the default (global) routing table for association with the configured instance ID.
	vrf	Selects the specified VRF table for association with the configured instance ID.
	<i>vrf_name</i>	Specifies the name of the VRF.
	instance	Specifies the instance ID to be associated with this EID table.
	<i>instance_id</i>	Specifies the instance ID value. This value ranges between 0 and 16777215.

Command Default A router configured for LISP associates the default table with instance ID 0.

Command Modes LISP configuration

Command History	Release	Modification
	Release 4.3.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **eid-table** command is used to associate a LISP instance ID with either the default routing table, or a VRF table through which its EID address space is reachable. When a LISP instance ID is specified, LISP Map Registration (control plane) messages include this instance ID along with the associated EID prefixes upon registering and LISP data plane packets include this instance ID in the LISP header.

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure LISP instance ID for association with a virtual routing and forwarding (VRF) table:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#eid-table vrf vrf1 instance-id 45
```

Related Commands	Command	Description
	locator-table, on page 15	Specifies the RLOC table.
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.

etr

To enable Egress Tunnel Router functionality, use the **etr** command in the LISP address family configuration mode. To disable the ETR functionality, use the **no** form of this command.

```
etr
no etr
```

Syntax Description This command has no keywords or arguments.

Command Default ETR functionality is not enabled by default.

Command Modes LISP IPv4 address family
LISP IPv6 address family

Command History	Release	Modification
	Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
lisp	read, write

The example shows how to turn on ETR functionality in all eid-tables, unless it is explicitly disabled.

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#etr
```

Related Commands

Command	Description
router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.
address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.

etr accept-map-request-mapping

To configure an Egress Tunnel Router (ETR) to cache to cache EID-to-RLOC mapping data contained, that ITRs may attach to a map-request message, use the **etr accept-map-request-mapping** command in the LISP address family configuration mode. To remove this functionality, use the **no** form of this command.

```
etr accept-map-request-mapping [verify]
no etr accept-map-request-mapping
```

Syntax Description

verify (Optional) Specifies that mapping data should be cached but not used for forwarding packets until the ETR can send its own map request to one of the locators from the mapping data record and receive a map reply with the same data in response.

Command Default

No caching of mapping data in a map-request message.

Command Modes

LISP IPv4 address family
LISP IPv6 address family

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

If an ETR receives a map-request message that contains mapping data for the invoking IPv6 source-EID's packet, then the ETR, by default, ignores the mapping data. However, if you configure the **etr accept-map-request-mapping** command, the ETR caches the mapping data in its map cache and immediately uses it for forwarding packets.

Task ID**Task ID Operation**

lisp	read, write
------	----------------

This example shows how to configure **etr accept-map-request-mapping** command in the LISP IPv6 address family configuration mode:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#etr accept-map-request-mapping verify
```

Related Commands

Command	Description
router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.
address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
etr, on page 6	Enables Egress Tunnel Router (ETR) functionality.

etr map-cache-ttl

To configure the time-to-live (TTL) value inserted into LISP IPv4 or IPv6 map-reply messages, use the **etr map-cache-ttl** command in the LISP address family configuration mode. To remove the configured TTL value and return to the default value, use the **no** form of this command.

```
etr map-cache-ttl minutes
no etr map-cache-ttl minutes
```

Syntax Description

minutes Specifies the value, in minutes, to be inserted in the TTL field in map-reply messages. The value ranges from 60 to 10080 minutes.

Command Default

The default TTL value is 1440 minutes (24 hours).

Command Modes

LISP IPv4 address family
LISP IPv6 address family

Command History	Release	Modification
	Release 4.3.1	This command was introduced.

Usage Guidelines	<p>To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p> <p>Use this command to change the default value associated with the Time-to-Live (TTL) field in map-reply messages. Entering this command changes the default TTL that remote ITRs will cache and use for your site's endpoint identifier (EID) prefix. The default value is 1440 minutes (24 hours), and the minimum value is 60 minutes.</p>
------------------	---

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure **etr map-cache-ttl** command with TTL value of 60 minutes:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#etr map-cache-ttl 60
```

Related Commands	Command	Description
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	etr, on page 6	Enables Egress Tunnel Router (ETR) functionality.

etr map-server

To configure the options related to the etr map-server (MS) such as locator, authentication key and whether or not the map server is allowed to respond on the ETR's behalf to map-requests (proxy-reply option), use the **etr map-server** command in the LISP address family configuration mode. To remove the configured options, use the **no** form of this command.

```
etr map-server IP {key [{clear | encrypted}] LINE | proxy-reply}
no etr map-server
```

Syntax Description	<p><i>ip_address</i> Specifies the IPv4 or IPv6 address of the map server.</p> <p>key Specifies that an authentication key will follow either encrypted or unencrypted option.</p>
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LINE	Specifies the key (either encrypted or unencrypted).
clear	Specifies the UNENCRYPTED (cleartext) key.
encrypted	Specifies that an ENCRYPTED key will follow.
proxy-reply	Specifies that the map-server with the specified RLOC is allowed to respond to map-requests on behalf of the ETR.

Command Default LISP map server locator addresses are not configured by default.

Command Modes LISP IPv4 address family
LISP IPv6 address family

Command History	Release	Modification
	Release 4.3.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	lisp	read, write

This example configures 2001:0db8::1 as map-server, specifying that *supers3cr3tpassw0rd* will be used as the shared secret for HMAC calculations, and that this map-server may respond to map-requests on behalf of the ETR.

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#etr map-server 2001:0db8::1 key clear supers3cr3tpassw0rd
RP/0/RP0/CPU0:router(config-lisp-af)#etr map-server 2001:0db8::1 proxy-reply
```

Related Commands	Command	Description
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	etr, on page 6	Enables Egress Tunnel Router (ETR) functionality.

itr map-resolver

To configure an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR, when sending Map-Requests for IPv4 EID-to-RLOC mapping resolution, use the **itr map-resolver** command in LISP address family configuration mode. To remove the configured locator address of the LISP Map-Resolver, use the **no** form of this command.

```
itr map-resolver map-resolver-address
no itr map-resolver map-resolver-address
```

Syntax Description

map-resolver-address Specifies the IPv4 or IPv6 locator addresses of the Map-Resolver.

Command Default

No LISP Map-Resolver locator address is configured.

Command Modes

LISP IPv4 address family configuration
LISP IPv6 address family configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
lisp	read, write

This example configures an ITR to use the Map-Resolver located at 10.2.3.4 when sending its Map-Request messages:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-afi)#itr map-resolver 10.2.3.4
```

This example configures and ITR to use the Map-Resolver located at 2001:DB8:0A::1 when sending its Map-Request messages:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
```

```
RP/0/RP0/CPU0:router(config-lisp-afi)#itr map-resolver 2001:DB8:0A::1
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.
	proxy-etr, on page 22	Configures a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR).
	proxy-itr, on page 23	Configures a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR).
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

locator reachability

To configure the conditions that must be met for a routing locator (RLOC) to be treated as being reachable, use the **locator reachability** command in the LISP address family configuration mode. To remove the configuration, use the **no** form of the command.

locator reachability exclude-default
no locator reachability exclude-default

Syntax Description	exclude-default
	If a remote RLOC is reached via the default route, then it is treated as unreachable.

Command Default

Command Modes
 LISP IPv4 address family
 LISP IPv6 address family

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure the **locator reachability** command:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#locator reachability exclude-default
```

Related Commands	Command	Description
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

locator-set

To configure a named locator set, use the **locator-set** command in the in LISP configuration mode. To disable a the locator-set, use the **no** form of the command.

```
locator-set name {ip_address {priority priority_value | weight weight_value} | auto-discover-rlocs}
no locator-set name
```

Syntax Description		
	<i>name</i>	Specifies the name of the locator set.
	ip_address	Specifies the RLOC IP address of Loopback or other Egress Tunnel Router (ETR) interfaces.
	priority	Configures the preferred locators from the locator set. When multiple locators have the same priority traffic may be load-balanced across them.
	<i>priority_value</i>	Specifies the value of the priority assigned to the RLOC. The value ranges from 0 to 255. A lower value indicates a higher priority.
	weight	Specifies how to determine to load-share traffic between multiple locators when the priorities assigned to multiple locators are the same.
	<i>weight_value</i>	Specifies the value of the percentage of traffic to be load-shared. The value ranges from 0 to 100.

auto-discover-rlocs Configures the Egress Tunnel Router (ETR) to discover the locators of all routers configured to function as both an ETR and an Ingress Tunnel Router (ITR)--such routers are referred to as xTRs--in ETRs 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.

Command Default**Command Modes** LISP configuration**Command History**

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

A locator set is a named group of Routing LOCators (RLOCs). It can be used in conjunction with the **database-mapping** and **map-cache** configuration commands.

Task ID

Task ID	Operation
lisp	read, write

This example shows how to configure the locator-set priority such that 2001:1::2 would have the highest priority and receive all the traffic. 2001:2::3 and 64.10.10.5 would each receive 50% of the traffic if 2001:1::2 is unreachable.

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router (config)#router lisp
RP/0/RP0/CPU0:router (config-lisp)#locator-set loc1
RP/0/RP0/CPU0:router (config-lisp)#2001:1::2 priority 1 weight 100
RP/0/RP0/CPU0:router (config-lisp)#2001:2::3 priority 2 weight 50
RP/0/RP0/CPU0:router (config-lisp)#64.10.10.5 priority 2 weight 50
```

Related Commands

Command	Description
address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

locator-table

To associate a virtual routing and forwarding (VRF) table through which the routing locator address space is reachable to a router Locator ID Separation Protocol (LISP) instantiation, use the **locator-table** command in LISP configuration mode. To remove this association, use the **no** form of this command.

locator-table *name* [{**default** | **vrf** *vrf_name*}]

no locator-table *name*

Syntax Description

default Selects the default (global) routing table for association with the routing locator address space.

vrf Selects the routing table for the specified VRF name for association with the routing locator address space.

vrf_name Specifies the name of the VRF.

Command Default

None

Command Modes

LISP configuration

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.



Note

The locator-table configuration is mandatory for LISP to function.

When a LISP device is deployed in a multitenant (virtualized) network environment with segmented routing locator (RLOC) address space, separate router LISP instantiations are required for each locator address space. Separate instantiations are created by including the optional **id** entry with the **router lisp** command. Each router LISP instantiation is considered to be standalone and must be associated with an RLOC address space. The **locator-table** command is used to associate a VRF table through which the routing locator address space is reachable to a router LISP instantiation. All necessary LISP components used in the operation of that particular router LISP instantiation, (for example, map server, map resolver, proxy ingress tunnel router (PITR), proxy egress tunnel router (PETR), and other routers that function as both egress and ingress tunnel routers, also known as xTRs) must be reachable via the routing locator address space referred to by the **locator-table** command.

Task ID

Task ID	Operation
lisp	read, write

This example shows how to associate a VRF table to a LISP instantiation:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#locator-table mplsvpn
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

loc-reach-algorithm rloc-probing

To configure locator reachability algorithm, RLOC Probing, and to determine reachability status for other iBGP peers through the IGP domain, use the **loc-reach-algorithm rloc-probing** command in LISP configuration mode. To disable the locator reachability algorithm, use the **no** form of this command .

loc-reach-algorithm rloc-probing
no loc-reach-algorithm rloc-probing

Syntax Description	This command has no keywords or arguments.	
Command Default	The locator reachability algorithm rloc-probing is disabled.	
Command Modes	LISP configuration	
Command History	Release	Modification
	Release 4.2.1	This command was introduced.
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.	
Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure the location reachability algorithm RLOC probing:


```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#loc-reach-algorithm rloc-probing
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.
	proxy-etr, on page 22	Configures a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR).
	proxy-itr, on page 23	Configures a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR).
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

map-cache-limit

To configure the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router, use the **map-cache-limit** command in LISP address family configuration mode. To remove the configured map-cache limit, use the **no** form of this command.

```
map-cache-limit map-cache-size
no map-cache-limit map-cache-size
```

Syntax Description	<i>map-cache-size</i> Specifies the map cache size value. Range is 1 to 65535.				
Command Default	Map cache size: 1000				
Command Modes	LISP IPv4 address family LISP IPv6 address family				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.2.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.2.1	This command was introduced.
Release	Modification				
Release 4.2.1	This command was introduced.				

Usage Guidelines None

Task ID	Task ID	Operation
	lisp	read, write

This example configures a lisp cache-limit of 2000 entries:

```
Router(config-lisp-afi)#map-cache-limit 2000
```

map-cache

To configure a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or to statically configure the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix, use the **map-cache** command in LISP address family configuration mode. To remove the configuration, use the **no** form of this command.

map-cache *destination-EID-prefix / prefix-length* {**action** {**drop** | **map-request** | **native-forward**} | **locator** *locator-address* **priority** *priority-value* **weight** *weight-value*}
no map-cache *destination-EID-prefix / prefix-length* {**action** {**drop** | **map-request** | **native-forward**} | **locator** *locator-address* **priority** *priority-value* **weight** *weight-value*}

Syntax Description	
<i>destination-EID-prefix / prefix-length</i>	Specifies the destination IPv4/IPv6 EID-prefix/prefix-length.
action	Specifies the non LISP forwarding action for the EID prefix.
drop	Selects drop action for the EID-prefix.
map-request	Generates a map-request for the EID-prefix.
native-forward	Specifies to natively forward EID-prefix.
locator <i>locator-address</i>	The IPv4 or IPv6 Routing Locator (RLOC) associated with the EID-prefix/prefix-length.
priority <i>priority-value</i>	The priority (value between 0 and 255) assigned to the RLOC. When multiple locators have the same priority they may be used in load-shared fashion. A lower value indicates a higher priority.
weight <i>weight-value</i>	The weight (value between 0 and 100) assigned to the locator. Used in order to determine how to load-share traffic between multiple locators when the priorities assigned to multiple locators are the same. The value represents the percentage of traffic to be load-shared.

Command Default No IPv6 EID-to-RLOC mapping relationships or static IPv6 EID-to-RLOC mapping destinations are configured.

Command Modes LISP IPv4 address family
LISP IPv6 address family

Command History	Release	Modification
	Release 4.2.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	lisp	read, write

configures a destination EID-to-RLOC mapping and associated traffic policy for the IPv6 EID-prefix block 2001:DB8:BB::/48. The locator for this EID-prefix block is 2001:DB8:0A::1 and the traffic policy for this locator has a priority of 1 and a weight of 100.

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-afi)#map-cache
RP/0/RP0/CPU0:router(config-lisp-afi-map-cache)#2001:db8:bb::/48 locator 2001:db8:a::1
priority 1 weight 100
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	proxy-etr, on page 22	Configures a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR).
	proxy-itr, on page 23	Configures a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR).
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

map-request-source

To configure inner header source address to be used as the source address for Locator/ID Separation Protocol (LISP) map-request messages, use the **map-request-source** command in LISP address family configuration mode. To remove the configured map-request source address, use the **no** form of this command.

```
map-request-source ip_address
no map-request-source
```

Syntax Description	<i>ip_address</i> Specifies the IPv4 or IPv6 source address of the inner header in the map-request message.
---------------------------	---

Command Default

Command Modes	LISP IPv4 address family LISP IPv6 address family
----------------------	--

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
lisp	read, write

This example shows how to configure the IPv6 source address to be used as the source address for LISP map-request messages:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#map-request-source 4:5::6
```

Related Commands

Command	Description
itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

other-xtr-probe

To configure parameters for probing of other xTRs *site-local* routing locators (RLOCs), use the **other-xtr-probe** command in the LISP configuration mode. To return to the default setting, use the **no** form of this command.

other-xtr-probe period *seconds*
no other-xtr-probe period *seconds*

Syntax Description

period Configures the site-local RLOC probing period.

seconds Specifies the value of the probing period in seconds. The range is between 5 to 900.

Command Default

Probing of site-local RLOCs is enabled by default and cannot be disabled. The default interval is 30 seconds.

Command Modes

LISP configuration

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **other-xtr-probe** command to change the probe interval for sending RLOC probes to all site-other RLOCs.

This command probes site-local rlocs, whereas rloc-probing probes remote RLOCs. The latter can be turned on or off with loc-reach-algorithm rloc-probing. Remote-rloc-probe also probes remote RLOCs.



Note

This functionality is enabled by default and cannot be disabled. The default interval is 30 seconds. Use the **show run | include other-xtr-probe** command to display the configured interval. When an output value is displayed, the value is configured for something other than the default value. When no output is displayed, it is configured for the default.

Task ID

Task ID	Operation
lisp	read, write

This example shows how to configure the probing period of 86 seconds for probing RLOCs:

```
RP/0/RP0/CPU0:router#configure
```

```
RP/0/RP0/CPU0:router (config) #router lisp
RP/0/RP0/CPU0:router (config-lisp) #other-xtr-probe period 86
```

Related Commands	Command	Description
	remote-rloc-probe, on page 24	Configures parameters for probing of remote local routing locators (RLOCs)
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

proxy-etr

To configure a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR), use the **proxy-etr** command in LISP address family configuration mode. To remove LISP PETR functionality, use the **no** form of this command.

proxy-etr
no proxy-etr

This command has no keywords or arguments.

Command Default ETR functionality is disabled.

Command Modes LISP IPv4 address family
 LISP IPv6 address family

Command History	Release	Modification
	Release 4.2.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure PETR functionality under LISP IPv6 on the router:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router (config) #router lisp
RP/0/RP0/CPU0:router (config-lisp) #address-family ipv6 unicast
```

```
RP/0/RP0/CPU0:router(config-lisp-afi)#proxy-itr
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.
	proxy-itr, on page 23	Configures a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR).
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

proxy-itr

To configure a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR), use the **proxy-itr** command in LISP address family configuration mode. To remove LISP PITR functionality, use the **no** form of this command.

proxy-itr *IPv4-source-locator-address*
no proxy-itr *IPv4-source-locator-address*

Syntax Description	<i>IPv4-source-locator-address</i> Specifies the IPv4 source locator for PITR.				
Command Default	PITR functionality is disabled.				
Command Modes	LISP IPv4 address family LISP IPv6 address family				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.2.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.2.1	This command was introduced.
Release	Modification				
Release 4.2.1	This command was introduced.				
Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.				

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure LISP Pitr functionality on the router:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-afi)#proxy-itr 10.2.3.4
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.
	proxy-etr, on page 22	Configures a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR).
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

remote-rloc-probe

To configure parameters for probing of remote local routing locators (RLOCs), use the **remote-rloc-probe** command in the LISP configuration mode. To return to the default setting, use the **no** form of this command.

remote-rloc-probe on-route-change
no remote-rloc-probe on-route-change

Syntax Description	on-route-change Specifies the probing of the trigger on routing changes for remote RLOCs.
Command Default	None
Command Modes	LISP configuration

Command History	Release	Modification
	Release 4.3.1	This command was introduced.

Usage Guidelines	To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
------------------	---

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure the **remote-rloc-probe** command for remote RLOCs:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#remote-rloc-probe on-route-change
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

router lisp

To enter Locator and ID Separation Protocol (LISP) configuration mode, use the **router lisp** command in global configuration mode. To remove all LISP configurations and exit the LISP configuration mode, use the **no** form of this command.

```
router lisp process-number
no router lisp
```

Syntax Description	<i>process-number</i> Specifies the router LISP process number. The range is 0-15.
Syntax Description	This command has no keywords or arguments.
Command Default	LISP configuration is disabled.
Command Modes	global configuration

Command History	Release	Modification
	Release 4.2.1	This command was introduced.
	Release 4.3.1	Support for LISP <i>process-number</i> was added.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to configure LISP configuration mode:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#
```

Related Commands	Command	Description
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	loc-reach-algorithm rloc-probing, on page 16	Configures locator reachability algorithm, RLOC Probing, and determines reachability status for other iBGP peers through the IGP domain.
	map-cache-limit, on page 17	Configures the maximum limit of IPv4 LISP or IPv6 LISP map-cache entries allowed to be stored by the router.
	map-cache, on page 18	Configures a static IPv4 EID-to-RLOC or static IPv6 EID-to-RLOC mapping relationship and its associated traffic policy, or statically configures the packet handling behavior associated with a destination IPv4 EID-prefix or a destination IPv6 EID-prefix.
	proxy-etr, on page 22	Configures a router to act as an IPv4 or IPv6 LISP Proxy Egress Tunnel Router (PETR).
	proxy-itr, on page 23	Configures a router to act as an IPv4 or IPv6 LISP Proxy Ingress Tunnel Router (PITR).

solicit-map-request

To configure the solicit map request (SMR) handling, use the **solicit-map-request** command in the LISP address family configuration mode. To disable solicit map request handling, use the **no** form of this command.

solicit-map-request {**ignore** | **max-per-entry** *number* | **suppression-time** *seconds*}
no solicit-map-request {**ignore** | **max-per-entry** *number* | **suppression-time** *seconds*}

Syntax Description	Parameter	Description
	ignore	Ignores an IPv4 or IPv6 map-request message that has the solicit-map-request (SMR) bit set.
	max-per-entry	Specifies the maximum number of solicit-map-requests (SMRs) for addresses under a map-cache entry.
	<i>number</i>	Specifies the maximum number of SMRs. The value ranges from 1 to 100.
	suppression-time	Specifies how long to suppress repeated solicit-map-requests (SMRs) for the same address.
	<i>seconds</i>	Specifies the seconds to suppress repeated SMRs for the same address. The value ranges from 1 to 600.

Command Default

Command Modes
 LISP IPv4 address family
 LISP IPv6 address family

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
<code>lisp</code>	read, write

This example shows how to configure the **solicit-map-request** command to ignore a map-request message, to specify a maximum number of 50 SMRs, and to specify a suppression time of 500 s:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#solicit-map-request ignore
RP/0/RP0/CPU0:router(config-lisp-af)#solicit-map-request max-per-entry 50
RP/0/RP0/CPU0:router(config-lisp-af)#solicit-map-request suppression-time 500
```

Related Commands

Command	Description
itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
etr, on page 6	Enables Egress Tunnel Router (ETR) functionality.

Command	Description
address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

use-petr

To specify that packets hitting a forward-native map-cache entry should be LISP encapsulated and forwarded to a PETR, instead of attempting to forward them natively, use the **use-petr** command in LISP address family configuration mode. To revert to the default behavior of forwarding packets natively, if they hit a forward-native map cache entry, use the **no** form of this command.

```
use-petr ip_address [priority priority weight weight]
no use-petr
```

Syntax Description

<i>ip_address</i>	Specifies the IPv4 or IPv6 locator address of the PETR.
priority	(Optional) Specifies the priority assigned to this PETR.
<i>priority</i>	Specifies the value of the priority assigned to this PETR. This value ranges from 0 to 255. A lower value indicates a higher priority.
weight	(Optional) Specifies the percentage of traffic to be load-shared.
<i>weight</i>	Specifies the weight in value of the percentage of traffic to be load-shared. The value ranges from 0 to 100.

Command Default

PETR services are disabled by default.

Command Modes

LISP IPv4 address family
LISP IPv6 address family

Command History

Release	Modification
Release 4.3.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Multiple PETRs can be configured. If you configure a priority and weight for one of them, you must configure a priority and weight for all of the PETRs.

Task ID	Task ID	Operation
	lisp	read, write

This example shows how to use a single PETR:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv4 unicast
RP/0/RP0/CPU0:router(config-lisp-af)#use-petr 2001:db8::1
```

This example shows how to configure a fallback PETR. This type of configuration is useful if, by default, you want to reach your PETR over IPv6, but in case you lose IPv6 connectivity to the outside world, you fall back to using IPv4. That way, your IPv6 EID prefix will maintain IPv6 connectivity to the outside world regardless of whether or not you have IPv6 connectivity at the ITR.

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#router lisp
RP/0/RP0/CPU0:router(config-lisp)#address-family ipv6 unicast
RP/0/RP0/CPU0:router(config-lisp-af)# use-petr 2001:db8::1 priority 1 weight 100
RP/0/RP0/CPU0:router(config-lisp-af)#use-petr 64.10.10.1 priority 2 weight 100
```

Related Commands	Command	Description
	itr map-resolver, on page 11	Configures an IPv4 or IPv6 locator address of the LISP Map-Resolver to be used by the ITR.
	address-family (LISP), on page 2	Enters Locator ID and separation protocol (LISP) address family configuration mode.
	router lisp, on page 25	Enters Locator and ID Separation Protocol (LISP) configuration mode.

use-petr