

address-family

To enter the address family submode for configuring routing protocols, such as BGP, RIP and static routing, use the **address-family** command in address family configuration submode. To disable the address family submode for configuring routing protocols, use the **no** form of this command.

VPN-IPv4 unicast

```
address-family vpnv4 [unicast]
no address-family vpnv4 [unicast]
```

IPv4 unicast

```
address-family ipv4 [unicast]
no address-family ipv4 [unicast]
```

IPv4 unicast with CE router

```
address-family ipv4 [unicast] vrf vrf-name
no address-family ipv4 [unicast] vrf vrf-name
```

Syntax Description		
ipv4		Configures sessions that carry standard IPv4 address prefixes.
vpnv4		Configures sessions that carry customer VPN-IPv4 prefixes, each of which has been made globally unique by adding an 8-byte route distinguisher.
unicast		(Optional) Specifies unicast prefixes.
vrf vrf-name		Specifies the name of a VPN routing/forwarding instance (VRF) to associate with submode commands.

Defaults Routing information for address family IPv4 is advertised by default when you configure a BGP session using the **neighbor...remote-as** command unless you execute the **no bgp default ipv4-activate** command.

Command Modes Address family configuration submode

Command History	Release	Modification
	12.0(5)T	This command was introduced.

Usage Guidelines Using the **address-family** command puts you in address family configuration submode (prompt: `(config-router-af)#`). Within this submode, you can configure address-family specific parameters for routing protocols, such as BGP, that can accommodate multiple Layer 3 address families.

To leave address family configuration submode and return to router configuration mode, type **exit-address-family**, or simply **exit**.

Examples

The address-family command in the following example puts the router into address family configuration submode for the VPNv4 address family. Within the submode, you can configure advertisement of NLRI for the VPNv4 address family using **neighbor activate** and other related commands:

```
router bgp 100
address-family vpnv4
```

The command in the following example puts the router into address family configuration submode for the IPv4 address family. Use this form of the command, which specifies a VRF, only to configure routing exchanges between PE and CE devices. This address-family command causes subsequent commands entered in the submode to be executed in the context of VRF vrf2. Within the submode, you can use **neighbor activate** and other related commands to accomplish the following:

- Configure advertisement of IPv4 NLRI between the PE and CE routers.
- Configure translation of the IPv4 NLRI (that is, translate IPv4 into VPNv4 for NLRI received from the CE, and translate VPNv4 into IPv4 for NLRI to be sent from the PE to the CE).
- Enter the routing parameters that apply to this VRF.

Entered the address family submode as follows:

```
router bgp 100
address-family ipv4 unicast vrf vrf2
```

Related Commands

Command	Description
default	Exits from the address family submode.
neighbor activate	Enables the exchange of information with a neighboring router.

append-after

To insert a path entry after a specific index number, use the **append-after** command in IP explicit path subcommand mode.

append-after *index command*

Syntax Description		
<i>index</i>		Previous index number. Valid range is 0 to 65534.
<i>command</i>		One of the IP explicit path configuration commands that create a path entry. (Currently, only the next-address command can be used.)

Defaults No default behavior or values.

Command Modes IP explicit path subcommand

Command History	Release	Modification
	12.0(5)S	This command was introduced.

Examples The following command inserts the **next-address** subcommand after the specific index:

```
append-after 5 next-address 3.3.27.3
```

Related Commands	Command	Description
	index	Inserts or modifies a path entry at a specific index.
	ip explicit-path	Enters the subcommand mode for IP explicit paths to create or modify the named path.
	list	Displays all or part of the explicit path or paths.
	next-address	Specifies the next IP address in the explicit path.
	show ip explicit-paths	Displays configured IP explicit paths.

atm-address

To override the control ATM address of an MPC or MPS, use the **atm-address** command in interface configuration mode. Use the no form of this command to revert to the default address.

atm-address *atm-address*

no atm-address

Syntax Description	<i>atm-address</i> Control ATM address.
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Defaults	The default is an auto-generated ATM address.
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Command Modes	Interface configuration
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Command History	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Release</th> <th style="text-align: left;">Modification</th> </tr> </thead> <tbody> <tr> <td>11.3(3a)WA4(5)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	11.3(3a)WA4(5)	This command was introduced.
Release	Modification				
11.3(3a)WA4(5)	This command was introduced.				

Usage Guidelines	<p>This command specifies the control ATM address that an MPC or MPS should use when it comes up; that is, when it is associated with a hardware interface.</p>
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The **atm-address** command overrides the default operational control address of the MPC or MPS. When this address is deleted (using the **no** form of the command), the MPC or MPS uses an auto-generated address as its control address.

Examples	The following example specifies the ATM address for an MPC:
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```
atm-address 47.0091810000000061705b7701.00400BFF0011.00
```

The following example specifies the ATM address for an MPS:

```
atm-address 47.0091810000000061705C2B01.00E034553024.00
```

bgp scan-time

To configure scanning intervals of BGP routers for next hop validation or to decrease import processing time of Virtual Private Network version 4 (VPNv4) routing information, use the **bgp scan-time** command in address family or router configuration mode. To return the scanning interval of a router to its default scanning interval of 60 seconds, use the **no** form of this command.

bgp scan-time [**import**] *scanner-interval*

no bgp scan-time [**import**] *scanner-interval*

Syntax Description	import	(Optional) Configures import processing of VPNv4 unicast routing information from BGP routers into routing tables.
	<i>scanner-interval</i>	Specifies the scanning interval of BGP routing information. Valid values used for selecting the desired scanning interval are from 5 to 60 seconds. The default is 60 seconds.

Defaults The default scanning interval is 60 seconds.

Command Modes Address family configuration
Router configuration

Command History	Release	Modification
	12.07(T)	This command was introduced.

Usage Guidelines The **import** keyword is supported in address family VPNv4 unicast mode only. Entering the **no** form of this command does not disable scanning, but removes it from the output of the **show running-config** command.

Examples In the following router configuration example, the scanning interval for next hop validation of IPv4 unicast routes for BGP routing tables is set to 20 seconds:

```
router bgp 100
 no synchronization
 bgp scan-time 20
```

In the following address family configuration example, the scanning interval for next hop validation of address family VPNv4 unicast routes for BGP routing tables is set to 45 seconds:

```
router bgp 150
 address-family vpn4 unicast
  bgp scan-time 45
```

In the following address family configuration example, the scanning interval for importing address family VPNv4 routes into IP routing tables is set to 30 seconds:

```
router bgp 150
 address-family vpnv4 unicast
  bgp scan-time import 30
```

Related Commands

Command	Description
address-family vpnv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard VPNv4 address prefixes.

cache

To configure aggregation cache operational parameters, use the **cache** command in aggregation cache configuration mode.

To disable the operational parameters, use the **no** form of this command.

```
cache {entries number | timeout [active minutes | inactive seconds]}
```

```
no cache {entries number | timeout [active minutes | inactive seconds]}
```

Syntax Description

entries number	The number of cached entries allowed in the aggregation cache. The number of entries can be 1024 to 524288. The default is 4096.
active minutes	(Optional) The number of minutes that an active entry is active. The default is 30 minutes; the range is from 1 to 60 minutes.
inactive seconds	(Optional) The number of seconds that an inactive entry will stay in the aggregation cache before it times out. The default is 15 seconds; the range is from 10 to 600 seconds.

Defaults

The default for cache entries is 4096.

The default for active cache entries is 30 minutes.

The default for inactive cache entries is 15 seconds.

Command Modes

Aggregation cache configuration

Command History

Release	Modification
12.0(3)T	This command was introduced.

Examples

The following example shows how to set the aggregation cache entry limits:

```
cache entries 2046
cache timeout inactive 199
```

Related Commands

Command	Description
default-name	Enables an aggregation cache.
ip cache-invalidate-delay	Enables the exporting of information from NetFlow aggregation caches.
ip flow-aggregation cache	Enables aggregation cache configuration mode.
show ip cache flow aggregation	Displays the aggregation cache configuration.
show mpoa client	Displays the statistics for the data export, including the main cache and all other enabled caches.

class (MPLS)

To configure a defined MPLS CoS map which specifies how classes map to label VCs (LVCs) when combined with a prefix map, use the **class** command in CoS map submode. To disable this option, use the **no** form of this command.

class *class* [**available standard premium control**]

no class *class* [**available standard premium control**]

Syntax Description

<i>class</i>	The precedence of identified traffic to classify traffic.
available	(Optional) Means low precedence (In/Out plus lower two bits = 0,4).
standard	(Optional) Means next precedence (In/Out plus lower two bits = 1,5).
premium	(Optional) Means high precedence (In/Out plus lower two bits = 2,6).
control	(Optional) Means highest precedence pair (In/Out plus lower two bits = 3,7). These bits are reserved for control traffic.

Defaults

No default behavior or values.

Command Modes

CoS map submode

Command History

Release	Modification
12.0(5)T	This command was introduced.

Examples

The following commands configure a CoS map:

```
tag-switching cos-map 55
class 1 premium
exit
```

Related Commands	Command	Description
	tag-switching cos-map	Creates a class map that specifies how classes map to LVCs when combined with a prefix map.
	show tag-switching cos-map	Displays the CoS map used to assign quantity of label virtual circuits and associated CoS of those LVCs.
	tag-switching prefix-map	Displays the prefix map used to assign a CoS map to network prefixes matching a standard IP access list.
	access-list	Configures the access list mechanism for filtering frames by protocol type or vendor code.

clear adjacency

To clear the Cisco Express Forwarding (CEF) adjacency table, use the **clear adjacency** command in EXEC mode.

clear adjacency

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2 GS	This command was introduced to support the Cisco 12012 Gigabit Switch Router.
	11.1 CC	Multiple platform support was added.

Usage Guidelines When you issue this command, entries in the adjacency table that resides on the route processor are removed and then repopulated. During repopulation, Layer 2 next hop information is reevaluated.

With Distributed CEF (dCEF) mode, the adjacency tables that reside on line cards are always synchronized to the adjacency table that resides on the route processor. Therefore, clearing the adjacency table on the route processor using the **clear adjacency** command also clears the adjacency tables on the line cards; all changes are propagated to the line cards.

Examples The following example clears the adjacency table:

```
clear adjacency
```

Related Commands	Command	Description
	show adjacency	Displays CEF adjacency table information.

clear atm vc

To release a specified switched virtual circuit (SVC), use the **clear atm vc** command in EXEC mode.

```
clear atm vc vcd
```

Syntax Description	<i>vcd</i>	Virtual channel descriptor of the channel to be released.
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Command Modes	EXEC
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Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	<p>For multicast or control VCCs, this command causes the LANE client to exit and rejoin an emulated LAN.</p> <p>For data VCCs, this command also removes the associated LANE Address Resolution Protocol (LE ARP) table entries.</p>
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Examples	<p>The following example releases SVC 1024:</p> <pre>clear atm vc 1024</pre>
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clear cef linecard

To clear Cisco Express Forwarding (CEF) information from line cards, use the **clear cef linecard** command in EXEC mode.

clear cef linecard [*slot-number*] [**adjacency** | **interface** | **prefix**]

Syntax Description		
	<i>slot-number</i>	(Optional) Line card slot number to clear. When you omit this argument, all line card slots are cleared.
	adjacency	(Optional) Clears line card adjacency tables and rebuilds adjacency for the specified line card.
	interface	(Optional) Clears line card interface information and recreates the interface information for the specified line card.
	prefix	(Optional) Clears line card prefix tables and starts rebuilding the FIB table.

Command Modes EXEC

Command History	Release	Modification
	11.2 GS	This command was introduced to support the Cisco 12012 Gigabit Switch Router.
	11.1 CC	Multiple platform support was added.

Usage Guidelines This command is available only on routers with line cards. This command clears CEF information only on the line cards; CEF information on the route processor is not affected.

Once you clear CEF information from line cards, the corresponding information from the route processor is propagated to the line cards. Inter Process Communication (IPC) ensures that CEF information on the route processor matches the CEF information on the line cards.

Examples The following example clears the CEF information from the line cards:

```
clear cef linecard
```

Related Commands	Command	Description
	show cef linecard	Displays CEF-related interface information by line card.

clear ip cache

To delete entries in the routing table cache used to fast switch IP traffic, use the **clear ip cache** command in the privileged EXEC mode.

clear ip cache [*prefix mask*]

Syntax Description	<i>prefix mask</i>	(Optional) Deletes only the entries in the cache that match the prefix and mask combination.
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Command Modes	Privileged EXEC
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Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines Use this command to clear routes from the routing table cache. You can remove all entries in the routing cache or you can remove only those entries associated with a specified prefix and mask.

Examples The following command shows how to delete entire in the routing table cache:

```
Router# clear ip cache
```

The following command show how to delete entries in the router table associated with the prefix and mask 192.168.32.0 255.255.255.0:

```
Router# clear ip cache 192.168.32.0 255.255.255.0
```

Related Commands	Command	Description
	ip route-cache	Controls the use of high-speed switching caches for IP routing.
	show ip cache	Displays the routing table cache used to fast switch IP traffic.

clear ip cef prefix-statistics

To clear Cisco Express Forwarding (CEF) counters by resetting the packet and byte count to zero (0), use the **clear ip cef prefix-statistics** command in EXEC mode.

clear ip cef {*network* [*mask*] | *} **prefix-statistics**

Syntax Description		
<i>network</i>		Clears counters for a FIB entry specified by network.
<i>mask</i>		(Optional) Clears counters for a FIB entry specified by network and mask.
*		Clears counters for all FIB entries.

Command Modes EXEC

Command History	Release	Modification
	11.2 GS	This command was introduced to support the Cisco 12012 Gigabit Switch Router.
	11.1 CC	Multiple platform support was added.

Examples The following example resets the CEF packet and byte count to zero:

```
clear ip cef prefix-statistics
```

Related Commands	Command	Description
	show adjacency	Displays CEF adjacency table information.
	show ip cef	Displays entries in the FIB that are unresolved or displays a FIB summary.

clear ip flow stats

To clear the NetFlow switching statistics, use the **clear ip flow stats** command in EXEC mode.

clear ip flow stats

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.1 CA	This command was introduced.

Usage Guidelines The **show ip cache flow** command displays the NetFlow switching statistics. Use the **clear ip flow stats** command to clear the NetFlow switching statistics.

Examples The following example clears the NetFlow switching statistics on the router:

```
clear ip flow stats
```

Related Commands	Command	Description
	show mpoa client	Displays the routing table cache used to fast-switch IP traffic.

clear ip mds forwarding

To clear all routes from a line card's MFIB table and resynchronize it with the RP, use the **clear ip mds forwarding** command in EXEC mode.

clear ip mds forwarding

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2(11)GS	This command was introduced.

Usage Guidelines Use this command on a line card of a Cisco 7500 or Cisco 12000.

Examples The following example clears the line card's MFIB table:

```
clear ip mds forwarding
```

Related Commands	Command	Description
	clear ip pim interface count	Clears all line card counts or packet counts.

clear ip mroute

To delete entries from the IP multicast routing table, use the **clear ip mroute** command in EXEC mode.

```
clear ip mroute [* | group [source]]
```

Syntax Description		
*		Deletes all entries from the IP multicast routing table.
group		Can be either one of the following: <ul style="list-style-type: none"> Name of the multicast group, as defined in the DNS hosts table or with the ip host command. IP address of the multicast group. This is a multicast IP address in four-part, dotted notation.
source		(Optional) If you specify a group name or address, you can also specify a name or address of a multicast source that is sending to the group. A source need not be a member of the group.

Command Modes	
	EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	12.0(5) T	The effect of this command was modified. If IP multicast Multilayer Switching (MLS) is enabled, using this command now clears both the multicast routing table on the MMLS-RP and all multicast MLS cache entries for all MMLS-SEs that are performing multicast MLS for the MMLS-RP. That is, the original clearing occurs, and the derived hardware switching table is also cleared.

Examples

The following example deletes all entries from the IP multicast routing table:

```
clear ip mroute *
```

The following example deletes from the IP multicast routing table all sources on the 10.3.0.0 subnet that are sending to the multicast group 224.2.205.42. Note that this example deletes all sources on network 10.3, not individual sources.

```
clear ip mroute 224.2.205.42 10.3.0.0
```

Related Commands	Command	Description
	ip host	Defines a static host name-to-address mapping in the host cache.
	mls rp ip multicast	Enables IP multicast Multilayer Switching (hardware switching) on an external or internal router in conjunction with Layer 3 switching hardware for the Catalyst 5000 switch.
	show ip mroute	Displays the contents of the IP multicast routing table.

clear ip pim interface count

To clear all line card counts or packet counts, use the **clear ip pim interface count** command in EXEC mode.

clear ip pim interface count

Syntax Description This command has no arguments or keywords.

Command Modes EXEC

Command History	Release	Modification
	11.2(11)GS	This command was introduced.

Usage Guidelines Use this command on an RP to delete all multicast distributed switching (MDS) statistics for the entire router.

Examples The following example clears all the line card packets counts:

```
clear ip pim interface count
```

Related Commands	Command	Description
	clear ip mds forwarding	Clears all routes from the MFIB table of a line card and resynchronizes it with the RP.

clear ip route vrf

To remove routes from the VRF routing table, use the **clear ip route vrf** command in EXEC mode.

```
clear ip route vrf vrf-name [* | network [mask]]
```

Syntax Description		
	<i>vrf-name</i>	Name of the VPN routing/forwarding instance (VRF) for the static route.
	*	Deletes all routes for a given VRF.
	<i>network</i>	Destination to be removed, in dotted-decimal format.
	<i>mask</i>	(Optional) Mask for the specified network destination, in dotted-decimal format.

Defaults No default behavior or values.

Command Modes EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.

Usage Guidelines Use this command to clear routes from the routing table. Use the asterisk (*) to delete all routes from the forwarding table for a specified VRF, or enter the address and mask of a particular network to delete the route to that network.

Examples The following command removes the route to the network 10.13.0.0 in the vpn1 routing table:

```
clear ip route vrf vpn1 10.13.0.0
```

Related Commands	Command	Description
	show ip route vrf	Displays the IP routing table associated with a VRF.

clear lane le-arp

To clear the dynamic LANE Address Resolution Protocol (LE ARP) table or a single LE ARP entry of the LANE client configured on the specified subinterface or emulated LAN, use the **clear lane le-arp** command in EXEC mode.

Cisco 7500 series

```
clear lane le-arp [interface slot/port[.subinterface-number] | name elan-name] [mac-address mac-address | route-desc segment segment-number bridge bridge-number]
```

Cisco 4500 and 4700 routers

```
clear lane le-arp [interface number[.subinterface-number] | name elan-name] [mac-address mac-address | route-desc segment segment-number bridge bridge-number]
```

Syntax Description		
interface <i>slot/port</i> [. <i>subinterface-number</i>]	(Optional) Interface or subinterface for the LANE client whose LE ARP table or entry is to be cleared for the Cisco 7500 series routers. The space between the interface keyword and the <i>slot</i> argument is optional.	
interface <i>number</i> [. <i>subinterface-number</i>]	(Optional) Interface or subinterface for the LANE client whose LE ARP table or entry is to be cleared for the Cisco 4500 or 4700 routers. The space between the interface keyword and the <i>number</i> argument is optional.	
name <i>elan-name</i>	(Optional) Name of the emulated LAN for the LANE client whose LE ARP table or entry is to be cleared. Maximum length is 32 characters.	
mac-address <i>mac-address</i>	(Optional) Media access control (MAC) address of the entry to be cleared from the LE ARP table.	
route-desc segment <i>segment-number</i>	(Optional) LANE segment number. The segment number ranges from 1 to 4095.	
bridge <i>bridge-number</i>	(Optional) Bridge number that is contained in the route descriptor. Valid bridge numbers range from 1 to 15.	

Command Modes EXEC

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines This command removes dynamic LE ARP table entries only. It does not remove static LE ARP table entries.

If you do not specify an interface or an emulated LAN, this command clears all the LE ARP tables of any LANE client in the router.

If you specify a major interface (not a subinterface), this command clears all the LE ARP tables of every LANE client on all the subinterfaces of that interface.

This command also removes the fast-cache entries built from the LE ARP entries.

Examples

The following example clears all the LE ARP tables for all clients on the router:

```
clear lane le-arp
```

The following example clears all the LE ARP tables for all LANE clients on all the subinterfaces of interface 1/0:

```
clear lane le-arp interface 1/0
```

The following example clears the entry corresponding to MAC address 0800.AA00.0101 from the LE ARP table for the LANE client on the emulated LAN *red*:

```
clear lane le-arp name red 0800.aa00.0101
```

The following example clears all dynamic entries from the LE ARP table for the LANE client on the emulated LAN *red*:

```
clear lane le-arp name red
```

The following example clears the dynamic entry from the LE ARP table for the LANE client on segment number 1, bridge number 1 in the emulated LAN *red*:

```
clear lane le-arp name red route-desc segment 1 bridge 1
```



Note

MAC addresses are written in the same dotted notation for the **clear lane le-arp** command as they are for the global IP **arp** command.

clear lane server

To force a LANE server to drop a client and allow the LANE configuration server to assign the client to another emulated LAN, use the **clear lane server** command in EXEC mode.

Cisco 7500 Series

```
clear lane server {interface slot/port [.subinterface-number] | name elan-name} [mac-address
mac-address | client-atm-address atm-address | lecid lane-client-id | route-desc segment
segment-number bridge bridge-number]
```

Cisco 4500 and 4700 Routers

```
clear lane server {interface number [.subinterface-number] | name elan-name} [mac-address
mac-address | client-atm-address atm-address | lecid lecid | route-desc segment
segment-number bridge bridge-number]
```

Syntax Description		
interface <i>slot/port</i> [.subinterface-number]		Interface or subinterface where the LANE server is configured for the Cisco 7500 series. The space between the interface keyword and the <i>slot</i> argument is optional.
interface <i>number</i> [.subinterface-number]		Interface or subinterface where the LANE server is configured for the Cisco 4500 or 4700 routers. The space between the interface keyword and the <i>number</i> argument is optional.
name <i>elan-name</i>		Name of the emulated LAN on which the LANE server is configured. Maximum length is 32 characters.
mac-address <i>mac-address</i>		(Optional) Keyword and MAC address of LANE client.
client-atm-address <i>atm-address</i>		(Optional) Keyword and ATM address of LANE client.
lecid <i>lane-client-id</i>		(Optional) Keyword and LANE client ID. The LANE client ID is a value from 1 to 4096.
route-desc segment <i>segment-number</i>		(Optional) Keywords and LANE segment number. The segment number ranges from 1 to 4095.
bridge <i>bridge-number</i>		(Optional) Keyword and bridge number that is contained in the route descriptor. The bridge number ranges from 1 to 15.

Command Modes EXEC

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines

After changing the bindings on the configuration server, use this command on the LANE server to force the client to leave one emulated LAN. The LANE server will drop the Control Direct and Control Distribute VCCs to the LANE client. The client will then ask the LANE configuration server for the location of the LANE server of the emulated LAN it should join.

If no LANE client is specified, all LANE clients attached to the LANE server are dropped.

Examples

The following example forces all the LANE clients on the emulated LAN *red* to be dropped. The next time they try to join, they will be forced to join a different emulated LAN.

```
clear lane server name red
```

Related Commands

Command	Description
client-atm-address name	Adds a LANE client address entry to the configuration database of the configuration server.
lane database	Creates a named configuration database that can be associated with a configuration server.
mac-address	Sets the MAC layer address of the Cisco Token Ring.
show lane server	Displays global information for the LANE server configured on an interface, on any of its subinterfaces, on a specified subinterface, or on an ELAN.

clear mpoa client cache

To clear the ingress and egress cache entries of one or all MPCs, use the **clear mpoa client cache** command in EXEC mode.

```
clear mpoa client [name mpc-name] cache [ingress | egress] [ip-address ip-address]
```

Syntax Description

name <i>mpc-name</i>	(Optional) Specifies the name of the MPC with the specified name.
ingress	(Optional) Clears ingress cache entries associated with the MPC.
egress	(Optional) Clears egress cache entries associated with the MPC.
ip-address <i>ip-address</i>	(Optional) Clears matching cache entries with the specified IP address.

Defaults

The system defaults are:

- All MPC cache entries are cleared.
- Both caches are cleared.
- Entries matching only the specified destination IP address are cleared.

Command Modes

EXEC

Command History

Release	Modification
11.3(3a)WA4(5)	This command was introduced.

Examples

The following example clears the ingress and egress cache entries for the MPC named ip_mpc:

```
clear mpoa client name ip_mpc cache
```

Related Commands

Command	Description
show mpoa client cache	Displays the ingress or egress cache entries matching the IP addresses for the MPCs.

clear mpoa server cache

To clear the ingress and egress cache entries, use the **clear mpoa server cache** command in EXEC mode.

```
clear mpoa server [name mps-name] cache [ingress | egress] [ip-address ip-address]
```

Syntax Description	
name <i>mps-name</i>	(Optional) Specifies the name of the MPS. If this keyword is omitted, this command will apply to all servers.
ingress	(Optional) Clears ingress cache entries associated with a server.
egress	(Optional) Clears egress cache entries associated with a server.
ip-address <i>ip-address</i>	(Optional) Clears matching cache entries with the specified IP address. If this keyword is omitted, this command will clear all entries.

Command Modes	
	EXEC

Command History	Release	Modification
	11.3(3a)WA4(5)	This command was introduced.

Usage Guidelines	
	This command clears cache entries.

Examples	
	The following example clears all cache entries:
	<pre>clear mpoa server cache</pre>

Related Commands	Command	Description
	show mpoa server cache	Displays ingress and egress cache entries associated with a server.

clear vlan

To delete an existing virtual LAN (VLAN) from a management domain, use the **clear vlan** command in privileged EXEC mode.

clear vlan *vlan*

Syntax Description

vlan Number of the VLAN. Valid values are 2 to 1000.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.0	This command was introduced.

Usage Guidelines

Follow these guidelines for deleting VLANs:

- When you delete an Ethernet VLAN in Virtual Terminal Protocol (VTP) server mode, the VLAN is removed from all switches in the same VTP domain.
- When you delete a VLAN in VTP transparent mode, the VLAN is deleted only on the current switch.
- To delete a Token Ring Bridge Relay Function (TRBRF) VLAN, you must either first reassign its child Token Ring Concentrator Relay Functions (TRCRFs) to another parent TRBRF or delete the child TRCRFs.



Caution

When you clear a VLAN, all ports assigned to that VLAN become inactive. However, the VLAN port assignments are retained until you move the ports to another VLAN. If the cleared VLAN is reactivated, all ports still configured on that VLAN are also reactivated. A warning is displayed if you clear a VLAN that exists in the mapping table.

Examples

The following example shows how to clear an existing VLAN (VLAN 4) from a management domain:

```
Router# clear vlan 4
This command will deactivate all ports on vlan 4
in the entire management domain
Do you want to continue(y/n) [n]? y
VLAN 4 deleted
```

Related Commands

Command	Description
set vlan	Groups ports into a VLAN.
show vlans	Displays VLAN subinterfaces.

clear vlan mapping

To delete existing 802.1Q virtual LAN (VLAN) to Inter-Switch Link (ISL) VLAN-mapped pairs, use the **clear vlan mapping** command in privileged EXEC mode.

```
clear vlan mapping dot1q { 1q-vlan | all }
```

Syntax Description	dot1q	Specifies the 802.1Q VLAN.
	<i>1q-vlan</i>	Number of the 802.1Q VLAN for which to remove the mapping.
	all	Clears the mapping table of all entries.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.0	This command was introduced.

Examples

The following example shows how to clear an existing mapped 802.1Q VLAN (VLAN 1044) from the mapping table:

```
Router# clear vlan mapping dot1q 1044
Vlan Mapping 1044 Deleted.
```

The following example shows how to clear all mapped 802.1Q VLANs from the mapping table:

```
Router# clear vlan mapping dot1q all
All Vlan Mapping Deleted.
```

Related Commands	Command	Description
	set vlan mapping	Maps 802.1Q VLANs to ISL VLANs.
	show vlan mapping	Displays VLAN mapping table information.

client-atm-address name

To add a LANE client address entry to the configuration server's configuration database, use the **client-atm-address** command in database configuration mode. To remove a client address entry from the table, use the **no** form of this command.

client-atm-address *atm-address-template* **name** *elan-name*

no client-atm-address *atm-address-template*

Syntax Description

<i>atm-address-template</i>	Template that explicitly specifies an ATM address or a specific part of an ATM address and uses wildcard characters for other parts of the ATM address, making it easy and convenient to specify multiple addresses matching the explicitly specified part. Wildcard characters can replace any nibble or group of nibbles in the prefix, the end-system identifier (ESI), or the selector fields of the ATM address.
<i>elan-name</i>	Name of the emulated LAN. Maximum length is 32 characters.

Defaults

No address and no emulated LAN name are provided.

Command Modes

Database configuration

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

The effect of this command is to bind any client whose address matches the specified template into the specified emulated LAN. When a client comes up, it consults the LANE configuration server, which responds with the ATM address of the LANE server for the emulated LAN. The client then initiates join procedures with the LANE server.

Before this command is used, the emulated LAN specified by the *elan-name* argument must have been created in the configuration server's database by use of the **name server-atm-address** command.

If an existing entry in the configuration server's database binds the LANE client ATM address to a different emulated LAN, the new command is rejected.

This command affects only the bindings in the named configuration server database. It has no effect on the LANE components themselves.

See the **lane database** command for information about creating the database, and the **name server-atm-address** command for information about binding the emulated LAN's name to the server's ATM address.

The **client-atm-address name** command is a subcommand of the global **lane database** command.

ATM Addresses

A LANE ATM address has the same syntax as a network service access point (NSAP), but it is not a network-level address. It consists of the following:

- A 13-byte prefix that includes the following fields defined by the ATM Forum:
 - AFI (Authority and Format Identifier) field (1 byte), DCC (Data Country Code) or ICD (International Code Designator) field (2 bytes), DFI field (Domain Specific Part Format Identifier) (1 byte), Administrative Authority field (3 bytes), Reserved field (2 bytes), Routing Domain field (2 bytes), and the Area field (2 bytes)
- A 6-byte end-system identifier (ESI)
- A 1-byte selector field

Address Templates

LANE ATM address templates can use two types of wildcards: an asterisk (*) to match any single character (nibble), and an ellipsis (...) to match any number of leading, middle, or trailing characters. The values of the characters replaced by wildcards come from the automatically assigned ATM address.

In LANE, a *prefix template* explicitly matches the prefix but uses wildcards for the ESI and selector fields. An *ESI template* explicitly matches the ESI field but uses wildcards for the prefix and selector.

In our implementation of LANE, the prefix corresponds to the switch, the ESI corresponds to the ATM interface, and the selector field corresponds to the specific subinterface of the interface.

Examples

The following example uses an ESI template to specify the part of the ATM address corresponding to the interface. This example allows any client on any subinterface of the interface that corresponds to the displayed ESI value, no matter to which switch the router is connected, to join the *engineering* emulated LAN:

```
client-atm-address ...0800.200C.1001.** name engineering
```

The following example uses a prefix template to specify the part of the ATM address corresponding to the switch. This example allows any client on a subinterface of any interface connected to the switch that corresponds to the displayed prefix to join the *marketing* emulated LAN:

```
client-atm-address 47.000014155551212f.00.00... name marketing
```

Related Commands

Command	Description
default-name	Provides an ELAN name in the database of the configuration server for those client MAC addresses and client ATM addresses that do not have explicit ELAN name bindings.
lane database	Creates a named configuration database that can be associated with a configuration server.
mac-address	Sets the MAC layer address of the Cisco Token Ring.
name server-atm-address	Specifies or replaces the ATM address of the LANE server for the ELAN in the configuration database of the configuration server.

default

To enable a default aggregation cache, use the **default** command in aggregation cache configuration mode.

default [**cache** | **enabled** | **export**]

Syntax Description

cache	(Optional) Configure NetFlow cache parameters.
enabled	(Optional) Enable the aggregation cache.
export	(Optional) Specify host/port to send flow statistics.

Defaults

No default behavior or values.

Command Modes

Aggregation cache configuration

Command History

Releases	Modifications
12.0(3)T	This command was introduced.

Examples

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

```
ip flow-aggregation cache as
default enabled
```

Related Commands

Command	Command
clear adjacency	Configures aggregation cache operational parameters.
enabled	Enables an aggregation cache.
export destination	Enables the exporting of information from NetFlow aggregation caches.
ip flow-aggregation cache	Enables aggregation cache configuration mode.
show mpoa client	Displays the statistics for the data export including the main cache and all other enabled caches.

default-name

To provide an emulated LAN name in the configuration server's database for those client MAC addresses and client ATM addresses that do not have explicit emulated LAN name bindings, use the **default-name** command in database configuration mode. To remove the default name, use the **no** form of this command.

default-name *elan-name*

no default-name

Syntax Description	<i>elan-name</i>	Default emulated LAN name for any LANE client MAC address or LANE client ATM address not explicitly bound to any emulated LAN name. Maximum length is 32 characters.
---------------------------	------------------	--

Defaults	No name is provided.
-----------------	----------------------

Command Modes	Database configuration
----------------------	------------------------

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines	<p>This command affects only the bindings in the configuration server's database. It has no effect on the LANE components themselves.</p> <p>The named emulated LAN must already exist in the configuration server's database before this command is used. If the default name-to-emulated LAN name binding already exists, the new binding replaces it.</p> <p>The default-name command is a subcommand of the global lane database command.</p>
-------------------------	---

Examples	<p>The following example specifies the emulated Token Ring LAN <i>man</i> as the default emulated LAN. Because none of the emulated LANs are restricted, clients are assigned to whichever emulated LAN they request. Clients that do not request a particular emulated LAN will be assigned to the <i>man</i> emulated LAN.</p>
-----------------	--

```
lane database example2
name eng server-atm-address 39.000001415555121101020304.0800.200c.1001.02
name eng local-seg-id 1000
name man server-atm-address 39.000001415555121101020304.0800.200c.1001.01
name man local-seg-id 2000
name mkt server-atm-address 39.000001415555121101020304.0800.200c.4001.01
name mkt local-seg-id 3000
default-name man
```

Related Commands

Command	Description
client-atm-address name	Adds a LANE client address entry to the configuration database of the configuration server.
lane database	Creates a named configuration database that can be associated with a configuration server.
mac-address name	Sets the MAC layer address of the Cisco Token Ring.
server-atm-address	Specifies or replaces the ATM address of the LANE server for the ELAN in the configuration database of the configuration server.

enabled

To enable an aggregation cache, use the **enabled** command in aggregation cache configuration mode.

enabled

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Aggregation cache configuration

Command History	Release	Modification
	12.0(3)T	This command was introduced.

Examples The following example shows how to use the **enabled** command:

```
enabled
```

Related Commands	Command	Description
	clear adjacency	Configures aggregation cache operational parameters.
	ip cache-invalidate-delay	Enables the exporting of information from NetFlow aggregation caches.
	ip flow-aggregation cache	Enables aggregation cache configuration mode.
	show mpoa client	Displays the statistics for the data export including the main cache and all other enabled caches.

encapsulation dot1q

To enable IEEE 802.1Q encapsulation of traffic on a specified subinterface in virtual LANs, use the **encapsulation dot1q** command in subinterface configuration mode. IEEE 802.1Q is a standard protocol for interconnecting multiple switches and routers and for defining VLAN topologies.

encapsulation dot1q *vlan-id*

Syntax Description	<i>vlan-id</i>	Virtual LAN identifier. The allowed range is from 1 to 1000.
---------------------------	----------------	--

Defaults	Disabled
-----------------	----------

Command Modes	Subinterface configuration
----------------------	----------------------------

Command History	Release	Modification
	12.0(1)T	This command was introduced.

Usage Guidelines	IEEE 802.1Q encapsulation is configurable on Fast Ethernet interfaces.
-------------------------	--

Examples	The following example encapsulates VLAN traffic using the IEEE 802.1Q protocol for VLAN 100:
-----------------	--

```
interface fastethernet 4/1.100
 encapsulation dot1q 100
```

Related Commands	Command	Description
	encapsulation isl	Enables the ISL, a Cisco proprietary protocol for interconnecting multiple switches and maintaining VLAN information as traffic goes between switches.
encapsulation sde	Enables IEEE 802.10 encapsulation of traffic on a specified subinterface in VLANs.	

encapsulation isl

To enable the Inter-Switch Link (ISL), use the **encapsulation isl** command in subinterface configuration mode. ISL is a Cisco protocol for interconnecting multiple switches and routers, and for defining VLAN topologies.

encapsulation isl *vlan-identifier*

Syntax Description	<i>vlan-identifier</i>	Virtual LAN identifier. The allowed range is from 1 to 1000.
---------------------------	------------------------	--

Defaults	Disabled.	
-----------------	-----------	--

Command Modes	Subinterface configuration	
----------------------	----------------------------	--

Command History	Release	Modification
	11.1	This command was introduced.

Usage Guidelines	<p>ISL encapsulation is configurable on Fast Ethernet interfaces.</p> <p>ISL encapsulation adds a 26-byte header to the beginning of the Ethernet frame. The header contains a 10-bit VLAN identifier that conveys VLAN membership identities between switches.</p>	
-------------------------	---	--

Examples	The following example enables ISL on Fast Ethernet subinterface 2/1.20:	
-----------------	---	--

```
interface FastEthernet 2/1.20
 encapsulation isl 400
```

Related Commands	Command	Description
	bridge-group	Assigns each network interface to a bridge group.
show bridge vlan	Displays virtual LAN subinterfaces.	
show interfaces	Displays statistics for all interfaces configured on the router or access server.	
show vlans	Displays virtual LAN subinterfaces.	

encapsulation sde

To enable IEEE 802.10 encapsulation of traffic on a specified subinterface in virtual LANs, use the **encapsulation sde** command in subinterface configuration mode. IEEE 802.10 is a standard protocol for interconnecting multiple switches and routers and for defining VLAN topologies.

encapsulation sde *said*

Syntax Description

<i>said</i>	Security association identifier. This value is used as the virtual LAN identifier. The valid range is 0 through 0xFFFFFFFFE.
-------------	--

Defaults

Disabled.

Command Modes

Subinterface configuration

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

SDE encapsulation is configurable only on the following interface types:

IEEE 802.10 Routing	IEEE 802.10 Transparent Bridging
<ul style="list-style-type: none"> FDDI 	<ul style="list-style-type: none"> Ethernet FDDI HDLC Serial Transparent mode Token Ring

Examples

The following example enables SDE on FDDI subinterface 2/0.1 and assigns a VLAN identifier of 9999:

```
interface fddi 2/0.1
 encapsulation sde 9999
```

Related Commands

Command	Description
bridge-group	Assigns each network interface to a bridge group.
show bridge vlan	Displays virtual LAN subinterfaces.

Command	Description
show interfaces	Displays statistics for all interfaces configured on the router or access server.
show vlans	Displays virtual LAN subinterfaces.

encapsulation tr-isl

To enable TRISL, use the **encapsulation tr-isl** command in subinterface configuration mode. TRISL is a Cisco proprietary protocol for interconnecting multiple routers and switches and maintaining VLAN information as traffic goes between switches.

encapsulation tr-isl trbrf-vlan *vlan-id* **bridge-num** *bridge-number*

Syntax Description		
	<i>vlan-id</i>	Number identifying the VLAN.
	bridge-num <i>bridge-number</i>	Keyword that specifies the identification number of the bridge number on the ISL trunk. Possible values are from 1 to 4095.

Defaults Disabled.

Command Modes Subinterface configuration

Command History	Release	Modification
	11.3(4)T	This command was introduced.

Examples In the following example, TRISL is enabled on a Fast Ethernet interface:

```
interface FastEthernet4/0.2
 encapsulation tr-isl trbrf-vlan 999 bridge-num 14
```

Related Commands	Command	Description
	clear drip counters	Clears DRiP counters.
	clear vlan statistics	Removes virtual LAN statistics from any statically or system configured entries.
	multiring	Enables collection and use of RIF information.
	multiring trcrf-vlan	Creates a pseudo-ring to terminate the RIF for source-routed traffic and assigns it to a VLAN.
	show drip	Displays the status of the DRiP database.
	show vlans	Displays virtual LAN subinterfaces.
	source-bridge trcrf-vlan	Attaches a TrCRF VLAN to the virtual ring of the router.

exit

To leave aggregation cache mode, use the **exit** command in aggregation cache configuration mode.

exit

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Aggregation cache configuration

Command History	Release	Modification
	12.0(3)T	This command was introduced.

Examples The following example shows how to use the **exit** command:

```
exit
```

Related Commands	Command	Description
	clear adjacency	Configures aggregation cache operational parameters.
	default-name	Enables an aggregation cache.
	ip cache-invalidate-delay	Enables the exporting of information from NetFlow aggregation caches.
	ip flow-aggregation cache	Enables aggregation cache configuration mode.
	show mpoa client	Displays the statistics for the data export including the main cache and all other enabled caches.

exit-address-family

To exit from the address family submode, use the **exit-address-family** command in address family submode.

exit-address-family

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Address family submode

Command History	Release	Modification
	12.0(5)T	This command was introduced.

Usage Guidelines This command can be abbreviated to **exit**.

Examples The following example shows how to exit the address-family command mode:

```
(config-router-af)# exit-address-family
```

Related Commands	Command	Description
	address-family	Enters the address family submode for configuring routing protocols, such as BGP, RIP, and static routing.

export destination

To enable the exporting of information from NetFlow aggregation caches, use the **export destination** command in aggregation cache configuration mode.

To disable the exporting of NetFlow aggregation cache information, use the **no** form of this command.

export destination *ip-address port*

no export destination *ip-address port*

Syntax Description

<i>ip-address</i>	Destination IP address.
<i>port</i>	Destination UDP port.

Defaults

An export destination is not set.

Command Modes

Aggregation cache configuration

Command History

Release	Modification
12.0(3)T	This command was introduced.

Usage Guidelines

For version 8 data exports, the maximum number of aggregated flow records and the maximum size in bytes of each UDP datagram are as follows:

Aggregation Scheme	Max. Number of Flow Records	UDP Packet Size
BGP Autonomous System	51	1456 bytes
Destination Prefix	44	1436 bytes
Prefix	35	1428 bytes
Protocol Port	51	1456 bytes
Source Prefix	44	1436 bytes

Examples

The following example shows how to configure an export destination for an aggregation cache:

```
export destination 10.41.41.1 9992
```

Related Commands	Command	Description
	clear adjacency	Configures aggregation cache operational parameters.
	default-name	Enables an aggregation cache.
	ip flow-aggregation cache	Enables aggregation cache configuration mode.
	show ip cache flow aggregation	Displays the aggregation cache configuration.
	show mpoa client	Displays the statistics for the data export including the main cache and all other enabled caches.

export map

To configure an export route map for a Virtual Private Network (VPN) routing/forwarding instance (VRF), use the **export map** command in VRF configuration submode. To remove an export route map, use the **no** form of this command.

export map *route-map*

no export map *route-map*

Syntax Description	<i>route-map</i>	Specifies the route map to be used as an export map for the VRF.
--------------------	------------------	--

Defaults	This command has no default behavior or values. A VRF has no export map unless one is configured using the export map command.
----------	---

Command Modes	VRF configuration submode
---------------	---------------------------

Command History	Release	Modification
	12.0(7)T	This command was introduced.

Usage Guidelines	Use an export route map when an application requires finer control over the routes exported by a VRF than provided by the import and export extended communities configured for the importing and exporting VRF.
------------------	--

The **export map** command associates a route map with the specified VRF. You can use a route map to filter target routes for a target VPN export by a VRF, based on the route target extended community attributes of the route. The route map might deny export to selected routes from a community on the export list.

An **export map** command with a **set extcommunity rt** command takes precedence over configured route targets (RTs), unless the **additive** keyword is specified. If the export map has a **set community rt1 rt2 additive** command, the previous RT list is kept and rt1 and rt2 are added to the RT list.

Examples	The following example shows how to configure an export map for VRF vpn1:
----------	--

```
Router(config)# ip vrf vpn1
Router(config-vrf)# export map export1
```

Related Commands	Command	Description
	import map	Configures an import route map for a VRF.
	ip vrf	Configures a VRF routing table.

Command	Description
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
route-target	Creates a route-target extended community for a VRF.
show ip vrf	Displays the set of defined VRFs and associated interfaces.

extended-port

To associate the currently selected extended label ATM (XTagATM) interface with a particular external interface on the remotely controlled ATM switch, use the **extended-port** command in interface configuration mode.

```
extended-port ctrl-if { bpx bpx-port-number | descriptor vsi-descriptor | vsi vsi-port-number }
```

Syntax Description		
<i>ctrl-if</i>	Identifies the ATM interface used to control the remote ATM switch. VSI must be configured on this interface using the tag-control-protocol interface configuration command.	
bpx <i>bpx-port-number</i>	Specifies the associated BPX interface using the native BPX syntax. <i>slot.port</i> [<i>virtual port</i>]	Note that this form of the command may be used only when the controlled switch is a BPX.
descriptor <i>vsi-descriptor</i>	Specifies the associated port by its VSI physical descriptor.	Note that the <i>vsi-descriptor</i> string must match the corresponding VSI physical descriptor exactly.
vsi <i>vsi-port-number</i>	Specifies the associated port by its VSI logical interface number (integer).	

Defaults None

Command Modes Interface configuration

Command History

Release	Modification
12.0(3)T	This command was introduced.

Usage Guidelines

The **extended-port** interface configuration command associates an XTagATM interface with a particular external interface on the remotely controlled ATM switch. The three alternate forms of the command permit the external interface on the controlled ATM switch to be specified in three different ways.

Examples

The following example shows you how to create an extended label ATM interface and bind it to the BPX port 2.3.

```
interface XTagATM0
extended-port atm0/0 bpx 2.3
```

Related Commands

Command	Description
interface XTagATM	Enters interface configuration mode for the extended MPLS ATM (XTagATM) interface.

holding-time

To specify the holding time value for the MPS-p7 variable of an MPS, use the **holding-time** command in MPS configuration mode. To revert to the default value, use the **no** form of this command.

holding-time *time*

no holding-time *time*

Syntax Description	<i>time</i> Specifies the holding time value in seconds.
---------------------------	--

Defaults	The default holding time is 1200 seconds (20 minutes).
-----------------	--

Command Modes	MPS configuration
----------------------	-------------------

Command History	Release	Modification
	11.3(3a)WA4(5)	This command was introduced.

Examples	<p>The following example sets the holding time to 600 seconds (10 minutes):</p> <pre>holding-time 600</pre>
-----------------	---

import map

To configure an import route map for a VRF, use the **import map** command in VRF submode.

import map *route-map*

Syntax Description	<i>route-map</i>	Specifies the route map to be used as an import route map for the VRF.
---------------------------	------------------	--

Defaults There is no default. A VRF has no import route map unless one is configured using the **import map** command.

Command Modes VRF submode

Command History	Release	Modification
	12.0(5)T	This command was introduced.

Usage Guidelines Use an import route map when an application requires finer control over the routes imported into a VRF than provided by the import and export extended communities configured for the importing and exporting VRF.

The **import map** command associates a route map with the specified VRF. You can filter routes that are eligible for import into a VRF, based on the route target extended community attributes of the route, through the use of a route map. The route map might deny access to selected routes from a community that is on the import list.

The **import map** command does not replace the need for a route-target import in the VRF configuration. You use the **import map** command to further filter prefixes that match a route-target import statement in that VRF.

Examples The following example shows how to configure an import route map for a VRF:

```
ip vrf vrf_blue
import map blue_import_map
```

Related Commands	Command	Description
	export map	Configures an export map for a VRF.
	ip vrf	Configures a VRF routing table.
	route-target	Creates a route-target extended community for a VRF.
	show ip vrf	Displays the set of defined VRFs and associated interfaces.

index

To insert or modify a path entry at a specific index, use the **index** command in IP explicit path subcommand mode.

index *index command*

Syntax Description	<i>index</i>	Specifies entry index number. Valid range is from 0 to 65534.
	<i>command</i>	One of the IP explicit path configuration commands that create or modify a path entry. (Currently, only the next-address command can be used.)

Defaults No default behavior or values.

Command Modes IP explicit path subcommand

Command History	Release	Modification
	12.0(5)S	This command was introduced.

Examples The following command specifies where the **next-address** command should be inserted in the list:

```
index 6 next-address 3.3.29.3
Explicit Path identifier 6:
  6: next-address 3.3.29.3
```

Related Commands	Command	Description
	append-after	Inserts a path entry after a specific index number.
	ip explicit-path	Enters the subcommand mode for IP explicit paths to create or modify the named path.
	list	Displays all or part of the explicit path or paths.
	next-address	Specifies the next IP address in the explicit path.
	show ip explicit-paths	Displays configured IP explicit paths.

interface XTagATM

To enter interface configuration mode for the extended label ATM (XTagATM) interface, use the **interface XTagATM** command in global configuration mode. The interface is created the first time this command is issued for a particular interface number.

interface XTagATM *if-num*

Syntax Description	<i>if-num</i>	Interface number.
---------------------------	---------------	-------------------

Defaults	None	
-----------------	------	--

Command Modes	Global configuration	
----------------------	----------------------	--

Command History	Release	Modification
	12.0(3)T	This command was introduced.

Usage Guidelines Extended label ATM interfaces are virtual interfaces that are created on first reference like tunnel interfaces. They are similar to ATM interfaces except that they only support TC-ATM encapsulation.

Examples The following example shows you how to create the extended label ATM interface with the interface number 62:

```
interface XTagATM62
```

Related Commands	Command	Description
	extended-port	Associates the currently selected extended MPLS ATM (XTagATM) interface with a particular external interface on the remotely controlled ATM switch.

ip cache-invalidate-delay

To control the invalidation rate of the IP route cache, use the **ip cache-invalidate-delay** command in global configuration mode. To allow the IP route cache to be immediately invalidated, use the **no** form of this command.

ip cache-invalidate-delay [*minimum maximum quiet threshold*]

no ip cache-invalidate-delay

Syntax Description

<i>minimum</i>	(Optional) Minimum time (in seconds) between invalidation request and actual invalidation. The default is 2 seconds.
<i>maximum</i>	(Optional) Maximum time (in seconds) between invalidation request and actual invalidation. The default is 5 seconds.
<i>quiet</i>	(Optional) Length of quiet period (in seconds) before invalidation.
<i>threshold</i>	(Optional) Maximum number of invalidation requests considered to be quiet.

Defaults

minimum = 2 seconds
maximum = 5 seconds, and 3 seconds with no more than zero invalidation requests

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

All cache invalidation requests are honored immediately.

This command should typically not be used except under the guidance of technical support personnel. Incorrect settings can seriously degrade network performance.

The IP fast-switching and autonomous-switching features maintain a cache of IP routes for rapid access. When a packet is to be forwarded and the corresponding route is not present in the cache, the packet is process-switched and a new cache entry is built. However, when routing table changes occur (such as when a link or an interface goes down), the route cache must be flushed so that it can be rebuilt with up-to-date routing information.

This command controls how the route cache is flushed. The intent is to delay invalidation of the cache until after routing has settled down. Because route table changes tend to be clustered in a short period of time, and the cache may be flushed repeatedly, a high CPU load might be placed on the router.

When this feature is enabled, and the system requests that the route cache be flushed, the request is held for at least *minimum* seconds. Then the system determines whether the cache has been “quiet” (that is, less than *threshold* invalidation requests in the last *quiet* seconds). If the cache has been quiet, the cache is then flushed. If the cache does not become quiet within *maximum* seconds after the first request, it is flushed unconditionally.

Manipulation of these parameters trades off CPU utilization versus route convergence time. Timing of the routing protocols is not affected, but removal of stale cache entries is affected.

Examples

The following example sets a minimum delay of 5 seconds, a maximum delay of 30 seconds, and a quiet threshold of no more than 5 invalidation requests in the previous 10 seconds:

```
ip cache-invalidate-delay 5 30 10 5
```

Related Commands

Command	Description
ip route-cache	Configures the router to export the flow cache entry to a workstation when a flow expires.
show mpoa client	Displays the routing table cache used to fast switch IP traffic.

ip cef

To enable Cisco Express Forwarding (CEF) on the route processor card, use the **ip cef** command in global configuration mode. To disable CEF, use the **no** form of this command.

ip cef [distributed]

no ip cef [distributed]

Syntax Description

distributed	(Optional) Enables distributed CEF (dCEF) operation. Distributes CEF information to line cards. Line cards perform express forwarding.
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Defaults

On this platform...	The default is...
Cisco 7000 series equipped with RSP7000	CEF is not enabled.
Cisco 7200 series	CEF is not enabled.
Cisco 7500 series	CEF is enabled.
Cisco 12000 series Gigabit Switch Router	Distributed CEF is enabled.

Command Modes

Global configuration

Command History

Release	Modification
11.1 CC	This command was introduced.

Usage Guidelines

This command is not available on the Cisco 12000 series GSR because that router series operates only in distributed CEF mode.

CEF is advanced Layer 3 IP switching technology. CEF optimizes network performance and scalability for networks with dynamic, topologically dispersed traffic patterns, such as those associated with Web-based applications and interactive sessions.

If you enable CEF and then create an access list that uses the **log** keyword, the packets that match the access list are not CEF switched. They are fast switched. Logging disables CEF.

Examples

The following example enables standard CEF operation:

```
ip cef
```

The following example enables dCEF operation:

```
ip cef distributed
```

Related Commands

Command	Description
ip route-cache cef	Reenables disabled CEF or DCEF operation on an interface.