



LAN Emulation Commands

This chapter describes the commands available to configure LAN emulation (LANE) in Cisco 4500 series routers, Cisco 4700 routers, and Cisco 7500 routers that contain an ATM Interface Processor (AIP) or an NP-1A ATM Network Processor Module (NPM) and are connected to a Cisco ATM switch.

For LANE configuration information and examples, refer to the chapter entitled “Configuring LAN Emulation” in the *Cisco IOS Switching Services Configuration Guide*.



Note

Because some LANE commands are used often and others are used very rarely, the command descriptions identify the commands you are most likely to use. See the “Usage Guidelines” section for the following indicator: “This command is ordinarily used.”

clear atm vc

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

clear atm vc *vcd*

| | | |
|---------------------------|------------|---|
| Syntax Description | <i>vcd</i> | Virtual channel descriptor of the channel to be released. |
|---------------------------|------------|---|

| | |
|----------------------|------|
| Command Modes | EXEC |
|----------------------|------|

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 11.0 | This command was introduced. |

| | |
|-------------------------|--|
| Usage Guidelines | For multicast or control VCCs, this command causes the LANE client to exit and rejoin an emulated LAN. |
|-------------------------|--|

For data VCCs, this command also removes the associated LANE Address Resolution Protocol (LE ARP) table entries.

| | |
|-----------------|--|
| Examples | The following example releases SVC 1024: |
|-----------------|--|

```
clear atm vc 1024
```

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 EXEC** command.

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** EXEC command.

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> [<i>.subinterface-number</i>] | | 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> [<i>.subinterface-number</i>] | | 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 LANE client's MAC address. |
| client-atm-address <i>atm-address</i> | | (Optional) Keyword and LANE client's ATM address. |
| lecid <i>lane-client-id</i> | | (Optional) Keyword and LANE client ID. The LANE client ID is a value between 1 and 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. |

■ **clear lane server****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. |

client-atm-address name

To add a LANE client address entry to the configuration server's configuration database, use the **client-atm-address** database configuration command. 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 which switch the router is connected to, 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 47.00001415551212f.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 | Specifies or replaces the ATM address of the LANE server for the ELAN |
| server-atm-address | in the configuration database of the configuration 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

| | |
|-------------|--|
| <i>vlan</i> | Number of the VLAN. Valid value 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 { Iq-vlan | all }
```

| Syntax | Description |
|----------------|--|
| dot1q | Specifies the 802.1Q VLAN. |
| <i>Iq-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. |

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** database configuration command. 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

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

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.

The **default-name** command is a subcommand of the global **lane database** command.

Examples

The following example specifies the emulated Token Ring LAN *man* 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 *man* emulated LAN.

```
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
```

■ default-name

| 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. |
| | 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. |

lane auto-config-atm-address

To specify that the configuration server ATM address is computed by our automatic method, use the **lane auto-config-atm-address** interface configuration command. To remove the previously assigned ATM address, use the **no** form of this command.

lane [config] auto-config-atm-address

no lane [config] auto-config-atm-address

| | | |
|---------------------------|---------------|---|
| Syntax Description | config | (Optional) When the config keyword is used, this command applies only to the LANE configuration server (LECS). This keyword indicates that the LECS should use the auto-computed LECS address. |
|---------------------------|---------------|---|

| | |
|-----------------|---------------------------------|
| Defaults | No specific ATM address is set. |
|-----------------|---------------------------------|

| | |
|----------------------|-------------------------|
| Command Modes | Interface configuration |
|----------------------|-------------------------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | 11.0 | This command was introduced. |

| | |
|-------------------------|---|
| Usage Guidelines | <p>When the config keyword is not present, this command causes the LANE server and LANE client on the subinterface to use the automatically assigned ATM address for the configuration server.</p> <p>When the config keyword is present, this command assigns the automatically generated ATM address to the configuration server (LECS) configured on the interface. Multiple commands that assign ATM addresses to the LANE configuration server can be issued on the same interface to assign different ATM addresses to the configuration server. Commands that assign ATM addresses to the LANE configuration server include lane auto-config-atm-address, lane config-atm-address, and lane fixed-config-atm-address.</p> <p>For a discussion of Cisco's method of automatically assigning ATM addresses, refer to the "Configuring LAN Emulation (LANE)" chapter in the <i>Cisco IOS Switching Services Configuration Guide</i>.</p> |
|-------------------------|---|

| | |
|-----------------|--|
| Examples | The following example associates the LANE configuration server with the database named <i>network1</i> and specifies that the configuration server's ATM address will be assigned by our automatic method: |
|-----------------|--|

```
lane database network1
 name eng server-atm-address 39.020304050607080910111213.0800.AA00.1001.02
 name mkt server-atm-address 39.020304050607080910111213.0800.AA00.4001.01
interface atm 1/0
 lane config database network1
 lane config auto-config-atm-address
```

The following example causes the LANE server and LANE client on the subinterface to use the automatically assigned ATM address to communicate with the configuration server:

```
interface atm 2/0.1
 ip address 172.16.0.4 255.255.255.0
 lane client ethernet
 lane server-bus ethernet eng
 lane auto-config-atm-address
```

Related Commands

| Command | Description |
|--|---|
| lane config-atm-address | Specifies the ATM address of the configuration server explicitly. |
| lane database | |
| lane fixed-config-atm-address | Specifies that the fixed configuration server ATM address assigned by the ATM Forum will be used. |

lane bus-atm-address

To specify an ATM address—and thus override the automatic ATM address assignment—for the broadcast-and-unknown server on the specified subinterface, use the **lane bus-atm-address** interface configuration command. To remove the ATM address previously specified for the broadcast-and-unknown server on the specified subinterface and thus revert to the automatic address assignment, use the **no** form of this command.

lane bus-atm-address *atm-address-template*

no lane bus-atm-address [*atm-address-template*]

| | | |
|---------------------------|-----------------------------|---|
| Syntax Description | <i>atm-address-template</i> | ATM address or a template in which wildcard characters are replaced by any nibble or group of nibbles of the prefix bytes, the end-system identifier (ESI) bytes, or the selector byte of the automatically assigned ATM address. |
|---------------------------|-----------------------------|---|

Defaults For the broadcast-and-unknown server, the default is automatic ATM address assignment.

Command Modes Interface configuration

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 11.0 | This command was introduced. |

Usage Guidelines When applied to a broadcast-and-unknown server, this command overrides automatic ATM address assignment for the broadcast-and-unknown server. When applied to a LANE client, this command gives the client the ATM address of the broadcast-and-unknown server. The client will use this address rather than sending LE ARP requests for the broadcast address.

When applied to a selected interface, but with a different ATM address than was used previously, this command replaces the broadcast-and-unknown server's ATM address.

ATM Addresses

A LANE ATM address has the same syntax as an 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)

- 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.

The values of the digits that are replaced by wildcards come from the automatic ATM assignment method.

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; the remaining values in the ATM address come from automatic assignment:

```
lane bus-atm-address ...0800.200C.1001.**
```

The following example uses a prefix template to specify the part of the ATM address corresponding to the switch; the remaining values in the ATM address come from automatic assignment:

```
lane bus-atm-address 45.000014155551212f.00.00...
```

Related Commands

| Command | Description |
|------------------------|--|
| lane server-bus | Enables a LANE server and a broadcast-and-unknown server on the specified subinterface with the ELAN ID. |

lane client

To activate a LANE client on the specified subinterface, use the **lane client** interface configuration command. To remove a previously activated LANE client on the subinterface, use the **no** form of this command.

lane client {**ethernet** | **tokenring**} [*elan-name*]

no lane client [{**ethernet** | **tokenring**} [*elan-name*]]

Syntax Description

| | |
|------------------|---|
| ethernet | Identifies the emulated LAN attached to this subinterface as an Ethernet ELAN. |
| tokenring | Identifies the emulated LAN attached to this subinterface as a Token Ring ELAN. |
| <i>elan-name</i> | (Optional) Name of the emulated LAN. This argument is optional because the client obtains its emulated LAN name from the configuration server. The maximum length of the name is 32 characters. |

Defaults

No LANE clients are enabled on the interface.

Command Modes

Interface configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.0 | This command was introduced. |

Usage Guidelines

If a **lane client** command has already been used on the subinterface for a different emulated LAN, then the client initiates termination procedures for that emulated LAN and joins the new emulated LAN.

If you do not provide an *elan-name* value, the client contacts the server to find which emulated LAN to join. If you do provide an emulated LAN name, the client consults the configuration server to ensure that no conflicting bindings exist.

Examples

The following example enables a Token Ring LANE client on an interface:

```
lane client tokenring
```

Related Commands

| Command | Description |
|--------------------------------|---|
| lane client-atm-address | Specifies an ATM address-and thus overrides the automatic ATM address assignment-for the LANE client on the specified subinterface. |

lane client-atm-address

To specify an ATM address—and thus override the automatic ATM address assignment—for the LANE client on the specified subinterface, use the **lane client-atm-address** interface configuration command. To remove the ATM address previously specified for the LANE client on the specified subinterface and thus revert to the automatic address assignment, use the **no** form of this command.

lane client-atm-address *atm-address-template*

no lane client-atm-address [*atm-address-template*]

| | | |
|---------------------------|-----------------------------|---|
| Syntax Description | <i>atm-address-template</i> | ATM address or a template in which wildcard characters are replaced by any nibble or group of nibbles of the prefix bytes, the ESI bytes, or the selector byte of the automatically assigned ATM address. |
|---------------------------|-----------------------------|---|

| | |
|-----------------|-----------------------------------|
| Defaults | Automatic ATM address assignment. |
|-----------------|-----------------------------------|

| | |
|----------------------|-------------------------|
| Command Modes | Interface configuration |
|----------------------|-------------------------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | 11.0 | This command was introduced. |

| | |
|-------------------------|--|
| Usage Guidelines | Use of this command on a selected subinterface, but with a different ATM address than was used previously, replaces the LANE client's ATM address. |
|-------------------------|--|

ATM Addresses

A LANE ATM address has the same syntax as an 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)
 - 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 ATM address 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.

For a discussion of Cisco's method of automatically assigning ATM addresses, refer to the "Configuring LAN Emulation (LANE)" chapter in the *Cisco IOS Switching Services Configuration Guide*.

Examples

The following example uses an ESI template to specify the part of the ATM address corresponding to the interface; the remaining parts of the ATM address come from automatic assignment:

```
lane client-atm-address...0800.200C.1001.**
```

The following example uses a prefix template to specify the part of the ATM address corresponding to the switch; the remaining parts of the ATM address come from automatic assignment:

```
lane client-atm-address 47.000014155551212f.00.00...
```

Related Commands

| Command | Description |
|--------------------------|--|
| <code>lane client</code> | Activates a LANE client on the specified subinterface. |

lane config-atm-address

To specify a configuration server's ATM address explicitly, use the **lane config-atm-address** interface configuration command. To remove an assigned ATM address, use the **no** form of this command.

lane [**config**] **config-atm-address** *atm-address-template*

no lane [**config**] **config-atm-address** *atm-address-template*

| Syntax Description | config | (Optional) When the config keyword is used, this command applies only to the LANE configuration server (LECS). This keyword indicates that the LECS should use the 20-byte address that you explicitly entered. |
|--------------------|-----------------------------|--|
| | <i>atm-address-template</i> | ATM address or a template in which wildcard characters are replaced by any nibble or group of nibbles of the prefix bytes, the ESI bytes, or the selector byte of the automatically assigned ATM address. |

Defaults No specific ATM address or method is set.

Command Modes Interface configuration

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.0 | This command was introduced. |

Usage Guidelines If the **config** keyword is not present, this command causes the LANE server and LANE client on the subinterface to use the specified ATM address for the configuration server.

When the **config** keyword is present, this command adds an ATM address to the configuration server configured on the interface. A LANE configuration server can listen on multiple ATM addresses. Multiple commands that assign ATM addresses to the LANE configuration server can be issued on the same interface to assign different ATM addresses to the LANE configuration server.

ATM Addresses

A LANE ATM address has the same syntax as an 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)

- 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 ATM address 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 prefix, the ESI corresponds to a function of ATM interface's MAC address, and the Selector field corresponds to the specific subinterface of the interface.

For a discussion of Cisco's method of automatically assigning ATM addresses, refer to the "Configuring LAN Emulation" chapter in the *Cisco IOS Switching Services Configuration Guide*.

Examples

The following example associates the LANE configuration server with the database named *network1* and explicitly specifies the configuration server's ATM address:

```
lane database network1
 name eng server-atm-address 39.020304050607080910111213.0800.AA00.1001.02
 name mkt server-atm-address 39.020304050607080910111213.0800.AA00.4001.01
interface atm 1/0
 lane config database network1
 lane config config-atm-address 39.020304050607080910111213.0800.AA00.3000.00
```

The following example causes the LANE server and LANE client on the subinterface to use the explicitly specified ATM address to communicate with the configuration server:

```
interface atm 2/0.1
 ip address 172.16.0.4 255.255.255.0
 lane client ethernet
 lane server-bus ethernet eng
 lane config-atm-address 39.020304050607080910111213.0800.AA00.3000.00
```

Related Commands

| Command | Description |
|--------------------------------------|--|
| lane auto-config-atm-address | Specifies that the configuration server ATM address is computed by our automatic method. |
| lane config database | Associates a named configuration table (database) with the configuration server on the selected ATM interface. |
| lane database | Creates a named configuration database that can be associated with a configuration server. |
| lane fixed-config-atm-address | Specifies that the fixed configuration server ATM address assigned by the ATM Forum will be used. |

lane config database

To associate a named configuration table (database) with the configuration server on the selected ATM interface, use the **lane config database** interface configuration command. To remove the association between a named database and the configuration server on the specified interface, use the **no** form of this command.

lane config database *database-name*

no lane config

| Syntax Description | <i>database-name</i> | Name of the LANE database. |
|--------------------|----------------------|----------------------------|
|--------------------|----------------------|----------------------------|

Defaults No configuration server is defined, and no database name is provided.

Command Modes Interface configuration

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.0 | This command was introduced. |

Usage Guidelines

This command is valid only on a major interface, not a subinterface, because only one LANE configuration server can exist for per interface.

The named database must exist before the **lane config database** command is used. Refer to the **lane database** command for more information.

Multiple **lane config database** commands cannot be used multiple times on the same interface. You must delete an existing association by using the **no** form of this command before you can create a new association on the specified interface.

Activating a LANE configuration server requires the **lane config database** command and one of the following commands: **lane config fixed-config-atm-address**, **lane config auto-config-atm-address**, or **lane config config-atm-address**.

Examples The following example associates the LANE configuration server with the database named *network1* and specifies that the configuration server's ATM address will be assigned by our automatic method:

```
lane database network1
 name eng server-atm-address 39.020304050607080910111213.0800.AA00.1001.02
 name mkt server-atm-address 39.020304050607080910111213.0800.AA00.4001.01
 interface atm 1/0
  lane config database network1
  lane config auto-config-atm-address
```

| Related Commands | Command | Description |
|------------------|--------------------------------------|---|
| | lane auto-config-atm-address | Specifies that the configuration server ATM address is computed by our automatic method. |
| | lane config-atm-address | Specifies the ATM address of the configuration server explicitly. |
| | lane database | Creates a named configuration database that can be associated with a configuration server. |
| | lane fixed-config-atm-address | Specifies that the fixed configuration server ATM address assigned by the ATM Forum will be used. |

lane database

To create a named configuration database that can be associated with a configuration server, use the **lane database** global configuration command. To delete the database, use the **no** form of this command.

lane database *database-name*

no lane database *database-name*

Syntax Description

| | |
|----------------------|--|
| <i>database-name</i> | Database name (32 characters maximum). |
|----------------------|--|

Defaults

No name is provided.

Command Modes

Global configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.0 | This command was introduced. |

Usage Guidelines

Use of the **lane database** command places you in database configuration mode, in which you can use the **client-atm-address name**, **default name**, **mac-address name**, **name restricted**, **name unrestricted**, **name new-name**, and **name server-atm-address** commands to create entries in the specified database. When you are finished creating entries, type **^Z** or **exit** to return to global configuration mode.

Examples

The following example creates the database named *network1* and associates it with the configuration server on interface ATM 1/0:

```
lane database network1
name eng server-atm-address 39.020304050607080910111213.0800.AA00.1001.02
name mkt server-atm-address 39.020304050607080910111213.0800.AA00.4001.01
default-name eng
interface atm 1/0
lane config database network1
lane config auto-config-atm-address
```

Related Commands

| Command | Description |
|--------------------------------|---|
| client-atm-address name | Adds a LANE client address entry to the configuration database of the configuration server. |
| 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. |

| Command | Description |
|------------------------------------|--|
| lane config database | Associates a named configuration table (database) with the configuration server on the selected ATM interface. |
| mac-address | Sets the MAC layer address of the Cisco Token Ring. |
| name | Assigns a name to the internal adapter. |
| 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. |

lane fixed-config-atm-address

To specify that the fixed configuration server ATM address assigned by the ATM Forum will be used, use the **lane fixed-config-atm-address** interface configuration command. To specify that the fixed ATM address is not used, use the **no** form of this command.

lane [config] fixed-config-atm-address

no lane [config] fixed-config-atm-address

| | | |
|---------------------------|---------------|---|
| Syntax Description | config | (Optional) When the config keyword is used, this command applies only to the LANE configuration server (LECS). This keyword indicates that LECS should use the well-known, ATM Forum, LEC address. |
|---------------------------|---------------|---|

| | |
|-----------------|---|
| Defaults | No specific ATM address or method is set. |
|-----------------|---|

| | |
|----------------------|-------------------------|
| Command Modes | Interface configuration |
|----------------------|-------------------------|

| | | |
|------------------------|----------------|------------------------------|
| Command History | Release | Modification |
| | 11.0 | This command was introduced. |

Usage Guidelines

When the **config** keyword is not present, this command causes the LANE server and LANE client on the subinterface to use that ATM address, rather than the ATM address provided by the ILMI, to locate the configuration server.

When the **config** keyword is present, and the LECS is already up and running, please be aware of the following scenarios:

- If you configure the LECS with only the well-known address, the LECS will not participate in the SSRP, act as a “standalone” master, and only listen on the well-known LECS address. This scenario is ideal if you want a “standalone” LECS that does not participate in SSRP, and you would like to listen to only the well-known address.
- If only the well-known address is already assigned, and you assign at least one other address to the LECS, (additional addresses are assigned using the **lane config auto-config-atm-address** command and/or the **lane config config-atm-address command**) the LECS will participate in the SSRP and act as the master or slave based on the normal SSRP rules. This scenario is ideal if you would like the LECS to participate in SSRP, and you would like to make the master LECS listen on the well-known address.
- If the LECS is participating in SSRP, has more than one address (one of which is the well-known address), and all the addresses but the well-known address is removed, the LECS will declare itself the master and stop participating in SSRP completely.

- If the LECS is operating as an SSRP slave, and it has the well-known address configured, it will not listen on the well-known address unless it becomes the master.
- If you want the LECS to assume the well-known address only when it becomes the master, configure the LECS with the well-known address and at least one other address.

When you use this command with the **config** keyword, and the LAN Emulation Configuration Server (LECS) is a master, the master will listen on the fixed address. If you use this command when an LECS is not a master, the LECS will listen on this address when it becomes a master. If you do not use this command, the LECS will not listen on the fixed address.

Multiple commands that assign ATM addresses to the LECS can be issued on the same interface in order to assign different ATM addresses to the LECS. Commands that assign ATM addresses to the LECS include **lane auto-config-atm-address**, **lane config-atm-address**, and **lane fixed-config-atm-address**. The **lane config database** command and at least one command that assigns an ATM address to the LECS are required to activate a LECS.

Examples

The following example associates the LANE configuration server with the database named *network1* and specifies that the configuration server's ATM address is the fixed address:

```
lane database network1
 name eng server-atm-address 39.020304050607080910111213.0800.AA00.1001.02
 name mkt server-atm-address 39.020304050607080910111213.0800.AA00.4001.01
interface atm 1/0
 lane config database network1
 lane config fixed-config-atm-address
```

The following example causes the LANE server and LANE client on the subinterface to use the fixed ATM address to communicate with the configuration server:

```
interface atm 2/0.1
 ip address 172.16.0.4 255.255.255.0
 lane client ethernet
 lane server-bus ethernet eng
 lane fixed-config-atm-address
```

Related Commands

| Command | Description |
|-------------------------------------|--|
| lane auto-config-atm-address | Specifies that the configuration server ATM address is computed by our automatic method. |
| lane config-atm-address | Specifies the ATM address of the configuration server explicitly. |
| lane config database | Associates a named configuration table (database) with the configuration server on the selected ATM interface. |

lane global-lecs-address

To specify a list of LECS addresses to use when the addresses cannot be obtained from the ILMI, use the **lane global-lecs-address** interface configuration command. The **no** form of this command removes an LECS address from the list.

lane global-lecs-address *address*

no lane global-lecs-address *address*

Syntax Description

address Address of the LECS. You cannot use the well-known LECS address.

Defaults

No addresses are configured. The router obtains LECS addresses from the ILMI.

Command Modes

Interface configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.2 | This command was introduced. |

Usage Guidelines

Use this command when your ATM switches do not support the ILMI list of LECS addresses and you want to configure Simple Server Redundancy. This command will simulate the list of LECS addresses, as if they were obtained from the ILMI. Use this command with a different address for each LECS. The order they are used determines their priority. You should enter the addresses in the same order as you would on the ATM switch.



Note

You must configure the same list of addresses on each interface that contains a LANE entity.

If your switches do support ILMI, this command force the router to use the addresses specified and will not use the ILMI to obtain the LECS addresses.

Since the well-known LECS address is always used as a last resort LECS address, you cannot use the address in this command.

lane le-arp

To add a static entry to the LE ARP table of the LANE client configured on the specified subinterface, use the **lane le-arp** interface configuration command. To remove a static entry from the LE ARP table of the LANE client on the specified subinterface, use the **no** form of this command.

```
lane le-arp {mac-address | route-desc segment segment-number bridge bridge-number}
           atm-address
```

```
no lane le-arp {mac-address | route-desc segment segment-number bridge bridge-number}
           atm-address
```

Syntax Description

| | |
|-----------------------|---|
| <i>mac-address</i> | MAC address to bind to the specified ATM address. |
| <i>segment-number</i> | LANE segment number. The segment number ranges from 1 to 4095. |
| <i>bridge-number</i> | Bridge number that is contained in the route descriptor. The bridge number ranges from 1 to 15. |
| <i>atm-address</i> | ATM address. |

Defaults

No static address bindings are provided.

Command Modes

Interface configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.0 | This command was introduced. |

Usage Guidelines

This command adds or removes a static entry binding a MAC address or segment number and bridge number to an ATM address. It does not add or remove dynamic entries. Removing the static entry for a specified ATM address from an LE ARP table does not release Data Direct VCCs established to that ATM address. However, clearing a static entry clears any fast-cache entries that were created from the MAC address-to-ATM address binding.

Static LE ARP entries are neither aged nor removed automatically.

To remove dynamic entries from the LE ARP table of the LANE client on the specified subinterface, use the **clear lane le-arp** command.

Examples

The following example adds a static entry to the LE ARP table:

```
lane le-arp 0800.aa00.0101 47.000014155551212f.00.00.0800.200C.1001.01
```

The following example adds a static entry to the LE ARP table binding segment number 1, bridge number 1 to the ATM address:

```
lane le-arp route-desc segment 1 bridge 1 39.020304050607080910111213.00000CA05B41.01
```

Related Commands

| Command | Description |
|--------------------------|---|
| clear lane le-arp | Forces a LANE server to drop a client and allow the LANE configuration server to assign the client to another ELAN. |

lane server-atm-address

To specify an ATM address—and thus override the automatic ATM address assignment—for the LANE server on the specified subinterface, use the **lane server-atm-address** interface configuration command. To remove the ATM address previously specified for the LANE server on the specified subinterface and thus revert to the automatic address assignment, use the **no** form of this command.

lane server-atm-address *atm-address-template*

no server-atm-address [*atm-address-template*]

Syntax Description

| | |
|-----------------------------|---|
| <i>atm-address-template</i> | ATM address or a template in which wildcard characters are replaced by any nibble or group of nibbles of the prefix bytes, the ESI bytes, or the selector byte of the automatically assigned ATM address. |
|-----------------------------|---|

Defaults

For the LANE server, the default is automatic address assignment; the LANE client finds the LANE server by consulting the configuration server.

Command Modes

Interface configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.0 | This command was introduced. |

Usage Guidelines

This command also instructs the LANE client configured on this subinterface to reach the LANE server by using the specified ATM address instead of the ATM address provided by the configuration server. When used on a selected subinterface, but with a different ATM address than was used previously, this command replaces the LANE server's ATM address.

ATM Addresses

A LANE ATM address has the same syntax as an 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)
 - 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.

For a discussion of Cisco's method of automatically assigning ATM addresses, refer to the "Configuring LAN Emulation (LANE)" chapter of the *Cisco IOS Switching Services Configuration Guide*.

Examples

The following example uses an ESI template to specify the part of the ATM address corresponding to the interface; the remaining parts of the ATM address come from automatic assignment:

```
lane server-atm-address ...0800.200C.1001.**
```

The following example uses a prefix template to specify the part of the ATM address corresponding to the switch; the remaining part of the ATM address come from automatic assignment:

```
lane server-atm-address 45.000014155551212f.00.00...
```

Related Commands

| Command | Description |
|------------------------|--|
| lane server-bus | Enables a LANE server and a broadcast-and-unknown server on the specified subinterface with the ELAN ID. |

lane server-bus

To enable a LANE server and a broadcast-and-unknown server (BUS) on the specified subinterface with the ELAN ID, use the **lane server-bus** interface configuration command. To disable a LANE server and BUS on the specified subinterface, use the **no** form of this command.

```
lane server-bus {ethernet | tokenring} elan-name [elan-id id]
```

```
no lane server-bus {ethernet | tokenring} elan-name [elan-id id]
```

Syntax Description

| | |
|------------------|---|
| ethernet | Identifies the emulated LAN attached to this subinterface as an Ethernet emulated LAN (ELAN). |
| tokenring | Identifies the emulated LAN attached to this subinterface as a Token Ring ELAN. |
| <i>elan-name</i> | Name of the ELAN. The maximum length of the name is 32 characters. |
| elan-id | Identifies the ELAN. |
| <i>id</i> | Specifies the ELAN ID of the LEC. |

Defaults

No LAN type or emulated LAN name is provided.

Command Modes

Interface configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.0 | This command was introduced. |

Usage Guidelines

The **elan-id** keyword first appeared in Cisco IOS Release 12.0.

The LANE server and the BUS are located on the same router.

If a **lane server-bus** command has already been used on the subinterface for a different emulated LAN, the server initiates termination procedures with all clients and comes up as the server for the new emulated LAN.

To participate in MPOA, a LEC must have an ELAN ID. This command enables the LEC to get the ELAN ID from the LES when the LEC bypasses the LECS phase.



Caution

If an ELAN ID is supplied, make sure that it corresponds to the same ELAN ID value specified in the LECS for the same ELAN.

The LEC can also obtain the ELAN ID from the LECS by using the **name elan-id** command.

Examples

The following example enables a LANE server and BUS for a Token Ring ELAN named MYELAN:

```
lane server-bus tokenring myelan
```

Related Commands

| Command | Description |
|--------------------------------|---|
| lane server-atm-address | Specifies an ATM address and thus overrides the automatic ATM address assignment for the LANE server on a specified subinterface. |
| name elan-id | Configures the ELAN ID of an ELAN in the LECS database to participate in MPOA. |

name elan-id

To configure the ELAN ID of an ELAN in the LECS database to participate in MPOA, use the **name elan-id** LANE database configuration command. To disable, use the **no** form of this command.

name *name* **elan-id** *id*

no name *name* **elan-id** *id*

Syntax Description

| | |
|-------------|--|
| <i>name</i> | Specifies the name of the ELAN. |
| <i>id</i> | Specifies the identification number of the ELAN. |

Defaults

No ELAN ID is configured.

Command Modes

LANE database configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 12.0 | This command was introduced. |

Usage Guidelines

To participate in MPOA, a LEC must have an ELAN ID. The LEC obtains the ELAN ID from the LECS. In case the LEC bypasses the LECS phase, the LEC can get the ELAN ID from the LES by using the **name elan-id** command.

Examples

The following example sets the ELAN ID to 10 for ELAN named MYELAN:

```
name MYELAN elan-id 10
```

Related Commands

| Command | Description |
|------------------------|--|
| lane server-bus | Enables a LANE server and a broadcast-and-unknown server on the specified subinterface with the ELAN ID. |

name preempt

To set the ELAN preempt, use the **name preempt** LANE database configuration command. To disable preempt, use the **no** form of this command.

name *elan-name* **preempt**

no name *elan-name* **preempt**

Syntax Description

| | |
|------------------|---------------------------------|
| <i>elan-name</i> | Specifies the name of the ELAN. |
|------------------|---------------------------------|

Defaults

Preempt is off by default.

Command Modes

LANE database configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.3 | This command was introduced. |

Usage Guidelines

Previously, when the primary LES failed, Cisco SSRP protocol switched over to a secondary LES. But when a LES that is ranked higher in the list came back up, the SSRP protocol switched the active LES to the new LES which had a higher priority. This forced the network to flap multiple times. In this release, we have prevented the network flapping by staying with the currently active master LES regardless of the priority. If a higher priority LES comes back online, SSRP will not switch to that LES.

LES preemption is off by default. The first LES that comes on becomes the master. Users can revert to the old behavior (of switching to the higher priority LES all the time) by specifying the **name elan-name preempt** command in the LECS database.

Examples

The following example sets the ELAN preempt for the ELAN named MYELAN:

```
name MYELAN preempt
```

name local-seg-id

To specify or replace the ring number of the emulated LAN in the configuration server's configuration database, use the **name local-seg-id** database configuration command. To remove the ring number from the database, use the **no** form of this command.

name *elan-name* **local-seg-id** *segment-number*

no name *elan-name* **local-seg-id** *segment-number*

| Syntax Description | |
|-----------------------|--|
| <i>elan-name</i> | Name of the emulated LAN. The maximum length of the name is 32 characters. |
| <i>segment-number</i> | Segment number to be assigned to the emulated LAN. The number ranges from 1 to 4095. |

Defaults No emulated LAN name or segment number is provided.

Command Modes Database configuration

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.3 | This command was introduced. |

Usage Guidelines This command is ordinarily used for Token Ring LANE. The same LANE ring number cannot be assigned to more than one emulated LAN. The **no** form of this command deletes the relationships.

Examples The following example specifies a ring number of 1024 for the emulated LAN *red*:

```
name red local-seg-id 1024
```

| 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

To specify or replace the ATM address of the LANE server for the emulated LAN in the configuration server's configuration database, use the **name server-atm-address** database configuration command. To remove it from the database, use the **no** form of this command.

name *elan-name* **server-atm-address** *atm-address* [**restricted** | **un-restricted**] [**index number**]

no name *elan-name* **server-atm-address** *atm-address* [**restricted** | **un-restricted**] [**index number**]

Syntax Description

| | |
|--|--|
| <i>elan-name</i> | Name of the emulated LAN. Maximum length is 32 characters. |
| <i>atm-address</i> | LANE server's ATM address. |
| restricted un-restricted | (Optional) Membership in the named emulated LAN is restricted to the LANE clients explicitly defined to the emulated LAN in the configuration server's database. |
| index number | (Optional) Priority number. When specifying multiple LANE servers for fault tolerance, you can specify a priority for each server. 0 is the highest priority. |

Defaults

No emulated LAN name or server ATM address are provided.

Command Modes

Database configuration

Command History

| Release | Modification |
|---------|---|
| 11.0 | This command was introduced. |
| 11.2 | The following keywords were added: <ul style="list-style-type: none"> • un-restricted • index |

Usage Guidelines

Emulated LAN names must be unique within one named LANE configuration database.

Specifying an existing emulated LAN name with a new LANE server ATM address adds the LANE server ATM address for that emulated LAN for redundant server operation or simple LANE service replication. This command can be used multiple times.

The **no** form of this command deletes the relationships.

Examples

The following example configures the *example3* database with two restricted and one unrestricted emulated LANs. The clients that can be assigned to the *eng* and *mkt* emulated LANs are specified using the **client-atm-address** commands. All other clients are assigned to the *man* emulated LAN.

```
lane database example3
name eng server-atm-address 39.000001415555121101020304.0800.200c.1001.02 restricted
name man server-atm-address 39.000001415555121101020304.0800.200c.1001.01
name mkt server-atm-address 39.000001415555121101020304.0800.200c.4001.01 restricted
client-atm-address 39.000001415555121101020304.0800.200c.1000.02 name eng
client-atm-address 39.000001415555121101020304.0800.200c.2000.02 name eng
client-atm-address 39.000001415555121101020304.0800.200c.3000.02 name mkt
client-atm-address 39.000001415555121101020304.0800.200c.4000.01 name mkt
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. |
| 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. |

set vlan

To group ports into a virtual LAN (VLAN), use the **set vlan** command in privileged EXEC mode.

set vlan *vlan-number module/port*

set vlan *vlan-number* [**name** *name*] [**type** {**ethernet** | **fddi** | **fddinet** | **trcrf** | **trbrf**}]
 [**state** {**active** | **suspend**}] [**said** *said*] [**mtu** *mtu*] [**ring** *hex-ring-number*]
 [**decring** *decimal-ring-number*] [**bridge** *bridge-number*] [**parent** *vlan-number*] [**mode** {**srt** |
srb}] [**stp** {**ieee** | **ibm** | **auto**}] [**translation** *vlan-number*] [**backupcrf** {**off** | **on**}]
 [**aremaxhop** *hop-count*] [**stemaxhop** *hop-count*]

Syntax Description

| | |
|--|--|
| <i>vlan-number</i> | Number identifying the VLAN. |
| <i>module</i> | Number of the module. This argument is not valid when defining or configuring Token Ring Bridge Relay Functions (TRBRFs). |
| <i>port</i> | Number of the port on the module belonging to the VLAN; this argument does not apply to TRBRFs. |
| name <i>name</i> | (Optional) Defines a text string used as the name of the VLAN (1 to 32 characters). |
| type { ethernet fddi fddinet trcrf trbrf } | (Optional) Identifies the VLAN type. The default type is Ethernet. |
| state { active suspend } | (Optional) Specifies whether the state of the VLAN is active or suspended. VLANs in suspended state do not pass packets. The default state is active. |
| said <i>said</i> | (Optional) Specifies the security association identifier. Possible values are 1 to 4294967294. The default is 100001 for VLAN1, 100002 for VLAN 2, 100003 for VLAN 3, and so on. This argument does not apply to Token Ring Concentrator Relay Functions (TRCRFs) or TRBRFs. |
| mtu <i>mtu</i> | (Optional) Specifies the maximum transmission unit (packet size, in bytes) that the VLAN can use. Possible values are 576 to 18190. The default is 1500 bytes. |
| ring <i>hex-ring-number</i> | (Optional) Specifies the logical ring number for Token Ring VLANs. Possible values are hexadecimal numbers 0x1 to 0xFFF. This argument is valid and required only when defining a TRCRF. |
| decring <i>decimal-ring-number</i> | (Optional) Specifies the logical ring number for Token Ring VLANs. Possible values are decimal numbers 1 to 4095. This argument is valid and required only when defining a TRCRF. |
| bridge <i>bridge-number</i> | (Optional) Specifies the identification number of the bridge. Possible values are hexadecimal numbers 0x1 to 0xF. For Token Ring VLANs, the default is 0F. This argument is not valid for TRCRFs. |
| parent <i>vlan-number</i> | (Optional) Sets a parent VLAN. The range for <i>vlan-number</i> is 2 to 1005. This argument identifies the TRBRF to which a TRCRF belongs and is required when defining a TRCRF. |
| mode { srt srb } | (Optional) Specifies the TRCRF bridging mode. |
| stp { ieee ibm auto } | (Optional) Specifies the Spanning Tree Protocol version for a TRBRF to use: source-routing transparent (ieee), source-route bridging (ibm), or automatic source selection (auto). |

| | |
|--|--|
| translation <i>vlan-number</i> | (Optional) Specifies a translational VLAN used to translate FDDI to Ethernet. Valid values are from 1 to 1005. This argument is not valid for defining or configuring Token Ring VLANs. |
| backupcrf {off on} | (Optional) Specifies whether the TRCRF is a backup path for traffic. |
| aremaxhop <i>hop-count</i> | (Optional) Specifies the maximum number of hops for All-Routes Explorer frames. Possible values are 1 to 14. The default is 7. This argument is only valid when defining or configuring TRCRFs. |
| stemaxhop <i>hop-count</i> | (Optional) Specifies the maximum number of hops for Spanning-Tree Explorer frames. Possible values are 1 to 14. The default is 7. This argument is only valid when defining or configuring TRCRFs. |

Defaults

The default configuration has all switched Ethernet ports and Ethernet repeater ports in VLAN 1. The default SAID is 100001 for VLAN 1, 100002 for VLAN 2, 100003 for VLAN 3, and so on. The default type is Ethernet. The default MTU is 1500 bytes. The default state is active.

The default TRBRF is 1005, the default TRCRF is 1003, and the default MTU for TRBRFs and TRCRFs is 4472. The default state is active. The default **aremaxhop** is 7; the default **stemaxhop** is 7.

Command Modes

Privileged EXEC

Usage Guidelines

You cannot use the **set vlan** command until the networking device is either in VTP transparent mode (**set vtp mode**) or until a VTP domain name has been set (**set vtp**).

Valid MTU values for Token Ring VLAN are 1500 or 4472. While you can enter any value for the MTU value, the value you enter defaults to the next lowest valid value.

You cannot set multiple VLANs for Inter-Switch Link (ISL) ports using this command. The VLAN name can be from 1 to 32 characters in length. If adding a new VLAN, the VLAN number must be within the range 2 to 1001. When modifying a VLAN, the valid range for the VLAN number is 2 to 1005.

On a new Token Ring VLAN, if you do not specify the parent parameter for a TRCRF, the default TRBRF (1005) is used.

Examples

The following example shows how to set VLAN 850 to include ports 4 through 7 on module 3. Because ports 4 through 7 were originally assigned to TRCRF 1003, the message reflects the modification of VLAN 1003.

```
Router# set vlan 850 3/4-7
VLAN 850 modified.
VLAN 1003 modified.
VLAN Mod/Ports
-----
850 3/4-7
```

| Related Commands | Command | Description |
|------------------|------------|--|
| | clear vlan | Deletes an existing VLAN from a management domain. |
| | show vlans | Displays VLAN subinterfaces. |

set vlan mapping

To map 802.1Q virtual LANs (VLANs) to Inter-Switch Link (ISL) VLANs, use the **set vlan mapping** command in privileged EXEC mode.

```
set vlan mapping dot1q 1q-vlan-number isl isl-vlan-number
```

| Syntax Description | dot1q | Specifies the 802.1Q VLAN. |
|--------------------|------------------------|--|
| | <i>1q-vlan-number</i> | Number identifying the 802.1Q VLAN; valid values are 1001 to 4095. |
| | isl | Specifies the ISL VLAN. |
| | <i>isl-vlan-number</i> | Number identifying the ISL VLAN; valid values are 1 to 1000. |

Defaults No 802.1Q-to-ISL mappings are defined.

Command Modes Privileged EXEC

Usage Guidelines IEEE 802.1Q VLAN trunks support VLANs 1 through 4095. ISL VLAN trunks support VLANs 1 through 1000. The switch automatically maps 802.1Q VLANs 1000 and lower to ISL VLANs with the same number.

The native VLAN of the 802.1Q trunk cannot be used in the mapping.

Use this feature to map 802.1Q VLANs above 1000 to ISL VLANs. Note that if you map a 802.1Q VLAN over 1000 to an ISL VLAN, the corresponding 802.1Q VLAN will be blocked. For example, if you map 802.1Q VLAN 2000 to ISL VLAN 200, then 802.1Q VLAN 200 will be blocked.

You can map up to seven VLANs. Only one 802.1Q VLAN can be mapped to an ISL VLAN. For example, if 802.1Q VLAN 800 has been automatically mapped to ISL VLAN 800, do not manually map any other 802.1Q VLANs to ISL VLAN 800.

You cannot overwrite existing 802.1Q VLAN mapping. If the 802.1Q VLAN number is in the mapping table, the command is aborted. You must first clear that mapping.

If *vlan-number* does not exist, then either of the following occurs:

- If the switch is in server or transparent mode, the VLAN is created with all default values.
- If the switch is in client mode, then the command proceeds without creating the VLAN. A warning will be given indicating that the VLAN does not exist.

If the table is full, the command is aborted with an error message indicating the table is full.

Examples The following example shows how to map VLAN 1022 to ISL VLAN 850:

```
Router# set vlan mapping dot1q 1022 isl 850
Vlan 850 configuration successful
Vlan mapping successful
```

The following example shows the display if you enter a VLAN that does not exist:

```
Router# set vlan mapping dot1q 1017 isl 999
Vlan mapping successful
Warning: vlan 999 non-existent
Vlan 999 configuration successful
```

The following example shows the display if you enter an existing mapping:

```
Router# set vlan mapping dot1q 1033 isl 722
722 exists in the mapping table. Please clear the mapping first.
```

The following example shows the display if the mapping table is full:

```
Router# set vlan mapping dot1q 1099 isl 917
Vlan Mapping Table Full.
```

Related Commands

| Command | Description |
|---------------------------|--|
| clear vlan mapping | Deletes existing 802.1Q VLAN to ISL VLAN-mapped pairs. |
| show vlans | Displays VLAN subinterfaces. |

show lane

To display detailed information for all the LANE components configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane** EXEC command.

AIP on the Cisco 7500 Series Routers; for the ATM Port Adapter on the Cisco 7200 Series

```
show lane [interface atm slot/port[.subinterface-number] | name elan-name] [brief]
```

ATM Port Adapter on the Cisco 7500 Series Routers

```
show lane [interface atm slot/port-adapter/port[.subinterface-number] | name elan-name][brief]
```

Cisco 4500 and 4700 Routers

```
show lane [interface atm number[.subinterface-number] | name elan-name] [brief]
```

| Syntax Description | |
|--|---|
| interface atm <i>slot/port</i> | (Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers. |
| interface atm <i>slot/port-adapter/port</i> | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. |
| interface atm <i>number</i> | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. |
| <i>.subinterface-number</i> | (Optional) Subinterface number. |
| name <i>elan-name</i> | (Optional) Name of emulated LAN. The maximum length of the name is 32 characters. |
| brief | (Optional) Keyword used to display the brief subset of available information. |

| Command Modes | |
|---------------|--|
| EXEC | |

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.0 | This command was introduced. |

Usage Guidelines Using the **show lane** command is equivalent to using the **show lane config**, **show lane server**, **show lane bus**, and **show lane client** commands. The **show lane** command shows all LANE-related information except the **show lane database** command information.

Examples

The following is sample output from the **show lane** command for an Ethernet-emulated LAN:

```
Router# show lane

LE Config Server ATM2/0 config table: cisco_eng
Admin: up State: operational
LECS Mastership State: active master
list of global LECS addresses (30 seconds to update):
39.020304050607080910111213.00000CA05B43.00 <----- me
ATM Address of this LECS: 39.020304050607080910111213.00000CA05B43.00 (auto)
  vcd rxCnt txCnt callingParty
    50      2      2 39.020304050607080910111213.00000CA05B41.02 LES elan2 0 active
cumulative total number of unrecognized packets received so far: 0
cumulative total number of config requests received so far: 30
cumulative total number of config failures so far: 12
  cause of last failure: no configuration
  culprits for the last failure: 39.020304050607080910111213.00602F557940.01

LE Server ATM2/0.2 ELAN name: elan2 Admin: up State: operational
type: ethernet Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B41.02
LECS used: 39.020304050607080910111213.00000CA05B43.00 connected, vcd 51
control distribute: vcd 57, 2 members, 2 packets

proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd pkts Hardware Addr ATM Address
  1 O 54 2 0000.0ca0.5b40 39.020304050607080910111213.00000CA05B40.02
  2 O 81 2 0060.2f55.7940 39.020304050607080910111213.00602F557940.02

LE BUS ATM2/0.2 ELAN name: elan2 Admin: up State: operational
type: ethernet Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B42.02
data forward: vcd 61, 2 members, 0 packets, 0 unicasts

lecid vcd pkts ATM Address
  1 58 0 39.020304050607080910111213.00000CA05B40.02
  2 82 0 39.020304050607080910111213.00602F557940.02

LE Client ATM2/0.2 ELAN name: elan2 Admin: up State: operational
Client ID: 1 LEC up for 11 minutes 49 seconds
Join Attempt: 1
HW Address: 0000.0ca0.5b40 Type: ethernet Max Frame Size: 1516

ATM Address: 39.020304050607080910111213.00000CA05B40.02

VCD rxFrames txFrames Type ATM Address
  0 0 0 configure 39.020304050607080910111213.00000CA05B43.00
  55 1 4 direct 39.020304050607080910111213.00000CA05B41.02
  56 6 0 distribute 39.020304050607080910111213.00000CA05B41.02
  59 0 1 send 39.020304050607080910111213.00000CA05B42.02
  60 3 0 forward 39.020304050607080910111213.00000CA05B42.02
  84 3 5 data 39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane** command for a Token Ring LANE network:

Router# **show lane**

```
LE Config Server ATM4/0 config table: eng
Admin: up State: operational
LECS Mastership State: active master
list of global LECS addresses (35 seconds to update):
39.020304050607080910111213.006047704183.00 <----- me
ATM Address of this LECS: 39.020304050607080910111213.006047704183.00 (auto)
vcd rxCnt txCnt callingParty
  7      1      1 39.020304050607080910111213.006047704181.01 LES elan1 0 active
cumulative total number of unrecognized packets received so far: 0
cumulative total number of config requests received so far: 2
cumulative total number of config failures so far: 0
```

```
LE Server ATM4/0.1 ELAN name: elan1 Admin: up State: operational
type: token ring Max Frame Size: 4544 Segment ID: 2048
ATM address: 39.020304050607080910111213.006047704181.01
LECS used: 39.020304050607080910111213.006047704183.00 connected, vcd 9
control distribute: vcd 12, 1 members, 2 packets
```

```
proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd pkts Hardware Addr ATM Address
  1 0 8 3 100.2 39.020304050607080910111213.006047704180.01
  0060.4770.4180 39.020304050607080910111213.006047704180.01
```

```
LE BUS ATM4/0.1 ELAN name: elan1 Admin: up State: operational
type: token ring Max Frame Size: 4544 Segment ID: 2048
ATM address: 39.020304050607080910111213.006047704182.01
data forward: vcd 16, 1 members, 0 packets, 0 unicasts
```

```
lecid vcd pkts ATM Address
  1 13 0 39.020304050607080910111213.006047704180.01
```

```
LE Client ATM4/0.1 ELAN name: elan1 Admin: up State: operational
Client ID: 1 LEC up for 2 hours 25 minutes 39 seconds
Join Attempt: 3
HW Address: 0060.4770.4180 Type: token ring Max Frame Size: 4544
Ring:100 Bridge:2 ELAN Segment ID: 2048
ATM Address: 39.020304050607080910111213.006047704180.01
```

| VCD | rxFrames | txFrames | Type | ATM Address |
|-----|----------|----------|------------|---|
| 0 | 0 | 0 | configure | 39.020304050607080910111213.006047704183.00 |
| 10 | 1 | 3 | direct | 39.020304050607080910111213.006047704181.01 |
| 11 | 2 | 0 | distribute | 39.020304050607080910111213.006047704181.01 |
| 14 | 0 | 0 | send | 39.020304050607080910111213.006047704182.01 |
| 15 | 0 | 0 | forward | 39.020304050607080910111213.006047704182.01 |

Table 123 describes significant fields in the sample displays.

Table 123 *show lane Field Descriptions*

| Field | Description |
|------------------|---|
| LE Config Server | Identifies the following lines as applying to the LANE configuration server. These lines are also displayed in output from the show lane config command. See the show lane config command for explanations of the output. |
| LE Server | Identifies the following lines as applying to the LANE server. These lines are also displayed in output from the show lane server command. See the show lane server command for explanations of the output. |
| LE BUS | Identifies the following lines as applying to the LANE broadcast-and-unknown server. These lines are also displayed in output from the show lane bus command. See the show lane bus command for explanations of the output. |
| LE Client | Identifies the following lines as applying to a LANE client. These lines are also displayed in output from the show lane client command. See the show lane bus command for explanations of the output. |

show lane bus

To display detailed LANE information for the broadcast-and-unknown server configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane bus EXEC** command:

AIP on the Cisco 7500 Series Routers; for the ATM Port Adapter on the Cisco 7200 Series

```
show lane bus [interface atm slot/port[.subinterface-number] | name elan-name] [brief]
```

ATM port adapter on the Cisco 7500 Series Routers

```
show lane bus [interface atm slot/port-adapter/port[.subinterface-number] | name elan-name][brief]
```

Cisco 4500 and 4700 Routers

```
show lane bus [interface atm number[.subinterface-number] | name elan-name] [brief]
```

| Syntax Description | | |
|--|---|---|
| interface atm <i>slot/port</i> | (Optional) ATM interface slot and port for the following: | <ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers. |
| interface atm <i>slot/port-adapter/port</i> | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. | |
| interface atm <i>number</i> | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. | |
| <i>.subinterface-number</i> | (Optional) Subinterface number. | |
| name <i>elan-name</i> | (Optional) Name of emulated LAN. The maximum length of the name is 32 characters. | |
| brief | (Optional) Keyword used to display the brief subset of available information. | |

| Command Modes | |
|---------------|--|
| EXEC | |

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.0 | This command was introduced. |

Examples

The following is sample output from the **show lane bus** command for an Ethernet-emulated LAN:

```
Router# show lane bus

LE BUS ATM2/0.2 ELAN name: elan2 Admin: up State: operational
type: ethernet Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B42.02
data forward: vcd 61, 2 members, 0 packets, 0 unicasts

lecid vcd pkts ATM Address
  1 58 0 39.020304050607080910111213.00000CA05B40.02
  2 82 0 39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane bus** command for a Token Ring LANE:

```
Router# show lane bus

LE BUS ATM3/0.1 ELAN name: anubis Admin: up State: operational
type: token ring Max Frame Size: 4544 Segment ID: 2500
ATM address: 47.00918100000000000000000000.00000CA01662.01
data forward: vcd 14, 2 members, 0 packets, 0 unicasts

lecid vcd pkts ATM Address
  1 11 0 47.00918100000000000000000000.00000CA01660.01
  2 17 0 47.00918100000000000000000000.00000CA04960.01
```

Table 124 describes significant fields in the sample displays.

Table 124 show lane bus Field Descriptions

| Field | Description |
|-----------------|---|
| LE BUS ATM2/0.2 | Interface and subinterface for which information is displayed. |
| ELAN name | Name of the emulated LAN for this broadcast-and-unknown server. |
| Admin | Administrative state, either up or down. |
| State | Status of this LANE broadcast-and-unknown server. Possible states include down and operational. |
| type | Type of emulated LAN. |
| Max Frame Size | Maximum frame size (in bytes) on the emulated LAN. |
| Segment ID | The emulated LAN's ring number. This field appears only for Token Ring LANE. |
| ATM address | ATM address of this LANE broadcast-and-unknown server. |
| data forward | Virtual channel descriptor of the Data Forward VCC, the number of LANE clients attached to the VCC, and the number of packets transmitted on the VCC. |
| lecid | Identifier assigned to each LANE client on the Data Forward VCC. |
| vcd | Virtual channel descriptor used to reach the LANE client. |
| pkts | Number of packets sent by the broadcast-and-unknown server to the LANE client. |
| ATM Address | ATM address of the LANE client. |

show lane client

To display detailed LANE information for all the LANE clients configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane client EXEC** command.

AIP on the Cisco 7500 Series Routers; for the ATM Port Adapter on the Cisco 7200 Series

```
show lane client [interface atm slot/port[.subinterface-number] | name elan-name] [brief]
```

ATM Port Adapter on the Cisco 7500 Series Routers

```
show lane client [interface atm slot/port-adapter/port[.subinterface-number] | name elan-name] [brief]
```

Cisco 4500 and 4700 Routers

```
show lane client [interface atm number[.subinterface-number] | name elan-name] [brief]
```

| Syntax Description | |
|--|---|
| interface atm <i>slot/port</i> | (Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers. |
| interface atm <i>slot/port-adapter/port</i> | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. |
| interface atm <i>number</i> | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. |
| <i>.subinterface-number</i> | (Optional) Subinterface number. |
| name <i>elan-name</i> | (Optional) Name of emulated LAN. The maximum length of the name is 32 characters. |
| brief | (Optional) Displays the brief subset of available information. |

| Command Modes | |
|---------------|--|
| EXEC | |

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.0 | This command was introduced. |

Examples

The following is sample output from the **show lane client** command for an Ethernet-emulated LAN:

```
Router# show lane client

LE Client ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
Client ID: 1          LEC up for 11 minutes 49 seconds
Join Attempt: 1
HW Address: 0000.0ca0.5b40  Type: ethernet          Max Frame Size: 1516

ATM Address: 39.020304050607080910111213.00000CA05B40.02

VCD  rxFrames  txFrames  Type      ATM Address
  0         0         0  configure 39.020304050607080910111213.00000CA05B43.00
 55         1         4  direct   39.020304050607080910111213.00000CA05B41.02
 56         6         0  distribute 39.020304050607080910111213.00000CA05B41.02
 59         0         1  send     39.020304050607080910111213.00000CA05B42.02
 60         3         0  forward  39.020304050607080910111213.00000CA05B42.02
 84         3         5  data     39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane client** command for a Token Ring LANE:

```
Router# show lane client

LE Client ATM4/0.1  ELAN name: elan1  Admin: up  State: operational
Client ID: 1          LEC up for 2 hours 26 minutes 3 seconds
Join Attempt: 3
HW Address: 0060.4770.4180  Type: token ring          Max Frame Size: 4544
Ring:100  Bridge:2          ELAN Segment ID: 2048
ATM Address: 39.020304050607080910111213.006047704180.01

VCD  rxFrames  txFrames  Type      ATM Address
  0         0         0  configure 39.020304050607080910111213.006047704183.00
 10         1         3  direct   39.020304050607080910111213.006047704181.01
 11         2         0  distribute 39.020304050607080910111213.006047704181.01
 14         0         0  send     39.020304050607080910111213.006047704182.01
 15         0         0  forward  39.020304050607080910111213.006047704182.01
```

Table 125 describes significant fields in the sample displays.

Table 125 show lane client Field Descriptions

| Field | Description |
|--------------------|--|
| LE Client ATM2/0.2 | Interface and subinterface of this client. |
| ELAN name | Name of the emulated LAN. |
| Admin | Administrative state; either up or down. |
| State | Status of this LANE client. Possible states include initialState, lecsConnect, configure, join, busConnect, and operational. |
| Client ID | The LAN emulation 2-byte Client ID assigned by the LAN emulation server. |
| Join Attempt | The number of attempts before successfully joining the emulated LAN. |
| HW Address | MAC address of this LANE client. |
| Type | Type of emulated LAN. |
| Max Frame Size | Maximum frame size (in bytes) on the emulated LAN. |

Table 125 *show lane client Field Descriptions (continued)*

| Field | Description |
|-----------------|--|
| Ring | The ring number for the client. This field only appears for Token Ring LANE. |
| Bridge | The bridge number for the client. This field only appears for Token Ring LANE. |
| ELAN Segment ID | The ring number for the emulated LAN. This field only appears for Token Ring LANE. |
| ATM Address | ATM address of this LANE client. |
| VCD | Virtual channel descriptor for each of the VCCs established for this LANE client. |
| rxFrames | Number of frames received. |
| txFrames | Number of frames transmitted. |
| Type | Type of VCC. The Configure Direct VCC is shown in this display as <i>configure</i> . The Control Direct VCC is shown as <i>direct</i> ; the Control Distribute VCC is shown as <i>distribute</i> . The Multicast Send VCC and Multicast Forward VC are shown as <i>send</i> and <i>forward</i> , respectively. The Data Direct VCC is shown as <i>data</i> |
| ATM Address | ATM address of the LANE component at the other end of this VCC. |

show lane config

To display global LANE information for the configuration server configured on an interface, use the **show lane config EXEC** command.

AIP on the Cisco 7500 Series Routers; for the ATM Port Adapter on the Cisco 7200 Series

```
show lane config [interface atm slot/0]
```

ATM Port Adapter on the Cisco 7500 Series Routers

```
show lane config [interface atm slot/port-adapter/0]
```

Cisco 4500 and 4700 Routers

```
show lane config [interface atm number]
```

| Syntax Description | interface atm slot/0 | (Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers. |
|--------------------|-----------------------------------|---|
| | interface atm slot/port-adapter/0 | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. |
| | interface atm number | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. |
| Command Modes | EXEC | |
| Command History | Release | Modification |
| | 11.0 | This command was introduced. |

Examples

The following is sample **show lane config** output for an Ethernet emulated LAN:

```
Router# show lane config

LE Config Server ATM2/0 config table: cisco_eng
Admin: up State: operational
LECS Mastership State: active master
list of global LECS addresses (30 seconds to update):
39.020304050607080910111213.00000CA05B43.00 <----- me
ATM Address of this LECS: 39.020304050607080910111213.00000CA05B43.00 (auto)
  vcd rxCnt txCnt callingParty
    50      2      2 39.020304050607080910111213.00000CA05B41.02 LES elan2 0 active
cumulative total number of unrecognized packets received so far: 0
cumulative total number of config requests received so far: 30
cumulative total number of config failures so far: 12
  cause of last failure: no configuration
  culprit for the last failure: 39.020304050607080910111213.00602F557940.01
```

The following example shows sample **show lane config** output for TR-LANE:

```
Router# show lane config

LE Config Server ATM4/0 config table: eng
Admin: up State: operational
LECS Mastership State: active master
list of global LECS addresses (40 seconds to update):
39.020304050607080910111213.006047704183.00 <----- me
ATM Address of this LECS: 39.020304050607080910111213.006047704183.00 (auto)
  vcd rxCnt txCnt callingParty
    7      1      1 39.020304050607080910111213.006047704181.01 LES elan1 0 active
cumulative total number of unrecognized packets received so far: 0
cumulative total number of config requests received so far: 2
cumulative total number of config failures so far: 0
```

Table 126 describes significant fields in the sample display.

Table 126 *show lane config Command Field Descriptions*

| Field | Description |
|-------------------------------|--|
| LE Config Server | Major interface on which the LANE configuration server is configured. |
| config table | Name of the database associated with the LANE configuration server. |
| Admin | Administrative state, either up or down. |
| State | State of the configuration server: down or operational. If down, the reasons field indicates why it is down. The reasons include the following: NO-config-table, NO-nsap-address, and NO-interface-up. |
| LECS Mastership state | Mastership state of the configuration server. If you have configured simple server redundancy, the configuration server with the lowest index is the active LECS. |
| list of global LECS addresses | List of LECS addresses. |
| 40 seconds to update | Amount of time until the next update. |
| <----- me | ATM address of this configuration server. |
| ATM Address of this LECS | ATM address of the active configuration server. |
| auto | Method of ATM address assignment for the configuration server. In this example, the address is assigned by the automatic method. |

Table 126 *show lane config Command Field Descriptions (continued)*

| Field | Description |
|--------------|---|
| vcd | Virtual circuit descriptor that uniquely identifies the configure VCC. |
| rxCnt | Number of packets received. |
| txCnt | Number of packets transmitted. |
| callingParty | ATM NSAP address of the LANE component that is connected to the LECS. 'elan1' indicates the emulated LAN name, '0' indicates the priority number, and 'active' indicates that the server is active. |

show lane database

To display the configuration server's database, use the **show lane database** EXEC command.

```
show lane database [database-name]
```

| Syntax Description | <i>database-name</i> (Optional) Specific database name. | | | | |
|---------------------------|--|---------|--------------|------|------------------------------|
| Command Modes | EXEC | | | | |
| Command History | <table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>11.0</td> <td>This command was introduced.</td> </tr> </tbody> </table> | Release | Modification | 11.0 | This command was introduced. |
| Release | Modification | | | | |
| 11.0 | This command was introduced. | | | | |

Usage Guidelines By default, this command displays the LANE configuration server information displayed by the **show lane config** command.

If no database name is specified, this command shows all databases.

Examples

The following is sample output of the **show lane database** command for an Ethernet LANE:

```
Router# show lane database

LANE Config Server database table 'engandmkt' bound to interface/s: ATM1/0
default elan: none
elan 'eng': restricted
  server 45.000001415555121f.yyyy.zzzz.0800.200c.1001.01 (prio 0) active
  LEC MAC 0800.200c.1100
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1000.01
  LEC NSAP 45.000001415555124f.yyyy.zzzz.0800.200c.1300.01
elan 'mkt':
  server 45.000001415555121f.yyyy.zzzz.0800.200c.1001.02 (prio 0) active
  LEC MAC 0800.200c.1200
  LEC NSAP 45.000001415555121f.yyyy.zzzz.0800.200c.1000.02
  LEC NSAP 45.000001415555124f.yyyy.zzzz.0800.200c.1300.02
```

The following is sample output of the **show lane database** command for a Token Ring LANE:

```
Router# show lane database

LANE Config Server database table 'eng' bound to interface/s: ATM4/0
default elan: elan1
elan 'elan1': un-restricted, local-segment-id 2048
  server 39.020304050607080910111213.006047704181.01 (prio 0) active
```

Table 127 describes significant fields in the sample displays.

Table 127 *show lane database Command Field Descriptions*

| Field | Description |
|-----------------------------|--|
| LANE Config Server database | Name of this database and interfaces bound to it. |
| default elan | Default name, if one is established. |
| elan | Name of the emulated LAN whose data is reported in this line and the following indented lines. |
| un-restricted | Indicates whether this emulated LAN is restricted or unrestricted. |
| local-segment-id 2048 | Ring number of the emulated LAN. |
| server | ATM address of the configuration server. |
| (prio 0) active | Priority level and simple server redundancy state of this configuration server. If you have configured simple server redundancy, the configuration server with the lowest priority will be active. |
| LEC MAC | MAC addresses of an individual LANE client in this emulated LAN. This display includes a separate line for every LANE client in this emulated LAN. |
| LEC NSAP | ATM addresses of all LANE clients in this emulated LAN. |

show lane default-atm-addresses

To display the automatically assigned ATM address of each LANE component in a router or on a specified interface or subinterface, use the **show lane default-atm-addresses EXEC** command.

AIP on the Cisco 7500 series routers; for the ATM port adapter on the Cisco 7200 series

```
show lane default-atm-addresses [interface atm slot/port.subinterface-number]
```

ATM port adapter on the Cisco 7500 series routers

```
show lane default-atm-addresses [interface atm slot/port-adapter/port.subinterface-number]
```

Cisco 4500 and 4700 routers

```
show lane default-atm-addresses [interface atm number.subinterface-number]
```

| Syntax Description | |
|---|---|
| <code>interface atm slot/port</code> | (Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers. |
| <code>interface atm slot/port-adapter/port</code> | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. |
| <code>interface atm number</code> | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. |
| <code>.subinterface-number</code> | (Optional) Subinterface number. |

| Command Modes | |
|---------------|------|
| | EXEC |

| Command History | Release | Modification |
|-----------------|---------|---|
| | 11.0 | This command was introduced. |
| | 11.1 | The <code>number.subinterface-number</code> argument was added. |

| Usage Guidelines | |
|------------------|--|
| | It is not necessary to have any of the LANE components running on this router before you use this command. |

show lane le-arp

To display the LANE ARP table of the LANE client configured on an interface or any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane le-arp EXEC** command.

AIP on the Cisco 7500 series routers; for the ATM port adapter on the Cisco 7200 series

```
show lane le-arp [interface atm slot/port[.subinterface-number] | name elan-name]
```

ATM port adapter on the Cisco 7500 series routers

```
show lane le-arp [interface atm slot/port-adapter/port[.subinterface-number] | name elan-name]
```

Cisco 4500 and 4700 routers

```
show lane le-arp [interface atm number[.subinterface-number] | name elan-name]
```

Syntax Description

| | |
|---|---|
| interface atm slot/port | (Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> AIP on the Cisco 7500 series routers. ATM port adapter on the Cisco 7200 series routers. |
| interface atm slot/port-adapter/port | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. |
| interface atm number | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. |
| .subinterface-number | (Optional) Subinterface number. |
| name elan-name | (Optional) Name of emulated LAN. The maximum length of the name is 32 characters. |

Command Modes

EXEC

Command History

| Release | Modification |
|---------|------------------------------|
| 11.0 | This command was introduced. |

Examples

The following is sample output of the **show lane le-arp** command for an Ethernet LANE client:

```
Router# show lane le-arp

Hardware Addr   ATM Address                               VCD  Interface
0000.0c15.a2b5  39.000000000000000000000000000000.00000C15A2B5.01  39  ATM1/0.1
0000.0c15.f3e5  39.000000000000000000000000000000.00000C15F3E5.01  25* ATM1/0.1
```

The following is sample output of the **show lane le-arp** command for a Token Ring LANE client:

```
Router# show lane le-arp
```

```
Ring Bridge      ATM Address                               VCD Interface
512   6           39.020304050607080910111213.00602F557940.01 47 ATM2/0.1
```

Table 129 describes significant fields shown in the displays.

Table 129 *show lane le-arp Field Descriptions*

| Field | Description |
|---------------|---|
| Hardware Addr | MAC address, in dotted hexadecimal notation, assigned to the LANE component at the other end of this VCD. |
| Ring | Route descriptor segment number for the LANE component. |
| Bridge | Bridge number for the LANE component. |
| ATM Address | ATM address of the LANE component at the other end of this VCD. |
| VCD | Virtual circuit descriptor. |
| Interface | Interface or subinterface used to reach the specified component. |

show lane server

To display global information for the LANE server configured on an interface, on any of its subinterfaces, on a specified subinterface, or on an emulated LAN, use the **show lane server EXEC** command.

AIP on the Cisco 7500 series routers; for the ATM port adapter on the Cisco 7200 series

```
show lane server [interface atm slot/port[.subinterface-number] | name elan-name] [brief]
```

ATM port adapter on the Cisco 7500 series routers

```
show lane server [interface atm slot/port-adapter/port[.subinterface-number] | name elan-name] [brief]
```

Cisco 4500 and 4700 routers

```
show lane server [interface atm number[.subinterface-number] | name elan-name] [brief]
```

| Syntax Description | |
|--|---|
| interface atm <i>slot/port</i> | (Optional) ATM interface slot and port for the following: <ul style="list-style-type: none"> • AIP on the Cisco 7500 series routers. • ATM port adapter on the Cisco 7200 series routers. |
| interface atm <i>slot/port-adapter/port</i> | (Optional) ATM interface slot, port adapter, and port number for the ATM port adapter on the Cisco 7500 series routers. |
| interface atm <i>number</i> | (Optional) ATM interface number for the NPM on the Cisco 4500 or 4700 routers. |
| <i>.subinterface-number</i> | (Optional) Subinterface number. |
| name <i>elan-name</i> | (Optional) Name of emulated LAN. The maximum length of the name is 32 characters. |
| brief | (Optional) Keyword used to display the brief subset of available information. |

| Command Modes | |
|---------------|--|
| EXEC | |

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.0 | This command was introduced. |

Examples

The following is sample output from the **show lane server** command for an Ethernet-emulated LAN:

```
Router# show lane server

LE Server ATM2/0.2  ELAN name: elan2  Admin: up  State: operational
type: ethernet      Max Frame Size: 1516
ATM address: 39.020304050607080910111213.00000CA05B41.02
LECS used: 39.020304050607080910111213.00000CA05B43.00 connected, vcd 51
control distribute: vcd 57, 2 members, 2 packets

proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd      pkts Hardware Addr  ATM Address
   1  O   54        2 0000.0ca0.5b40 39.020304050607080910111213.00000CA05B40.02
   2  O   81        2 0060.2f55.7940 39.020304050607080910111213.00602F557940.02
```

The following is sample output from the **show lane server** command for a Token Ring-emulated LAN:

```
Router# show lane server

LE Server ATM3/0.1  ELAN name: anubis Admin: up  State: operational
type: token ring    Max Frame Size: 4544      Segment ID: 2500
ATM address: 47.009181000000000000000000.00000CA01661.01
LECS used: 47.009181000000000000000000.00000CA01663.00 connected, vcd 6
control distribute: vcd 10, 2 members, 4 packets

proxy/ (ST: Init, Conn, Waiting, Adding, Joined, Operational, Reject, Term)
lecid ST vcd      pkts Hardware Addr  ATM Address
   1  O    7         3 400.1           47.009181000000000000000000.00000CA01660.01
                        0000.0ca0.1660 47.009181000000000000000000.00000CA01660.01
   2  O   16         3 300.1           47.009181000000000000000000.00000CA04960.01
                        0000.0ca0.4960 47.009181000000000000000000.00000CA04960.01
```

Table 130 describes significant fields shown in the displays

Table 130 show lane server Field Descriptions

| Field | Description |
|--------------------|--|
| LE Server ATM2/0.2 | Interface and subinterface of this server. |
| ELAN name | Name of the emulated LAN. |
| Admin | Administrative state, either up or down. |
| State | Status of this LANE server. Possible states for a LANE server include down, waiting_ILMI, waiting_listen, up_not_registered, operational, and terminating. |
| type | Type of emulated LAN. |
| Max Frame Size | Maximum frame size (in bytes) on this type of emulated LAN. |
| Segment ID | The emulated LAN's ring number. This field appears only for Token Ring LANE. |
| ATM address | ATM address of this LANE server. |
| LECS used | ATM address of the LANE configuration server being used. This line also shows the current state of the connection between the LANE server and the LANE configuration server and the virtual circuit descriptor of the circuit connecting them. |
| control distribute | Virtual circuit descriptor of the Control Distribute VCC |

Table 130 *show lane server Field Descriptions (continued)*

| Field | Description |
|---------------|--|
| proxy | Status of the LANE client at the other end of the Control Distribute VCC. |
| lecid | Identifier for the LANE client at the other end of the Control Distribute VCC. |
| ST | Status of the LANE client at the other end of the Control Distribute VCC. Possible states are Init, Conn, Waiting, Adding, Joined, Operational, Reject, and Term |
| vcd | Virtual channel descriptor used to reach the LANE client. |
| pkts | Number of packets sent by the LANE server on the Control Distribute VCC to the LANE client. |
| Hardware Addr | The top number in this column is the router-descriptor, while the second number is the MAC-layer address of the LANE client. |
| ATM Address | ATM address of the LANE client. |

■ show lane server