# clear appletalk arp

**Note** Effective with Cisco IOS Release 15.0(1)M, the **clear appletalk arp** command is not available in Cisco IOS software.

To delete all entries or a specified entry from the AppleTalk Address Resolution Protocol (AARP) table, use the **clear appletalk arp** command in EXEC mode.

**clear appletalk arp** [*network.node*]

## Syntax Description

| | |
|---|---|
| *network.node* | (Optional) AppleTalk network address to be deleted from the AARP table. The argument *network* is the 16-bit network number in the range 0 to 65,279. The argument *node* is the 8-bit node number in the range 0 to 254. Both numbers are decimal. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following example deletes all entries from the AARP table:

```
clear appletalk arp
```

## Related Commands

| Command | Description |
|---|---|
| show appletalk arp | Displays the entries in the ARP cache. |

# clear appletalk neighbor

**Note** Effective with Cisco IOS Release 15.0(1)M, the **clear appletalk neighbor** command is not available in Cisco IOS software.

To delete all entries or a specified entry from the neighbor table, use the **clear appletalk neighbor** command in EXEC mode.

**clear appletalk neighbor** [*neighbor-address*]

## Syntax Description

| | |
|---|---|
| *neighbor-address* | (Optional) Network address of the neighboring router to be deleted from the neighbor table. The address is in the format *network.node*. The argument *network* is the 16-bit network number in the range 1 to 65,279. The argument *node* is the 8-bit node number in the range 0 to 254. Both numbers are decimal. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

You cannot clear the entry for an active neighbor, that is, for a neighbor that still has RTMP connectivity.

## Examples

The following example deletes the neighboring router 1.129 from the neighbor table:

```
clear appletalk neighbor 1.129
```

## Related Commands

| Command | Description |
|---|---|
| show appletalk neighbors | Displays information about the AppleTalk routers that are directly connected to any of the networks to which this router is directly connected. |

# clear appletalk route

**Note** Effective with Cisco IOS Release 15.0(1)M, the **clear appletalk route** command is not available in Cisco IOS software.

To delete entries from the routing table, use the **clear appletalk route** command in EXEC mode.

**clear appletalk route** [*network*]

## Syntax Description

| | |
|---|---|
| *network* | (Optional) Number of the network to which the route provides access. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following example deletes the route to network 1:

```
clear appletalk route 1
```

## Related Commands

| Command | Description |
|---|---|
| **show appletalk route** | Displays all entries or specified entries in the AppleTalk routing table. |

# clear appletalk traffic

**Note** Effective with Cisco IOS Release 15.0(1)M, the **clear appletalk traffic** command is not available in Cisco IOS software.

To reset AppleTalk traffic counters, use the **clear appletalk traffic** command in EXEC mode.

**clear appletalk traffic**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output after a **clear appletalk traffic** command was executed:

```
Router# clear appletalk traffic
Router# show appletalk traffic

AppleTalk statistics:
  Rcvd:  0 total, 0 checksum errors, 0 bad hop count
         0 local destination, 0 access denied
         0 for MacIP, 0 bad MacIP, 0 no client
         0 port disabled, 0 no listener
         0 ignored, 0 martians
  Bcast: 0 received, 0 sent
  Sent:  0 generated, 0 forwarded, 0 fast forwarded, 0 loopback
         0 forwarded from MacIP, 0 MacIP failures
         0 encapsulation failed, 0 no route, 0 no source
  DDP:   0 long, 0 short, 0 macip, 0 bad size
  NBP:   0 received, 0 invalid, 0 proxies
         0 replies sent, 0 forwards, 0 lookups, 0 failures
  RTMP:  0 received, 0 requests, 0 invalid, 0 ignored
         0 sent, 0 replies
  ATP:   0 received
  ZIP:   0 received, 0 sent, 0 netinfo
  Echo:  0 received, 0 discarded, 0 illegal
         0 generated, 0 replies sent
  Responder:  0 received, 0 illegal, 0 unknown
AppleTalk statistics:
         0 replies sent, 0 failures
  AARP:  0 requests, 0 replies, 0 probes
```

```
        0 martians, 0 bad encapsulation, 0 unknown
        0 sent, 0 failures, 0 delays, 0 drops
Lost: 0 no buffers
Unknown: 0 packets
Discarded: 0 wrong encapsulation, 0 bad SNAP discriminator
```

For explanation of the fields shown in the preceding example, see the **show appletalk traffic** command later in this chapter.

## Related Commands

| Command | Description |
|---|---|
| show appletalk macip-traffic | Displays statistics about MacIP traffic through the router. |
| **show appletalk traffic** | Displays statistics about AppleTalk traffic. |

# clear smrp mcache

**Note** Effective with Cisco IOS Release 15.0(1)M, the **clear appletalk mcache** command is not available in Cisco IOS software.

To remove all fast-switching entries in the Sample Multicast Routing Protocol (SMRP) fast-switching cache table, use the **clear smrp mcache** command in EXEC mode.

**clear smrp mcache**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.1 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

Use this command to clear the SMRP fast-switching cache table. The SMRP fast-switching cache table contains the information needed to fast switch SMRP data packets. It is usually unnecessary to clear the table; however, you can do so to repopulate it or to clear a corrupted entry.

**Note** Using this command clears the table of all entries, not just a single entry.

## Examples

The following example shows the fast-switching cache table before and after the **clear smrp mcache** command clears the table of entries:

```
Router# show smrp mcache

SMRP Multicast Fast Switching Cache
Group        In  Parent        Child         MAC Header (Top)
Address      Use Interface     Interface(s)  Network Header (Bottom)
------------------------------------------------------------------

AT 11.121    Y   Ethernet0     Ethernet3     090007400b7900000c1740db
                                             001fed750000002aff020a0a0a
AT 11.122    Y   Ethernet0     Ethernet3     090007400b7a00000c1740db
                                             001f47750000002aff020a0a0a
AT 11.123    Y   Ethernet0     Ethernet1     090007400b7b00000c1740d9
```

```
                                                  001fe77500000014ff020a0a0a
                                  Ethernet3       090007400b7b00000c1740db
                                                  001ffd750000002aff020a0a0a
AT 11.124     N   Ethernet0       Ethernet1       090007400b7c00000c1740d9
                                                  001fef7500000014ff020a0a0a


Router# clear smrp mcache
Router# show smrp mcache

SMRP Multicast Fast Switching Cache
Group         In  Parent          Child           MAC Header (Top)
Address       Use Interface       Interface(s)    Network Header (Bottom)
------------------------------------------------------------------------
```

## Related Commands

| Command | Description |
|---|---|
| **show smrp mcache** | Displays the SMRP fast-switching cache table. |

# show appletalk access-lists

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk access-lists** command is not available in Cisco IOS software.

To display the AppleTalk access lists currently defined, use the **show appletalk access-lists** command in EXEC mode.

**show appletalk access-lists**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

User EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show appletalk access-lists** command:

```
Router> show appletalk access-lists

AppleTalk access list 601:
         permit zone ZoneA
         permit zone ZoneB
         deny additional-zones
         permit network 55
         permit network 500
         permit cable-range 900-950
         deny includes 970-990
         permit within 991-995
         deny other-access
```

Table 9 describes fields shown in the display.

*Table 9 show appletalk access-lists Field Descriptions*

| Field | Description |
|---|---|
| AppleTalk access list 601: | Number of the AppleTalk access lists. |
| permit zone<br>deny zone | Indicates whether access to an AppleTalk zone has been explicitly permitted or denied with the **access-list zone** command. |
| permit additional-zones<br>deny additional-zones | Indicates whether additional zones have been permitted or denied with the **access-list additional-zones** command. |
| permit network<br>deny network | Indicates whether access to an AppleTalk network has been explicitly permitted or denied with the **access-list network** command. |
| permit cable-range<br>deny cable-range | Indicates the cable ranges to which access has been permitted or denied with the **access-list cable-range** command. |
| permit includes<br>deny includes | Indicates the cable ranges to which access has been permitted or denied with the **access-list includes** command. |
| permit within<br>deny within | Indicates the additional cable ranges to which access has been permitted or denied with the **access-list within** command. |
| permit other-access<br>deny other-access | Indicates whether additional networks or cable ranges have been permitted or denied with the **access-list other-access** command. |

## Related Commands

| Command | Description |
|---|---|
| **access-list additional-zones** | Defines the default action to take for access checks that apply to zones. |
| **access-list cable-range** | Defines an AppleTalk access list for a cable range (for extended networks only). |
| **access-list includes** | Defines an AppleTalk access list that overlaps any part of a range of network numbers or cable ranges (for both extended and nonextended networks). |
| **access-list nbp** | Defines an AppleTalk access list entry for a particular NBP named entity, class of NBP named entities, NBP packet type, or NBP named entities belonging to a specific zone. |
| **access-list network** | Defines an AppleTalk access list for a single network number (that is, for a nonextended network). |
| **access-list other-access** | Defines the default action to take for subsequent access checks that apply to networks or cable ranges. |
| **access-list other-nbps** | Defines the default action to take for access checks that apply to NBP packets from named entities not otherwise explicitly denied or permitted. |
| **access-list within** | Defines an AppleTalk access list for an extended or a nonextended network whose network number or cable range is included entirely within the specified cable range. |
| **access-list zone** | Defines an AppleTalk access list that applies to a zone. |
| **appletalk access-group** | Assigns an access list to an interface. |

| Command | Description |
|---|---|
| **appletalk distribute-list in** | Filters routing updates received from other routers over a specified interface. |
| **appletalk distribute-list out** | Filters routing updates sent to other routers. |
| **appletalk getzonelist-filter** | Filters GZL replies. |

# show appletalk adjacent-routes

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk adjacent-routes** command is not available in Cisco IOS software.

To display routes to networks that are directly connected or that are one hop away, use the **show appletalk adjacent-routes** command in privileged EXEC mode.

**show appletalk adjacent-routes**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(13)T | The E - EIGRP field was removed from command output. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The **show appletalk adjacent-routes** command provides a quick overview of the local environment that is especially useful when an AppleTalk internetwork consists of a large number of networks (typically, more then 600 networks).

You can use information provided by this command to determine if any local routes are missing or are misconfigured.

## Examples

The following is sample output from the **show appletalk adjacent-routes** command:

```
Router# show appletalk adjacent-routes

Codes: R - RTMP derived, C - connected, S - static, P - proxy, 67 routes in internet

R Net 29-29 [1/G] via gatekeeper, 0 sec, Ethernet0, zone Engineering
C Net 2501-2501 directly connected, Ethernet1, no zone set
C Net 4160-4160 directly connected, Ethernet0, zone Low End SW Lab
C Net 4172-4172 directly connected, TokenRing0, zone Low End SW Lab
R Net 6160 [1/G] via urk, 0 sec, TokenRing0, zone Low End SW Lab
```

Table 10 describes the fields shown in the display.

*Table 10 show appletalk adjacent-routes Field Descriptions*

| Field | Description |
|---|---|
| Codes: | Codes defining source of route. |
| R - RTMP derived | Route derived from an RTMP update. |
| C - Connected | Directly connected network RTMP update. |
| S - Static | Static route. |
| P - Proxy | Proxy route. |
| 67 routes in internet | Total number of known routes in the AppleTalk network. |
| Net 29-29 | Cable range or network to which the route goes. |
| [1/G] | Hop count, followed by the state of the route.<br>Possible values for state include the following:<br>• G—Good (update has been received within the last 10 seconds)<br>• S—Suspect (update has been received more than 10 seconds ago but less than 20 seconds ago)<br>• B—Bad (update was received more than 20 seconds ago) |
| via | NBP registered name or address of the router that sent the routing information. |
| 0 sec | Time, in seconds, since information about this network cable range was last received. |
| directly connected | Indicates that the network or cable range is directly connected to the router. |
| Ethernet0 | Possible interface through which updates to this NBP registered name or address will be sent. |
| zone | Zone name assigned to the network or cable range sending this update. |

# show appletalk arp

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk arp** command is not available in Cisco IOS software.

To display the entries in the Address Resolution Protocol (ARP) cache, use the **show appletalk arp** command in privileged EXEC mode.

**show appletalk arp**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

ARP establishes associates between network addresses and hardware (MAC) addresses. This information is maintained in the ARP cache.

## Examples

The following is sample output from the **show appletalk arp** command:

```
Router# show appletalk arp

Address      Age (min)  Type      Hardware Addr   Encap     Interface
2000.1             -  Hardware  0000.0c04.1111  SNAP      Ethernet1
2000.2             0  Dynamic   0000.0c04.2222  SNAP      Ethernet1
2000.3             0  Dynamic   0000.0c04.3333  SNAP      Ethernet3
2000.4             -  Hardware  0000.0c04.4444  SNAP      Ethernet3
```

Table 11 describes the fields shown in the display.

*Table 11 show appletalk arp Field Descriptions*

| Field | Description |
|---|---|
| Address | AppleTalk network address of the interface. |
| Age (min) | Time, in minutes, that this entry has been in the ARP table. Entries are purged after they have been in the table for 240 minutes (4 hours). A hyphen indicates that this is a new entry. |
| Type | Indicates how the ARP table entry was learned. It can be one of the following:<br>• Dynamic—Entry was learned via AARP.<br>• Hardware—Entry was learned from an adapter in the router.<br>• Pending—Entry for a destination for which the router does not yet know the address. When a packet requests to be sent to an address for which the router does not yet have the MAC-level address, the Cisco IOS software creates an AARP entry for that AppleTalk address, then sends an AARP Resolve packet to get the MAC-level address for that node. When the software gets the response, the entry is marked “Dynamic.” A pending AARP entry times out after 1 minute. |
| Hardware Addr | MAC address of this interface. |
| Encap | Encapsulation type. It can be one of the following:<br>• ARPA—Ethernet-type encapsulation<br>• Subnetwork Access Protocol (SNAP)—IEEE 802.3 encapsulation |
| Interface | Type and number of the interface. |

# show appletalk aurp events

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk aurp events** command is not available in Cisco IOS software.

To display the pending events in the AppleTalk Update-Based Routing Protocol (AURP) update-events queue, use the **show appletalk aurp events** command in privileged EXEC mode.

**show appletalk aurp events**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.3 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show appletalk aurp events** command:

```
Router# show appletalk aurp events

100-100, NDC EVENT pending
17043-17043, ND EVENT pending
```

Table 12 explains the fields shown in the display.

*Table 12 show appletalk aurp events Field Descriptions*

| Field | Description |
|---|---|
| 100-100 | Network number or cable range. |
| NCD EVENT pending | Type of update event that is pending. |

# show appletalk aurp topology

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk aurp topology** command is not available in Cisco IOS software.

To display entries in the AppleTalk Update-Based Routing Protocol (AURP) private path database, which consists of all paths learned from exterior routers, use the **show appletalk aurp topology** command in privileged EXEC mode.

**show appletalk aurp topology**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.3 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show appletalk aurp topology** command:

```
Router# show appletalk aurp topology

30
             via Tunnel0, 3 hops
80
             via Tunnel0, 3 hops
101-101
             via Tunnel0, 8 hops
102-102
             via Tunnel0, 8 hops
103-103
             via Tunnel0, 8 hops
104-104
             via Tunnel0, 8 hops
105-105
             via Tunnel0, 8 hops
108-108
             via Tunnel0, 8 hops
109-109
             via Tunnel0, 9 hops
120-120
             via Tunnel0, 10 hops
125-125
```

```
            via Tunnel0, 8 hops
169-169
            via Tunnel0, 7 hops
201-205
            via Tunnel0, 4 hops
```

Table 13 describes the fields shown in the display.

***Table 13 show appletalk aurp topology Field Descriptions***

| Field | Description |
|---|---|
| 30 | AppleTalk network number or cable range. |
| via Tunnel0 | Interface used to reach the network. |
| 3 hops | Number of hops to the network. |

# show appletalk cache

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk cache** command is not available in Cisco IOS software.

To display the routes in the AppleTalk fast-switching table on an extended AppleTalk network, use the **show appletalk cache** command in EXEC mode.

**show appletalk cache**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The **show appletalk cache** command displays information for all fast-switching route cache entries, regardless of whether they are valid.

Route entries are removed from the fast-switching cache if one of the following occurs:

- A route that was used has been deleted but has not yet been marked bad.
- A route that was used has gone bad.
- A route that was used has been replaced with a new route with a better metric.
- The state of route to a neighbor has changed from suspect to bad.
- The hardware address corresponding to a node address in the AARP cache has changed.
- The node address corresponding to a hardware address has changed.
- The ARP cache has been flushed.
- An ARP cache entry has been deleted.
- You have entered the **no appletalk routing** command, the **appletalk route-cache** command, or an **access-list** command.
- The encapsulation on the line has changed.
- An interface has become operational or nonoperational.

## Examples

The following is sample output from the **show appletalk cache** command:

```
Router> show appletalk cache

AppleTalk Routing Cache, * = active entry, cache version is 227
Destination     Interface     MAC Header
*      29.0     Ethernet0     00000C00008200000C00D8DD
*  1544.000     Ethernet1     AA000400013400000C000E8C809B84BE02
*    33.000     Ethernet1     AA000400013400000C000E8C809B84BE02
```

The following is sample output from the **show appletalk cache** command when AppleTalk load balanced is enabled. The output displayed shows additional MAC headers for parallel paths (for example, 6099.52):

```
Router> show appletalk cache

Appletalk Routing cache, * = active entry, cache version is 11021
Destination     Interface     MAC Header
*     82.36     Ethernet1/4   00000CF366A600000C12C52D
  17043.208     Ethernet1/5   00000C367B4000000C12C52E
*  60099.52     Ethernet1/5   00000C367B4000000C12C52E
                Ethernet1/2   00000C367B3D00000C12C52B
                Ethernet1/3   00000C367B3E00000C12C52C
```

Table 14 describes the fields shown in the display.

***Table 14 show appletalk cache Field Descriptions***

| Field | Description |
|---|---|
| * | Indicates the entry is valid. |
| cache version is | Version number of the AppleTalk fast-switching cache. |
| Destination | Destination network for this packet. |
| Interface | Router interface through which this packet is transmitted. |
| MAC Header | First bytes of this packet's MAC header. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk maximum-paths** | Defines the maximum number of equal-cost paths the router should use when balancing the traffic load. |
| **appletalk route-cache** | Enables fast switching on all supported interfaces. |

# show appletalk domain

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk domain** command is not available in Cisco IOS software.

To display all domain-related information, use the **show appletalk domain** command in EXEC mode.

**show appletalk domain** [*domain-number*]

## Syntax Description

| | |
|---|---|
| *domain-number* | (Optional) Number of an AppleTalk domain about which to display information. It can be a decimal integer from 1 to 1,000,000. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.3 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If you omit the argument *domain-number*, the **show appletalk domain** command displays information about all domains.

## Examples

The following is sample output from the **show appletalk domain** command:

```
Router# show appletalk domain

        AppleTalk   Domain   Information:

        Domain 1        Name : Xerxes
      ---------------------------------------
        State                : Active
        Inbound remap range  : 100-199
        Outbound remap range : 200-299
        Hop reduction        : OFF
        Interfaces in domain :
               Ethernet1     : Enabled

        Domain 2        Name : Desdemona
      ---------------------------------------
        State                : Active
        Inbound remap range  : 300-399
        Outbound remap range : 400-499
        Hop reduction        : OFF
```

```
        Interfaces in domain :
               Ethernet3     : Enabled
```

The following is sample output from the **show appletalk domain** command when you specify a domain number:

```
Router# show appletalk domain 1

        AppleTalk   Domain   Information:

        Domain 1        Name : Xerxes
      ---------------------------------------
        State                : Active
        Inbound remap range  : 100-199
        Outbound remap range : 200-299
        Hop reduction        : OFF
        Interfaces in domain :
               Ethernet1     : Enabled
```

Table 15 describes the fields shown in the displays.

***Table 15 show appletalk domain Field Descriptions***

| Field | Description |
|---|---|
| Domain | Number of the domain as specified with the **appletalk domain name** global configuration command. |
| Name | Name of the domain as specified with the **appletalk domain name** global configuration command. |
| State | Status of the domain. It can be either Active or Nonactive. |
| Inbound remap range | Inbound mapping range as specified with the **appletalk domain remap-range in** global configuration command. |
| Outbound remap range | Outbound mapping range as specified with the **appletalk domain remap-range out** global configuration command. |
| Hop reduction | Indicates whether hop reduction has been enabled with the **appletalk domain hop-reduction** global configuration command. It can be either OFF or ON. |
| Interfaces in domain | Indicates which interfaces are in the domain as specified with the **appletalk domain-group** interface configuration command and whether they are enabled. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk domain-group** | Assigns a predefined domain number to an interface. |
| **appletalk domain hop-reduction** | Reduces the hop-count value in packets traveling between segments of a domain. |
| **appletalk domain name** | Creates a domain and assigns it a name and number. |
| **appletalk domain remap-range** | Remaps ranges of AppleTalk network numbers or cable ranges between two segments of a domain. |

# show appletalk eigrp interfaces

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk eigrp interfaces** command is not available in Cisco IOS software.

To display information about interfaces configured for Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show appletalk eigrp interfaces** command in EXEC mode.

**show appletalk eigrp interfaces** [*type number*]

## Syntax Description

| | |
|---|---|
| *type* | (Optional) Interface type. |
| *number* | (Optional) Interface number. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.2 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

Use the **show appletalk eigrp interfaces** command to determine on which interfaces Enhanced IGRP is active and to find out information about Enhanced IGRP relating to those interfaces.

If an interface is specified, only that interface is displayed. Otherwise, all interfaces on which Enhanced IGRP is running are displayed.

## Examples

The following is sample output from the **show appletalk eigrp interfaces** command:

```
Router> show appletalk eigrp interfaces

AT/EIGRP interfaces for process 1, router id 24096

                    Xmit Queue    Mean   Pacing Time   Multicast   Pending
Interface   Peers   Un/Reliable   SRTT   Un/Reliable   Flow Timer  Routes
Di0           0         0/0          0      11/434          0          0
Et0           1         0/0        337       0/10           0          0
SE0:1.16      1         0/0         10       1/63         103          0
Tu0           1         0/0        330       0/16           0          0
```

Table 16 describes the fields shown in the display.

*Table 16 show appletalk eigrp interfaces Field Descriptions*

| Field | Description |
|---|---|
| process 1 | Autonomous system number of the process. |
| router id | Identification number of the router, as configured in the **appletalk routing eigrp** command. |
| Interface | Interface name. |
| Peers | Number of neighbors on the interface. |
| Xmit Queue | Count of unreliable and reliable packets queued for transmission. |
| Mean SRTT | Average round-trip time for all neighbors on the interface. |
| Pacing Time | Number of milliseconds to wait after transmitting unreliable and reliable packets. |
| Multicast Flow Timer | Number of milliseconds to wait for acknowledgment of a multicast packet by all neighbors before transmitting the next multicast packet. |
| Pending Routes | Number of routes still to be transmitted on this interface. |

## Related Commands

| Command | Description |
|---|---|
| show appletalk eigrp neighbors | Displays the neighbors discovered by Enhanced IGRP. |

# show appletalk eigrp neighbors

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk eigrp neighbors** command is not available in Cisco IOS software.

To display the neighbors discovered by Enhanced Interior Gateway Routing Protocol (EIGRP), use the **show appletalk eigrp neighbors** command in EXEC mode.

**show appletalk eigrp neighbors** [*interface*]

## Syntax Description

| | |
|---|---|
| *interface* | (Optional) Displays information about the specified neighbor router. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.3 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The **show appletalk eigrp neighbors** command lists only the neighbors running AppleTalk Enhanced IGRP. To list all neighboring AppleTalk routers, use the **show appletalk neighbors** command.

## Examples

The following is sample output from the **show appletalk eigrp neighbors** command:

```
Router# show appletalk eigrp neighbors

AT/EIGRP Neighbors for process 1, router id 83
Address                 Interface     Holdtime Uptime   Q      Seq  SRTT  RTO
                                      (secs)   (h:m:s)  Count  Num  (ms)  (ms)
warp.Ethernet1          Ethernet2     41       0:02:48  0      282  4     20
master.Ethernet2        Ethernet2     40       1:16:46  0      333  4     20
```

Table 17 describes the fields shown in the display.

*Table 17 show appletalk eigrp neighbors Field Descriptions*

| Field | Description |
|---|---|
| process 1 | Number of the Enhanced IGRP routing process. |
| router id 83 | Autonomous system number specified in the **appletalk routing** global configuration command. |
| Address | AppleTalk address of the AppleTalk Enhanced IGRP peer. |
| Interface | Interface on which the router is receiving hello packets from the peer. |
| Holdtime | Length of time, in seconds, that the Cisco IOS software will wait to hear from the peer before declaring it down. If the peer is using the default hold time, this number will be less than 15. If the peer configures a nondefault hold time, it will be reflected here. |
| Uptime | Elapsed time, in hours, minutes, and seconds, since the local router first heard from this neighbor. |
| Q Count | Number of AppleTalk Enhanced IGRP packets (update, query, and reply) that the Cisco IOS software is waiting to send. |
| Seq Num | Sequence number of the last update, query, or reply packet that was received from this neighbor. |
| SRTT | Smooth round-trip time. This is the number of milliseconds it takes for an AppleTalk Enhanced IGRP packet to be sent to this neighbor and for the local router to receive an acknowledgment of that packet. |
| RTO | Retransmission timeout, in milliseconds. This is the amount of time the Cisco IOS software waits before retransmitting a packet from the retransmission queue to a neighbor. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk routing** | Enables AppleTalk routing. |
| show appletalk neighbors | Displays information about the AppleTalk routers that are directly connected to any of the networks to which this router is directly connected. |

# show appletalk eigrp topology

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk eigrp topology** command is not available in Cisco IOS software.

To display the AppleTalk Enhanced Interior Gateway Routing Protocol (EIGRP) topology table, use the **show appletalk eigrp topology** command in EXEC mode.

**show appletalk eigrp topology** [*network-number* | **active** | **zero-successors**]

## Syntax Description

| | |
|---|---|
| *network-number* | (Optional) Number of the AppleTalk network whose topology table entry you want to display. |
| **active** | (Optional) Displays the entries for all active routes. |
| **zero-successors** | (Optional) Displays the entries for destinations for which no successors exist. These entries are destinations that the Cisco IOS software currently does not know how to reach via Enhanced IGRP. This option is useful for debugging network problems. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.3 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

All Enhanced IGRP routes that are received for a destination, regardless of metric, are placed in the topology table. The route to a destination that is currently in use is the first route listed. Routes that are listed as “connected” take precedence over any routes learned from any other source.

## Examples

The following is sample output from the **show appletalk eigrp topology** command:

```
Router# show appletalk eigrp topology

IPX EIGRP Topology Table for process 1, router id 1

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - Reply status
```

```
P 3165-0, 1 successors, FD is 0
          via Redistributed (25601/0),
          via 100.1 (2198016/2195456), Fddi0
          via 4080.67 (2198016/53760), Serial4
P 3161-0, 1 successors, FD is 307200
          via Redistributed (1025850/0),
          via 100.1 (2198016/2195456), Fddi0
          via 4080.67 (2198016/1028410), Serial4
P 100-100, 1 successors, FD is 0
          via Connected, Fddi0
          via 4080.67 (2198016/28160), Serial4
P 4080-4080, 1 successors, FD is 0
          via Connected, Serial4
          via 100.1 (2172416/2169856), Fddi0
```

Table 18 describes the fields that may be displayed in the output.

***Table 18 show appletalk eigrp topology Field Descriptions***

| Field | Description |
|---|---|
| Codes: | State of this topology table entry. Passive and Active refer to the Enhanced IGRP state with respect to this destination; and Update, Query, and Reply refer to the type of packet that is being sent. |
| P – Passive | No Enhanced IGRP computations are being performed for this destination. |
| A – Active | Enhanced IGRP computations are being performed for this destination. |
| U – Update | Indicates that an update packet was sent to this destination. |
| Q – Query | Indicates that a query packet was sent to this destination. |
| R – Reply | Indicates that a reply packet was sent to this destination. |
| r – Reply status | Flag that is set after the Cisco IOS software has sent a query and is waiting for a reply. |
| 3165, 3161, and so on | Destination AppleTalk network number. |
| successors | Number of successors. This number corresponds to the number of next hops in the AppleTalk routing table. |
| FD | Feasible distance. This value is used in the feasibility condition check. If the neighbor's reported distance (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it does not have to send a query for that destination. |
| replies | Number of replies that are still outstanding (have not been received) with respect to this destination. This information appears only when the destination is in the Active state. |
| state | Exact Enhanced IGRP state that this destination is in. It can be the number 0, 1, 2, or 3. This information appears only when the destination is Active. |
| via | AppleTalk address of the peer who told the software about this destination. The first *n* of these entries, where *n* is the number of successors, are the current successors. The remaining entries on the list are feasible successors. |

*Table 18 show appletalk eigrp topology Field Descriptions (continued)*

| Field | Description |
|---|---|
| (345088/319488) | The first number is the Enhanced IGRP metric that represents the cost to the destination, The second number is the Enhanced IGRP metric that this peer advertised to us. |
| Ethernet0 | Interface from which this information was learned. |

The following is sample output from the **show appletalk eigrp topology** command when you specify an AppleTalk network number:

```
Router# show appletalk eigrp topology 3165

AT-EIGRP topology entry for 3165-0
State is Passive, Query origin flag is 1, 1 Successor(s)
Routing Descriptor Blocks:
0.0, from 0.0
  Composite metric is (25601/0), Send flag is 0x0, Route is Internal
  Vector metric:
    Minimum bandwidth is 2560000000 Kbit
    Total delay is 1000000 nanoseconds
    Reliability is 255/255
    Load is 1/255
    Minimum MTU is 1500
    Hop count is 0
100.1 (Fddi0), from 100.1
  Composite metric is (2198016/2195456), Send flag is 0x0, Route is External
  Vector metric:
    Minimum bandwidth is 1544 Kbit
    Total delay is 21100000 nanoseconds
    Reliability is 255/255
    Load is 1/255
    Minimum MTU is 1500
    Hop count is 2
4080.83 (Serial4), from 4080.83
   Composite metric is (2198016/53760), Send flag is 0x0, Route is Internal
   Vector metric:
   Minimum bandwidth is 1544 Kbit
   Total delay is 21100000 nanoseconds
   Reliability is 255/255
   Load is 1/255
   Minimum MTU is 1500
   Hop count is 2
```

Table 19 describes the fields that may appear in the output.

*Table 19 show appletalk eigrp topology Field Descriptions—Specified Network*

| Field | Description |
|---|---|
| 3165 | AppleTalk network number of the destination. |
| State is ... | State of this entry. It can be either Passive or Active. Passive means that no Enhanced IGRP computations are being performed for this destination, and Active means that they are being performed. |
| Query origin flag | Exact Enhanced IGRP state that this destination is in. It can be the number 0, 1, 2, or 3. This information appears only when the destination is Active. |

*Table 19 show appletalk eigrp topology Field Descriptions—Specified Network (continued)*

| Field | Description |
|---|---|
| Successors | Number of successors. This number corresponds to the number of next hops in the IPX routing table. |
| Next hop is ... | Indicates how this destination was learned. It can be one of the following:<br>• Connected—The destination is on a network directly connected to this router.<br>• Redistributed—The destination was learned via RTMP or another routing protocol.<br>• AppleTalk host address—The destination was learned from that peer via this Enhanced IGRP process. |
| Ethernet0 | Interface from which this information was learned. |
| from | Peer from whom the information was learned. For connected and redistributed routers, this is 0.0. For information learned via Enhanced IGRP, this is the peer's address. Currently, for information learned via Enhanced IGRP, the peer's AppleTalk address always matches the address in the "Next hop is" field. |
| Composite metric is | Enhanced IGRP composite metric. The first number is this device's metric to the destination, and the second is the peer's metric to the destination. |
| Send flag | Numeric representation of the "flags" field. It is 0 when nothing is being sent, 1 when an Update is being sent, 3 when a Query is being sent, and 4 when a Reply is being sent. Currently, 2 is not used. |
| Route is ... | Type of router. It can be either internal or external. Internal routes are those that originated in an Enhanced IGRP autonomous system, and external routes are those that did not. Routes learned via RTMP are always external. |
| Vector metric: | This section describes the components of the Enhanced IGRP metric. |
| Minimum bandwidth | Minimum bandwidth of the network used to reach the next hop. |
| Total delay | Delay time to reach the next hop. |
| Reliability | Reliability value used to reach the next hop. |
| Load | Load value used to reach the next hop. |
| Minimum MTU | Smallest Maximum Transmission Unit (MTU) size of the network used to reach the next hop. |
| Hop count | Number of hops to the next hop. |
| External data | This section describes the original protocol from which this route was redistributed. It appears only for external routes. |
| Originating router | Network address of the router that first distributed this route into AppleTalk Enhanced IGRP. |
| External protocol metric delay | External protocol from which this route was learned. The metric will match the external hop count displayed by the **show appletalk route** command for this destination. The delay is the external delay. |

*Table 19 show appletalk eigrp topology Field Descriptions—Specified Network (continued)*

| Field | Description |
|---|---|
| Administrator tag | Currently not used. |
| Flag | Currently not used. |

## Related Commands

| Command | Description |
|---|---|
| **show appletalk route** | Displays all entries or specified entries in the AppleTalk routing table. |

# show appletalk globals

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk globals** command is not available in Cisco IOS software.

To display information and settings about the AppleTalk internetwork and other parameters, use the **show appletalk globals** command in EXEC mode.

**show appletalk globals**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show appletalk globals** command:

```
Router# show appletalk globals

AppleTalk global information:
      The router is a domain router.
      Internet is compatible with older, AT Phase1, routers.
      There are 67 routes in the internet.
      There are 25 zones defined.
      All significant events will be logged.
      ZIP resends queries every 10 seconds.
      RTMP updates are sent every 10 seconds with a jitter.
      RTMP entries are considered BAD after 20 seconds.
      RTMP entries are discarded after 60 seconds.
      AARP probe retransmit count: 10, interval: 200.
      AARP request retransmit count: 5, interval: 1000.
      DDP datagrams will be checksummed.
      RTMP datagrams will be strictly checked.
      RTMP routes may not be propagated without zones.
      Alternate node address format will not be displayed.
```

Table 20 describes the fields shown in the display.

*Table 20 show appletalk globals Field Descriptions*

| Field | Description |
|---|---|
| AppleTalk global information: | Heading for the command output. |
| The router is a domain router. | Indicates whether this router is a domain router. |
| Internet is compatible with older, AT Phase1, routers. | Indicates whether the AppleTalk internetwork meets the criteria for interoperation with Phase 1 routers. |
| There are 67 routes in the internet. | Total number of routes in the AppleTalk internetwork from which this router has heard in routing updates. |
| There are 25 zones defined. | Total number of valid zones in the current AppleTalk internetwork configuration. |
| All significant events will be logged. | Indicates whether the router has been configured with the **appletalk event-logging** command. |
| ZIP resends queries every 10 seconds. | Interval, in seconds, at which zone name queries are retried. |
| RTMP updates are sent every 10 seconds. | Interval, in seconds, at which the Cisco IOS software sends routing updates. |
| RTMP entries are considered BAD after 20 seconds. | Time after which routes for which the software has not received an update will be marked as candidates for being deleted from the routing table. |
| RTMP entries are discarded after 60 seconds. | Time after which routes for which the software has not received an update will be deleted from the routing table. |
| AARP probe retransmit count: 10, interval: 200. | Number of AARP probe retransmissions that will be done before abandoning address negotiations and instead using the selected AppleTalk address, followed by the time, in milliseconds, between retransmission of ARP probe packets. You set these values with the **appletalk arp retransmit-count** and **appletalk arp interval** commands, respectively. |
| AARP request retransmit count: 5, interval: 1000. | Number of AARP request retransmissions that will be done before abandoning address negotiations and using the selected AppleTalk address, followed by the time, in milliseconds, between retransmission of ARP request packets. You set these values with the **appletalk arp retransmit-count** and **appletalk arp interval** commands, respectively. |
| DDP datagrams will be checksummed. | Indicates whether the **appletalk checksum** configuration command is enabled. When enabled, the software discards DDP packets when the checksum is incorrect and when the router is the final destination for the packet. |
| RTMP datagrams will be strictly checked. | Indicates whether the **appletalk strict-rtmp-checking** configuration command is enabled. When enabled, RTMP packets arriving from routers that are not directly connected to the router performing the check are discarded. |

*Table 20 show appletalk globals Field Descriptions (continued)*

| Field | Description |
|---|---|
| RTMP routes may not be propagated without zones. | Indicates whether the **appletalk require-route-zones** configuration command is enabled. When enabled, the Cisco IOS software does not advertise a route to its neighboring routers until it has obtained a network/zone association for that route. |
| Alternate node address format will not be displayed. | Indicates whether AppleTalk addresses will be printed in numeric or name form. You configure this with the **appletalk lookup-type** and **appletalk name-lookup-interval** commands. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk arp interval** | Specifies the time interval between retransmissions of ARP packets. |
| **appletalk arp retransmit-count** | Specifies the number of ARP probe or request transmissions. |
| **appletalk checksum** | Enables the generation and verification of checksums for all AppleTalk packets (except routed packets). |
| **appletalk event-logging** | Logs significant network events. |
| **appletalk lookup-type** | Specifies which NBP service types are retained in the name cache. |
| **appletalk name-lookup-interval** | Sets the interval between service pollings by the router on its AppleTalk interfaces. |
| **appletalk require-route-zones** | Prevents the advertisement of routes (network numbers or cable ranges) that have no assigned zone. |
| **appletalk strict-rtmp-checking** | Performs maximum checking of routing updates to ensure their validity. |

# show appletalk interface

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk interfaces** command is not available in Cisco IOS software.

To display the status of the AppleTalk interfaces configured in the Cisco IOS software and the parameters configured on each interface, use the **show appletalk interface** command in privileged EXEC mode.

**show appletalk interface** [**brief**] [*type number*]

## Syntax Description

| | |
|---|---|
| **brief** | (Optional) Displays a brief summary of the status of the AppleTalk interfaces. |
| *type* | (Optional) Interface type. It can be one of the following types: asynchronous, dialer, Ethernet (IEEE 802.3), Token Ring (IEEE 802.5), FDDI, High-Speed Serial Interface (HSSI), Virtual Interface, ISDN Basic Rate Interface (BRI), ATM interface, loopback, null, or serial. |
| *number* | (Optional) Interface number. |

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The **show appletalk interface** is particularly useful when you first enable AppleTalk on a router interface.

## Examples

The following is sample output from the **show appletalk interface** command for an extended AppleTalk network:

```
Router# show appletalk interface fddi 0

Fddi0 is up, line protocol is up
    AppleTalk cable range is 4199-4199
    AppleTalk address is 4199.82, Valid
    AppleTalk zone is "Low End SW Lab"
    AppleTalk address gleaning is disabled
    AppleTalk route cache is enabled
```

```
    Interface will not perform pre-FDDITalk compatibility
```

Table 21 describes the fields shown in the display as well as some fields not shown but that also may be displayed. Note that this command can show a node name in addition to the address, depending on how the software has been configured with the **appletalk lookup-type** and **appletalk name-lookup-interval** commands.

***Table 21 show appletalk interface Field Descriptions—Extended Network***

| Field | Description |
|---|---|
| FDDI is ... | Type of interface and whether it is currently active and inserted into the network (up) or inactive and not inserted (down). |
| line protocol | Indicates whether the software processes that handle the line protocol believe the interface is usable (that is, whether *keepalives* are successful). |
| AppleTalk node | Indicates whether the node is up or down in the network. |
| AppleTalk cable range | Cable range of the interface. |
| AppleTalk address is ..., Valid | Address of the interface, and whether the address conflicts with any other address on the network ("Valid" means it does not). |
| AppleTalk zone | Name of the zone that this interface is in. |
| AppleTalk port configuration verified ... | When our access server implementation comes up on an interface, if there are other routers detected and the interface we are bringing up is not in discovery mode, our access server "confirms" our configuration with the routers that are already on the cable. The address printed in this field is that of the router with which the local router has verified that the interface configuration matches that on the running network. |
| AppleTalk discarded...packets due to input errors | Number of packets the interface discarded because of input errors. These errors are usually incorrect encapsulations (that is, the packet has a malformed header format). |
| AppleTalk address gleaning | Indicates whether the interface is automatically deriving ARP table entries from incoming packets (referred to as *gleaning*). |
| AppleTalk route cache | Indicates whether fast switching is enabled on the interface. |
| Interface will ... | Indicates that the AppleTalk interface will check to see if AppleTalk packets sent on the FDDI ring from routers running Cisco software releases prior to Release 9.0(3) or 9.1(2) are recognized. |
| AppleTalk domain | AppleTalk domain of which this interface is a member. |

The following is sample output from the **show appletalk interface** command for a nonextended AppleTalk network:

```
Router# show appletalk interface ethernet 1

Ethernet 1 is up, line protocol is up
    AppleTalk address is 666.128, Valid
    AppleTalk zone is Underworld
    AppleTalk routing protocols enabled are RTMP
```

```
AppleTalk address gleaning is enabled
AppleTalk route cache is not initialized
```

Table 22 describes the fields shown in the display.

*Table 22 show appletalk interface Field Descriptions—Nonextended Network*

| Field | Description |
|---|---|
| Ethernet 1 | Type of interface and whether it is currently active and inserted into the network (up) or inactive and not inserted (down). |
| line protocol | Indicates whether the software processes that handle the line protocol believe the interface is usable (that is, whether *keepalives* are successful). |
| AppleTalk address is ..., Valid | Address of the interface, and whether the address conflicts with any other address on the network ("Valid" means it does not). |
| AppleTalk zone | Name of the zone that this interface is in. |
| AppleTalk routing protocols enabled | AppleTalk routing protocols that are enabled on the interface. |
| AppleTalk address gleaning | Indicates whether the interface is automatically deriving ARP table entries from incoming packets (referred to as *gleaning*). |
| AppleTalk route cache | Indicates whether fast switching is enabled on the interface. |

The following is sample output from the **show appletalk interface brief** command:

```
Router# show appletalk interface brief

Interface   Address     Config        Status/Line Protocol   Atalk Protocol
TokenRing0  108.36      Extended      up                     down
TokenRing1  unassigned  not config'd  administratively down  n/a
Ethernet0   10.82       Extended      up                     up
Serial0     unassigned  not config'd  administratively down  n/a
Ethernet1   30.83       Extended      up                     up
Serial1     unassigned  not config'd  administratively down  n/a
Serial2     unassigned  not config'd  administratively down  n/a
Serial3     unassigned  not config'd  administratively down  n/a
Serial4     unassigned  not config'd  administratively down  n/a
Serial5     unassigned  not config'd  administratively down  n/a
Fddi0       50001.82    Extended      administratively down  down
Ethernet2   unassigned  not config'd  up                     n/a
Ethernet3   9993.137    Extended      up                     up
Ethernet4   40.82       Non-Extended  up                     up
Ethernet5   unassigned  not config'd  administratively down  n/a
Ethernet6   unassigned  not config'd  administratively down  n/a
Ethernet7   unassigned  not config'd  administratively down  n/a
```

Table 23 describes the fields shown in the display.

*Table 23 show appletalk interface brief Field Descriptions*

| Field | Description |
|---|---|
| Interface | Interface type and number. |
| Address | Address assigned to the interface. |

*Table 23 show appletalk interface brief Field Descriptions (continued)*

| Field | Description |
|---|---|
| Config | How the interface is configured. Possible values are extended, nonextended, and not configured. |
| Status/Line Protocol | Whether the software processes that handle the line protocol believe the interface is usable (that is, whether *keepalives* are successful). |
| Atalk Protocol | Whether AppleTalk routing is up and running on the interface. |

The following sample output displays the **show appletalk interface** command when AppleTalk RTMP stub mode is enabled. The last line of the output notes that this mode is turned on.

```
Router# show appletalk interface ethernet 2

Ethernet2 is up, line protocol is up
  AppleTalk cable range is 30-30
  AppleTalk address is 30.1, Valid
  AppleTalk zone is "Zone30-30"
  AppleTalk address gleaning is disabled
  AppleTalk route cache is enabled
  AppleTalk RTMP stub mode is enabled
```

## Related Commands

| Command | Description |
|---|---|
| **appletalk access-group** | Assigns an access list to an interface. |
| **appletalk address** | Enables nonextended AppleTalk routing on an interface. |
| **appletalk cable-range** | Enables an extended AppleTalk network. |
| **appletalk client-mode** | Allows users to access an AppleTalk zone when dialing into an asynchronous line (on Cisco routers, only via the auxiliary port). |
| **appletalk discovery** | Places an interface into discovery mode. |
| **appletalk distribute-list in** | Filters routing updates received from other routers over a specified interface. |
| **appletalk distribute-list out** | Filters routing updates sent to other routers. |
| **appletalk free-trade-zone** | Establishes a free-trade zone. |
| **appletalk getzonelist-filter** | Filters GZL replies. |
| **appletalk glean-packets** | Derives ARP table entries from incoming packets. |
| **appletalk pre-fdditalk** | Enables the recognition of pre-FDDI Talk packets. |
| **appletalk protocol** | Specifies the routing protocol to use on an interface. |
| **appletalk route-cache** | Enables fast switching on all supported interfaces. |
| **appletalk rtmp-stub** | Enables AppleTalk RTMP stub mode. |
| **appletalk send-rtmps** | Allows the Cisco IOS software to send routing updates to its neighbors. |
| **appletalk zip-reply-filter** | Configures a ZIP reply filter. |
| **appletalk zone** | Sets the zone name for the connected AppleTalk network. |

# show appletalk macip-clients

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk macip-clients** command is not available in Cisco IOS software.

To display status information about all known MacIP clients, use the **show appletalk macip-clients** command in EXEC mode.

**show appletalk macip-clients**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show appletalk macip-clients** command:

```
Router# show appletalk macip-clients

172.31.199.1@[27001n,69a,72s] 45 secs    'S/W Test Lab'
```

Table 24 describes the fields shown in the display.

*Table 24 show appletalk macip-clients Field Descriptions*

| Field | Description |
|---|---|
| 172.31.199.1@ | Client IP address. |
| [2700ln,69a,72s] | DDP address of the registered entity, showing the network number, node address, and socket number. |
| 45 secs | Time (in seconds) since the last NBP confirmation was received. |
| ‘S/W Test Lab’ | Name of the zone to which the MacIP client is attached. |

## Related Commands

| Command | Description |
|---|---|
| **show appletalk traffic** | Displays statistics about AppleTalk traffic. |

# show appletalk macip-servers

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk macip-servers** command is not available in Cisco IOS software.

To display status information about related servers, use the **show appletalk macip-servers** command in EXEC mode.

**show appletalk macip-servers**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The information in the **show appletalk macip-servers** display can help you quickly determine the status of your MacIP configuration. In particular, the STATE field can help identify problems in your AppleTalk environment.

## Examples

The following is sample output from the **show appletalk macip-servers** command:

```
Router# show appletalk macip-servers

MACIP SERVER 1, IP 172.18.199.221,  ZONE 'S/W Test Lab' STATE is server_up
Resource #1 DYNAMIC 172.18.199.1-172.18.199.10, 1/10 IP in use
Resource #2 STATIC 172.18.199.11-172.18.199.20, 0/10 IP in use
```

Table 25 describes the fields shown in the display.

*Table 25 show appletalk macip-servers Field Descriptions*

| Field | Description |
|---|---|
| MACIP SERVER 1 | Number of the MacIP server. This number is assigned arbitrarily. |
| IP 172.18.199.221 | IP address of the MacIP server. |

*Table 25 show appletalk macip-servers Field Descriptions (continued)*

| Field | Description |
|---|---|
| ZONE 'S/W Test Lab' | AppleTalk server zone specified with the **appletalk macip server** command. |
| STATE is server_up | State of the server. Table 27 lists the possible states.<br>If the server remains in the "resource_wait" state, check that resources have been assigned to this server with either the **appletalk macip dynamic** or the **appletalk macip static** command. |
| Resource #1 DYNAMIC 172.18.199.1-172.18.199.10, 1/10 IP in use | Resource specifications defined in the **appletalk macip dynamic** and **appletalk macip static** commands. This list indicates whether the resource address was assigned dynamically or statically, identifies the IP address range associated with the resource specification, and indicates the number of active MacIP clients. |

Use the **show appletalk macip-servers** command with **show appletalk interface** to identify AppleTalk network problems, as follows:

**Step 1** Determine the state of the MacIP server using **show appletalk macip-servers**. If the STATE field continues to indicate an anomalous status (something other than "server_up," such as "resource_wait" or "zone_wait"), there is a problem.

**Step 2** Determine the status of AppleTalk routing and the specific interface using the **show appletalk interface** command.

**Step 3** If the protocol and interface are up, check the MacIP configuration commands for inconsistencies in the IP address and zone.

The STATE field of the **show appletalk macip-servers** command indicates the current state of each configured MacIP server. Each server operates according to the finite-state machine table described in Table 26. Table 27 describes the state functions listed in Table 26. These are the states that are displayed by the **show appletalk macip-servers** command.

*Table 26 MacIP Finite-State Machine Table*

| State | Event | New State | Notes |
|---|---|---|---|
| initial | ADD_SERVER | resource_wait | Server configured |
| resource_wait | TIMEOUT | resource_wait | Wait for resources |
| resource_wait | ADD_RESOURCE | zone_wait | Wait for zone seeding |
| zone_wait | ZONE_SEEDED | server_start | Register server |
| zone_wait | TIMEOUT | zone_wait | Wait until seeded |
| server_start | START_OK | reg_wait | Wait for server register |
| server_start | START_FAIL | del_server | Could not start (possible configuration error) |
| reg_wait | REG_OK | server_up | Registration successful |

*Table 26 MacIP Finite-State Machine Table (continued)*

| State | Event | New State | Notes |
|---|---|---|---|
| reg_wait | REG_FAIL | del_server | Registration failed (possible duplicate IP address) |
| reg_wait | TIMEOUT | reg_wait | Wait until register |
| server_up | TIMEOUT | send_confirms | NBP confirm all clients |
| send_confirms | CONFIRM_OK | server_up | |
| send_confirms | ZONE_DOWN | zone_wait | Zone or IP interface down; restart |
| * | ADD_RESOURCE | * | Ignore, except resource_wait |
| * | DEL_SERVER | del_server | "No server" statement (HALT) |
| * | DEL_RESOURCE | ck_resource | Ignore |
| ck_resource | YES_RESOURCS | * | Return to previous state |
| ck_resource | NO_RESOURCES | resource_wait | Shut down and wait for resources |

*Table 27 Server States*

| State | Description |
|---|---|
| ck_resource | The server verifies that at least one client range is available. If not, it deregisters NBP names and returns to the resource_wait state. |
| del_server | State at which all servers end. In this state, the server deregisters all NBP names, purges all clients, and deallocates server resources. |
| initial | The state at which all servers start. |
| resource-wait | The server waits until a client range for the server has been configured. |
| send_confirms | The server tickles active clients every minute, deletes clients that have not responded within the last 5 minutes, and checks IP and AppleTalk interfaces used by MacIP server. If the interfaces are down or have been reconfigured, the server restarts. |
| server_start | The server registers configured IPADDRESS and registers as IPGATEWAY. It then opens an ATP socket to listen for IP address assignment requests, sends NBP lookup requests for existing IPADDRESSes, and automatically adds clients with addresses within one of the configured client ranges. |
| server_up | The server has registered. Being in this state enables routing to client ranges. The server now responds to IP address assignment requests. |

*Table 27 Server States (continued)*

| State | Description |
|---|---|
| zone_wait | The server waits until the configured AppleTalk zone name for the server is up. The server will remain in this state if no such zone has been configured or if AppleTalk routing is not enabled. |
| * | An asterisk in the first column represents any state. An asterisk in the second column represents a return to the previous state. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk macip dynamic** | Allocates IP addresses to dynamic MacIP clients. |
| **appletalk macip server** | Establishes a MacIP server for a zone. |
| **appletalk macip static** | Allocates an IP address to be used by a MacIP client that has reserved a static IP address. |
| show appletalk interface | Displays the status of the AppleTalk interfaces configured in the Cisco IOS software and the parameters configured on each interface. |
| **show appletalk traffic** | Displays statistics about AppleTalk traffic. |

# show appletalk macip-traffic

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk macip-traffic** command is not available in Cisco IOS software.

To display statistics about MacIP traffic through the router, use the **show appletalk macip-traffic** command in privileged EXEC mode.

**show appletalk macip-traffic**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

Use the **show appletalk macip-traffic** command to obtain a detailed breakdown of MacIP traffic that is sent through a router from an AppleTalk to an IP network. The output from this command differs from that of the **show appletalk traffic** command, which shows normal AppleTalk traffic generated, received, or routed by the router.

## Examples

The following is sample output from the **show appletalk macip-traffic** command:

```
Router# show appletalk macip-traffic

 -- MACIP Statistics
                  MACIP_DDP_IN:    11062
              MACIP_DDP_IP_OUT:    10984
  MACIP_DDP_NO_CLIENT_SERVICE:       78
                   MACIP_IP_IN:     7619
              MACIP_IP_DDP_OUT:     7619
               MACIP_SERVER_IN:       62
              MACIP_SERVER_OUT:       52
         MACIP_SERVER_BAD_ATP:       10
       MACIP_SERVER_ASSIGN_IN:       26
      MACIP_SERVER_ASSIGN_OUT:       26
         MACIP_SERVER_INFO_IN:       26
        MACIP_SERVER_INFO_OUT:       26
```

Table 28 describes the fields shown in the display.

*Table 28 show appletalk macip-traffic Field Descriptions*

| Field | Description |
|---|---|
| MACIP_DDP_IN | Number of DDP packets received. |
| MACIP_DDP_IP_OUT | Number of DDP packets received that were sent to the IP network. |
| MACIP_DDP_NO_CLIENT_ SERVICE | Number of DDP packets received for which there is no client. |
| MACIP_IP_IN | Number of IP packets received. |
| MACIP_IP_DDP_OUT | Number of IP packets received that were sent to the AppleTalk network. |
| MACIP_SERVER_IN | Number of packets destined for MacIP servers. |
| MACIP_SERVER_OUT | Number of packets sent by MacIP servers. |
| MACIP_SERVER_BAD_ATP | Number of MacIP allocation requests received with a bad request. |
| MACIP_SERVER_ASSIGN_IN | Number of MacIP allocation requests received asking for an IP address. |
| MACIP_SERVER_ASSIGN_ OUT | Number of IP addresses assigned. |
| MACIP_SERVER_INFO_IN | Number of MacIP packets received requesting server information. |
| MACIP_SERVER_INFO_OUT | Number of server information requests answered. |

## Related Commands

| Command | Description |
|---|---|
| **show appletalk traffic** | Displays statistics about AppleTalk traffic. |

# show appletalk name-cache

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk name-cache** command is not available in Cisco IOS software.

To display a list of Name Binding Protocol (NBP) services offered by nearby routers and other devices that support NBP, use the **show appletalk name-cache** command in privileged EXEC mode.

**show appletalk name-cache**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The **show appletalk name-cache** command displays the information currently in the NBP name cache.

Support for names allows you to easily identify and determine the status of any associated device. This can be important in AppleTalk internetworks where node numbers are dynamically generated.

You can authorize the **show appletalk name-cache** command to display any AppleTalk services of interest in local zones. This contrasts with the **show appletalk nbp** command, which you use to display services registered by routers.

## Examples

The following is sample output from the **show appletalk name-cache** command:

```
Router# show appletalk name-cache

AppleTalk Name Cache:
Net     Adr   Skt  Name                 Type             Zone
4160    19    8    gatekeeper           SNMP Agent       Underworld
4160    19    254  gatekeeper.Ether4    ciscoRouter      Underworld
4160    86    8    bones                SNMP Agent       Underworld
4160    86    72   131.108.160.78       IPADDRESS        Underworld
4160    86    254  bones.Ethernet0      IPGATEWAY        Underworld
```

Table 29 describes the fields shown in the display.

*Table 29 show appletalk name-cache Field Descriptions*

| Field | Description |
|---|---|
| Net | AppleTalk network number or cable range. |
| Adr | Node address. |
| Skt | DDP socket number. |
| Name | Name of the service. |
| Type | Device type. The possible types vary, depending on the service. The following are the Cisco server types:<br>• ciscoRouter—Server is a Cisco router.<br>• SNMP Agent—Server is an SNMP agent.<br>• IPGATEWAY—Active MacIP server names.<br>• IPADDRESS—Active MacIP server addresses. |
| Zone | Name of the AppleTalk zone to which this address belongs. |

## Related Commands

| Command | Description |
|---|---|
| show appletalk nbp | Displays the contents of the NBP name registration table. |

# show appletalk nbp

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk nbp** command is not available in Cisco IOS software.

To display the contents of the Name Binding Protocol (NBP) name registration table, use the **show appletalk nbp** command in EXEC mode.

**show appletalk nbp**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The **show appletalk nbp** command lets you identify specific AppleTalk nodes. It displays services registered by the router. In contrast, use the **show appletalk name-cache** command to display any AppleTalk services of interest in local zones.

Routers with active AppleTalk interfaces register each interface separately. The Cisco IOS software generates a unique interface NBP name by appending the interface type name and unit number to the router name. For example, for the router named "router" that has AppleTalk enabled on Ethernet interface 0 in the zone Marketing, the NBP registered name is as follows:

```
router.Ethernet0:ciscoRouter@Marketing
```

Registering each interface on the router provides you with an indication that the device is configured and operating properly.

One name is registered for each interface. Other service types are registered once for each zone.

The Cisco IOS software deregisters the NBP name if AppleTalk is disabled on the interface for any reason.

## Examples

The following is sample output from the **show appletalk nbp** command:

```
Router# show appletalk nbp

Net  Adr Skt Name                    Type           Zone
```

```
4160 211 254 pag.Ethernet0           ciscoRouter     Low End SW Lab
4160 211   8 pag                     SNMP Agent      Low End SW Lab
4172  84 254 pag.TokenRing0          ciscoRouter     LES Tokenring
4172  84   8 pag                     SNMP Agent      LES Tokenring
200  75 254 myrouter. Ethernet1      ciscoRouter     Marketing    *
```

Table 30 describes the fields shown in the display, as well as other fields that may also be displayed.

***Table 30 show appletalk nbp Field Descriptions***

| Field | Description |
|---|---|
| Net | AppleTalk network number. |
| Adr | Node address. |
| Skt | DDP socket number. |
| Name | Name of the service. |
| Type | Device type. The possible types vary, depending on the service. The following are the Cisco server types:<br>• ciscoRouter—Cisco routers displayed by port.<br>• SNMP Agent—SNMP agents displayed by zone if AppleTalk SNMP-over-DDP is enabled.<br>• IPGATEWAY—Active MacIP server names.<br>• IPADDRESS—Active MacIP server addresses. |
| Zone | Name of the AppleTalk zone to which this address belongs. |
| * | An asterisk in the right margin indicates that the name registration is pending confirmation. |

## Related Commands

| Command | Description |
|---|---|
| show appletalk name-cache | Displays a list of NBP services offered by nearby routers and other devices that support NBP. |

# show appletalk neighbors

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk neighbors** command is not available in Cisco IOS software.

To display information about the AppleTalk routers that are directly connected to any of the networks to which this router is directly connected, use the **show appletalk neighbors** command in EXEC mode.

**show appletalk neighbors** [*neighbor-address*]

## Syntax Description

| | |
|---|---|
| *neighbor-address* | (Optional) Displays information about the specified neighbor router. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If no neighbor address is specified, this command displays information about all AppleTalk routers.

The local router determines the AppleTalk network topology from its neighboring routers and learns from them most of the other information it needs to support the AppleTalk protocols.

## Examples

The following is sample output from the **show appletalk neighbors** command:

```
Router# show appletalk neighbors

AppleTalk neighbors:
  17037.2      anger.Ethernet0/0        Ethernet0/0, uptime 8:33:27, 2 secs
               Neighbor is reachable as a RTMP peer
  17037.108     Ethernet0/0, uptime 8:33:21, 7 secs
               Neighbor is reachable as a RTMP peer
  17037.248     Ethernet0/0, uptime 8:33:30, 4 secs
               Neighbor is reachable as a RTMP peer
  17046.2      anger.Ethernet0/1        Ethernet0/1, uptime 8:33:27, 2 secs
               Neighbor is reachable as a RTMP peer
  17435.87     firewall.Ethernet0/0     Ethernet0/3, uptime 8:33:27, 6 secs
               Neighbor is reachable as a RTMP peer
  17435.186    the-wall.Ethernet0       Ethernet0/3, uptime 8:33:24, 5 secs
               Neighbor is reachable as a RTMP peer
  17435.233    teach-gw.Ethernet0       Ethernet0/3, uptime 8:33:24, 7 secs
               Neighbor is reachable as a RTMP peer
```

```
17036.1      other-gw.Ethernet5 Ethernet0/5, uptime 8:33:29, 9 secs
          Neighbor is reachable as a RTMP peer
4021.5       boojum.Hssi4/0   Hssi1/0, uptime 10:49:02, 0 secs
      Neighbor has restarted 1 time in 8:33:11.
          Neighbor is reachable as a static peer
```

Table 31 describes the fields shown in this display. Depending on the configuration of the **appletalk lookup-type** and **appletalk name-lookup-interval** commands, a node name as well as a node address also may be shown in this display.

***Table 31 show appletalk neighbors Field Descriptions***

| Field | Description |
|---|---|
| 31.86 | AppleTalk address of the neighbor router. |
| Ethernet0/0 | Router interface through which the neighbor router can be reached. |
| uptime 133:28:06 | Amount of time (in hours, minutes, and seconds) that the Cisco IOS software has received this neighboring router's routing updates. |
| 2 secs | Time (in seconds) since the software last received an update from the neighbor router. |
| Neighbor is reachable as a RTMP peer<br>Neighbor is reachable as a static peer | Indicates how the route to this neighbor was learned. |
| Neighbor is down.<br>Neighbor has restarted 1 time | Indicates whether neighbor is up or down, and number of times it has restarted in the specified time interval, displayed in the format hours:minutes:seconds. |

The following is sample output from the **show appletalk neighbors** command when you specify the AppleTalk address of a particular neighbor:

```
Router# show appletalk neighbors 69.163

Neighbor 69.163, Ethernet0, uptime 268:00:52, last update 7 secs ago
  We have sent queries for 299 nets via 214 packets.
  Last query was sent 4061 secs ago.
  We received 152 replies and 0 extended replies.
  We have received queries for 14304 nets in 4835 packets.
  We sent 157 replies and 28 extended replies.
  We received 0 ZIP notifies.
  We received 0 obsolete ZIP commands.
  We received 4 miscellaneous ZIP commands.
  We received 0 unrecognized ZIP commands.
  We have received 92943 routing updates.
  Of the 92943 valid updates, 1320 entries were invalid.
  We received 1 routing update which were very late.
  Last update had 0 extended and 2 nonextended routes.
  Last update detail: 2 old
```

Table 32 describes the fields shown in this display. Depending on the configuration of the **appletalk lookup-type** and **appletalk name-lookup-interval** commands, a node name as well as a node address can be shown in this display.

*Table 32 show appletalk neighbors Field Descriptions—Specific Address*

| Field | Description |
|---|---|
| Neighbor 69.163 | AppleTalk address of the neighbor. |
| Ethernet0 | Interface through which the router receives this neighbor's routing updates. |
| uptime 268:00:52 | Amount of time (in hours, minutes, and seconds) that the Cisco IOS software has received this neighboring router's routing updates. |
| last update 7 secs ago | Time (in seconds) since the software last received an update from the neighbor router. |
| sent queries | Number of queries sent to neighbor networks and the number of query packets sent. |
| Last query was sent | Time (in seconds) since last query was sent. |
| received replies | Number of RTMP replies heard from this neighbor. |
| extended replies | Number of extended RTMP replies received from this neighbor. |
| ZIP notifies | Number of ZIP notify packets received from this neighbor. |
| obsolete ZIP commands | Number of nonextended-only (obsolete) ZIP commands received from this neighbor. |
| miscellaneous ZIP commands | Number of ZIP commands (for example, GNI, GZI, and GMZ) from end systems rather than from routers. |
| unrecognized ZIP commands | Number of bogus ZIP packets received from this neighbor. |
| routing updates | Number of RMTP updates received from this neighbor. |
| entries were invalid | Of the routing update packets received from this neighbor, the number of invalid entries discarded. |
| Last update detail | Of the routing update packets received from this neighbor, the number already known about. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk lookup-type** | Specifies which NBP service types are retained in the name cache. |
| **appletalk name-lookup-interval** | Sets the interval between service pollings by the router on its AppleTalk interfaces. |

# show appletalk remap

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk remap** command is not available in Cisco IOS software.

To display domain remapping information, use the **show appletalk remap** EXEC command.

**show appletalk remap** [**domain** *domain-number* [{**in** | **out**} [{**to** | **from**} *domain-network*]]]

## Syntax Description

| | |
|---|---|
| **domain** *domain-number* | (Optional) Number of an AppleTalk domain about which to display remapping information. It can be a decimal integer from 1 through 1,000,000. |
| **in** | (Optional) Displays remapping information about inbound packets, that is, on packets entering the local segment of the domain. |
| **out** | (Optional) Displays remapping information about outbound packets, that is on packets exiting from the local segment of the domain. |
| **to** | (Optional) Displays information about the network number or cable range to which an address has been remapped. |
| **from** | (Optional) Displays information about the original network number or cable range. |
| *domain-network* | (Optional) Number of an AppleTalk network. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.3 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If you omit all options, keywords, and arguments, the **show appletalk remap** command displays all remapping information about all domains.

## Examples

The following is sample output from the **show appletalk remap** command:

```
Router# show appletalk remap

       AppleTalk   Remapping  Table :
       ------------------------------
```

```
Domain 1 : Domain 1   State : Active
----------------------------------------

Direction : IN

Domain Net(Cable)       Remapped to         Status
3     - 3               100   - 100          Good

 Direction : OUT

Domain Net(Cable)       Remapped to         Status
1     - 1               200   - 200          Good

Domain 2 : Domain 2   State : Active
----------------------------------------

Direction : IN

Domain Net(Cable)       Remapped to         Status

Direction : OUT

Domain Net(Cable)       Remapped to         Status
2     - 2               400   - 400          Good
100   - 100             401   - 401          Good
```

The following is sample output from the **show appletalk remap** command when you specify a domain number:

```
Router# show appletalk remap domain 1

       AppleTalk   Remapping  Table :
       ----------------------------

       Domain 1 : Domain 1   State : Active
       ----------------------------------------

       Direction : IN

       Domain Net(Cable)       Remapped to         Status
       3     - 3               100   - 100          Good

       Direction : OUT

       Domain Net(Cable)       Remapped to         Status
       1     - 1               201   - 201          Good
```

The following is sample output from the **show appletalk remap** command to display inbound remappings for AppleTalk network 100:

```
Router# show appletalk remap domain 1 in from 100

       AppleTalk   Remapping  Table :
             ----------------------------

For the Remap 100  the Domain  net is 3
```

Table 33 describes the fields shown in the display.

*Table 33 show appletalk remap Field Descriptions*

| Field | Description |
|---|---|
| Domain | Number of the AppleTalk IP domain. |
| State | State of the domain. It can be either Active or Nonactive. |
| Direction | Indicates whether the mapping is an inbound one (for packets entering the local domain segment) or an outbound one (for packets leaving the local domain segment). |
| Domain Net (Cable) | Network number or cable range that is being remapped. |
| Remapped to | Number or range of numbers to which a network number or cable range has been remapped. |
| Status | It can be one of the following values:<br>• Unassigned—The network number or cable range was just remapped.<br>• Unzipped—The remapped network number or cable range is trying to acquire a zone list. This state is possible for inbound remapped network numbers only.<br>• Suspect—The Cisco IOS software suspects that it already has this entry in the routing table, and it is performing loop detection for this entry. This state is possible for inbound remappings only.<br>• Good—The remapped entry has a complete zone list and, for inbound remappings only, it is in the main routing table.<br>• Bad—The remapping entry is about to be deleted from the remapping table. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk domain remap-range** | Remaps ranges of AppleTalk network numbers or cable ranges between two segments of a domain. |

# show appletalk route

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk route** command is not available in Cisco IOS software.

To display all entries or specified entries in the AppleTalk routing table, use the **show appletalk route** EXEC command.

**show appletalk route** [*network* | *type number*]

## Syntax Description

| | |
|---|---|
| *network* | (Optional) Displays the routing table entry for the specified network. |
| *type number* | (Optional) Displays the routing table entries for networks that can be reached via the specified interface type and number. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(13)T | The E - EIGRP field was removed from command output. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If you omit the arguments, this command displays all entries in the routing table.

## Examples

The following is sample output from the **show appletalk route** command for a nonextended AppleTalk network:

```
Router# show appletalk route

Codes: R - RTMP derived, C - connected, A - AURP
P - proxy, S - static
5 routes in internet
C Net 258 directly connected, 1431 uses, Ethernet0, zone Twilight
R Net 6 [1/G] via 258.179, 8 sec, 0 uses, Ethernet0, zone The O
C Net 11 directly connected, 472 uses, Ethernet1, zone No Parking
R Net 2154 [1/G] via 258.179, 8 sec, 6892 uses, Ethernet0, zone LocalTalk
S Net 1111 via 258.144, 0 uses, Ethernet0, no zone set
[hops/state] state can be one of G:Good, S:Suspect, B:Bad
```

The following is sample output from the **show appletalk route** command for an extended AppleTalk network:

```
Router# show appletalk route

Codes: R - RTMP derived, C - connected, A - AURP
P - proxy, S - static
5 routes in internet
E Net 10000 -10000 [1/G] via 300.199, 275 sec, Ethernet2, zone France
R Net 890 [2/G] via 4.129, 1 sec, Ethernet0, zone release lab
R Net 901 [2/G] via 4.129, 1 sec, Ethernet0, zone Dave's House
C Net 999-999 directly connected, Serial3, zone Magnolia Estates
R Net 2003 [4/G] via 80.129, 6 sec, Ethernet4, zone Bldg-13
```

The following is sample output from the **show appletalk route** command when AppleTalk load balancing is enabled. The output displayed shows additional equal-cost path entries.

```
Router# show appletalk route

Codes: R - RTMP derived, C - connected, A - AURP
       P - proxy, S - static
759 routes in internet. Up to 4 parallel paths allowed.

The first zone listed for each entry is its default (primary) zone.

R Net 20-20 [2/G] via 60.172, 1 sec, Ethernet1/2,
                  via 1010.68 1 sec, Ethernet1/3,
                  via 70.199, 2 sec, Ethernet1/5, zone zone20
R Net 32-32 [9/G] via 60172, 2 sec, Ethernet1/2
                  via 1010.68, 2 sec, Ethernet1/3,
                  via 70.199, 2 sec, Ethernet1/5,
                  Zone: "Executive Briefing Center"
R Net 43-43 [7/G] via 60.172, 2 sec, Ethernet1/2,
                  via 1010.68, 2 sec, Ethernet1/3,
                  via 70.199, 2 sec, Ethernet1/5, zone ISDN Tunnel
R Net 57-57 [6/G] via 60.172, 2 sec, Ethernet1/2,
                  via 1010.68, 2 sec, Ethernet1/3,
                  via 70.199, 2 sec, Ethernet1/5, zone zone-home-bumi
```

Table 34 describes the fields shown in the two displays, as well as some fields not shown but that may also be displayed. Depending on the configuration of the **appletalk lookup-type** and **appletalk name-lookup-interval** global configuration commands, a node name may appear in this display instead of a node address.

***Table 34 show appletalk route Field Descriptions***

| Field | Description |
|---|---|
| Codes: | Codes defining how the route was learned. |
| R - RTMP derived | Route learned from an RTMP update. |
| C - Connected | Directly connected network. |
| A - AURP | Route learned from an AURP update. |
| S - Static | Statically defined route. |

*Table 34 show appletalk route Field Descriptions (continued)*

| Field | Description |
|---|---|
| P - Proxy | Proxy route. Proxy routes are included in outgoing RTMP updates as if they were directly connected routes (although they are not really directly connected), since they are not associated with any interface. Whenever an NBQ BrRq for the zone in question is generated by anyone anywhere in the internetwork, an NBP FwdReq is directed to any router connected to the proxy route. The Phase 2 router (which is the only router directly connected) converts the FwdReq to LkUps, which are understood by Phase 1 routers, and sends them to every network in the zone. |
| routes | Number of routes in the table. |
| Net | Network to which the route goes. |
| Net 999-999 | Cable range to which the route goes. |
| directly connected | Indicates that the network is directly connected to the router. |
| uses | Fair estimate of the number of times a route gets used. It actually indicates the number of times the route has been selected for use prior to operations such as access list filtering. |
| Ethernet | Possible interface through which updates to the remote network will be sent. |
| zone | Name of zone of which the destination network is a member. |
| [1/G] | Number of hops to this network, followed by the state of the link to that network. The state can be one of the following letters:<br>• G—Link is good.<br>• S—Link is suspect.<br>• B—Link is bad.<br>The state is determined from the routing updates that occur at 10-second intervals. A separate and nonsynchronized event occurs at 20-second intervals, checking and flushing the ratings for particular routes that have not been updated. For each 20-second period that passes with no new routing information, a rating changes from G to S and then from S to B. After 1 minute with no updates, that route is flushed. Every time the Cisco IOS software receives a useful update, the status of the route in question is reset to G. Useful updates are those advertising a route that is as good or better than the one currently in the table.<br>When an AppleTalk route is poisoned by another router, its metric gets changed to poisoned (that is, 31 hops). The software then will age this route normally during a holddown period, during which the route will still be visible in the routing table. |
| via 258.179 | Address of a router that is the next hop to the remote network. |

*Table 34 show appletalk route Field Descriptions (continued)*

| Field | Description |
|---|---|
| via gatekeeper | Node name of a router that is the next hop to the remote network. |
| sec | Number of seconds that have elapsed since an RMTP update about this network was last received. |

The following is sample output from the **show appletalk route** command when you specify a network number:

```
Router# show appletalk route 69

Codes: R - RTMP derived, C - connected, A - AURP
P - proxy, S - static

The first zone listed for each entry is its default (primary) zone.

R Net 69-69 [2/G] via gatekeeper, 0 sec, Ethernet0, zone Empty Guf
Route installed 125:20:21, updated 0 secs ago
Next hop: gatekeeper, 2 hops away
Zone list provided by gatekeeper
Route has been updated since last RTMP was sent
Valid zones: "Empty Guf"
```

Table 35 describes the fields shown in the display.

*Table 35 show appletalk route Field Descriptions—Specified Network*

| Field | Description |
|---|---|
| Codes: | Codes defining how the route was learned. |
| R - RTMP derived | Route learned from an RTMP update. |
| C - Connected | Directly connected network. |
| A - AURP derived | Route learned from an AURP update. |
| P - Proxy | Proxy route. |
| S - Static | Static route. |
| routes in internet | Number of routes in the Apple Talk internet. |
| Net | Cable range to which the route goes. This is the number of the network you specified on the **show appletalk route** command line. |

*Table 35 show appletalk route Field Descriptions—Specified Network (continued)*

| Field | Description |
|---|---|
| [2/G] | Number of hops to this network, followed by the state of the link to that network. The state can be one of the following letters:<br>• G—Link is good.<br>• S—Link is suspect.<br>• B—Link is bad.<br>The state is determined from the routing updates that occur at 10-second intervals. A separate and nonsynchronized event occurs at 20-second intervals, checking and flushing the ratings for particular routes that have not been updated. For each 20-second period that passes with no new routing information, a rating changes from G to S and then from S to B. After 1 minute with no updates, that route is flushed. Every time the Cisco IOS software receives a useful update, the status of the route in question is reset to G. Useful updates are those advertising a route that is as good or better than the one currently in the table.<br>When an AppleTalk route is poisoned by another router, its metric gets changed to poisoned (that is, 31 hops). The software then will age this route normally during a holddown period, during which the route will still be visible in the routing table. |
| via gatekeeper | Address or node name of a router that is the next hop to the remote network. |
| 0 sec | Number of seconds that have elapsed since an RMTP update about this network was last received. |
| Ethernet0 | Possible interface through which updates to the remote network will be sent. |
| zone Empty Guf | Name of zone of which the destination network is a member. |
| Route installed 125:20:21 | Length of time (in hours, minutes, and seconds) since this route was first learned about. |
| updated 0 secs ago | Time (in seconds) since the software received an update for this route. |
| Next hop: gatekeeper | Address or node name of the router that is one hop away. |
| 2 hops away | Number of hops to the network specified in the **show appletalk route** command line. |
| Zone list provided by gatekeeper | Address or node name of the router that provided the zone list included with the RTMP update. |
| Route has been updated since last RTMP was sent | Indicates whether the software has received a routing update from a neighboring router since the last time the software sent an RTMP update for this route. |
| Valid zones: “Empty Guf” | Zone names that are valid for this network. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk lookup-type** | Specifies which NBP service types are retained in the name cache. |
| **appletalk maximum-paths** | Defines the maximum number of equal-cost paths the router should use when balancing the traffic load. |
| **appletalk name-lookup-interval** | Sets the interval between service pollings by the router on its AppleTalk interfaces. |
| **appletalk proxy-nbp** | Assigns a proxy network number for each zone in which there is a router that supports only nonextended AppleTalk. |
| **clear appletalk route** | Deletes entries from the routing table. |

# show appletalk sockets

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk sockets** command is not available in Cisco IOS software.

To display all information or specified information about process-level operation in the sockets of an AppleTalk interface, use the **show appletalk sockets** privileged EXEC command.

**show appletalk sockets** [*socket-number*]

## Syntax Description

| | |
|---|---|
| *socket-number* | (Optional) Displays information about the specified socket number. |

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If no socket number is specified, this command displays information about all sockets.

## Examples

The following is sample output from the **show appletalk sockets** command when you do not specify a socket number:

```
Router# show appletalk sockets

Socket   Name       Owner         Waiting/Processed
1        RTMP       AT RTMP          0    148766
2        NIS        AT NBP           0    15642
4        AEP        AT Maintenance   0    0
6        ZIP        AT ZIP           0    13619
8        SNMP       AT SNMP          0    0
253      PingServ   AT Maintenance   0    0
```

The following is sample output from the **show appletalk sockets** command when you do specify a socket number:

```
Router# show appletalk sockets 6

6        ZIP       AT ZIP           0    13619
```

Table 36 describes the fields shown in these displays.

*Table 36 show appletalk sockets Field Descriptions*

| Field | Description |
|---|---|
| Socket | Socket number. |
| Name | Name of the socket. |
| Owner | Process that is managing communication with this socket. |
| Waiting/Processed | Number of packets waiting to be processed by the socket, and number of packets that have been processed by the socket since it was established. |

# show appletalk static

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk static** command is not available in Cisco IOS software.

To display information about the statically defined routes, including floating static routes, use the **show appletalk static** EXEC command.

**show appletalk static**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show appletalk static** command:

```
Router# show appletalk static

    AppleTalk    Static    Entries
---------------------------------------
Network     NextIR     Zone     Status

100-109     1.10       Zone100   A
200         1.10       Zone200   A
300-309     1.10       Zone300   A(Floating)
```

Table 37 describes the fields shown in the display.

*Table 37 show appletalk static Field Descriptions*

| Field | Description |
|---|---|
| Network | For an extended AppleTalk network, the network range. For a nonextended AppleTalk network, the network number. |
| NextIR | The next internetwork router. |

*Table 37 show appletalk static Field Descriptions (continued)*

| Field | Description |
|---|---|
| Zone | The AppleTalk zone name. |
| Status | The status of the route, which can be one of the following:<br>• A—The static route is active.<br>• A(Floating)—The floating static route is active.<br>• N/A—The static route is not active.<br>• N/A(Floating)—The floating static route is not active. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk static cable-range** | Defines a static route or a floating static route on an extended network. |
| **appletalk static network** | Defines a static route or a floating static route on a nonextended network. |
| **show appletalk neighbors** | Displays information about the AppleTalk routers that are directly connected to any of the networks to which this router is directly connected. |
| show appletalk route | Displays all entries or specified entries in the AppleTalk routing table. |

# show appletalk traffic

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk traffic** command is not available in Cisco IOS software.

To display statistics about AppleTalk traffic, including MacIP traffic, use the **show appletalk traffic** EXEC command.

**show appletalk traffic**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(13)T | The EIGRP section was removed from command output. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

For MacIP traffic, an IP alias is established for each MacIP client and for the IP address of the MacIP server if it does not match an existing IP interface address. To display the client aliases, use the **show ip aliases** command.

## Examples

The following is sample output from the **show appletalk traffic** command:

```
Router# show appletalk traffic

AppleTalk statistics:
  Rcvd:  357471 total, 0 checksum errors, 264 bad hop count
         321006 local destination, 0 access denied
         0 for MacIP, 0 bad MacIP, 0 no client
         13510 port disabled, 2437 no listener
         0 ignored, 0 martians
  Bcast: 191881 received, 270406 sent
  Sent:  550293 generated, 66495 forwarded, 1840 fast forwarded, 0 loopback
         0 forwarded from MacIP, 0 MacIP failures
         436 encapsulation failed, 0 no route, 0 no source
  DDP:   387265 long, 0 short, 0 macip, 0 bad size
  NBP:   302779 received, 0 invalid, 0 proxies
         57875 replies sent, 59947 forwards, 418674 lookups, 432 failures
  RTMP:  108454 received, 0 requests, 0 invalid, 40189 ignored
```

```
        90170 sent, 0 replies
  AURP: 0 Open Requests, 0 Router Downs
        0 Routing Information sent, 0 Routing Information received
        0 Zone Information sent, 0 Zone Information received
        0 Get Zone Nets sent, 0 Get Zone Nets received
        0 Get Domain Zone List sent, 0 Get Domain Zone List received
AppleTalk statistics:
        0 bad sequence
  ATP:   0 received
  ZIP:   13619 received, 33633 sent, 32 netinfo
  Echo:  0 received, 0 discarded, 0 illegal
         0 generated, 0 replies sent
  Responder:  0 received, 0 illegal, 0 unknown
         0 replies sent, 0 failures
  AARP:  85 requests, 149 replies, 100 probes
         84 martians, 0 bad encapsulation, 0 unknown
         278 sent, 0 failures, 29 delays, 315 drops
  Lost: 0 no buffers
  Unknown: 0 packets
  Discarded: 130475 wrong encapsulation, 0 bad SNAP discriminator
```

Table 38 describes the fields shown in the display.

***Table 38 show appletalk traffic Field Descriptions***

| Field | Description |
|---|---|
| Rcvd: | This section describes the packets received. |
| 357741 total | Total number of packets received. |
| 0 checksum errors | Number of packets that were discarded because their DDP checksum was incorrect. The DDP checksum is verified for packets that are directed to the router. It is not verified for forwarded packets. |
| 264 bad hop count | Number of packets discarded because they had traveled too many hops. |
| 321006 local destination | Number of packets addressed to the local router. |
| 0 access denied | Number of packets discarded because they were denied by an access list. |
| 0 for MacIP | Number of AppleTalk packets the Cisco IOS software received that were encapsulated within an IP packet. |
| 0 bad MacIP | Number of bad MacIP packets the software received and discarded. These packets may have been malformed or may not have included a destination address. |
| 0 no client | Number of packets discarded because they were directed to a nonexistent MacIP client. |
| 13510 port disabled | Number of packets discarded because routing was disabled for that port (extended AppleTalk only). This is the result of a configuration error or a packet's being received while the software is in verification/discovery mode. |
| 2437 no listener | Number of packets discarded because they were directed to a socket that had no services associated with it. |

*Table 38 show appletalk traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| 0 ignored | Number of routing update packets ignored because they were from a misconfigured neighbor or because routing was disabled. |
| 0 martians | Number of packets discarded because they contained bogus information in the DDP header. What distinguishes this error from the others is that the data in the header is never valid as opposed to not being valid at a given point in time. |
| Bcast: | Number of broadcast packets sent and received. |
| 191881 received | Number of broadcast packets received. |
| 270406 sent | Number of broadcast packets sent. |
| Sent: | Number of packets transmitted. |
| 550293 generated | Number of packets generated. |
| 66495 forwarded | Number of packets forwarded using routes derived from process switching. |
| 1840 fast forwarded | Number of packets sent using routes from the fast-switching cache. |
| 0 loopback | Number of packets that were broadcast out an interface on the router for which the device simulated reception of the packet because the interface does not support sending a broadcast packet to itself. The count is cumulative for all interfaces on the device. |
| 0 forwarded from MacIP | Number of IP packets forwarded that were encapsulated within an AppleTalk DDP packet. |
| 0 MacIP failures | Number of MacIP packets sent that were corrupted during the MacIP encapsulation process. |
| 436 encapsulation failed | Number of packets the router could not send because encapsulation failed. This can happen because encapsulation of the DDP packet failed or because AARP address resolution failed. |
| 0 no route | Number of packets the router could not send because it knew of no route to the destination. |
| 0 no source | Number of packets the router sent when it did not know its own address. This should happen only if something is seriously wrong with the router or network configuration. |
| DDP: | This section describes DDP packets seen. |
| 387265 long | Number of DDP long packets. |
| 0 short | Number of DDP short packets. |
| 0 macip | Number of IP packets encapsulated in an AppleTalk DDP packet that the router sent. |
| 0 bad size | Number of packets whose physical packet length and claimed length differed. |
| NBP: | This section describes NBP packets. |

*Table 38 show appletalk traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| 302779 received | Total number of NBP packets received. |
| 0 invalid | Number of invalid NBP packets received. Causes include invalid op code and invalid packet type. |
| 0 proxies | Number of NBP proxy lookup requests received by the router when it was configured for NBP proxy transition usage. |
| 57875 replies sent | Number of NBP replies sent. |
| 59947 forwards | Number of NBP forward requests received or sent. |
| 418674 lookups | Number of NBP lookups received. |
| 432 failures | Generic counter that increments any time the NBP process experiences a problem. |
| RTMP: | This section describes RTMP packets. |
| 108454 received | Total number of RTMP packets received. |
| 0 requests | Number of RTMP requests received. |
| 0 invalid | Number of invalid RTMP packets received. Causes include invalid op code and invalid packet type. |
| 40189 ignored | Number of RTMP packets ignored. One reason for this is that the interface is still in discovery mode and is not yet initialized. |
| 90170 sent | Number of RTMP packets sent. |
| 0 replies | Number of RTMP replies sent. |
| ATP: | This section describes ATP packets. |
| 0 received | Number of ATP packets the router received. |
| ZIP: | This section describes ZIP packets. |
| 13619 received | Number of ZIP packets the router received. |
| 33633 sent | Number of ZIP packets the router sent. |
| 32 netinfo | Number of packets that requested port configuration via ZIP GetNetInfo requests. These are commonly used during node startup and are occasionally used by some AppleTalk network management software packages. |
| Echo: | This section describes AEP packets. |
| 0 received | Number of AEP packets the router received. |
| 0 discarded | Number of AEP packets the router discarded. |
| 0 illegal | Number of illegal AEP packets the router received. |
| 0 generated | Number of AEP packets the router generated. |
| 0 replies sent | Number of AEP replies the router sent. |
| Responder: | This section describes Responder Request packets. |
| 0 received | Number of Responder Request packets the router received. |
| 0 illegal | Number of illegal Responder Request packets the router received. |

*Table 38 show appletalk traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| 0 unknown | Number of Responder Request packets the router received that it did not recognize. |
| 0 replies sent | Number of Responder Request replies the router sent. |
| 0 failures | Number of Responder Request replies the router could not send. |
| AARP: | This section describes AARP packets. |
| 85 requests | Number of AARP requests the router received. |
| 149 replies | Number of AARP replies the router received. |
| 100 probes | Number of AARP probe packets the router received. |
| 84 martians | Number of AARP packets the router did not recognize. If you start seeing an inordinate number of martians on an interface, check whether a bridge has been inserted into the network. When a bridge is starting up, it floods the network with AARP packets. |
| 0 bad encapsulation | Number of AARP packets received that had an unrecognizable encapsulation. |
| 0 unknown | Number of AARP packets the router did not recognize. |
| 278 sent | Number of AARP packets the router sent. |
| 0 failures | Number of AARP packets the router could not send. |
| 29 delays | Number of AppleTalk packets delayed while waiting for the results of an AARP request. |
| 315 drops | Number of AppleTalk packets dropped because an AARP request failed. |
| Lost: 0 no buffers | Number of packets lost because of lack of buffer space. |
| Unknown: 0 packets | Number of packets whose protocol could not be determined. |
| Discarded: | This section describes the number of packets that were discarded. |
| 130475 wrong encapsulation | Number of packets discarded because they had the wrong encapsulation.That is, nonextended AppleTalk packets were on an extended AppleTalk network, or vice versa. |
| 0 bad SNAP discrimination | Number of packets discarded because they had the wrong SNAP discriminator. This occurs when another AppleTalk device has implemented an obsolete or incorrect packet format. |
| AURP: | This section describes AppleTalk Update Routing Protocol packets. |
| 0 open requests | Total number of open requests. |
| 0 router downs | Number of router down packets received. |
| 0 routing information sent | Number of routing information packets sent. |
| 0 routing information received | Number of routing information packets received. |

*Table 38 show appletalk traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| 0 zone information sent | Number of ZIP packets sent. |
| 0 zone information received | Number of ZIP packets received. |
| 0 get zone nets sent | Number of get zone network packets sent requesting zone information. |
| 0 get zone nets received | Number of get zone network packets received requesting zone information. |
| 0 get domain zone list sent | Number of get domain zone list packets sent requesting domain zone list information. |
| 0 get domain zone list received | Number of get domain zone list packets received requesting domain zone list information. |
| 0 bad sequence | Number of AURP packets received out of sequence. |

## Related Commands

| Command | Description |
|---|---|
| **clear appletalk traffic** | Resets AppleTalk traffic counters. |
| **show appletalk macip-traffic** | Displays statistics about MacIP traffic through the router. |
| **show ip aliases** | Displays the IP addresses mapped to TCP ports (aliases) and SLIP addresses, which are treated similarly to aliases. |

# show appletalk zone

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show appletalk zone** command is not available in Cisco IOS software.

To display all entries or specified entries in the zone information table, use the **show appletalk zone** EXEC command.

**show appletalk zone** [*zone-name*]

## Syntax Description

| | |
|---|---|
| *zone-name* | (Optional) Displays the entry for the specified zone. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 10.0 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If no zone name is specified, the command displays all entries in the zone information table.

You can use this command on extended and nonextended networks.

A zone name can be associated with multiple network addresses or cable ranges, or both. There is not a one-to-one correspondence between a zone name and a LAN; a zone name may correspond to one or more networks (LANs or network interfaces). This means that a zone name will effectively replace multiple network addresses in zone filtering. This is reflected in the output of the **show appletalk zone** command. For example, the zone named *Mt. View 1* in the following example is associated with two network numbers and four cable ranges.

## Examples

The following is sample output from the **show appletalk zone** command:

```
Router# show appletalk zone

Name                    Network(s)
Engineering             3 29-29 4042-4042
customer eng            19-19
CISCO IP                4140-4140
Dave's House            3876 3924 5007
Narrow Beam             4013-4013 4023-4023 4037-4037 4038-4038
Low End SW Lab          6160 4172-4172 9555-9555 4160-4160
Tir'n na'Og             199-199
```

```
Mt. View 1              7010-7010 7122 7142 7020-7020 7040-7040 7060-7060
Mt. View 2              7152 7050-7050
UDP                     1112-12
Empty Guf               69-69
Light                   80
europe                  2010 3010 3034 5004
Bldg-13                 4032 5026 61669 3012 3025 3032 5025 5027
Bldg-17                 3004 3024 5002 5006
```

The following is sample output from the **show appletalk zone** command when you specify a zone name:

```
Router# show appletalk zone CISCO IP

AppleTalk Zone Information for CISCO IP:
  Valid for nets: 4140-4140
  Not associated with any interface.
  Not associated with any access list.
```

Table 39 describes the fields shown in the display.

*Table 39 show appletalk zone Field Descriptions—Specific Zone Name*

| Field | Description |
|---|---|
| AppleTalk Zone Information for CISCO IP: | Name of the zone. |
| Valid for nets: 4140-4140 | Cable range(s) or network numbers assigned to this zone. |
| Not associated with any interface. | Interfaces that have been assigned to this zone. |
| Not associated with any access list. | Access lists that have been defined for this zone. |

## Related Commands

| Command | Description |
|---|---|
| **appletalk zone** | Sets the zone name for the connected AppleTalk network. |

# show smrp forward

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp forward**command is not available in Cisco IOS software.

To display all entries or specific entries in the Simple Multicast Routing Protocol (SMRP) forwarding table, use the **show smrp forward** EXEC command.

**show smrp forward** [**appletalk** [*group-address*]]

## Syntax Description

| | |
|---|---|
| **appletalk** | (Optional) Displays SMRP forwarding table entries for all AppleTalk networks. Currently SMRP services are supported over AppleTalk only. |
| *group-address* | (Optional) SMRP group address. All members of a group listen for multicast packets on this address. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

The SMRP forwarding table describes the relationship between the SMRP router and the distribution tree for each SMRP group on the internetwork. An SMRP router has an entry in this table for every SMRP group for which the router is forwarding data. When data for an SMRP group arrives on the parent interface, it is forwarded to each child interface.

Looking at child and parent interfaces in relation to members of an SMRP group, a child interface is a neighbor that is farther away from the SMRP creator node and a parent interface is one that is closer to the creator node.

If no SMRP group address is specified, then the **show smrp forward** command displays information for all entries in the SMRP forwarding table. For all entries, the **show smrp forward** command displays the SMRP group address, the state of the SMRP group, the parent interface and address, and one or more child interfaces and addresses.

If an SMRP group address is specified, the command displays additional information for that group showing the child count, the time elapsed since the entry was updated, and the next poll time.

**Note** Because SMRP is currently supported over AppleTalk networks only, sample output resulting from the **show smrp forward** command is the same as output from the **show smrp forward appletalk** command.

## Examples

The following is sample output from the **show smrp forward** command that shows all entries:

```
Router# show smrp forward

SMRP Forwarding Table

Group       State           Parent                  Child
Address             Interface     Address   Interface     Address
-----------------------------------------------------------------

AT 1.2     Fwd    Ethernet2    20.3      Ethernet3    30.2
AT 10.1    Fwd    Ethernet2    20.4      Ethernet4    40.2
AT 30.1    Fwd    Ethernet3    30.1      Ethernet2    20.2
```

The following is sample output from the **show smrp forward** command with the **appletalk** keyword and an SMRP group address specified:

```
Router# show smrp forward appletalk 10.1

Group        State          Parent                  Child
Address             Interface     Address   Interface     Address
-----------------------------------------------------------------

AT 10.1     Fwd    Ethernet2   20.4      Ethernet4   40.2

Child count: 1
Elapsed update time: 01:15:32
Next poll time (sec): 3
```

Table 40 describes the fields shown in the displays.

*Table 40 show smrp forward Field Descriptions*

| Field | Description |
|---|---|
| Group Address | Address of the SMRP group. |
| State | State of the group. Possible states are as follows:<br>• Join—Joining the group<br>• Fwd—Forwarding data<br>• Leave—Leaving the group |
| Parent Interface | Interface that receives data to be forwarded. |
| Parent Address | Address of the parent interface. |
| Child Interface | One or more interfaces to which data is forwarded. |
| Child Address | Address of the interface. |
| Child Count | For a specific SMRP group address, the number of children for the group. |

*Table 40 show smrp forward Field Descriptions (continued)*

| Field | Description |
|---|---|
| Elapsed update time | Time elapsed since the last change was made to the forwarding entry. |
| Next poll time | Time remaining before polling all child members. |

# show smrp globals

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp globals** command is not available in Cisco IOS software.

To display global information about Simple Multicast Routing Protocol (SMRP)—such as whether SMRP is enabled and running and settings for timers, most of which are used internally—use the **show smrp globals** EXEC command.

**show smrp globals**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Examples

The following is sample output from the **show smrp globals** command:

```
Router# show smrp globals

SMRP global information:
  SMRP is running.
  Maximum number of retries for requests is 4 times.
  Request transactions are sent every 10 seconds.
  Response transactions are sent every 100 seconds.
  Creators are polled every 60 seconds.
  Members are polled every 30 seconds.
  Hellos are sent every 10 seconds.
  Neighbors are down after not being heard from for 30 seconds.
  Poisoned routes purged after 60 seconds.
  Primary requests sent every 1 second.
  Secondary requests sent every 1 second.
```

Table 41 describes the global information shown in the display.

*Table 41 show smrp globals Field Descriptions*

| Field | Description |
|---|---|
| SMRP is running. | SMRP is enabled. |
| Maximum number of retries for requests is 4. | This value is used internally. |
| Request transactions are sent every 10 seconds. | This timer is used internally. |
| Response transactions are sent every 100 seconds. | This timer is used internally. This is a variable value that is determined by the following mathematical formula:<br>2 * *request-interval* * (*maximum-retries* +1) |
| Creators are polled every 60 seconds. | Identifies how often the Cisco IOS software polls the SMRP group creator. This timer is used internally. |
| Members are polled every 30 seconds. | Identifies how often the software polls the SMRP group members. This timer is used internally. |
| Hellos are sent every 10 seconds. | Identifies how often the software sends hello packets to its neighbors. |
| Neighbors are down after not being heard from for 30 seconds. | Identifies the time in seconds that elapses after which neighbors that are not heard from are assumed to be down. |
| Poisoned routes are purged after 60 seconds. | Poisoned routes are bad route having a distance of 255 hops. |
| Primary requests sent every 1 second. | Primary requests are requests from a secondary router requesting to become the primary router. Only a secondary router can become a primary router. |
| Secondary requests sent every 1 second. | Secondary requests are requests from a router in normal operation mode requesting to become a secondary router. Only a router in normal mode can become a secondary router. |

# show smrp group

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp group** command is not available in Cisco IOS software.

To display all entries or specific entries in the SMRP group table, use the **show smrp group** EXEC command.

**show smrp group** [**appletalk** [*group-address*]]

## Syntax Description

| | |
|---|---|
| **appletalk** | (Optional) Displays SMRP group table entries for all AppleTalk networks. Currently SMRP services are supported over AppleTalk networks only. |
| *group-address* | (Optional) SMRP group address. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

If no SMRP group address is specified, the command displays the group address, the state, and the parent and child information for all entries in the SMRP group table. If a group address is specified, the command displays the standard information plus additional information for that group showing the child count, the elapsed update time, and the next poll time.

**Note** Because SMRP is currently supported over AppleTalk networks only, sample output resulting from the **show smrp group** command is the same as output from **show smrp group appletalk** command.

An SMRP group address is an address that is based on the local network address of the network to which the creator of the SMRP group belongs.

## Examples

The following is sample output from the **show smrp group** command that shows all group table entries:

```
Router# show smrp group
```

```
SMRP Group Table
Group          Creation  Next          Creator
Address        Time      Poll  Interface     Address
------------------------------------------------------------

AT 30.1        0:04:37   22    Ethernet3     30.1
AT 40.2        0:04:35   24    Ethernet4     40.1
AT 40.1        0:04:36   23    Ethernet4     40.1
```

The following is sample output from the **show smrp group** command with the **appletalk** keyword and an SMRP group address specified:

```
Router# show smrp group appletalk 40.2

SMRP Group Table
Group       Creation  Next          Creator
Address     Time      Poll  Interface     Address
------------------------------------------------------------

AT 40.2     0:05:58   1     Ethernet4     40.1
```

Table 42 describes the fields shown in the display.

***Table 42 show smrp group Field Descriptions***

| Field | Description |
|---|---|
| Group Address | SMRP group address. AT signifies that this is an AppleTalk network group. |
| Creation Time | Elapsed time since the group was created in hours, minutes, and seconds (*hh*:*mm*:*ss*). |
| Next Poll | Time remaining until the next check is performed to determine if the creator is still active. |
| Creator Interface | Interface that the creator of the SMRP group is on. |
| Creator Address | Address of the creator. |

# show smrp mcache

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp macahe** command is not available in Cisco IOS software.

To display the SMRP fast-switching cache table, use the **show smrp mcache** EXEC command.

**show smrp mcache** [**appletalk** [*group-address*]]

## Syntax Description

| | |
|---|---|
| **appletalk** | (Optional) Displays the SMRP fast-switching cache table entries for all AppleTalk network groups. Currently, SMRP services are supported over AppleTalk only. |
| *group-address* | (Optional) SMRP group address. Use this argument to display only this group's fast-switching cache table entry. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.1 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

An SMRP router has an entry in its forwarding table for every SMRP group for which the router forwards data. For each group, the forwarding table lists the parent interface and address and one or more child interfaces and addresses. When data for an SMRP group arrives on the parent interface, the router forwards it to each child interface. The SMRP fast-switching cache table specifies whether or not to fast switch SMRP data packets out the interfaces specified by the forwarding table.

Use the **show smrp mcache** command to view the SMRP fast-switching cache table. The command displays which interfaces are fast-switch enabled. If a parent interface is not fast-switch enabled, then there is no entry (row) in the table. If a child interface is not fast-switch enabled, then it is not in the list of child interfaces for an entry in the table.

If you do not specify an SMRP group address, the **show smrp mcache** command displays information for all entries in the SMRP fast-switching cache table. If you specify an SMRP group address, the command displays cache entries for only that group.

SMRP fast-switching is enabled by default.

## Examples

The following is sample output from the **show smrp mcache** command:

```
Router# show smrp mcache

SMRP Multicast Fast Switching Cache
Group        In  Parent        Child         MAC Header (Top)
Address      Use Interface     Interface(s)  Network Header (Bottom)
------------------------------------------------------------------

AT 11.121    Y   Ethernet0     Ethernet3     090007400b7900000c1740db
                                             001fed750000002aff020a0a0a
AT 11.122    Y   Ethernet0     Ethernet3     090007400b7a00000c1740db
                                             001f47750000002aff020a0a0a
AT 11.123    Y   Ethernet0     Ethernet1     090007400b7b00000c1740d9
                                             001fe77500000014ff020a0a0a
                               Ethernet3     090007400b7b00000c1740db
                                             001ffd750000002aff020a0a0a
AT 11.124    N   Ethernet0     Ethernet1     090007400b7c00000c1740d9
                                             001fef7500000014ff020a0a0a
```

Table 43 describes the fields shown in the display.

*Table 43 show smrp mcache Field Descriptions*

| Field | Description |
|---|---|
| Group Address | SMRP group address. AT signifies that this is an AppleTalk network group. |
| In Use | Y = Router can use the cache entry to fast-switch packets.<br>N = Router cannot use cache entry to fast-switch packets. Router forwards packets via the process level. |
| Parent Interface | Interface that receives the SMRP data packet to send out. The interface must be fast-switch enabled. |
| Child Interface(s) | One or more interfaces to which the SMRP data packet is sent. At least one of the child interfaces must be fast-switch enabled. |
| MAC Header (Top)<br>Network Header (Bottom) | MAC header and network header for only fast-switch enabled child interfaces. |

## Related Commands

| Command | Description |
|---|---|
| **clear smrp mcache** | Removes all fast-switching entries in the SMRP fast-switching cache table. |
| show smrp forward | Displays all entries or specific entries in the SMRP forwarding table. |

# show smrp neighbor

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp neighbors** command is not available in Cisco IOS software.

To display all entries or specific entries in the SMRP neighbor table, use the **show smrp neighbor** EXEC command.

**show smrp neighbor** [**appletalk** [*network-address*]]

## Syntax Description

| | |
|---|---|
| **appletalk** | (Optional) Displays SMRP neighbor table entries for all AppleTalk networks. Currently SMRP services are supported over AppleTalk networks only. |
| *network-address* | (Optional) Network address of the neighbor router. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

A neighbor is an adjacent router. Neighboring routers keep track of one another by sending and receiving hello packets periodically. Using this method, the Cisco IOS software can determine if it has heard from a neighbor router within a certain amount of time. The software creates an entry in its neighbor table when it finds a neighboring route. The software maintains the entry, indicating, among other information, the current state of the neighbor. The software updates the entry if the state of the neighbor router changes; for example, a secondary router became a primary router. The secondary router is the router that becomes the primary router when the primary router is no longer heard from.

For all neighboring routers, the **show smrp neighbor** command displays the address of the neighbor router, the state of the neighbor, its interface, the last time it was heard from, its route version number, and whether or not routes need to be sent to the neighbor. If the network address of a specific neighbor is given as a command parameter, this information is displayed for that neighbor router only.

**Note** Because SMRP is currently supported over AppleTalk networks only, sample output resulting from the **show smrp neighbor** command is the same as output from **show smrp neighbor appletalk** command.

## Examples

The following is sample output from the **show smrp neighbor** command that displays SMRP neighbor table entries for all neighbors:

```
Router# show smrp neighbor

SMRP Neighbor Table
                                        Last
Neighbor  State Interface     Heard
-----------------------------------

20.3      (S)   Ethernet2     5
10.4      (N)   Ethernet1     3
11.5      (S)   Ethernet1     7
```

The following is sample output from the **show smrp neighbor** command with the **appletalk** keyword and the network address of a specific neighboring node:

```
Router# show smrp neighbor appletalk 20.3

SMRP Neighbor Table
                                Last
Neighbor  State Interface     Heard
-----------------------------------

20.3      (S)   Ethernet2     5

Route version: 0x0000000E
Routes needed: False
```

Table 44 describes the fields shown in the display.

*Table 44 show smrp neighbor Field Descriptions*

| Field | Description |
|---|---|
| Neighbor | Network address of the neighbor router. |
| State | State of the neighbor. Possible states are:<br>• (P) —Primary operation<br>• (S) —Secondary operation<br>• (N) —Normal operation<br>• PN.. —Primary negotiation<br>• SN.. —Secondary negotiation<br>• -D- —Down |
| Interface | Interface to the neighbor router. |
| Last Heard | Last time in seconds that the neighbor was heard from. |

*Table 44 show smrp neighbor Field Descriptions (continued)*

| Field | Description |
|---|---|
| Route Version | Route version number of the neighbor. If the route version number is less than the neighbor's route version, then the route will be sent to that neighbor. |
| Routes Needed | True if routes need to be sent to the neighbor; False if not. |

# show smrp port

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp port** command is not available in Cisco IOS software.

To display all entries or specific entries in the SMRP port table, use the **show smrp port** EXEC command.

**show smrp port** [**appletalk** [*type number*]]

## Syntax Description

| | |
|---|---|
| **appletalk** | (Optional) Displays SMRP port table entries for all AppleTalk networks. Currently SMRP services are supported over AppleTalk networks only. |
| *type* | (Optional) Interface type. |
| *number* | (Optional) Interface number. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

For all SMRP ports, the **show smrp port** command displays the interface of the SMRP port, the current state of the port, the network protocol type (currently only AppleTalk is supported) and its address, the address of the primary router on the local network, the address of the secondary router on the local network, the current groups on the port, and the last group on the port.

If the interface of a specific SMRP port is given, this information is displayed for that port only.

**Note** Because SMRP is currently supported over AppleTalk networks only, sample output resulting from the **show smrp port** command is the same as output from **show smrp port appletalk** command.

## Examples

The following is sample output from the **show smrp port** command:

```
Router# show smrp port
```

```
SMRP Port Table
Interface     State Network        Type Address   Primary   Secondary
-------------------------------------------------------------------

Ethernet2     (P)   20-22          AT   20.2      20.2      20.3
Ethernet3     (P)   30-33          AT   30.2      30.2      0.0
Ethernet4     (S)   40-44          AT   40.3      40.2      40.0
```

The following is sample output from the **show smrp port** command with the **appletalk** keyword and the interface of a specific port:

```
Router# show smrp port appletalk ethernet 2

SMRP Port Table
Interface     State Network        Type Address   Primary   Secondary
-------------------------------------------------------------------

Ethernet2     (P)   20-22          AT   20.2      20.2      20.3
Current groups:
Last group:
```

Table 45 describes the fields shown in the displays.

***Table 45 show smrp port Field Descriptions***

| Field | Description |
|---|---|
| Interface | Interface of a specific SMRP port. |
| State | Current state of the port. Possible states are as follows:<br>• (P) —Primary operation<br>• (S) —Secondary operation<br>• (N) —Normal operation<br>• PN.. —Primary negotiation<br>• SN.. —Secondary negotiation<br>• -D- —Down |
| Network | Network range. |
| Type | Network protocol type. Currently only AppleTalk (AT) is supported. |
| Address | Network layer address. |
| Primary | Address of the primary SMRP router on the local network. |
| Secondary | Address of the secondary SMRP router on the local network. |

## Related Commands

| Command | Description |
|---|---|
| test appletalk | Makes SMRP multicast services available over AppleTalk for a specific interface. |

# show smrp route

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp route** command is not available in Cisco IOS software.

To display all entries or specific entries in the Simple Multicast Routing Protocol (SMRP) routing table, use the **show smrp route** EXEC command.

**show smrp route** [**appletalk** [*network*] | *type number*]

## Syntax Description

| | |
|---|---|
| **appletalk** | (Optional) Displays SMRP route table entries for all AppleTalk networks. Currently SMRP services are supported over AppleTalk networks only. |
| *network* | (Optional) SMRP network range. |
| *type* | (Optional) Interface type. |
| *number* | (Optional) Interface number. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

For all SMRP routes, the **show smrp route** command displays the number of SMRP routes in the internetwork. For each route, it shows the SMRP network range of the route, the version of the route, the elapsed time since the route was updated, the number of hops away the route is from the route's origin, the number of hops away the route is from the tunnel origin, the interface from which the route was received, and the router that sent the route.

If a specific network range is given, this information is displayed for that network range only.

If the interface is specified, the routes that came from this interface are displayed.

If the **appletalk** keyword is specified with or without an SMRP network range, the number of SMRP routes in the internetwork is not specified. Connected routes have a hop value of 0 and no address value.

**Note** Because SMRP is currently supported over AppleTalk networks only, sample output resulting from the **show smrp port** command is the same as output from **show smrp port appletalk** command.

## Examples

The following is sample output from the **show smrp route** command:

```
Router# show smrp route

SMRP Route Table

5 routes in internet

Network         Hop Tunnel          Parent
                            Interface     Address
------------------------------------------------------------------

AT 1-1          1     0      Ethernet2     20.3
AT 10-11        1     0      Ethernet2     20.3
AT 20-22        0     0      Ethernet2
AT 40-44        0     0      Ethernet4
```

The following is sample output from the **show smrp route** command with the **appletalk** keyword and a specific SMRP network number within an SMRP network range:

```
Router# show smrp route appletalk 21

Network      Hop   Tunnel        Parent
                          Interface   Address
------------------------------------------------------------------

AT 20-22     0    0     Ethernet2   20.3

Route version: 0x0000000E
Elapsed update time: 00:23:55
```

The following is sample output from the **show smrp route** command for a specific interface:

```
Router# show smrp route appletalk ethernet 2

Network      Hop   Tunnel        Parent
                          Interface   Address
------------------------------------------------------------------

AT 1-1         1    0     Ethernet2    20.3
AT 10-11       1    0     Ethernet2    20.3
AT 20-22       0    0     Ethernet2
```

Table 46 describes the fields shown in the displays.

***Table 46 show smrp route Field Descriptions***

| Field | Description |
|---|---|
| Network | SMRP network range (the route). “AT” indicates that this is an AppleTalk network. |
| Hop | Number of hops away from origin. |
| Tunnel | Number of hops away from the origin of this tunnel. |
| Parent Interface | Interface from which the route was received. |

*Table 46 show smrp route Field Descriptions*

| Field | Description |
|---|---|
| Parent Address | Address of the router that sent this route. |
| Route version | Version number of a route. If the route version is greater than the neighbor's route version, then the route will be sent to that neighbor. |
| Elapsed update time | Time elapsed since the route was last updated. |

# show smrp traffic

**Note** Effective with Cisco IOS Release 15.0(1)M, the **show smrp traffic** command is not available in Cisco IOS software.

To display all entries or specific entries in the Simple Multicast Routing Protocol (SMRP) traffic table, use the **show smrp traffic** EXEC command.

**show smrp traffic** [**all** | **group** | **neighbor** | **port** | **route** | **transaction**]

## Syntax Description

| | |
|---|---|
| **all** | (Optional) Displays SMRP traffic for SMRP groups, neighbors, ports, routes, and transactions. |
| **group** | (Optional) Displays SMRP traffic for SMRP groups. |
| **neighbor** | (Optional) Displays SMRP traffic for neighbors. |
| **port** | (Optional) Displays SMRP traffic for ports. |
| **route** | (Optional) Displays SMRP traffic for routes. |
| **transaction** | (Optional) Displays SMRP traffic for transactions. |

## Command Modes

EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

To display general SMRP statistics, use the **show smrp traffic** command without keywords. To display traffic for all of the categories defined by the keywords, use the **show smrp traffic all** command. To display traffic for a specific category, specify the command and the keyword for the category.

## Examples

The following is sample output from the **show smrp traffic all** command:

```
Router# show smrp traffic all

SMRP statistics:
 Rcvd:  350 total, 99 hellos, 0 mc data, 0 fast handled
         78 requests, 127 confirms, 1 reject
```

```
          3 primaries, 6 secondaries
          7 notifies, 2 distance vectors
          3 create groups, 0 delete groups
          4 join groups, 0 leave groups
          54 members
          0 add group entries, 0 remove group entries
          0 locates, 0 tunnels
  Sent:   547 total, 307 hellos
          0 duplicate mc data, 0 mc data, 0 fast forwarded
          176 requests, 62 confirms, 2 rejects
          3 primaries, 3 secondaries
          6 notifies, 1 distance vector
          0 joins, 0 leaves
          42 creators, 81 members
          0 add group entries, 0 remove group entries
  Misc:   0 no buffers, 0 no forwards
          0 bad portids, 0 port downs
          0 bad versions, 0 runts
          0 bad packet types, 0 input errors

SMRP group statistics:
          Groups:  3 added, 0 removed,
          Forwards:  3 new, 1 recycled, 0 deleted
          Child Ports:  4 added, 1 freed,
          Misc: 0 range fulls, 0 not primary drops
                 0 no routes

SMRP port statistics:
  Ports:  3 new, 0 recycled, 0 deleted

SMRP route statistics:
  Routes:  5 new, 0 recycled, 0 deleted
  Neighbor AT 20.3:
          1 received updates, 1 send updates
          3 received routes, 0 sent routes
          0 poisoned, 0 improved
          0 better parent interfaces, 0 worst parent interfaces
          0 better parent addresses, 0 worst parent addresses
          0 bad ranges, 0 overlaps

SMRP transaction statistics:
  Requests:  5 new, 135 recycled
          0 deleted, 0 freed
          9 timeouts, 36 resends
          0 duplicates, 0 incomplete duplicates
  Responses:  16 new, 62 recycled, 0 freed
          0 deleted, 0 freed
          0 unexpected, 0 bad
```

Table 47 describes the fields shown in the display.

***Table 47 show smrp traffic Field Descriptions***

| Field | Description |
|---|---|
| SMRP Statistics: | |
| Rcvd: | |
| total | Total number of SMRP packets received. |
| hellos | Number of hello packets received from neighbors. |
| mc data | Number of packets of multicast data received. |

*Table 47 show smrp traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| fast handled | Number of input packets handled by the SMRP fast-switching function. |
| requests | Number of request transactions received from neighbors. |
| confirms | Number of confirm response transactions received. |
| reject | Number of reject response transactions received. |
| primaries | Number of primary request packets received. |
| secondaries | Number of secondary request packets received. |
| notifies | Number of notify packets received. A router sends a notify packet when it becomes an SMRP primary, secondary, or normal router. A router in normal operation mode can become a secondary router and a router in secondary operation mode can become a primary router. |
| distance vectors | Number of route update packets received. |
| create groups | Number of create group packets received from the creator endpoint when it requests to create a group. |
| delete groups | Number of delete group packets received. These packets are sent when a group is deleted. |
| join groups | Number of join-group packets received. These packets are sent when members join a group. |
| leave groups | Number of leave-group packets received. These packets are sent when members leave a group. |
| members | Number of member-request packets for polling group members received. |
| add group entries | Number of packets received to add group entries. |
| remove group entries | Number of packets received to remove group entries. |
| locates | Number of locate packets received. Endpoints send locate packets to find the SMRP router on the local network. |
| tunnels | Number of SMRP tunnel packets received. |
| Sent: | |
| total | Total number of SMRP packets sent. |
| hellos | Number of hello packets sent to neighbors. |
| duplicate mc data | Number of packets of multicast data duplicated and forwarded. |
| mc data | Number of packets of multicast data forwarded. |
| fast forwarded | Number of packets that were fast-switched out of the fast-switch enabled interface. |
| requests | Number of request transaction packets sent to neighbors. |
| confirms | Number of confirm responses sent. |
| rejects | Number of reject responses sent. |
| primaries | Number of primary request packets sent. |

*Table 47 show smrp traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| secondaries | Number of secondary request packets sent. These are sent in attempt to become the secondary router. |
| notifies | The number of notify packets sent. A router sends a notify packet when it becomes an SMRP primary, secondary, or normal router. A router in normal operation mode can become a secondary router and a router in secondary operation mode can become a primary router. |
| distance vectors | Number of route-update packets sent. |
| joins | Number of join-group packets sent. These packets are sent when members join a group. |
| leaves | Number of leave-group packets sent. These packets are sent when members leave a group. |
| creators | Number of creator-request packets sent to poll the creator endpoint to verify that it is still active. |
| members | Number of member request packets sent for polling group members. |
| add group entries | Number of packets sent to the secondary router to add group entries. |
| remove group entries | Number of packets sent to the secondary router to remove group entries. |
| Misc: | |
| no buffers | Number of times no system buffers available condition occurred. Memory allocation failure. |
| no forwards | Number of packets for which there was no entry in the forwarding table for the packet's destination. |
| bad portids | Number of packets with invalid port IDs. |
| port downs | Number of packets for ports that were down. |
| bad versions | Number of packets with the wrong SMRP protocol version number. |
| runts | Number of truncated packet. |
| bad packet types | Number of packets with invalid type field values. |
| input errors | Number of packets received that failed network layer packet validation. |
| SMRP group statistics: | |
| Groups: | |
| added | Number of groups added. |
| removed | Number of groups removed. |
| Forwards: | |
| new | Number of new entries created in the forwarding table. |
| recycled | Number of forwarding table entries that were recycled. |

*Table 47 show smrp traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| deleted | Number of forwarding table entries that were deleted. |
| Child Ports: | |
| added | Number of child ports added to the forwarding table entries. |
| freed | Number of child ports removed from the forwarding table entries. |
| Misc: | |
| range fulls | Number of times attempts were made to create SMRP groups after the range of available SMRP addresses was exhausted. The number of SMRP group addresses available equals the SMRP network range times 254. |
| not primary drops | Number of packets received and dropped because this router is not the SMRP primary router and, therefore, not responsible for the packets. |
| no routes | Number of times a route to the creator endpoint was not found in the routing table. |
| SMRP port statistics: | |
| Ports: | SMRP port traffic information |
| new | Number of new port entries added to the SMRP port table. |
| recycled | Number of recycled port entries added to the SMRP port table. |
| deleted | Number of port entries deleted from the SMRP port table. |
| SMRP route statistics: | |
| Routes: | Neighbor route statistics. |
| new | Number of new entries added to the SMRP routing table. |
| recycled | Number of recycled entries added to the SMRP routing table. |
| deleted | Number of entries deleted from the SMRP routing table. |
| Neighbor AT | AppleTalk neighbor information. |
| received updates | For each SMRP neighbor, the number of distance vector (routing update) packets received. |
| sent updates | For each SMRP neighbor, the number of distance vector (routing update) packets sent. |
| received routes | For each SMRP neighbor, the number of routes received. |
| sent routes | For each SMRP neighbor, the number of routes sent. |
| poisoned | Number of bad routes (with 255 hops) received in distance vector packets. |
| improved | Number of routes improved through updates received in distance vector packets. |

*Table 47 show smrp traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| better parent interfaces | Number of times the Cisco IOS software switches to a better parent interface when a tie condition exists. A tie exists when both routes have equal hop counts. A ties is broken by choosing the neighbor with the higher network address. |
| worst parent interfaces | Number of times the software does not switch interfaces in a tie condition. The software assesses a tie between two interfaces to choose the interface for the route when the hop count of both routes is equal. A tie is broken by choosing the neighbor with the higher network address. |
| better parent addresses | Number of times this software wins a tie to forward a packet when a tie condition exists. A tie condition occurs when two routers on the same local net have routes to the packet's destination with the same hop count. Whichever router has the highest network address wins and forwards the packet. |
| worst parent addresses | Number of times this software loses a tie to forward a packet when a tie condition exists. A tie condition occurs when two routers on the same local net have routes to the packet's destination with the same hop count. Whichever router has the highest network address wins and forwards the packet. |
| bad ranges | Number of times an invalid SMRP network range was received. |
| overlaps | Number of times an incoming SMRP network range overlapped with an existing SMRP routing entry. |
| SMRP transaction statistics: | |
| Requests: | |
| new | Number of new requests created. |
| recycled | Number of recycled requests. |
| deleted | Number of times data was allocated for requests. |
| freed | Number of times deleted requests are freed. |
| timeouts | Number of times requests timed out. |
| resends | Number of times requests were resent. |
| duplicates | Number of times a processed request arrived. |
| incomplete duplicates | Number of times requests were received while in incomplete state. |
| Responses: | |
| new | Number of new responses created. |
| recycled | Number of recycled responses. |
| freed | Number of freed responses. |
| deleted | Number of times data was allocated for responses. |
| freed | Number of times deleted responses are freed. |

*Table 47 show smrp traffic Field Descriptions (continued)*

| Field | Description |
|---|---|
| unexpected | Number of unexpected responses. |
| bad | Number of bad responses. |

# smrp mroute-cache protocol appletalk

**Note** Effective with Cisco IOS Release 15.0(1)M, the **smrp mroute-cache protocol appletalk** command is not available in Cisco IOS software.

To enable Simple Multicast Routing Protocol (SMRP) fast-switching on a port, use the **smrp mroute-cache protocol appletalk** interface configuration command. To disable SMRP fast-switching, use the **no** form of this command.

**smrp mroute-cache protocol appletalk**

**no smrp mroute-cache protocol appletalk**

## Syntax Description

This command has no arguments or keywords.

## Defaults

Enabled

## Command Modes

Interface configuration

## Command History

| Release | Modification |
|---|---|
| 11.1 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

By default, fast-switching is enabled on all SMRP ports. A network protocol and interface comprise an SMRP port. Fast switching improves the throughput rate by processing incoming packets more quickly than process switching.

SMRP uses the forwarding table to forward packets for a particular SMRP group. For each group, the forwarding table lists the parent interface and address and one or more child interfaces and addresses. When data for an SMRP group arrives on the parent interface, the router forwards it to each child interface. The SMRP fast-switching cache table specifies whether to fast switch SMRP data packets out the interfaces specified by the forwarding table.

SMRP fast switching requires that:

- A parent port is fast-switch enabled.

- One or more child ports are fast-switch enabled.

When the parent port is fast-switch enabled, the system populates and validates a fast-switching cache table when forwarding packets out child ports.

To populate the fast-switching cache table with fast-switching information, the first packets are process switched. Thus, the fast-switching cache table is populated with information about fast-switch enabled child ports. When succeeding packets arrive, the system uses the SMRP fast-switching cache table to fast switch the packets out those child ports.

If there are non-fast-switching ports in the forwarding table, then the system process switches the packet out those ports.

To validate the fast-switching cache table, the system validates each cache entry when it forwards the first packet out all child ports. If a cache entry is validated, the router can use the entry to fast switch succeeding packets out the child ports.

If a cache entry is invalidated, the router cannot use the entry to fast switch packets. The entry is removed from the fast-switching cache table and the router process switches packets out the child ports. A cache entry is invalidated when one of these conditions is met:

- A child endpoint leaves the SMRP group.
- A new child endpoint joins the SMRP group.
- A port's fast-switching configuration is enabled or disabled.
- A port is restarted.

## Examples

The following example disables SMRP fast-switching:

```
no smrp mroute-cache protocol appletalk
```

# smrp protocol appletalk

**Note** Effective with Cisco IOS Release 15.0(1)M, the **smrp rpotocol appletalk** command is not available in Cisco IOS software.

To make Simple Multicast Routing Protocol (SMRP) multicast services available over AppleTalk for a specific interface, use the **smrp protocol appletalk** interface configuration command. To disable SMRP over AppleTalk for a specific interface, use the **no** form of this command.

**smrp protocol appletalk** [**network-range** *beginning-end*]

**no smrp protocol appletalk** [**network-range** *beginning-end*]

## Syntax Description

| | |
|---|---|
| **network-range** | (Optional) SMRP network range for the interface. We recommend that you do not specify an SMRP network range. When you omit the range, the Cisco IOS software uses the AppleTalk cable range configured for the interface as the SMRP network range. If you specify a range, it must fall within the SMRP network range 1 to 65,535. |
| *beginning-end* | (Optional) The beginning and end of the SMRP network range for this AppleTalk network. If you specify a range, it must fall within the SMRP network range 1 to 65,535. |

## Defaults

SMRP is disabled.

## Command Modes

Interface configuration

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

SMRP supports point-to-multipoint multicasting of packets for AppleTalk networks. This support provides the capability of sending data from a single source to multiple stations without having to send duplicate copies of the data.

The **smrp protocol appletalk** command configures SMRP support over an AppleTalk network on an interface basis. Before you use this command, you must issue the **smrp routing** command to enable SMRP. After you enable SMRP, you can use this command to make SMRP services available over AppleTalk for any number of individual interfaces.

We recommend that you do not specify an SMRP network range for the AppleTalk network. Because the upper limit of the AppleTalk network range is 65,535, AppleTalk network numbers always fit within the SMRP network range; SMRP network numbers are 3 bytes long, whereas AppleTalk network numbers are 2 bytes long. If the AppleTalk network is a nonextended network, which is defined by a single network number, the AppleTalk network is mapped to the SMRP network range using the single number to define both ends of the range (for example, 65,520-65,520).

To disable SMRP services for a specific AppleTalk network, use the **no** form of this command. To disable SMRP services globally (that is, for all AppleTalk networks whose interfaces you have configured for SMRP support) issue the **no smrp routing** command.

## Examples

The following example enables SMRP globally and turns on SMRP support over AppleTalk for the current interface:

```
smrp routing
interface ethernet 0
 smrp protocol appletalk
```

The following example disables SMRP over AppleTalk for the current interface:

```
interface ethernet 0
 no smrp protocol appletalk
```

## Related Commands

| Command | Description |
|---|---|
| show smrp port | Displays all entries or specific entries in the SMRP port table. |
| test appletalk | Enables the use of the multicast transport services provided by the SMRP. |

# smrp routing

**Note** Effective with Cisco IOS Release 15.0(1)M, the **smrp routing** command is not available in Cisco IOS software.

To enable the use of the multicast transport services provided by the Simple Multicast Routing Protocol (SMRP), use the **smrp routing** global configuration command. To disable SMRP services for all interfaces, use the **no** form of this command.

**smrp routing**

**no smrp routing**

## Syntax Description

This command has no arguments or keywords.

## Defaults

SMRP is disabled.

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.2(13)T | This command is no longer supported in Cisco IOS Mainline releases or in Technology-based (T-train) releases. It might continue to appear in 12.2S-family releases. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

Currently, SMRP services are supported over AppleTalk only. The **smrp routing** command enables the use of SMRP. To enable SMRP for an AppleTalk network over a specific interface, you must use the **smrp protocol appletalk** interface configuration command after you issue this command. The **smrp routing** command has no effect until you enable SMRP at the interface level.

## Examples

The following example enables SMRP:

```
smrp routing
```

The following example disables SMRP:

```
no smrp routing
```

**Related Commands**

| Command | Description |
|---|---|
| test appletalk | Makes SMRP multicast services available over AppleTalk for a specific interface. |

# test appletalk

**Note** Effective with Cisco IOS Release 15.0(1)M, the **test appletalk** command is not available in Cisco IOS software.

To enter the test mode, use the **test appletalk** command in privileged EXEC mode.

**test appletalk**

## Syntax Description

This command has no arguments or keywords.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 11.1 | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2SX | This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware. |
| 15.0(1)M | This command was removed. |

## Usage Guidelines

Use the **test appletalk** command to enter test mode. From test mode you can test the Name Binding Protocol (NBP) protocol.

The following display shows how to enter Appletalk test mode:

```
Router# test appletalk
Router(atalk test)#
```

Type **?** to display the following list of test options:

```
Router(atalk test)# ?
end    Exit AppleTalk test mode
nbp    AppleTalk NBP test commands
```

Use the **test appletalk** command with the **nbp** options to test and to perform informational lookups of NBP-registered entities. Use the NBP options when you find that AppleTalk zones are listed in the Chooser, but services in these zones are unavailable.

Type **nbp ?** to learn what NBP test commands you can use:

```
Router(atalk test)# nbp ?
nbp confirm:          send out an NBP confirm packet to the specified entity
nbp lookup:           lookup an NVE. prompt for name, type and zone
nbp parameters:       display/change lookup parms (ntimes, ncecs, interval)
nbp poll:             for every zone, lookup all devices, using default
?:                      print command list
end:                  exit nbptest
```

The following list summarizes the **nbp** test commands you can use:

- **nbp confirm**—Sends out an NBP confirm packet to the specified entity.
- **nbp lookup**—Searches for NBP entities in a specific zone.
- **nbp parameters**—Sets the parameters used in subsequent lookup and pool tests.
- **nbp poll**—Searches for all devices in all zones.
- **?**—Displays the list of **nbp** tests.
- **end**—Exit from the **nbp** test commands.

The remainder of this section shows and explains the syntax and output of the various NBP test commands.

When running any of the NBP tests, you specify a nonprinting character by entering a three-character string that is the hexadecimal equivalent of the character. For example, type **:c5** to specify the test appletalk truncation wildcard.

This is the syntax of the **nbp confirm** command:

**nbp confirm** *appletalk-address* [**:***skt*] *object***:***type*@*zone*

The syntax description is as follows:

| | |
|---|---|
| *appletalk-address* | AppleTalk network address in the form *network.node*. The argument *network* is the 16-bit network number in the range 1 to 65,279. The argument *node* is the 8-bit node number in the range 0 to 254. Both numbers are decimal. |
| **:***skt* | (Optional) Name of socket. |
| *object***:***type* | Name of device and the type of service. The colon (**:**) between *object* and *type* is required. |
| @*zone* | Name of the AppleTalk zone where the entity *object***:***type* resides. |

## Examples

The following is sample output from the **nbp confirm** command. In this example, the test sends a confirm packet to the entity *ciscoRouter* in zone *Engineering*.

```
Router(atalk test)# nbp confirm 24279.173 my-mac:AFPServer@Engineering

confirmed my-mac:AFPServer@Engineering at 24279n,173a,250s
```

This is the syntax of the **nbp lookup** command:

**nbp lookup** *object***:***type*@*zone*

The syntax description is as follows:

| | |
|---|---|
| *object***:***type* | Name of device and the type of service. The colon (**:**) between *object* and *type* is required. |
| @*zone* | Name of the AppleTalk zone where the entity *object***:***type* resides. |

The following is sample output from the **nbp lookup** command:

```
Router(atalk test)# nbp lookup =:macintosh:c5@engineering
```

```
(100n,50a,253s)[1]: 'userA:Macintosh IIcx@engineering'
(100n,16a,251s)[1]: 'userB:Macintosh II@engineering'
(200n,24a,253s)[1]: 'userC:Macintosh IIci@engineering'
(200n,36a,251s)[1]: 'userD:Macintosh II@engineering'
(300n,21a,252s)[1]: 'userE:Macintosh SE/30@engineering'
test appletalk lookup request timed out
Processed 6 replies, 7 events
```

Table 48 describes the fields shown in the display.

***Table 48 nbp lookup Field Descriptions***

| Field | Description |
|---|---|
| (100n,50a,253s) [1] | AppleTalk DDP address of the registered entity, in the format network, node address, and socket number. The number in brackets is either the current value of the field (if this is the first time you have invoked **nbptest**) or the value the field had the last time you invoked **nbptest**. |
| 'userA:Macintosh IIcx@engineering' | NBP enumerator:NBP entity string of the registered entity. |
| test appletalk lookup request timed out | Indicates whether replies were heard within the timeout interval. |
| Processed 6 replies, 7 events | Number of NBP replies received. |

This is the syntax of the **nbp parameters** command:

**nbp parameters** *retransmissions replies interval*

The syntax description is as follows:

| | |
|---|---|
| *retransmissions* | Maximum number of lookup retransmissions. This is a number from 1 to 5. The default value is 5. |
| *replies* | Maximum number of replies to accept for each lookup. This is a number from 1 to 500. The default is 1. |
| *interval* | Interval, in seconds, between each retry. This value is from 1 to 60 seconds. The default is 5 seconds. |

The following is sample output of the **nbp parameters** command. In this example, the maximum number of retransmission is 1, the maximum number of replies is 100, and there are 10 seconds between each retry.

```
Router(atalk test)# nbp parameters 1 100 10
```

The **nbp poll** command has no keywords or arguments. The following is sample output from the **nbp poll** command:

```
Router(atalk test)# nbp poll

poll: sent 2 lookups
(100n,82a,252s)[1]: 'userA:Macintosh IIci@Zone one'
(200n,75a,254s)[1]: 'userB:Macintosh IIcx@Zone two'
test appletalk polling completed.
Processed 2 replies, 2 events
```

Table 49 describes the fields shown in the display.

*Table 49 nbp poll Field Descriptions*

| Field | Description |
|---|---|
| poll | Number of lookups the command sent. |
| (100n,82,252s) [1] | AppleTalk DDP address of the registered entity, in the format network, node address, and socket number. The number in brackets is either the current value of the field (if this is the first time you have invoked **nbptest**) or the value the field had the last time you invoked **nbptest**. |
| 'userA:Macintosh IIci@Zone one' | NBP enumerator:NBP entity string of the registered entity. |
| test appletalk polling completed. | Indicates that the polling completed successfully. |
| Processed 2 replies, 2 events | Number of NBP replies received. |

The following example enables the **appletalk nbp polling** command, which does not use any keywords or arguments:

```
Router (atalk test)# nbp poll
```

## Related Commands

| Command | Description |
|---|---|
| **test flash** | Tests Flash memory on MCI and envm Flash EPROM interfaces. |
| **test interfaces** | Tests the system interfaces on the modular router. |
| **test memory** | Performs a test of Multibus memory (including nonvolatile memory) on the modular router. |