show appletalk remap

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.

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 28 describes the fields shown in the display.

Table 28 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.

Table 28 show appletalk remap Field Descriptions (continued)

Field	Description
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: • Unassigned—The network number or cable range was just remapped. • 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. • 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. • Good—The remapped entry has a complete zone list and, for inbound remappings only, it is in the main routing table. • 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

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.

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, E - EIGRP 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, E - EIGRP 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, E - EIGRP 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 29 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 29 show appletalk route Field Descriptions

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

Table 29 show appletalk route Field Descriptions (continued)

Field	Description
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: • G—Link is good. • S—Link is suspect. • B—Link is bad. 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. 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.
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, E - EIGRP 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 30 describes the fields shown in the display.

Table 30 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.
E - EIGRP derived	Route learned from an Enhanced IGRP 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.
[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: • G—Link is good. • S—Link is suspect. • B—Link is bad. 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. 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.

Table 30 show appletalk route Field Descriptions—Specified Network (continued)

Field	Description
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

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.

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
10       SMRP       SMRP Input       0    56393
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 31 describes the fields shown in these displays.

Table 31 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

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.

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 32 describes the fields shown in the display.

Table 32 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.
Zone	The AppleTalk zone name.
Status	The status of the route, which can be one of the following: • A—The static route is active. • A(Floating)—The floating static route is active. • N/A—The static route is not active. • 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

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.

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
  EIGRP: 0 received, 0 hellos, 0 updates, 0 replies, 0 queries
         0 sent,     0 hellos, 0 updates, 0 replies, 0 queries
         0 invalid, 0 ignored
  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 33 describes the fields shown in the display.

Table 33 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.
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.

Table 33 show appletalk traffic Field Descriptions (continued)

Field	Description
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.
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.

Table 33 show appletalk traffic Field Descriptions (continued)

Field	Description
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.
EIGRP:	This section describes Enhanced IGRP packets.
0 received	Number of EIGRP packets received.
0 hellos	Number of EIGRP hello packets received.
0 updates	Number of EIGRP update packets received.
0 replies	Number of EIGRP reply packets received.
0 queries	Number of EIGRP query packets received.
0 sent	Number of EIGRP packets sent.
0 hellos	Number of EIGRP hello packets sent.
0 updates	Number of EIGRP update packets sent.
0 replies	Number of EIGRP reply packets sent.
0 queries	Number of EIGRP query packets sent.
0 invalid	Number of invalid EIGRP packets sent.
0 ignored	Number of packets ignored as a result of invalid IEGRP packets received.
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.

Table 33 show appletalk traffic Field Descriptions (continued)

Field	Description
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.
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.

Table 33 show appletalk traffic Field Descriptions (continued)

Field	Description
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.
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

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.

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 34 describes the fields shown in the display.

Table 34 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

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.

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 35 describes the fields shown in the displays.

Table 35 show smrp forward Field Descriptions

Field	Description
Group Address	Address of the SMRP group.
State	State of the group. Possible states are as follows: • Join—Joining the group • Fwd—Forwarding data • 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.
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

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.

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 36 describes the global information shown in the display.

Table 36 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: 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.

Table 36 show smrp globals Field Descriptions (continued)

Field	Description
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

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.

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 37 describes the fields shown in the display.

Table 37 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

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.

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 38 describes the fields shown in the display.

Table 38 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. 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) 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

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.

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 39 describes the fields shown in the display.

Table 39 show smrp neighbor Field Descriptions

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

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.

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 40 describes the fields shown in the displays.

Table 40 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: • (P) —Primary operation • (S) —Secondary operation • (N) —Normal operation • PN.. —Primary negotiation • SN.. —Secondary negotiation • -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
smrp protocol appletalk	Makes SMRP multicast services available over AppleTalk for a specific interface.

show smrp route

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.

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 41 describes the fields shown in the displays.

Table 41 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.
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

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.

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 42 describes the fields shown in the display.

Table 42 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.
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.

Table 42 show smrp traffic Field Descriptions (continued)

Field	Description
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.
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.

Table 42 show smrp traffic Field Descriptions (continued)

Field	Description
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.
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.

Table 42 show smrp traffic Field Descriptions (continued)

Field	Description
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.
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.

Table 42 show smrp traffic Field Descriptions (continued)

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

smrp mroute-cache protocol appletalk

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.

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

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.

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.
smrp routing	Enables the use of the multicast transport services provided by the SMRP.

smrp routing

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.

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
smrp protocol appletalk	Makes SMRP multicast services available over AppleTalk for a specific interface.

test appletalk

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.

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 43 describes the fields shown in the display.

Table 43 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 44 describes the fields shown in the display.

Table 44 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.