

Configuring the MPOA Server

This chapter describes the required and optional tasks for configuring the Multiprotocol over ATM (MPOA) Server. For a complete description of the MPOA Server commands used in this chapter, refer to the “MPOA Commands” chapter in the *Cisco IOS Switching Services Command Reference*. For documentation of other commands that appear in this chapter, you can use the command reference master index or search online.

The MPOA Server supplies the forwarding information used by the MPOA Clients (MPCs). The MPOA Server (MPS) responds with the information after receiving a query from a client. To support the query and response functions, MPOA has adopted the Next Hop Resolution Protocol (NHRP). The MPS on the router can also terminate shortcuts.

How MPS Works

The MPS software module implements the functionality of the MPS in compliance with the ATM Forum MPOA specification. The following sections describe the functions of MPS:

- MPS-NHRP-Routing Interaction
- Shortcut Domains

MPS-NHRP-Routing Interaction

MPS has to interact with the NHRP module in the router to smoothly propagate MPOA/NHRP packets end to end. MPOA frames are identical to NHRP frames except for some specific op-codes and extensions for MPOA.

The following process explains the interaction of MPS and NHRP:

- 1 MPS converts MPOA resolution requests to NHRP requests and sends it either to the next hop MPS or to the Next Hop Server (NHS) depending on the configuration. MPS searches for the next hop routing information to determine the interface and sends the packet with correct encapsulation to an MPS or an NHS.
- 2 NHS sends resolution requests to MPS when the next hop is on a LAN Emulation (LANE) cloud or when NHS is unsure of the packet destination. MPS may do further processing, such as prompt NHS to terminate the request or throw away the packet.
- 3 NHS sends resolution replies to MPS when the next hop interface is LANE or when the replies terminate in the router. Then MPS sends an MPOA resolution reply to the MPC.

Shortcut Domains

Within a router, it is possible to permit shortcuts between one group of LAN Emulation Clients (LECs) and deny it between some other groups of LECs. Cisco introduces a notion of network ID associated with an MPS. By default, all the MPSs in a router get a network ID of 1.

If the administrator wants to segregate traffic, then MPSs can be given different network IDs, in effect preventing shortcuts between LECs served by different MPSs. This can be configured in the definition of an MPS database.

If a router has both MPS and NHRP configured, then the same network ID is required to facilitate requests, replies, and shortcuts across the MPS and NHRP. The interface-specific NHRP command (**ip nhrp network-id**) must be the same for an MPS; otherwise, there will be a disjointed network.

MPS Configuration Task List

To configure an MPS on your network, perform the following tasks. Only the first two tasks are required; the remaining two tasks are optional.

- Configure the ELAN ID
- Configure the MPS
- Configure the MPS Variables
- Monitor and Maintain the MPS

Configure the ELAN ID

For MPOA to work properly, a LANE client must have an ELAN ID for all ELANs represented by the LANE clients. To configure an ELAN ID, use either of the following commands in lane database configuration mode or in interface configuration mode when starting up the LAN Emulation Client Server (LES) for that ELAN:

Command	Purpose
name <i>elan-name</i> elan-id <i>id</i>	Configure the ELAN ID in the LECS database to participate in MPOA.
lane server-bus { ethernet tokenring } <i>elan-name</i> [elan-id <i>id</i>]	Configure the LAN Emulation Server (LES) with the ELAN ID to participate in MPOA.



Caution If an ELAN ID is supplied by both commands, make sure that the ELAN ID matches in both.

Configure the MPS

To configure an MPS, use the following commands. The MPS starts functioning only after it is attached to a specific hardware interface:

Step	Command	Purpose
1	mpoa server config name <i>mps-name</i>	In global configuration mode, define an MPS with the specified name.
2	interface atm { <i>slot/port</i> <i>number</i> }	Specify the ATM interface to attach the MPS.
3	mpoa server name <i>mps-name</i>	In interface configuration mode, attach the MPS to the ATM interface.

Step	Command	Purpose
4	interface atm { <i>slot/port.subinterface-number</i> <i>number.subinterface-number</i> }	Specify the ATM interface to bind the MPS to a LEC.
5	lane client mpoa server name <i>mps-name</i>	In subinterface configuration mode, bind a LANE client to the specified MPS.

Configure the MPS Variables

An MPS has to be defined with a specified name before you can change the MPS variables specific to that MPS.

To change MPS variables specific only to a particular MPS, use the following commands starting in MPS configuration mode:

Step	Command	Purpose
1	mpoa server config name <i>mps-name</i>	Define an MPS with the specified name.
2	atm-address <i>atm-address</i>	(Optional) Specify the control ATM address that the MPS should use (when it is associated with a hardware interface).
3	network-id <i>id</i>	(Optional) Specify the network ID of the MPS.
4	keepalive-time <i>time</i>	(Optional) Specify the keepalive time value for the MPS-p1 variable of the MPS.
5	holding-time <i>time</i>	(Optional) Specify the holding time value for the MPS-p7 variable of the MPS.

Monitor and Maintain the MPS

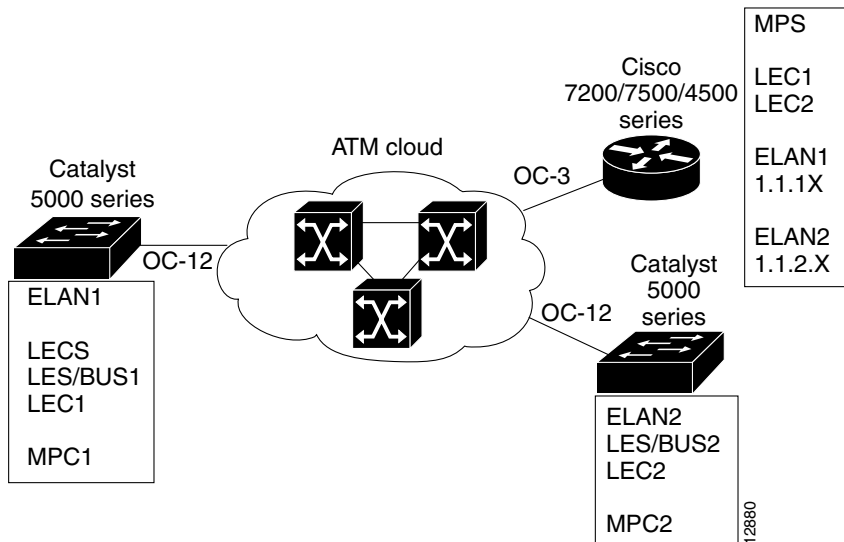
To monitor and maintain the configuration of an MPS, use the following commands in EXEC mode:

Command	Purpose
show mpoa default-atm-addresses	Display default ATM addresses for an MPS.
show mpoa server [<i>name mps-name</i>]	Display information about a specified server or all servers depending on the specified name of the required server.
show mpoa server [<i>name mps-name</i>] cache [<i>ingress</i> <i>egress</i>] [<i>ip-address ip-address</i>]	Display ingress and egress cache entries associated with a server.
show mpoa server [<i>name mps-name</i>] statistics	Display all the statistics collected by a server including the ingress and egress cache entry creations, deletions, and failures.
clear mpoa server [<i>name mps-name</i>] cache [<i>ingress</i> <i>egress</i>] [<i>ip-addr ip-addr</i>]	Clear cache entries.
mpoa server name <i>mps-name</i> trigger ip-address <i>ip-address</i> [<i>mpc-address mpc-address</i>]	Originate an MPOA trigger for the specified IP address to the specified client. If a client is not specified, the MPOA is triggered to all the clients.

MPS Configuration Examples

This section contains an example of the commands needed to configure an MPS. The lines beginning with exclamation points (!) are comments explaining the command shown on the following line. Figure 40 shows an example of how you can configure your system to utilize MPOA.

Figure 40 Example of an MPOA Configuration



MPS Configuration Examples

The following example configures the MPS and attaches the MPS to a hardware interface:

```
! Define the MPS "MYMPS"
mpoa server config name MYMPS
! Leave everything as default
exit
! Enter into interface config mode
interface ATM 1/0
! Attach MPS MYMPS to the HW interface
mpoa server name MYMPS
! Go back up to global config mode
exit
```

The following example shows a typical MPS configuration file:

```
version 11.3
hostname MPS
! Define the MPS "mps"
mpoa server config name mps
! Specify the ATM interface to which the MPS is attached
interface ATM4/0
no ip address
atm pvc 1 0 5 qsaal
atm pvc 2 0 16 ilmi
lane config auto-config-atm-address
mpoa server name mps
! Specify the ATM interface that contains the LEC to which you will bind the MPS
```

```
interface ATM4/0.1 multipoint
  ip address 1.1.1.2 255.255.255.0
  lane client mpoa server name mps
  lane client ethernet elan1
interface ATM4/0.2 multipoint
  ip address 1.1.2.1 255.255.255.0
  lane client mpoa server name mps
  lane client ethernet elan2
end
```

