



# Configuring the MNLB Forwarding Agent

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This chapter describes how to configure a Cisco router as an MNLB Forwarding Agent to operate in conjunction with a Cisco LocalDirector serving as Services Manager.

The components of the MNLD Feature Set for LocalDirector are described in Chapter 1, “Overview: Load Balancing with the MNLB Feature Set for LocalDirector”.

## Configuration Tasks

The following sections describe forwarding agent configuration tasks.

- Enabling Cisco Express Forwarding
- Enabling NetFlow Switching
- Enabling Multicast Routing
- Configuring the Router as a Forwarding Agent

## Enabling Cisco Express Forwarding

Cisco Express Forwarding (CEF) is advanced Layer 3 IP switching technology. CEF optimizes network performance and scalability for networks with large and dynamic traffic patterns, such as the Internet, on networks characterized by intensive Web-based applications, or interactive sessions.

To enable CEF, use the following command in global configuration mode:

Command	Purpose
Router(config) <code>ip cef distributed</code>	Enables CEF.

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**Note** When you enable CEF globally, all interfaces that support CEF are enabled by default. If you want to turn off CEF on a particular interface, you can do so.

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## Enabling NetFlow Switching

We recommend that you enable NetFlow switching on all interfaces that will carry MNLB traffic, although it is not required. To enable NetFlow switching, use the following commands, beginning in global configuration mode:

Step	Command	Purpose
1	For VIP interfaces on Cisco 7500 series routers: Router(config)# <b>interface</b> <i>type slot/port-adapter/port</i>  For all other routers: Router(config)# <b>interface</b> <i>type slot/port</i>	Specifies the interface, and enters interface configuration mode.
2	Router(config-if)# <b>ip route-cache flow</b>	Enables flow switching on the interface.

Normally the size of the NetFlow cache will meet your needs. However, you can increase or decrease the number of entries maintained in the cache by using the following command in global configuration mode

Command	Purpose
Router(config)# <b>ip flow-cache entries</b> <i>number</i>	Changes the number of entries maintained in the NetFlow cache. The number of entries can be 1024 to 524288. The default is 64536.

## Enabling Multicast Routing

You must enable multicast routing on all interfaces to the services manager.

To enable multicast routing on all interfaces, use the following command in global configuration mode:

Command	Purpose
Router(config)# <b>ip multicast-routing</b>	Enables multicast routing.

To have the router join a multicast group and enable IGMP, use the following command in interface configuration mode:

Command	Purpose
Router(config-if)# <b>ip igmp join-group</b> <sup>1</sup> <i>group-address</i> <sup>2</sup>	Joins a multicast group.

- 1 This command must be configured on all interfaces that will listen for the services manager multicasts.
- 2 The group address must match that configured within the services manager configuration.

## Configuring the Router as a Forwarding Agent

To configure the router as a forwarding agent, use the following commands, beginning in global configuration mode:

Step	Command	Purpose
1	Router(config)# <b>ip casa control-address</b> <i>igmp-address</i>	Specify the control address and IGMP address of the forwarding agent. The control address is a unique ip address used by forwarding-agent to send and receive control message between the service manager and the forwarding-agent. The recommended IGMP address is 224.0.1.2.
2	Router(config) <b>forwarding-agent pool</b> [ <i>initial-affinity</i> ] [ <i>max-affinity</i> ]	Adjusts the memory allocated for the forwarding agent's affinity pools. The default pool size is 5000 and there is no maximum pool size.
3	Router(config) <b>forwarding-agent</b> num [ <i>passwd</i> [ <i>timeout</i> ]]	Specify the port number.

**Note** The forwarding agent IGMP address and port must match the IGMP address and port configured on the services manager and the **ip igmp join-group** command.

If you are running CASA, you must configure **ip pim dense**. Some Forwarding Agents might be many hops away, so TTL=1 might not work in some cases.

## Monitoring the Forwarding Agent

To monitor the status of the forwarding agent, use the following commands in EXEC mode:

Command	Purpose
Router# <b>show ip casa affinities</b>	Display the status of affinities.
Router# <b>show ip casa oper</b>	Display the operational status of the forwarding agent.



```

microcode CIP flash slot0:cip26-5
microcode reload
ip subnet-zero
no ip domain-lookup
!
ip cef distributed
ip casa 206.10.20.34 224.0.1.2
  forwarding-agent 1637
!
interface Ethernet0/0
  ip address 172.26.56.18 255.255.255.224
  no ip directed-broadcast
  ip route-cache flow
  ip igmp join-group 224.0.1.2
  no ip mroute-cache
!
interface Ethernet0/1
  ip address 172.26.56.37 255.255.255.224
  no ip directed-broadcast
!
!
!
router eigrp 777
  network 172.26.0.0
!

no ip classless
!
line con 0
  exec-timeout 0 0
  transport input none
line aux 0
line vty 0 4
  exec-timeout 0 0
login
!
end

```

### Services Manager Configuration for SM

```

SM# wr t
Building configuration...
: Saved
: LocalDirector 420 Version 3.0.0.127
syslog output 20.3
no syslog console
enable password 00000000000000000000000000000000 encrypted
hostname SM
no shutdown ethernet 0
no shutdown ethernet 1
no shutdown ethernet 2
no shutdown ethernet 3
interface ethernet 0 auto
interface ethernet 1 auto
interface ethernet 2 auto
interface ethernet 3 auto
mtu 0 1500
mtu 1 1500
mtu 2 1500
mtu 3 1500
multiring all
no secure 0
no secure 1
no secure 2

```

## Configuration Examples

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```
no secure 3
ping-allow 0
ping-allow 1
ping-allow 2
ping-allow 3
ip address 172.26.56.19 255.255.255.248
route 172.26.10.249 255.255.255.255 172.26.56.20 1
route 206.10.20.33 255.255.255.255 172.26.56.17 1
route 206.10.20.34 255.255.255.255 172.26.56.18 1
no rip passive
failover ip address 0.0.0.0
failover
password cisco
telnet 161.0.0.0 255.0.0.0
no snmp-server contact
no snmp-server location
casa service-manager port 1638
casa service-manager multicast-ttl 60
tftp-server 172.26.10.249 /tftpboot/LD
virtual 172.26.56.13:0:0:tcp is
virtual 172.26.56.2:0:0:tcp is
redirection 172.26.56.13:0:0:tcp dispatched casa wildcard-ttl 60 fixed-ttl 60 igmp
224.0.1.2 port 1637
redirection 172.26.56.2:0:0:tcp dispatched casa wildcard-ttl 60 fixed-ttl 60 igmp
224.0.1.2 port 1637
real 172.26.56.34:0:0:tcp is
real 172.26.56.33:0:0:tcp is
real 172.26.56.6:0:0:tcp is
real 172.26.56.10:0:0:tcp is
bind 172.26.56.13:0:0:tcp 172.26.56.33:0:0:tcp
bind 172.26.56.13:0:0:tcp 172.26.56.34:0:0:tcp
bind 172.26.56.2:0:0:tcp 172.26.56.10:0:0:tcp
bind 172.26.56.2:0:0:tcp 172.26.56.6:0:0:tcp
: end
```