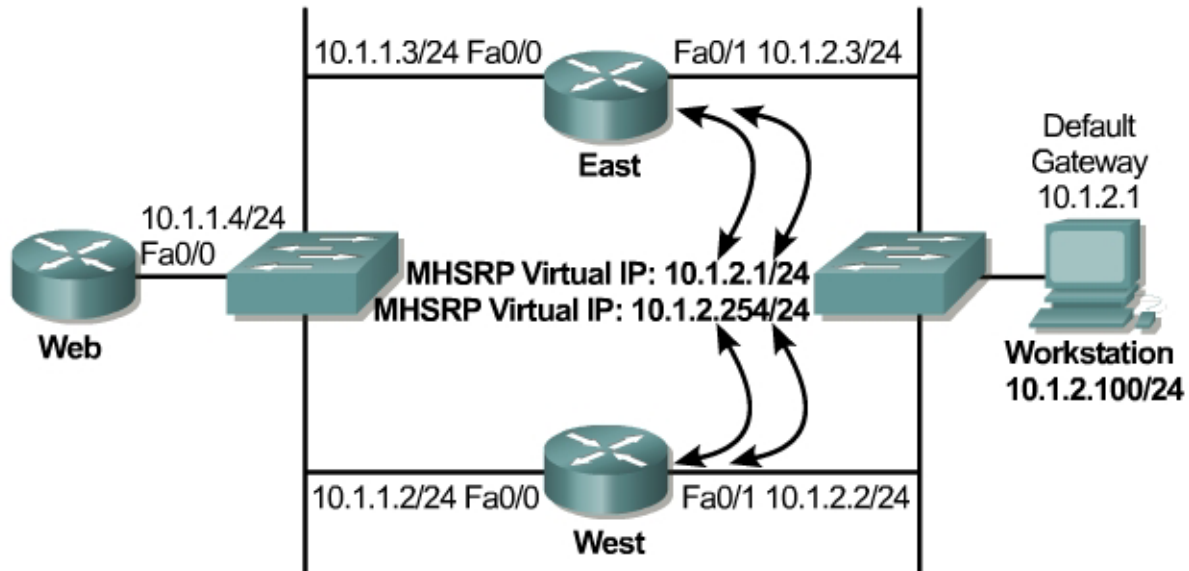


Lab 6.5.2 Multigroup Hot Standby Router Protocol



Objective

Configure Multigroup Hot Standby Router Protocol (MHSRP) on a pair of routers to provide redundant router services to a network.

Scenario

There are two routers connected to the network. After installing HSRP the user realizes that all the LAN traffic is forwarded through the active HSRP router. This is not the most efficient use of the bandwidth. Use the Multigroup HSRP for load balancing between the East and the West router.

Step 1

Cable the lab as shown in the diagram.

Step 2

Configure the Web router to act as a Web server. Configure the router with a username, VTY and secret passwords, IP address, and enable HTTP management services as shown below.

```
Router(config)#hostname Web
Web(config)#interface fastethernet0/0
Web(config-if)#ip address 10.1.1.4 255.255.255.0
Web(config-if)#no shutdown
Web(config-if)#line vty 0 4
Web(config-line)#password cisco
Web(config-line)#login
Web(config-line)#enable password class
Web(config)#ip http server
```

Step 3

Configure the East and West routers.

```
Router(config)#hostname West
West(config)#interface fastethernet 0/0
West(config-if)#ip address 10.1.1.2 255.255.255.0
West(config-if)#no shutdown
West(config-if)#interface fastethernet 0/1
West(config-if)#ip address 10.1.2.2 255.255.255.0
West(config-if)#no shutdown
West(config-if)#line vty 0 4
West(config-line)# password cisco
West(config-line)#login
West(config-line)#enable password class

Router(config)#hostname East
East(config)#interface fastethernet 0/0
East(config-if)#ip address 10.1.1.3 255.255.255.0
East(config-if)#no shutdown
East(config-if)#interface fastethernet 0/1
East(config-if)#ip address 10.1.2.3 255.255.255.0
East(config-if)#no shutdown
East(config-if)#line vty 0 4
East(config-line)# password cisco
East(config-line)#login
East(config-line)#enable password class
```

Step 4

Configure Enhanced Interior Gateway Routing Protocol (EIGRP) on all routers.

```
Web(config)#router eigrp 10
Web(config-router)#network 10.0.0.0

West(config)#router eigrp 10
West(config-router)#network 10.0.0.0

East(config)#router eigrp 10
East(config-router)#network 10.0.0.0
```

Step 5

Turn on HSRP using the **standby ip** command at the interface level.

Turn on HSRP on the 10.1.2.0 network.

```
West(config)#interface fastethernet 0/1
West(config-if)#standby ip 10.1.2.1
West(config-if)#standby preempt

East(config)#interface fastethernet 0/1
East(config-if)#standby ip 10.1.2.1
East(config-if)#standby preempt
```

Check the HSRP configuration with a **show standby** command on both routers.

Step 6

Ping the Web router at 10.1.1.4 from the workstation to test HSRP operation.

1. Was the ping successful? _____

If the ping does not work, go back and troubleshoot the configuration.

Change the IP address several times and ping 10.1.1.4 each time. Observe the lights on the routers and switch ports. Notice the packets are forwarded over the same router each time. The HSRP active router is sitting idle.

Step 7

To utilize both paths from the host network to the server network, configure Multigroup HSRP (MHSRP) between East and West. East and West are both configured with the same two HSRP groups. For group 1, East is the active router and West is the standby router. For group 2, West is the active router and East is the standby router. Configure half of the host default gateways using HSRP group 1 virtual IP address. Configure the other half of the host default gateways using HSRP group 2 virtual IP address.

Remove the original standby configuration before implementing MHSRP.

```
West(config)#interface fastethernet 0/1
West(config-if)#no standby ip 10.1.2.1

East(config)#interface fastethernet 0/1
East(config-if)# no standby ip 10.1.2.1

East(config)#interface fastethernet 0/1
East(config-if)#standby 1 ip 10.1.2.1
East(config-if)#standby 1 preempt
East(config-if)#standby 1 track fastethernet 0/0
East(config-if)#standby 2 ip 10.1.2.254
East(config-if)#standby 2 preempt
East(config-if)#standby 2 priority 95
East(config-if)#standby 2 track fastethernet 0/0

West(config)#interface fastethernet 0/1
West(config-if)#standby 1 ip 10.1.2.1
West(config-if)#standby 1 preempt
West(config-if)#standby 1 track fastethernet 0/0
West(config-if)#standby 1 priority 95
West(config-if)#standby 2 ip 10.1.2.254
West(config-if)#standby 2 preempt
West(config-if)#standby 2 track serial 0
West(config-if)#standby 2 track fastethernet 0/0
```

Check the HSRP configuration with a **show standby** command on both routers. The East router should be the Active router for HSRP Group 1 and Standby router for Group 2. The West router should be the Active router for Group 2 and Standby router for Group 1.

Step 8

Two default gateways for the LAN have been created. Half of the devices will be configured with one default gateway and the other half the other gateway. Each router is the active HSRP for one of the virtual IP address.

Configure the workstation with the default gateway address of 10.1.2.1. Ping the Web router.

2. Was the ping successful? _____

If not troubleshoot the network. Use the **show standby** command for assistance.

3. Which router forwarded the packets to the Web router? _____

Now change the default gateway address on the workstation to 10.1.2.254. Ping the Web router.

4. Which router forwarded the packets to the Web router? _____

Now the network is load balancing between the two HSRP routers.

Now test the redundancy of HSRP. Set the default gateway address to 10.1.2.1 on the workstation. ping the Web router with the -t option. Disconnect the cable between the East Router and the switch attached to the workstation while observing the ping output.

5. Did the network recover from the failure? _____

Reconnect the cable between the East router and the switch connected to the workstation. Now change the default gateway address of the workstation to 10.1.1.254. Again, use the -t option and ping the Web router. Disconnect the cable between the West router and the switch connected to the workstation.

6. Did the network recover from the failure? _____

Step 9

The track feature recovers the network when the far side links fail. Reconnect all the cables. Disconnect the cable between the East Router and the switch attached to the Web router. Set the default gateway address to 10.1.2.1. Ping the Web router with the -t option. Reconnect the cable between the East router and the switch attached to the Web router.

7. Did the network recover from the failure? _____