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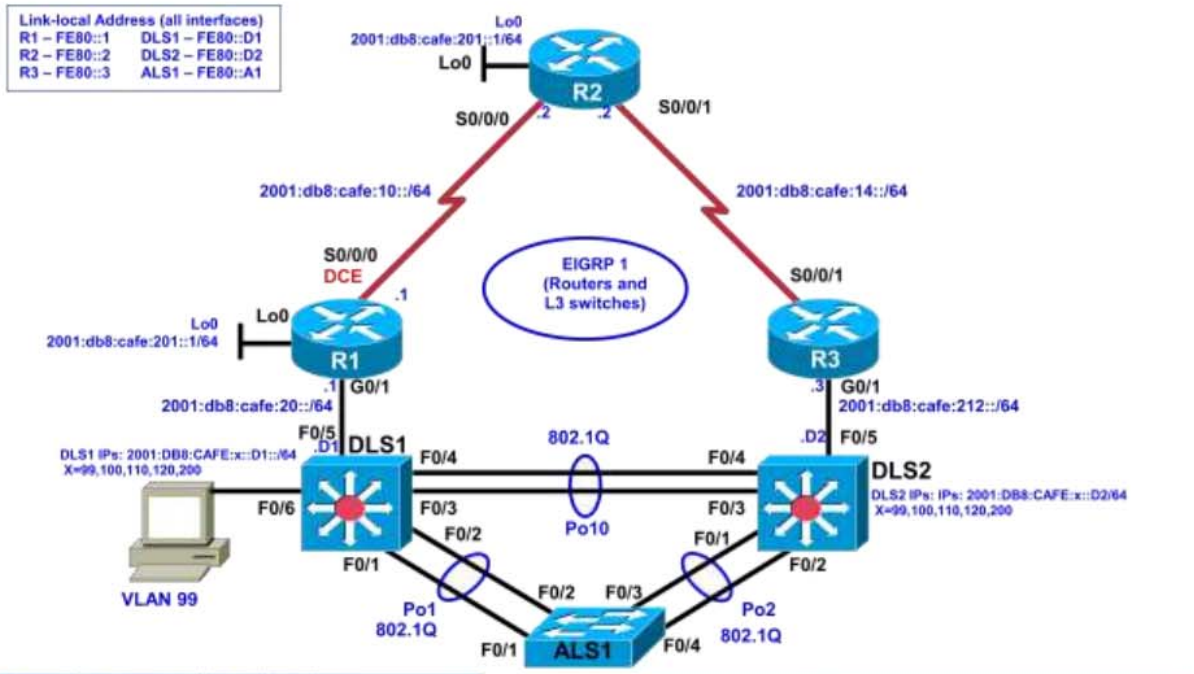
CCNPv7 SWITCH

# Chapter 6 Lab 6-1, Hot Standby Router Protocol for IPV6

## Topology




| VLAN | VLAN NAME | IPV6 Network |
|---|---|---|
| 99 | Management | 2001:DB8:CAFE:99::/64 |
| 100 | Servers | 2001:DB8:CAFE:100::/64 |
| 110 | Guest | 2001:DB8:CAFE:110::/64 |
| 120 | Office | 2001:DB8:CAFE:120::/64 |
| 200 | Voice | 2001:DB8:CAFE:200::/64 |

| Vtp Mode | DLS1 , DLS2 – Server<br>ALS1- Client |
|---|---|
| VTP Domain | SWITCHLAB |
| PVRST+ | DLS1 Root for VLANs 99, 110, 120<br>DLS2 Active for VLANs 100, 200 |
| HSRPv6 | DLS1 Active for VLANs 99, 110, 120<br>DLS2 Active for VLANs 100, 200 |

## Objective

- Configure inter-VLAN routing with HSRP for IPV6 to provide redundant, fault-tolerant routing to the internal network.
- Configure HSRP object tracking
- Adjust HSRP times for optimization.

## Background

Hot Standby Router Protocol (HSRP) version 2 is a Cisco-proprietary redundancy protocol for establishing a fault-tolerant default gateway. It is described in RFC 2281. HSRP provides a transparent failover mechanism to the end stations on the network. This provides users at the access layer with uninterrupted service to the network if the primary gateway becomes inaccessible. The Virtual Router Redundancy Protocol (VRRP) is a standards-based alternative to HSRP and is defined in RFC 3768. The two technologies are similar but not compatible. This lab focuses on HSRP.

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

**Note:** This lab uses Cisco ISR G2 routers running Cisco IOS 15.4(3) images with IP Base and Security packages enabled, and Cisco Catalyst 3560 and 2960 switches running Cisco IOS 15.0(2) IP Services and LAN Base images, respectively. The switches have Fast Ethernet interfaces, so the routing metrics for all Ethernet links in the labs are calculated based on 100 Mb/s, although the routers have Gigabit Ethernet interfaces. The 3560 and 2960 switches are configured with the SDM templates "dual-ipv4-and-ipv6 routing" and "lanbase-routing", respectively. Depending on the router or switch model and Cisco IOS Software version, the commands available and output produced might vary from what is shown in this lab. Catalyst 3650 switches (running any Cisco IOS XE release) and Catalyst 2960-Plus switches (running any Cisco IOS image) can be used in place of the Catalyst 3560 switches and the Catalyst 2960 switches.

### Required Resources

- 1 switches (Cisco 2960 with the Cisco IOS Release 15.0(2)SE6 C2960-LANBASEK9-M image or comparable)
- 2 switches (Cisco 3560 with the Cisco IOS Release 15.0(2)SE6 C3560-IPSERVICESK9-M image or comparable)
- Ethernet and console cables
- 1 PC

## Part 1: Prepare for the Lab

### Step 1: Prepare the switches for the lab

Use the **reset.tcl** script you created in Lab 1 "Preparing the Switch" to set your switches up for this lab. Then load the file BASE.CFG into the running-config with the command **copy flash:BASE.CFG running-config**. An example from DLS1:

```
DLS1# tclsh reset.tcl
Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]
[OK]
Erase of nvram: complete
Reloading the switch in 1 minute, type reload cancel to halt

Proceed with reload? [confirm]

*Mar  7 18:41:40.403: %SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
*Mar  7 18:41:41.141: %SYS-5-RELOAD: Reload requested by console. Reload Reason:
Reload command.
<switch reloads - output omitted>

Would you like to enter the initial configuration dialog? [yes/no]: n
Switch> en
*Mar  1 00:01:30.915: %LINK-5-CHANGED: Interface Vlan1, changed state to
administratively down
Switch# copy BASE.CFG running-config
Destination filename [running-config]?
184 bytes copied in 0.310 secs (594 bytes/sec)
DLS1#
```

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

### Step 2: Configure basic switch parameters.

Configure an IP address on the management VLAN according to the diagram. VLAN 1 is the default management VLAN, but following best practice, we will use a different VLAN. In this case, VLAN 99.

Enter basic configuration commands on each switch according to the diagram. Each interface should be configured with a global unicast address and a *statically assigned* link-local address. Please refer to the table on the topology diagram for the address information.

DLS1 example:

```
DLS1# configure terminal
DLS1(config)# interface vlan 99
DLS1(config-if)# ipv6 address 2001:DB8:CAFE:99::D1/64
DLS1(config-if)# ipv6 address fe80::d1 link-local
DLS1(config-if)# no shutdown Enter configuration commands, one per line.  End with
CNTL/Z.
```

The interface VLAN 99 will not come up immediately, because the layer 2 instance of the vlan has not yet been defined. This issue will be remedied in subsequent steps.

(Optional) On each switch, create an enable secret password and configure the VTY lines to allow remote access from other network devices.

DLS1 example:

```
DLS1(config)# enable secret class
DLS1(config)# line vty 0 15
DLS1(config-line)# password cisco
DLS1(config-line)# login
```

**Note**: The passwords configured here are required for NETLAB compatibility only and are NOT recommended for use in a live environment.

**Note(2)**: For purely lab environment purposes, it is possible to configure the VTY lines so that they accept any Telnet connection immediately, without asking for a password, and place the user into the privileged EXEC mode directly. The configuration would be similar to the following example for DLS1:

```
DLS1(config)# enable secret class
DLS1(config)# line vty 0 15
DLS1(config-line)# no login
DLS1(config-line)# privilege level 15
```

### Step 4: Configure trunks and EtherChannels between switches.

EtherChannel is used for the trunks because it allows you to utilize both Fast Ethernet interfaces that are available between each device, thereby doubling the bandwidth.

**Note**: It is good practice to shut down the interfaces on both sides of the link before a port channel is created and then re-enable them after the port channel is configured.

a. Configure trunks and EtherChannels from DLS1, DLS2, and ALS1 according to the diagram. Use PaGP as the negotiation protocol for EtherChannel configurations. **Refer to diagram for port channel numbers.

```
DLS1(config)# interface range fastEthernet 0/1-2
DLS1(config-if-range)# switchport trunk encapsulation dot1q
DLS1(config-if-range)# switchport mode trunk
DLS1(config-if-range)# channel-group 1 mode desirable
```

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```
DLS1(config-if-range)# no shut
Creating a port-channel interface Port-channel 1
```

b. Verify trunking and etherchannel configurations between all switches with the appropriate trunking and etherchannel verification commands.

## Step 5: Configure VTP on all switches according to the VTP information on the diagram.

a. A sample configuration is provided for you.

**DLS2(config)# vtp mode server**

```
Setting device to VTP Server mode for VLANS
NOTE:  Switches default to vtp mode server. However, remember the base
configuration modifies this setting to vtp mode transparent.
```

Repeat similar configurations on ALS1.

b. Verify the VTP changes.

## Step 6: Configure VTP on DLS1.

Create the VTP domain on VTP server DLS1 and create VLANs 99, 100, 110, 120, 200, for the domain.

NOTE: Switches default to vtp mode server. However, remember the base configuration modifies this setting to vtp mode transparent.

```
DLS1(config)# vtp domain SWITCHLAB
DLS1(config)# vtp version 2
DLS1(config)#vtp mode server
Setting device to VTP Server mode for VLANS

DLS1(config)# vlan 99
DLS1(config-vlan)# name Management
DLS1(config-vlan)# vlan 100
DLS1(config-vlan)# name Servers
DLS1(config-vlan)# vlan 110
DLS1(config-vlan)# name Guest
DLS1(config-vlan)# vlan 120
DLS1(config-vlan)# name office
DLS1(config-vlan)# vlan 200
DLS1(config-vlan)# name Voice
```

c. Verify that VLANs propagated to the other switches in the network.

## Step 8: Configure HSRPv6 interfaces and enable IPV6 routing with EIGRP.

HSRP provides redundancy in the network. The VLANs can be load-balanced by using the **standby** *group* **priority** *priority* command. The **ipv6 unicast-routing** command is used on DLS1 and DLS2 to activate ipv6 routing capabilities on these Layer 3 switches.

Each route processor can route between the various SVIs configured on its switch. In addition to the real IP address assigned to each distribution switch SVI, assign a third IP address in each subnet to be used as a virtual gateway address. HSRP negotiates and determines which switch accepts information forwarded to the virtual gateway IP address.

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### Chapter 5 Lab 5-1, Hot Standby Router Protocol

The **standby** command configures the IP address of the virtual gateway, sets the priority for each VLAN, and configures the router for preempt. Preemption allows the router with the higher priority to become the active router after a network failure has been resolved. Standby version 2 must be implemented for support of HSRPv6. The **standby x ipv6 autoconfig** command, where x is the assigned HSRP group number, is used to assign the group an automatically generated virtual ipv6 address.

In the following configurations, the *configured* priority for VLANs 99, 110, and 120 is 110 on DLS1, making it the active router for those VLANs. VLANs 100 and 200 have a default priority of 100 on DLS1, making DLS1 the standby router for these VLANs. DLS2 is configured to be the active router for VLANs 100 and 200 with a *configured* priority of 110, and the standby router for VLANs 99, 110, and 120 with a default priority of 100.

**Note:** It is recommended that the HSRP group number be mapped to VLAN number.

```
DLS1(config)# ipv6 unicast-routing

DLS1(config)# ipv6 router eigrp 1
DLS1(config-router)# no shutdown
DLS1(config-router)# router-id 1.1.1.1

DLS1(config)# interface FastEthernet0/5
DLS1(config)# no switchport
DLS1(config)# ipv6 address FE80::D1 link-local
DLS1(config)# ipv6 address 2001:DB8:CAFE:20::D1/64
DLS1(config)# ipv6 eigrp 1

DLS1(config)# interface vlan 99
DLS1(config-if)# standby version 2
DLS1(config-if)# standby 99 ipv6 autoconfig
DLS1(config-if)# standby 99 priority 110
DLS1(config-if)# standby 99 preempt
DLS1(config-if)# ipv6 eigrp 1
DLS1(config-if)# exit

DLS1(config)# interface vlan 100
DLS1(config-if)# ipv6 address 2001:DB8:CAFE:100::D1/64
DLS1(config-if)# ipv6 address FE80::D1 link-local
DLS1(config-if)# standby version 2
DLS1(config-if)# standby 100 ipv6 autoconfig
DLS1(config-if)# standby 100 preempt
DLS1(config-if)# ipv6 eigrp 1

DLS1(config)# interface vlan 110
DLS1(config-if)# ipv6 address 2001:DB8:CAFE:110::D1/64
DLS1(config-if)# ipv6 address FE80::D1 link-local
DLS1(config-if)# standby version 2
DLS1(config-if)# standby 110 ipv6 autoconfig
DLS1(config-if)# standby 110 priority 110
DLS1(config-if)# standby 110 preempt
DLS1(config-if)# ipv6 eigrp 1

DLS1(config)# interface vlan 120
DLS1(config-if)# ipv6 address 2001:DB8:CAFE:120::D1/64
DLS1(config-if)# ipv6 address FE80::D1 link-local
DLS1(config-if)# standby version 2
DLS1(config-if)# standby 120 ipv6 autoconfig
```

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

```
DLS1(config-if)# standby 120 priority 110
DLS1(config-if)# standby 120 preempt
DLS1(config-if)# ipv6 eigrp 1

DLS1(config)# interface vlan 200
DLS1(config-if)# ipv6 address 2001:DB8:CAFE:200::D1/64
DLS1(config-if)# ipv6 address FE80::D1 link-local
DLS1(config-if)# standby version 2
DLS1(config-if)# standby 200 ipv6 autoconfig
DLS1(config-if)# standby 200 preempt
DLS1(config-if)# ipv6 eigrp 1

DLS2(config)# ipv6 unicast-routing

DLS2(config)# ipv6 router eigrp 1
DLS1(config-router)# router-id 2.2.2.2
DLS2(config)# no shutdown

DLS2(config)# interface FastEthernet0/5
DLS2(config)# no switchport
DLS2(config)# ipv6 address FE80::d2 link-local
DLS2(config)# ipv6 address 2001:DB8:CAFE:212::D2/64
DLS2(config)# ipv6 eigrp 1

DLS2(config)# interface vlan 99
DLS2(config-if)# ipv6 address fe80::d2 link-local
DLS2(config-if)# standby version 2
DLS2(config-if)# standby 99 ipv6 autoconfig
DLS2(config-if)# standby 99 preempt
DLS2(config-if)# ipv6 eigrp 1
DLS2(config-if)# exit

DLS2(config)# interface vlan 100
DLS2(config-if)# ipv6 address 2001:DB8:CAFE:100::D2/64
DLS2(config-if)# ipv6 address FE80::D2 link-local
DLS2(config-if)# standby version 2
DLS2(config-if)# standby 100 ipv6 autoconfig
DLS1(config-if)# standby 100 priority 110
DLS2(config-if)# standby 100 preempt
DLS2(config-if)# ipv6 eigrp 1

DLS2(config)# interface vlan 110
DLS2(config-if)# ipv6 address 2001:DB8:CAFE:110::D2/64
DLS2(config-if)# ipv6 address FE80::D2 link-local
DLS2(config-if)# standby version 2
DLS2(config-if)# standby 110 ipv6 autoconfig
DLS2(config-if)# standby 110 preempt
DLS2(config-if)# ipv6 eigrp 1

DLS2(config)# interface vlan 120
DLS2(config-if)# ipv6 address 2001:DB8:CAFE:120::D2/64
DLS2(config-if)# ipv6 address FE80::D2 link-local
DLS2(config-if)# standby version 2
DLS2(config-if)# standby 120 ipv6 autoconfig
DLS2(config-if)# standby 120 preempt
DLS2(config-if)# ipv6 eigrp 1
```

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

```
DLS2(config)# interface vlan 200
DLS2(config-if)# ipv6 address 2001:DB8:CAFE:200::D2/64
DLS2(config-if)# ipv6 address FE80::D2 link-local
DLS2(config-if)# standby version 2
DLS2(config-if)# standby 200 ipv6 autoconfig
DLS1(config-if)# standby 200 priority 110
DLS2(config-if)# standby 200 preempt
DLS2(config-if)# ipv6 eigrp 1
```

## Step 9: Verify the HSRP configuration.

a. Issue the **show standby** command on both DLS1 and DLS2. Notice that the command to view HSRPv6 configuration is the same command used in implementing HSRPv4.

```
DLS1# sh standby
Vlan99 - Group 99 (version 2)
  State is Active
    13 state changes, last state change 05:43:06
  Link-Local Virtual IPv6 address is FE80::5:73FF:FEA0:63 (conf auto EUI64)
  Active virtual MAC address is 0005.73a0.0063
    Local virtual MAC address is 0005.73a0.0063 (v2 IPv6 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.640 secs
  Preemption enabled
  Active router is local
  Standby router is FE80::D2, priority 100 (expires in 9.136 sec)
  Priority 110 (configured 110)
    Track interface FastEthernet0//5 state Up decrement 30
  Group name is "hsrp-Vl99-99" (default)
Vlan100 - Group 100 (version 2)
  State is Standby
    3 state changes, last state change 06:05:19
  Link-Local Virtual IPv6 address is FE80::5:73FF:FEA0:64 (conf auto EUI64)
  Active virtual MAC address is 0005.73a0.0064
    Local virtual MAC address is 0005.73a0.0064 (v2 IPv6 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.296 secs
  Preemption enabled
  Active router is FE80::D2, priority 110 (expires in 10.448 sec)
    MAC address is 24b6.57e7.95c2
  Standby router is local
  Priority 100 (default 100)
  Group name is "hsrp-Vl100-100" (default)
Vlan110 - Group 110 (version 2)
  State is Active
    10 state changes, last state change 05:43:04
  Link-Local Virtual IPv6 address is FE80::5:73FF:FEA0:6E (conf auto EUI64)
  Active virtual MAC address is 0005.73a0.006e
    Local virtual MAC address is 0005.73a0.006e (v2 IPv6 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 1.728 secs
  Preemption enabled
  Active router is local
  Standby router is FE80::D2, priority 100 (expires in 9.664 sec)
  Priority 110 (configured 110)
    Track interface FastEthernet0//5 state Up decrement 30
```

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

```
  Group name is "hsrp-Vl110-110" (default)
Vlan120 - Group 120 (version 2)
  State is Active
    10 state changes, last state change 05:43:06
  Link-Local Virtual IPv6 address is FE80::5:73FF:FEA0:78 (conf auto EUI64)
  Active virtual MAC address is 0005.73a0.0078
    Local virtual MAC address is 0005.73a0.0078 (v2 IPv6 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 2.592 secs
  Preemption enabled
  Active router is local
  Standby router is FE80::D2, priority 100 (expires in 9.296 sec)
  Priority 110 (configured 110)
    Track interface FastEthernet0//5 state Up decrement 30
  Group name is "hsrp-Vl120-120" (default)
Vlan200 - Group 200 (version 2)
  State is Standby
    3 state changes, last state change 06:04:58
  Link-Local Virtual IPv6 address is FE80::5:73FF:FEA0:C8 (conf auto EUI64)
  Active virtual MAC address is 0005.73a0.00c8
    Local virtual MAC address is 0005.73a0.00c8 (v2 IPv6 default)
  Hello time 3 sec, hold time 10 sec
    Next hello sent in 0.032 secs
  Preemption enabled
  Active router is FE80::D2, priority 110 (expires in 7.360 sec)
    MAC address is 24b6.57e7.95c5
  Standby router is local
  Priority 100 (default 100)
  Group name is "hsrp-Vl200-200" (default)DLS1#sh standby
```

b. Issue the **show standby brief** command on both DLS1 and DLS2.

```
DLS1# sh stand bri
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Vl99        99   110 P Active  local           FE80::D2        FE80::5:73FF:FEA0:63
Vl100       100  100 P Standby FE80::D2        local           FE80::5:73FF:FEA0:64
Vl110       110  110 P Active  local           FE80::D2        FE80::5:73FF:FEA0:6E
Vl120       120  110 P Active  local           FE80::D2        FE80::5:73FF:FEA0:78
Vl200       200  100 P Standby FE80::D2        local           FE80::5:73FF:FEA0:C8

DLS2# sh standby brief
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Vl99        99   100 P Standby FE80::D1        local           FE80::5:73FF:FEA0:63
Vl100       100  110   Active  local           FE80::D1        FE80::5:73FF:FEA0:64
Vl110       110  100 P Standby FE80::D1        local           FE80::5:73FF:FEA0:6E
Vl120       120  100 P Standby FE80::D1        local           FE80::5:73FF:FEA0:78
Vl200       200  110 P Active  local           FE80::D1        FE80::5:73FF:FEA0:C8
```

Referencing the above output, notice that the virtual IPv6 address for each HSRP group was automatically generated using EUI-64 format and that the address is a link-local address. This happened as a result of the **standby x ipv6 autoconfig** command being entered on the interface.

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

# Part 2: This part of the lab will be used to test connectivity in conjunction with tracked interfaces with HSRPv6.

## Step 9: Configure routers R1, R2, and R3 with IPv6 addresses and routing according to the diagram.

d. Configure EIGRP version 6 routing between R1, R2, and R3. Use the global unicast addresses and link-local addresses shown in the topology.

e. Manually set the router-id on these devices. Use the chart listed below.

| | |
|---|---|
| R1 | 11.11.11.11 |
| R2 | 12.12.12.12 |
| R3 | 3.3.3.3 |

a. Verify connectivity throughout the network. If for some reason you do not have full connectivity, stop and troubleshoot routing before continuing with the next step in the lab.

## Step 10: Configure interface tracking with HSRPv6.

Interface tracking is used to track interfaces that affect HSRP operation. If DLS1 is the active router for VLANs 99,110 and 120 forwarding to destination address 2001:db8:café:201::2 off of router R2 and the connection between DLS1 and R1 is lost, DLS1 would have to reroute traffic over to DLS2. DLS2 would then forward traffic to the specified destination. In order to prevent this re-route situation from happening, we will tell HSRP to track the interface connected to R1 by using the standby 99 track FastEthernet 1/0/5. The value included after the port identification is the value that we want to subtract from the priority value previously configured on the active router. (110 -30). Decrementing the priority (110) by 30 would cause the priority value on DLS1 interface vlan 99 to change to 90. DLS2's interface vlan 99 is set to 100. DLS2's priority value is now higher than DLS1 causing DLS1 to relinquish the active router role to DLS2 for VLAN 99. HSRP preempt must be configured on the interfaces of DLS1 and DLS2 in order for this work properly. If no decrement value is specified in the *standby 99 track* then the value defaults to 10. This is important to note because the value must be set to a value that would cause the active router to lose its role in the event the line protocol of the tracked interface goes down. Refer to the output below for a list of available options to be used in configurations options for tracking.

```
DLS1(config-if)# standby 99 track ?
  <1-1000>           Tracked object number
  Async              Async interface
  Auto-Template      Auto-Template interface
  BVI                Bridge-Group Virtual Interface
  CTunnel            CTunnel interface
  Dialer             Dialer interface
  FastEthernet       FastEthernet IEEE 802.3
  Filter             Filter interface
  Filtergroup        Filter Group interface
  GigabitEthernet    GigabitEthernet IEEE 802.3z
  GroupVI            Group Virtual interface
```

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```
  Lex                 Lex interface
  Loopback            Loopback interface
  Port-channel        Ethernet Channel of interfaces
  Portgroup           Portgroup interface
  Pos-channel         POS Channel of interfaces
  Tunnel              Tunnel interface
  Vif                 PGM Multicast Host interface
  Virtual-TokenRing   Virtual TokenRing
  Vlan                Catalyst Vlans
  fcpa                Fiber Channel

DLS1(config-if)# standby 99 track fastEthernet 0/5 ?
  <1-255>  Decrement value
  <cr>

DLS1(config)# interface vlan 99
DLS1(config-if)# standby 99 track fastEthernet 0/5 30

DLS1(config)# interface vlan 110
DLS1(config-if)# standby 110 track fastEthernet 0/5 30

DLS1(config)# interface vlan 120
DLS1(config-if)# standby 120 track fastEthernet 0/5 30
```

NOTE: Repeat on DLS2 for SVI's 100 and 200. FYI: The interface that requires tracking connected to DLS2 is interface fast Ethernet 0/5 on DLS2. Also, use a decrement value of 30 using above explanation for DLS1.

## Step 10: Test HSRPv6 tracked interfaces.

Configure a host on DLS1 connected to port fa0/6.

Assign the host to access VLAN 99 on DLS1. Assign the SRV1 host an IPv6 address on VLAN 99 network ending in .100.

On SRV1, issue an extended ping using the ping 2001:db8:café:201::2 –t option.

While the ping is running, move to DLS1 and shut down the **interface fa0/5 connected DLS1 to R1**. You should see an immediate HSRP state change.

DLS1 is the active router for VLAN 99. Interface tracking is monitoring the line protocol state of fa0/5. Once the interface is **shutdown**, DLS2 automatically takes the active role for VLAN 99 and any other VLAN affected by this interface. The goal of HSRP operation is to provide end user(s) (SRV1) with automatic backup default-gateway services. As a result of the HSRP state change, clients experience minimal disruption and require no reconfiguration.

The following is from the Server (VLAN 99) to the R2 IPv6 loopback address.

```
C:\>ping 2001:db8:café:201::2 -t

Output omitted

DLS1(config)# interface range fastEthernet 0/5
DLS1(config-if-range)# shutdown
```

Output to the console at DLS1 should reflect DLS2 becoming the active router for VLANs 99, 110 and 120.

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**Chapter 5 Lab 5-1, Hot Standby Router Protocol**

## Step 11: Verify that DLS2 is acting as the backup default gateway for VLANs 99, 110 and 120. DLS2 is now the active HSRP router for all VLANs and the standby router is unknown.

```
DLS1# sh stand bri
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Vl99        99   80  P Standby FE80::D2        local           FE80::5:73FF:FEA0:63
Vl100       100  100 P Standby FE80::D2        local           FE80::5:73FF:FEA0:64
Vl110       110  80  P Standby FE80::D2        local           FE80::5:73FF:FEA0:6E
Vl120       120  80  P Standby FE80::D2        local           FE80::5:73FF:FEA0:78
Vl200       200  100 P Standby FE80::D2        local           FE80::5:73FF:FEA0:C8

DLS2# sh stand bri
                     P indicates configured to preempt.
                     |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Vl99        99   100 P Active  local           FE80::D1        FE80::5:73FF:FEA0:63
Vl100       100  110   Active  local           FE80::D1        FE80::5:73FF:FEA0:64
Vl110       110  100 P Active  local           FE80::D1        FE80::5:73FF:FEA0:6E
Vl120       120  100 P Active  local           FE80::D1        FE80::5:73FF:FEA0:78
Vl200       200  110 P Active  local           FE80::D1        FE80::5:73FF:FEA0:C8
```

Repeat this process by bringing up the DLS1 interface connecting to R1. Shut down the DLS2 interface connecting to R3. Use the **show standby brief** command to see the results.

**Note**: Since DLS1 and DLS2 have links to the Internet, failure of either switch will cause HSRP to redirect packets to the other switch. The functioning switch will take over as the default gateway to provide virtually uninterrupted connectivity for hosts at the access layer.

**CHALLENGE:** Optimize HSRPv6 by adjusting the hello and hold timers used in HSRP communication with the hello time adjusted to 50 milliseconds and hold time adjusted to 250 milliseconds on all HSRP groups.

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