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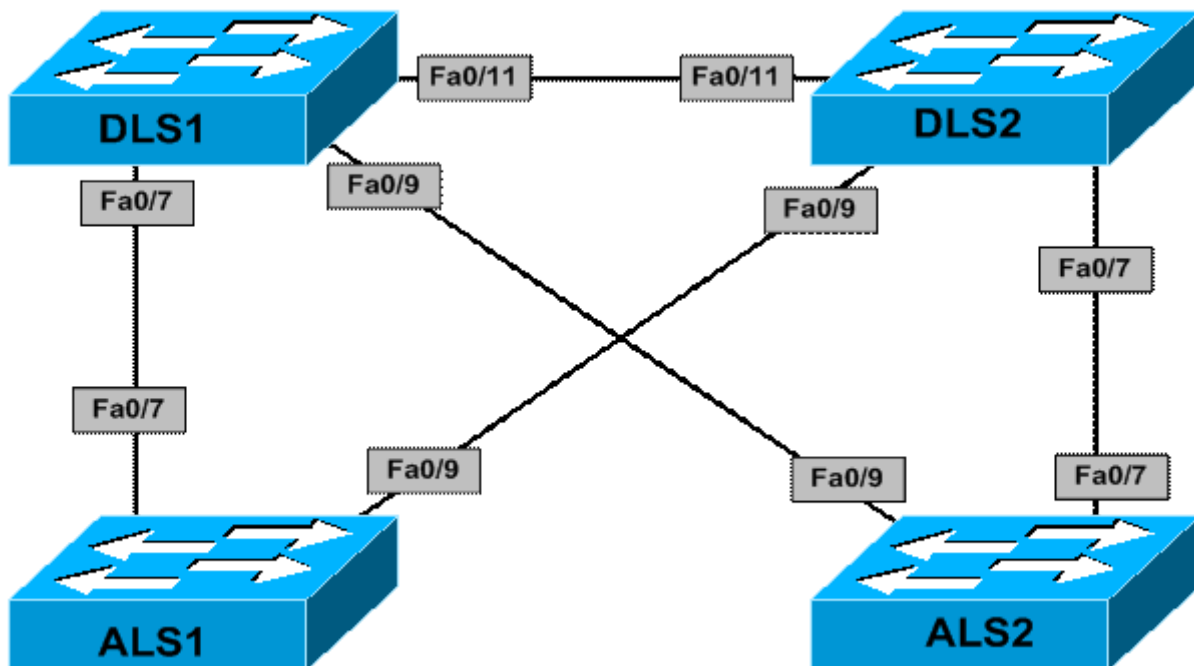
CCNP Lab 006 Solution: HSRP and Switch Security

Lab Objective:

The focus of this lab is to understand basic HSRP and common security technology implementation and configuration in Cisco IOS Catalyst switches.

Lab Topology:

The lab network topology is illustrated below:



IMPORTANT NOTE

If you are using the www.howtonetwork.net racks, please begin each and every lab by shutting down all interfaces on all switches and then manually re-enabling only the interfaces that are illustrated in this topology.

Task 1

Disable VTP on all switches and create the following VLANs:

1. DLS1: VLAN 100 and VLAN 200
2. DLS2: VLAN 100 and VLAN 200
3. ALS1: VLAN 100
4. ALS2: VLAN 200

Task 2

Disable DTP and 802.1Q configure trunking on all switches as follows:

1. The trunk links on switch DLS1 should only allow VLANs 1, 100 and 200
2. The trunk links on switch DLS2 should only allow VLANs 1, 100 and 200
3. The trunk links on switch ALS1 should only allow VLANs 1 and 100
4. The trunk links on switch ALS2 should only allow VLANs 1 and 200

Task 3

Configure the following SVIs and interfaces on the switches in the topology:

1. DLS1: Interface VLAN 100: IP address 100.1.1.1/24
2. DLS1: Interface VLAN 200: IP address 200.1.1.1/24

1. DLS2: Interface VLAN 100: IP address 100.1.1.2/24
2. DLS2: Interface VLAN 200: IP address 200.1.1.2/24

1. ALS1: Interface VLAN 100: IP address 100.1.1.3/24
2. ALS2: Interface VLAN 100: IP address 200.1.1.3/24

Task 4

Configure Cisco HSRP version 1 with preemption on switches DLS1 and DLS2 as follows:

1. DLS1: VLAN 100: HSRP IP address 100.1.1.254, group 1, priority 105, password HSRP1
2. DLS1: VLAN 200: HSRP IP address 200.1.1.254, group 2, priority 100, password HSRP2

1. DLS2: VLAN 100: HSRP IP address 100.1.1.254, group 1, priority 100, password HSRP1

2. DLS2: VLAN 200: HSRP IP address 200.1.1.254, group 2, priority 105, password HSRP2

Task 5

To allow for faster convergence, enable RPVST+. In addition to this, ensure that your Layer 2 and Layer 3 topologies are consistent, i.e. the primary gateway should be the root for the corresponding VLAN. Finally, ensure that switches ALS1 and ALS2 can also ping each other.

Task 6

Configure port security on all trunk links on switches DLS1 and DLS2. The switch port security configuration should allow a maximum of 10 addresses. When this limit has been reached, the switch should drop packets with unknown MAC addresses, until the number is of MAC addresses is below the limit. Additionally, the switch should send out an SNMP trap and a Syslog message, and the violation counter should be incremented.

Lab Validation

Task 1

```
DLS1(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS1(config)#vlan 100
DLS1(config-vlan)#exit
DLS1(config)#vlan 200
DLS1(config-vlan)#exit
```

```
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 100
DLS2(config-vlan)#exit
```

```
DLS2(config)#vlan 200
```

```
DLS2(config-vlan)#exit
```

```
ALS1(config)#vtp mode transparent
```

```
Setting device to VTP TRANSPARENT mode.
```

```
ALS1(config)#vlan 100
```

```
ALS1(config-vlan)#exit
```

```
ALS2(config)#vtp mode transparent
```

```
Setting device to VTP TRANSPARENT mode.
```

```
ALS2(config)#vlan 200
```

```
ALS2(config-vlan)#exit
```

Task 2

```
DLS1(config)#interface range fasteth 0/7 , fasteth 0/9 , fasteth 0/11
```

```
DLS1(config-if-range)#switchport
```

```
DLS1(config-if-range)#switchport trunk encapsulation dot1q
```

```
DLS1(config-if-range)#switchport mode trunk
```

```
DLS1(config-if-range)#switchport trunk allowed vlan 1,100,200
```

```
DLS1(config-if-range)#switchport nonegotiate
```

```
DLS1(config-if-range)#exit
```

```
DLS2(config)# interface range fasteth 0/7 , fasteth 0/9 , fasteth 0/11
```

```
DLS2(config-if-range)#switchport
```

```
DLS2(config-if-range)#switchport trunk encapsulation dot1q
```

```
DLS2(config-if-range)#switchport mode trunk
```

```
DLS2(config-if-range)#switchport trunk allowed vlan 1,100,200
```

```
DLS2(config-if-range)#switchport nonegotiate
```

```
DLS2(config-if-range)#exit
```

```
ALS1(config)#interface range fastethernet 0/7 , fastethernet 0/9
ALS1(config-if-range)#switchport mode trunk
ALS1(config-if-range)#switchport trunk allowed vlan 1,100
ALS1(config-if-range)#exit
```

```
ALS2(config)#interface range fastethernet 0/7 , fastethernet 0/9
ALS2(config-if-range)#switchport mode trunk
ALS2(config-if-range)#switchport trunk allowed vlan 1,200
ALS2(config-if-range)#exit
```

Verify your configuration using the **show interfaces trunk** command:

```
DLS1#show interfaces trunk

Port Mode Encapsulation Status Native vlan
Fa0/7 on 802.1q trunking 1
Fa0/11 on 802.1q trunking 1

Port Vlans allowed on trunk
Fa0/7 1,100,200
Fa0/11 1,100,200

Port Vlans allowed and active in management domain
Fa0/7 1,100,200
Fa0/11 1,100,200

Port Vlans in spanning tree forwarding state and not pruned
Fa0/7 1,100,200
Fa0/11 200
```

Task 3

```
DLS1(config)#interface vlan 100
DLS1(config-if)#ip add 100.1.1.1 255.255.255.0
DLS1(config-if)#exit
DLS1(config)#interface vlan 200
DLS1(config-if)#ip add 200.1.1.1 255.255.255.0
DLS1(config-if)#exit
```

```
DLS2(config)#interface vlan 100
DLS2(config-if)#ip address 100.1.1.2 255.255.255.0
DLS2(config-if)#exit
DLS2(config)#interface vlan 200
DLS2(config-if)#ip address 200.1.1.2 255.255.255.0
DLS2(config-if)#exit
```

```
ALS1(config)#interface vlan 100
ALS1(config-if)#ip add 100.1.1.3 255.255.255.0
ALS1(config-if)#exit
```

```
ALS2(config)#interface vlan 200
ALS2(config-if)#ip address 200.1.1.3 255.255.255.0
ALS2(config-if)#exit
```

Task 4

When completing this task, keep in mind that the default priority value for HSRP is 100 and so no explicit configuration is required to specify this value. However, unlike VRRP, preemption for HSRP is disabled by default and must be explicitly configured. Additionally, by default, when HSRP is enabled, version 1 is enabled. This task is completed as follows:

```
DLS1(config)#interface vlan 100
```

```
DLS1(config-if)#standby 1 ip 100.1.1.254
DLS1(config-if)#standby 1 priority 105
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 authentication text HSRP1
DLS1(config-if)#exit
DLS1(config)#interface vlan 200
DLS1(config-if)#standby 2 ip 200.1.1.254
DLS1(config-if)#standby 2 preempt
DLS1(config-if)#standby 2 authentication text HSRP2
DLS1(config-if)#exit
```

```
DLS2(config)#interface vlan 100
DLS2(config-if)#standby 1 ip 100.1.1.254
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 authentication text HSRP1
DLS2(config-if)#exit
DLS2(config)#interface vlan 200
DLS2(config-if)#standby 2 ip 200.1.1.254
DLS2(config-if)#standby 2 priority 105
DLS2(config-if)#standby 2 preempt
DLS2(config-if)#standby 2 authentication text HSRP2
DLS2(config-if)#exit
```

Next, although not explicitly stated, configure the default gateway for switches ALS1 and ALS2 as the HSRP virtual IP (VIP) address so that they can reach other.

```
ALS1(config)#ip default-gateway 100.1.1.254
```

```
ALS2(config)#ip default-gateway 200.1.1.254
```

Verify your configuration using the **show standby** commands on switches DLS1 and DLS2:

DLS1#show stand brief

P indicates configured to preempt.

|

Interface Grp Prio P State Active Standby Virtual IP

VI100 1 105 P Active local 100.1.1.2 100.1.1.254

VI200 2 100 P Standby 200.1.1.2 local 200.1.1.254

DLS2#show standby

Vlan100 – Group 1

State is Standby

9 state changes, last state change 00:01:42

Virtual IP address is 100.1.1.254

Active virtual MAC address is 0000.0c07.ac01

Local virtual MAC address is 0000.0c07.ac01 (v1 default)

Hello time 3 sec, hold time 10 sec

Next hello sent in 2.620 secs

Authentication text "HSRP1"

Preemption enabled

Active router is 100.1.1.1, priority 105 (expires in 8.612 sec)

Standby router is local

Priority 100 (default 100)

IP redundancy name is "hsrp-VI100-1" (default)

Vlan200 – Group 2

State is Active

5 state changes, last state change 00:14:18

Virtual IP address is 200.1.1.254

Active virtual MAC address is 0000.0c07.ac02

Local virtual MAC address is 0000.0c07.ac02 (v1 default)

Hello time 3 sec, hold time 10 sec

Next hello sent in 0.244 secs

Authentication text "HSRP2"

Preemption enabled

```
Active router is local
Standby router is 200.1.1.1, priority 100 (expires in 9.836 sec)
Priority 105 (configured 105)
IP redundancy name is "hsrp-Vl200-2" (default)
```

Task 5

The first part of this task is simple. RPVST+ is enabled on all switches as follows:

```
DLS1(config)#spanning-tree mode rapid-pvst
```

```
DLS2(config)#spanning-tree mode rapid-pvst
```

```
ALS1(config)#spanning-tree mode rapid-pvst
```

```
ALS2(config)#spanning-tree mode rapid-pvst
```

The second part of this task entails adjusting the default root bridges for the respective VLANs. Given that switch DLS1 is primary gateway for VLAN 100, it should be root for that VLAN. Given that switch DLS2 is primary gateway for VLAN 200, it should be root for that VLAN. These two switches should be configured as the secondary or backup root bridge for the other VLAN. This task is completed as follows:

```
DLS1(config)#spanning-tree vlan 100 priority 4096
```

```
DLS1(config)#spanning-tree vlan 200 priority 8192
```

```
DLS2(config)#spanning-tree vlan 100 priority 8192
```

```
DLS2(config)#spanning-tree vlan 200 priority 4096
```

Following this, verify your configuration using the **show spanning-tree** commands:

DLS1#show spanning-tree summary

Switch is in rapid-pvst mode

Root bridge for: VLAN0100

Extended system ID is enabled

Portfast Default is disabled

PortFast BPDU Guard Default is disabled

Portfast BPDU Filter Default is disabled

Loopguard Default is disabled

EtherChannel misconfig guard is enabled

UplinkFast is disabled

BackboneFast is disabled

Configured Pathcost method used is short

Name Blocking Listening Learning Forwarding STP Active

VLAN0001 1 0 0 1 2

VLAN0100 0 0 0 2 2

VLAN0200 0 0 0 2 2

3 vlans 1 0 0 5 6

DLS2#show spanning-tree summary

Switch is in rapid-pvst mode

Root bridge for: VLAN0200

Extended system ID is enabled

Portfast Default is disabled

PortFast BPDU Guard Default is disabled

Portfast BPDU Filter Default is disabled

Loopguard Default is disabled

EtherChannel misconfig guard is enabled

UplinkFast is disabled

```
BackboneFast is disabled
Configured Pathcost method used is short

Name Blocking Listening Learning Forwarding STP Active
-----
VLAN0001 0 0 0 2 2
VLAN0100 0 0 0 2 2
VLAN0200 0 0 0 2 2
-----
3 vlans 0 0 0 6 6
```

The final task calls for verifying that switches ALS1 and ALS2 can ping each other:

```
ALS1#ping 200.1.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 200.1.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4 ms
```

```
ALS2#ping 100.1.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 100.1.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
```

Task 6

```
DLS1(config)#interface range fasteth 0/7 , fasteth 0/9 , fasteth 0/11
DLS1(config-if-range)#switchport port-security
DLS1(config-if-range)#switchport port-security maximum 10
DLS1(config-if-range)#switchport port-security violation restrict
DLS1(config-if-range)#switchport port-security mac-address sticky
DLS1(config-if-range)#exit
```

```
DLS2(config)#interface range fasteth 0/7 , fasteth 0/9 , fasteth 0/11
DLS2(config-if-range)#switchport port-security
DLS2(config-if-range)#switchport port-security maximum 10
DLS2(config-if-range)#switchport port-security violation restrict
DLS2(config-if-range)#switchport port-security mac-address sticky
DLS2(config-if-range)#exit
```

Following this configuration, use the **show port-security** commands for verification:

```
DLS1#show port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
(Count) (Count) (Count)
-----
Fa0/7 10 0 1 Restrict
Fa0/9 10 0 1 Restrict
Fa0/11 10 0 1 Restrict
-----
Total Addresses in System (excluding one mac per port) : 0
Max Addresses limit in System (excluding one mac per port) : 5120
```

```
DLS2#show port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
(Count) (Count) (Count)
-----
Fa0/7 10 1 0 Restrict
```

```
Fa0/9 10 1 0 Restrict
```

```
Fa0/11 10 0 0 Restrict
```

```
Total Addresses in System (excluding one mac per port) : 0
```

```
Max Addresses limit in System (excluding one mac per port) : 5120
```

Final Switch Configurations

DLS1

```
DLS1#term len 0
```

```
DLS1#show ru
```

```
Building configuration...
```

```
Current configuration : 5074 bytes
```

```
!
```

```
version 12.2
```

```
no service pad
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
no service password-encryption
```

```
!
```

```
hostname DLS1
```

```
!
```

```
no logging console
```

```
!
```

```
no aaa new-model
```

```
ip subnet-zero
```

```
ip routing
```

```
no ip domain-lookup
!
vtp domain hard
vtp mode transparent
!
!
!
!
!
!
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
spanning-tree vlan 100 priority 4096
spanning-tree vlan 200 priority 8192
!
vlan internal allocation policy ascending
!
vlan 100,200
!
!
!
!
!
!
!
!
interface FastEthernet0/1
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/2
switchport mode dynamic desirable
shutdown
!
```

```
interface FastEthernet0/3
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/4
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/5
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/6
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/7
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 1,100,200
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 10
switchport port-security
switchport port-security violation restrict
switchport port-security mac-address sticky
!
interface FastEthernet0/8
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/9
switchport trunk encapsulation dot1q
```



```
switchport trunk allowed vlan 1,100,200
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 10
switchport port-security
switchport port-security violation restrict
switchport port-security mac-address sticky
!
interface FastEthernet0/10
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/11
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 1,100,200
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 10
switchport port-security
switchport port-security violation restrict
switchport port-security mac-address sticky
!
interface FastEthernet0/12
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/13
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/14
switchport mode dynamic desirable
```

```
shutdown
!  
interface FastEthernet0/15  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/16  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/17  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/18  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/19  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/20  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/21  
switchport mode dynamic desirable  
shutdown  
!  
interface FastEthernet0/22  
switchport mode dynamic desirable
```

```
shutdown
!
interface FastEthernet0/23
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/24
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/25
switchport mode dynamic desirable
!
interface FastEthernet0/26
switchport mode dynamic desirable
!
interface FastEthernet0/27
switchport mode dynamic desirable
!
interface FastEthernet0/28
switchport mode dynamic desirable
!
interface FastEthernet0/29
switchport mode dynamic desirable
!
interface FastEthernet0/30
switchport mode dynamic desirable
!
interface FastEthernet0/31
switchport mode dynamic desirable
!
interface FastEthernet0/32
```

```
switchport mode dynamic desirable
!
interface FastEthernet0/33
switchport mode dynamic desirable
!
interface FastEthernet0/34
switchport mode dynamic desirable
!
interface FastEthernet0/35
switchport mode dynamic desirable
!
interface FastEthernet0/36
switchport mode dynamic desirable
!
interface FastEthernet0/37
switchport mode dynamic desirable
!
interface FastEthernet0/38
switchport mode dynamic desirable
!
interface FastEthernet0/39
switchport mode dynamic desirable
!
interface FastEthernet0/40
switchport mode dynamic desirable
!
interface FastEthernet0/41
switchport mode dynamic desirable
!
interface FastEthernet0/42
switchport mode dynamic desirable
!
```

```
interface FastEthernet0/43
switchport mode dynamic desirable
!
interface FastEthernet0/44
switchport mode dynamic desirable
!
interface FastEthernet0/45
switchport mode dynamic desirable
!
interface FastEthernet0/46
switchport mode dynamic desirable
!
interface FastEthernet0/47
switchport mode dynamic desirable
!
interface FastEthernet0/48
switchport mode dynamic desirable
!
interface GigabitEthernet0/1
switchport mode dynamic desirable
!
interface GigabitEthernet0/2
switchport mode dynamic desirable
!
interface Vlan1
no ip address
shutdown
!
interface Vlan100
ip address 100.1.1.1 255.255.255.0
standby 1 ip 100.1.1.254
standby 1 priority 105
```

```
standby 1 preempt
standby 1 authentication HSRP1
!
interface Vlan200
ip address 200.1.1.1 255.255.255.0
standby 2 ip 200.1.1.254
standby 2 preempt
standby 2 authentication HSRP2
!
ip classless
ip http server
ip http secure-server
!
!
!
control-plane
!
!
line con 0
line vty 5 15
!
end

DLS1#
```

DLS2

```
DLS2#term len 0
DLS2#sh run
Building configuration...
```

```
Current configuration : 5194 bytes
!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname DLS2
!
no logging console
!
no aaa new-model
ip subnet-zero
ip routing
no ip domain-lookup
!
vtp domain hard
vtp mode transparent
!
!
!
!
!
!
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
spanning-tree vlan 100 priority 8192
spanning-tree vlan 200 priority 4096
!
vlan internal allocation policy ascending
!
```

```
vlan 100,200
!
!
!
!
!
!
!
interface FastEthernet0/1
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/2
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/3
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/4
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/5
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/6
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/7
```



```
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 1,100,200
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 10
switchport port-security
switchport port-security violation restrict
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0009.b79f.7d87
!
interface FastEthernet0/8
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/9
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 1,100,200
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 10
switchport port-security
switchport port-security violation restrict
switchport port-security mac-address sticky
switchport port-security mac-address sticky 0007.8432.dd09
!
interface FastEthernet0/10
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/11
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 1,100,200
```

```
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 10
switchport port-security
switchport port-security violation restrict
switchport port-security mac-address sticky
!
interface FastEthernet0/12
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/13
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/14
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/15
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/16
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/17
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/18
```

```
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/19
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/20
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/21
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/22
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/23
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/24
switchport mode dynamic desirable
shutdown
!
interface FastEthernet0/25
switchport mode dynamic desirable
!
interface FastEthernet0/26
switchport mode dynamic desirable
```

```
!  
interface FastEthernet0/27  
switchport mode dynamic desirable  
!  
interface FastEthernet0/28  
switchport mode dynamic desirable  
!  
interface FastEthernet0/29  
switchport mode dynamic desirable  
!  
interface FastEthernet0/30  
switchport mode dynamic desirable  
!  
interface FastEthernet0/31  
switchport mode dynamic desirable  
!  
interface FastEthernet0/32  
switchport mode dynamic desirable  
!  
interface FastEthernet0/33  
switchport mode dynamic desirable  
!  
interface FastEthernet0/34  
switchport mode dynamic desirable  
!  
interface FastEthernet0/35  
switchport mode dynamic desirable  
!  
interface FastEthernet0/36  
switchport mode dynamic desirable  
!  
interface FastEthernet0/37
```

```
switchport mode dynamic desirable
!
interface FastEthernet0/38
switchport mode dynamic desirable
!
interface FastEthernet0/39
switchport mode dynamic desirable
!
interface FastEthernet0/40
switchport mode dynamic desirable
!
interface FastEthernet0/41
switchport mode dynamic desirable
!
interface FastEthernet0/42
switchport mode dynamic desirable
!
interface FastEthernet0/43
switchport mode dynamic desirable
!
interface FastEthernet0/44
switchport mode dynamic desirable
!
interface FastEthernet0/45
switchport mode dynamic desirable
!
interface FastEthernet0/46
switchport mode dynamic desirable
!
interface FastEthernet0/47
switchport mode dynamic desirable
!
```

```
interface FastEthernet0/48
switchport mode dynamic desirable
!
interface GigabitEthernet0/1
switchport mode dynamic desirable
!
interface GigabitEthernet0/2
switchport mode dynamic desirable
!
interface Vlan1
no ip address
shutdown
!
interface Vlan100
ip address 100.1.1.2 255.255.255.0
standby 1 ip 100.1.1.254
standby 1 preempt
standby 1 authentication HSRP1
!
interface Vlan200
ip address 200.1.1.2 255.255.255.0
standby 2 ip 200.1.1.254
standby 2 priority 105
standby 2 preempt
standby 2 authentication HSRP2
!
ip classless
ip http server
ip http secure-server
!
!
!
```

```
control-plane
!  
!  
line con 0  
line vty 5 15  
!  
end  
  
DLS2#
```

ALS1

```
ALS1>en  
ALS1#term len 0  
ALS1#sh run  
Building configuration...  
  
Current configuration : 1143 bytes  
!  
version 12.1  
no service pad  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!  
hostname ALS1  
!  
no logging console  
!  
ip subnet-zero
```

```
!  
no ip domain-lookup  
vtp domain hard  
vtp mode transparent  
!  
!  
spanning-tree mode rapid-pvst  
no spanning-tree optimize bpdu transmission  
spanning-tree extend system-id  
!  
!  
!  
!  
vlan 100  
!  
interface FastEthernet0/1  
shutdown  
!  
interface FastEthernet0/2  
shutdown  
!  
interface FastEthernet0/3  
shutdown  
!  
interface FastEthernet0/4  
shutdown  
!  
interface FastEthernet0/5  
shutdown  
!  
interface FastEthernet0/6  
shutdown
```



```
!  
interface FastEthernet0/7  
switchport trunk allowed vlan 1,100  
switchport mode trunk  
!  
interface FastEthernet0/8  
shutdown  
!  
interface FastEthernet0/9  
switchport trunk allowed vlan 1,100  
switchport mode trunk  
!  
interface FastEthernet0/10  
shutdown  
!  
interface FastEthernet0/11  
shutdown  
!  
interface FastEthernet0/12  
shutdown  
!  
interface Vlan1  
no ip address  
no ip route-cache  
shutdown  
!  
interface Vlan100  
ip address 100.1.1.3 255.255.255.0  
no ip route-cache  
!  
ip default-gateway 100.1.1.254  
ip http server
```

```
!  
line con 0  
line vty 5 15  
!  
!  
end  
  
ALS1#
```

ALS2

```
ALS2>en  
ALS2#term len 0  
ALS2#sh run  
Building configuration...  
  
Current configuration : 1143 bytes  
!  
version 12.1  
no service pad  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!  
hostname ALS2  
!  
no logging console  
!  
ip subnet-zero  
!
```

```
no ip domain-lookup
vtp domain hard
vtp mode transparent
!
!
spanning-tree mode rapid-pvst
no spanning-tree optimize bpdu transmission
spanning-tree extend system-id
!
!
!
!
vlan 200
!
interface FastEthernet0/1
shutdown
!
interface FastEthernet0/2
shutdown
!
interface FastEthernet0/3
shutdown
!
interface FastEthernet0/4
shutdown
!
interface FastEthernet0/5
shutdown
!
interface FastEthernet0/6
shutdown
!
```

```
interface FastEthernet0/7
switchport trunk allowed vlan 1,200
switchport mode trunk
!
interface FastEthernet0/8
shutdown
!
interface FastEthernet0/9
switchport trunk allowed vlan 1,200
switchport mode trunk
!
interface FastEthernet0/10
shutdown
!
interface FastEthernet0/11
shutdown
!
interface FastEthernet0/12
shutdown
!
interface Vlan1
no ip address
no ip route-cache
shutdown
!
interface Vlan200
ip address 200.1.1.3 255.255.255.0
no ip route-cache
!
ip default-gateway 200.1.1.254
ip http server
!
```

```
line con 0
line vty 5 15
!
!
end

ALS2#
```

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