Configuring Secure (Router) Mode on the Content Switching Module

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Introduction

The Content Switching Module (CSM) provides high−performance connections between network users and server farms based on Layer 4 through 7 information. You can represent a group of real servers (the server farm) as a single server instance (virtual server), balance the traffic to the server farm by selecting one of the server load balancing methods, and limit traffic to individual servers (sticky connections) and server farms (policies). This sample configuration describes how to configure Server Load Balancing (SLB) on the Catalyst 6000 family CSM.

You cannot run Cisco IOS® SLB software on the same switch as the CSM. You must configure the CSM mode by issuing the **ip slb mode [csm | rp]** command before any configuration. In the **ip slb mode** command, the **rp** argument is default.

Before You Begin

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

Prerequisites

There are no specific prerequisites for this document.

Components Used

The information in this document is based on the software and hardware versions below.

- Catalyst 6000 family Supervisor IOS Release 12.1(8)EX for Supervisor Engine 1 with MSFC1 (c6sup11−jsv−mz.121−8.EX)
- Catalyst 6000 family CSM Software Release 2.1(0) (c6slb−apc.2−1−1.bin)

The CSM runs on Cisco IOS Release 12.1(6)E or later. If you are using a Supervisor Engine 2, you must use Cisco IOS Release 12.1(8a)E or later.

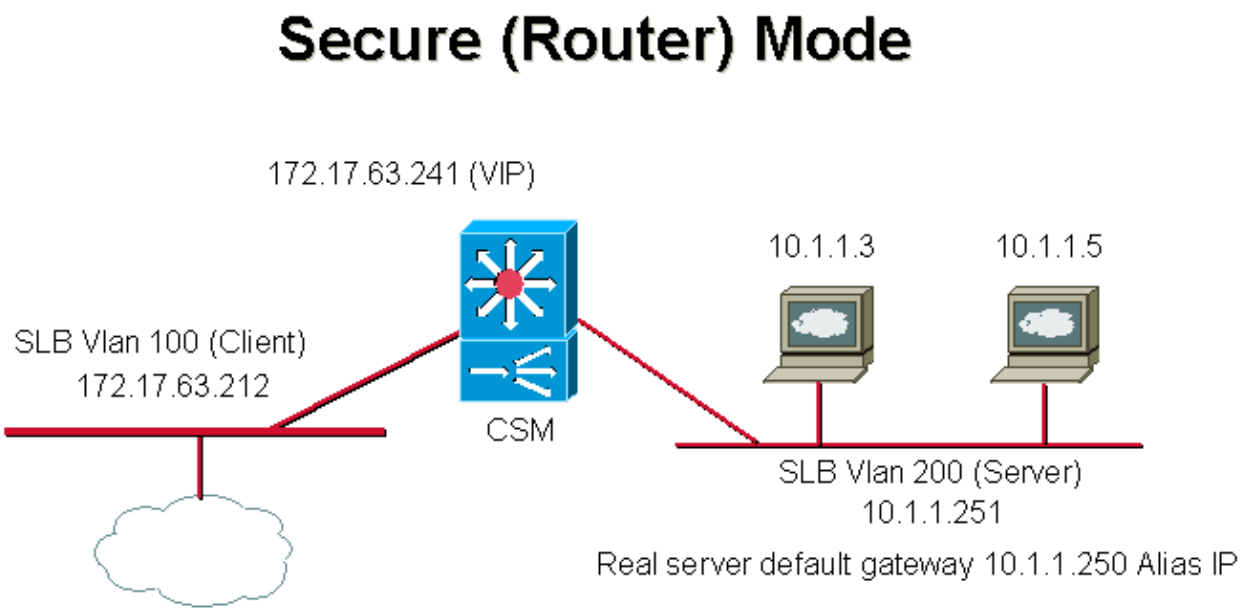
Operation Mode

Client and server connections through the CSM can use either Layer 2 or Layer 3 switching. Clients connect to the client side VLAN, and servers connect to the server side VLAN. Servers and clients can exist on different subnets. Servers can also be located more than one hop away and connect to the server side VLAN through routers. In this case, the servers' default gateway and the routing through the network from servers to the CSM server side VLAN must direct all load balanced traffic from the servers through the CSM, or serverfarm client NAT must be configured in the CSM for all traffic destined to servers in the server farm. A client sends a request to a VIP address, and the CSM forwards the request to a server that can satisfy the request. The server forwards the response to the CSM, and the CSM forwards the response to the client.

When the client side and server side VLANs are in different subnets, you can configure the CSM in secure (router) mode. This sample configuration focuses on secure (router) mode configuration. When the client side and server side VLANs are in the same subnet, you can configure the CSM to operate in single subnet (bridge) mode. Refer to the sample configurations below for more information.

Network Diagram

The client side and server side VLANs are on different subnets in secure (router) mode. The diagram shows how the secure (router) mode configuration is set up.



Configurations

Complete these steps to configure CSM for secure (multiple subnet) mode:

1. Select the CSM mode.

```
cat(config)# ip slb mode csm
```

2. Create the client and server VLAN in the database. When exiting the VLAN database mode, the configuration changes are applied.

```
cat# vlan database
cat(vlan)# vlan 100
VLAN 100 added: Name: VLAN0100
cat(vlan)# vlan 200
VLAN 200 added: Name: VLAN0200
cat(vlan)# exit
APPLY completed.
Exiting....
```

3. Configure physical interfaces that connect the client (uplink) to the corresponding VLAN.

```
cat(config)# inter fastEthernet 2/1
cat(config-if)# switchport
cat(config-if)# switchport access vlan 100
cat(config-if)# no shut
```

4. Configure physical interfaces that connect the servers to the corresponding VLAN.

```
cat(config)# inter fastEthernet 2/3
```

```
cat(config-if)# switchport
cat(config-if)# switchport access vlan 200
cat(config-if)# no shutdown
cat(config)# inter fastEthernet 2/4
cat(config-if)# switchport
cat(config-if)# switchport access vlan 200
cat(config-if)# no shutdown
```

5. Create the client side VLAN and gateway.

```
cat(config)# ip slb vlan 100 client
cat(config-slb-vlan-client)# ip address 172.17.63.217 255.255.255.192
cat(config-slb-vlan-client)# gateway 172.17.63.210
```

6. Create the server side VLAN.

```
cat(config)# ip slb vlan 200 server
cat(config-slb-vlan-server)# ip address 10.1.1.251 255.255.255.0
cat(config-slb-vlan-server)# alias 10.1.1.250 255.255.255.0
```

7. Create the serverfarm.

```
cat(config)# ip slb serverfarm WWWFARM
cat(config-slb-sfarm)# real 10.1.1.3
cat(config-slb-real)# inservice
cat(config-slb-real)# real 10.1.1.5
cat(config-slb-real)# inservice
```

8. Create vserver and associate serverfarm.

```
cat(config)# ip slb vserver SERVER
cat(config-slb-vserver)# virtual 172.17.63.241 tcp www
cat(config-slb-vserver)# serverfarm WWWFARM
cat(config-slb-vserver)# inservice
```

The following is a sample configuration of server load balancing that uses the Cisco Catalyst 6500 and the CSM.

CSM (WS-X6066-SLB-APC) Running Configuration

```
Current configuration : 3791 bytes
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname cat
!
boot buffersize 126968
boot system flash slot0:c6sup11-jsv-mz.121-8.EX.bin
!
redundancy
 main-cpu
  auto-sync standard
ip subnet-zero
!


!--- SLB mode.

ip slb mode csm
!
```

```
!--- Client side VLAN configuration.
!--- Important: Gateway address pointing to interface VLAN 100.

ip slb vlan 100 client
 ip address 172.17.63.217 255.255.255.192
 gateway 172.17.63.210
!


!--- Server side VLAN configuration.

ip slb vlan 200 server
 ip address 10.1.1.251 255.255.255.0
 alias 10.1.1.250 255.255.255.0
!


!--- Serverfarm configuration.

ip slb serverfarm WWWFARM
 nat server
 no nat client
real 10.1.1.3
  inservice
 real 10.1.1.5
  inservice
!


!--- Vserver configuration.

ip slb vserver SERVER
 virtual 172.17.63.241 tcp www
 serverfarm WWWFARM
 inservice
!
interface GigabitEthernet1/1
 no ip address
 shutdown
!
interface GigabitEthernet1/2
 no ip address
 shutdown
!


!--- Client (uplink) connected to FastEthernet 2/1.

interface FastEthernet2/1
 no ip address
 switchport
 switchport access vlan 100
 switchport mode access
!
interface FastEthernet2/2
 no ip address
 shutdown
!


!--- Servers connected to FastEthernet 2/3 and 2/4.

interface FastEthernet2/3
 no ip address
```

```
 switchport
 switchport access vlan 200
 switchport mode access
!
interface FastEthernet2/4
 no ip address
 switchport
 switchport access vlan 200
 switchport mode access ...
interface FastEthernet2/48
 no ip address
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan100
 ip address 172.17.63.210 255.255.255.192
!
ip default−gateway 172.17.63.193
ip classless
ip route 0.0.0.0 0.0.0.0 172.17.63.193
no ip http server
!
line con 0
line vty 0 4
 login
!
end
```

show Commands

Note: Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

show ip slb status Command

The **show ip slb status** command displays the status of the SLB module. The module must be online.

```
cat6#show ip slb status
SLB Module is online in slot 3.
Configuration Download state: COMPLETE, SUCCESS
```

show ip slb vserver Command

The **show ip slb vserver** command displays the virtual server information. You also see the state of the virtual server and how many connections there are:

```
cat6#show ip slb vserver
slb vserver   prot    virtual              vlan   state         conns
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
SERVER        TCP     172.17.63.241/32:80  ALL    OPERATIONAL   0
```

show ip slb reals Command

The **show ip slb reals** command displays information for each real server, such as the server farm where each

server resides, the server states, thresholds, and connections.

```
cat6#show ip slb reals
real                  server farm      weight  state          conns
--------------------------------------------------------------------
10.1.1.5              WWWFARM          8       OPERATIONAL    0
10.1.1.3              WWWFARM          8       OPERATIONAL    0
```

show ip slb serverfarms Command

The **show ip slb serverfarms** command displays the server farm information. This command shows the predictor used for load balancing. This example uses the default, round robin.

```
cat6#show ip slb serverfarm
server farm    predictor    nat   reals   redirect  bind id
-----------------------------------------------------------
WWWFARM        RoundRobin   S     2       0         0
```

show ip slb vlan Command

The **show ip slb vlan** command displays the VLAN information for the client and the server.

```
cat6# show ip slb vlan
vlan   IP address       IP mask            type
-------------------------------------------------
100    172.17.63.217    255.255.255.192    CLIENT
200    10.1.1.251       255.255.255.0      SERVER
```

Troubleshoot

You can only ping the real server from the Catalyst 6500 by using the **ping slb** command, as shown below.

```
cat6#ping slb 10.1.1.3
IP address       Reachable
--------------------------
10.1.1.3         Yes
```

Related Information

- **Catalyst 6000 Family Content Switching Module Installation and Configuration Note**
- **Technical Support − Cisco Systems**

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