

# 服务器负载均衡的内容交换模块和对真实服务器直接访问的配置示例

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## 简介

内容交换模块(CSM)可以被添加到有运行本地IOS的多层交换机特性卡(MSFC)的一台Catalyst 6500。此模块允许最终性能，当负载均衡流量对多个服务器或防火墙。

一般，当您使用CSM时，直接访问对服务器不是可用的。然而，此配置使用各自的IP地址为了直接地到达服务器。此配置通过虚拟地址也表示对服务器的负载均衡连接。

## 先决条件

### 要求

本文档没有任何特定的要求。

### 使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco IOS软件版本12.1(11b)E1
- Catalyst 6000
- ROM：系统引导，版本12.0(3)XE，发行软件
- BOOTLDR：MSFC软件(C6MSFC-BOOT-M)，版本12.1(3a)E4，早期软件发行(fc1)

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

## 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## 配置

本部分提供有关如何配置本文档所述功能的信息。

使用 [命令查找工具](#) ( [仅限注册用户](#) ) 可获取有关本部分所使用命令的详细信息。

## 网络图

本文档使用以下网络设置：

## 配置

为了完成此配置，请遵从这些步骤：

### 1. 配置在交换机的VLAN。

```
Router#vlan database
Router(vlan)#vlan 10
VLAN 10 added:
    Name: VLAN0010
Router(vlan)#vlan 50
VLAN 50 added:
    Name: VLAN0050
Router(vlan)#exit
APPLY completed.
Exiting....
```

### 2. 配置交换机的端口。

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa 4/1
Router(config-if)#switchport
Router(config-if)#switchport access vlan 10
Router(config-if)#no shut
Router(config-if)#int fa 4/46
Router(config-if)#switchport
Router(config-if)#switchport access vlan 50
Router(config-if)#no shut
Router(config-if)#int fa 4/47
Router(config-if)#switchport
Router(config-if)#switchport access vlan 50
Router(config-if)#no shut
Router(config-if)#int fa 4/48
Router(config-if)#switchport
Router(config-if)#switchport access vlan 50
Router(config-if)#no shut
Router(config-if)#int fa 4/45
Router(config-if)#switchport
Router(config-if)#switchport access vlan 50
Router(config-if)#no shut
Router(config-if)#exit
```

### 3. 配置在MSFC的接口VLAN客户端的VLAN。

```
Router(config-if)#interface vlan 10
Router(config-if)#ip address 172.17.63.229 255.255.255.192
Router(config-if)#no shut
Router(config-if)#exit
```

### 4. 配置在MSFC的路由。

```
Router(config)#ip route 10.0.0.0 255.255.255.0 172.17.63.233
Router(config)#ip route 0.0.0.0 0.0.0.0 172.17.63.193
Router(config)#
```

### 5. 配置CSM服务器VLAN。

```
Router(config)#module csm 3
Router(config-module-csm)#vlan 50 server
Route(config-slb-vlan-server)#ip address 10.0.0.1 255.255.255.0
Route(config-slb-vlan-server)#gateway 172.17.63.229
```

### 6. 通过配置IP地址和网关配置CSM客户端VLAN。

```
Route(config-slb-vlan-server)#vlan 10 client
Route(config-slb-vlan-client)#ip address 172.17.63.233 255.255.255.192
Route(config-slb-vlan-client)#gateway 172.17.63.229
Route(config-slb-vlan-client)#exit
Router(config-slb-sfarm)#
```

### 7. 配置直接访问的serverfarm。

```
Router(config-module-csm)#serverfarm SERVER-SUBNETS
Router(config-slb-sfarm)#predictor forward
Router(config-slb-sfarm)#exit
```

### 8. 配置直接访问的vserver。

```
Router(config-module-csm)#vserver DIRECT-ACCESS
Router(config-slb-vserver)#virtual 10.0.0.0 255.255.255.0 any
Router(config-slb-vserver)#serverfarm SERVER-SUBNETS
Router(config-slb-vserver)#inservice
Router(config-slb-vserver)#exit
Router(config-module-csm)#exit
```

### 9. 配置服务器的serverfarm。

```
Router(config-module-csm)#serverfarm SERVERS
Router(config-slb-sfarm)#nat server
Router(config-slb-sfarm)#no nat client
Router(config-slb-sfarm)#real 10.0.0.10
Router(config-slb-real)#inservice
Router(config-slb-real)#real 10.0.0.11
Router(config-slb-real)#inservice
Router(config-slb-real)#real 10.0.0.12
Router(config-slb-real)#inservice
Router(config-slb-real)#real 10.0.0.13
Router(config-slb-real)#inservice
Router(config-slb-real)#exit
```

### 10. 配置负载均衡的流量的vserver。

```

Router(config-slb-sfarm)#vserver MYSITE
Router(config-slb-vserver)#virtual 172.17.63.231 any
Router(config-slb-vserver)#serverfarm SERVERS
Router(config-slb-vserver)#inservice
Router(config-slb-vserver)#exit
Router(config-module-csm)#serverfarm SERVER-SUBNETS
Router(config-slb-sfarm)#predictor forward
Router(config-slb-sfarm)#exit
Router(config-module-csm)#exit
Router(config)#exit
Router#wr mem
Building configuration...

01:44:58: %SYS-5-CONFIG_I: Configured from console by console[OK]

```

## 验证

使用本部分可确认配置能否正常运行。

### 1. 查看配置。

```

Router#show run
Building configuration...

Current configuration : 4071 bytes
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Router
!
boot bootldr bootflash:c6msfc-boot-mz.121-3a.E4
!
redundancy
  main-cpu
    auto-sync standard
ip subnet-zero
!
!
!
mls qos statistics-export interval 300
mls qos statistics-export delimiter |
module ContentSwitchingModule 3
  vlan 50 server
    ip address 10.0.0.1 255.255.255.0
!
  vlan 10 client
    ip address 172.17.63.233 255.255.255.192
    gateway 172.17.63.229
!
  serverfarm SERVER-SUBNETS
    nat server
    no nat client
    predictor forward
!
  serverfarm SERVERS
  nat server
    no nat client
    real 10.0.0.10

```

```

    inservice
real 10.0.0.11
    inservice
real 10.0.0.12
    inservice
real 10.0.0.13
    inservice
!
vserver DIRECT-ACCESS
virtual 10.0.0.0 255.255.255.0 any
serverfarm SERVER-SUBNETS
persistent rebalance
inservice
!
vserver MYSITE
virtual 172.17.63.231 any
serverfarm SERVERS
persistent rebalance
inservice
!
!
!
!
interface GigabitEthernet1/1
no ip address
shutdown
!
interface GigabitEthernet1/2
no ip address
shutdown
!
interface FastEthernet4/1
no ip address
switchport
switchport access vlan 10
!
interface FastEthernet4/2
no ip address
shutdown
!
interface FastEthernet4/3
no ip address
shutdown
!
!
--- output suppressed --- !! interface FastEthernet4/43 no ip address shutdown ! interface
FastEthernet4/44 no ip address shutdown ! interface FastEthernet4/45 no ip address
switchport switchport access vlan 50 ! interface FastEthernet4/46 no ip address switchport
switchport access vlan 50 ! interface FastEthernet4/47 no ip address switchport switchport
access vlan 50 ! interface FastEthernet4/48 no ip address switchport switchport access vlan
50 ! interface Vlan1 no ip address shutdown ! interface Vlan10 ip address 172.17.63.229
255.255.255.192 ! ip classless ip route 0.0.0.0 0.0.0.0 172.17.63.193 ip route 10.0.0.0
255.255.255.0 172.17.63.233 no ip http server !!! line con 0 line vty 0 4 ! end

```

## 2. 验证VLAN在交换处理器配置。

```

Router#show vlan
VLAN Name                Status    Ports
-----
1    default                 active
1002 fddi-default            active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active

```

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

Primary Secondary Type Ports

Router#

### 3. 验证模块在他们适当的slot。

Router# **show module**

Mod	Ports	Card	Type	Model	Serial No.
1	2	Cat 6k sup 1	Enhanced QoS (Active)	WS-X6K-SUP1A-2GE	SAD05020E10
3	0	SLB Application Processor	Complex	WS-X6066-SLB-APC	SAD051102E1
4	48	48 port 10/100 mb RJ45		WS-X6348-RJ-45	SAL05073TGR

Mod	MAC addresses	Hw	Fw	Sw	Status
1	0001.c9b0.3b6c to 0001.c9b0.3b6d	7.0	5.4(2)	7.2(0.35)	Ok
3	0030.f271.5d28 to 0030.f271.5d2f	1.2		2.2(2a)	Ok
4	0004.de83.4530 to 0004.de83.455f	2.0	5.4(2)	7.2(0.35)	Ok

Mod	Sub-Module	Model	Serial	Hw	Status
1	Policy Feature Card	WS-F6K-PFC	SAD05020NYT	1.1	Ok
1	MSFC Cat6k daughterboard	WS-F6K-MSFC	SAD05020B9A	1.4	Ok

### 4. 检查您的Reals。

Router#**show modu csm 3 reals**

real	server farm	weight	state	conns
10.0.0.10	SERVERS	8	OPERATIONAL	0
10.0.0.11	SERVERS	8	OPERATIONAL	0
10.0.0.12	SERVERS	8	OPERATIONAL	0
10.0.0.13	SERVERS	8	FAILED	0

Router#

### 5. 检查您的vserver。

Router#**show module csm 3 vservers**

slb vserver	prot	virtual	vlan	state	conns
DIRECT-ACCESS	any	10.0.0.0/24:0	ALL	OPERATIONAL	0
MYSITE	any	172.17.63.231/32:0	ALL	OPERATIONAL	1

Router#**show module csm 3 ?**

```

arp          SLB arp cache listing
capp         SLB Content Application Peering Protocol information
conns        SLB connection information
dfp          SLB DFP manager information
ft           SLB ft information
map          SLB map information
memory       SLB memory information
natpools     SLB client nat pool information
policy       SLB policy information
probe        SLB probe information
reals        SLB real server information

```

```

serverfarms  SLB server farm information
static       SLB static server NAT information
stats        SLB Statistics
status       SLB status information
sticky       SLB sticky database
tech-support SLB tech debug information
vlan         SLB vlan information
vservers     SLB virtual server information

```

## 6. 检查在CSM的连接。

```
Router#show module csm 3 conns
```

	prot	vlan	source	destination	state
In	TCP	10	171.71.78.140:53141	172.17.63.231:23	ESTAB
Out	TCP	50	10.0.0.11:23	171.71.78.140:53141	ESTAB
In	UDP	50	10.0.0.11:1130	192.168.1.1:161	ESTAB
Out	UDP	10	192.168.1.1:161	10.0.0.11:1130	ESTAB

## 7. 检查在模块的统计信息。

```
Router#show module csm 3 stats
```

```

Connections Created:      6
Connections Destroyed:   5
Connections Current:     1
Connections Timed-Out:   0
Connections Failed:      0
Server initiated Connections:
    Created: 13, Current: 0, Failed: 13
L4 Load-Balanced Decisions: 18
L4 Rejected Connections:  1
L7 Load-Balanced Decisions: 0
L7 Rejected Connections:
    Total: 0, Parser: 0,
    Reached max parse len: 0, Cookie out of mem: 0,
    Cfg version mismatch: 0, Bad SSL2 format: 0
L4/L7 Rejected Connections:
    No policy: 0, No policy match 0,
    No real: 1, ACL denied 0,
    Server initiated: 0
Checksum Failures:  IP: 0, TCP: 0
Redirect Connections: 0, Redirect Dropped: 0
FTP Connections:    0
MAC Frames:
    Tx: Unicast: 709, Multicast: 0, Broadcast: 155,
    Underflow Errors: 0
    Rx: Unicast: 723, Multicast: 1433, Broadcast: 83,
    Overflow Errors: 0, CRC Errors: 0

```

## 8. 检查在serverfarm的其他详细信息。

```
Router#show module csm 3 serverfarms detail
```

```

SERVER-SUBNETS, predictor = Forward, nat = SERVER
    virtuals inservice: 1, reals = 0, bind id = 0, fail action = none
    inband health config: <none>
    retcode map = <none>
    Total connections = 0

SERVERS, predictor = RoundRobin, nat = SERVER
    virtuals inservice: 1, reals = 4, bind id = 0, fail action = none
    inband health config: <none>
    retcode map = <none>
Real servers:
    10.0.0.10, weight = 8, OPERATIONAL, conns = 0
    10.0.0.11, weight = 8, OPERATIONAL, conns = 0
    10.0.0.12, weight = 8, OPERATIONAL, conns = 0

```

```
10.0.0.13, weight = 8, FAILED, conns = 0
Total connections = 0
```

Router#

Router#show module csm 3 conns ?

```
client    conns associated with a specific client IP address
detail    Detailed output
vserver   conns associated with a specific vserver
|         Output modifiers
<cr>
```

## 9. 检查在vserver的其他详细信息。

Router#show module csm 3 vservers detail

```
DIRECT-ACCESS, state = OPERATIONAL, v_index = 10
virtual = 10.0.0.0/24:0, any, service = NONE, advertise = FALSE
idle = 3600, replicate csrps = none, vlan = ALL, pending = 30
max parse len = 600, persist rebalance = TRUE
conns = 1, total conns = 1
Default policy:
  server farm = SERVER-SUBNETS
  sticky: timer = 0, subnet = 0.0.0.0, group id = 0
Policy          Tot Conn      Client pkts  Server pkts
-----
(default)       1             27           19

MYSITE, state = OPERATIONAL, v_index = 11
virtual = 172.17.63.231/32:0, any, service = NONE, advertise = FALSE
idle = 3600, replicate csrps = none, vlan = ALL, pending = 30
max parse len = 600, persist rebalance = TRUE
conns = 0, total conns = 8
Default policy:
  server farm = SERVERS
  sticky: timer = 0, subnet = 0.0.0.0, group id = 0
Policy          Tot Conn      Client pkts  Server pkts
-----
(default)       8             539          405
```

## 故障排除

目前没有针对此配置的故障排除信息。

## 相关信息

- [内容交换模块产品与服务](#)
- [Cisco CSS 11000 系列内容服务交换机](#)
- [Cisco CSS 11500 系列内容服务交换机](#)
- [技术支持和文档 - Cisco Systems](#)