

Configurar el CS en el modo del router con las directivas L7

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[Introducción](#)

Este documento proporciona una configuración de muestra del módulo content switching (CS) configurado en el modo del router con las directivas de la capa 7 (L7).

El concepto de política predeterminada también se explica en este documento. El CS se configura para caer las conexiones servidor-originadas. Una sonda de ICMP simple se configura también.

[Antes de comenzar](#)

[Convenciones](#)

Para obtener más información sobre las convenciones del documento, consulte [Convenciones de Consejos Técnicos de Cisco](#).

[prerrequisitos](#)

No hay requisitos previos específicos para este documento.

[Componentes Utilizados](#)

Este documento no tiene restricciones específicas en cuanto a versiones de software y de hardware.

La información que se presenta en este documento se originó a partir de dispositivos dentro de un ambiente de laboratorio específico. Todos los dispositivos que se utilizan en este documento se pusieron en funcionamiento con una configuración verificada (predeterminada). Si la red está funcionando, asegúrese de haber comprendido el impacto que puede tener un comando antes de ejecutarlo.

Teoría Precedente

Los clientes (o el router ascendente que conecta con los clientes) y los servidores están típicamente en dos VLAN distintos. Dependiendo de la configuración de las subredes IP, el CS puede actuar en los dos modos siguientes:

- **Modo del router** — los VLAN del cliente y servidor se configuran como dos subredes IP distintas. En un entorno del Equilibrio de carga del servidor estándar (SLB), el VIP pertenece IP del cliente a la subred, y los servidores pertenecen IP del servidor a la subred, que no se puede alcanzar directamente del lado del cliente. El CS en el modo del router no permite que los pedidos entrantes sean pasados encendido a los servidores si no hacen juego un VIP.
- **Modo Bridge** — los VLAN del cliente y servidor son parte de la misma subred IP. Los CSM Bridges Packet entre esos dos VLAN. En un entorno SLB estándar, los VIP y los servidores están en la misma subred IP. Todos los pedidos entrantes que no corresponden con un VIP se interligan al VLAN juntado (si la conexión vino de un cliente, será enviada al servidor de VLAN, y si la conexión vino de un servidor, será enviada al VLAN del cliente).

Configurar

En esta sección encontrará la información para configurar las funciones descritas en este documento. Las configuraciones siguientes residen totalmente en el mismo Catalyst 6500 representado en el diagrama de la red abajo. La configuración está rota en los pedazos separados ilustra mejor qué parte se refiere específicamente al CS y qué parte refiere a la configuración del (MSFC) de la capa 2/3 (L2/3) del Catalyst.

Nota: Para obtener información adicional sobre los comandos que se utilizan en este documento, use la Command Lookup Tool (solo para clientes [registrados](#)).

Diagrama de la red

Este documento utiliza la instalación de red que se muestra en el siguiente diagrama.

Configuraciones

En este documento, se utilizan estas configuraciones:

- Catalyst 6000 - Slot 4 CS
- Catalyst 6000 - comprobación y interfaces lógicas

Catalyst 6000 - Slot 4 CS

```
module ContentSwitchingModule 4
```

```

vlan 50 client
  ip address 192.168.8.2 255.255.255.0
  gateway 192.168.8.1

!--- Client side VLAN configuration for the CSM in slot
4. !--- The gateway keyword refers to the MSFC interface
VLAN 50 IP address. !
vlan 240 server
  ip address 10.66.86.249 255.255.255.240
  alias 10.66.86.250 255.255.255.240

!--- Server side VLAN configuration. !--- The IP address
is different from the one used for the client VLAN 240.
!--- The CSM is configured in router mode (two VLANs and
two IP subnets). !--- Bridge mode (two VLANs, only 1 IP
subnet) is configured specifying !--- the same exact IP
address for a pair of client and server VLANs on the
CSM. !--- An alias is not necessary, however, it is a
good practice, since it is required !--- when migrating
to a redundant configuration. !--- In that case, active
and standby CSMs have different IP addresses on the
VLAN, !--- however, they share the same alias. !--- Real
servers are configured to point to the alias as their
default gateway. static drop real 10.66.86.240
255.255.255.240 !--- Server-originated connections from
all servers in the 10.66.86.240 subnet !--- are dropped.
By default, server-originated connections are allowed
and !--- their source IP (the server IP address) is not
modified. !--- Other options are allowing server-
originated connections with !--- their source IP NATed
to the VIP, or allowing server-originated connections !-
-- with their source IP NATed to a pool of specific IP
addresses. !--- Note: The static command applies only !-
-- to server originated connections, which do not hit
any VIPs !--- configured on the CSM.

!
probe PING icmp
  interval 5
  failed 30

!--- This is an example of an Internet Control Message
Protocol (ICMP) probe. !--- Probes are sent out every
interval (five) seconds. !--- Once a server goes out of
service, probes to that server are sent !--- every
failed (30) second to see if the server has come back
online. ! serverfarm FARM1 nat server !--- nat server is
the default configuration of a serverfarm. !--- This
means that the CSM performs directed mode !---
(destination IP of incoming connections is changed from
the VIP !--- to the IP address of the selected server)
for that serverfarm. !--- Dispatch mode (only L2
rewrite) can be configured by !--- issuing the no nat
server command.

```

```
no nat client
```

```
!--- no nat client is the default behavior for a  
serverfarm. !--- The CSM by default does not change the  
source IP address of !--- incoming requests.
```

```
real 10.66.86.242  
weight 24  
inservice
```

```
!--- This is an example of a different weight (the  
default is eight). !--- Remember that weights are  
relative to the weights of other real servers !---  
(weight of eight does not mean that eight consecutive  
requests are sent !--- to the same server). !--- Observe  
also that there is no port translation configured. !---  
A port translation is used to support a server listening  
to port 8080. !--- You can also use real 10.66.86.242  
8080 for the configuration.
```

```
real 10.66.86.245  
inservice
```

```
real 10.66.86.246  
inservice
```

```
real 10.66.86.248  
inservice  
probe PING
```

```
!--- All the servers in the serverfarm are pinged every  
five seconds, !--- according to the probe PING  
configured above. !--- No predictor was specified, and  
the default is round robin.
```

```
serverfarm FARM2  
nat server  
no nat client  
real 10.66.86.242 23  
inservice  
real 10.66.86.246 23  
inservice
```

```
!--- The real servers in FARM2 are an example of port  
translation. !
```

```
serverfarm FARM3  
nat server  
no nat client  
real 10.66.86.242  
inservice  
  
real 10.66.86.245  
inservice
```

```
!
```

```
sticky 10 cookie cookienametimeout 20
```

```
!--- A sticky group (group number 10) is configured for
cookie sticky !--- with a timeout of 20 minutes. ! map
TEST url match protocol http url *jpg* !--- A URL map
(also HTTP header and cookie maps are available) is
created. !--- This is the first step in the creation of
a L7 policy. !--- In this case, only one match sentence
is configured. In general, !--- multiple match sentences
can be configured. ! map IE header match protocol http
header User-Agent header-value *IE* !--- This is another
example of a map, in this case a HTTP header map. !---
Observe that the header name needs to perfectly match
the !--- HTTP header field to be examined, while the
header value is !--- a regular expression. ! policy TEST
url-map TEST serverfarm FARM3 !--- Creation of the
policy named TEST. You can use the same name as !--- the
one of the map previously created, however, this is not
a requirement. !--- This is just a way to easily
remember the association if only one map !--- is
associated with a policy. !--- In general, a policy can
include a url-map, a cookie-map, a header-map, !--- a
client-group, and so on. !--- If all of these conditions
match (in this example, only the condition !--- url-map
TEST), the policy has a match, and the specified !---
serverfarm (FARM3) is used to fulfill that request. !
policy IE header-map IE serverfarm FARM3 vserver WEB
virtual 192.168.8.3 tcp www !--- This is a creation of a
simple virtual server. !--- No IP mask has been
specified and no VLAN of incoming traffic !--- has been
specified. !--- This means that this is a simple VIP for
standard server load balancing. !--- Traffic coming from
any VLAN and directed to that specific IP address !---
(192.168.8.3) will match this VIP if it is TCP and if it
is destined !--- to port 80 (keyword www). serverfarm
FARM1 sticky 20 group 10 !--- Default Policy: This is
very important. The two lines above refer !--- to the
default policy. !--- If there are no other policies
configured or if none of the configured !--- slb-
policies has a match, the default policy is used. !---
In this case, the default policy is used only if neither
!--- slb-policy TEST or slb-policy IE have a match. !---
If there are no other matches, the farm FARM1 will be
used, !--- and the rules of sticky group 10 will be
applied. !--- If the default serverfarm is not
configured for a virtual server, !--- and if none of the
slb-policies has a match, the session will be discarded.
persistence rebalance !--- Default behaviour for HTTP
1.1; if multiple GETs are present !--- in the same TCP
connection, the CSM will examine every GET. !--- If the
new GET needs to be sent to a different serverfarm, !---
the connection with the current server is closed and !---
- a new connection with a new server if opened. !---
This is completely transparent to the client. slb-policy
TEST slb-policy IE !--- This is an association of two
previously configured policies to !--- the virtual
server WEB. The order is important. !--- In this case,
if TEST has a match, IE is not even considered, !--- and
the serverfarm associated with policy TEST is used. !---
If stickyness had to be configured for these policies,
this would !--- be done at the policy level above (in
the policy TEST submode !--- for example). inservice !---
- All virtual servers need to be put in service. !
vserver FTP
  virtual 192.168.8.3 tcp ftp service ftp
```

```
!--- For FTP, the service ftp keyword needs !--- to be
specified. This instructs the CSM to monitor !--- the
control channel (port "ftp", 21), !--- and figure out
automatically the data port to be used, and map !--- the
data channel to the same real server.
```

```
!--- Both active and passive types of FTP are
supported. serverfarm FARM3 persistent rebalance
inservice ! vserver TELNET virtual 192.168.8.3 tcp
telnet serverfarm FARM1 persistent rebalance inservice !
vserver TELNET2 virtual 192.168.8.3 tcp 345 !--- This is
an example of a virtual server listening to port 345,
while !--- the default policy (the only policy
configured for this virtual server) !--- uses serverfarm
FARM2, and real servers in FARM2 are configured !--- for
port translation to port 23 (see above). serverfarm
FARM2 persistent rebalance inservice ! !
```

Catalyst 6000 - comprobación y interfaces lógicas

```
!

interface GigabitEthernet1/1
  no ip address
  shutdown
!
=====
!

interface FastEthernet8/1
  no ip address
  switchport
  switchport access vlan 176
  spanning-tree portfast
!

!--- Servers are connected to this port. !
interface FastEthernet8/2
  no ip address
  switchport
  switchport access vlan 240
  spanning-tree portfast

!--- Clients are connected to this port.
=====
interface Vlan1
  no ip address

!--- Default VLAN 1, cannot be configured in the CSM
(CLI will prevent it). !
```

```
interface Vlan50
 ip address 192.168.8.1 255.255.255.0

!--- Internal VLAN between MSFC and CSM. !--- In this
example, the MSFC on the client side of the CSM is used.
!--- Vlan50 is the client side VLAN of the CSM, and the
CSM !--- is pointing to int vlan 50 IP address as the
default gateway. !
interface Vlan176
 ip address 10.66.86.184 255.255.255.240

!--- Observe that VLAN 240 (CSM server side VLAN) is not
created as !--- a L3 entity on the MSFC. You do not want
the MSFC !--- to route between VLAN 50 and 240, thus
skipping the CSM. !--- VLAN 240 is created as a L2
entity in the switch !--- (issue the show vlan command
to verify this). !--- VLAN 50 is also created as a L3
entity on the MSFC. !--- In this example, the MSFC is
used on the client side of the CSM.
```

Verificación

En esta sección encontrará información que puede utilizar para confirmar que su configuración esté funcionando correctamente.

Verificación

```
Router#
Router#sh mod csm 4 vser deta
WEB, type = SLB, state = OPERATIONAL, v_index = 19
  virtual = 192.168.8.3/32:80 bidir, TCP, service =
NONE, advertise = FALSE

!--- 32 bits of mask is the default. The destination IP
of incoming requests !--- needs to be exactly the VIP.
!--- advertise = FALSE refers to the Route Health
Injection feature, !--- where VIPs are advertised with
host routes by the MSFC !--- (used on the client side).
idle = 3600, replicate csrp = none, vlan = ALL, pending
= 30 !--- 3600 seconds of idle timer. !--- If no packets
are sent over a specific session !--- for the idle time,
the CSM tears down that session. !--- The idle timer is
important, especially for non-TCP sessions !--- where
there is no explicit termination of the session. !---
There is no replication configured. In this example, a
standby CSM will !--- simply monitor the active CSM and
eventually become active, however, it !--- will not
learn sticky database, nor TCP state. !--- The
replication can be configured as none, sticky database,
or TCP state. !--- Traffic can come to this vserver from
any VLAN. !--- This is the default behaviour since no
VLAN was specified in the config. max parse len = 2000,
persist rebalance = TRUE !--- Max depth of inspection
(default 600 bytes, max 4000 bytes). conns = 0, total
conns = 2 !--- Currently open connections and total
connections that have been set up !--- since the last
```

```

reset of the counters (clear mod csm 4 counters).
Default policy: server farm = FARM1, backup = sticky:
timer = 20, subnet = 0.0.0.0, group id = 10 !--- Default
policy serverfarm and sticky config (this sticky config
only applies !--- to the default serverfarm; stickiness
for the other policies needs !--- to be configured in
the various "policy" submodes) Policy Tot matches Client
pkts Server pkts -----
----- TEST 1 3 6 IE 2 10 3 (default) 0 0 0 !---
Total number of connections that matched the various
policies and !--- number of packets sent by servers and
clients. TELNET, type = SLB, state = OPERATIONAL,
v_index = 21 virtual = 192.168.8.3/32:23 bidir, TCP,
service = NONE, advertise = FALSE idle = 3600, replicate
csrp = none, vlan = ALL, pending = 30 max parse len =
2000, persist rebalance = TRUE ssl sticky offset = 0,
length = 32 conns = 0, total conns = 0 Default policy:
server farm = FARM1, backup = sticky: timer = 0, subnet
= 0.0.0.0, group id = 0 Policy Tot matches Client pkts
Server pkts -----
----- (default) 14 375 258 TELNET2, type = SLB,
state = OPERATIONAL, v_index = 22 virtual =
192.168.8.3/32:345 bidir, TCP, service = NONE, advertise
= FALSE idle = 3600, replicate csrp = none, vlan = ALL,
pending = 30 max parse len = 2000, persist rebalance =
TRUE ssl sticky offset = 0, length = 32 conns = 0, total
conns = 0 Default policy: server farm = FARM2, backup =
sticky: timer = 0, subnet = 0.0.0.0, group id = 0 Policy
Tot matches Client pkts Server pkts -----
----- (default) 5 24 19 FTP,
type = SLB, state = OPERATIONAL, v_index = 20 virtual =
192.168.8.3/32:21 bidir, TCP, service = ftp, advertise =
FALSE !--- FTP service was configured for this virtual
server that is !--- listening on port 21. idle = 3600,
replicate csrp = none, vlan = ALL, pending = 30 max
parse len = 2000, persist rebalance = TRUE ssl sticky
offset = 0, length = 32 conns = 0, total conns = 0
Default policy: server farm = FARM3, backup = sticky:
timer = 0, subnet = 0.0.0.0, group id = 0 Policy Tot
matches Client pkts Server pkts -----
----- (default) 2 21 16 Router#
Router# Router# Router#sh mod csm 4 sticky ?
  client sticky associated with a specific client IP
address
  config list configured sticky groups
  cookie sticky associated with a HTTP cookie value
  group sticky associated with a specific group
  ssl sticky associated with a SSL session id
  | Output modifiers
  <cr>

Router#
Router#sh mod csm 4 real deta
10.66.86.242, FARM1, state = OPERATIONAL
  conns = 0, maxconns = 4294967295, minconns = 0

!--- There are 0 active connections to this real server.
!--- maxconns and minconns have their default values. !-
-- If changed to something else, they enable the
connection watermarks feature. !--- No more than
maxconns connections will ever be active on this real
server. !--- When the server has reached its maximum,

```



```
then the CSM does not send to it !--- any more new
connection until the number of active connections drops
!--- below minconns. weight = 24, weight(admin) = 24,
metric = 0, remainder = 0 !--- Admin weight is
configured, weight is dynamic. !--- If using Dynamic
Feedback Protocol (DFP), the dynamic weight !--- can be
different from the admin. total conns established = 0,
total conn failures = 0 10.66.86.245, FARM1, state =
OPERATIONAL conns = 1, maxconns = 4294967295, minconns =
0 weight = 8, weight(admin) = 8, metric = 0, remainder =
1 total conns established = 193, total conn failures = 0
10.66.86.246, FARM1, state = OPERATIONAL conns = 0,
maxconns = 4294967295, minconns = 0 weight = 8,
weight(admin) = 8, metric = 0, remainder = 0 total conns
established = 563, total conn failures = 0 10.66.86.248,
FARM1, state = OPERATIONAL conns = 0, maxconns =
4294967295, minconns = 0 weight = 8, weight(admin) = 8,
metric = 0, remainder = 0 total conns established = 455,
total conn failures = 0 10.66.86.242:23, FARM2, state =
OPERATIONAL conns = 0, maxconns = 4294967295, minconns =
0 weight = 8, weight(admin) = 8, metric = 0, remainder =
0 total conns established = 3, total conn failures = 0
10.66.86.246:23, FARM2, state = OPERATIONAL conns = 0,
maxconns = 4294967295, minconns = 0 weight = 8,
weight(admin) = 8, metric = 0, remainder = 0 total conns
established = 2, total conn failures = 0 10.66.86.242,
FARM3, state = OPERATIONAL conns = 0, maxconns =
4294967295, minconns = 0 weight = 8, weight(admin) = 8,
metric = 0, remainder = 0 total conns established = 180,
total conn failures = 0 10.66.86.245, FARM3, state =
OPERATIONAL conns = 0, maxconns = 4294967295, minconns =
0 weight = 8, weight(admin) = 8, metric = 0, remainder =
0 total conns established = 179, total conn failures = 0
Router# Router# Router# Router# Router#sh mod csm 4 serv
deta
FARM1, type = SLB, predictor = RoundRobin
    nat = SERVER

!--- Default load balancing algorithm is round robin. !-
-- Default NAT options are nat server (directed mode)
but no nat client. virtuals inservice: 2, reals = 4,
bind id = 0, fail action = none !--- Two active virtual
servers are using this serverfarm. inband health config:
<none> retcode map = <none> Probes: PING, type = icmp
Real servers: 10.66.86.242, weight = 24, OPERATIONAL,
conns = 0 10.66.86.245, weight = 8, OPERATIONAL, conns =
1 10.66.86.246, weight = 8, OPERATIONAL, conns = 0
10.66.86.248, weight = 8, OPERATIONAL, conns = 0 Total
connections = 1 !--- This number indicates the active
connections only. FARM2, type = SLB, predictor =
RoundRobin nat = SERVER virtuals inservice: 1, reals =
2, bind id = 0, fail action = none inband health config:
<none> retcode map = <none> Real servers:
10.66.86.242:23, weight = 8, OPERATIONAL, conns = 0
10.66.86.246:23, weight = 8, OPERATIONAL, conns = 0
Total connections = 0 FARM3, type = SLB, predictor =
RoundRobin nat = SERVER virtuals inservice: 2, reals =
2, bind id = 0, fail action = none inband health config:
<none> retcode map = <none> Real servers: 10.66.86.242,
weight = 8, OPERATIONAL, conns = 0 10.66.86.245, weight
= 8, OPERATIONAL, conns = 0 Total connections = 0
Router# Router# Router# Router#sh mod csm 4 arp
```

!--- This is a very useful command; it shows the ARP table of the CSM. !--- Remember that this table is completely distinct from the MSFC ARP table. Internet Address Physical Interface VLAN Type Status -----

10.66.86.241 00-30-F2-C9-EB-F8 240 LEARNED up(0 misses)
10.66.86.242 00-02-B3-9D-2C-B9 240 REAL up(0 misses)
10.66.86.243 00-11-25-AB-21-D2 240 LEARNED up(0 misses)
10.66.86.244 00-09-5B-1E-B5-D5 240 LEARNED up(0 misses)
!--- 0 misses refers to the number of unanswered ARP requests by that device. !--- In this case, all ARPs are receiving a response, !--- so the server is well connected. 10.66.86.245 00-0D-88-2F-67-E4 240 REAL up(0 misses)
10.66.86.246 00-02-B3-9D-2C-B9 240 REAL up(0 misses)
10.66.86.247 00-11-25-8D-2F-A8 240 LEARNED up(0 misses)
10.66.86.248 00-0D-88-2F-67-E4 240 REAL up(0 misses)
10.66.86.249 00-03-32-87-B7-B8 240 --SLB-- local
10.66.86.250 00-02-2F-00-14-0C 240 LEARNED up(0 misses)
10.66.86.253 00-0D-60-0F-24-6A 240 LEARNED up(0 misses)
10.66.86.254 00-0D-60-0F-24-5C 240 LEARNED up(0 misses)
192.168.8.1 00-D0-D3-86-B8-0A 50 GATEWAY up(0 misses)
192.168.8.2 00-03-32-87-B7-B8 50 --SLB-- local
192.168.8.3 00-03-32-87-B7-B7 0 VSERVER local Router#

Router# Router# Router# Router# Router#**sh mod csm 4 ?**
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
gslb Global Server Load Balancing stats
map SLB map information
memory SLB memory information
natpools SLB client nat pool information
owner SLB owner information
policy SLB policy information
probe SLB probe information
pvlan SLB pvlan information
reals SLB real server information
script SLB script 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
variable SLB environment variables
vlan SLB vlan information
vservers SLB virtual server information
xml-config SLB XML-config information

Router#**sh mod csm 4 policy ?**
name slb policy name
| Output modifiers
<cr>

Router#**sh mod csm 4 policy**
policy: TEST
type: SLB
url map: TEST
serverfarm: FARM3

```
policy:          IE
type:           SLB
header map:     IE
serverfarm:     FARM3

Router#
Router#sh mod csm 4 vlan deta
vlan   IP address      IP mask           type
-----
50     192.168.8.2        255.255.255.0    CLIENT
      GATEWAYS
      192.168.8.1
240    10.66.86.249        255.255.255.240  SERVER

Router#
Router#
```

[Troubleshooting](#)

Actualmente, no hay información específica de troubleshooting disponible para esta configuración.

[Información Relacionada](#)

- [Nota de instalación y configuración del módulo content switching del Catalyst 6000 Family, versión 2.2](#)
- [Descargas de las Redes de contenido \(clientes registrados solamente\)](#)
- [Soporte Técnico y Documentación - Cisco Systems](#)