SCA ファーム（隻腕プロキシ モード）への SSL ロード バランスを実現するための CSM の設定

目次

はじめに

この資料はセキュアコンテンツアクセラレータ（SCA）のファームにセキュア ソケット レイヤ（SSL）トラフィックの Content Switching Module（CSM）ロード バランスに設定 例を提供したものです。 設定は 1 ポート モードの接続との非透過プロキシモードの SCA のためです。

非透過モードでは、SCA は Webサーバへのプレーンテキスト接続のために出典として SCA IP アドレスを使用します。

注: SCA および Webサーバのために 2 つの異なる VLANs/IP サブネットワークを使用して下さい; 1 サブネットワークはすべての SCA のためであり、別途のサブネットワークはすべての Webサーバのためです。 同じレイヤ2（L2）ドメインに両方のファームを置く場合、ソースネットワーク アドレス 変換（NAT）は必要です。 パケットが CSM に戻ること、そして Catalystハードウェアが L2 スイッチ パケット単にことを出典 NAT は保証します。

前提条件

要件

このドキュメントに関しては個別の要件はありません。

使用するコンポーネント

この 文書に記載されている 情報はこれらの VLAN/サブネットワークに基づいています:

- クライアント側: バーチャル IP（VIP）およびアップストリーム ルータ（マルチレイヤ スイ

ッチ フィーチャ カード[MSFC] ）
- スロット 5 の CSM の Catalyst 6500/6000
- サーバ側 1: Webサーバ
- サーバ側 2: SCA

本書の情報は、特定のラボ環境にあるデバイスに基づいて作成されたものです。 このドキュメントで使用するすべてのデバイスは、初期（デフォルト）設定の状態から起動しています。 稼働中のネットワークで作業を行う場合、コマンドの影響について十分に理解したうえで作業してください。

表記法

ドキュメント表記の詳細は、『シスコ テクニカル ティップスの表記法』を参照してください。

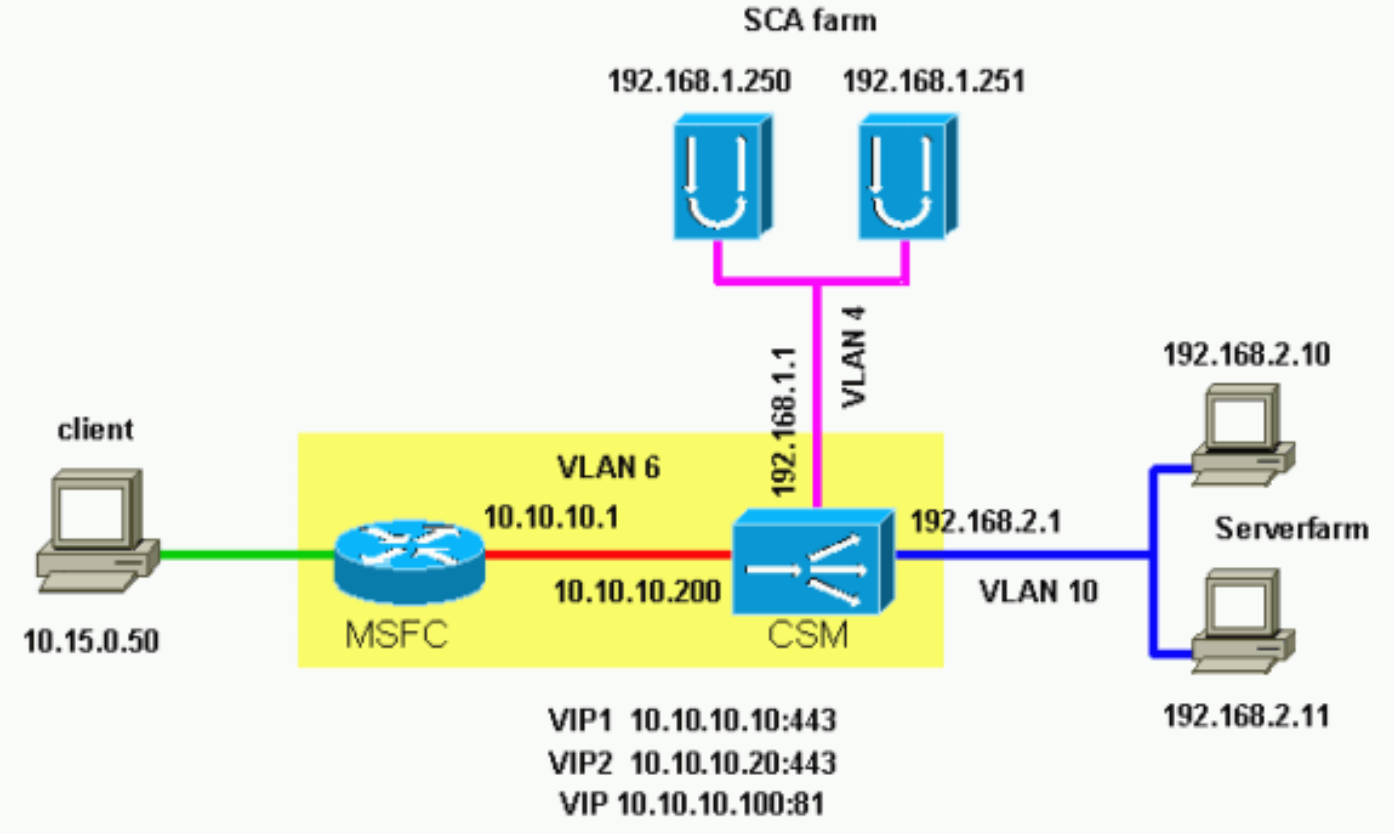
設定

この項では、このドキュメントで説明する機能の設定に必要な情報を提供します。

注: このドキュメントで使用されているコマンドの詳細を調べるには、Command Lookup Tool（登録ユーザ専用）を使用してください。

ネットワーク図

このドキュメントでは、次のネットワーク構成を使用しています。



設定

このドキュメントでは、次の設定を使用します。

- Catalyst 6000/CSM スロット 5
- SCA 1
- SCA 2

Catalyst 6000/CSM スロット 5

```
!--- This is the configuration of nontransparent SSL
load balance. Cat6k# show running-config | begin Module
5
module ContentSwitchingModule 5
 vlan 6 client
  ip address 10.10.10.200 255.255.255.0
  gateway 10.10.10.1
!--- This is the CSM IP address on the client side and
!--- CSM upstream gateway (the MSFC). ! vlan 4 server ip
address 192.168.1.1 255.255.255.0 !--- This is the CSM
IP address on the SCA server farm VLAN. !--- SCAs use
this IP address as the default gateway. ! vlan 10 server
ip address 192.168.2.1 255.255.255.0 !--- This is the
CSM IP address on the web server farm VLAN. !--- The web
servers use this IP address as the default gateway. !
static drop real 192.168.2.0 255.255.255.0 !--- This
drops every new connection that the web servers
originate, !--- unless the connection matches a VIP. !
serverfarm SCA443 nat server !--- When connections are
directed to this server farm, !--- the IP address of the
SCA selection replaces !--- the destination IP address.
no nat client real 192.168.1.250 443 inservice real
192.168.1.251 443 inservice !--- The configurations of
both SCAs are such that, !--- with the send of a
connection to this server farm, the destination port !--
- translates to 443. In this example, there is no
translation, as !--- the VIP listens to port 443. !---
This is different in the following server farm, SCA444.
! serverfarm SCA444 nat server no nat client real
192.168.1.250 444 inservice real 192.168.1.251 444
inservice !--- With the selection of this server farm,
there is a !--- modification of connections that go to
either SCA. !--- The destination IP changes to match the
IP of one of the SCAs !--- (NAT server), and the
destination port becomes 444. ! serverfarm WEBFARM nat
server no nat client real 192.168.2.10 80 inservice real
192.168.2.11 80 !--- Specify port 80 to translate from
port 81 inservice. !--- (The SCA communicates on port
81, according to the SCA setup.) !--- This is a standard
web server farm. ! sticky 10 ssl timeout 60 sticky 20
ssl timeout 60 !--- This creates two distinct sticky
groups with SSL ID as a basis. !--- The timeout is 60
seconds. ! vserver TESTSITE1 virtual 10.10.10.10 tcp
https serverfarm SCA443 sticky 60 group 10 persistent
rebalance inservice !--- The vserver for the first site
(www.testsite1.com) listens !--- to 10.10.10.10 on port
443. !--- Connections go to the SCAs without a change in
the !--- destination port. (See the configuration of
server farm SCA443.) ! vserver TESTSITE2 virtual
10.10.10.20 tcp https serverfarm SCA444 sticky 60 group
20 persistent rebalance inservice !--- The vserver for
the second site (www.testsite2.com) listens !--- to
10.10.10.10 on port 443. !--- Connections go to the SCAs
and change the !--- destination port to 444. (See the
configuration of server farm SCA444.) ! vserver WEB-
DECRYPT virtual 10.10.10.100 tcp 81 serverfarm WEBFARM
```

```
persistent rebalance inservice ! !--- This is the
vserver for the plain-text connections. !--- This
vserver receives connections on port 81 from the SCAs.
!--- As the configuration of this vserver does not
specify a VLAN, !--- the vserver can also receive
connections directly !--- from the client side. !--- To
prevent direct client access of this VIP, !--- you can
use the VLAN 4 option. !--- You can also place this VIP
in the SCA subnetwork. In that case, !--- clients do not
even have a route to that subnetwork. (Clients only !---
have a route if you configure the upstream router !---
with a static route.)
```

SCA 1

```
!--- This configures SCA in one-port, nontransparent
mode. sca1# show run
#
# Cisco CSCA Device Configuration File
#
# Written:      Sun Feb  6 01:46:35 2106
# Inxcfg:       version 2.3 build 200108071342
# Device Type:  CSS-SCA
# Device Id:    S/N 119cd6
# Device OS:    MaxOS version 2.5.1 build 200108071341
by Dan L. Reading

### Device ###

mode one-port
ip address 192.168.1.250 netmask 255.255.255.0
hostname sca1
password enable
"2431245A5724417131737177486 26D734B35516B794F64336A51652
F"
no ip domain-name
no rdate-server
timezone "MST7MDT"
no rip
ip route 0.0.0.0 0.0.0.0 192.168.1.1 metric 1

### Interfaces ###

interface network
  auto
end
interface server
  auto
end

### Remote Management ###

no remote-management access-list
remote-management enable

### SNMP Subsystem ###

no snmp
telnet enable
no telnet access-list
web-mgmt enable
no web-mgmt access-list
```

```
### SSL Subsystem ###

ssl
  server test1 create
    ip address 10.10.10.100
    sslport 443
    remoteport 81
    key default
    cert default
    secpolicy default
    cachesize 20
    no transparent
  end
  server test2 create
    ip address 10.10.10.100
    sslport 444
    remoteport 81
    key default
    cert default
    secpolicy default
    cachesize 20
    no transparent
  end
end
sca1#
```

SCA 2

```
!--- This configures SCA in one-port, nontransparent
mode. sca2# sca2# show run
#
# Cisco CSCA Device Configuration File
#
# Written:      Fri Feb 13 21:18:29 1970
# Inxcfg:       version 2.3 build 200108071342
# Device Type:  CSS-SCA
# Device Id:    S/N 119ca2
# Device OS:    MaxOS version 2.5.1 build 200108071341
by Dan L. Reading

### Device ###

mode one-port
ip address 192.168.1.251 netmask 255.255.255.0
hostname sca2
password enable
"2431245A5724417131737177486 26D734B35516B794F64336A51652
F"
no ip domain-name
no rdate-server
timezone "MST7MDT"
no rip
ip route 0.0.0.0 0.0.0.0 192.168.1.1 metric 1

### Interfaces ###

interface network
  auto
end
interface server
  auto
```

```
end

### Remote Management ###

no remote-management access-list
remote-management enable

### SNMP Subsystem ###

no snmp
telnet enable
no telnet access-list
web-mgmt enable
no web-mgmt access-list

### SSL Subsystem ###

ssl
  server test1 create
    ip address 10.10.10.100
    sslport 443
    remoteport 81
    key default
    cert default
    secpolicy default
    cachesize 20
    no transparent
  end
  server test2 create
    ip address 10.10.10.100
    sslport 444
    remoteport 81
    key default
    cert default
    secpolicy default
    cachesize 20
    no transparent
  end
end
sca2#
```

確認

このセクションでは、設定が正常に動作しているかどうかを確認する際に役立つ情報を提供しています。

特定の **show** コマンドは、Output Interpreter Tool（登録ユーザ専用）によってサポートされています。このツールを使用すると、**show** コマンド出力の分析を表示できます。

```
!--- A client opens a connection to www.testsite1.com. Cat6k# show module csm 5 vserver detail
TESTSITE1, state = OPERATIONAL, v_index = 10
  virtual = 10.10.10.10/32:443, TCP, service = NONE, advertise = FALSE
  idle = 3600, replicate csrp = none, vlan = ALL, pending = 0
  max parse len = 600, persist rebalance = TRUE
  conns = 1, total conns = 1
  Default policy:
    server farm = SCA443
    sticky: timer = 60, subnet = 0.0.0.0, group id = 10
```

```
  Policy          Tot Conn     Client pkts  Server pkts
  ------------------------------------------------------
  (default)       1            9            11
```
!--- The client connection to port 443 hits the vserver TESTSITE1 !--- and is load balanced to an SCA. TESTSITE2, state = OPERATIONAL, v_index = 11 virtual = 10.10.10.20/32:443, TCP, service = NONE, advertise = FALSE idle = 3600, replicate csrp = none, vlan = ALL, pending = 0 max parse len = 600, persist rebalance = TRUE conns = 0, total conns = 0 Default policy: server farm = SCA444 sticky: timer = 60, subnet = 0.0.0.0, group id = 20 Policy Tot Conn Client pkts Server pkts -- (default) 0 0 0 WEB-DECRYPT, state = OPERATIONAL, v_index = 13 virtual = 10.10.10.100/32:81, TCP, service = NONE, advertise = FALSE idle = 3600, replicate csrp = none, vlan = 4, pending = 0 max parse len = 600, persist rebalance = TRUE conns = 1, total conns = 1 Default policy: server farm = WEBFARM sticky: timer = 0, subnet = 0.0.0.0, group id = 0 Policy Tot Conn Client pkts Server pkts ------------------------ ---------------------------- (default) 1 7 5 *!--- The SCA opens a connection to 10.10.10.100 port 81, !--- which is load balanced to a web server.* Cat6k# **show module csm 5 conns detail**

```
    prot vlan source               destination          state
-------------------------------------------------------------------------
In  TCP  4    192.168.1.250:4376    10.10.10.100:81      ESTAB
Out TCP  10   192.168.2.11:81       192.168.1.250:4376   ESTAB
    vs = WEB-DECRYPT, ftp = No, csrp = False
```
!--- This provides details of the connection from the SCA to the web server. !--- The connection comes from VLAN 4 (the SCA VLAN), destined to !--- 10.10.10.100 port 81. !--- This is different from what happens in transparent mode. !--- In this case, the SCA opens the connections with use of !--- the SCA IP address, 192.168.1.250. The server does not see the IP !--- of the original client. !--- The connection goes to VLAN 10 (web servers VLAN) !--- to the web server selection. (The destination IP address !--- changes accordingly. The port does not change.) !--- If the servers listen to port 80 instead of port 81, you can configure !--- the translation of the destination port. You can add a port !--- to the definition of the real servers. !--- **NOTE:** The Out line swaps source with destination. !--- "Out" refers to the return traffic packets that the CSM !--- receives from that VLAN.

```
In  TCP  6    10.15.0.50:2324       10.10.10.10:443      ESTAB
Out TCP  4    192.168.1.250:443     10.15.0.50:2324      ESTAB
    vs = TESTSITE1, ftp = No, csrp = False
```
!--- This provides details of the connection from the client to the VIP. !--- The connection comes from VLAN 6 (the client VLAN), destined to !--- 10.10.10.10 port 443. !--- The connection goes to VLAN 4 (the SCA VLAN) !--- to the SCA selection. The destination IP changes !--- from the 10.10.10.10 (the VIP) to 192.168.1.250 (the SCA), !--- as the server farm had the option NAT server. !--- This is different in nontransparent mode. !--- The same client opens a second connection, !--- this time to www.testsite2.com. Cat6k# Cat6k# **show module csm 5 conns detail**

```
    prot vlan source               destination          state
-------------------------------------------------------------------------
In  TCP  4    192.168.1.250:4377    10.10.10.100:81      ESTAB
Out TCP  10   192.168.2.10:81       192.168.1.250:4377   ESTAB
    vs = WEB-DECRYPT, ftp = No, csrp = False
```
!--- This connection is from SCA to VIP .100, load balanced to !--- web server .10. In TCP 4 192.168.1.250:4376 10.10.10.100:81 ESTAB Out TCP 10 192.168.2.11:81 192.168.1.250:4376 ESTAB vs = WEB-DECRYPT, ftp = No, csrp = False *!--- This connection is from SCA to VIP .100, load balanced to !--- webserver .11.* In TCP 6 10.15.0.50:2325 10.10.10.20:443 ESTAB Out TCP 4 192.168.1.250:444 10.15.0.50:2325 ESTAB vs = TESTSITE2, ftp = No, csrp = False *!--- This connection is from client to VIP .20, load balanced to !--- SCA .250, port 444.* In TCP 6 10.15.0.50:2324 10.10.10.10:443 ESTAB Out TCP 4 192.168.1.250:443 10.15.0.50:2324 ESTAB vs = TESTSITE1, ftp = No, csrp = False *!--- This connection is from client to VIP .10, load balanced to !--- SCA .250, port 443.* Cat6k#**show module csm 5 real detail**

```
192.168.2.10, WEBFARM, state = OPERATIONAL
  conns = 1, maxconns = 4294967295, minconns = 0
  weight = 8, weight(admin) = 8, metric = 0, remainder = 1
  total conns established = 1, total conn failures = 0
192.168.2.11, WEBFARM, state = OPERATIONAL
  conns = 1, maxconns = 4294967295, minconns = 0
  weight = 8, weight(admin) = 8, metric = 0, remainder = 1
  total conns established = 1, total conn failures = 0
```

```
192.168.1.250:443, SCA443, state = OPERATIONAL
  conns = 1, maxconns = 4294967295, minconns = 0
  weight = 8, weight(admin) = 8, metric = 0, remainder = 1
  total conns established = 1, total conn failures = 0
192.168.1.251:443, SCA443, state = OPERATIONAL
  conns = 0, maxconns = 4294967295, minconns = 0
  weight = 8, weight(admin) = 8, metric = 0, remainder = 0
  total conns established = 0, total conn failures = 0
192.168.1.250:444, SCA444, state = OPERATIONAL
  conns = 1, maxconns = 4294967295, minconns = 0
  weight = 8, weight(admin) = 8, metric = 0, remainder = 1
  total conns established = 1, total conn failures = 0
192.168.1.251:444, SCA444, state = OPERATIONAL
  conns = 0, maxconns = 4294967295, minconns = 0
  weight = 8, weight(admin) = 8, metric = 0, remainder = 0
  total conns established = 0, total conn failures = 0
```

!--- This output shows that each web server has received a !--- connection. !--- The SCA .250 has received two connections, one to port 443 and !--- one to port 444. !--- The SCA .251 has not yet received any connection because !--- only two connections are open. One is open to each site !--- (10.10.10.10 and 10.10.10.20). A different port (443 or 444) !--- on the SCAs handles each site. The first !--- connection for each site goes to the first SCAs. !--- The following connection to either .10 or .20 goes to !--- .251, port 443 or 444, respectively. !--- This is SCA1 output. !--- There is one open connection. sca1# **show netstat**

```
Pro State Recv-Q Send-Q Local Address         Remote Address
R-Win S-Win
-------------------------------------------------------------------------
tcp ESTAB      0      0 192.168.1.250:443     10.15.0.50:2324
33580 16529
tcp ESTAB      0      0 192.168.1.250:4376    10.10.10.100:81
33304 17232
udp            0      0 *:4099                *:*
0     0
udp            0      0 *:4098                *:*
0     0
tcp LISTN      0      0 *:2932                *:*
0     0
udp            0      0 *:2932                *:*
0     0
udp            0      0 *:520                 *:*
0     0
udp            0      0 *:514                 *:*
0     0
tcp LISTN      0      0 *:444                 *:*
0     0
tcp LISTN      0      0 *:443                 *:*
32768     0
tcp LISTN      0      0 *:80                  *:*
0     0
tcp LISTN      0      0 *:23                  *:*
0     0
sca1#
```

!--- There are two open connections. sca1# **show netstat**

```
Pro State Recv-Q Send-Q Local Address         Remote Address
R-Win S-Win
-------------------------------------------------------------------------
tcp ESTAB      0      0 192.168.1.250:444     10.15.0.50:2325
33580 16529
tcp ESTAB      0      0 192.168.1.250:443     10.15.0.50:2324
33580 16529
tcp ESTAB      0      0 192.168.1.250:4377    10.10.10.100:81
33304 17232
tcp ESTAB      0      0 192.168.1.250:4376    10.10.10.100:81
33304 17232
udp            0      0 *:4099                *:*
```

```
0     0
udp            0      0 *:4098                  *:*
0     0
tcp LISTN      0      0 *:2932                  *:*
0     0
udp            0      0 *:2932                  *:*
0     0
udp            0      0 *:520                   *:*
0     0
udp            0      0 *:514                   *:*
0     0
tcp LISTN      0      0 *:444                   *:*
32768     0
tcp LISTN      0      0 *:443                   *:*
32768     0
tcp LISTN      0      0 *:80                    *:*
0     0
tcp LISTN      0      0 *:23                    *:*
0     0
sca1#
```

トラブルシューティング

現在のところ、この設定に関する特定のトラブルシューティング情報はありません。