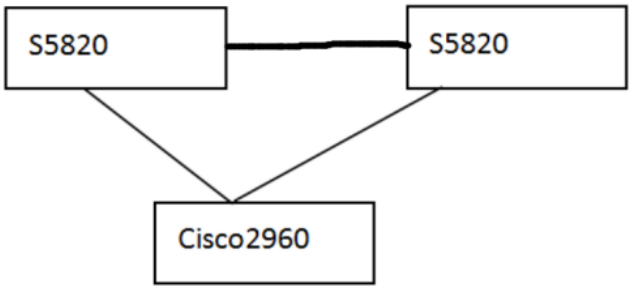
S5820与思科2960对接PVST典型组网配置案例

STP 韦家宁 2020-04-17 发表

组网及说明

本案例使用S5820与思科2960对接PVST的典型组网配置案例，其中S5820为主根，同时也部署了IRF、与思科2960部署了链路聚合，为了进一步防止物理环路，因此在S5820与思科2960部署PVST。



S5820版本信息如下：

H3C Comware Software, Version 7.1.045, Release 2418P06
Copyright (c) 2004-2015 Hangzhou H3C Tech. Co., Ltd. All rights reserved.
H3C S5820V2-48S uptime is 235 weeks, 0 days, 21 hours, 30 minutes
Last reboot reason : USER reboot

Boot image: flash:/s5820v2_5830v2-cmw710-boot-r2418p06.bin
Boot image version: 7.1.045, Release 2418P06
  Compiled Aug 07 2015 15:40:53
System image: flash:/s5820v2_5830v2-cmw710-system-r2418p06.bin
System image version: 7.1.045, Release 2418P06
  Compiled Aug 07 2015 15:40:53

Slot 1:
Uptime is 24 weeks,3 days,7 hours,29 minutes
S5820V2-48S with 2 Processors
BOARD TYPE: S5820V2-48S
DRAM: 2048M bytes
FLASH: 512M bytes
PCB 1 Version: VER.B
Bootrom Version: 142
CPLD 1 Version: 002
CPLD 2 Version: 002
Release Version: H3C S5820V2-48S-2418P06
Patch Version : None
Reboot Cause : UserReboot
[SubSlot 0] 48SFP Plus

Slot 2:
Uptime is 24 weeks,3 days,7 hours,11 minutes
S5820V2-48S with 2 Processors
BOARD TYPE: S5820V2-48S
DRAM: 2048M bytes
FLASH: 512M bytes
PCB 1 Version: VER.B
Bootrom Version: 142
CPLD 1 Version: 002
CPLD 2 Version: 002
Release Version: H3C S5820V2-48S-2418P06
Patch Version : None
Reboot Cause : UserReboot

[SubSlot 0] 48SFP Plus

思科2960版本信息如下:
sh version
Cisco IOS Software, C2960S Software (C2960S-UNIVERSALK9-M), Version 12.2(55)SE2, RELEAS
E SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2011 by Cisco Systems, Inc.
Compiled Tue 11-Jan-11 02:23 by prod_rel_team
Image text-base: 0x00003000, data-base: 0x01B00000

ROM: Bootstrap program is Alpha board boot loader
BOOTLDR: C2960S Boot Loader (C2960S-HBOOT-M) Version 12.2(53r)SE, RELEASE SOFTWARE
(fc3)

SCW-T-1 uptime is 1 year, 25 weeks, 2 days, 13 hours, 25 minutes
System returned to ROM by power-on
System restarted at 18:17:13 UTC Mon Oct 22 2018
System image file is "flash:/c2960s-universalk9-mz.122-55.SE2/c2960s-universalk9-mz.122-55.SE2.
bin"

This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco WS-C2960S-48TS-S (PowerPC) processor (revision D0) with 131072K bytes of memory.
Processor board ID FOC1517Y1E2
Last reset from power-on
3 Virtual Ethernet interfaces
1 FastEthernet interface
50 Gigabit Ethernet interfaces
The password-recovery mechanism is enabled.

512K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address : 88:F0:77:74:C3:80
Motherboard assembly number : 73-12424-06
Power supply part number : 341-0327-03
Motherboard serial number : FOC15151KUK
Power supply serial number : LIT144432FT
Model revision number : D0
Motherboard revision number : A0
Model number : WS-C2960S-48TS-S
Daughterboard assembly number : 73-11933-04
Daughterboard serial number : FOC1516245W
System serial number : FOC1517Y1E2
Top Assembly Part Number : 800-32452-03
Top Assembly Revision Number : A0
Version ID : V03
CLEI Code Number : COMGK00ARC
Daughterboard revision number : A0
Hardware Board Revision Number : 0x01

```
Switch Ports Model              SW Version            SW Image
------ ----- -----              ----------            ----------
*    1 50    WS-C2960S-48TS-S   12.2(55)SE2           C2960S-UNIVERSALK9-M


Configuration register is 0xF
```

配置步骤

S5820 MAC如下:

```
Global LLDP local-information:
 Chassis ID         : 741f-4a25-ae4b
 System name        : s5800
 System description  : H3C Comware Platform Software, Software Version 7.1.045,
                       Release 2418P06
                       H3C S5820V2-48S
                       Copyright (c) 2004-2015 Hangzhou H3C Tech. Co., Ltd. All
                       rights reserved.
 System capabilities supported : Bridge, Router, Customer Bridge, Service Bridge
 System capabilities enabled   : Bridge, Router, Customer Bridge
```

S5820 PVST配置:

```
stp instance 0 root primary
 stp vlan 2 to 3 12 37 400 root primary
 stp mode pvst
 stp global enable
```

思科2960 PVST配置如下:

```
spanning-tree mode pvst
spanning-tree uplinkfast
```

查看S5820 STP根桥信息:

```
dis stp root
 VLAN ID  Root Bridge ID        ExtPathCost IntPathCost Root Port
 1        32768.741f-4a25-ae4b  0           0
 2        0.741f-4a25-ae4b      0           0
 3        0.741f-4a25-ae4b      0           0
 12       0.741f-4a25-ae4b      0           0
 37       0.741f-4a25-ae4b      0           0
 193      32768.741f-4a25-ae4b  0           0
 200      32768.741f-4a25-ae4b  0           0
 400      0.741f-4a25-ae4b      0           0
 555      32768.741f-4a25-ae4b  0           0
```

查看思科2960STP根桥信息:

```
show spanning-tree root

                                        Root    Hello Max Fwd
Vlan                Root ID         Cost    Time  Age Dly  Root Port
---------------- -------------------- --------- ----- --- ---  ------------
VLAN0002           2 741f.4a25.ae4b     3003    2   20  15  Po1
VLAN0003           3 741f.4a25.ae4b     3003    2   20  15  Po1
VLAN0012          12 741f.4a25.ae4b     3003    2   20  15  Po1
VLAN0400         400 741f.4a25.ae4b     3003    2   20  15  Po1
```

查看S5820 STP端口的状态:

```
dis stp brief
 VLAN ID  Port                        Role  STP State   Protection
 2        Bridge-Aggregation24        DESI  FORWARDING  NONE
 2        Bridge-Aggregation25        DESI  FORWARDING  NONE
 2        Bridge-Aggregation26        DESI  FORWARDING  NONE
```

2	Bridge-Aggregation27	DESI	FORWARDING	NONE
2	Bridge-Aggregation28	DESI	FORWARDING	NONE
2	Bridge-Aggregation29	DESI	FORWARDING	NONE
2	Bridge-Aggregation30	DESI	FORWARDING	NONE
2	Bridge-Aggregation31	DESI	FORWARDING	NONE
2	Bridge-Aggregation32	DESI	FORWARDING	NONE
2	Bridge-Aggregation41	DESI	FORWARDING	NONE
2	Bridge-Aggregation42	DESI	FORWARDING	NONE
2	Bridge-Aggregation43	DESI	FORWARDING	NONE
2	Bridge-Aggregation44	DESI	FORWARDING	NONE
2	Bridge-Aggregation45	DESI	FORWARDING	NONE
2	Bridge-Aggregation46	DESI	FORWARDING	NONE
3	Bridge-Aggregation24	DESI	FORWARDING	NONE
3	Bridge-Aggregation25	DESI	FORWARDING	NONE
3	Bridge-Aggregation26	DESI	FORWARDING	NONE
3	Bridge-Aggregation27	DESI	FORWARDING	NONE
3	Bridge-Aggregation28	DESI	FORWARDING	NONE
3	Bridge-Aggregation29	DESI	FORWARDING	NONE
3	Bridge-Aggregation30	DESI	FORWARDING	NONE
3	Bridge-Aggregation31	DESI	FORWARDING	NONE
3	Bridge-Aggregation32	DESI	FORWARDING	NONE
3	Bridge-Aggregation41	DESI	FORWARDING	NONE
3	Bridge-Aggregation42	DESI	FORWARDING	NONE
3	Bridge-Aggregation43	DESI	FORWARDING	NONE
3	Bridge-Aggregation44	DESI	FORWARDING	NONE
3	Bridge-Aggregation45	DESI	FORWARDING	NONE
3	Bridge-Aggregation46	DESI	FORWARDING	NONE
12	Bridge-Aggregation24	DESI	FORWARDING	NONE
12	Bridge-Aggregation25	DESI	FORWARDING	NONE
12	Bridge-Aggregation26	DESI	FORWARDING	NONE
12	Bridge-Aggregation27	DESI	FORWARDING	NONE
12	Bridge-Aggregation28	DESI	FORWARDING	NONE
12	Bridge-Aggregation29	DESI	FORWARDING	NONE
12	Bridge-Aggregation30	DESI	FORWARDING	NONE
12	Bridge-Aggregation31	DESI	FORWARDING	NONE
12	Bridge-Aggregation32	DESI	FORWARDING	NONE
12	Bridge-Aggregation41	DESI	FORWARDING	NONE
12	Bridge-Aggregation42	DESI	FORWARDING	NONE
12	Bridge-Aggregation43	DESI	FORWARDING	NONE
12	Bridge-Aggregation44	DESI	FORWARDING	NONE
12	Bridge-Aggregation45	DESI	FORWARDING	NONE
12	Bridge-Aggregation46	DESI	FORWARDING	NONE
37	Bridge-Aggregation24	DESI	FORWARDING	NONE
37	Bridge-Aggregation25	DESI	FORWARDING	NONE
37	Bridge-Aggregation26	DESI	FORWARDING	NONE
37	Bridge-Aggregation27	DESI	FORWARDING	NONE
37	Bridge-Aggregation28	DESI	FORWARDING	NONE
37	Bridge-Aggregation29	DESI	FORWARDING	NONE
37	Bridge-Aggregation30	DESI	FORWARDING	NONE
37	Bridge-Aggregation31	DESI	FORWARDING	NONE
37	Bridge-Aggregation32	DESI	FORWARDING	NONE
37	Bridge-Aggregation41	DESI	FORWARDING	NONE
37	Bridge-Aggregation42	DESI	FORWARDING	NONE
37	Bridge-Aggregation43	DESI	FORWARDING	NONE
37	Bridge-Aggregation44	DESI	FORWARDING	NONE
37	Bridge-Aggregation45	DESI	FORWARDING	NONE
37	Bridge-Aggregation46	DESI	FORWARDING	NONE
193	Bridge-Aggregation24	DESI	FORWARDING	NONE
193	Bridge-Aggregation25	DESI	FORWARDING	NONE
193	Bridge-Aggregation26	DESI	FORWARDING	NONE
193	Bridge-Aggregation27	DESI	FORWARDING	NONE
193	Bridge-Aggregation28	DESI	FORWARDING	NONE
193	Bridge-Aggregation29	DESI	FORWARDING	NONE
193	Bridge-Aggregation30	DESI	FORWARDING	NONE

193 Bridge-Aggregation31 DESI FORWARDING NONE
193 Bridge-Aggregation32 DESI FORWARDING NONE
193 Bridge-Aggregation41 DESI FORWARDING NONE
193 Bridge-Aggregation42 DESI FORWARDING NONE
193 Bridge-Aggregation43 DESI FORWARDING NONE
193 Bridge-Aggregation44 DESI FORWARDING NONE
193 Bridge-Aggregation45 DESI FORWARDING NONE
193 Bridge-Aggregation46 DESI FORWARDING NONE
200 Bridge-Aggregation24 DESI FORWARDING NONE
200 Bridge-Aggregation25 DESI FORWARDING NONE
200 Bridge-Aggregation26 DESI FORWARDING NONE
200 Bridge-Aggregation27 DESI FORWARDING NONE
200 Bridge-Aggregation28 DESI FORWARDING NONE
200 Bridge-Aggregation29 DESI FORWARDING NONE
200 Bridge-Aggregation30 DESI FORWARDING NONE
200 Bridge-Aggregation31 DESI FORWARDING NONE
200 Bridge-Aggregation32 DESI FORWARDING NONE
200 Bridge-Aggregation41 DESI FORWARDING NONE
200 Bridge-Aggregation42 DESI FORWARDING NONE
200 Bridge-Aggregation43 DESI FORWARDING NONE
200 Bridge-Aggregation44 DESI FORWARDING NONE
200 Bridge-Aggregation45 DESI FORWARDING NONE
200 Bridge-Aggregation46 DESI FORWARDING NONE
400 Bridge-Aggregation24 DESI FORWARDING NONE
400 Bridge-Aggregation25 DESI FORWARDING NONE
400 Bridge-Aggregation26 DESI FORWARDING NONE
400 Bridge-Aggregation27 DESI FORWARDING NONE
400 Bridge-Aggregation28 DESI FORWARDING NONE
400 Bridge-Aggregation29 DESI FORWARDING NONE
400 Bridge-Aggregation30 DESI FORWARDING NONE
400 Bridge-Aggregation31 DESI FORWARDING NONE
400 Bridge-Aggregation32 DESI FORWARDING NONE
400 Bridge-Aggregation41 DESI FORWARDING NONE
400 Bridge-Aggregation42 DESI FORWARDING NONE
400 Bridge-Aggregation43 DESI FORWARDING NONE
400 Bridge-Aggregation44 DESI FORWARDING NONE
400 Bridge-Aggregation45 DESI FORWARDING NONE
400 Bridge-Aggregation46 DESI FORWARDING NONE
555 Bridge-Aggregation24 DESI FORWARDING NONE
555 Bridge-Aggregation25 DESI FORWARDING NONE
555 Bridge-Aggregation26 DESI FORWARDING NONE
555 Bridge-Aggregation27 DESI FORWARDING NONE
555 Bridge-Aggregation28 DESI FORWARDING NONE
555 Bridge-Aggregation29 DESI FORWARDING NONE
555 Bridge-Aggregation30 DESI FORWARDING NONE
555 Bridge-Aggregation31 DESI FORWARDING NONE
555 Bridge-Aggregation32 DESI FORWARDING NONE
555 Bridge-Aggregation41 DESI FORWARDING NONE
555 Bridge-Aggregation42 DESI FORWARDING NONE
555 Bridge-Aggregation43 DESI FORWARDING NONE
555 Bridge-Aggregation44 DESI FORWARDING NONE
555 Bridge-Aggregation45 DESI FORWARDING NONE
555 Bridge-Aggregation46 DESI FORWARDING NONE
555 Ten-GigabitEthernet1/0/17 DESI FORWARDING NONE
555 Ten-GigabitEthernet1/0/18 DESI FORWARDING NONE
555 Ten-GigabitEthernet2/0/17 DESI FORWARDING NONE
555 Ten-GigabitEthernet2/0/18 DESI FORWARDING NONE

查看思科2960 STP端口状态：
show spanning-tree detail active

VLAN0002 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 49152, sysid 2, address 88f0.7774.c380
Configured hello time 2, max age 20, forward delay 15

```
  Current root has priority 2, address 741f.4a25.ae4b
  Root port is 224 (Port-channel1), cost of root path is 3003
  Topology change flag not set, detected flag not set
  Number of topology changes 117 last change occurred 4w6d ago
          from GigabitEthernet0/37
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300
  Uplinkfast enabled

Port 37 (GigabitEthernet0/37) of VLAN0002 is designated forwarding
   Port path cost 3004, Port priority 128, Port Identifier 128.37.
   Designated root has priority 2, address 741f.4a25.ae4b
   Designated bridge has priority 49154, address 88f0.7774.c380
   Designated port id is 128.37, designated path cost 3003
   Timers: message age 0, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   Link type is point-to-point by default
   BPDU: sent 22961456, received 52

Port 224 (Port-channel1) of VLAN0002 is root forwarding
   Port path cost 3003, Port priority 128, Port Identifier 128.224.
   Designated root has priority 2, address 741f.4a25.ae4b
   Designated bridge has priority 2, address 741f.4a25.ae4b
   Designated port id is 128.525, designated path cost 0
   Timers: message age 1, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   Link type is point-to-point by default
   BPDU: sent 10342988, received 23360705


VLAN0003 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 49152, sysid 3, address 88f0.7774.c380
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 3, address 741f.4a25.ae4b
  Root port is 224 (Port-channel1), cost of root path is 3003
  Topology change flag not set, detected flag not set
  Number of topology changes 26 last change occurred 32w6d ago
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300
  Uplinkfast enabled

Port 224 (Port-channel1) of VLAN0003 is root forwarding
   Port path cost 3003, Port priority 128, Port Identifier 128.224.
   Designated root has priority 3, address 741f.4a25.ae4b
   Designated bridge has priority 3, address 741f.4a25.ae4b
   Designated port id is 128.525, designated path cost 0
   Timers: message age 2, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   Link type is point-to-point by default
   BPDU: sent 10342907, received 23360373


VLAN0012 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 49152, sysid 12, address 88f0.7774.c380
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 12, address 741f.4a25.ae4b
  Root port is 224 (Port-channel1), cost of root path is 3003
  Topology change flag not set, detected flag not set
  Number of topology changes 0 last change occurred 06:23:54 ago
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300
```

```
  Uplinkfast enabled

Port 224 (Port-channel1) of VLAN0012 is root forwarding
   Port path cost 3003, Port priority 128, Port Identifier 128.224.
   Designated root has priority 12, address 741f.4a25.ae4b
   Designated bridge has priority 12, address 741f.4a25.ae4b
   Designated port id is 128.525, designated path cost 0
   Timers: message age 1, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   Link type is point-to-point by default
   BPDU: sent 1, received 11520


VLAN0400 is executing the ieee compatible Spanning Tree protocol
  Bridge Identifier has priority 49152, sysid 400, address 88f0.7774.c380
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 400, address 741f.4a25.ae4b
  Root port is 224 (Port-channel1), cost of root path is 3003
  Topology change flag not set, detected flag not set
  Number of topology changes 26 last change occurred 32w6d ago
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300
  Uplinkfast enabled

Port 224 (Port-channel1) of VLAN0400 is root forwarding
   Port path cost 3003, Port priority 128, Port Identifier 128.224.
   Designated root has priority 400, address 741f.4a25.ae4b
   Designated bridge has priority 400, address 741f.4a25.ae4b
   Designated port id is 128.525, designated path cost 0
   Timers: message age 1, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   Link type is point-to-point by default
   BPDU: sent 10342917, received 13625912
```

至此，S5820与思科2960对接PVST典型组网配置案例已完成!

配置关键点