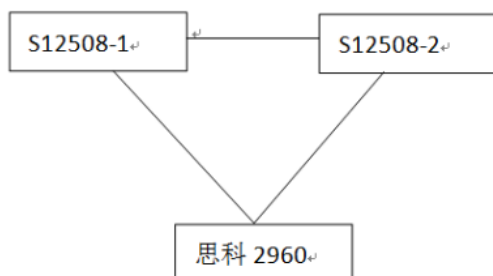


知 S12508与思科2960对接PVST典型组网配置案例

STP PVST 韦家宁 2020-05-24 发表

组网及说明

本案例使用S12508与思科2960对接PVST的典型组网配置案例，S12508-1为主根，同时也部署了VRRP，其中S12508-1为VRRP的master，S12508-2为VRRP的backup，为了进一步防止物理环路，因此在S12508与思科2960部署PVST。



S12508版本信息如下：

```
H3C Comware Platform Software
Comware Software, Version 5.20, Release 1828P05
Copyright (c) 2004-2014 Hangzhou H3C Tech. Co., Ltd. All rights reserved.
H3C S12508 uptime is 57 weeks, 5 days, 7 hours, 43 minutes
Last reboot reason : User reboot
```

思科2960版本信息如下：

```
sh version

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 12.2(50)SE5, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Tue 28-Sep-10 13:44 by prod_rel_team
Image text-base: 0x00003000, data-base: 0x01400000

ROM: Bootstrap program is C2960 boot loader
BOOTLDR: C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(44)SE5, RELEASE SOFTWARE (fc1)

anquanpingtai-ha-v4-1 uptime is 2 years, 38 weeks, 5 days, 11 hours, 11 minutes
System returned to ROM by power-on
System restarted at 23:25:04 UTC Wed Jul 19 2017
System image file is "flash:c2960-lanbasek9-mz.122-50.SE5/c2960-lanbasek9-mz.122-50.SE5.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-C2960G-48TC-L (PowerPC405) processor (revision H0) with 65536K bytes of memory.

Processor board ID FOC1520W692

Last reset from power-on

6 Virtual Ethernet interfaces

48 Gigabit Ethernet interfaces

The password-recovery mechanism is enabled.

64K bytes of flash-simulated non-volatile configuration memory.

Base ethernet MAC Address : 20:37:06:04:0C:00

Motherboard assembly number : 73-10300-12

Power supply part number : 341-0098-02

Motherboard serial number : FOC15200C86

Power supply serial number : DCA151090Q4

Model revision number : H0

Motherboard revision number : A0

Model number : WS-C2960G-48TC-L

System serial number : FOC1520W692

Top Assembly Part Number : 800-27071-06

Top Assembly Revision Number : D0

Version ID : V06

CLEI Code Number : COMB800BRA

Hardware Board Revision Number : 0x01

Switch	Ports	Model	SW Version	SW Image
*	1 48	WS-C2960G-48TC-L	12.2(50)SE5	C2960-LANBASEK9-M

Configuration register is 0xF

配置步骤

S12508-1的MAC如下 (使用lldp查看) :

Global LLDP local-information:

Chassis ID : 7425-8ade-a600

System name : Internet_S12508A

System description : H3C S12508 Product Version S12500-CMW520-R18 28P05. Copyright (c) 2004-2014 Hangzhou H3C Tech. Co., Ltd. All rights reserved.

System capabilities supported : Bridge,Router

System capabilities enabled : Bridge,Router

S12508-2的MAC如下 (使用lldp查看) :

Global LLDP local-information:

Chassis ID : 70f9-6df4-8a00

System name : Internet_S12508B

System description : H3C Comware software. H3C S12508 Product Version S12500-CMW520-R18 28P05. Copyright (c) 2004-2014 Hangzhou H3C Tech. Co., Ltd. All rights reserved.

System capabilities supported : Bridge,Router

System capabilities enabled : Bridge,Router

S12508-1配置如下:

stp mode pvst

stp pathcost-standard dot1d-1998

stp vlan 1 4 13 16 19 28 37 64 to 65 72 110 to 112 root primary

stp vlan 120 to 121 131 140 to 141 150 to 151 160 to 161 170 to 171 180 to 181 190 to 191 200 to 2

01 210 to 211 root primary

```
stp vlan 220 to 221 311 to 316 330 to 331 400 411 to 422 root primary
stp enable
```

S12508-2配置如下:

```
stp mode pvst
stp instance 0 root secondary
stp pathcost-standard dot1d-1998
stp vlan 120 to 121 140 to 141 150 to 151 160 to 161 170 to 171 180 to 181 190 to 191 200 to 201 2
10 to 211 220 to 221 root secondary
stp vlan 311 to 316 330 to 331 411 to 422 root secondary
stp enable
```

思科2960配置如下:

```
spanning-tree mode pvst
```

查看S12508-1的STP根信息:

```
dis stp root
```

VLAN	Root Bridge ID	ExtPathCost	IntPathCost	Root Port
1	0.7425-8ade-a600	0	0	
4	0.7425-8ade-a600	0	0	
28	0.7425-8ade-a600	0	0	
37	0.7425-8ade-a600	0	0	
64	0.7425-8ade-a600	0	0	
65	0.7425-8ade-a600	0	0	
72	0.7425-8ade-a600	0	0	
110	0.7425-8ade-a600	0	0	
111	0.7425-8ade-a600	0	0	
112	0.7425-8ade-a600	0	0	
120	0.7425-8ade-a600	0	0	
121	0.7425-8ade-a600	0	0	
131	0.7425-8ade-a600	0	0	
140	0.7425-8ade-a600	0	0	
141	0.7425-8ade-a600	0	0	
150	0.7425-8ade-a600	0	0	
151	0.7425-8ade-a600	0	0	
160	0.7425-8ade-a600	0	0	
161	0.7425-8ade-a600	0	0	
170	0.7425-8ade-a600	0	0	
171	0.7425-8ade-a600	0	0	
180	0.7425-8ade-a600	0	0	
181	0.7425-8ade-a600	0	0	
190	0.7425-8ade-a600	0	0	
191	0.7425-8ade-a600	0	0	
200	0.7425-8ade-a600	0	0	
201	0.7425-8ade-a600	0	0	
210	0.7425-8ade-a600	0	0	
211	0.7425-8ade-a600	0	0	
220	0.7425-8ade-a600	0	0	
221	0.7425-8ade-a600	0	0	
311	0.7425-8ade-a600	0	0	
312	0.7425-8ade-a600	0	0	
313	0.7425-8ade-a600	0	0	
314	0.7425-8ade-a600	0	0	
315	0.7425-8ade-a600	0	0	
316	0.7425-8ade-a600	0	0	
330	0.7425-8ade-a600	0	0	
331	0.7425-8ade-a600	0	0	
400	0.7425-8ade-a600	0	0	
411	0.7425-8ade-a600	0	0	
412	0.7425-8ade-a600	0	0	
413	0.7425-8ade-a600	0	0	
414	0.7425-8ade-a600	0	0	

415	0.7425-8ade-a600	0	0	
416	0.7425-8ade-a600	0	0	
417	0.7425-8ade-a600	0	0	
418	0.7425-8ade-a600	0	0	
419	0.7425-8ade-a600	0	0	
420	0.7425-8ade-a600	0	0	
421	0.7425-8ade-a600	0	0	
422	0.7425-8ade-a600	0	0	
555	32768.7425-8ade-a600	0	0	
901	32768.7425-8ade-a600	0	0	
902	32768.7425-8ade-a600	0	0	
998	32768.70f9-6df4-8a00	0	2	Bridge-Aggregation1
999	32768.7425-8ade-a600	0	0	

查看S12508-2的STP根信息:

dis stp root

VLAN	Root Bridge ID	ExtPathCost	IntPathCost	Root Port
1	0.7425-8ade-a600	0	2	Bridge-Aggregation1
4	0.7425-8ade-a600	0	2	Bridge-Aggregation1
28	0.7425-8ade-a600	0	2	Bridge-Aggregation1
37	0.7425-8ade-a600	0	2	Bridge-Aggregation1
64	0.7425-8ade-a600	0	2	Bridge-Aggregation1
65	0.7425-8ade-a600	0	2	Bridge-Aggregation1
72	0.7425-8ade-a600	0	2	Bridge-Aggregation1
110	0.7425-8ade-a600	0	2	Bridge-Aggregation1
111	0.7425-8ade-a600	0	2	Bridge-Aggregation1
112	0.7425-8ade-a600	0	2	Bridge-Aggregation1
120	0.7425-8ade-a600	0	2	Bridge-Aggregation1
121	0.7425-8ade-a600	0	2	Bridge-Aggregation1
140	0.7425-8ade-a600	0	2	Bridge-Aggregation1
141	0.7425-8ade-a600	0	2	Bridge-Aggregation1
150	0.7425-8ade-a600	0	2	Bridge-Aggregation1
151	0.7425-8ade-a600	0	2	Bridge-Aggregation1
160	0.7425-8ade-a600	0	2	Bridge-Aggregation1
161	0.7425-8ade-a600	0	2	Bridge-Aggregation1
170	0.7425-8ade-a600	0	2	Bridge-Aggregation1
171	0.7425-8ade-a600	0	2	Bridge-Aggregation1
180	0.7425-8ade-a600	0	2	Bridge-Aggregation1
181	0.7425-8ade-a600	0	2	Bridge-Aggregation1
190	0.7425-8ade-a600	0	2	Bridge-Aggregation1
191	0.7425-8ade-a600	0	2	Bridge-Aggregation1
200	0.7425-8ade-a600	0	2	Bridge-Aggregation1
201	0.7425-8ade-a600	0	2	Bridge-Aggregation1
210	0.7425-8ade-a600	0	2	Bridge-Aggregation1
211	0.7425-8ade-a600	0	2	Bridge-Aggregation1
220	0.7425-8ade-a600	0	2	Bridge-Aggregation1
221	0.7425-8ade-a600	0	2	Bridge-Aggregation1
311	0.7425-8ade-a600	0	2	Bridge-Aggregation1
312	0.7425-8ade-a600	0	2	Bridge-Aggregation1
313	0.7425-8ade-a600	0	2	Bridge-Aggregation1
314	0.7425-8ade-a600	0	2	Bridge-Aggregation1
315	0.7425-8ade-a600	0	2	Bridge-Aggregation1
316	0.7425-8ade-a600	0	2	Bridge-Aggregation1
330	0.7425-8ade-a600	0	2	Bridge-Aggregation1
331	0.7425-8ade-a600	0	2	Bridge-Aggregation1
400	0.7425-8ade-a600	0	2	Bridge-Aggregation1
411	0.7425-8ade-a600	0	2	Bridge-Aggregation1
412	0.7425-8ade-a600	0	2	Bridge-Aggregation1
413	0.7425-8ade-a600	0	2	Bridge-Aggregation1
414	0.7425-8ade-a600	0	2	Bridge-Aggregation1
415	0.7425-8ade-a600	0	2	Bridge-Aggregation1
416	0.7425-8ade-a600	0	2	Bridge-Aggregation1
417	0.7425-8ade-a600	0	2	Bridge-Aggregation1

```

418 0.7425-8ade-a600 0 2 Bridge-Aggregation1
419 0.7425-8ade-a600 0 2 Bridge-Aggregation1
420 0.7425-8ade-a600 0 2 Bridge-Aggregation1
421 0.7425-8ade-a600 0 2 Bridge-Aggregation1
422 0.7425-8ade-a600 0 2 Bridge-Aggregation1
555 32768.70f9-6df4-8a00 0 0
900 32768.70f9-6df4-8a00 0 0
903 32768.70f9-6df4-8a00 0 0
998 32768.70f9-6df4-8a00 0 0

```

查看思科2960的STP根信息：

```
sh spanning-tree root
```

Vlan	Root Hello Max Fwd					
	Root ID	Cost	Time	Age	Dly	Root Port
VLAN0064	64 7425.8ade.a600	4	2	20	15	Gi0/48
VLAN0140	140 7425.8ade.a600	4	2	20	15	Gi0/48
VLAN0400	400 7425.8ade.a600	4	2	20	15	Gi0/48

查看思科2960 STP端口状态信息：

```
sh spanning-tree detail active
```

VLAN0064 is executing the ieee compatible Spanning Tree protocol
 Bridge Identifier has priority 32768, sysid 64, address 5835.d946.4b00
 Configured hello time 2, max age 20, forward delay 15
 Current root has priority 64, address 7425.8ade.a600
 Root port is 48 (GigabitEthernet0/48), cost of root path is 4
 Topology change flag not set, detected flag not set
 Number of topology changes 15 last change occurred 2w1d ago
 from GigabitEthernet0/47
 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

Port 46 (GigabitEthernet0/46) of VLAN0064 is designated forwarding
 Port path cost 4, Port priority 128, Port Identifier 128.46.
 Designated root has priority 64, address 7425.8ade.a600
 Designated bridge has priority 32832, address 5835.d946.4b00
 Designated port id is 128.46, designated path cost 4
 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 522598, received 0

Port 47 (GigabitEthernet0/47) of VLAN0064 is designated forwarding
 Port path cost 19, Port priority 128, Port Identifier 128.47.
 Designated root has priority 64, address 7425.8ade.a600
 Designated bridge has priority 32832, address 5835.d946.4b00
 Designated port id is 128.47, designated path cost 4
 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 520206, received 51

Port 48 (GigabitEthernet0/48) of VLAN0064 is root forwarding
 Port path cost 4, Port priority 128, Port Identifier 128.48.
 Designated root has priority 64, address 7425.8ade.a600
 Designated bridge has priority 64, address 7425.8ade.a600
 Designated port id is 128.121, designated path cost 0
 Timers: message age 3, forward delay 0, hold 0
 Number of transitions to forwarding state: 1
 Link type is point-to-point by default

BPDU: sent 4, received 520803

VLAN0140 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 32768, sysid 140, address 5835.d946.4b00
Configured hello time 2, max age 20, forward delay 15
Current root has priority 140, address 7425.8ade.a600
Root port is 48 (GigabitEthernet0/48), cost of root path is 4
Topology change flag not set, detected flag not set
Number of topology changes 303 last change occurred 1d15h ago
from GigabitEthernet0/7
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

Port 7 (GigabitEthernet0/7) of VLAN0140 is designated forwarding
Port path cost 100, Port priority 128, Port Identifier 128.7.
Designated root has priority 140, address 7425.8ade.a600
Designated bridge has priority 32908, address 5835.d946.4b00
Designated port id is 128.7, designated path cost 4
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 57940, received 0

Port 10 (GigabitEthernet0/10) of VLAN0140 is designated forwarding
Port path cost 100, Port priority 128, Port Identifier 128.10.
Designated root has priority 140, address 7425.8ade.a600
Designated bridge has priority 32908, address 5835.d946.4b00
Designated port id is 128.10, designated path cost 4
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 65869, received 0

Port 34 (GigabitEthernet0/34) of VLAN0140 is designated forwarding
Port path cost 4, Port priority 128, Port Identifier 128.34.
Designated root has priority 140, address 7425.8ade.a600
Designated bridge has priority 32908, address 5835.d946.4b00
Designated port id is 128.34, designated path cost 4
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 204774, received 0

Port 46 (GigabitEthernet0/46) of VLAN0140 is designated forwarding
Port path cost 4, Port priority 128, Port Identifier 128.46.
Designated root has priority 140, address 7425.8ade.a600
Designated bridge has priority 32908, address 5835.d946.4b00
Designated port id is 128.46, designated path cost 4
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 544444, received 68

Port 47 (GigabitEthernet0/47) of VLAN0140 is designated forwarding
Port path cost 19, Port priority 128, Port Identifier 128.47.
Designated root has priority 140, address 7425.8ade.a600
Designated bridge has priority 32908, address 5835.d946.4b00
Designated port id is 128.47, designated path cost 4
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 541893, received 53

Port 48 (GigabitEthernet0/48) of VLAN0140 is root forwarding
Port path cost 4, Port priority 128, Port Identifier 128.48.
Designated root has priority 140, address 7425.8ade.a600
Designated bridge has priority 140, address 7425.8ade.a600
Designated port id is 128.121, designated path cost 0
Timers: message age 3, forward delay 0, hold 0
Number of transitions to forwarding state: 1
Link type is point-to-point by default
BPDU: sent 333, received 542515

VLAN0400 is executing the ieee compatible Spanning Tree protocol
Bridge Identifier has priority 32768, sysid 400, address 5835.d946.4b00
Configured hello time 2, max age 20, forward delay 15
Current root has priority 400, address 7425.8ade.a600
Root port is 48 (GigabitEthernet0/48), cost of root path is 4
Topology change flag not set, detected flag not set
Number of topology changes 15 last change occurred 2w1d ago
from GigabitEthernet0/47
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

Port 46 (GigabitEthernet0/46) of VLAN0400 is designated forwarding
Port path cost 4, Port priority 128, Port Identifier 128.46.
Designated root has priority 400, address 7425.8ade.a600
Designated bridge has priority 33168, address 5835.d946.4b00
Designated port id is 128.46, designated path cost 4
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 653252, received 0

Port 47 (GigabitEthernet0/47) of VLAN0400 is designated forwarding
Port path cost 19, Port priority 128, Port Identifier 128.47.
Designated root has priority 400, address 7425.8ade.a600
Designated bridge has priority 33168, address 5835.d946.4b00
Designated port id is 128.47, designated path cost 4
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 650269, received 45

Port 48 (GigabitEthernet0/48) of VLAN0400 is root forwarding
Port path cost 4, Port priority 128, Port Identifier 128.48.
Designated root has priority 400, address 7425.8ade.a600
Designated bridge has priority 400, address 7425.8ade.a600
Designated port id is 128.121, 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 4, received 651016

至此，S12508与华为思科2960 PVST对接的典型组网配置案例已完成！