四元组在Catalyst 4500交换机配置示例的Supervisor VSS部署

目录

简介

本文描述如何配置四元组Supervisor虚拟交换系统(VSS)在Catalyst 4500。四元组Supervisor VSS是在Catalyst 6500的一个选项几年当前，然而此技术新建到Catalyst 4500，并且也许不执行您用于的方式。

安装四个Supervisor (2每每个机箱)是可能的和建立四元组SUP VSS设置。在这样设置一机箱包含作为VSS激活并且为全部的VSS设置的控制面板是resposible的Supervisor，而在同一个机箱的另一个Supervisor作为机箱内的待机(ICS)。第二个机箱包含即作为VSS待机(的Supervisor VSS在VSS活动失败的情况下故障切换)的一个Supervisor，当其他作为ICS时。

在Catalyst 4500的四元组SUP VSS行为取决于使用的Cisco IOS XE ®版本。最初对于四元组SUP VSS在ROMMON设置， ICS Supervisor在指定时候坚持与能所有的上行链路端口转递数据。没有ICS的自动机制能自动地接管(即请参加VSS从控制层面方面)在失败情形下。

在版本03.08.00E和以上， Catalyst 4500支持在Supervisor失败的情况下改进四元组SUP功能和故障切换行为在失败的情况下允许在所有Supervisor之间的自动故障切换的路由处理器冗余模式的ICS Supervisor。

先决条件

要求

思科建议您有VSS技术知识，在您安装四元组Supervisor前。

为了设置在Catalyst 4500的一个四元组Supervisor VSS用Supervisor 7，您的Supervisor需要运行Cisco IOS XE版本3.4.0或以上。您也将需要保证您的ROM版本是15.0(1r) SG7或以后。

为了设置在Catalyst 4500的四元组Supervisor VSS用Supervisor 8，您的Supervisor需要运行Cisco IOS XE版本3.6.0或以上。您也将需要保证您的ROM版本是15.1(1r) SG4或以后。

为了设置在RPR模式运行在Catalyst 4500的四元组Supervisor VSS有ICS的，您的Supervisor需要运行Cisco IOS XE版本3.8.0或以上。您也将需要保证您的ROM版本是15.1(1r)SG6或以后。

在机箱内的激活的Supervisor之间的Stateful Switchover (SSO)冗余要求或者IP BASE或企业服务准许级别。

使用的组件

本文档中的信息根据包含冗余Supervisor 7Es的两个Catalyst 4507R+E机箱。

思科建议您的虚拟交换机林克(VSL)包括冗余连接。在本例中有每个Supervisor之间的冗余的10G链路。

在版本03.08.00E和以下， Cisco不支持“活动/等待待机”，而在四元组Supervisor VSS。每个机箱的冗余Supervisor在ROMMON将保持并且必须手工启动在主Supervisor失败。在版本03.08.00E和以上， ICS Supervisor在RPR模式。

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。

不对称机箱支持

Catalyst 4500和Catalyst 4500-X VSS要求在两个机箱的同一种Supervisor Engine类型。**机箱必须包含slot同一数量**，即使他们的线路卡有所不同或他们的slot是空的。假设slot数量在两个机箱的配比，机箱在类型能有所不同(即+E和- E机箱可以在单个VSS)。

配置

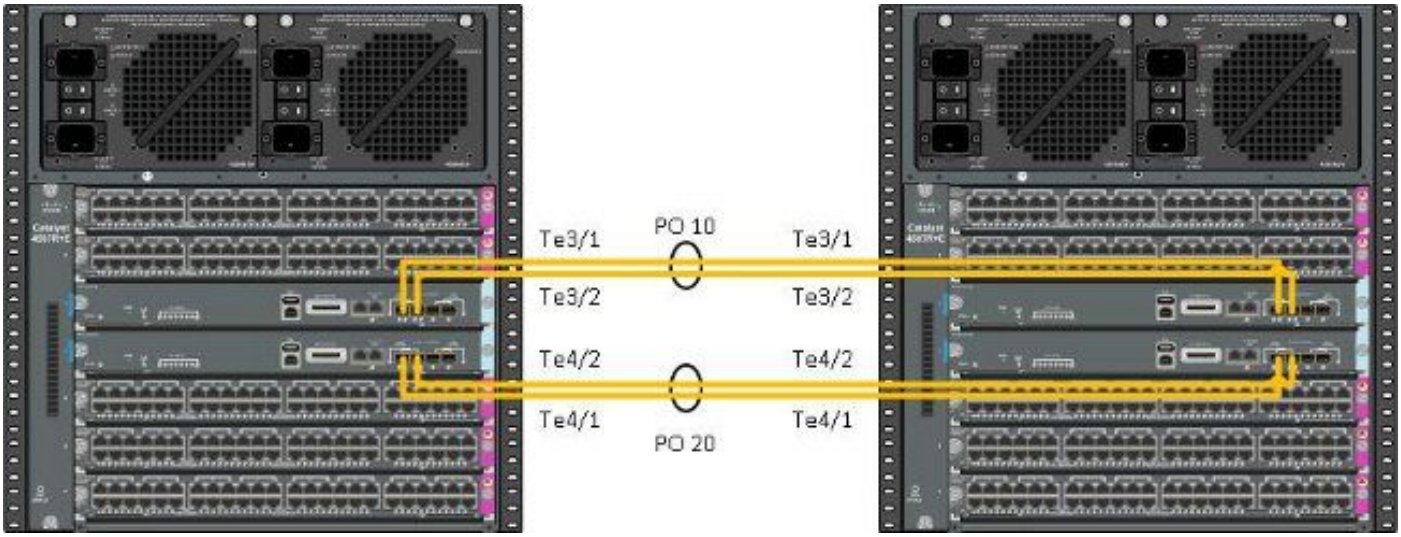
在您开始前，请验证

为了部署在Catalyst 4500的四元组Supervisor VSS，使用Supervisor 8为了保证一些设置到位：

1. 保证最低软件需求满足。此示例显示与ROM版本15.1(1r)SG6的版本03.08.01E。 `4K_SW1#show version | i Cisco IOS Software|ROM:`
   ```
   Cisco IOS Software, IOS-XE Software, Catalyst 4500 L3 Switch  Software
   (cat4500es8-UNIVERSALK9-M), Version 03.08.01.E RELEASE SOFTWARE (fc2) ROM: 15.1(1r)SG6
   ```
2. 保证当前Supervisor是全部在SSO冗余模式。 **注意**：一个最低的许可证级IP BASE为SSO要求(LAN基础在RPR只将运行)。`4K_SW1#show redundancy`
   ```
   Redundant System Information :

   ------------------------------
   Available system uptime = 1 day, 10 hours, 4 minutes
   Switchovers system experienced = 0
   Standby failures = 0
   Last switchover reason = none

   Hardware Mode = Duplex
   Configured Redundancy Mode = Stateful Switchover
   Operating Redundancy Mode = Stateful Switchover
   Maintenance Mode = Disabled
   Communications = Up
   ```
3. 保证正确引导程序寄存器变量设置保证交换机将启动正如所料。思科推荐0x2102作为配置寄存器值。这保证交换机启动对Cisco IOS XE在引导说明注释的版本。 `4K_SW1#show bootvar`
   ```
   BOOT variable = bootflash:cat4500es8-universalk9.SPA.03.08.01.E.152-4.E1.bin,1;
   CONFIG_FILE variable =
   BOOTLDR variable =
   Configuration register is 0x2102

   Standby BOOT variable = bootflash:cat4500es8-universalk9.SPA.03.08.01.E.152-4.E1.bin,1;
   Standby CONFIG_FILE variable =
   Standby BOOTLDR variable =
   Standby Configuration register is 0x2102
   ```

缚住并且配置

在本例中，每个机箱之间的四10G光纤连接用于形成VSL。连接在Supervisor使用10G端口。



注意：有多种方式缚住此解决方案，并且此处示例只是一方式。

完成这些步骤为了配置交换机：

1. 设置虚拟域和交换编号在每交换机。在两交换机配置的交换机虚拟域编号一定是相同的。

```
4K_SW1(config)#switch virtual domain 200
Domain ID 200 config will take effect only
after the exec command 'switch convert mode virtual' is issued

4K_SW1(config-vs-domain)#switch 14K_SW2(config)#switch virtual domain 200
Domain ID 200 config will take effect only
after the exec command 'switch convert mode virtual' is issued

4K_SW2(config-vs-domain)#switch 2
```

2. 创建端口通道并且添加成员链接。不同于以前显示的域编号， Port-Channel编号不能是相同的。

```
4K_SW1(config)#int po10
4K_SW1(config-if)#switchport
4K_SW1(config-if)#switchport mode trunk
4K_SW1(config-if)#switch virtual link 1
4K_SW1(config-if)#exit

4K_SW1(config)#int range te3/1-2, te4/1-2
4K_SW1(config-if-range)#switchport mode trunk
4K_SW1(config-if-range)#channel-group 10 mode on

WARNING: Interface TenGigabitEthernet3/1 placed in restricted config mode.
All extraneous configs removed!

*Jul 3 19:36:00.615: %EC-5-CANNOT_BUNDLE2: Te3/1 is not compatible with Po10
and will be suspended (trunk mode of Te3/1 is dynamic, Po10 is trunk)

4K_SW1#show etherchannel summary

Group Port-channel Protocol Ports
------+-------------+-----------+-----------------------------------------------
10 Po10(SD) - Te3/1(w) Te3/2(w) Te4/1(w)
Te4/2(w)4K_SW2(config)#int po20
4K_SW2(config-if)#switchport
4K_SW2(config-if)#switchport mode trunk
4K_SW2(config-if)#switch virtual link 2

4K_SW2(config)#int range te3/1-2, te4/1-2
4K_SW2(config-if-range)#switchport mode trunk
```

```
4K_SW2(config-if-range)#channel-group 20 mode on

WARNING: Interface TenGigabitEthernet3/2 placed in restricted config mode.
All extraneous configs removed!
*Jul 3 19:50:26.703: %EC-5-CANNOT_BUNDLE2: Te3/1 is not compatible with
Po20 and will be suspended (trunk mode of Te3/1 is dynamic, Po20 is trunk)

4K_SW2#show etherchannel summary

Group Port-channel Protocol Ports
------+-------------+-----------+-----------------------------------------------
20 Po20(SD) - Te3/1(w) Te3/2(w) Te4/1(w)
Te4/2(w)
```

注意："%EC-5-CANNOT_BUNDLE2"错误瞬变，并且可能安全忽略。

转换交换机对虚拟(RPR Mode/03.08.00E和以后)

1. 保存在两交换机的配置，将同步在Supervisor的配置在机箱内。

```
4K_SW1#copy running-config startup-config4K_SW2#copy running-config startup-config
```

2. 转换机箱到VSS模式：

```
Switch#switch convert mode virtual

This command will convert all interface names
to naming convention "interface-type switch-number/slot/port",
save the running config to startup-config and
reload the switch.
Do you want to proceed? [yes/no]: yes
Converting interface names
```

那引起机箱重新加载。在ICS机箱的重新加载期间，此消息显示，并且控制台不再将是可用的：

```
Switch#switch convert mode virtual

This command will convert all interface names
to naming convention "interface-type switch-number/slot/port",
save the running config to startup-config and
reload the switch.
Do you want to proceed? [yes/no]: yes
Converting interface names
```

转换交换机对虚拟(ROMmon模式/早于版本03.08.00E)

交换机当前需要转换到VSS，然而不同于一个传统单个Supervisor VSS进程要求您演出每套Supervisor。

1. 重新加载在每个机箱的对等体Supervisor并且保持在ROMMON。

注意：您需要保证您访问控制台访问到Supervisor，并且能迅速终止启动程序。

每个机箱的激活的Supervisor

```
4K_SW1#redundancy reload peer
Reload peer [confirm]
4K_SW1#
Preparing to reload peer
```

在每个机箱的对等体Supervisor

```
4K_SW1#redundancy reload peer
Reload peer [confirm]
4K_SW1#
Preparing to reload peer
```

在您继续前，两个机箱应该有一激活的Supervisor和一个Supervisor在ROMMON状态。其次，请输入**virtual命令交换机转换的模式**为了转换两激活的Supervisor到VSS。

```
4K_SW1#switch convert mode virtual

This command will convert all interface names
to naming convention "interface-type switch-number/slot/port",
save the running config to startup-config and
reload the switch.

Do you want to proceed? [yes/no]: yes
Converting interface names
Building configuration...
Compressed configuration from 6329 bytes to 2912 bytes[OK]
Saving converted configuration to bootflash: ...
Destination filename [startup-config.converted_vs-20140704-053736]?

7146 bytes copied in 1.404 secs (5090 bytes/sec)
Rebooting the switch

*Jul 4 05:37:40.501: %SYS-5-RELOAD: Reload requested by Exec.
Reload Reason: Reason unspecified.4K_SW2#switch convert mode virtual

This command will convert all interface names
to naming convention "interface-type switch-number/slot/port",
save the running config to startup-config and
reload the switch.

Do you want to proceed? [yes/no]: yes
Converting interface names
Building configuration...
Compressed configuration from 5819 bytes to 2786 bytes[OK]
Saving converted configuration to bootflash: ...
Destination filename [startup-config.converted_vs-20140704-053752]?
5831 bytes copied in 0.416 secs (14017 bytes/sec)
Rebooting the switch

*Jul 4 05:37:54.072: %SYS-5-RELOAD: Reload requested by Exec.
Reload Reason: Reason unspecified.
```

> **注意**：既使当Supervisor在ROMMON状态，对等体Supervisor的交换机端口积极地通过流量。

一旦Supervisor转换并且重新加载到VSS，下一步是安置他们在ROMMON状态和转换对等体Supervisor到VSS。因为激活的Supervisor是在VSS，您能运行单个命令为了重新加载整个架子。请勿忘记终止他们两个在ROMMON。

```
4K_SW1#redundancy reload shelf
Reload the entire shelf [confirm]
Preparing to reload this shelf

<Snippet>

***** The system will autoboot in 5 seconds *****
```

```
Type control-C to prevent autobooting.
.
Autoboot cancelled......... please wait!!!
rommon 1 > [interrupt]

rommon 1 >
```

一旦以前激活的Supervisor被终止在ROMMON，请手工启动对等体Supervisor并且转换他们对VSS。

一旦两个Supervisor是启动，并且激活，您需要进行一些个配置更改为了保证新的Supervisor加入VSS。切记Supervisor在对VSS的转换前重新加载的对等体，因此他们无法解析某些配置在加载。最安全的方式保证所有配置应用将重复以前被执行的步骤。在您重新配置Port-Channel前，您也许也需要默认接口。

```
4K_SW1(config)#switch virtual domain 200
4K_SW1(config-vs-domain)#switch 1

4K_SW1(config)#int po10
4K_SW1(config-if)#switchport
4K_SW1(config-if)#switchport mode trunk
4K_SW1(config-if)#switch virtual link 1

MESSAGE:
You are configuring VSL on interface Po10.
There are member ports already attached to the port channel.
Remove all member ports before configuring as VSL Port-Channel.
```

激活的Supervisor

```
4K_SW1(config)#default int range te3/1-2, te4/1-2
```

重新应用配置对Port-Channel 10

```
4K_SW1(config)#int po10
4K_SW1(config-if)#switch virtual link 1

*Jul 4 07:25:29.532: %SPANTREE-6-PORTDEL_ALL_VLANS: Port-channel10
deleted from all Vlans
```

配置成员端口

```
4K_SW1(config)#int range te3/1-2,te4/1-2
4K_SW1(config-if-range)#switchport mode trunk
4K_SW1(config-if-range)#channel-group 10 mode on
```

重新应用配置对Port-Channel 20

```
4K_SW2(config)#int po20
4K_SW2(config-if)#switch virtual link 2

*Jul 4 07:35:29.532: %SPANTREE-6-PORTDEL_ALL_VLANS: Port-channel20 deleted from all Vlans
```

配置成员端口

```
4K_SW2(config)#int range te3/1-2,te4/1-2
4K_SW2(config-if-range)#switchport mode trunk
4K_SW2(config-if-range)#channel-group 20 mode on
```

转换两交换机对VSS

```
4K_SW1#switch convert mode virtual
```

```
This command will convert all interface names
to naming convention "interface-type switch-number/slot/port",
save the running config to startup-config and
reload the switch.

Do you want to proceed? [yes/no]: yes
Converting interface names
Building configuration...
Compressed configuration from 6329 bytes to 2911 bytes[OK]
Saving converted configuration to bootflash: ...
Destination filename [startup-config.converted_vs-20140704-080809]?
7146 bytes copied in 0.116 secs (61603 bytes/sec)

Rebooting the switch4K_SW2#switch convert mode virtual

This command will convert all interface names
to naming convention "interface-type switch-number/slot/port",
save the running config to startup-config and
reload the switch.

Do you want to proceed? [yes/no]: yes
Converting interface names
Building configuration...
Compressed configuration from 5819 bytes to 2785 bytes[OK]
Saving converted configuration to bootflash: ...
Destination filename [startup-config.converted_vs-20140704-080834]?
5831 bytes copied in 0.984 secs (5926 bytes/sec)

Rebooting the switch
```

一旦Supervisor重新加载，他们应该在VSS当前形成。您应该当前有在ROMMON坐并且等候手动启动的两激活的Supervisor和两个Supervisor。 对等体Supervisor在ROMMON保持并且需要手工启动为了接收控制层面流量。

故障排除

目前没有针对此配置的故障排除信息。

验证

使用本部分可确认配置能否正常运行。

```
4K_SW1#show switch virtual

Executing the command on VSS member switch role = VSS Active, id = 2


Switch mode : Virtual Switch
Virtual switch domain number : 200
Local switch number : 2
Local switch operational role: Virtual Switch Active
Peer switch number : 1
Peer switch operational role : Virtual Switch Standby

Executing the command on VSS member switch role = VSS Standby, id = 1
```

```
Switch mode : Virtual Switch
Virtual switch domain number : 200
Local switch number : 1
Local switch operational role: Virtual Switch Standby
Peer switch number : 2
Peer switch operational role : Virtual Switch Active4K_SW1#show switch virtual redundancy

Executing the command on VSS member switch role = VSS Active, id = 2


My Switch Id = 2
Peer Switch Id = 1
Last switchover reason = user forced
Configured Redundancy Mode = Stateful Switchover
Operating Redundancy Mode = Stateful Switchover

Switch 2 Slot 14 Processor Information :
-----------------------------------------------
Current Software state = ACTIVE
Image Version = Cisco IOS Software, Catalyst 4500 L3 Switch Software
(cat4500e-UNIVERSALK9-M), Version 15.2(2)E, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Fri 27-Jun-14 05:55 by prod_rel_team
BOOT = bootflash:cat4500e-universalk9.SPA.03.05.02.E.152-1.E2.bin,1;
Configuration register = 0x102 (will be 0x2102 at next reload)
Fabric State = ACTIVE
Control Plane State = ACTIVE

Switch 1 Slot 4 Processor Information :
-----------------------------------------------
Current Software state = STANDBY HOT (switchover target)
Image Version = Cisco IOS Software, Catalyst 4500 L3 Switch Software
(cat4500e-UNIVERSALK9-M), Version 15.2(2)E, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Fri 27-Jun-14 05:55 by p
BOOT = bootflash:cat4500e-universalk9.SPA.03.05.02.E.152-1.E2.bin,1;
Configuration register = 0x102 (will be 0x2102 at next reload)
Fabric State = ACTIVE
Control Plane State = STANDBY


Executing the command on VSS member switch role = VSS Standby, id = 1

show virtual switch redundancy is not supported on the standby
```

相关信息

- 四元组思科Catalyst的4500-E Supervisor RPR交换白皮书
- Catalyst 4500系列交换机软件配置指南，最近版本的IOS XE 3.4.xSG和IOS 15.1(2)SGx
- 技术支持和文档 - Cisco Systems