排除NX-OS交换机上的vPC不一致问题

目录

简介

先决条件

- 要求
- 使用的组件

背景信息

排除NX-OS设备上的vPC故障

- 第#1期：vPC成员端口不兼容
- 故障排除
- 第#2期：对等链路关闭
- 故障排除
- 第#3期：对等体无法通过对等保持连接访问
- 故障排除
- 第#4期：类型1不一致
- 故障排除
- 第#5期：类型2不一致
- 故障排除
- 第#6期：接口编号和vPC ID不一致
- 故障排除

相关信息

简介

本文档介绍常见的虚拟端口通道(vPC)不一致问题及其故障排除步骤。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档不限于特定的软件和硬件版本。

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。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

背景信息

vPC允许物理上连接到两台不同交换机的链路通过第三台设备显示为单个端口通道。

排除NX-OS设备上的vPC故障

检查show vpc brief的输出，并查看某个vPC成员端口中是否存在任何兼容性问题。

使用列出的命令检查特定vPC的不一致性：

- show vpc consistency-parameters global
- show vpc consistency-parameters interface Ethernet x/y
- show vpc consistency-parameters vlan
- show vpc consistency-parameters vpc vpc-id

第#1期：vPC成员端口不兼容

检查vPC成员端口之间是否存在任何兼容性问题，如使用show vpc命令报告。

如果存在任何问题，则会报告为“Compatibility check failed”，如输出所示：

<#root>

`show vpc`

```
Legend:
(*) - local vPC is down, forwarding via vPC peer-link
vPC domain id : 1
Peer status : peer adjacency formed ok
vPC keep-alive status : peer is alive
Configuration consistency status : success
Per-vlan consistency status : success
```

```
Type-2 consistency status : success
vPC role : secondary
Number of vPCs configured : 18
Peer Gateway : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status : Enabled, timer is off.(timeout = 240s)
Delay-restore status : Timer is off.(timeout = 50s)
Delay-restore SVI status : Timer is off.(timeout = 10s)
vPC Peer-link status
---------------------------------------------------------------------
id Port Status Active vlans
-- ---- ------ --------------------------------------------------
1  Po100 up    1,5,10,118,121-132,150,160,253

vPC status
----------------------------------------------------------------------
id Port Status Consistency Reason Active vlans
-- ---- ------ ----------- ------ ------------
1  Po1  up     success     success 1,5,10,118, 121-132,150

2  Po2  down*  failed      Compatibility check failed -      <--- for speed
```

<#root>

`show vpc consistency-parameters vpc 2`

```
    Legend:
        Type 1 : vPC will be suspended in case of mismatch

Name                        Type  Local Value            Peer Value
-------------               ----  ---------------------- -----------------------
delayed-lacp                1     disabled               disabled
mode                        1     active                 active
Switchport Isolated         1     0                      0
Interface type              1     port-channel           port-channel
LACP Mode                   1     on                     on
Virtual-ethernet-bridge     1     Disabled               Disabled

Speed                       1     10 Gb/s                100 Gb/s     <--- speed mismatch

Duplex                      1     full                   full
MTU                         1     9216                   9216
Port Mode                   1     trunk                  trunk
Native Vlan                 1     20                     20
Admin port mode             1     trunk                  trunk
STP Port Guard              1     Default                Default
STP Port Type               1     Edge Trunk Port        Edge Trunk Port
STP MST Simulate PVST       1     Default                Default
lag-id                      1     [(64, 0-23-4-ee-be-6d, [(0,
                                   806b, 0, 0), (ffff,    50-6b-4b-46-3a-fa, 0,
                                   50-6b-4b-46-39-6a, 1,  0, 0), (64,
                                   0, 0)]                 0-23-4-ee-be-6d, 806b,
```

```
                                                    0, 0)]
Vlan xlt mapping            1     Disabled              Disabled
vPC card type               1     N9K TOR               N9K TOR
Allowed VLANs               -     1,5,10,118            1,5,10,118
Local suspended VLANs       -     -                     -
```

故障排除

- 确保vPC接口和远程端（服务器/第三台交换机）配置了相同的速度。使用show vpc consistency-parameters vpc vpc-id检查与对等vPC接口的速度不匹配。
- 此外，请确认vPC中的所有成员接口都配置了相同的速度。

第#2期：对等链路关闭

使用show vpc命令检查对等体状态是否显示对等链路已关闭。

如果对等链路状态存在任何问题，则对于“对等状态”，必须将其报告为“对等链路已关闭”，如以下输出所示：

<#root>

`**show vpc brief**`

```
Legend:
                (*) - local vPC is down, forwarding via vPC peer-link

vPC domain id                     : 100

Peer status                       : peer link is down      <--- peer-link is down then vPC is down


vPC keep-alive status             : peer is alive
Configuration consistency status  : success
Per-vlan consistency status       : success
Type-2 consistency status         : failed
Type-2 inconsistency reason       : SVI type-2 configuration incompatible
vPC role                          : secondary
Number of vPCs configured         : 1
Peer Gateway                      : Disabled
Dual-active excluded VLANs        : -
Graceful Consistency Check        : Enabled
Auto-recovery status              : Disabled
Delay-restore status              : Timer is off.(timeout = 30s)
Delay-restore SVI status          : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router    : Disabled
```

```
Virtual-peerlink mode             : Disabled
vPC Peer-link status
---------------------------------------------------------------------
id    Port   Status Active vlans
--    ----   ------ --------------------------------------------------
1     Po1    down   -

vPC status
----------------------------------------------------------------------------
Id    Port          Status Consistency Reason                Active vlans
--    ------------  ------ ----------- ------                ---------------

123   Po123         down   failed      Peer-link is down     -           <--- Reason: Peer-link down
```

故障排除

- 检查对等链路中配置的端口通道接口和成员接口的状态。如果它们已关闭但未连接，请检查物理连接，如电缆/SFP等。
- 需要将vPC对等链路port-channel配置为生成树协议(STP)端口类型网络。确保在两台vPC对等交换机上的所有vPC对等链路上都启用了网桥保证。
- 验证vPC对等链路是否配置为仅允许vPC VLAN的第2层端口通道中继。
- 在对等体之间的vPC对等链路最初建立之前，所有vPC端口通道必须保持挂起状态。如果vPC对等链路在线一段时间后发生故障，辅助链路上的vPC将挂起，直到对等链路恢复。

第#3期：对等体无法通过对等保持连接访问

使用CLI命令检查vPC keep-alive状态是否显示对等体无法通过对等体保持连接到达 show vpc command.

输出报告vPC对等保持连接已关闭，原因是对等设备无法通过对等保持连接访问，如下所示：

<#root>

`show vpc brief`

```
Legend:
                (*) - local vPC is down, forwarding via vPC peer-link
vPC domain id                     : 100
Peer status                       : peer adjacency formed ok
vPC keep-alive status             : peer is not reachable through peer-keepalive

<--- keep-alive is down

Configuration consistency status  : success
```

```
Per-vlan consistency status       : success
Type-2 consistency status         : failed
Type-2 inconsistency reason       : SVI type-2 configuration incompatible
vPC role                          : secondary
Number of vPCs configured         : 1
Peer Gateway                      : Disabled
Dual-active excluded VLANs        : -
Graceful Consistency Check        : Enabled
Auto-recovery status              : Disabled
Delay-restore status              : Timer is off.(timeout = 30s)
Delay-restore SVI status          : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router    : Disabled
Virtual-peerlink mode             : Disabled
vPC Peer-link status
--------------------------------------------------------------------
id    Port   Status Active vlans
--    ----   ------ --------------------------------------------------
1     Po1    up     1,10

vPC status
----------------------------------------------------------------------------
Id    Port          Status Consistency Reason                Active vlans
--    ------------  ------ ----------- ------                ---------------
123   Po123         up     success     success               1,10

<-- vpc is still up
```

故障排除

- 验证第3层接口是否与vPC对等交换机之间用于对等保持连接的正确虚拟路由转发(VRF)关联。
- 如果管理VRF用于对等保持连接，请确保将管理交换机连接到两个vPC对等设备上的管理端口。
- 验证用于对等保持连接消息的源IP地址和目标IP地址是否可从与vPC对等保持连接链路关联的VRF到达。
- 确保地址解析协议(ARP)已解析，并且您可以在对等保持连接地址之间执行ping操作以测试连通性。如果不存在可达性，请检查路径沿途的问题（例如，L1、STP等）。

第#4期：类型1不一致

使用show vpc comm检查类型1一致性状态是否失败and.

如果检测到配置一致性问题，命令结果会报告失败的原因：

<#root>

`show vpc`

```
Legend:
                (*) - local vPC is down, forwarding via vPC peer-link

vPC domain id                     : 1
Peer status                       : peer adjacency formed ok
vPC keep-alive status             : peer is alive

Configuration consistency status  : failed      <--- consistency check failed


Per-vlan consistency status       : success

Configuration inconsistency reason: vPC type-1 configuration incompatible - STP Mode inconsistent    <--


Type-2 consistency status         : success
vPC role                          : primary
Number of vPCs configured         : 0
Peer Gateway                      : Enabled
Dual-active excluded VLANs        : -
Graceful Consistency Check        : Enabled
Auto-recovery status              : Enabled, timer is off.(timeout = 360s)
Delay-restore status              : Timer is on.(timeout = 150s, 30s left)
Delay-restore SVI status          : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router    : Enabled
Virtual-peerlink mode             : Disabled
```

故障排除

- 检验两台对等交换机是否控制相同的生成树模式。例如，如果对等交换机使用多生成树(MST)，则生成树模式和其他对等交换机使用快速每VLAN生成树（快速PVST）。 在两台交换机上将生成树模式更改为相同以清除此错误。
- 使用以下命令更改生成树模式：

Switch(config)# spanning-tree mode mst or

Switch(config)# spanning-tree mode rapid-pvst

要查看第1类VPC全局配置故障的其他类型，请使用此命令确定类别以及本地和对等体值：

<#root>

`show vpc consistency-parameters global`

```
    Legend:
        Type 1 : vPC will be suspended in case of mismatch

Name                        Type  Local Value            Peer Value
-------------               ----  ---------------------- -----------------------

STP MST Simulate PVST       1     Enabled                Enabled

STP Port Type, Edge         1     Normal, Disabled,      Normal, Disabled,

BPDUFilter, Edge BPDUGuard        Disabled               Disabled

STP MST Region Name         1     ""                     ""

STP Disabled                1     None                   None

STP Mode                    1     Rapid-PVST             Rapid-PVST

STP Bridge Assurance        1     Enabled                Enabled

STP Loopguard               1     Disabled               Disabled

STP MST Region Instance to  1

 VLAN Mapping

STP MST Region Revision     1     0                      0
```

```
Interface-vlan admin up     2                          10
Interface-vlan routing      2     1                    1,10
capability
QoS (Cos)                   2     ([0-7], [], [], [],  ([0-7], [], [], [],
                                  [], [])              [], [])
Network QoS (MTU)           2     (1500, 1500, 1500,   (1500, 1500, 1500,
                                  1500, 1500, 1500)    1500, 1500, 1500)
Network Qos (Pause:         2     (F, F, F, F, F, F)   (F, F, F, F, F, F)
T->Enabled, F->Disabled)
Input Queuing (Bandwidth)   2     (0, 0, 0, 0, 0, 0)   (0, 0, 0, 0, 0, 0)
Input Queuing (Absolute     2     (F, F, F, F, F, F)   (F, F, F, F, F, F)
Priority: T->Enabled,
F->Disabled)
Output Queuing (Bandwidth   2     (0, 0, 0, 0, 0, 0)   (0, 0, 0, 0, 0, 0)
Remaining)
Output Queuing (Absolute    2     (T, F, F, F, F, F)   (T, F, F, F, F, F)
Priority: T->Enabled,
F->Disabled)
Allowed VLANs               -     1,10                 1,10
Local suspended VLANs       -     -                    -
```

此示例显示如何显示特定vPC端口通道的vPC一致性参数：

<#root>

`show vpc consistency-parameters interface port-channel 10`

```
   Legend:
       Type 1 : vPC will be suspended in case of mismatch
Name                        Type  Local Value            Peer Value
-------------               ----  ---------------------- -----------------------
STP Mode                    1     Rapid-PVST             Rapid-PVST
STP Disabled                1     None                   None
STP MST Region Name         1     ""                     ""
STP MST Region Revision     1     0                      0
STP MST Region Instance to  1
VLAN Mapping
STP Loopguard               1     Disabled               Disabled
STP Bridge Assurance        1     Enabled                Enabled
STP Port Type               1     Normal                 Normal
STP MST Simulate PVST       1     Enabled                Enabled
Allowed VLANs               -     1-10,15-20,30,37,99    1-10,15-20,30,37,9
```

- 使用全局和端口通道vPC一致性参数以及当前配置来确定vPC对等体之间的任何差异。

第#5期：类型2不一致

使用show vpc co检查类型2一致性状态是否失败mmand.

如果检测到配置不一致，此命令将提供故障原因结果：

<#root>

`show vpc`

```
Legend:
                (*) - local vPC is down, forwarding via vPC peer-link
vPC domain id                     : 1
Peer status                       : peer adjacency formed ok
vPC keep-alive status             : peer is alive
Configuration consistency status  : success
Per-vlan consistency status       : success

Type-2 consistency status         : failed      <--- Type-2 inconsistency found



Type-2 inconsistency reason       : SVI type-2 configuration incompatible    <--- Reason for Type-2 inco


vPC role                          : primary
Number of vPCs configured         : 0
Peer Gateway                      : Enabled
Dual-active excluded VLANs        : -
Graceful Consistency Check        : Enabled
Auto-recovery status              : Enabled, timer is off.(timeout = 360s)
Delay-restore status              : Timer is off.(timeout = 150s)
Delay-restore SVI status          : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router    : Enabled
Virtual-peerlink mode             : Disabled
```

此命令可用于深入挖掘，查看所有类型2不一致情况，以及对等值和本地值的配置，以查看配置不匹配：

<#root>

`show vpc consistency-parameters global`

```
    Legend:
        Type 1 : vPC will be suspended in case of mismatch

Name                        Type  Local Value            Peer Value
-------------               ----  ---------------------- -----------------------
STP MST Simulate PVST       1     Enabled                Enabled
STP Port Type, Edge         1     Normal, Disabled,      Normal, Disabled,
BPDUFilter, Edge BPDUGuard        Disabled               Disabled
STP MST Region Name         1     ""                     ""
STP Disabled                1     None                   None
```

STP Mode	1	Rapid-PVST	Rapid-PVST
STP Bridge Assurance	1	Enabled	Enabled
STP Loopguard	1	Disabled	Disabled
STP MST Region Instance to VLAN Mapping	1		
STP MST Region Revision	1	0	0
Interface-vlan admin up	**2**		**10 <--- mismatch for SVIs between peers**
Interface-vlan routing	**2**	**1**	**1,10 <--- mismatch for SVIs between peers**
capability			
QoS (Cos)	**2**	**([0-7], [], [], [], [], [])**	**([0-7], [], [], [], [], [])**
Network QoS (MTU)	**2**	**(1500, 1500, 1500, 1500, 1500, 1500)**	**(1500, 1500, 1500, 1500, 1500, 1500)**
Network Qos (Pause: T->Enabled, F->Disabled)	**2**	**(F, F, F, F, F, F)**	**(F, F, F, F, F, F)**
Input Queuing (Bandwidth)	**2**	**(0, 0, 0, 0, 0, 0)**	**(0, 0, 0, 0, 0, 0)**
Input Queuing (Absolute	**2**	**(F, F, F, F, F, F)**	**(F, F, F, F, F, F)**

```
Priority: T->Enabled,

F->Disabled)

Output Queuing (Bandwidth   2     (0, 0, 0, 0, 0, 0)     (0, 0, 0, 0, 0, 0)

Remaining)

Output Queuing (Absolute    2     (T, F, F, F, F, F)     (T, F, F, F, F, F)

Priority: T->Enabled,

F->Disabled)

Allowed VLANs               -     1,10                   1,10

Local suspended VLANs       -     -                      -
```

故障排除

- 交换虚拟接口(SVI)第2类配置不一致可能是由于vPC对等交换机之间配置的许多不一致SVI造成的。例如，当一台交换机上配置了特定VLAN SVI时，它不会出现在对等交换机上。
- 在两台交换机上使用show running-config命令进行验证，以确定SVI配置之间的任何差异。
- 如果仍需进一步帮助以确定SVI配置中的任何差异，请打开TAC案例。

第#6期：接口编号和vPC ID不一致

检查show vpc命令结果中vPC状态下是否报告有任何成员端口存在一致性故障。

<#root>

`show vpc`

```
Legend:
                (*) - local vPC is down, forwarding via vPC peer-link
vPC domain id                     : 100
Peer status                       : peer adjacency formed ok
vPC keep-alive status             : peer is alive
Configuration consistency status  : success
Per-vlan consistency status       : success
Type-2 consistency status         : success
vPC role                          : secondary
Number of vPCs configured         : 1
Peer Gateway                      : Disabled
Dual-active excluded VLANs        : -
Graceful Consistency Check        : Enabled
Auto-recovery status              : Disabled
Delay-restore status              : Timer is off.(timeout = 30s)
Delay-restore SVI status          : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router    : Disabled
Virtual-peerlink mode             : Disabled
vPC Peer-link status
---------------------------------------------------------------------
id    Port   Status Active vlans
--    ----   ------ --------------------------------------------------
1     Po1    up     1

vPC status
----------------------------------------------------------------------------
Id    Port          Status Consistency Reason                Active vlans
--    ------------  ------ ----------- ------                ---------------

123   Po123         down*  failed      vPC type-1            -                      <---  type-1 incon
                                       configuration

                                       incompatible - STP

                                       interface port type

                                       inconsistent
```

故障排除

- 使用show vpc consistency-parameters vpc vpc-id命令验证vPC接口之间的确切端口类型不匹配。

检查STP端口类型不匹配的步骤：

<#root>

`show vpc consistency-parameters vpc 123`

```
    Legend:
        Type 1 : vPC will be suspended in case of mismatch

Name                        Type  Local Value            Peer Value
-------------               ----  ---------------------- -----------------------
Interface type              1     port-channel           port-channel
LACP Mode                   1     on                     on
STP Port Guard              1     Default                Default

STP Port Type               1     Edge Trunk Port        Default

  <--- this VPC port-channel is configured as Edge Trunk port while peer has Default STP port type.
```

- 在两个对等体上配置STP端口类型以匹配vPC接口。生成树端口可以配置为边缘端口、网络端口或普通端口。端口在给定时间只能处于其中一种状态。默认生成树端口类型是正常的。
- STP端口类型可以全局配置，也可以在接口级别配置。

相关信息

- 思科技术支持和下载

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