在运行 CatOS 的 Catalyst 5000/6000 交换机之间配置 ISL 聚合

目录

简介

本文提供了 Catalyst 5500 和 Catalyst 5000 交换机（都运行 Catalyst OS (CatOS)）之间的 Inter-Switch Link (ISL) 配置示例。所有运行 CatOS 的 Catalyst 5000 或 6000 系列成员可以用于此方案，以获得相同结果。

简单来说，中继是一种在两个设备之间点对点链路上传输来自若干 VLAN 的流量的方式。实施以太网中继的方法有如下两种：

- ISL（Cisco 专有 Inter-Switch 链路协议）
- 802.1Q（IEEE 标准）

本文档仅显示交换机的配置文件，以及相关 show 命令示例的输出。有关怎样在 Catalyst 交换机之间配置 ISL 中继的详细信息，请参阅在 Catalyst 5500/5000 和 6500/6000的ISL 系列交换机上配置 ISL 中继。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- 运行 Catalyst OS 6.1(1) 软件的 Catalyst 5500 交换机
- 运行 Catalyst OS 6.1(1) 软件的 Catalyst 5000 交换机

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。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。用clear config all和write erase命令清除所有设备的配置，以保证它们有一个默认配置。

规则

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

重要说明

运行 CatOS 的 Catalyst 4000 系列（包括 Catalyst 2948G 及 Catalyst 2980G）只支持 802.1Q 中继，不支持 ISL 中继。

Catalyst 6000 系列的所有以太网端口都支持 802.1Q 和 ISL 封装。

根据模块，支持 Catalyst 5000 中继的端口只支持 ISL 封装，或同时支持 ISL 和 802.1Q。验证这一点的最佳方式是发出 **show port capabilities 命令**。明确地陈述了中继容量。例如：

```
cat5000> show port capabilities 3

Model                     WS-X5225R
Port                      3/1
Type                      10/100BaseTX
Speed                     auto,10,100
Duplex                    half,full
Trunk encap type          802.1Q,ISL
Trunk mode                on,off,desirable,auto,nonegotiate
Channel                   3/1-2,3/1-4
Broadcast suppression     percentage(0-100)
Flow control              receive-(off,on),send-(off,on)
Security                  yes
Membership                static,dynamic
Fast start                yes
QOS scheduling            rx-(none),tx-(none)
CoS rewrite               yes
ToS rewrite               IP-Precedence
Rewrite                   no
UDLD                      yes
AuxiliaryVlan             1..1000,1025..4094,untagged,dot1p,none
SPAN                      source,destination
```

确保整个中继链路范围内的中继模式匹配。如果链路的一端配置为 ISL中继，那么链路的另一端也应该配置为 ISL；同样地，如果链路一端配置为 802.1Q，那么链路另一端应该配置为 802.1Q。

配置

本部分提供有关如何配置本文档所述功能的信息。

注意： 要查找本文档所用命令的其他信息，请使用命令查找工具（仅限注册用户）。

网络图

本文档使用以下网络设置：

配置

本文档使用以下配置：

- Catalyst 5500
- Catalyst 5000

Catalyst 5500

```
#version 6.1(1)
!
set option fddi-user-pri enabled
set password $2$q.J7$O5n.pwx7aEC6NHWJfXadx1
set enablepass $2$o.h/$bAxfjJ4XUA/RMUHqBr1YQ0
!
#errordetection
set errordetection portcounter enable
!
#system
set system name  cat5500
!
#frame distribution method
set port channel all distribution mac both
!
#vtp
!--- In this example, the VLAN Trunking Protocol (VTP)
mode is set to be transparent. !--- Depending on your
network, set the VTP mode accordingly. set vtp mode
transparent
!--- For details on VTP, refer to Configuring VTP. set
vlan 1 name default type ethernet mtu 1500 said 100001
state active set vlan 1002 name fddi-default type fddi
mtu 1500 said 101002 state active set vlan 1004 name
fddinet-default type fddinet mtu 1500 said 101004 state
active stp ieee set vlan 1005 name trnet-default type
trbrf mtu 1500 said 101005 state active stp ibm set vlan
2
set vlan 1003 name token-ring-default type trcrf mtu
1500 said 101003 state acti
ve mode srb aremaxhop 7 stemaxhop 7 backupcrf off
!
#ip
!--- IP address used for management. set interface sc0 1
10.10.10.2/255.255.255.0 10.10.10.255
!
#set boot command
set boot config-register 0x2102
set boot system flash slot0:cat5000-sup3.6-1-1.bin
!
# default port status is enable
!
!
#module 1 empty
!
#module 2 : 2-port 1000BaseSX Supervisor
```

```
!
#module 3 empty
!
#module 4 : 24-port 10/100BaseTX Ethernet
!--- Ports 4/13-24 are assigned to VLAN 2. set vlan 2
4/13-24
!--- The ISL trunking mode is set to on. !--- Depending
on your network and requirements, set the trunking mode
accordingly. set trunk 4/1 on isl 1-1005
!--- For details on different trunking modes, refer to
!--- Configuring VLAN Trunks on Fast Ethernet and
Gigabit Ethernet Ports !--- Portfast has been enabled on
the ports connected to the workstations. set spantree
portfast 4/2-24 enable
!--- For details on why to enable portfast, refer to !--
- Using Portfast and Other Commands to Fix Workstation
Startup Connectivity Delays ! #module 5 empty ! #module
6 empty ! #module 7 empty ! #module 8 empty ! #module 9
empty ! #module 10 empty ! #module 11 empty ! #module 12
empty ! #module 13 empty end
```

Catalyst 5000

```
#Version 6.1(1)
!
set option fddi-user-pri enabled
set password $2$J75L$Ug4163kfeHTDcLJZ/L9es1
set enablepass $2$h/BN$i3S54iNvIXknFelh6gOve0
!
#errordetection
set errordetection portcounter enable
!
#system
set system name  cat5000
!
#frame distribution method
set port channel all distribution Mac both
!
#vtp
!--- In this example, the VTP mode is set to be
transparent. !--- Depending on your network and
requirements, set the VTP mode accordingly. set vtp mode
transparent
!--- For details on VTP, refer to Configuring VTP. set
vlan 1 name default type ethernet mtu 1500 said 100001
state active set vlan 1002 name fddi-default type fddi
mtu 1500 said 101002 state active set vlan 1004 name
fddinet-default type fddinet mtu 1500 said 101004 state
active stp IEEE set vlan 1005 name trnet-default type
trbrf mtu 1500 said 101005 state active stp IBM set vlan
2
set vlan 1003 name token-ring-default type trcrf mtu
1500 said 101003 state acti
ve mode srb aremaxhop 7 stemaxhop 7 backupcrf off
!
#ip
!--- IP address used for management. set interface sc0 1
10.10.10.3/255.255.255.0 10.10.10.255
!
#set boot command
set boot config-register 0x2102
set boot system flash slot0:cat5000-sup3.6-1-1.bin
!
```

```
# default port status is enable
!
!
#module 1 : 0-port Supervisor III
!
#module 2 : 12-port 10/100BaseTX Ethernet
!
#module 3 : 24-port 10/100BaseTX Ethernet
!--- Ports 3/13-24 have been assigned to VLAN 2. set
vlan 2 3/13-24
!--- The ISL trunking mode is set to on. !--- Depending
on your network and requirements, set the trunking mode
accordingly. set trunk 3/1 on isl 1-1005
!--- For details on different trunking modes, refer to
!--- Configuring VLAN Trunks on Fast Ethernet and
Gigabit Ethernet Ports !--- Portfast has been enabled on
the ports connected to the workstations. set spantree
portfast 3/2-24 enable
!--- For details on why to enable portfast, refer to !--
- Using Portfast and Other Commands to Fix Workstation
Startup Connectivity Delays ! ! #module 4 : 24-port
10/100BaseTX Ethernet ! #module 5 : 12-port 10BaseFL
Ethernet end
```

验证

本部分所提供的信息可用于确认您的配置是否正常工作。

命令输出解释程序工具（仅限注册用户）支持某些 **show** 命令（尤其是 **show tech-support** ），使用此工具可以查看对 show 命令输出的分析。

Catalyst 5500 交换机

show port capabilities module/port — 此命令用于验证端口是否可以进行中继。

```
cat5500> (enable)  show port capabilities 4/1

Model                    WS-X5234
Port                     4/1
Type                     10/100BaseTX
Speed                    auto,10,100
Duplex                   half,full
Trunk encap type         802.1Q,ISL
Trunk mode               on,off,desirable,auto,nonegotiate
Channel                  4/1-2,4/1-4
Broadcast suppression    percentage(0-100)
Flow control             receive-(off,on),send-(off,on)
Security                 yes
Membership               static,dynamic
Fast start               yes
QOS scheduling           rx-(none),TX(1q4t)
COs rewrite              yes
ToS rewrite              IP-Precedence
Rewrite                  no
UDLD                     yes
AuxiliaryVlan            1..1000,1025..4094,untagged,dot1p,none
SPAN                     source,destination
```

show port module/port — 此命令用于确定特定端口的状态以及端口是否正在中继。

```
cat5500> (enable) show port 4/1

Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
 4/1                     connected  trunk      normal a-full a-100 10/100BaseTX

Port  AuxiliaryVlan AuxVlan-Status
----- ------------ --------------
 4/1  none         none

Port  Security Violation Shutdown-Time Age-Time Max-Addr Trap     IfIndex
----- -------- --------- ------------- -------- -------- -------- -------
 4/1  disabled  shutdown             0        0        1 disabled      11

Port  Num-Addr Secure-Src-Addr   Age-Left Last-Src-Addr     Shutdown/Time-Left
----- -------- ----------------- -------- ----------------- ------------------
 4/1         0                 -        -                 -        -         -
!--- Output suppressed.
```

show trunk — 此命令用于验证中继状态和配置。

```
cat5500> (enable) show trunk

* - indicates vtp domain mismatch
Port      Mode         Encapsulation  Status        Native vlan
--------  -----------  -------------  ------------  -----------
4/1       on           isl            trunking      1

Port      Vlans allowed on trunk
--------  --------------------------------------------------------------------
 4/1      1-1005

Port      Vlans allowed and active in management domain
--------  --------------------------------------------------------------------
 4/1      1-2

Port      Vlans in spanning tree forwarding state and not pruned
--------  --------------------------------------------------------------------
 4/1      1-2
```

show vtp domain — 此命令用于检查 VTP 信息。

```
cat5500> (enable) show vtp domain

Domain Name                    Domain Index VTP Version Local Mode  Password
------------------------------ ------------ ----------- ----------- ----------
                               1            2           Transparent -

Vlan-count Max-vlan-storage Config Revision Notifications
---------- ---------------- --------------- -------------
6          1023             0               disabled

Last Updater    V2 Mode  Pruning  PruneEligible on Vlans
--------------- -------- -------- -------------------------
10.10.10.2      disabled disabled 2-1000
```

Catalyst 5000 交换机

show port capabilities module/port — 此命令用于验证端口是否可以进行中继。

```
cat5000> (enable) show port capabilities 3/1

Model                    WS-X5225R
Port                     3/1
Type                     10/100BaseTX
Speed                    auto,10,100
Duplex                   half,full
Trunk encap type         802.1Q,ISL
Trunk mode               on,off,desirable,auto,nonegotiate
Channel                  3/1-2,3/1-4
Broadcast suppression    percentage(0-100)
Flow control             receive-(off,on),send-(off,on)
Security                 yes
Membership               static,dynamic
Fast start               yes
QOS scheduling           rx-(none),TX(none)
COs rewrite              yes
ToS rewrite              IP-Precedence
Rewrite                  no
UDLD                     yes
AuxiliaryVlan            1..1000,1025..4094,untagged,dot1p,none
SPAN                     source,destination
```

show port module/port — 此命令用于确定特定端口的状态以及端口是否正在中继。

```
cat5000> (enable) show port 3/1

Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
 3/1                     connected  trunk      normal a-full a-100 10/100BaseTX

Port  AuxiliaryVlan AuxVlan-Status
----- ------------- --------------
 3/1  none          none

Port  Security Violation Shutdown-Time Age-Time Max-Addr Trap     IfIndex
----- -------- --------- ------------- -------- -------- -------- -------
 3/1  disabled  shutdown             0        0        1 disabled      57
!--- Output suppressed.
```

show trunk — 此命令用于验证中继状态和配置。

```
cat5000> (enable) show trunk

* - indicates vtp domain mismatch
Port      Mode         Encapsulation  Status        Native vlan
--------  -----------  -------------  ------------  -----------
 3/1      on           isl            trunking      1

Port      Vlans allowed on trunk
--------  ---------------------------------------------------------------------
 3/1      1-1005

Port      Vlans allowed and active in management domain
--------  ---------------------------------------------------------------------
 3/1      1-2

Port      Vlans in spanning tree forwarding state and not pruned
--------  ---------------------------------------------------------------------
 3/1      1-2
```

show vtp domain — 此命令用于检查 VTP 信息。

```
cat5000> (enable) show vtp domain

Domain Name                      Domain Index VTP Version Local Mode  Password
-------------------------------- ------------ ----------- ----------- ----------
                                 1            2           Transparent -

Vlan-count Max-vlan-storage Config Revision Notifications
---------- --------------- -------------- -------------
6          1023            0              disabled

Last Updater    V2 Mode  Pruning  PruneEligible on Vlans
--------------- -------- -------- -------------------------
10.10.10.3      disabled disabled 2-1000
```

故障排除

目前没有针对此配置的故障排除信息。

相关信息

- LAN 产品支持页
- LAN 交换技术支持页
- 技术支持和文档 - Cisco Systems