Cisco Trunks

Nov 2017

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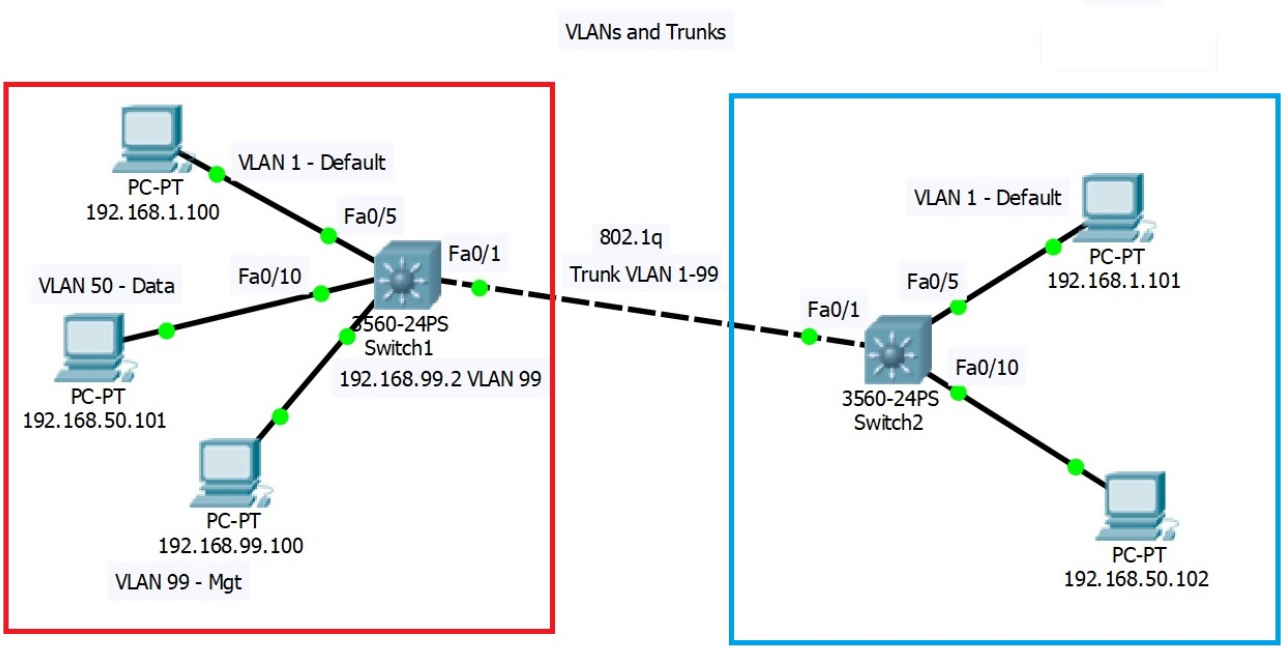
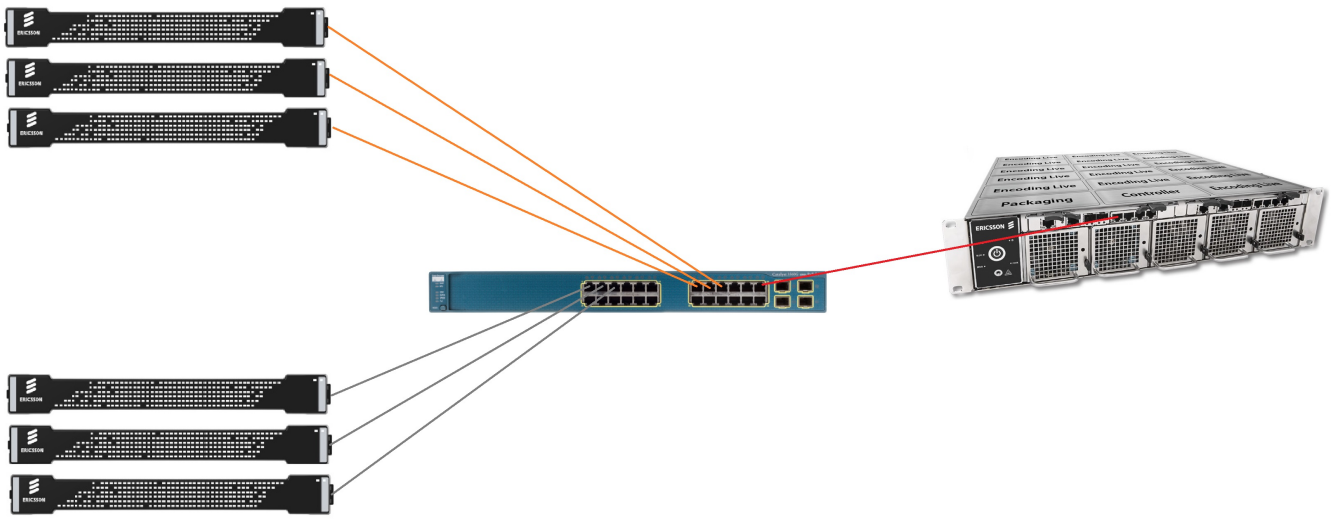


Introduction

In the previous topic regarding Cisco VLANs and Trunks there are some videos outlining the theory of using VLANs and Trunks. Here we will look more at a worked example, and see some of the commands.

Why is using a Trunk port important? There are a few reasons for this, but from my perspective it is down to a new product that we have, the T1. The T1 is effectively a group of blades in a box with two switches. Access to the switches, which have a number of ports, is limited to just a few ports on the front panel. This means we really need to be able to group all of our multicasts in to a single source interface, and connect this to the T1.



Looking at the above diagram, we see an example of some sources on the left (could be encoders, receivers or streaming devices) feeding a cisco switch. The Cisco could have one or more VLANs configured, and we need to get all of these VLANs in to a single interface in our T1. If you only have a single VLAN, then a Trunk port is not required, but in some way it would be a good practice to use a trunk port, as if you needed to add VLANs later, half your work is already done.

Example

VLANs, while technically the same, can be broken down in to funciton. Some of these are:

```
Default VLAN
Native VLAN
Data VLAN
Management VLAN
Voice VLAN
```

I will discuss the meaning of these VLANs later, but for now I want to look at the configuration.

Default VLAN

As the name suggests, the default VLAN is the VLAN that the interfaces are initially located in. On a Cisco this is VLAN 1. From the Cisco CLI you can use the command show vlan to list the currently configured VLANs.

```
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                Gig0/1, Gig0/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

Above we can see that VLAN 1 is listed as the default VLAN, this VLAN contains all the ports on the switch, this is how the switch will be configured from new when powered on.

Native VLAN

notes

```
Default VLAN
Native VLAN
Data VLAN
Management VLAN
Voice VLAN

Default VLAN is VLAN 1

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
```

```
                                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                Gig0/1, Gig0/2
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup

Cannot delete or rename vlan 1

vlan50
name student

vlan99
name mgt

exit

sh vlan

see vlan but no ports, need to assign ports.

int fa 0/10
switchport mode access
switchport access vlan 50


VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                Fa0/9, Fa0/11, Fa0/12, Fa0/13
                                                Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                Fa0/22, Fa0/23, Fa0/24, Gig0/1
                                                Gig0/2
50   student                           active    Fa0/10



Switch(config-if)#ip address 192.168.99.2 255.255.255.0
Switch(config-if)#no shutdown

not using vlan 1 is better for security, as guessing a vlan or interface number is harder.

Native VLAN is important for Trunk Ports
Interfaces (access ports) are one port per vlan effectivly (but no vlan configured)

Trunk Port carries multiple VLANs across a single link (single interface)


virtual terminal

Switch(config)#line vty 0 15
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config)#enable secret cisco


Switch(config-if)#switchport trunk encapsulation dot1q
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch(config-if)#switchport trunk allowed vlan 1-99


interface FastEthernet0/1
 switchport trunk allowed vlan 1-99
```

```
 switchport trunk encapsulation dot1q
 switchport mode trunk


port 1 no longer shown:

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/2, Fa0/3, Fa0/4, Fa0/5
                                                Fa0/6, Fa0/7, Fa0/8, Fa0/9
                                                Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                                Fa0/23, Fa0/24, Gig0/1, Gig0/2
50   student                          active    Fa0/10
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup

Switch#sh interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       on           802.1q         trunking      1

Port        Vlans allowed on trunk
Fa0/1       1-99

Port        Vlans allowed and active in management domain
Fa0/1       1,50

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1,50

The native vlan defaults to vlan 1 (default vlan)



Protocol 802.1q is the trunking protocol that puts tags on packets as they traverse the trunk (vlan
tagging)

If you have a device that does not support 802.1q, then the switch will put that traffic on the default
vlan (if that vlan is allowed in the trunk)
(the defaul vlan is vlan 1 unless you changed it)
This traffic remains untagged.


Switch(config)#vlan 80
Switch(config-vlan)#name native



Switch#show interfaces fastEthernet 0/1 switchport

Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
```

```
Trunking VLANs Enabled: 1-99
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
Unknown unicast blocked: disabled
Unknown multicast blocked: disabled
Appliance trust: none


set native vlan
Switch(config-if)#switchport trunk native vlan 80


show interfaces fastEthernet 0/1 switchport

Name: Fa0/1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)

Trunking Native Mode VLAN: 80

Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: 1-99
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
Unknown unicast blocked: disabled
Unknown multicast blocked: disabled
Appliance trust: none



Switch#show interfaces trunk

Port        Mode         Encapsulation  Status        Native vlan
Fa0/1       on           802.1q         trunking      80

Port        Vlans allowed on trunk
Fa0/1       1-99

Port        Vlans allowed and active in management domain
Fa0/1       1,50,80

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       1,50,80


native vlan for backwards compatibility, or non tagged vlan traffic.
REMEMBER TO DO THIS ON BOTH SWITCHES.


You will see this message after configuring the first switch, on the second switch.

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with Switch
FastEthernet0/1 (80).
```

```
until you configure second switch.
(CDP Cisco Discovery Protocol) This message occurs if Spanning Tree protocol is on.

You will see an unblock message when second switch is configured.
%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unblocking FastEthernet0/1 on VLAN0001. Port consistency restored.


do show ip interface br


Switch(config)#do sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/1        unassigned      YES unset  up                    up
FastEthernet0/2        unassigned      YES unset  down                  down
FastEthernet0/3        unassigned      YES unset  down                  down
FastEthernet0/4        unassigned      YES unset  down                  down
FastEthernet0/5        unassigned      YES unset  up                    up
FastEthernet0/6        unassigned      YES unset  down                  down
FastEthernet0/7        unassigned      YES unset  down                  down
FastEthernet0/8        unassigned      YES unset  down                  down
FastEthernet0/9        unassigned      YES unset  down                  down
FastEthernet0/10       unassigned      YES unset  up                    up
FastEthernet0/11       unassigned      YES unset  down                  down
FastEthernet0/12       unassigned      YES unset  down                  down
FastEthernet0/13       unassigned      YES unset  down                  down
FastEthernet0/14       unassigned      YES unset  down                  down
FastEthernet0/15       unassigned      YES unset  down                  down
FastEthernet0/16       unassigned      YES unset  down                  down
FastEthernet0/17       unassigned      YES unset  down                  down
FastEthernet0/18       unassigned      YES unset  down                  down
FastEthernet0/19       unassigned      YES unset  down                  down
FastEthernet0/20       unassigned      YES unset  down                  down
FastEthernet0/21       unassigned      YES unset  down                  down
FastEthernet0/22       unassigned      YES unset  down                  down
FastEthernet0/23       unassigned      YES unset  down                  down
FastEthernet0/24       unassigned      YES unset  up                    up
GigabitEthernet0/1     unassigned      YES unset  down                  down
GigabitEthernet0/2     unassigned      YES unset  down                  down
Vlan1                  unassigned      YES unset  administratively down down
Vlan99                 192.168.99.2    YES manual up                    up
```