

VLAN & VTP

Course Code: COE 3206

Course Title: Computer Networks



Dept. of Computer Science
Faculty of Science and Technology

Lecturer No:	Lab 12	Week No:	13	Semester:	Spring 22-23
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Lecture Outline



1. Configuring VLANs
2. VTP Configuration

Configuring VLANs

Introduction



A technique of logically grouping of computers of LAN to limit broadcast domain and improve security.

- Each VLAN must have a LAN number → Valid numbers are 1 to 4094
- Normal VLANS 1 to 1005
 - Stored in in vlan.dat file of Flash memory
 - Normally used
- Extended VLANS 1006 to 4094
 - Stored in running configuration file
 - Limited options
- Factory set VLANs (cannot be changed)
 - VLAN 1 ---Administrative VLAN or default VLAN (for Cisco switch)
 - VLAN 1001 to 1005 used for Token ring and FDDI networks (Not used usually)
- VLAN name is optional [1]

Configuring VLANs....

Creation of VLANs



- All configuration must be done in Global Configuration mode

❖ VLAN Creation

1. # *enable* to access privileged exec mode.
2. # *configure terminal* to access global configuration mode.
3. # *vlan 2* to create VLAN 2 and access VLAN configuration mode.
4. # *name Production* to name this VLAN Production.
5. # *vlan 3* to create VLAN 3.
6. # *name HR* to name this VLAN HR [1].

❖ Verify VLAN creation

show vlan brief

Configuring VLANs....



❖ Cisco IOS commands for creating four VLANs

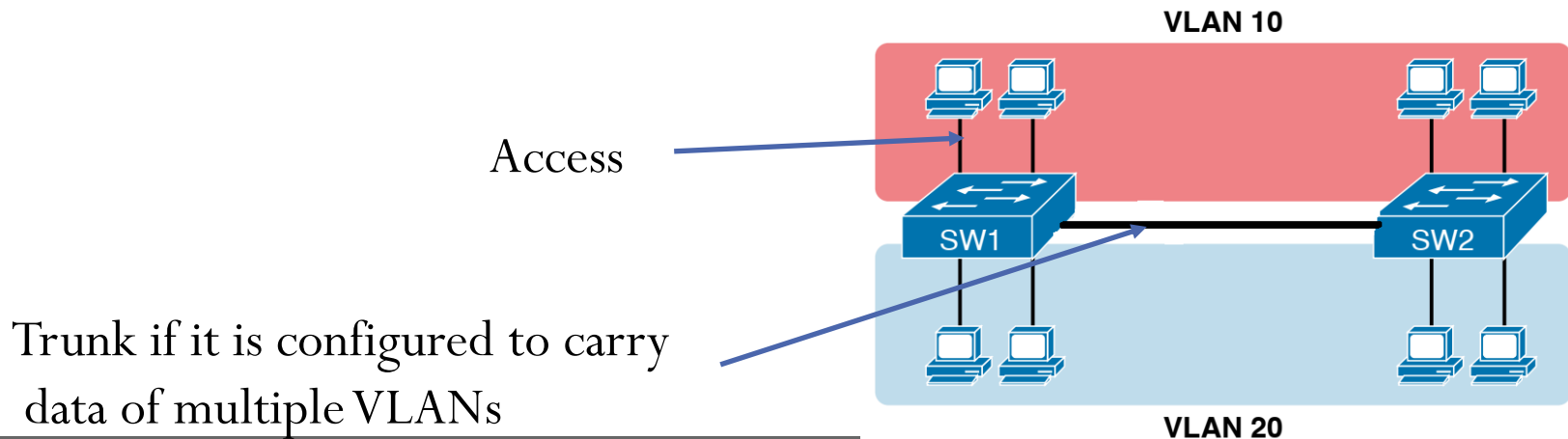
```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#VLAN 2
Switch(config-vlan)#name production
Switch(config-vlan)#VLAN 3
Switch(config-vlan)#name HR
Switch(config-vlan)#VLAN 4
Switch(config-vlan)#name sales
Switch(config-vlan)#VLAN 5
Switch(config-vlan)#name IT
Switch(config-vlan)#exit
Switch(config)#
```

Configuring VLANs....



❖ Modes of Interfaces

- Access
 - Used to connect an end device such as PC
- Trunk
 - Used to connect a connecting device such as another switch or a router to carry data for multiple VLANs



Configuring VLANs....

Topic sub heading..



❖ Adding interface to a VLAN

1. # **enable** to access privileged exec mode.
2. # **configure terminal** to access global configuration mode.
3. # *interface fa0/1* to access FastEthernet port 0/1.
4. # *switchport mode access* to set this port into a nontrunking access mode.
5. # *switchport access vlan 2* to set this port to use VLAN 2.
6. # *interface fa0/2* to access FastEthernet port 0/2.
7. # *switchport mode access* to set this port into a nontrunking access mode.
8. # *switchport access vlan 3* to set this port to use VLAN 3
9. # *interface fa0/3* to access FastEthernet port 0/3
10. # *switchport mode trunk* to set this port into a trunking mode

Configuring VLANs....

Commands for adding interfaces to a VLAN



```
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#
Switch(config-if)#interface fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#
Switch(config-if)#interface fa0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#
Switch(config-if)#
```


Configuring VLANs....

Verify members of a VLAN



```
Switch#show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	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
2	production	active	Fa0/1
3	HR	active	Fa0/2
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch#
```

Fa0/3
is not
shown
as it is
a trunk

Configuring VLANs....

Adding multiple interfaces to a VLAN at a time



❖ Adding multiple interfaces to a VLAN at a time

```
Switch(config)#interface range fa0/4-10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 3
```

```
Switch(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	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
2	production	active	Fa0/1
3	HR	active	Fa0/2, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch(config)#
```

Configuring VLANs....



❖ Verifying VLAN Information

Switch# show vlan	Displays VLAN information
Switch# show vlan brief	Displays VLAN information in brief
Switch# show vlan id 2	Displays information about VLAN 2 only
Switch# show vlan name HR	Displays information about VLAN HR only

VTP Configuration

VTP configuration commands



Suppose

SW1: Server

SW2 & SW3: Client

SW1

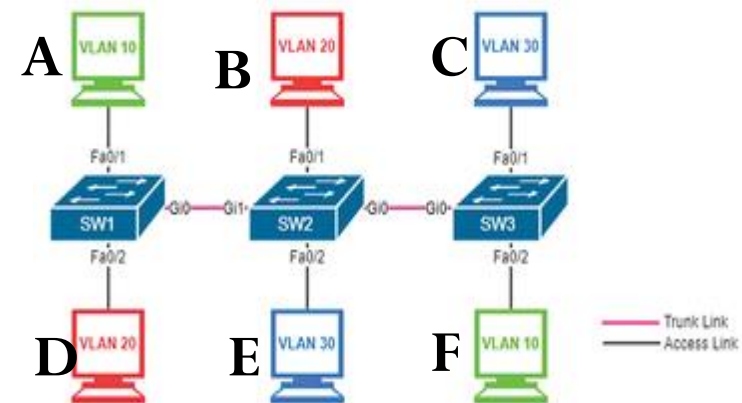
```
Switch(config)# vtp mode server
Switch(config)# vtp domain aiub
Switch(config)# vtp password 123
```

SW2

```
Switch(config)# vtp mode client
Switch(config)# vtp domain aiub
Switch(config)# vtp password 123
```

SW3

```
Switch(config)# vtp mode client
Switch(config)# vtp domain aiub
Switch(config)# vtp password 123
```



Topic Heading..

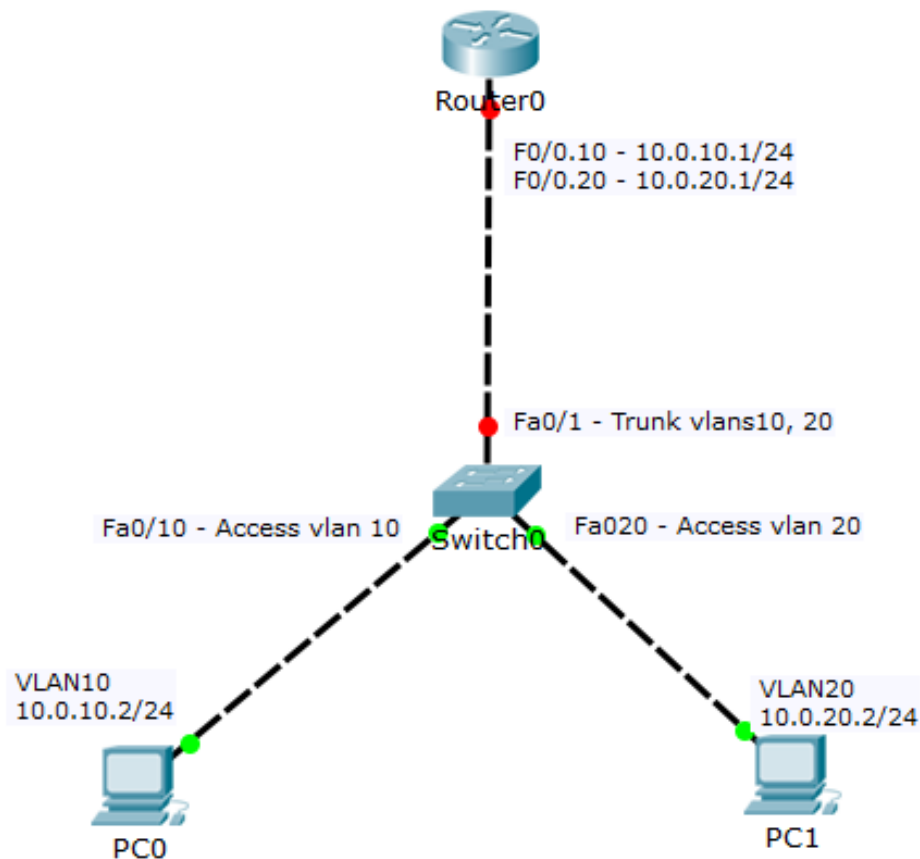
VTP configuration verification



❖ Verifying VTP

Switch# show vtp status	Displays general information about VTP configuration
Switch# show vtp counters	Displays the VTP counters for the switch

router on stick





References

- [1] D. Liu, *Cisco CCNA/CCENT Exam 640-802, 640-822, 640-816 Preparation Kit*, Syngress Publishing, Inc., 2009, pp. 549-567.
- [2] W. Odom, *Official Cert Guide CCNA 200-301 Volume 1*, Pearson Education, Inc., 2020, USA, p. 181.



Books

1. **Official Cert Guide CCNA 200-301 , vol. 1**, *W. Odom*, Cisco Press, First Edition, 2019, USA.
2. **CCNA Routing and Switching**, *T. Lammle*, John Wily & Sons, Second Edition, 2016, USA.