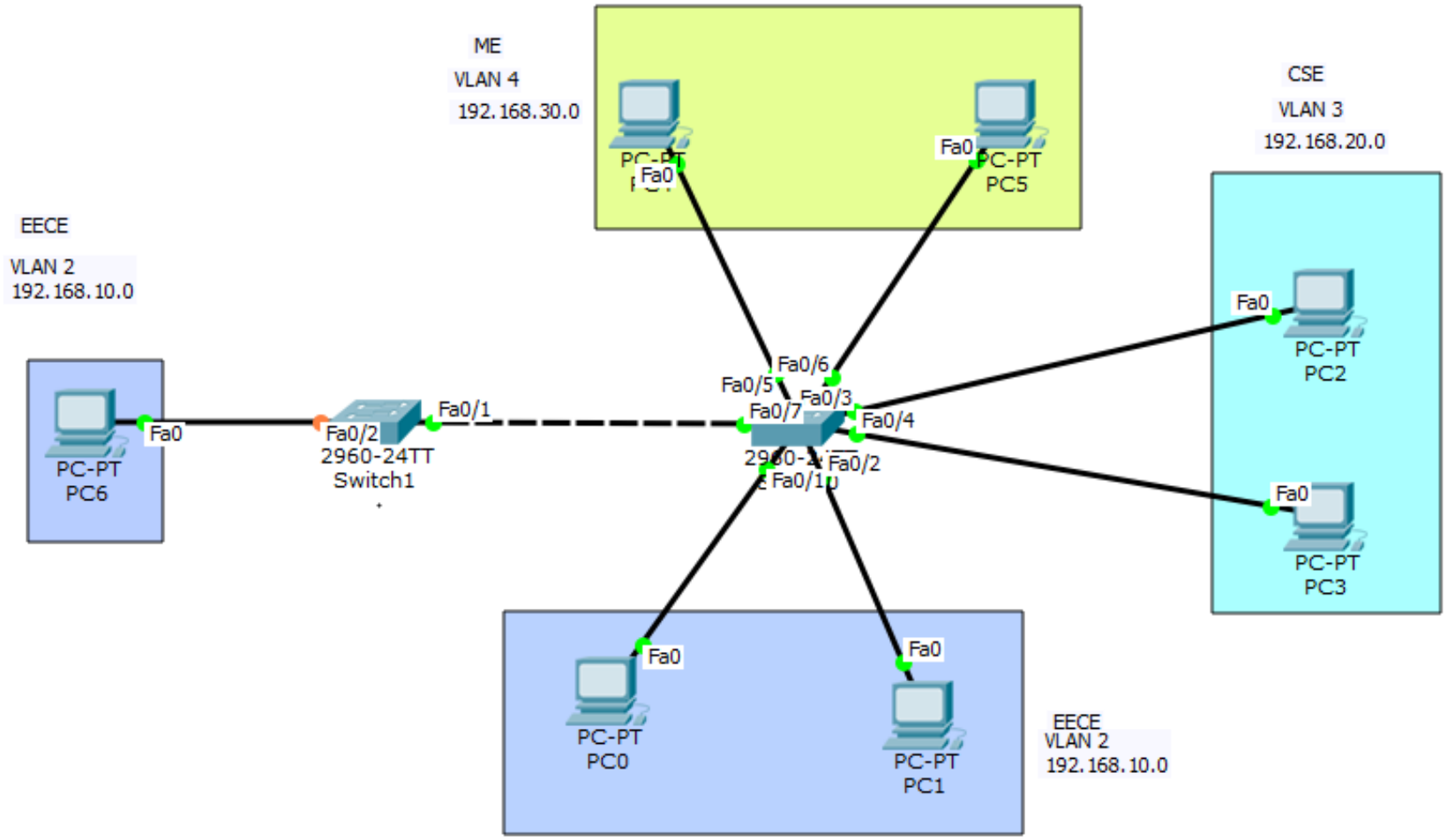
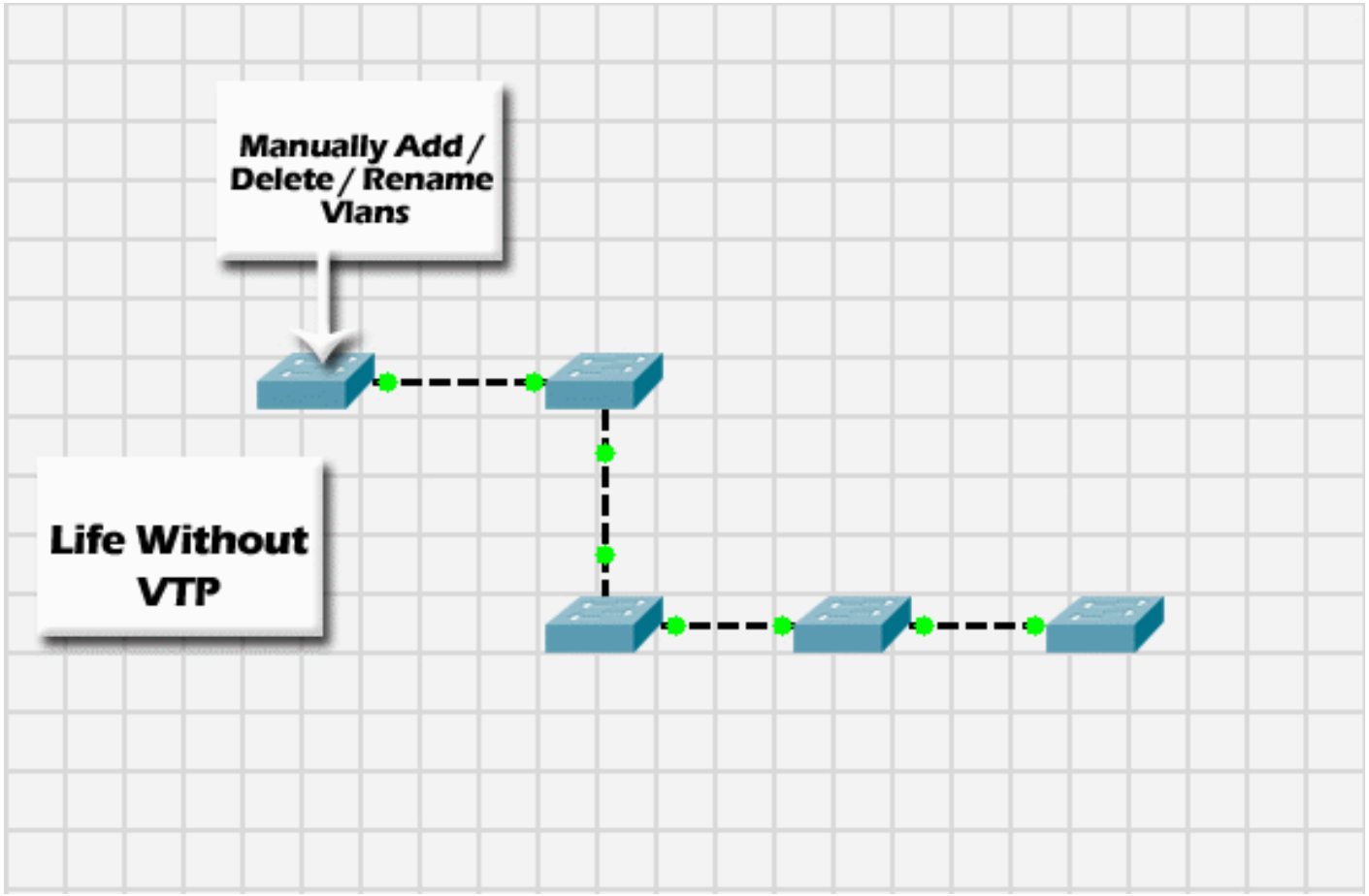
VLAN Trunking Protocol(VTP)

VTP

- VTP is a layer 2 messaging protocol that maintains VLAN configuration consistency by managing addition, deletion and naming of VLANs within a VTP domain which greatly simplify network administration
- It helps to centralize changes which are sent to the other switches.
- VTP Domain is made up of one or more interconnected network devices that share the same VTP domain.
- A network device can be configured to be in one and only one VTP domain.
- Switches transmit VTP messages only on 802.1Q or ISL trunks.


ME
VLAN 4
192.168.30.0
CSE
VLAN 3
192.168.20.0
EECE
VLAN 2
192.168.10.0
PC-PT
PC5
Fa0
PC-PT
PC6
Fa0
Fa0/2
2960-24TT
Switch1
Fa0/1
Fa0/6
Fa0/5
Fa0/3
Fa0/7
Fa0/4
Fa0/2
Fa0/10
PC-PT
PC2
PC-PT
PC3
PC-PT
PC0
PC-PT
PC1
EECE
VLAN 2
192.168.10.0


Manually Add / Delete / Rename Vlans
Life Without VTP

How VTP works

- A switch had to be configured in the role of a VTP server to manage VLAN configuration on the network.
- This server(s) will share VLAN info with other switches on the network which must use the same domain name.
- After trunk is established between switches, VTP advertisement is exchanged between the switches.
- Both server switch and client exchange and monitor advertisement from one another to ensure each has an accurate record of VLAN info.
- VTP advertisement will not be exchanged if the trunk between the switches is inactive.

VTP Mode

- Server
  - ✓ Switches are set to this mode by default.
  - ✓ Allows to create, add, delete VLANs and specify other configuration parameters.
  - ✓ Any changes should be done on this mode and will be advertised to all the switches that are in the same VTP domain.
- Client
  - ✓ Switches receive the update and forward the update to other switches of same VTP domain.
  - ✓ Can not create, delete, change VLANs on a VTP client.
- Transparent
  - ✓ Only forwards the VTP summary advertisements through the trunk link but doesn't advertise its VLAN config and also doesn't synchronize on received advertisement.
  - ✓ Can create and delete VLANs on a VTP transparent switch, but the changes will not be sent to other switches.

	VTP Server	VTP Client	VTP Transparent
Create/Modify/Delete VLANs	Yes	No	Only local
Synchronizes itself	Yes	Yes	No
Forwards advertisements	Yes	Yes	Yes

VTP Advertisement

- Client Advertisement Request
  - ✓ Messages are sent by VTP clients to VTP servers to request VLAN and VTP information they may be missing.
  - ✓ Server responds with both summary and subset advertisements.
- Summary Advertisement:
  - ✓ Sent out every 300 sec by default or when a configuration change occurs which is the summarized VLAN info (Version, domain name, revision number etc.).
- Subset Advertisement
  - ✓ Send when a VLAN configuration change occurs.
  - ✓ Contains specific changes that have been performed in server switch (add, delete & change VLAN name, status etc.).

Configuration Revision Number

- 32 bit number that indicates the level of revision for a VTP packet.
- This number is tracked by every switch in order to find that the received info is more recent than the current version.
- Every time one modification is done on the VLANs by the server switch, the configuration revision number increased by one.
- The client mode devices receives it and check if the configuration revision number that they received are latest or not by comparing it's own configuration number by the number received.
  - If greater than their own number then the devices update their configuration and pass it to other clients of the same VTP domain.
  - If same then the devices just pass it to other clients of the same VTP domain.

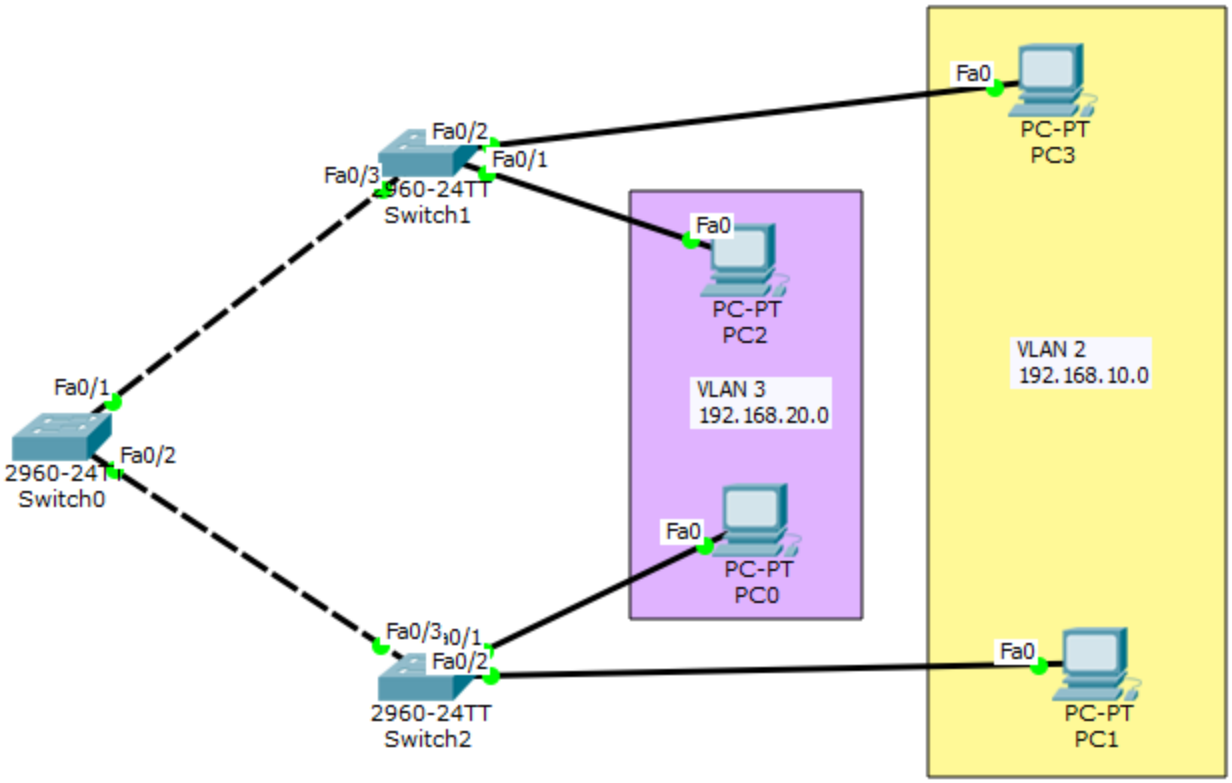
Requirements

- The VTP version must be same on the switches user wants to configure.
- VTP domain name must be same on the switches.
- One of the switches must be a server.
- Authentication should match.

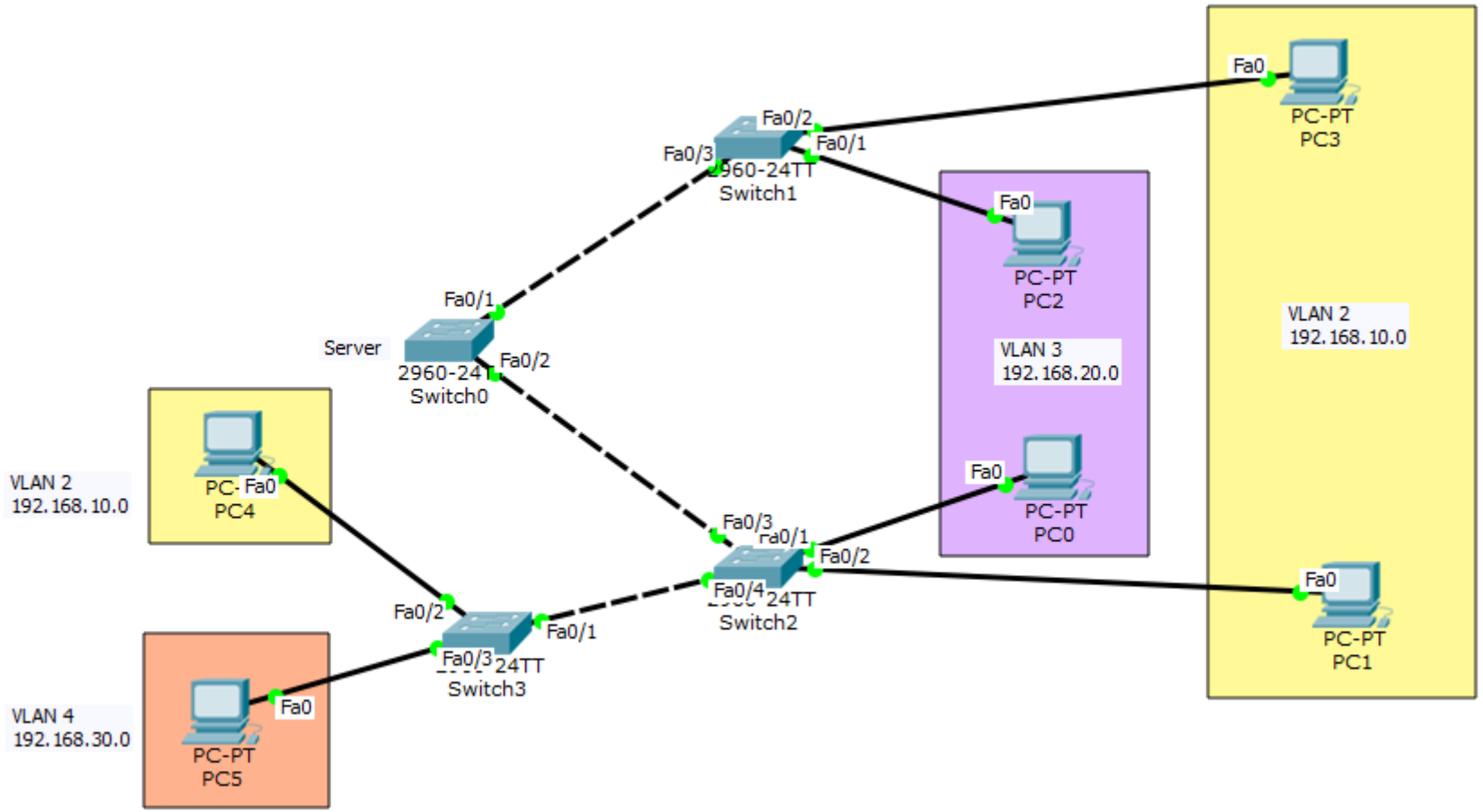
For switches to be in the same domain and exchange VTP information they all must agree on the following:

- ✓ Domain Name
- ✓ VTP Modes
- ✓ VTP Version
- ✓ VTP Password

Practice Problem-1



Practice Problem-2



Instructions of VTP

Server Switch:

Switch(config)#hostname vtpserver
vtpserver(config)#vtp domain nm
vtpserver(config)#vtp password mist
vtpserver(config)#vtp mode server

Domain name, password, mode

vtpserver(config)#vlan 2
vtpserver(config-vlan)#name cse
vtpserver(config-vlan)#vlan 3
vtpserver(config-vlan)#name eece
vtpserver(config-vlan)#exit

VLANs create and naming

vtpserver(config)#int range f0/1-2
vtpserver(config-if-range)#switchport mode trunk
vtpserver(config-if-range)#exit

*** Additional Instruction: show vtp status

Instructions of VTP

Client Switch:

Switch(config)#hostname vtpclient1
vtpclient1(config)#vtp ver 2
vtpclient1(config)#vtp domain nm
vtpclient1(config)#vtp password mist
vtpclient1(config)#vtp mode client

Specify version, domain name & password and mode of the switch

vtpclient1(config)#int f0/1
vtpclient1(config-if)#switchport mode access
vtpclient1(config-if)#switchport access vlan 3
vtpclient1(config-if)#int f0/2
vtpclient1(config-if)#switchport mode access
vtpclient1(config-if)#switchport access vlan 2
vtpclient1(config-if)#exit