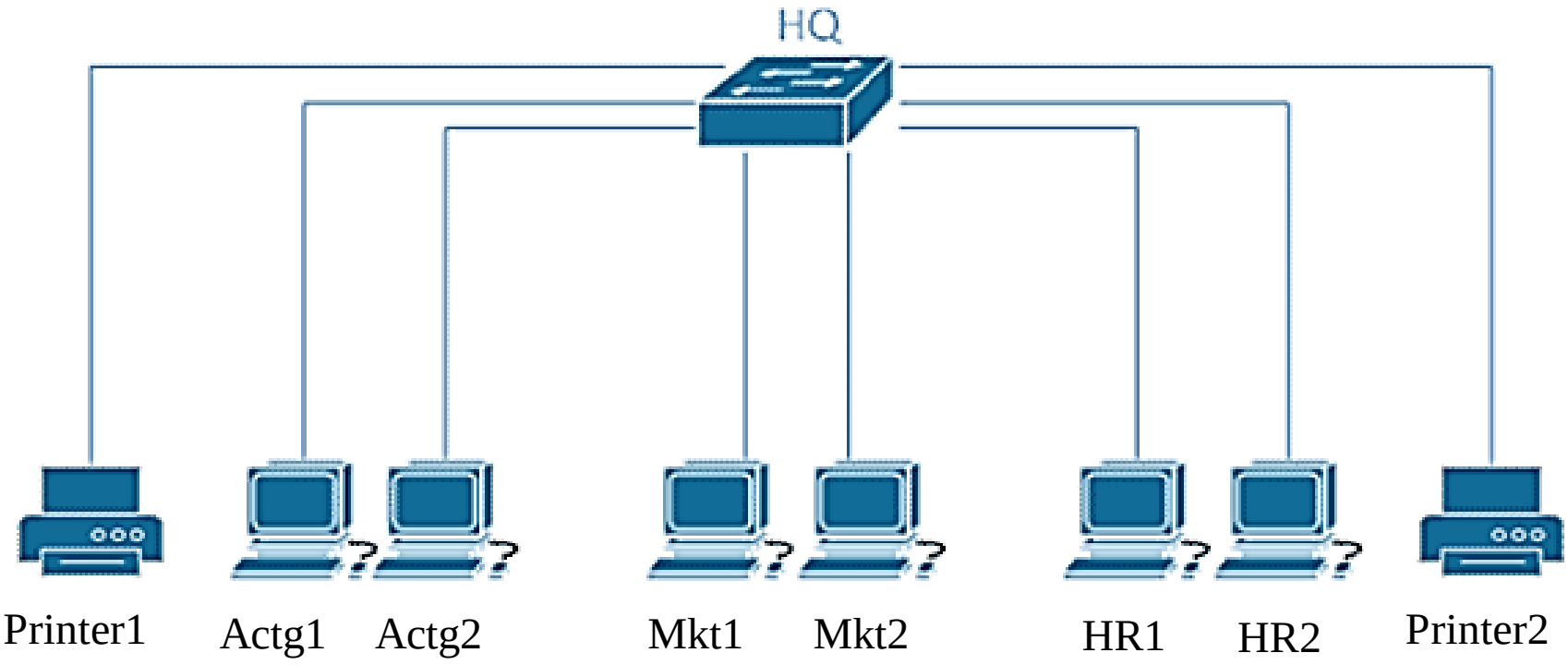
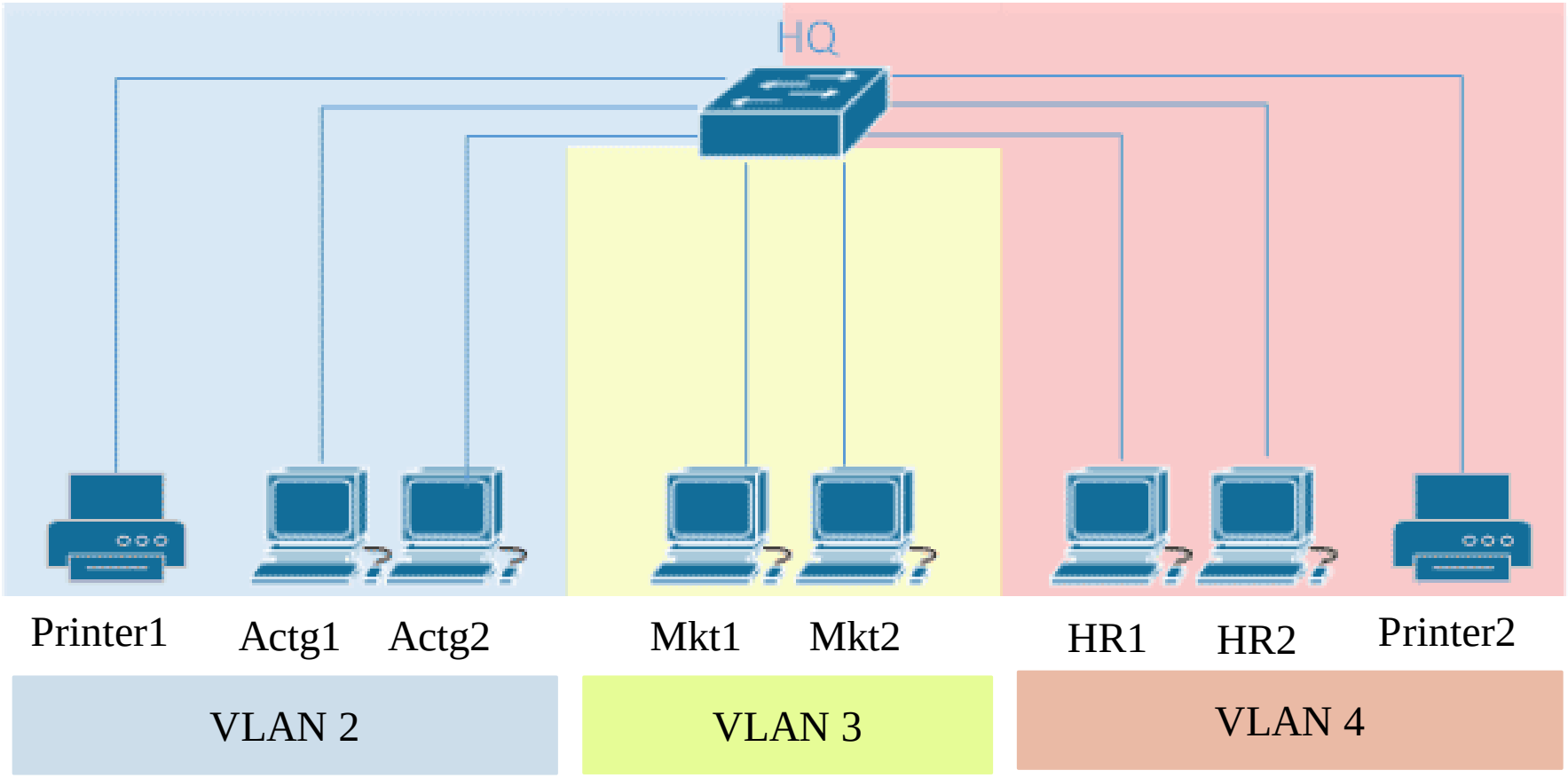
Virtual Local Area Network (VLAN)

LAN



VLAN

- A VLAN is a group of end stations in a switched network that is logically segmented by function or application, without regard to the physical locations of the users.
- Each VLAN creates its own broadcast domain.
- Hosts in one VLAN cannot communicate with hosts in another VLAN without extra services.
- VLANs are usually associated with IP subnetworks. For example, all the end stations in a particular IP subnet belong to the same VLAN.
- Communication among multiple VLANs can only occur through router that is connected to both.
- VLAN supports Layer 2 switch which can read MAC address.


HQ
Printer1
Actg1
Actg2
Mkt1
Mkt2
HR1
HR2
Printer2
VLAN 2
VLAN 3
VLAN 4

Advantages

- Solve broadcast problem
- Reduce size of the broadcast
- Allow additional layer of security
- Make device management easier.

VLAN Membership

- Static
  - Each switch port is statically connected assigned to a specific VLAN and any host connected to that switchport would automatically be a part of that VLAN.
  - Also called port based VLANs.
- Dynamic
  - Membership is based on MAC address of the an end user device. When a device is connected to switch port, query must be made to establish VLAN membership.

Identifying VLAN

- Access Links
  - A link that is part of only one VLAN.
- Trunk Links
  - Carries multiple VLANs
  - Trunk port generally used in the switch to switch, switch to router or switch to server communication.

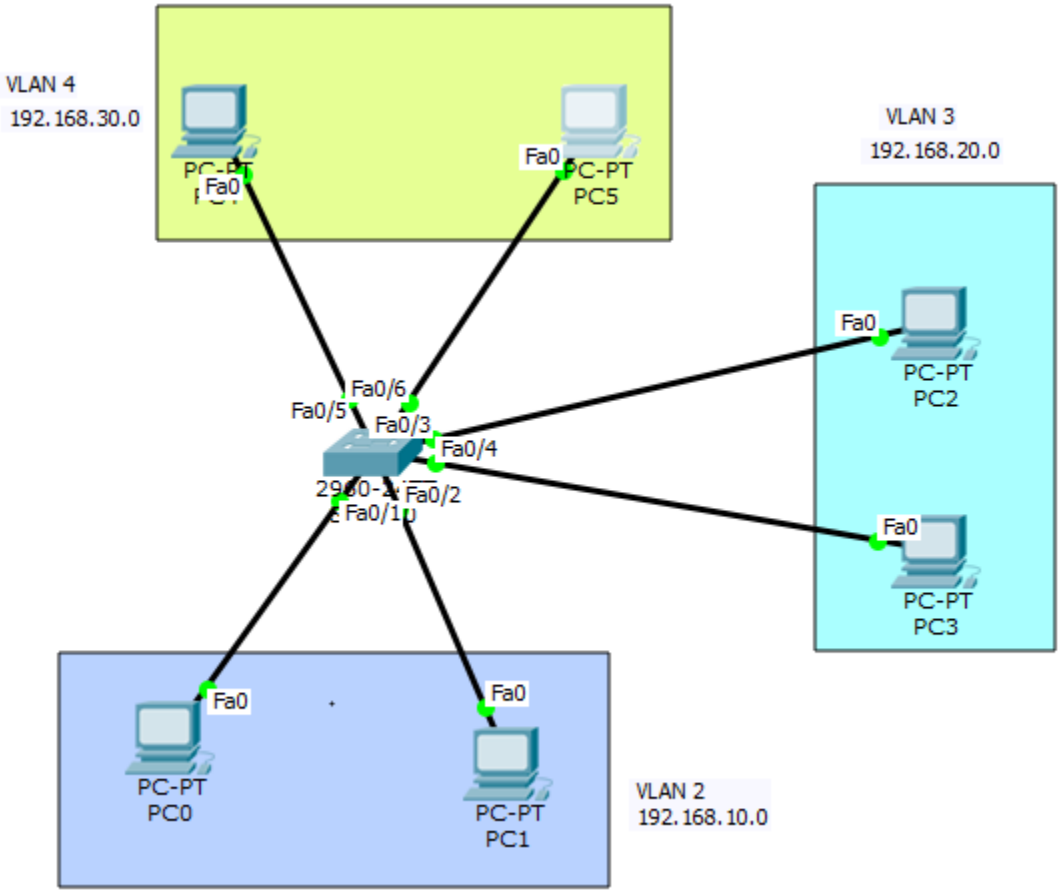
VLAN Range

VLANs	Range	Usage	Propagated by VTP
0, 4095	Reserved	For system use only. You cannot see or use these VLANs.	—
1	Normal	Cisco default. You can use this VLAN but you cannot delete it.	Yes
2-1001	Normal	For Ethernet VLANs; you can create, use, and delete these VLANs.	Yes
1002-1005	Normal	Cisco defaults for FDDI and Token Ring. You cannot delete VLANs 1002-1005.	Yes
1006-4094	Extended	For Ethernet VLANs only.	No

VLAN Parameters

- Vlan number
- Vlan name
- Vlan type
- Vlan state (active or suspended)
- Maximum transmission unit (MTU)
- Security association identifier (SAID)

Practice Problem-1



Instructions for VLAN

Switch(config)# vlan 2
Switch(config-vlan)#name actg
Switch(config-vlan)#exit

Naming VLAN

Switch(config)#int f0/1

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

VLAN Implement in interface

Trunk:

Switch(config)#int fa 0/7
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit

Additional Instructions

Switch(config)#do show vlan

Switch(config)# do show interface f0/1 sw

Switch(config)# do show int trunk

To delete vlan:

Switch(config)#no vlan **id**