

# Cisco Lab - Switch

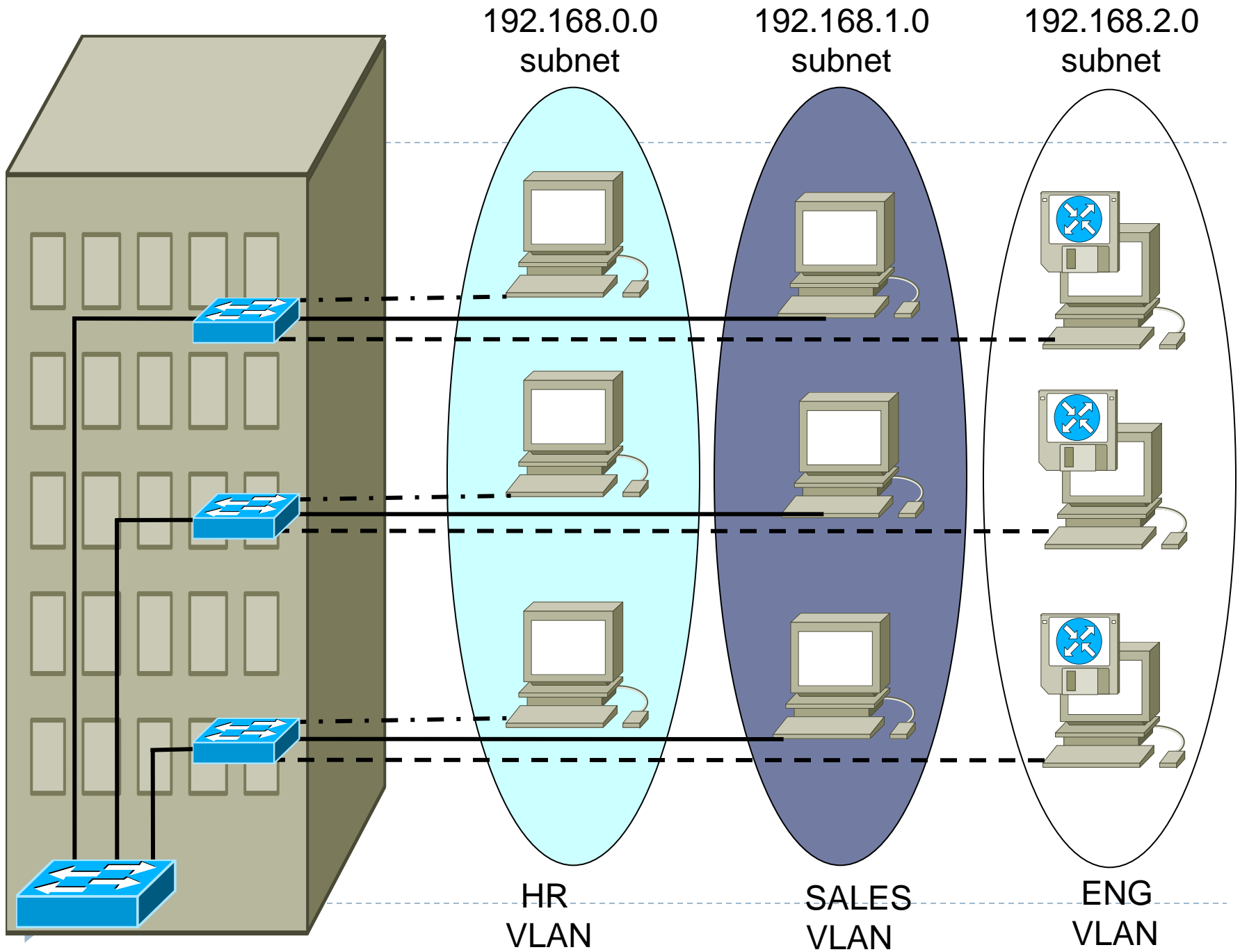
2013.03.18

# 大綱

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- ▶ Multi-LAN
  - ▶ VLAN
  - ▶ TRUNK
  - ▶ VTP
- ▶ ACL
- ▶ Port Channel
- ▶ Routing
  - ▶ InterVLAN Routing
  - ▶ Static Routing
- ▶ Homework

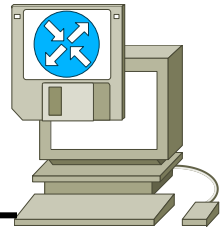
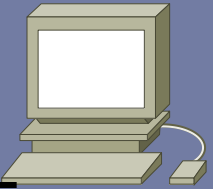
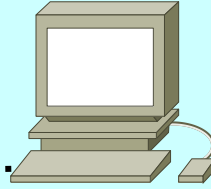
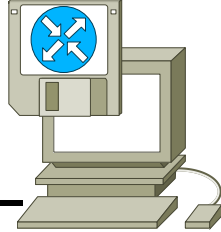
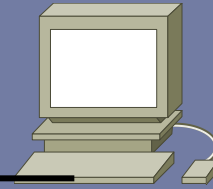
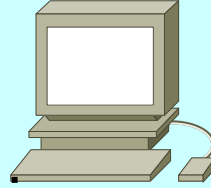
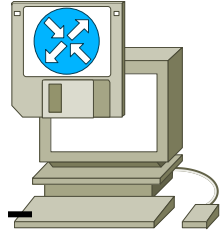
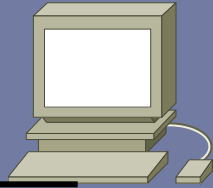
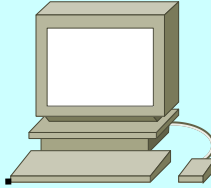




192.168.0.0  
subnet

192.168.1.0  
subnet

192.168.2.0  
subnet

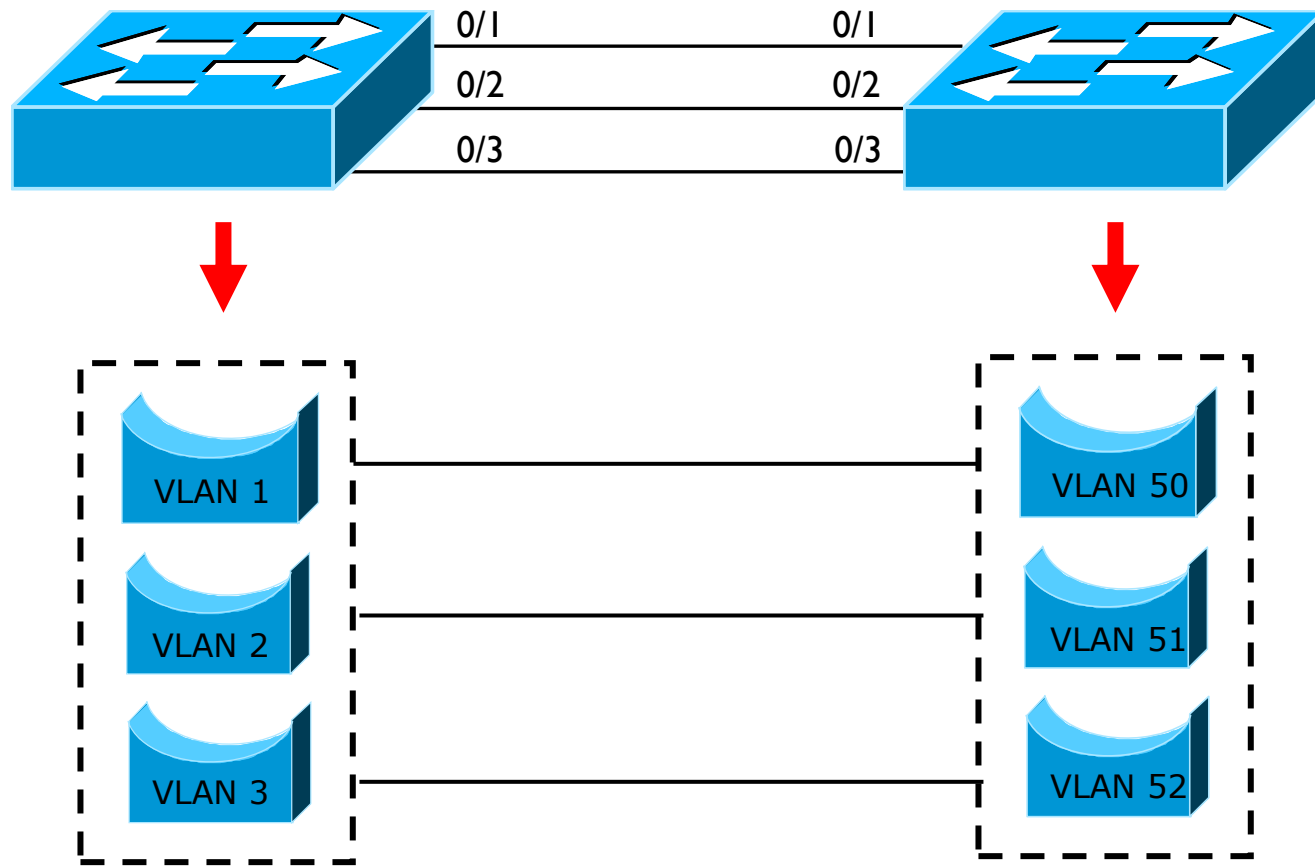


HR  
VLAN

SALES  
VLAN

ENG  
VLAN

# Multi-LAN - VLAN



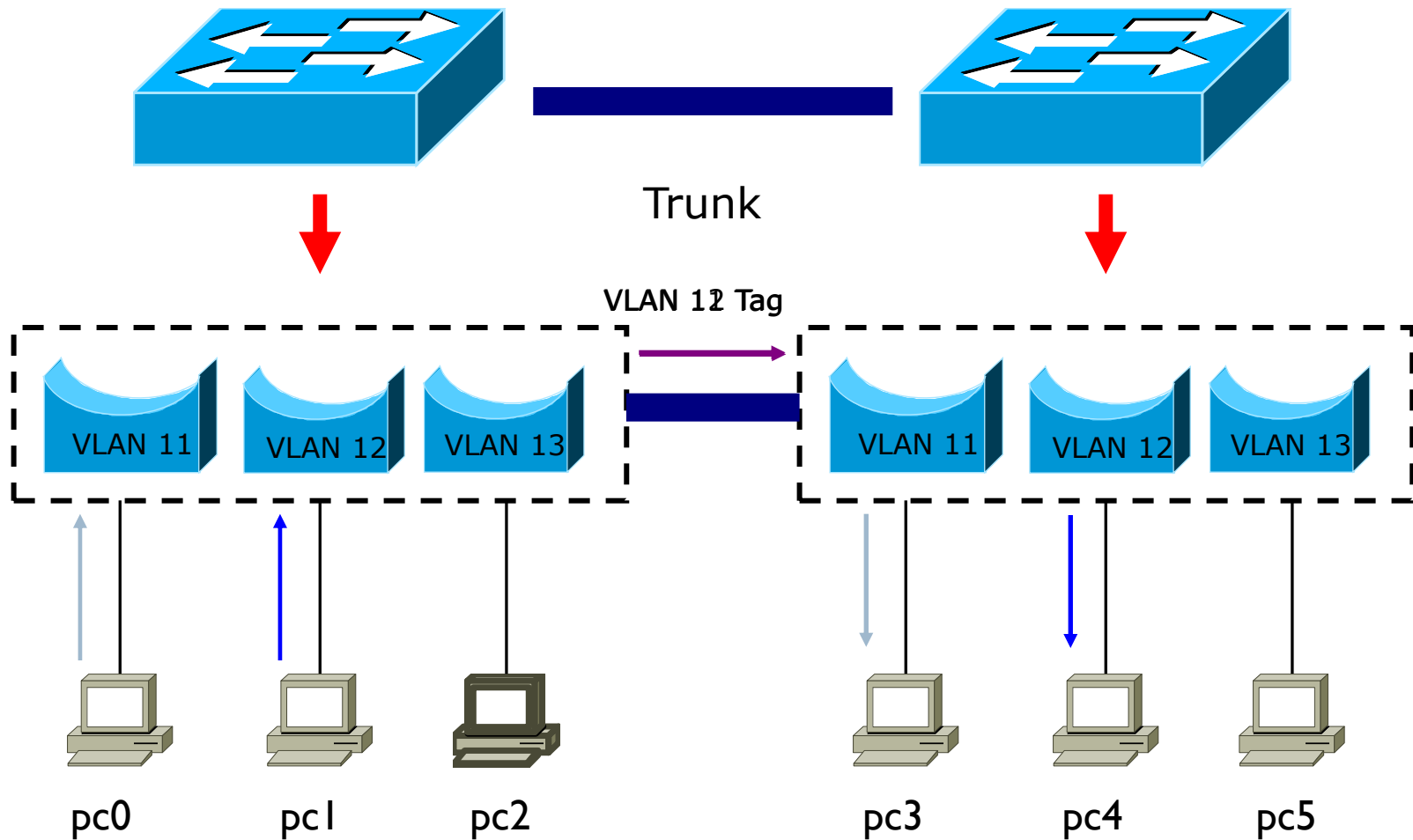
# Multi-LAN - VLAN

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- ▶ **Switch(config)#vlan “vlan-id”**
  - ▶ 建立新vlan
- ▶ **Switch(config-vlanid)#name “vlan-name”**
  - ▶ 為所新增的vlan命名
- ▶ **Switch(config)#interface fastethernet 0/1**
  - ▶ 進入單一interface設定模式
- ▶ **Switchport mode access**
- ▶ **Switchport access vlan “vlan-id”**



# Multi-LAN - Trunk



# Multi-LAN - Trunk

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- ▶ **switchport trunk encapsulation dot1q**
  - ▶ 指定Trunk封裝為dot1q模式
- ▶ **switchport mode trunk**
  - ▶ 指定Switch Port為Trunk Port
- ▶ **switchport trunk allowed vlan “Vlan- ID”**
  - ▶ 允許特定VLAN ID的流量通過Trunk Port



# Multi-LAN - VTP

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## ▶ VLAN Trunking Protocol

- ▶ Cisco 專有協議
- ▶ 負責同步網域中相同VTP Domain Switch的VLAN資訊
- ▶ VTP Mode：Server、Client、Transparent
- ▶ 利用Switch的Trunking Port作VLAN的同步。

| 所支援的動作         | Server模式 | Client模式 | Transparent模式 |
|----------------|----------|----------|---------------|
| 新增VLAN設定       | ○        | ×        | ○             |
| 修改VLAN設定       | ○        | ×        | ○             |
| 刪除VLAN設定       | ○        | ×        | ○             |
| 發送設定給其他設備做同步   | ○        | ×        | ×             |
| 轉發設定給其他設備      | ○        | ○        | ○             |
| 同步其他設備給的VLAN設定 | ○        | ○        | ×             |
| 儲存到NVRAM中      | ○        | ×        | ○             |





# Multi-LAN - VTP

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- ▶ **Switch(config)#vtp mode server/client/transparent**
  - ▶ 設定VTP的模式
- ▶ **Switch(config)#vtp domain “Domain Name”**
  - ▶ 設定VTP Domain名稱，Domain相同的才會進行VLAN的同步
- ▶ **Switch#show vtp status**
  - ▶ 顯示設備的VTP狀態



# Port Channel

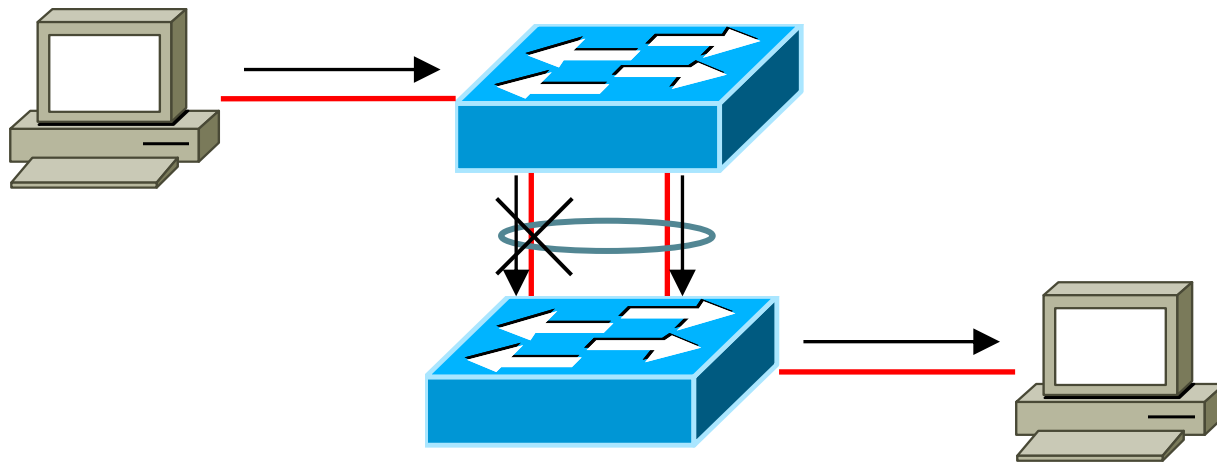
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- ▶ 利用數個實體介面邏輯上合併為一個
- ▶ 增加頻寬
- ▶ 分散流量
- ▶ 達到備援的目的



# Port Channel

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# Port Channel

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1. **Switch(config)#interface range fastethernet 0/1 – 4**
    - ▶ 指定要作為同一Group的Port
  2. **Switch(config-if-range)#shutdown**
    - ▶ 為避免對流量產生影響，建議在建立Port Channel前先將Port關閉
  3. **Switch(config-if-range)#channel-group “Channel-Group ID” mode active/passive**
    - ▶ Channel-Group建立起來所使用的ID
    - ▶ Active：主動建立Port-Channel
    - ▶ Passive：當遠端Switch為Active並要求建立Port-Channel時才會建立
- ▶ **Show etherchannel summary**
    - ▶ 查看Port-Channel狀態
  - ▶ **對Port Channel進行設定**
    - ▶ **Switch(config)#interface port-channel “Channel-Group ID”**



# Port Channel

192.168.219.202



192.168.219.203



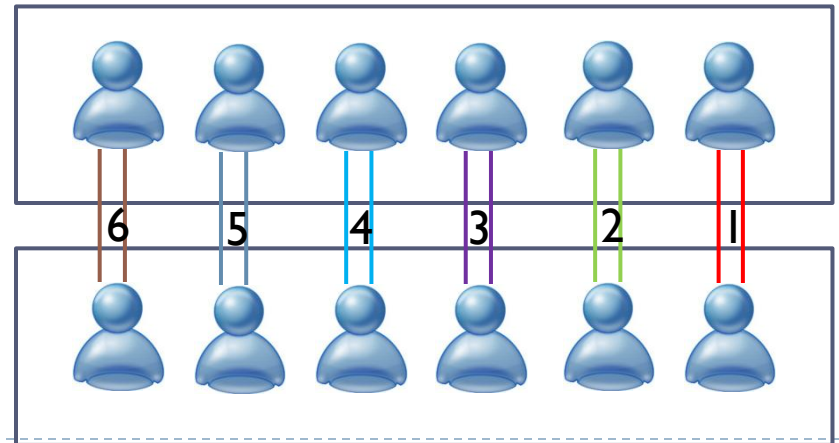
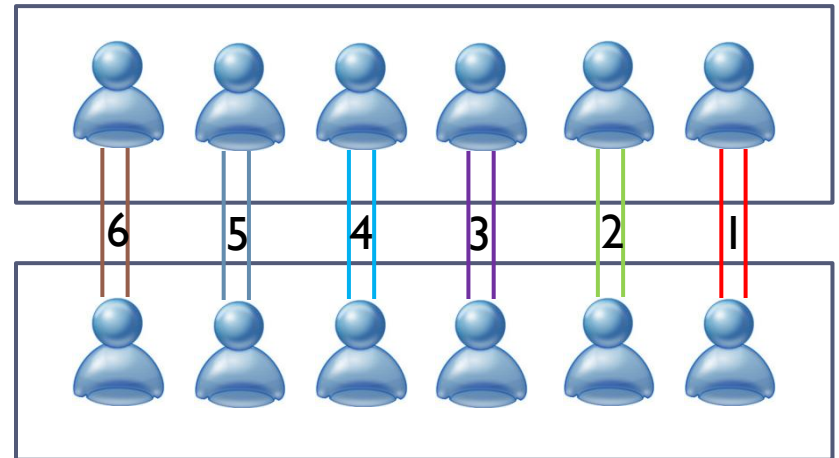
192.168.219.204



192.168.219.205



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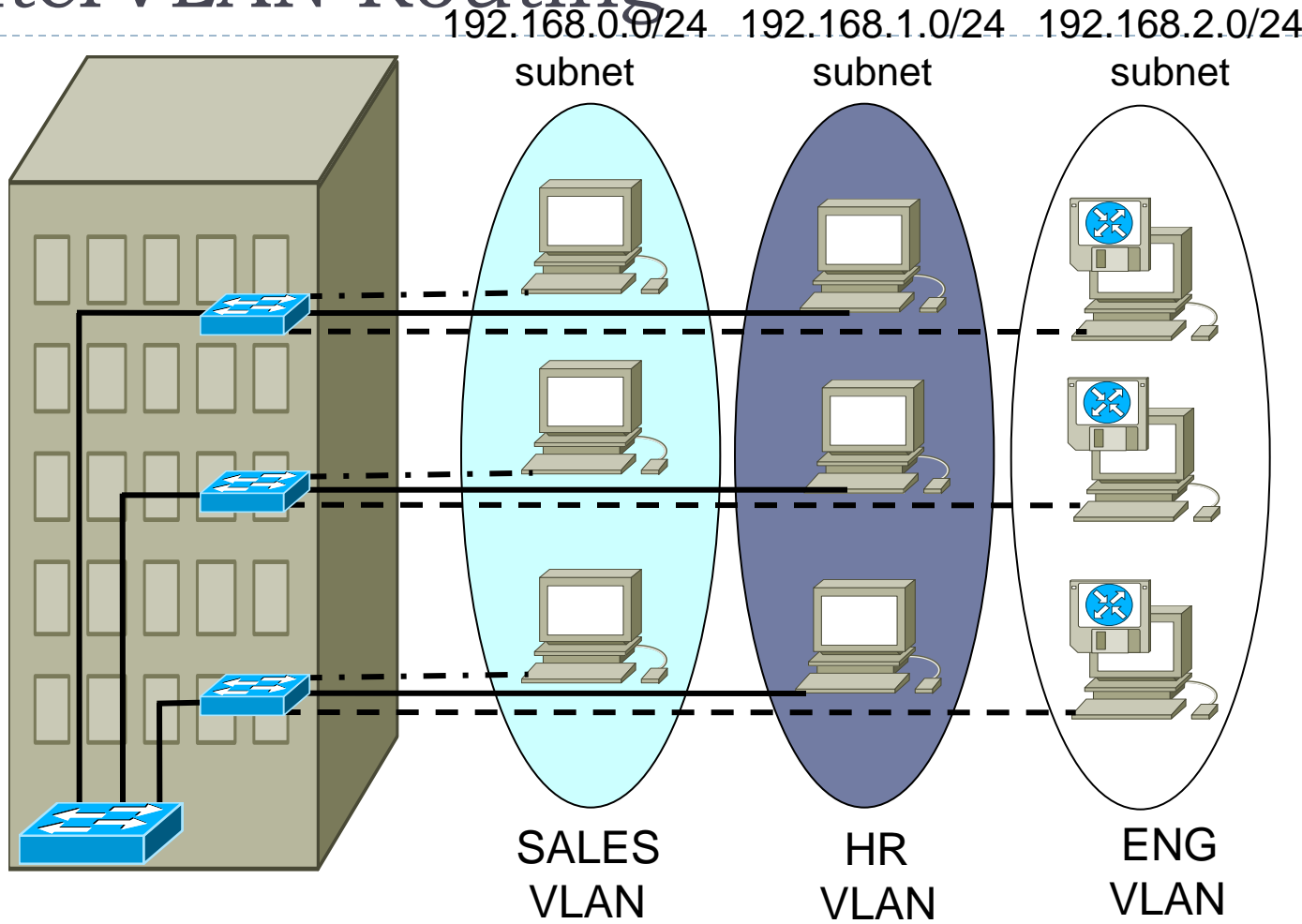
# ACL

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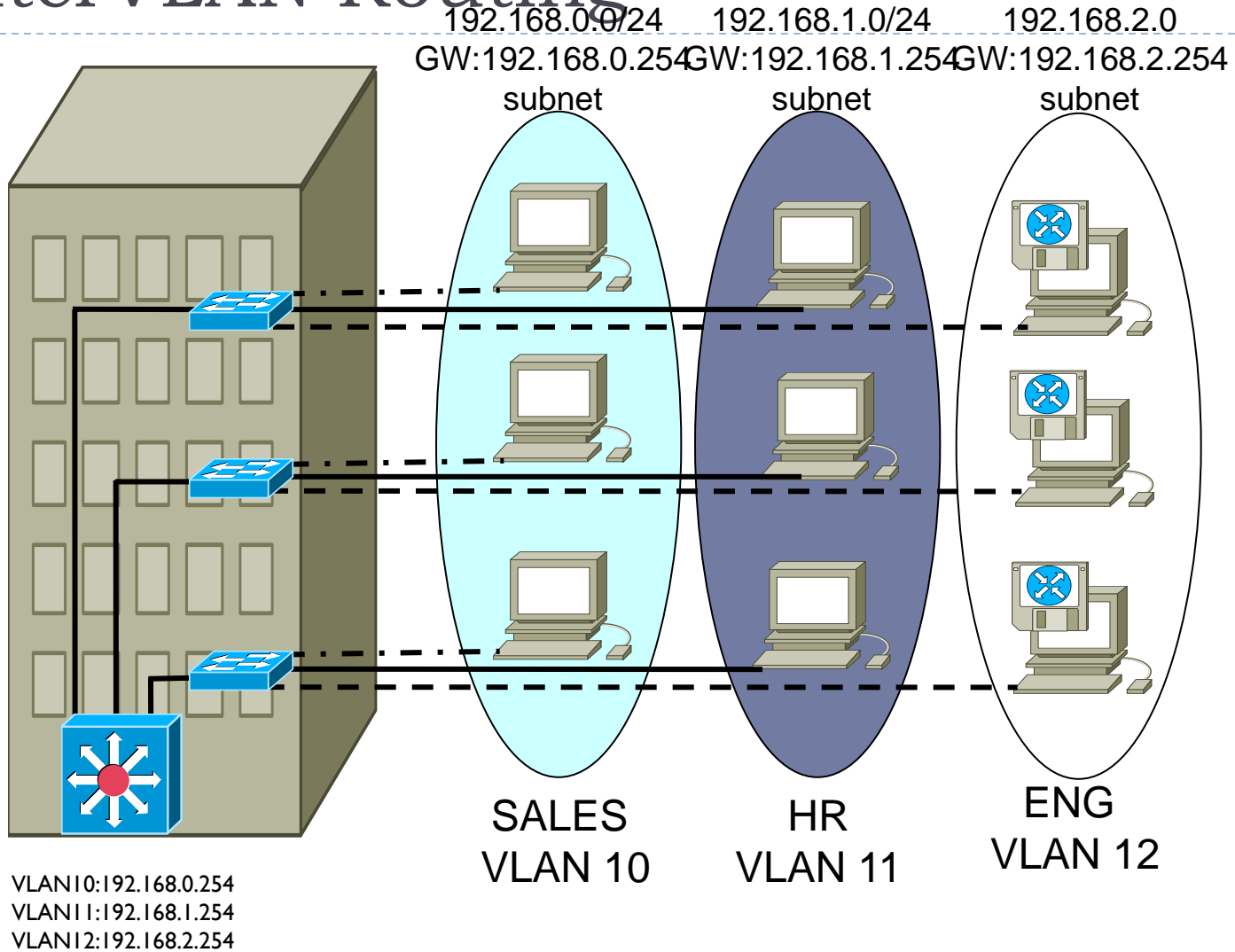
1. Switch(config)#ip access-list extended/standard “Policy ID or Policy Name”
  - ▶ Extended：會檢查封包來源、目的IP以及所使用之Layer4協定及路由協定等等資訊。
  - ▶ Standard：僅檢查封包的目的地IP資訊。
2. Switch(config-ext-nacl)#permit/deny tcp/udp “Source Address” “Wildcard Bits” “Dest Address” “Wildcard Bits” eq “Port Number”
3. Switch(config)#interface fastethernet “Port ID”
4. Switch(config-if)#no switchport
5. Switch(config-if)#ip access-group “Policy Name or Policy ID” in/out



# InterVLAN Routing

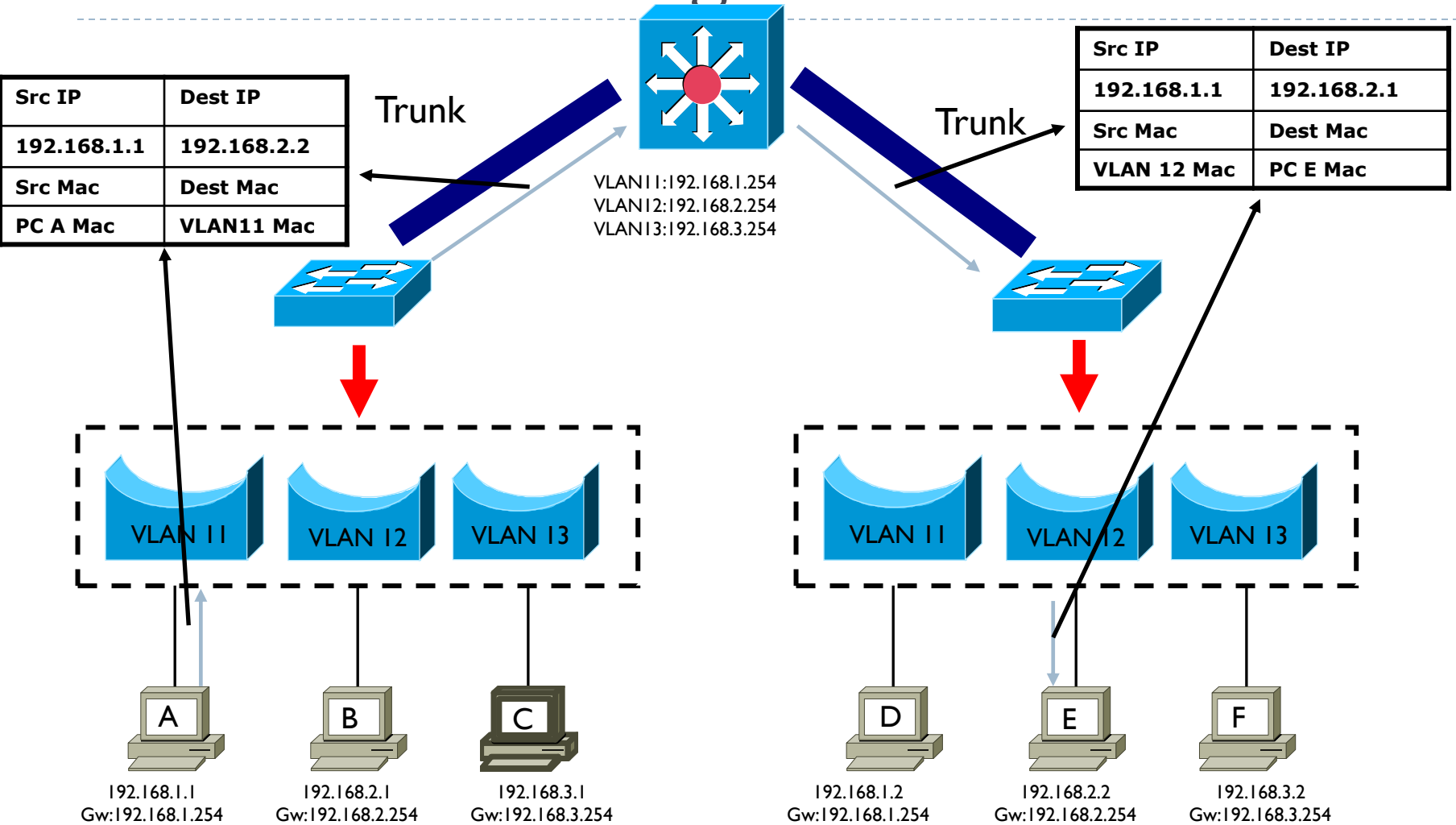


# InterVLAN Routing





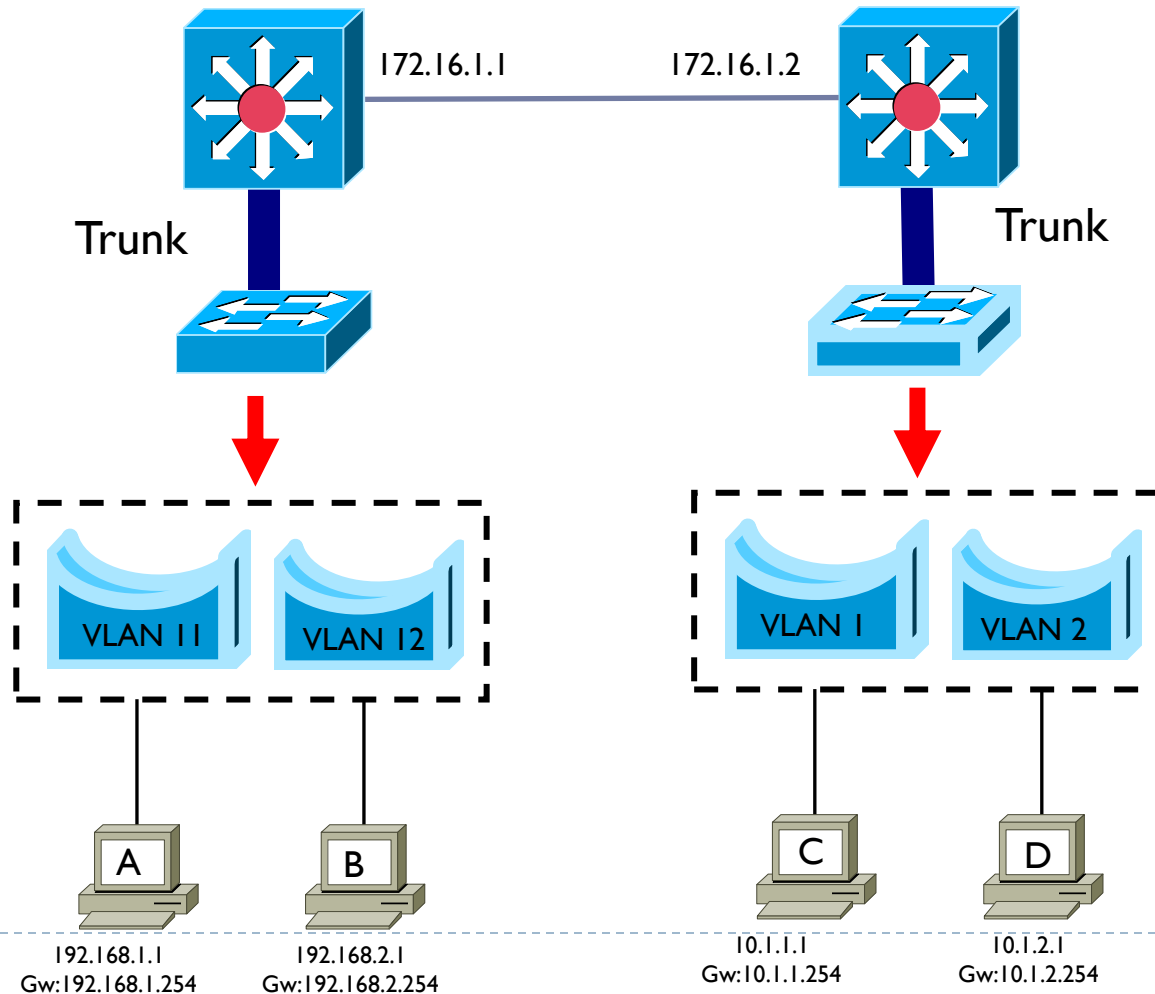
# InterVLAN Routing



# Static Routing

```
ip route 10.1.1.0 255.255.255.0 gw 172.16.1.2  
ip route 10.1.2.0 255.255.255.0 gw 172.16.1.2
```

```
ip route 192.168.1.0 255.255.255.0 gw 172.16.1.2  
ip route 192.168.2.0 255.255.255.0 gw 172.16.1.2
```

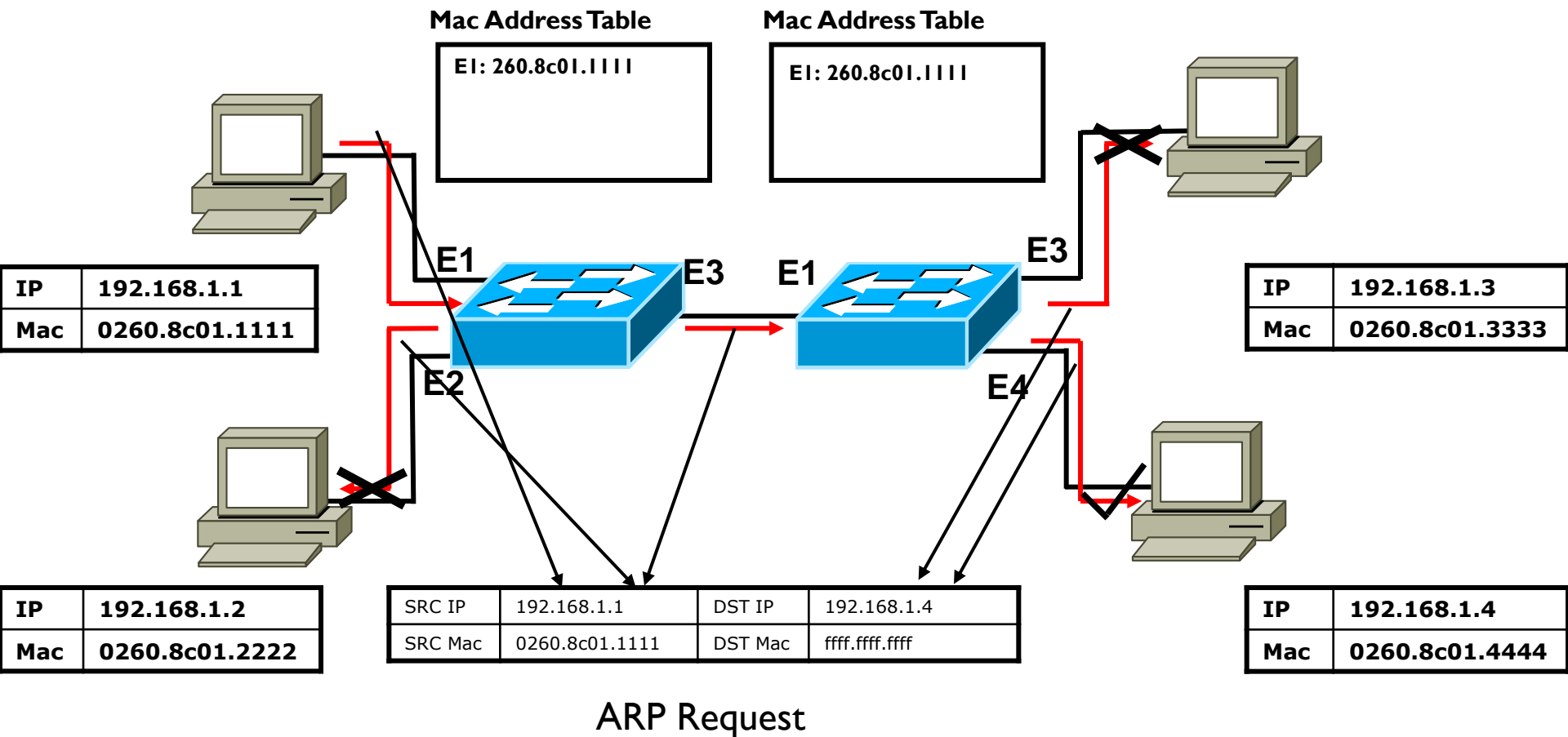


# Homework

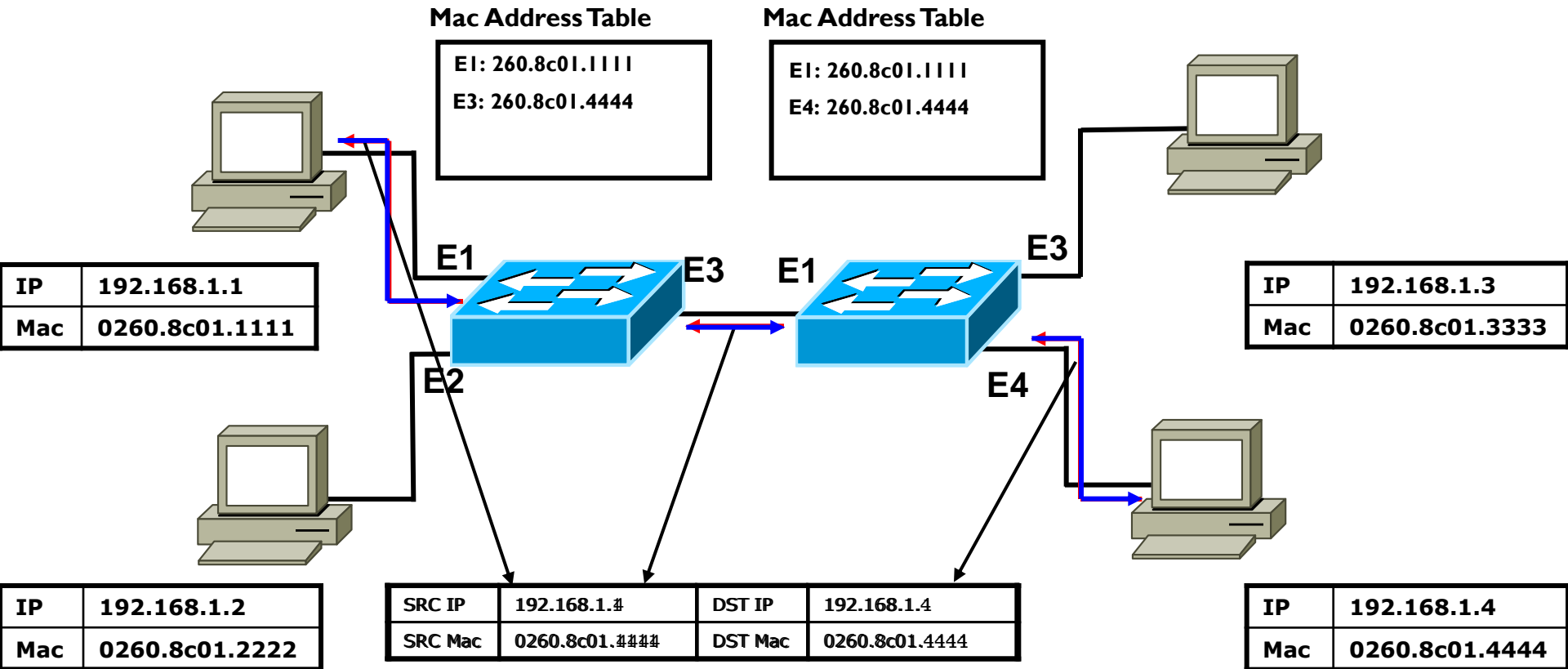
- 開啟LAB-HW.pkt
- 從主機A使用PING主機D
- 使用HW4.pkt
- 從主機A使用PING主機D
- 使用模擬器的Simulation觀察網路狀態
- 說明使用PING從主機A到主機D時，ARP傳遞的狀況，以及說明主機A無法PING到主機D的原因



# Homework



# Homework



DATA Transfer



# Homework

