BATCH : BATCH 85

LESSON : **Network -7**

DATE : 25.06.2022

SUBJECT : **Troubleshooting and Hands-on Lab**

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ZOOM GİRİŞLERİNİZİ LÜTFEN **LMS** SİSTEMİ ÜZERİNDEN YAPINIZ

Previous Session

Subnetting
CIDR

NETWORK Day 7

Contents

- Troubleshooting
- Hands-on Lab

What is a Network?

- A computer network is a group of computers that use a set of common communication protocols over digital inter-connections for the purpose of sharing resources located on or provided by the network nodes.

Types of Networks

Georaphical	Network Architecture	Topological	Transferring Mediums

• NANO
• BAN
• PAN
• LAN
• CAN
• MAN
• WAN
	• Client –Server
	• P2P
		• Ring
		• Star
		• Mesh
		• Bus
		• Line
			• Cable
			• Wireless
			  • RF
			  • Laser
			  • Microwaves

OSI Referans Modeli

ENCAPSULATION

APPLICATION	•SMTP •FTP •TELNET
PRESENTATION	•FORMAT DATA •ENCRYPTION
SESSION	•START •STOP
TRANSPORT	•TCP •UDP •PORT NUMBERS
NETWORK	•IP ADDRESS •ROUTERS
DATALINK	•MAC ADDRESS •SWITCHES
PHYSICAL	•CABLE •NIC •HUBS

DE-CAPSULATION

Transmission Media

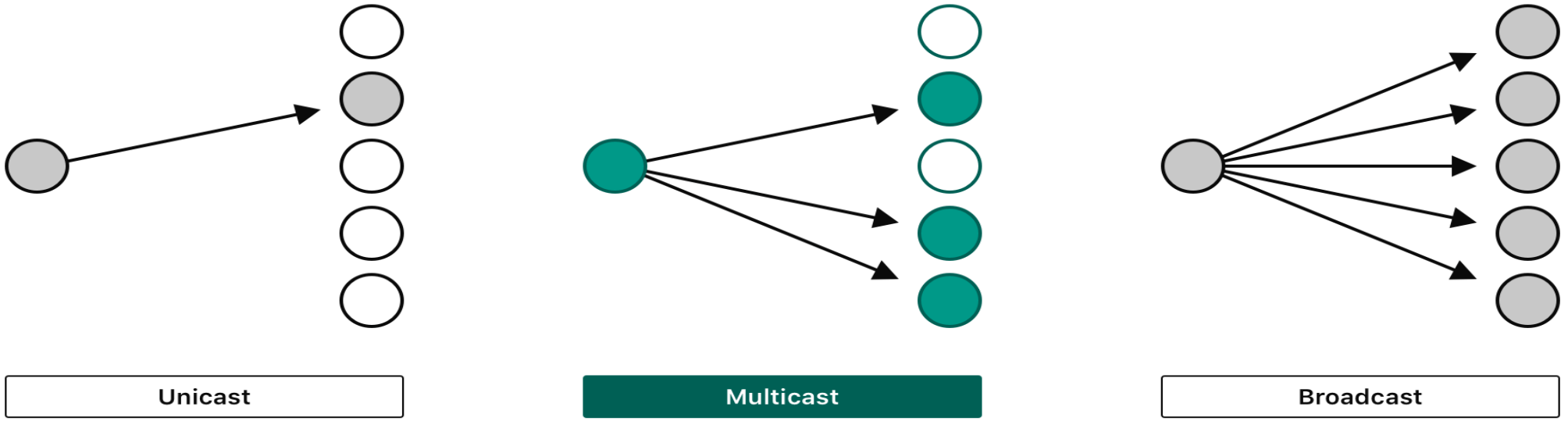
- Kablolu
  - Koaksiyel
  - Twisted pair(Burgulu Çift)
  - Fiber
- Kablosuz
  - Laser (WLAN)
  - Infrared (Bluetooth v.b)
  - Radyo Frekans (WLAN, Uydu Haberleşmesi)

Network Devices

- Network Interface Card (NIC)
- Hub
- Bridge
- Switch
- Router
- Firewall
- DNS
- DHCP
- Other specialized devices

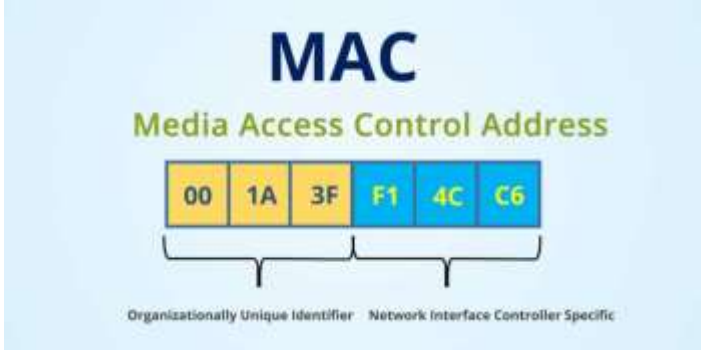
Data Transmission

Multicasting



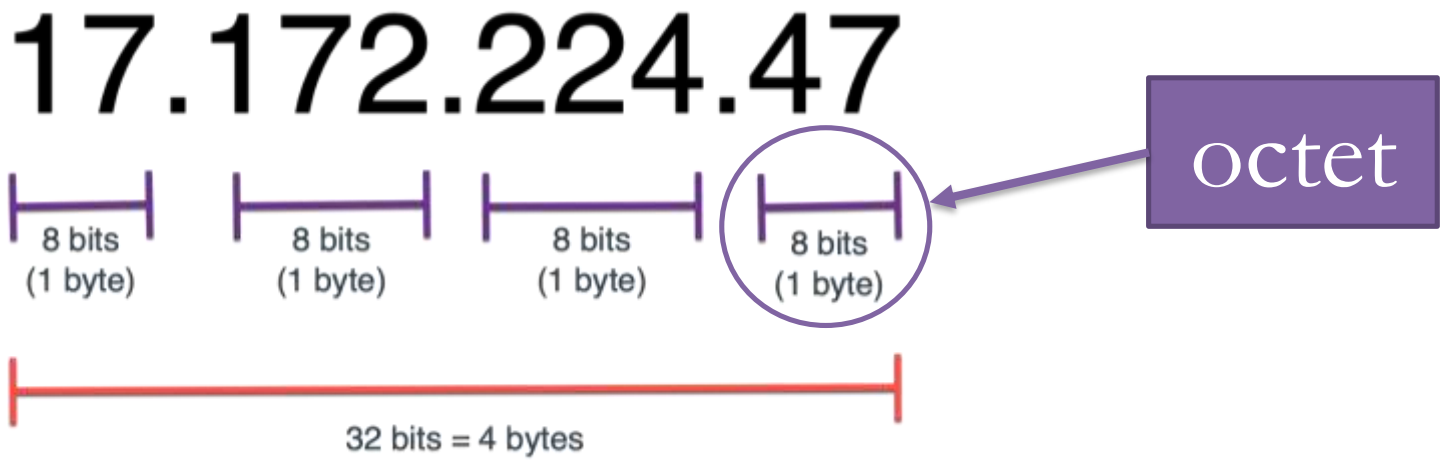
MAC Adres

- MAC adres dağıtımları **IEEE** tarafından yönetilir.
- **MAC**, 48 **bit**'lik bir **adres** olduğundan dolayı 2^{48} = 281,474,976,710,656 değişik ağ kartını tanımlamak için kullanılabilir. **MAC adresi** (Fiziksel **adres**, Donanım **adresi**), ağ donanımının tanımlanmasını sağlar. **MAC adresi**, bilgisayarın ethernet kartına üretici tarafından kodlanan bir bilgidir.
- Üreticiler **MAC** adres aralıklarını satın alırlar.
  - Aynı ağ içerisinde birbirine fiziksel olarak bağlı birimler arasında çerçeve transferinde kullanılır.



IP Adres

- IP adres:
  - Ağ katmanı adresidir.
  - Veri Çerçevesi –Datagram- iletmek için kullanılır.
  - **32-bit** ⟶ **17.172.224.47 (IPv.4)**



SubnetMask

IP address **192.168.0.96 and** Mask **255.255.255.0**

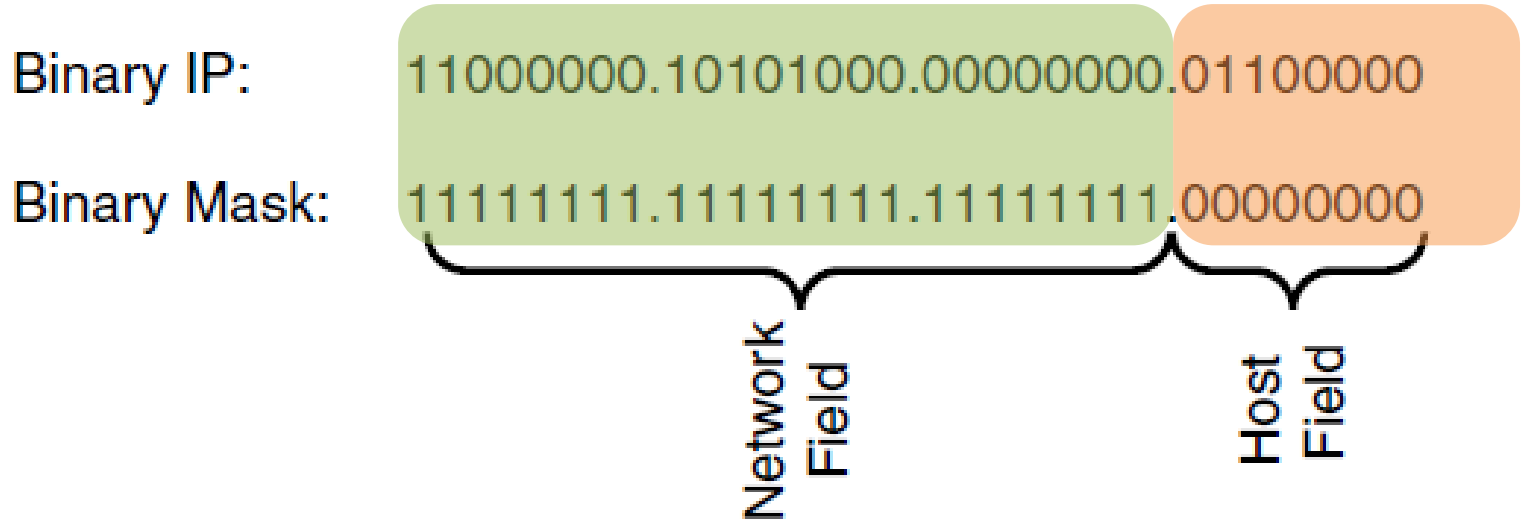
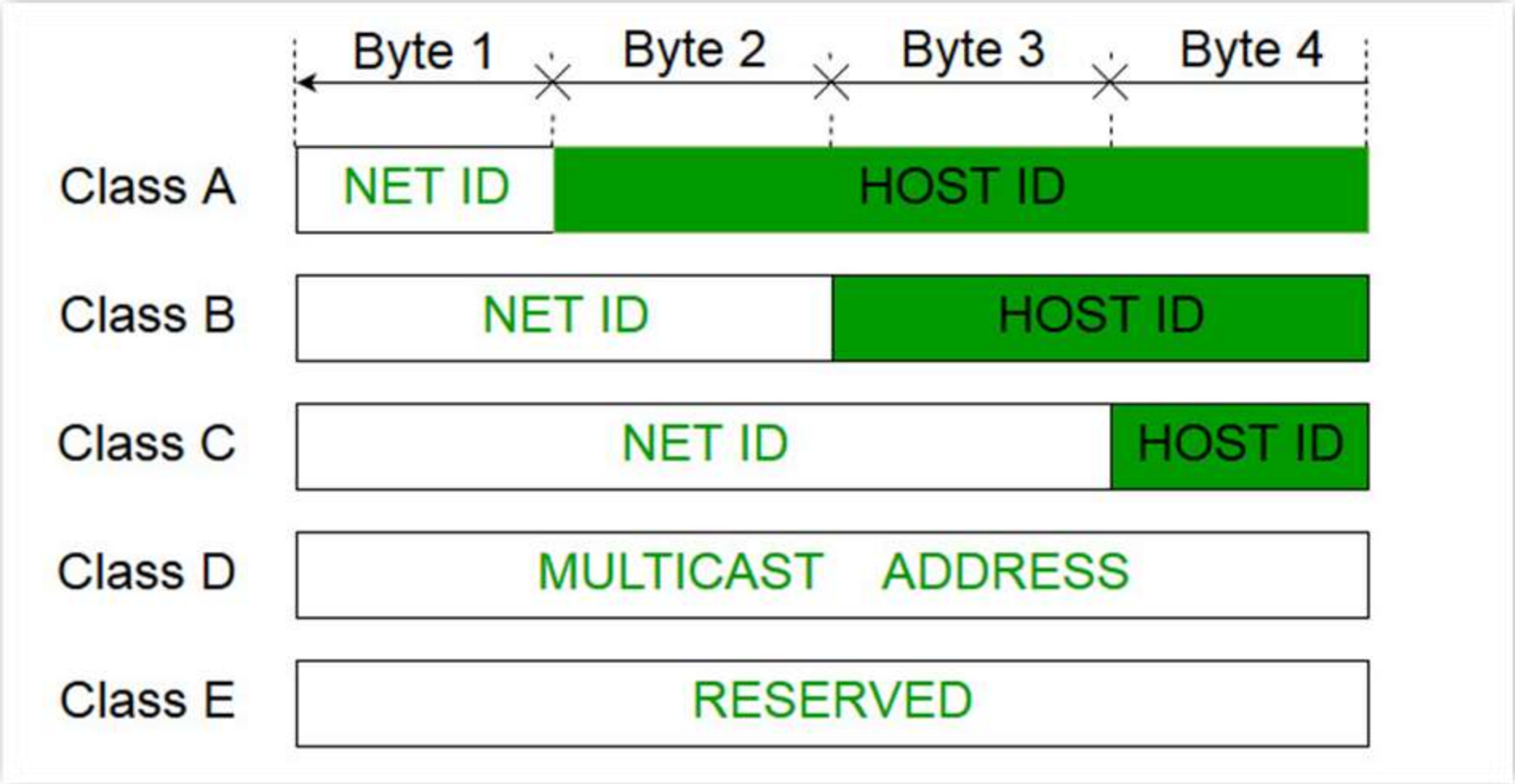


Figure 3.1 IP address and mask in binary, showing network and host fields.

IP Classification



IP Classification

Class	Leading bits	Size of *network number* bit field	Size of *rest* bit field	Number of networks	Addresses per network	Total addresses in class	Start address	End address
Class A	0	8	24	128 (2^7)	16,777,216 (2^{24})	2,147,483,648 (2^{31})	0.0.0.0	127.255.255.255
Class B	10	16	16	16,384 (2^{14})	65,536 (2^{16})	1,073,741,824 (2^{30})	128.0.0.0	191.255.255.255
Class C	110	24	8	2,097,152 (2^{21})	256 (2^8)	536,870,912 (2^{29})	192.0.0.0	223.255.255.255
Class D (multicast)	1110	not defined	not defined	not defined	not defined	268,435,456 (2^{28})	224.0.0.0	239.255.255.255
Class E (reserved)	1111	not defined	not defined	not defined	not defined	268,435,456 (2^{28})	240.0.0.0	255.255.255.255

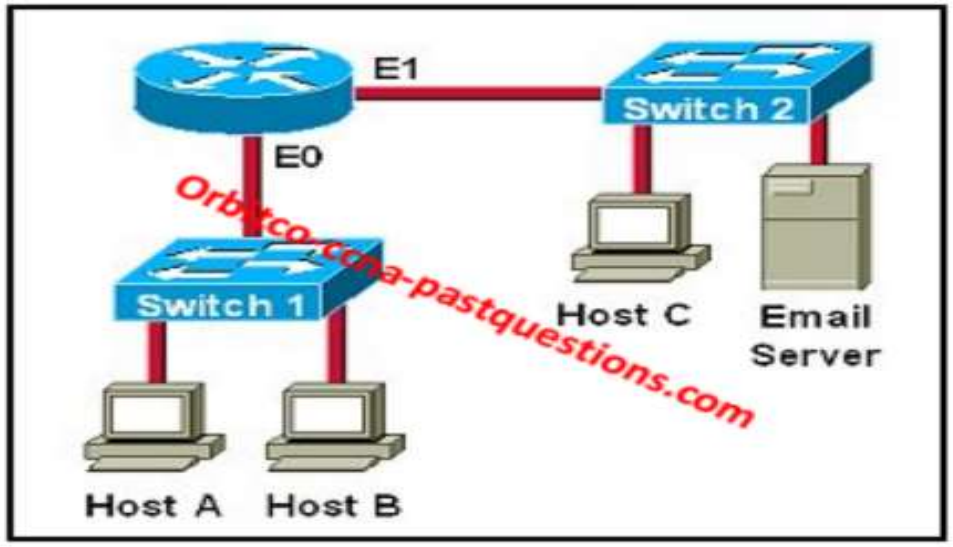
Private Networks

Public and Private IP Addresses

- No two machines that connect to a public network can have the same IP address because public IP addresses are global and standardized.
- However, private networks that are not connected to the Internet may use any host addresses, as long as each host within the private network is unique.
- RFC 1918 sets aside three blocks of IP addresses for private, internal use.
- Connecting a network using private addresses to the Internet requires translation of the private addresses to public addresses using Network Address Translation (NAT).

Class	RFC 1918 internal address range
A	10.0.0.0 to 10.255.255.255
B	172.16.0.0 to 172.31.255.255
C	192.168.0.0 to 192.168.255.255

Case 1



Which two destination addresses will be used by Host A to send data to Host C? (Choose two.)

A. the IP address of Switch 1

B. the MAC address of Switch 1

C. the IP address of Host C

D. the MAC address of Host C

E. the IP address of the router's E0 interface

F. the MAC address of the router's E0 interface

Case 2

```
Switch-1# show mac address-table
Dynamic Addresses Count:                   3
Secure Addresses (User-defined) Count:     0
Static Addresses (User-defined) Count:     0
System Self Addresses Count:               41
Total Mac addresses:                       50
Non-static Address Table:
Destination Address  Address Type  VLAN  Destination Port
-------------------  ------------  ----  --------------------
0010.0de0.e289       Dynamic       1     FastEthernet0/1
0010.7b00.1540       Dynamic       2     FastEthernet0/3
0010.7b00.1545       Dynamic       2     FastEthernet0/2
```


Switch-1 needs to send data to a host with a MAC address of 00b0.d056.efa4. What will Switch-1 do with this data?

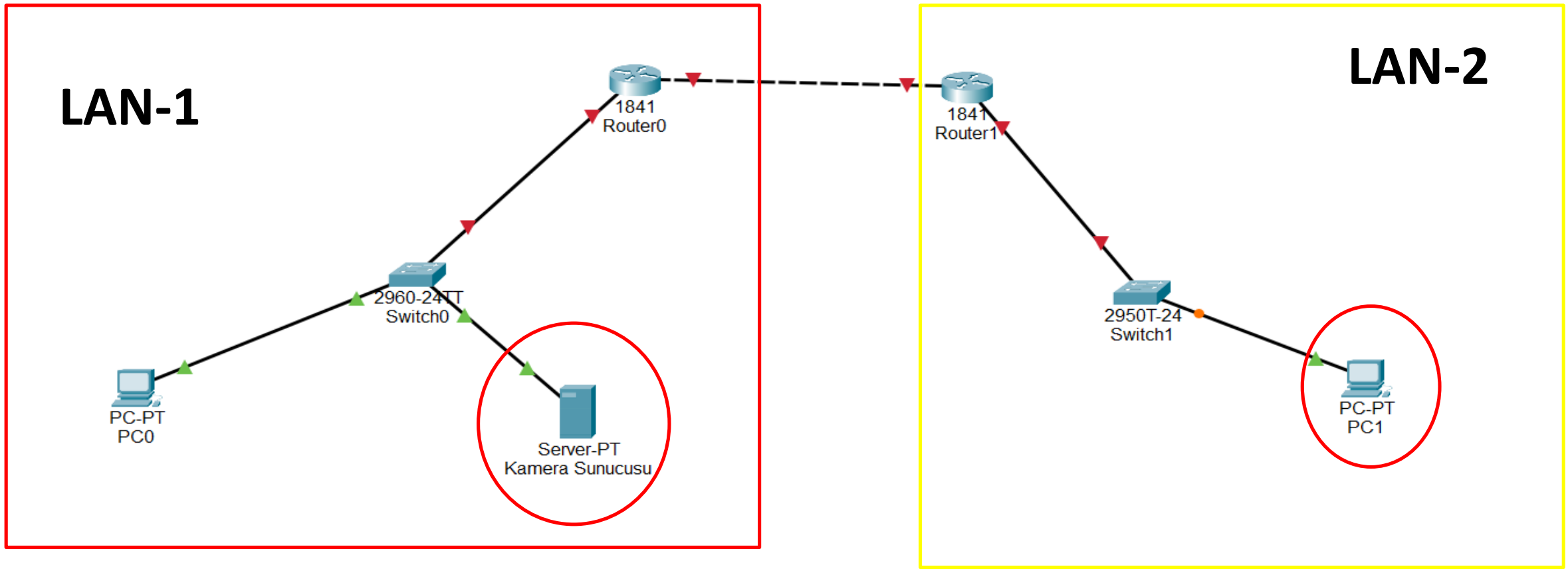
A. Switch-1 will drop the data because it does not have an entry for that MAC address.

B. Switch-1 will flood the data out all of its ports except the port from which the data originated.

C. Switch-1 will send an ARP request out all its ports except the port from which the data originated.

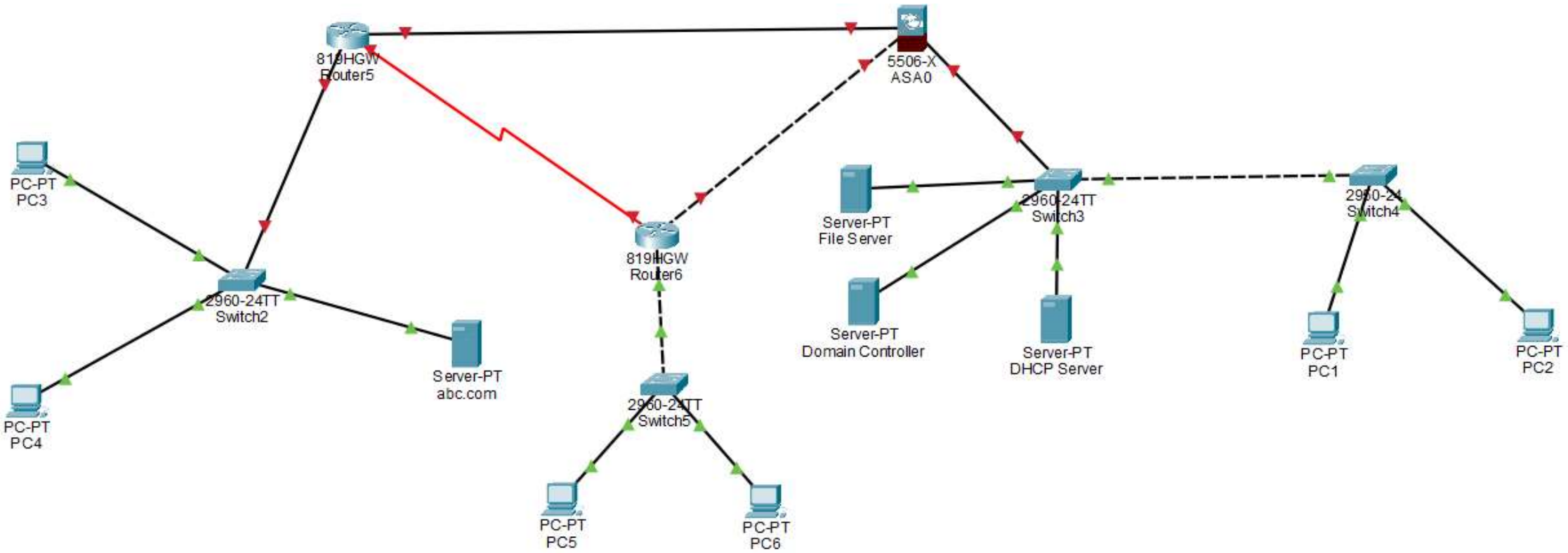
D. Switch-1 will forward the data to its default gateway.

Case 3



PC1 can’t Access Camera Server ???

Case 4



PC3 and PC4 take APİPA IP???