

WEEK 3 REVIEW



Q1. What is the difference between the OSI Reference Model and the TCP/IP Reference Models for the Protocol Stack?

A)The OSI Model has 4 layers whereas the TCP/IP Model has 7 layers.

B)The TCP/IP Model was developed for the TCP and IP protocols whereas the OSI Model is generic.

C)The OSI Model was developed by the IETF whereas the TCP/IP Model was developed by the ITU standards body.

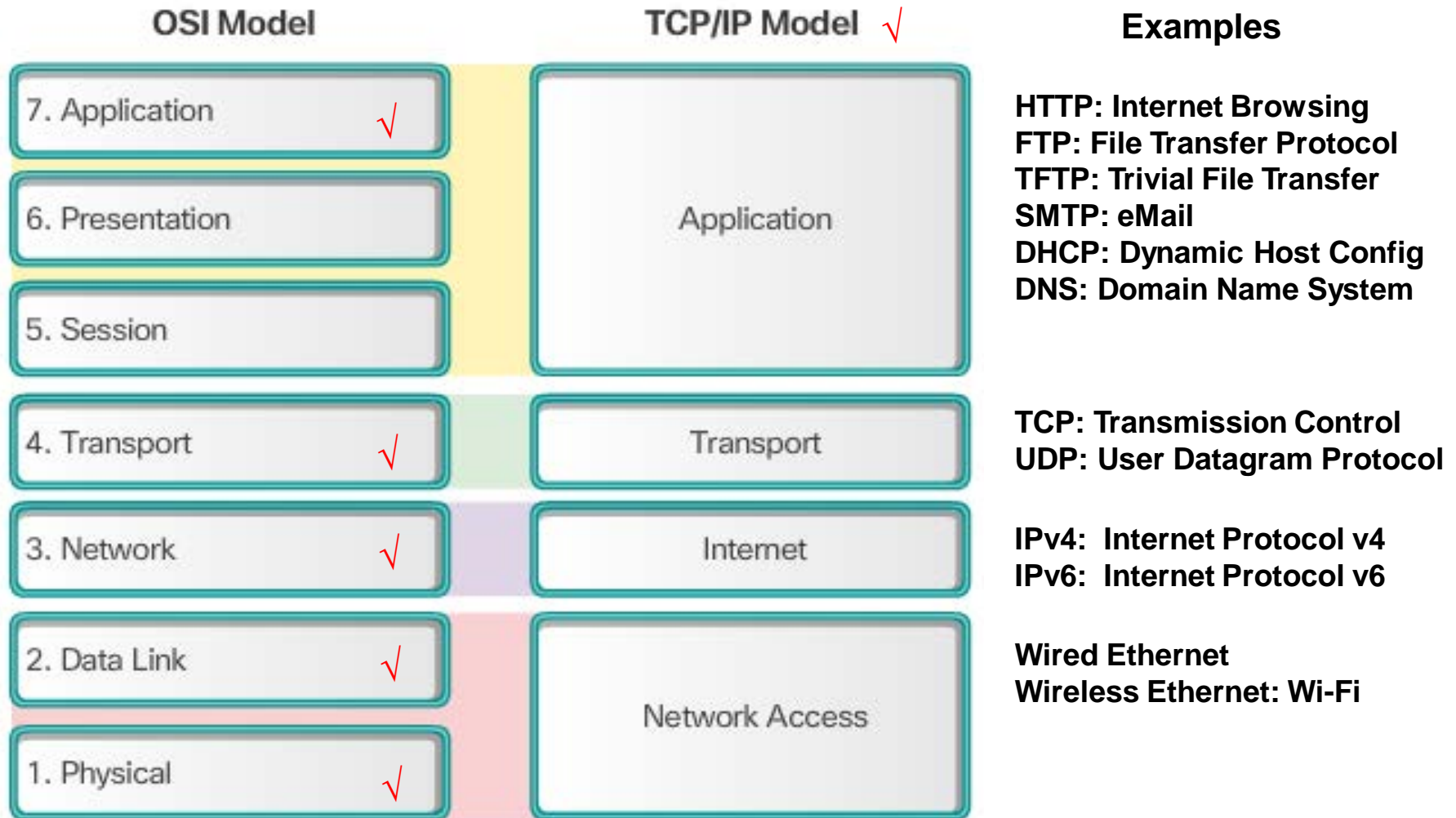
D)Layer 3 of the TCP/IP Model is the Transport layer whereas layer 2 of the OSI Model is the Transport layer.

ANSWER ON LAST SLIDE



OSI Model and TCP/IP Model Comparison

ALL PEOPLE SEEM TO NEED DATA PROCESSING



Q2. In the context of the protocol stack, what is the difference between a peer layer conversation and an adjacent layer conversation?

A) Peer layer conversations refer to the TCP/IP Model whereas the adjacent layer conversations refer to the OSI Model.

B) These are two terms for the same concept.

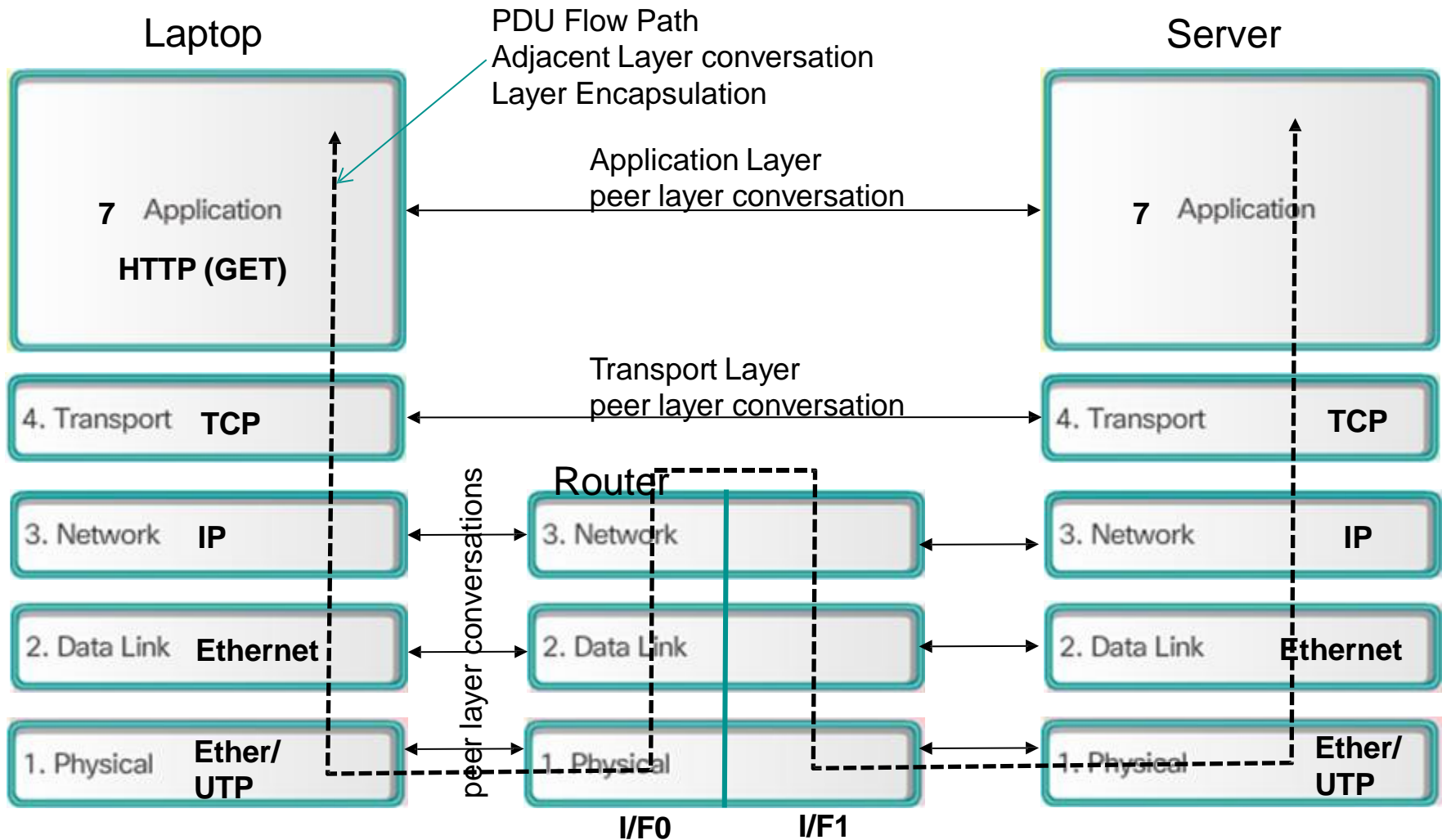
C) An adjacent layer conversation occurs between the same functional layer in the source and destination device. A peer layer conversation occurs between adjacent functional layers in the same device.

D) A peer layer conversation occurs between the same functional layer in the source and destination device. An adjacent layer conversation occurs between adjacent functional layers in the same device.

ANSWER ON LAST SLIDE



Protocol Flows



Q3. What is the name of the Protocol Data Unit at the Data Link Layer?

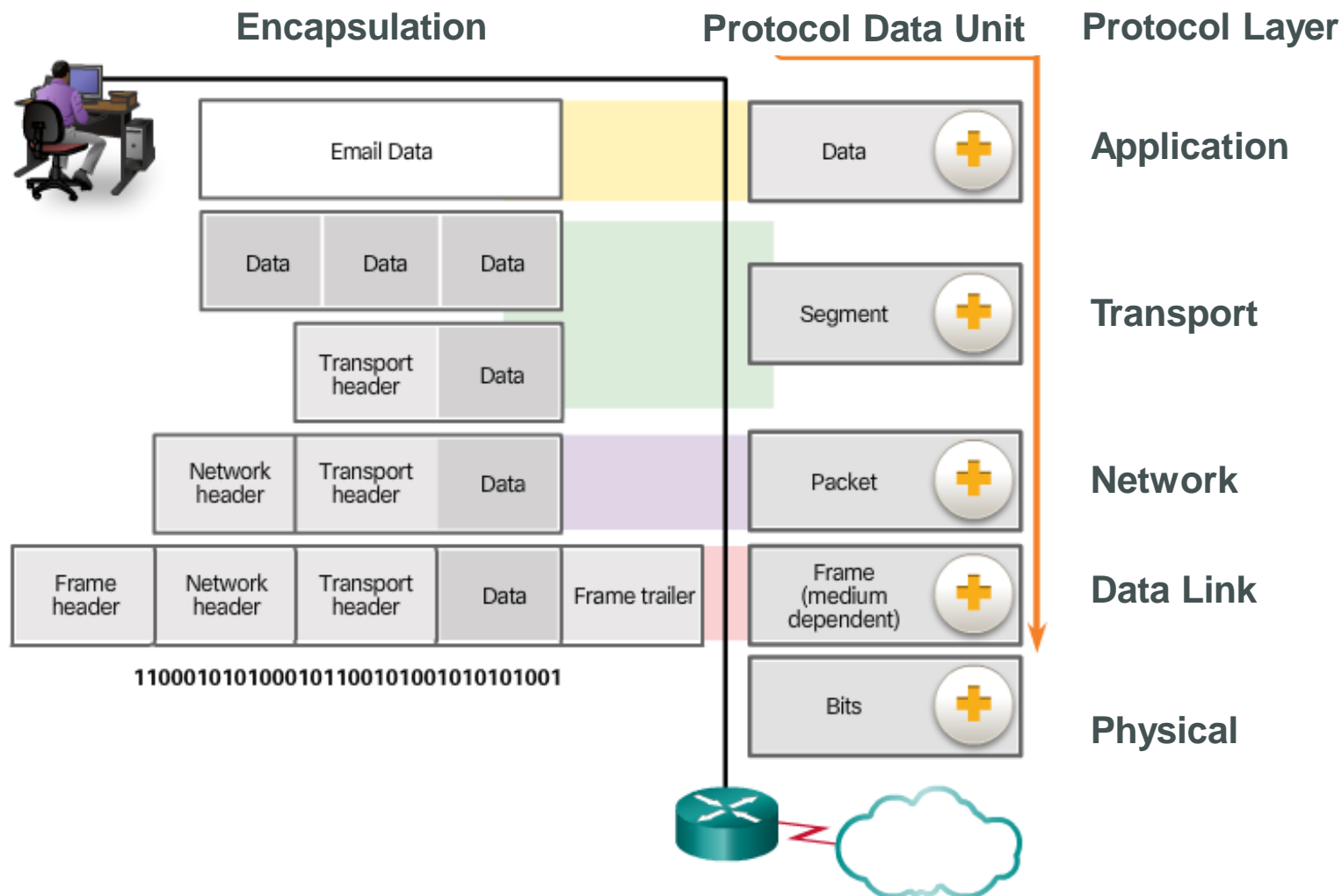
- A) Frame
- B) Segment
- C) Packet
- D) Block

ANSWER ON LAST SLIDE



Protocol Data Units

- Segmentation – partition of application data into blocks of data
- A data block with its headers is called a Protocol Data Unit (PDU)



Q4. The Data Link layer encapsulates what type of PDU?

- A) Frame
- B) Segment
- C) Packet
- D) Block

ANSWER ON LAST SLIDE



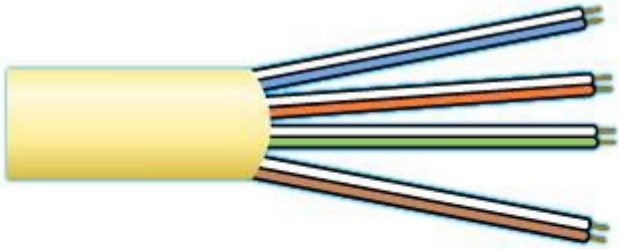
Q5. What is UTP Cat 6 Ethernet Cable?

- A) Four twisted-pairs of copper wires in an unshielded jacket.
- B) Two twisted-pairs of copper wires in an unshielded jacket.
- C) Cat 5 Ethernet cable used copper wire whereas Cat 6 is an upgrade to fiber optic cable.
- D) Four twisted-pairs of copper wires in a shielded jacket.

ANSWER ON LAST SLIDE



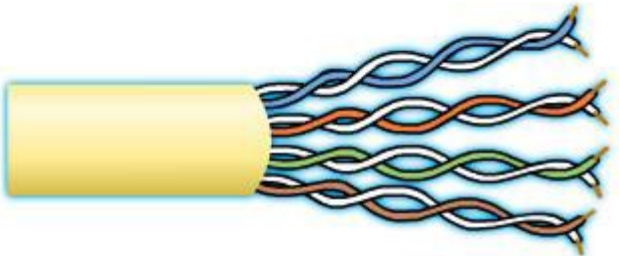
UTP Cabling Standards



Category 3 Cable (UTP)

Category 3 Cable (UTP)

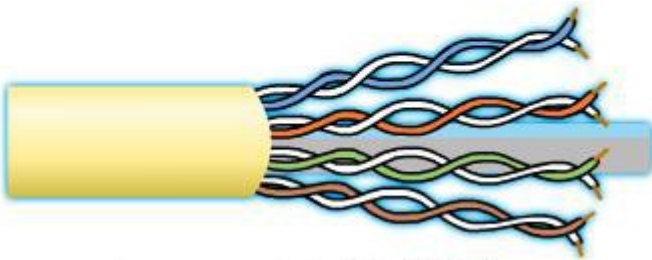
- Used for voice communication
- Most often used for phone lines



Category 5 and 5e Cable (UTP)

Category 5 and 5e Cable (UTP)

- Used for data transmission
- Cat5 supports 100 Mb/s and can support 1000 Mb/s, but it is not recommended
- Cat5e supports 1000 Mb/s



Category 6 Cable (UTP)

Category 6 Cable (UTP)

- Used for data transmission
- An added separator is between each pair of wires allowing it to function at higher speeds
- Supports 1000 Mb/s - 10 Gb/s, though 10 Gb/s is not recommended

Q6. What is the “maximum supported bit rate” of a communication path/channel called?

- A) Throughput
- B) Bandwidth
- C) Goodput
- D) Max bit Rate

ANSWER ON LAST SLIDE



Bandwidth and Throughput

Unit of Bandwidth	Abbreviation	Equivalence
Bits per second	bps	1 bps = fundamental unit of bandwidth
Kilobits per second	kbps	1 kbps = 1,000 bps = 10^3 bps
Megabits per second	Mbps	1 Mbps = 1,000,000 bps = 10^6 bps
Gigabits per second	Gbps	1 Gbps = 1,000,000,000 bps = 10^9 bps
Terabits per second	Tbps	1 Tbps = 1,000,000,000,000 bps = 10^{12} bps

Bandwidth: Maximum bit rate supported by the channel

Throughput: Actual bit rate carried by the channel at a point in time

Q7. Why do network devices need two layers of addressing: a Data Link Layer Address (i.e. Ethernet) and a Network Layer Address (i.e. IP Address)?

A) The IP Address can be used to forward packets to the final destination but historically Ethernet was developed first so it continues to be used for Data Link Addressing.

B) A Data Link Layer Address is used to forward the packet from one network segment to another network segment. The Network Layer Address is used to forward the frame from one device to another within the network segment.

C) A Network Layer Address is used to forward the packet from one network segment to another network segment. The Data Link Address is used to forward the frame from one device to another within the network segment.

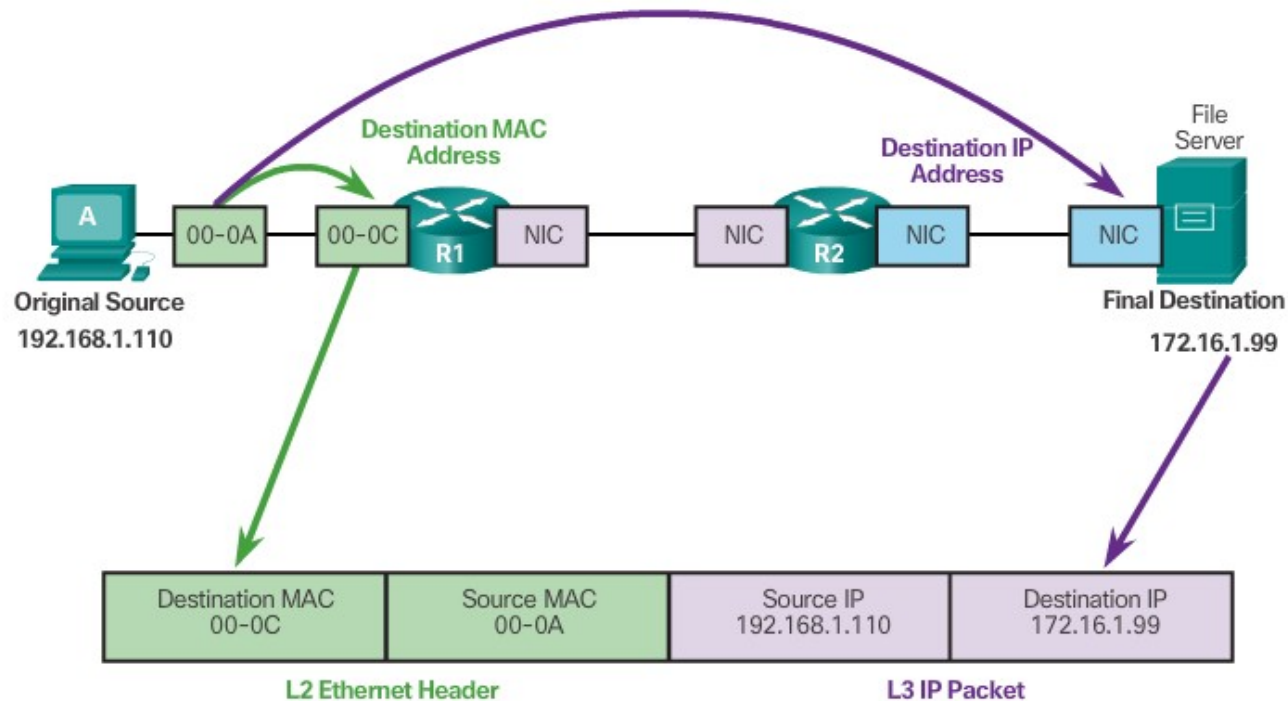
D) I don't know so please tell me.

ANSWER ON LAST SLIDE



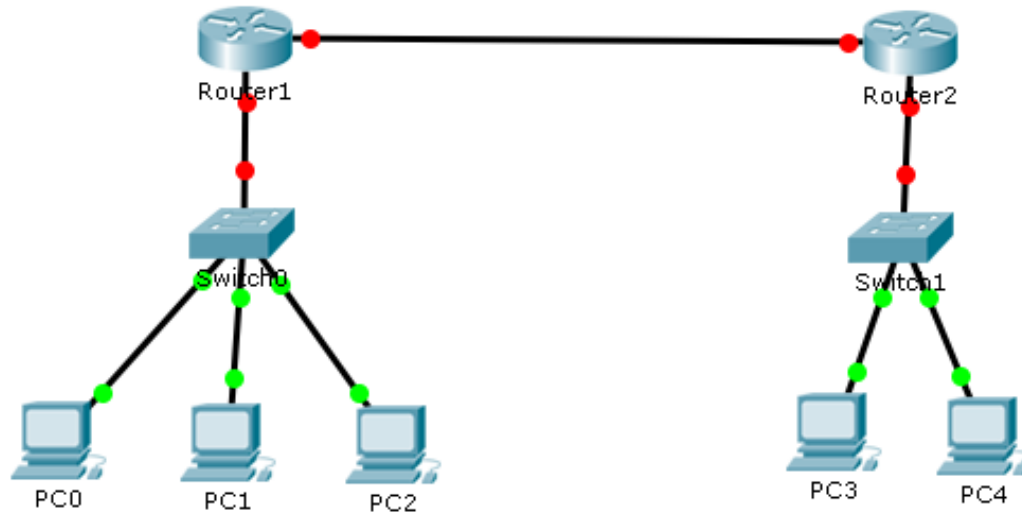
Destination on a Remote Network

Communicating to a Remote Network



MAC addresses are shortened for demonstration purposes.

Q8. How many collision domains and broadcast domains are in this network?

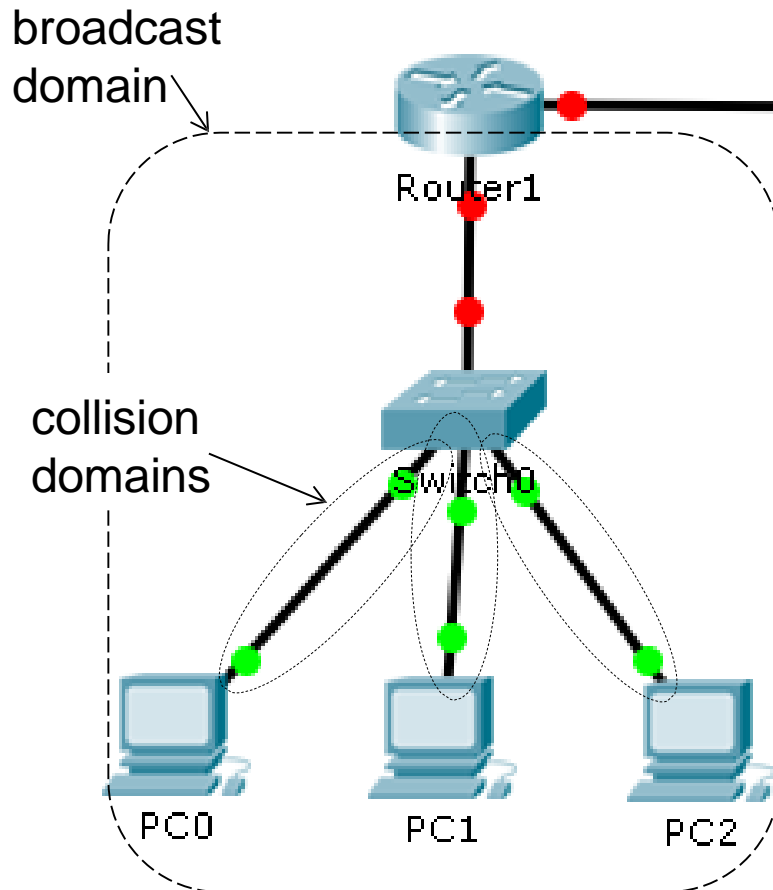


- A) 7 collision domains and 3 broadcast domains
- B) 8 collision domains and 3 broadcast domains
- C) 8 collision domains and 2 broadcast domains
- D) 5 collision domains and 3 broadcast domains

ANSWER ON LAST SLIDE



Collision Domain & Broadcast Domain: Ethernet Switched Network



Collision Domain:

- Ethernet Switches break up collision domains into point-to-point links.
- Each Switch port forms a separate collision domain
- This is due to the switching function

Broadcast Domain:

- Routers break up broadcast domains and collision domains.
- Each Router port forms a separate broadcast domain
- Routers do not forward broadcasts
- The switch prevents collisions in the broadcast domain.

This is important for capacity planning

Answers

Q1: B

Q2: D

Q3: A

Q4: C

Q5: A

Q6: B

Q7: C

Q8: B