



# LAN Switching Fundamentals

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## Important Note

- + Objectives/topics for this category are displayed with different numerical identifiers depending on what Cisco resource you are viewing:

Objective	Cisco Press Official Certification Guide	Cisco Learning Website
Describe switching concepts	1.13	1.13
MAC learning & aging	1.13.a	1.14
Frame switching	1.13.b	1.15
Frame flooding	1.13.c	1.16
MAC address table	1.13.d	1.17

- + This exam assessment will reference the values used in the Cisco Press Official Certification Guide for each question.



# Question-1

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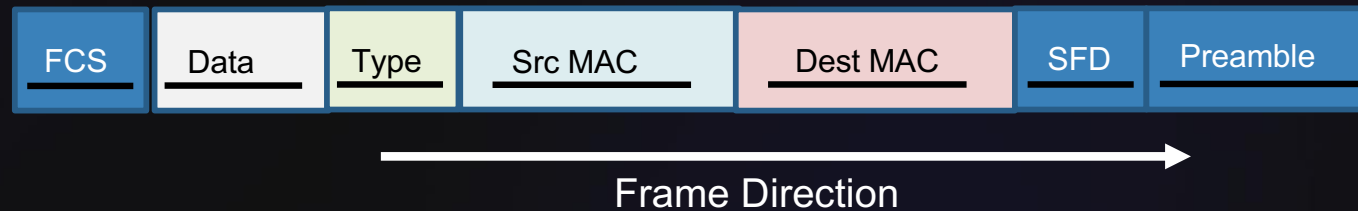
## Question-1

+ Name each section of an Ethernet frame (Ethernet2 version). [1.13]



# ANSWER

+ Name each section of an Ethernet frame (Ethernet2 version). [1.13]





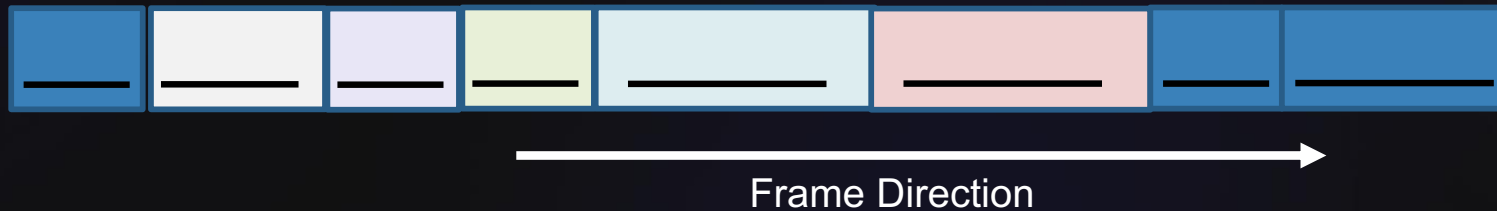
# Question-2

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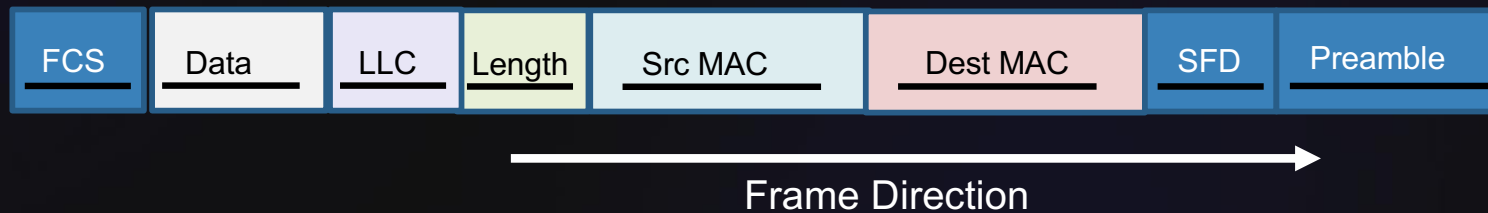
## Question-2

- + Name each section of an Ethernet frame (IEEE 802.3 version). [1.13]



# ANSWER

+ Name each section of an Ethernet frame (Ethernet2 version). [1.13]







# Question-3

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## Question-3

- + Which field within an Ethernet frame is viewed by an Ethernet switch in order to make a forwarding decision?
- + [1.13.b]

☐

A. Type field

☐

B. FCS field

☐

C. Source MAC field

☐

D. Destination MAC field

☐

E. LLC field

## ANSWER

- + Which field within an Ethernet frame is viewed by an Ethernet switch in order to make a forwarding decision?
- + [1.13.b]

☐

A. Type field

☐

B. FCS field

☐

C. Source MAC field

☒

D. Destination MAC field

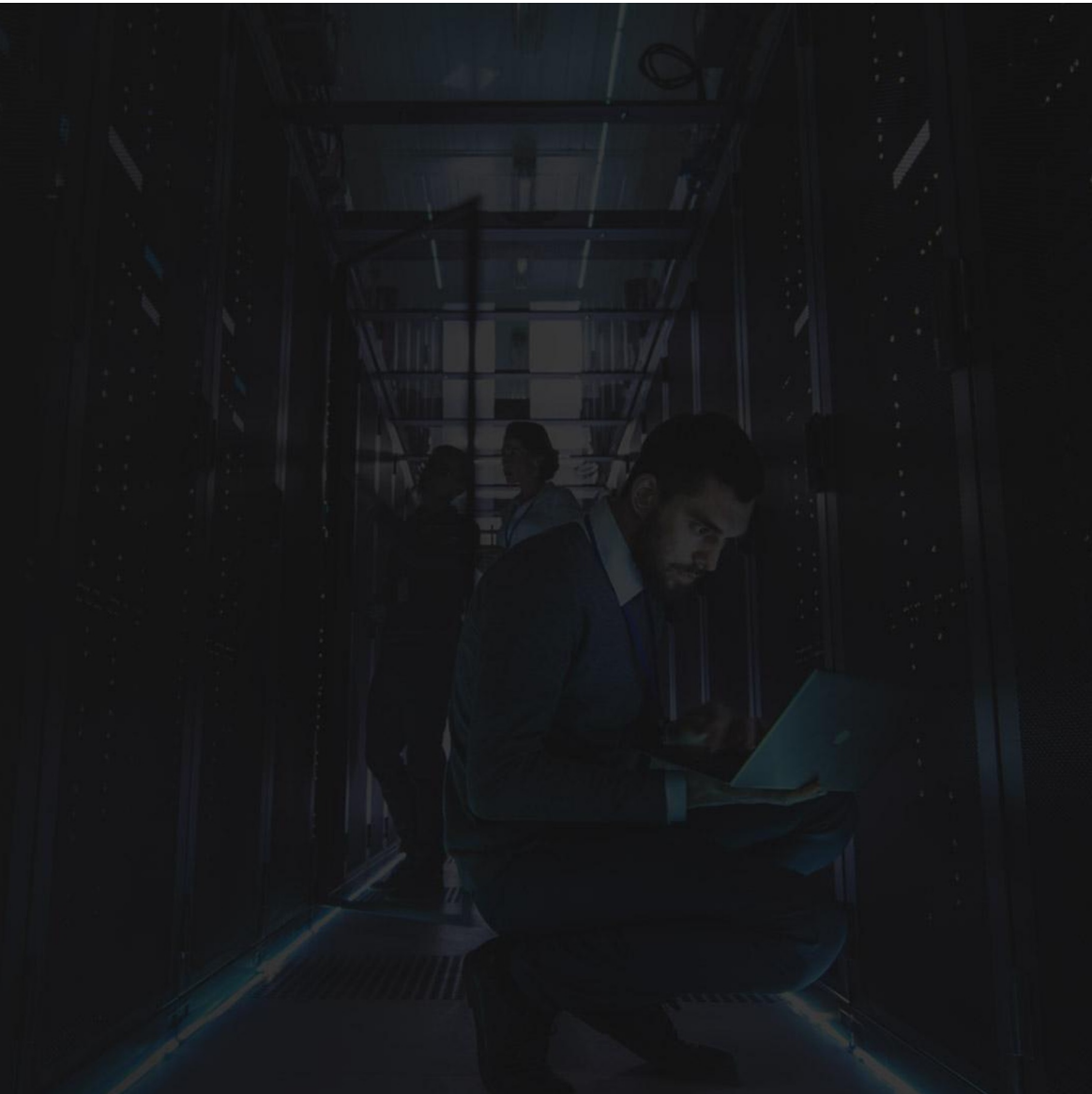
☐

E. LLC field



# Question-4

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## Question-4

- + What are the three actions that a switch can perform with a frame that has been received?
- + (Select three answers)
- + [1.13.b & 1.13.c]

☐

A. Discard a frame

☐

B. Forward a frame

☐

C. Return a frame

☐

D. Flood a frame

☐

E. Fragment a frame

# ANSWER

+ What are the three actions that a switch can perform with a frame that has been received?

+ (Select three answers)

+ [1.13.b & 1.13.c]



A. Discard a frame



B. Forward a frame



C. Return a frame



D. Flood a frame



E. Fragment a frame



# Question-5

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## Question-5

+ What are the various terms used to describe the Layer-2 table used by a switch when performing a forwarding decision?

+ (Select three answers)

+ [1.13.d]

☐

A. CAM table

☐

B. Processing table

☐

C. MAC table

☐

D. Decision table

☐

E. Bridging table



# ANSWER

+ What are the various terms used to describe the Layer-2 table used by a switch when performing a forwarding decision?

+ (Select three answers)

+ [1.13.d]



A. CAM table



B. Processing table



C. MAC table



D. Decision table

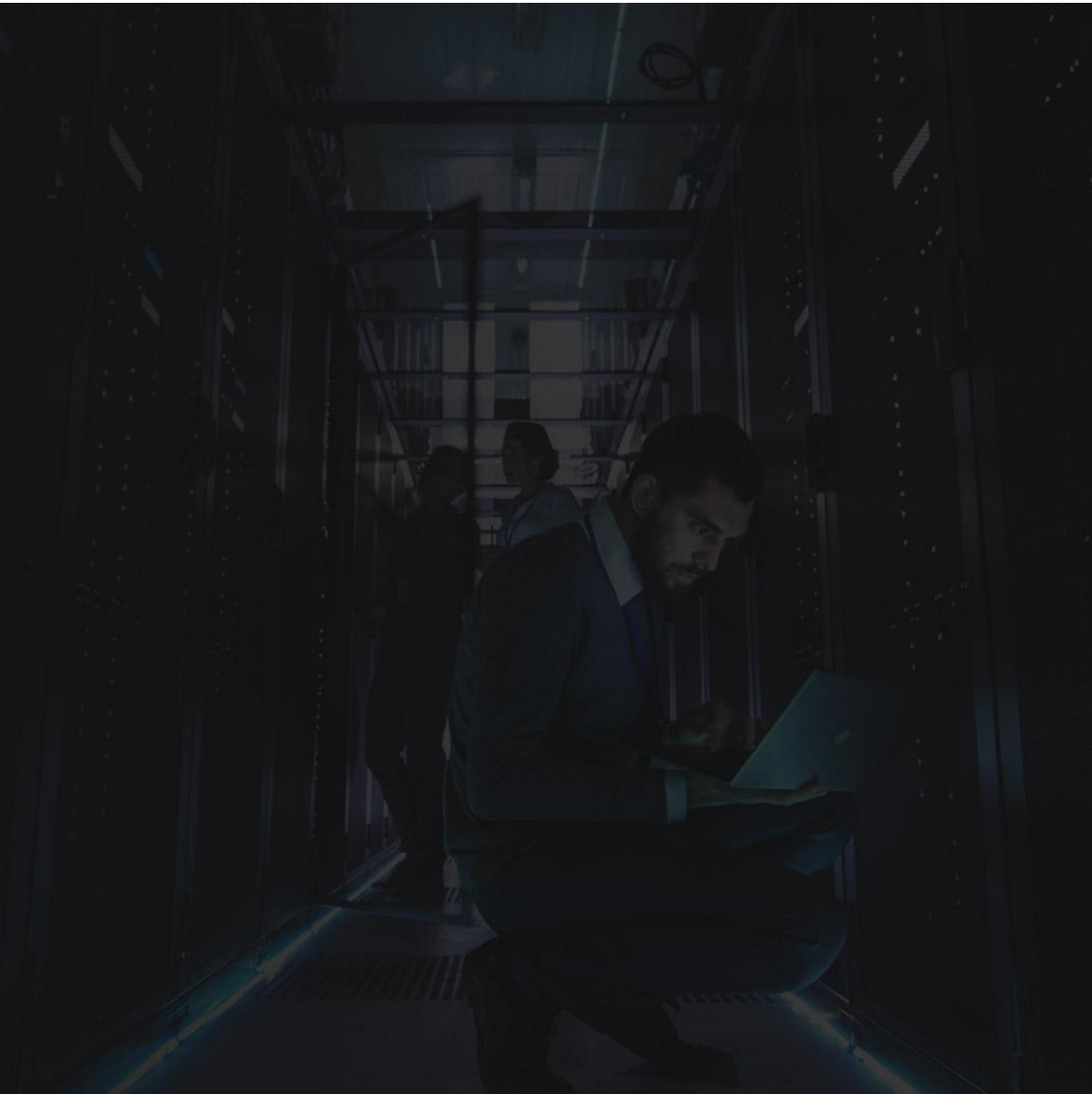


E. Bridging table



# Question-6

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## Question-6

+ Which field within an Ethernet frame is viewed by an Ethernet switch in order to make a learning decision and populate the MAC table?

+ [1.13.a]

☐

A. Type field

☐

B. FCS field

☐

C. Source MAC field

☐

D. Destination MAC field

☐

E. LLC field

## ANSWER

+ Which field within an Ethernet frame is viewed by an Ethernet switch in order to make a learning decision and populate the MAC table?

+ [1.13.a]

☐

A. Type field

☐

B. FCS field

☒

C. Source MAC field

☐

D. Destination MAC field

☐

E. LLC field



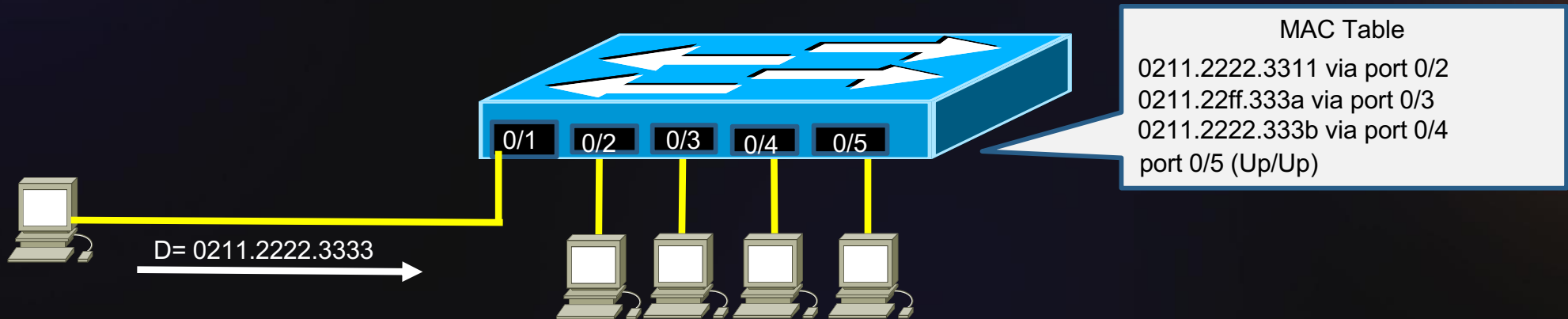
# Question-7

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## Question-7

- + Based on the following graphic, when a switch receives a frame containing a destination MAC address of 0211.2222.3333 which port(s) will be used to transmit/forward this frame? [1.13.c]

☐

A. Port 0/2

☐

B. Port 0/3

☐

C. Port 0/4

☐

D. Port 0/5

☐

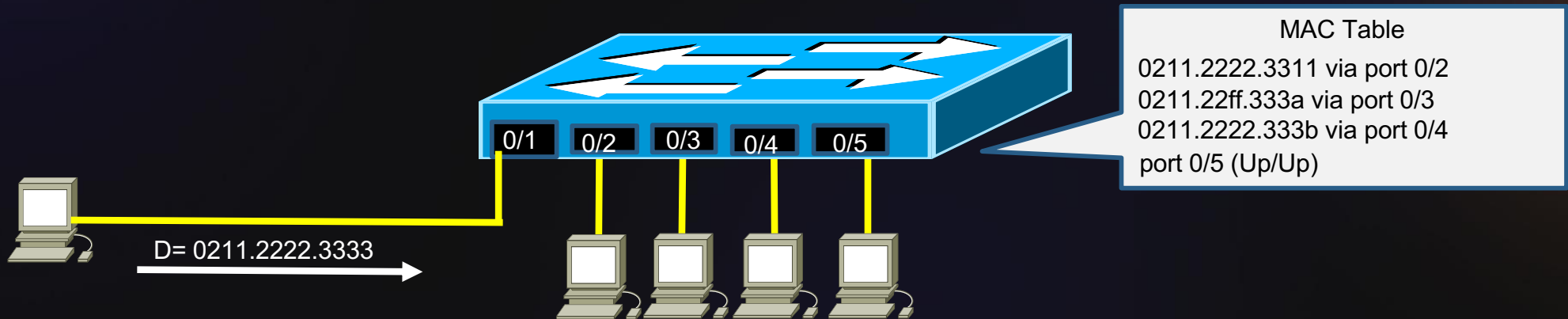
E. Answers A-D are correct

☐

F. None of these answers are correct

# ANSWER

- + Based on the following graphic, when a switch receives a frame containing a destination MAC address of 0211.2222.3333 which port(s) will be used to transmit/forward this frame? [1.13.c]

☐

A. Port 0/2

☐

B. Port 0/3

☐

C. Port 0/4

☐

D. Port 0/5

☒

E. Answers A-D are correct

☐

F. None of these answers are correct



# Question-8

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## Question-8

- + Which of the following destination MAC addresses would result in a frame being flooded by a switch?
- + [1.13.c]

☐

A. FE80:1111:2222

☐

B. FFFF:FFFF:FFFF

☐

C. 0001:1111:1111

☐

D. AAAA:AAAA:AAAA

☐

E. All these answers are correct

## ANSWER

- + Which of the following destination MAC addresses would result in a frame being flooded by a switch?
- + [1.13.c]

☐

A. FE80:1111:2222

☒

B. FFFF:FFFF:FFFF

☐

C. 0001:1111:1111

☐

D. AAAA:AAAA:AAAA

☐

E. All these answers are correct



# Question-9

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## Question-9

- + Which of the following answers correctly describes the result of running STP on a switch?
- + [1.13]

- ☐ A. It ensures path redundancy between hosts is maintained
- ☐ B. It ensures each host is provided a dedicated service level
- ☐ C. It creates only one active path between any two pairs of LAN segments
- ☐ D. It keeps a record of host MAC addresses and ports
- ☐ E. None of these answers is correct

## ANSWER

- + Which of the following answers correctly describes the result of running STP on a switch?
- + [1.13]

☐

A. It ensures path redundancy between hosts is maintained

☐

B. It ensures each host is provided a dedicated service level

☒

C. It creates only one active path between any two pairs of LAN segments

☐

D. It keeps a record of host MAC addresses and ports

☐

E. None of these answers is correct



# Question-10

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## Question-10

+ Which of the following statements are true regarding the factory-default state of Cisco switches?

+ (Select three answers)

+ [1.13]

☐

A. Interfaces are disabled by default

☐

B. Interfaces are enabled by default

☐

C. By default, no interfaces are assigned to a VLAN

☐

D. By default, all interfaces are assigned to VLAN-1

☐

E. STP is enabled by default

☐

F. STP is disabled by default

## ANSWER

- + Which of the following statements are true regarding the factory-default state of Cisco switches?
- + (Select three answers)
- + [1.13]

☐

A. Interfaces are disabled by default

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B. Interfaces are enabled by default

☐

C. By default, no interfaces are assigned to a VLAN

☒

D. By default, all interfaces are assigned to VLAN-1

☒

E. STP is enabled by default

☐

F. STP is disabled by default





# Question-11

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## Question-11

+ Once a MAC address is dynamically learned by a switch, what method is used by the switch (or host) to keep that entry populated within the MAC table as time elapses?

+ [1.13.d]

☐

A. The switch transmits period “Hello” messages to the host

☐

B. The host transmits periodic “Keepalive” messages to the switch

☐

C. The MAC entry is maintained by receiving Ethernet frames from the host

☐

D. The MAC entry is automatically purged after 60-seconds

☐

E. The MAC entry is never purged, and no maintenance is required

## ANSWER

+ Once a MAC address is dynamically learned by a switch, what method is used by the switch (or host) to keep that entry populated within the MAC table as time elapses?

+ [1.13.d]

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A. The switch transmits period “Hello” messages to the host

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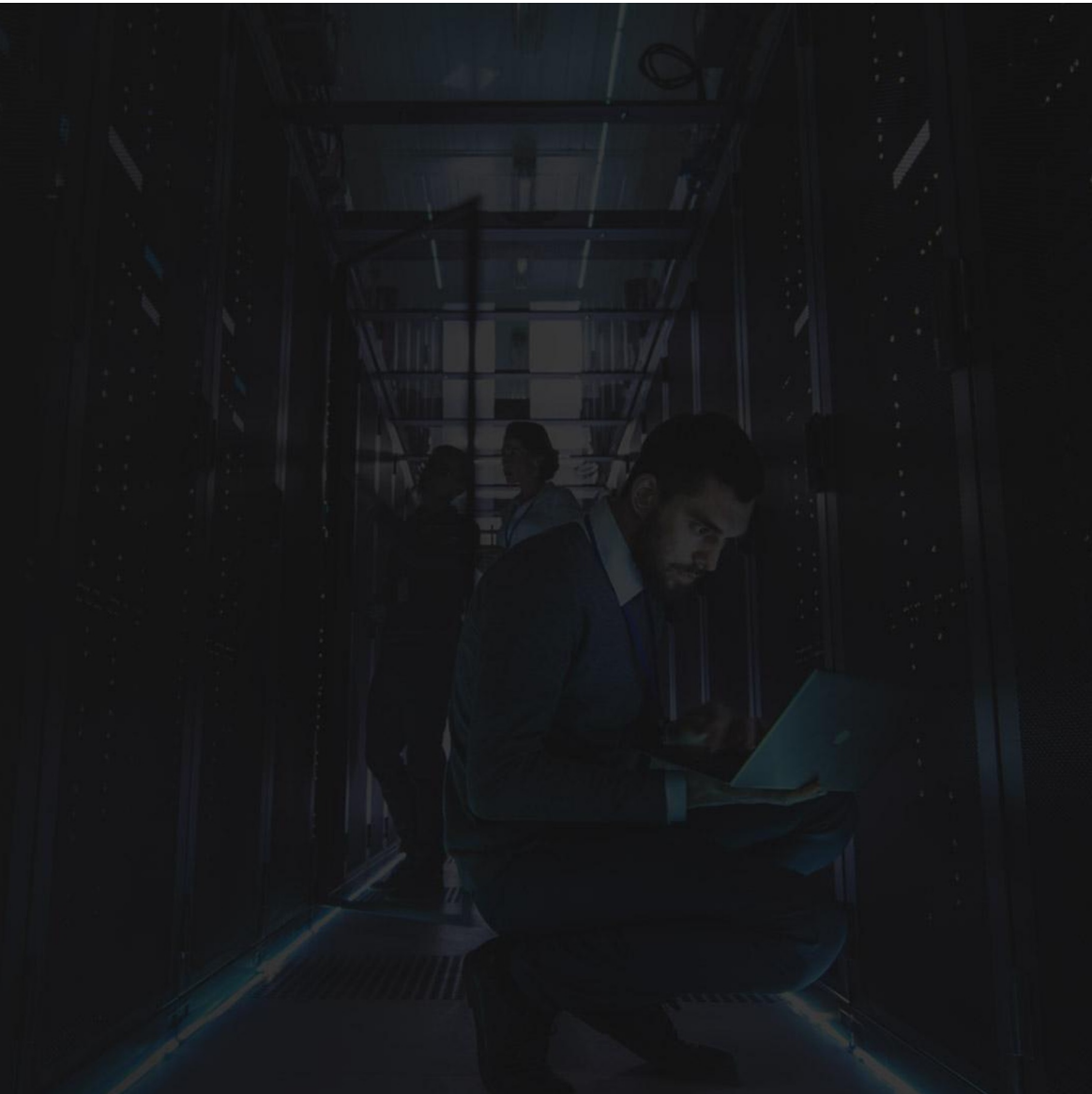
☐

E. The MAC entry is never purged, and no maintenance is required



# Question-12

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## Question-12

- + Host-A sends an ethernet frame to a switch and subsequently Host-A's MAC address is learned and placed into the MAC table. If Host-A never sends another Ethernet frame, how long will it take until that MAC address is purged from the table by the switch?

+ [1.13.a]

☐

A. 30-seconds

☐

B. 60-seconds

☐

C. 120-seconds

☐

D. 300-seconds

☐

E. It will not be purged

## ANSWER

- + Host-A sends an ethernet frame to a switch and subsequently Host-A's MAC address is learned and placed into the MAC table. If Host-A never sends another Ethernet frame, how long will it take until that MAC address is purged from the table by the switch?
- + [1.13.a]

☐

A. 30-seconds

☐

B. 60-seconds

☐

C. 120-seconds

☒

D. 300-seconds

☐

E. It will not be purged



# Question-13

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## Question-13

+ A frame is received by a switch and the switch determines that the source MAC address is new and needs to be learned. However, the MAC address-table is already completely full. What will happen?

+ (Select two answers)

+ [1.13.a]

☐ A. The new MAC address will be learned.

☐ B. The oldest MAC in the table will be purged.

☐ C. The new MAC address will not be learned.

☐ D. All dynamic MAC entries will be purged

☐ E. The most recently learned MAC entry will be purged



## ANSWER

+ A frame is received by a switch and the switch determines that the source MAC address is new and needs to be learned. However, the MAC address-table is already completely full. What will happen?

+ (Select two answers)

+ [1.13.a]

☒ A. The new MAC address will be learned.

☒ B. The oldest MAC in the table will be purged.

☐ C. The new MAC address will not be learned.

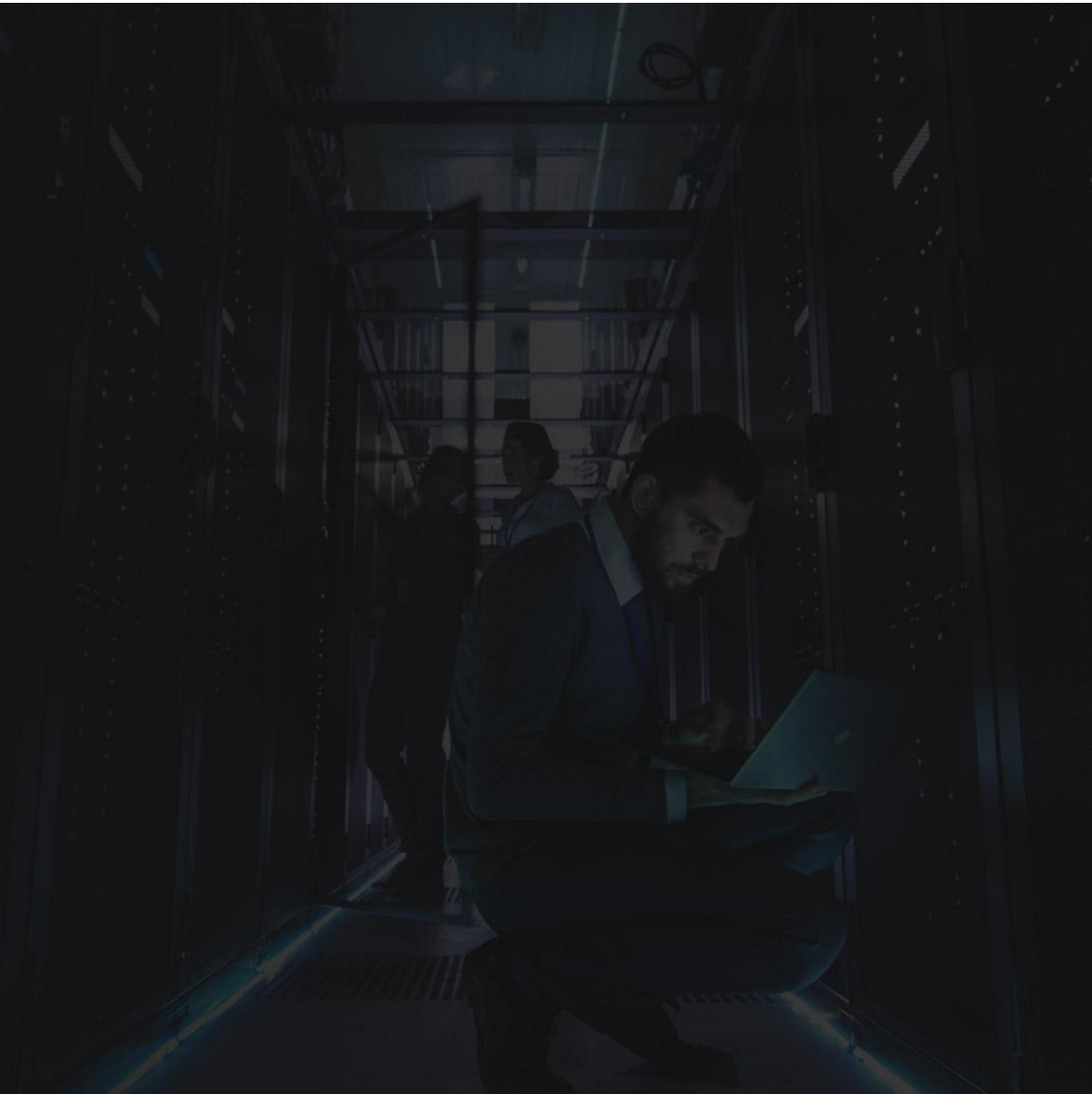
☐ D. All dynamic MAC entries will be purged

☐ E. The most recently learned MAC entry will be purged



# Question-14

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## Question-14

- + Which of the following interfaces would be most appropriate to configure an IPv4 address for a switch that requires such an address for management purposes?
- + [1.13]

☐ A. Interface GigabitEthernet0/1

☐ B. Line VTY 0

☐ C. Line Con 0

☐ D. Interface VLAN 1

☐ E. Interface Loopback 0

## ANSWER

- + Which of the following interfaces would be most appropriate to configure an IPv4 address for a switch that requires such an address for management purposes?
- + [1.13]

☐

A. Interface GigabitEthernet0/1

☐

B. Line VTY 0

☐

C. Line Con 0

☒

D. Interface VLAN 1

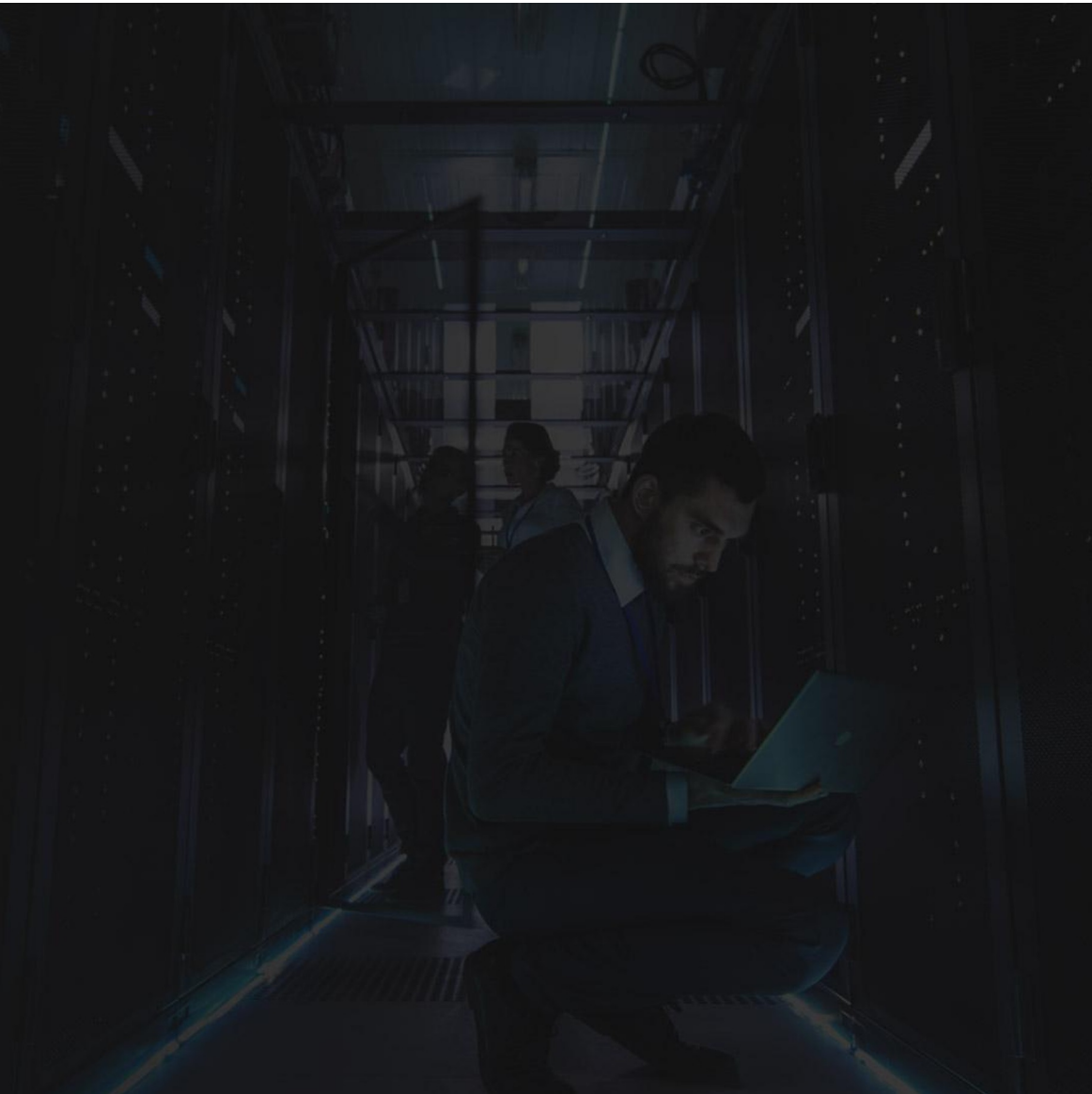
☐

E. Interface Loopback 0



# Question-15

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## Question-15

- + Given the following output, which answer could explain why interface VLAN 2 on this switch is in the “Down / Down” state? [1.13]

```
Switch#show interface vlan 2
Vlan2 is down, line protocol is down
Hardware is Ethernet SVI, address is 0c06.c6fa.8002 (bia 0c06.c6fa.8002)
MTU 1500 bytes, BW 10000000 Kbit/sec, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive not supported
```

- ☐ A. The interface contains the “shutdown” command
- ☐ B. The interface has not been connected to any networking cable
- ☐ C. The interface is lacking an IPv4 address and mask
- ☐ D. VLAN-2 does not exist on the switch
- ☐ E. Keepalives have not been enabled

## ANSWER

- + Given the following output, which answer could explain why interface VLAN 2 on this switch is in the “Down / Down” state? [1.13]

```
Switch#show interface vlan 2
Vlan2 is down, line protocol is down
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- ☐ A. The interface contains the “shutdown” command
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- ☐ C. The interface is lacking an IPv4 address and mask
- ☒ D. VLAN-2 does not exist on the switch
- ☐ E. Keepalives have not been enabled



**Thanks for Watching!**