# Cisco 642-611

## CISCO 642-611 Implementing Cisco MPLS

# Practice Test

**Version 2.7**

**QUESTION NO: 1**

Which statement is true about the hardware requirements of MPLS?

A. Because you do not need to run a routing protocol on P-routers, they require less memory than routers

supporting classic IP routing.

B. Because of the additional processing and memory requirements needed to build the LFIB, MPLS is only available on high end routers.

C. MPLS is available on low end routers, built their use is limited because of the additional processing and memory requirements needed to build the LFIB.

D. Because P-routers do not need to carry routes outside the MPLD domain, they require less memory than routers that support the same application using classic IP routing.

**Answer: C**

**QUESTION NO: 2**

If aggregation (summarization) were to be used on a network with ATM LSRs. What would result?

A. LSPs would be broken in two.
B. There would be extra LFIB entries.
C. The size of the LFIB table would increase.
D. There would be extra LIB entries

**Answer: A**

**QUESTION NO: 3**

What is true of MPLS TE?

A. Only the ingress LSR must see the entire topology of the network.
B. Every LSR needs additional information about links in the network, available resources, and constraints.
C. Every core router must be able to create an LSP tunnel on demand.
D. Both RSVP and CR-LDP are used in conjunction to establish traffic engineering (TE) tunnels and to

propagate the labels.

**Answer: B**

**QUESTION NO: 4**

What is a major drawback of using traditional IP routing over an ATM network when connecting multiple sites?

A. Each ATM switch in the path has to perform Layer 3 routing lookup.
B. ATM virtual circuits have to be established between the different sites.
C. There is high ATM management overhead between the ATM switch and the router at each site.
D. Each ATM switch has to be manually configured to participate in Layer 3 routing.
E. There is high PNNI overhead.-

**Answer: B**

**Explanation:**
Drawbacks of Traditional IP Forwarding IP over ATM
1) Layer 2 devices have no knowledge of Layer 3 routing information - virtual circuits must be manually
established.
2) Layer 2 topology may be different from Layer 3 topology, resulting in suboprtimal paths and link use.
3) Even if the two topologies overlap, the hub-and-spoke topology is usually used because of easier
management.

**QUESTION NO: 5**

What is true of MPLS TE?

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D. Both RSVP and CR-LDP are used in conjunction to establish traffic engineering (TE) tunnels and to
propagate the labels.

**Answer: B**

**QUESTION NO: 6**

In order for MPLS to be implemented on ATM switches, what requirements must the ATM switch meet? Select two.

_____

A. become Layer 3 aware by running a routing protocol

B. use MPLS LDP or TDP to distribute and receive MPLS label information

C. use BGP to exchange MPLS VPN labels in the data plane

D. use RSVP to exchange MPLS traffic-engineering labels in the data plane

E. establish a full mesh of Layer 2 ATM virtual circuits between all the ATM switches in the MPLS domain

F. use cell-mode MPLS and insert MPLS label in the ATM AAL5 header

**Answer: A,B**

## QUESTION NO: 7

When running basic MPLS in conjunction with VPNs, how many labels does each packet contain?

A. Each packet contains one label that identifies the VPN.

B. Each packet contains at least two labels. One label identifies the path to the egress router and one that

identifies the VPN.

C. Each packet contains at least three labels. One label identifies the ingress router, one identifies the egress router and one identifies the path that will be taken.

D. Each packet contains at least three labels. One label identifies the ingress router, one label identifies the path to the egress router, and one identifies the VPN.

**Answer: B**

## QUESTION NO: 8

On ingress, a label is imposed to a packet. Which process is responsible for this function?

A. LDP process.

B. Control plane process

C. Penultimate hop process.

D. Forwarding plane process.

**Answer: B**

## QUESTION NO: 9

How could you check for potential MTU size issues on the path taken by a PE-to-PE LSP?

A. Because MPLS packets are label switched, MTU problems can only be detected by the user applications.

B. Use the ping vrf command with packet size set to the largest MTU along the path and DF bit set from the local PE-router to ping the remote PE-router.

C. Use the ping vrf command with packet size set to the smallest MTU along the path and DF bit set from the local PE-router to ping the remote PE-router.

D. Because MPLS packets are label switched, packets are automatically fragmented and reassembled by the PE-routers. Therefore, there are no potential MTU issues.

**Answer: B**

**QUESTION NO: 10**

Which one of the following is true regarding MPLS independent control label allocations?

A. The LSR can always assign a label for a destination prefix, even if it has no downstream label.
B. The LSR can assign a label for a destination prefix only if it has already receives a label from the next-hop LSR, otherwise, it must request a label from the next-hop LSR.
C. The LSR will assign a label to a destination prefix only when asked for a label by an upstream LSR.
D. The label for a destination prefix is allocated and advertised to all LDP peers, regardless of whether the LDP peers are upstream or downstream LSRs for the destination prefix.
E. The LSR stores the receives label in its LIB, even when the label is not received from the next-hop LSR.
F. The LSR stores only the labels received from the next-hop LSR, all other labels are ignored.

**Answer: A**

**QUESTION NO: 11**

Which two statements are true about the label stack used for MPLS VPNs? (Choose two)

A. The first label in the label stack is the VPN label assigned by the egress PE router.
B. The first label in the label stack is the LDP label used to reach the egress PE router.
C. The first label in the label stack is the VPN label used to reach the egress PE router.
D. The second label in the label stack is the VPN label assigned by the egress PE router.
E. The second label in the label stack is the LDP label used to each the egress PE router.
F. The second label in the label stack is the VPN label assigned by the ingress PE router and tells the ingress
PE router how to forward the incoming VPN packet.

**Answer: B,D**

**QUESTION NO: 12**

What is true about how MPLS implementations support different applications?

A. The applications only differ in the control plane.
B. The forwarding plane is customized for each application.
C. MPLS VPNs require RSVP.
D. In general a FEC is assigned to a label.

**Answer: A**

**QUESTION NO: 13**

MPLS supports which three applications? (Choose three)

A. VPN
B. CDN
C. QoS
D. Broadcast
E. Traffic engineering

**Answer: A,C,E**

**Explanation:**
MPLS is used in many different applications:
1) Unicast IP routing
2) Multicast IP routing
3) MPLS TE
4) QoS
5) MPLS VPNs
6) AToM

**QUESTION NO: 14**

What are two methods to achieve differentiated QoS in MPLS? (Choose two)

A. By creating a separate Label Switch Path for each class.
B. By using the experimental bits to identify the different classes.
C. By using the DiffServ Codepoints to identify the different classes.
D. By using the TOS bits in the Layer 3 header to identify the different classes.

**Answer: B,C**

**Explanation:**

Two general approaches are used to mark MPLS traffic for QoS handling within an MPLS network in the first method, the DiffServ "coloring" information is carried in the experimental (EXP) field of the MPLS shim header. This field allows for eight different QoS markings. Label Switched Paths (LSPs) using this approach are called E-LSPs, signifying that QoS information is inferred from the EXP field. Alternatively, IETF specifications allow for a second method of carrying the DiffServ information. Here, the label associated with each MPLS packet carries the portion of the DiffServ marking that specifies how a packet should be queued. The dropping precedence portion of the DiffServ marking is carried either in the EXP field, if an MPLS shim header is being used, or on fields available for this purpose on underlying technologies (for example, CLP bit for ATM and DE bit for Frame Relay). Switching paths within the MPLS network using this approach are called L-LSPs, signifying that QoS information is inferred, in part, from the MPLS label.

LSPs supporting DiffServ may be established with bandwidth reservation. That is, bandwidth requirements for a label switched path could be signaled at LSP establishment time. Bandwidth reservation could be used to perform admission control on the DiffServ resources that have been provisioned. Though admission control can be performed on an LSP basis, the QoS design within the MPLS network is DiffServ-based, taking advantage of the scalability benefits implicit in that QoSarchitecture.

Reference:

http://www.cisco.com/en/US/tech/ CK4 36/ CK4

28/technologies_white_paper09186a00800a4455.shtml

**QUESTION NO: 15**

How does a core LSR operating in the default frame mode advertise labels?

A. The core LSR advertises a label for every destination in its FIB.
B. The core LSR only advertises labels for destinations inside the MPLS domain.
C. The core LSR only advertises labels for destinations outside the MPLS domain.
D. The core LSR does not advertise labels. Label advertisements is only done by the PE-router.

**Answer: A**

**Explanation:**

Core LSRs receive this labeled packet and use label forwarding tables to exchange the inbound label in the incoming packet with the outbound label corresponding to the same FEC.
Reference: MPLS and VPN Architectures (Ciscopress) page 25

**QUESTION NO: 16**

In frame-relay MPLS, where is the label imposed?

A. Between Layer 1 and Layer 2 headers.

B. Between Layer 2 and Layer 3 headers.

C. In the VPI/VCU fields.

D. In the VPI field alone.

**Answer: B**

**Explanation:**

MPLS labels are assigned to packets based on groupings or forwarding equivalency classes (FECs) at the ingress eLSR. A FEC is a group of packets from a source IP address that are all going to the same destination.

The MPLS label is imposed between Layer 2 and Layer 3 headers in a frame-based packet environment, or in the Layer 2 virtual path identifier/virtual channel identifier (VPI/VCI) field in cell-based networks like ATM.

**QUESTION NO: 17**

Network topology exhibit
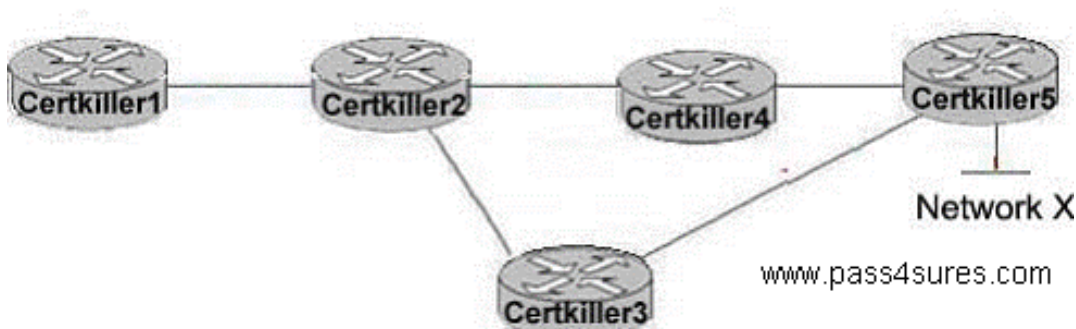


Liberal label retention and unsolicited downstream distribution is being used in the frame-mode MPLS network shown in the exhibit. The best to network X as defined by the IGP for network is Certkiller 1- Certkiller 2- Certkiller 4- Certkiller 5. What will Router Certkiller 3 and router Certkiller 4 add to their LIB regarding network X?

A. Both routers will add it to their LIB.

B. Both routers will ignore it.

C. Router Certkiller 3 will add the label to its LIB. Router Certkiller 4 will ignore it.

D. Router Certkiller 4 will add the label to its LIB. Router Certkiller 3 will ignore it.

**Answer: A**

**QUESTION NO: 18**

What is true about the label in frame-mode MPLS?

A. 32 bit label with an 8 bit label field.

B. 32 bit label with a 20 bit label field.

C. 20 bit label with a 3 bit Bottom of Stack field.

D. 20 bit label with a 1 bit TTL field.

**Answer: B**

## QUESTION NO: 19

Which two statements about TDP and LDP are true? (Choose two)

A. TDP and LDP populate the same LFIB.

B. TDP operates over UPD while LDP operates over TCP.

C. TDP and LDP both operate over TCP, but use different port numbers.

D. While TDP and LDP are functionally equivalent, they use a different label format.

**Answer: A,C**

**Explanation:**
According to the "Implementing Cisco MPLS" Student Guide (Text Part Number: 97-1153-01)
Volume 1,
version 1.0, page 2-51.
TDP vs. LDP:
- MPLS and Tag switching are equal on the data plane ( for me it means that they populate the
same FIB and
LFIB)
- The only difference is on the control plane, where tag switching uses Cisco proprietary TDP and
MPLS uses
standard LDP
- TDP and LDP are functionally equivalent but not compatible
- TDP use UDP and TCP port number 711
- LDP uses UDP and TCP port number 646
Not D: LDP and TDP use the same label format.

## QUESTION NO: 20

Which command should you use to display the contents of LFIB?

A. show tag routes

B. show tag tdp lfib

C. show tag bindings

D. show tag forwarding-table

**Answer: D**

## QUESTION NO: 21

To whom does a PE-router advertise labels, when operating in the default frame mode?

A. The PE-router advertises a label to all of its neighbors.
B. The PE-router only advertises labels to its neighbors in the MPLS domain.
C. The PE-router only advertises labels to its neighbors outside the MPLS domain.
D. The PE-router does not advertise labels.
Label advertisement is only done by the core LSR.

**Answer: B**

**Explanation:**

The Ingress Edge-LSR receives an IP packet, classifies the packet into a forward equivalence class (FEC), and labels the packet with the outgoing label stack corresponding to the FEC. For unicast destination-based IP routing, the FEC corresponds to a destination subnet and the packet classification is a traditional layer 3 lookup in the forwarding table.
Reference: MPLS and VPN Architectures (Ciscopress) page 25

## QUESTION NO: 22

Network topology Exhibit
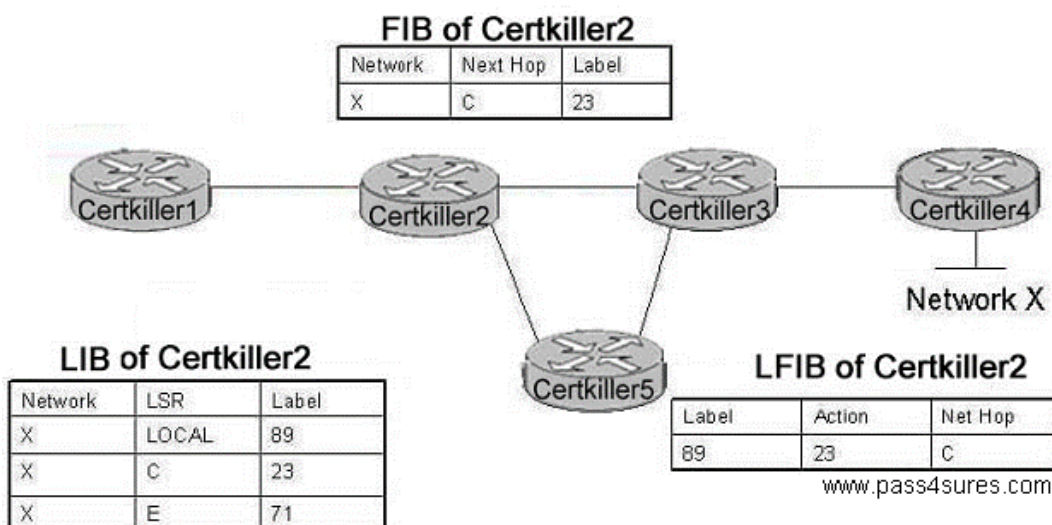


The relevant entries in the FIB, LIB, and LFIB tables for a frame-mode MPLS network is shown. If the link

between Routers B and C was lost, what would be the relevant entries in the LFIB table for label, action, and next hop?