

Quality of Service  
MPLS-TE and RSVP

Date: Spring  
Duration: 15 min.

- There is only one correct answer for each multiple choice question.
- Each correct answer adds 1 point.
- Each incorrect answer has a penalty of  $\frac{1}{3}$  points.
- No score is awarded for unanswered questions, neither positive nor negative.
- Mark out your answers with an “X”. Make sure that the “X” reaches the corners of the rectangle. ☒
- No score is awarded if you mark more than one answer.
- Pad your NIA with 0s on the left to complete the NIA field.

Write your personal data clearly.

Last name:	
First name:	
Group:	

Permutation: A

NIA: 

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	A	B	C	D		A	B	C	D
1					7				
2					8				
3					9				
4					10				
5					11				
6									

1.- In MPLS Fast Re-Route ...

- (a) the end-to-end LSP is computed before a local detour is activated.
- (b) provides restoration times below 50 ns.
- (c) the routing protocol is temporarily disabled until the failure has been repaired.
- (d) a local restoration path is activated until a new LSP is established.

2.- What is the purpose of the RSVP protocol in a MPLS-TE environment?

- (a) Resource reservation.
- (b) Routing.
- (c) Traffic conditioning.
- (d) Policing and shaping.

3.- What packet performs the actual resource reservation in RSVP?

- (a) The SNMP packet.
- (b) The PATH packet.
- (c) The ECHO packet.
- (d) The RSVP packet.

4.- In MPLS-DiffServ-TE ...

- (a) the delay of RSVP packets is minimized.
- (b) the high priority flows are not policed.
- (c) the MPLS packets use a different label than the IP packets.
- (d) bandwidth reservation is done on a per-class basis.

5.- Is it possible for a MPLS packet to carry more than one label?

- (a) Yes. There is flag indicating the bottom of the stack.
- (b) Yes. If two or more labels are added to a packet, they cannot be removed.
- (c) No, a MPLS packet carries a single label that never changes.
- (d) No, a MPLS packet carries one single label that is changed in each hop.

6.- What is not a reason for using MPLS?

- (a) To have a tighter control on the path followed by each traffic stream.
- (b) To use Fast Re-Route for a recovery time below 50ms.
- (c) To differentiate between different classes of traffic.
- (d) To use traffic engineering to distribute the traffic accross the network.

7.- The path of a LSP ...

- (a) changes for each packet.
- (b) can be computed by CSPF, that takes into account the constraints that apply to the LSP (e.g. bandwidth requirements).
- (c) must be computed by the network administrator.
- (d) can be inferred by the LSD protocol.

8.- When are VPNs used?

- (a) When wireless communication is needed.
- (b) To connect different networks of the same institution.
- (c) When the number of real networks is not enough.
- (d) To classify packets according to their priority.

9.- Which information is used by a core MPLS router to forward a packet?

- (a) The MAC of the packet and a marking table.
- (b) The IP of the packet and a routing table.
- (c) The label of the packet and a lookup table.
- (d) The port of the packet and a porting table.

10.- The resource reservation in RSVP is ...

- (a) a hard-edge reservation. It lasts until it is explicitly teared down by a TEAR message.
- (b) a full duplex reservation.
- (c) a soft state reservation. It needs to be periodically refreshed.
- (d) a bouncing egg reservation. It lasts for 10 minutes.

11.- Why is MPLS “multi-protocol”?

- (a) Because it can carry packets of other protocols such as ethernet or IP.
- (b) Because it can carry packets of other protocols such as FTP and HTTP.
- (c) Because it can carry packets of other protocols such as TFTP and bittorrent.
- (d) Because it can carry packets of other protocols such as SNMP and SMTP.