Quality of Service

Lecture 3

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.

Write your personal data clearly.

Last name:	
First name:	
Group:	

Permutation: A

NIA:

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1.- Which tool somoothes bursty traffic without dropping packets?

(a) A classifier.
(b) A meter.
(c) A shaper.
(d) A marker.

2.- Which of the following classification methods has the lower computational cost?

(a) Deep packet inspection.
(b) QoS markings.
(c) IP and port source and destination pairs.
(d) Stateful inspection.

3.- Where can we find a TX-ring

(a) Between the marker and the meter.
(b) Between the classifier and the queues.
(c) Between the scheduler and the transmission line.
(d) Between the policer and the shaper.

4.- Why is QoS more important in case of equipment failure or scheduled downtime?

(a) Because QoS simplifies the configuration and reduces the length of the downtime.
(b) Because there might be not enough resources to satisfy all traffic, and it is important to prioritize.
(c) Because the scheduled downtime is usually at night or during the weekend.
(d) Because QoS increases the available bandwidth, making sure that there is plenty of resources even during failure conditions.

5.- Where is computationally expensive classification and marking done?

(a) At the edge of the network where traffic is less aggregated.
(b) At the outgoing interface of core routers.
(c) In the network core, where the routers are more powerful.
(d) At the incoming interface of core routers.

6.- What is the name defined by the IETF to refer to the treatment that a router offers to a class of traffic?

(a) Synchronous Optical Networking (SONET).
(b) Per Hop Behaviour (PHB).
(c) Hierarchical replication code (HRC).
(d) Binary Exponential Backoff (BEB).

7.- When is it appropriate to police the traffic?

(a) When it is desired to prevent packet loss.
(b) When the traffic is in contract and we want to increase the delay.
(c) When we want to absorb a burst and temparily store the additional traffic.
(d) When it is exceeding the agreed profile and we want to avoid delay and jitter.

8.- Which of the following is not a typical element in a queue system?

(a) An IP address.
(b) A buffer.
(c) A scheduler.
(d) A dropper.

9.- What is the preferred OSI layer to implement end-to-end QoS?

(a) Layer 1.
(b) Layer 3.
(c) Layer 4.
(d) Layer 7.

10.- Where is a chain of QoS tools applied?

(a) In the routing tables.
(b) In the router switching fabric. A tool (e.g. a policer) that is configured in a router, will apply to all interfaces and directions.
(c) In the router interfaces, taking into account the direction of traffic (incoming/outgoing).
(d) In the router ports.

11.- Which techniques would you use to identify and classify P2P traffic?

(a) Incoming interface and source IP address.
(b) Deep packet inspection and stateful inspection.
(c) Source port classification and layer 4 protocol.
(d) Metering.

12.- Why is it not possible to offer per IP flow granularity in data networks?

(a) Because a router only pays attention to layer 4 information.
(b) A core router may handle millions of IP flows and it is not scalable to keep state about them and treat them differently.
(c) Because it is not possible for a router to identify an IP flow.
(d) Because it would increase the queueing time.

13.- What is not a downside of bandwidth overprovisioning?

(a) The need to pay for the extra bandwidth.

(b) Lack of protection from the extra bandwidth consumption by virus/worms and other security attacks.

(c) Network usage may increase in pair with extra network provisioning.

(d) Higher complexity.