15 minutes

[M1] Quiz 1

Quiz covering network layer introductory principles and how the router works.

* Required

* This form will record your name, please fill your name.

1. [Internet's L3 Service Model] What is the primary characteristic of the Best-Effort service model in networking? * (4 Points)

- ◯ It guarantees a specific amount of bandwidth to each user or traffic flow.
- ◯ It provides the best possible service that the network can deliver without any specific priority given to any particular traffic flow.
- ◯ It uses complex traffic management mechanisms, such as traffic shaping or priority queuing, to ensure QoS guarantees.
- ◯ It is designed for applications that require strict QoS guarantees, such as voice and video streaming.

2. [Destination-based Forwarding] A router has a routing table with the following entries:

   IP range: 11000000.10101000.00000010.xxxxxxxx --> Interface 1
   IP range: 11000000.10101000.00000011.xxxxxxxx --> Interface 2
   IP range: 11000000.10101000.0000001x.xxxxxxxx --> Interface 3

   If a packet with a destination IP address of 192.168.3.100 arrives at the router, which outgoing link interface will be selected for forwarding the packet? The router is configured to perform longest prefix matching. HINT: Try to convert the packet's destination IP address to binary, it will be easier to match it. * (4 Points)

   - ◯ Interface 1
   - ◯ Interface 2
   - ◯ Interface 3
   - ◯ Interfaces 2 **and** 3

3. [Router Operation] What is head-of-the-line (HOL) blocking in networking? * (4 Points)

   - ◯ A condition that occurs when packets are delayed due to congestion in the network.
   - ◯ A condition that occurs when a packet is dropped because it exceeds the maximum size allowed by the network.
   - ◯ A condition that occurs when packets are blocked by a faulty network device, such as a switch or router.
   - ◯ A condition that occurs when packets are blocked by a queue in a switch or router, preventing other packets from being forwarded.

4. [Buffer Management] Which of the following scheduling policies for router's buffer management is designed to split traffic based on its classification or application type? * (4 Points)

- ◯ First-Come-First-Serve (FCFS)
- ◯ Round Robin (RR)
- ◯ Weighted Fair Queue (WFQ)
- ◯ Priority Queue (PQ)

5. [Router's Operation] (A) What is a switching fabric in a router and (B) what are the different types of switching fabrics used in modern routers? * (4 Points)

- ◯ (A) A switching fabric is a component that connects routers to the internet, and (B) the types of switching fabrics used in modern routers include fiber optic, copper, and wireless.
- ◯ (A) A switching fabric is a component that connects routers to the internet, and (B) the types of switching fabrics used in modern routers include shared memory, bus, and interconnected networks.
- ◯ (A) A switching fabric is a component that manages the input and output of packets in a router, and (B) the types of switching fabrics used in modern routers include fiber optic, copper, and wireless.
- ◯ (A) A switching fabric is a component that manages the input and output of packets in a router, and (B) the types of switching fabrics used in modern routers include shared memory, bus, and interconnected networks.