

Computer Networks
2nd Year, 1st Semester
2020

Tutorial 6 – Sample Answers

1. Show how you can go to the global configuration mode of the switch from the user EXEC mode.

```
Switch>enable  
Switch#configure terminal  
Switch(config)#
```

2. Why a switch needs an IP address?

For management Purposes
For unique Identification
Remote accessing via Telnet /SSH

3. What is the command to examine the addresses that a switch has learned?

```
Switch#show mac-address-table
```

4. What can the 'port security' feature do?

Enable / activate security functions to the switch per port basis

5. Out of these devices what is more likely to act as a multi-port bridge?
 - a) Router
 - b) Switch**
 - c) Hub
 - d) Repeater
 - e) Transceiver
6. Explain the Frame Transmission Modes.

Switching Method	Description
Store-and-forward	The switch fully receives all bits in the frame (store) before forwarding the frame (forward). This allows the switch to check the FCS before forwarding the frame.
Cut-through	The switch forwards the frame as soon as it can. This reduces latency but does not allow the switch to discard frames that fail the FCS check.
Fragment-free	The switch forwards the frame after receiving the first 64 bytes of the frame, thereby avoiding forwarding frames that were errored due to a collision.

What is the fastest mode?

Cut – through Method

What is the most accurate?

Store and forward Method

7. Briefly describe the functions of switches.

Address Learning

Making forwarding and filtering decisions for incoming and outgoing frames

Loop avoidance

8. State 5 factors to be considered when purchasing switches.

a) Cost

**Speed and #of Interfaces , Supported Features
Expansion Capability**

b) Port Density

#of devices on the Network

c) Power

Power access points , PoE , Redundant Power Supply

d) Reliability

24/7 Continues access

e) Port Speed

Ethernet , FastEthernet , GigabitEthernet

f) Scalability

Network growth

- **High port density - Switches have high-port densities: 24- and 48-port switches are often just a single rack unit and operate at speeds of 100 Mb/s, 1 Gb/s, and 10 Gb/s. Large enterprise switches may support many hundreds of ports.**
- **Large frame buffers - The ability to store more received frames before having to start dropping them is useful, particularly when there may be congested ports to servers or other parts of the network.**
- **Port speed - Depending on the cost of a switch, it may be possible to support a mixture of speeds. Ports of 100 Mb/s, and 1 or 10 Gb/s are common (100 Gb/s is also possible).**
- **Fast internal switching - Having fast internal forwarding capabilities allows high performance. The method that is used may be a fast internal bus or shared memory, which affects the overall performance of the switch.**
- **Low per-port cost - Switches provide high-port density at a lower cost**

9. Describe about Stackable Configuration Switches.

Stackable configuration switches can be interconnected using a special cable that provides high-bandwidth throughput between the switches, Cisco StackWise technology allows the interconnection of up to nine switches. Switches can be stacked one on top of the other with cables connecting the switches in a daisy chain fashion. The stacked switches effectively operate as a single larger switch. Stackable switches are desirable where fault tolerance and bandwidth availability are critical and a modular switch is too costly to implement. By cross-connecting these stacked switches, the network can recover quickly if a single switch fails. Stackable switches use a special port for interconnections. Many Cisco stackable switches also support StackPower technology, which enables power sharing among stack members.

10. State the best practices of applying security for switches.

- **Shutdown unused ports.**
- **Apply passwords**
- **Limit the number of devices to be connected**
- **Configure permanent devices MAC addresses to the switch as static MAC addresses.**
- **Configure a security violation action**