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| Networking Infrastructure Diploma in CSF / IT  Year 2 (2022/23) Semester 3 | Week 11 |
| Tutorial |
| Virtual Local Area Networks (VLAN) | |

**OBJECTIVES**

After completing this session, you should have a better understanding of VLAN, its membership criteria as well as advantages and disadvantages.

**Part A**

1) What is the term used when a device is connected to a switch port, the VLAN membership is automatically assigned to the device?

A. Dynamic

B. Static

C. Port-centric

D. Default

A

2) Frame tagging places a unique identifier in the header of each frame as it is forwarded across the network \_\_\_\_\_\_\_\_\_\_.

A. microsegment

B. LAN

C. Trunk (backbone)

D. WAN

C

3) Frame tagging functions at what OSI layer?

A. 2 B. 3 C. 1 D. 4

A

4) The smaller the VLAN, the smaller the number of users that are affected by which of the following?

A. Packet filtering

B. Switch latency

C. Framing

D. Broadcasts

D

5) A VLAN makes up a switched network that is logically segmented by all of the following EXCEPT :

A. Collision domains

B. Functions

C. Applications

D. Project teams

C

6) Dynamic VLANs can be based on which of the following?

A. MAC addresses

B. Protocol type

C. Logical addressing

D. All of the above

D

7) How can access be controlled on a secured VLAN?

A. Station address

B. Protocol types

C. Application types

D. All of the above

D

8) When logically segmenting your network with VLANs, what type of device do you need to ensure proper communication between the VLANs that are created?

A. Switch

B. Bridge

C. Hub

D. Router

**A**

**Part B**

1. InfoTech is an IT school located in a building in Anson Road. The offices of the teaching staff of the school are located on three different floors of the building.

The school groups teaching staff in different subnets based on the subjects they teach. However, the subject taught by a staff could be changed every semester.

Give a few reasons for recommending the school to make use of VLAN.

Users can be logically grouped by their subjects. The logical grouping will be handled by the software and the membership for each VLAN can be configured by the network admin. This means that the network admin will not have to constantly separate/reconfigure the staff should the subjects they teach change. It also provides more security as VLANs cannot see each other on the network, and lastly they will be less broadcast traffic meaning the system would run faster.

What could be a disadvantage of implementing VLAN?

2. List some criteria in which membership in a VLAN could be based on.

Some criteria include port number, MAC address, network protocol, application used and work function.

1. When VLANs are spread across multiple physical switches, how can the VLAN membership of a device be passed on from one switch to another via the trunk?

Done through frame tagging. Every frame will have a VLAD ID before it is forwarded across the trunk. This helps to identify which VLAN the packet belongs to allowing the switch to know where to send the packet to. The frame is removed by the switch after and then forwarded to its destination.

1. Explain how devices in one VLAN could communicate with another device in a different VLAN.

They would have to go through a routing device, either a router or a layer 3 switch. A packet from one of the VLAN will be sent to the routing device, the routing device will then read the destination Ip address and from there route to the destination Ip address.