**GHANA COMMUNICATION TECHNOLOGY UNIVERSITY (GCTU)**



**ASSIGNMENT –2024**

**FACULTY OF COMPUTING AND INFORMATION SYSTEMS**

**DEPARTMENT OF COMPUTER SCIENCE**

**DATA COMMUNICATION**

**LEVEL: 200**

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# GROUP 30

**Components and Roles**

**PC-PT (PC0 to PC4):**

**Role:** These are end devices (computers) that users interact with. They are connected to the switch, allowing them to communicate with other devices on the same LAN, such as other PCs, printers, and network resources.

**Function:** PCs send and receive data, access the internet, share files, and print documents via the network printer.

**2960-24TT Switch:**

**Role:** This is a network switch, which acts as the central device connecting all the wired devices (PCs, printers, and access points) in the LAN.

**Function:** The switch ensures that data packets are sent only to the intended recipient device, thus efficiently managing data traffic within the network. It operates at Layer 2 (Data Link Layer) of the OSI model.

**Access Point (AP-PT0):**

**Role:** The wireless access point extends network access to wireless devices like laptops, smartphones, or even wireless printers. It provides a bridge between the wired LAN and wireless devices.

**Function:** The AP is connected to the switch, providing wireless connectivity (via Wi-Fi) to clients in the network. It broadcasts an SSID that wireless devices can connect to, ensuring they are part of the same LAN as the wired devices.

**Printer-PT (Printer2):**

**Role:** This is a network printer that can be accessed by any device within the LAN, allowing users to print documents.

Function: The printer can be connected to the switch either via Ethernet (wired) or wirelessly (if it's a wireless printer). Devices on the LAN can send print jobs to the printer through its IP address.

**Configuration Explanation:**

1. **PC Configuration:**

Each PC (PC0 to PC4) must be configured with a unique IP address(static IP ) so that they can communicate with each other.

1. **Switch Configuration:**

The switch primarily operates at Layer 2, which means it doesn’t require an IP address unless you want to manage it remotely .

**Port Configuration:** Each device (PCs, Access Point, Printer) connects to an individual port on the switch. No additional configuration is needed for basic operations.

1. **Access Point Configuration:**

**IP Configuration:** The AP should have an IP address on the same subnet as other devices in the network. It can be configured with a static IP or use DHCP to obtain an IP address automatically.

This will allow wireless clients (like laptops and mobile phones) to connect to the network and access the same resources as wired devices.

1. **Printer Configuration:**

**Connect to the Access Point:** The wireless printer was connected to the Access point since it is te function of the access point to connect wireless devices such as laptops, printers etc.

1. **Connectivity and Communication:**

**Once everything is configured:**

All devices (wired and wireless) will communicate via the switch or access point.

PCs can communicate with each other, access the printer, and send print jobs.

Wireless devices will connect through the access point but are part of the same LAN, allowing seamless communication between wired and wireless devices.

The printer will be accessible to all devices in the network, either via a wired or wireless connection.

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