# Lab 2. DHCP Configuration

### Objective:

* Set up a DHCP server and assign it a static IP address.
* Enable DHCP services to assign dynamic IP addresses to devices.
* Verify that devices on the network can communicate using dynamically assigned IP addresses.

### Description

This lab demonstrates how to configure a DHCP server to assign IP addresses dynamically to devices in a network. You will set up a server as the DHCP host, enable DHCP services, and verify that devices on the network can communicate with each other.

**What is DHCP and Why Do We Need It?**

**Dynamic Host Configuration Protocol (DHCP)** is a network management protocol that automates the process of assigning IP addresses and other network configuration parameters (like subnet mask, gateway, and DNS servers) to devices on a network.

**Why We Need DHCP**

1. **Automation:** DHCP eliminates the need for manual IP address configuration, saving time and reducing errors.
2. **Scalability:** It is particularly useful in networks with many devices, ensuring efficient IP address allocation.
3. **Flexibility:** DHCP allows devices to obtain IP addresses dynamically, making it easier to connect new devices or relocate existing ones without reconfiguration.

### Steps to Perform

1. **Set Up the Network Devices:**
   * Take one switch, one server (for DHCP configuration), three PCs, and one laptop.
2. **Assign an IP Address to the DHCP Server:**
   * Access the server’s settings and assign it a static IP address: 192.168.1.1

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1. **Enable DHCP Services:**
   * On the server, navigate to **Services** and select the **DHCP** option.
   * Enable the DHCP service, which will automatically configure the DHCP scope.
2. **Default IP Address Range:**
   * The DHCP server will assign IP addresses dynamically from the default range: 192.168.0.1 to 192.168.255.255

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1. **Verify IP Address Assignment:**
   * Check the IP address assigned to each PC and laptop to confirm they have received a dynamic IP address from the DHCP server.
2. **Test Network Connectivity:**
   * Use the ping command from one PC to another to verify communication between devices. For example: ping 192.168.x.x

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1. **Confirm Successful Configuration:**
   * If the devices reply to the ping requests, it confirms that the DHCP service is working and that the devices are properly connected.

### Final Network Architecture A diagram of a computer network Description automatically generated