**Assignment 3.4: Basic Network Diagram**

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Create the diagram with the above components, and meet the following guidelines:

* + The router has 3 interfaces each with its own IP.
  + One interface connects to the Internet cloud
  + One interface connects to the Server
  + One interface connects to the Switch
  + All four computers connect to the Switch.
  + The printer connects to the Switch.

A diagram of a computer network

Description automatically generated

When would the switch need an IP address?

A switch would need an IP address when it is going to be accessed from a remote location.

Write a one-page paper explaining the components of your diagram, the function of each, and your IP addressing scheme.

**The internet cloud** represents the global network that connects devices and services. In this diagram, the **router's WAN interface** (Interface 1) connects the local network to the internet via a public IP address (e.g., 10.0.0.1), assigned by the Internet Service Provider (ISP). This address allows the router to communicate with external networks.

**The router** serves as the central device connecting the local network to the internet and managing traffic between subnets. It has three interfaces:

* **Interface 1 (WAN)**: Connects to the internet, using the public IP assigned by the ISP.
* **Interface 2**: Connects directly to the server with IP **192.168.1.1**.
* **Interface 3**: Connects to the switch with IP **192.168.2.1** and acts as the default gateway for devices on the internal network.

**The switch** connects the computers and the printer to the internal network, forwarding data between devices. Operating at Layer 2 of the OSI model, it forwards data using MAC addresses and does not require an IP address unless it’s a managed switch.

**Each** **computer (4)** is assigned a private IP address within the **192.168.2.x** subnet and is connected to the switch. All computers use **192.168.2.1** as their default gateway, routing traffic through the router to external networks.

**Computer 1**: IP: 192.168.2.2, **Computer 2**: IP: 192.168.2.3, **Computer 3**: IP: 192.168.2.4, **Computer 4**: IP: 192.168.2.5 All computers have a subnet mask of **255.255.255.0**.

**The printer**, with IP **192.168.2.6**, connects to the switch and shares the same subnet mask and gateway (192.168.2.1) as the computers, allowing network-wide access for printing.

**The server** connects to **Router Interface 2** in the **192.168.1.x** subnet with an IP of **192.168.1.2**. The router interface (192.168.1.1) acts as the default gateway, allowing the server to communicate with other network devices and the internet.

**IP Addressing Scheme**

The network uses two subnets:

1. **192.168.1.x**: Dedicated to the router’s connection with the server.
2. **192.168.2.x**: Used for internal devices, including computers and the printer.

Each device has a unique IP address, a subnet mask of **255.255.255.0**, and a default gateway directing traffic through the router. This configuration ensures efficient communication between all devices and organized traffic flow, with the router managing external connectivity.

References

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