**Part 1**: **Written Portion:**

Write a 1-page APA formatted essay on router and switch configurations. Include specific configuration parts you deem important based on what you have learned. Indicate any portions that are not as important and should be removed.

The router and switch configurations are similar. To start a router will not just work upon plugging it in and generally will use an additionally WAN interface. With any type of managed device, it is important in the initial configuration to setup authentication to privileged modes. I say any managed device to include network firewalls and other devices where a CLI can be accessed. Following this, assigning a hostname to the router should be done for identification purposes. Next, choosing the transport input (ssh or telnet) should be done. SSH is much more secure than telnet which is unencrypted and will send credentials in clear text over the wire. In terms of security, telnet is a bad idea. Along with access to the CLI, the console and vty interfaces should additionally be configured with authentication (keys if using ssh). Setting up authentication in the initial config of both a router and switch is extremely important.

Moving on, the next part in the configuration would be to get a sense of addressing and how the routers and clients will exchange addressing info. Once either dynamic or static routing were chosen the interfaces and routing tables would need to be configured accordingly (more if static routing). If dynamic routing were chosen, a network admin would need to set up DHCP pools in the configuration and assign the interfaces to hand out addresses from those pools. This would go along with concepts from last week, in terms of assigning interfaces to networks created with VLSM, CIDR and how the routes will be summarized.

The next part in the configuration would be to determine how many clients a router will need to support. Along with providing info into the size of networks (subnetting), this will provide info into what internal routing protocol the routers may need to use. For smaller networks RIPv2 may work well, while EIGRP and OSPF would be better in larger networks. Choosing the routing protocol will also provide insight into additional addressing info such as utilizing IPv6 addressing and if an internal routing protocol supported it. This would also lead into the possible use of tunneling protocols.

Routers additionally can come with a ton of other services. Some examples include monitoring, logging, IDS/IPS, proxy, vpn (as well as site to site), dynamic dns, firewall confs and so on. At this point in the configuration, an admin should have a good sense of what they require out of a router. Depending on this, some or none of these services may be used. Beside this, the show commands are useful in the initial config in order to troubleshoot potential problems.

Configuring a switch begins with a few of the same config steps as a router. Setting up authentication to privileged modes as well as naming the device should be done upon the initial boot up. Choosing a transport input and securing access to that protocol should be configured in the beginning. Additionally, securing access to the console and vty lines should be completed initially.

Configuring a switch changes in terms of what an admin needs the switch to do or how an admin wants a switch to operate. This would include configuring the throughput (speeds) for interfaces or assigning what duplex an interface uses. On top of this, switches can utilize vlans which would allow for an admin to have multiple LAN segments on a single switch. Additionally, from what I understand, switches can share vlans (vlan database) which would allow for having any client to be connected to any switch and still be placed in different LAN segments. As an example of where this is useful, having two branches (LAN segments) accounting and finance, on the same switch, separate and not requiring an additional switch to achieve these results.

Other parts of the switch configuration could be editing or reviewing the MAC tables or if the switch were layer 3, doing the same for the routing tables. For the most part switches are plug and play no matter what layer they exist at (2 or 3). Depending on what a network admin needs out of switches and routers, influences the configuration. The config can either be very brief or complex depending on what is required out of these devices.

**Part 2: LabSim:**

Complete the following in LabSim and submit the required screenshots, along with Part 1, to this unit's lab Dropbox. Take a screenshot after each lab practice or simulation subsection and then copy and paste all the screenshots into the same document you use for Part 1.

6.2.5 Configure switch ports- Take screenshot after simulation

9.1.8 Practice questions- Take screenshot



