ICT & Infrastructure

Week 4 – Chapter 2

Evidence

Drawing of Infrastructure

Case 1: Visualize your home network

**Problems:**

1. Gather all the necessary information about your home network, including the types of devices (for example smartphone, laptop, smart TV, et cetera) connected to it, the router, and any other networking equipment (for example Wi-Fi access points, switches, et cetera).
2. Create a network diagram using a tool such as draw.io or Packet Tracer.
3. Label each device, give the IP address for each device in the network, and indicate its connection to other devices.
4. Include a legend or key in the diagram to explain the different symbols and colors used to represent different types of devices.
5. Once the diagram is complete, take a screenshot or export it as an image file and submit it along with a brief written explanation of your home network and any challenges or issues you encountered while creating the diagram.

**Action:**

* Home network diagram

A diagram of a computer network

Description automatically generated

I used draw.io to make this network diagram. Here the internet we have access to first goes through a firewall and then goes the router to which all the devices I have are connected to.

Feedback: I was told I had swapped the line symbols for ethernet and glasfiber, so I fixed that.

Reflection: I had trouble with creating the right order in which the items in the diagram had to be displayed. After doing a google search I learned the right arrangement of the elements.

Decision: My goal is to learn about better security.

Case 2: Fast-food chain

**Problem 1:** The first task to be completed is to make an inventory of network components that are required for the network.

* Customer network
* Internal employee network
* Internal network for systems and cash registers
* Connection with headquarters

**Action:**

Customer network components inventory:

1. Access point - needed to provide Wi-Fi access to customers
2. Router - routes customer traffic to the internet
3. Switch - connects the access point and other network devices to the router

Internal employee network components inventory:

1. Access point - needed if employees use Wi-Fi devices
2. Switch - connects all internal devices on the wired network
3. Router – connects the employee network to the internet and other networks
4. Firewall - protects the employee network from external and internal threats
5. Authentication Server - verifies the identity of users and devices before granting access to the network
6. VPN - required for secure remote access by employees outside the location

Internal network for systems and cash registers components inventory:

1. Switch - connects all POS devices on the internal network
2. Router - routes data to the payment gateway or cloud services for transaction processing
3. Firewall - isolates the network and protects internal systems

Connection with headquarters components inventory:

1. Router - routes traffic to the internet
2. Firewall - isolates the network and protects internal systems
3. VPN - create a secure connection

**Problem 2:** Drawing of the infrastructure

The next step is to make a network drawing for each of the networks. Things to take into

consideration with each of the drawings are:

* Does the network need internet connection?
* How do the devices connect to the network?
* Subnet usage

Customer network diagram:

A screen shot of a computer

Description automatically generated

The internet goes through the router, then a switch and an access point where the devices are all connected with wi-fi.

Feedback: I was advised to change the subnet from 255.255.255.224 to 255.255.255.0 so that a wider range of IPs can be covered and be sure that the IPs that I have displayed on my diagram are possible IPs.

Reflection: I find it interesting to learn about networks and how they work. I found the IPs and subnets challenging for me to understand.

Decision: My goal is to practice more and try to understand these new concepts better.

Internal employee network diagram:

A diagram of a computer network

Description automatically generated

Internal network for systems and cash registers with connection to headquarters:

A computer diagram of a computer network

Description automatically generated

**Problem 2:** The final step is to put everything together in one network drawing. Do keep in mind that not every network is connected to the other networks. Add the drawing below with an explanation of choices/considerations.

**Action:**

A diagram of a computer network

Description automatically generated

Here is the Tasty Bites network – all the networks combined. I made one firewall for the whole network and a switch to which all the different networks’ routers are connected to. The firewall has two IPs.

Reflection: I had fun doing the diagrams. At first, I thought that the firewall should be before the router, but I was wrong and fixed the mistake of putting it before. I also learned that the firewall should have two IPs, one for the connection going in and one for the connection going out.

**Decision:** My goal is to keep learning about networks and learn how to make one more secure and correct.