**Task**

You are tasked with designing and implementing a solution (in packet tracer) and providing a response to major unit goals.

**Each submission must include the following at a minimum**

* A packet tracer file
* A video, recording, animation, highlighting examples of each major feature.
* Responses to each major feature.

# Tools of Learning

### Network Design

In response to the take up of Cyber Security, Canberra College is planning to build two dedicated cyber security classrooms.

Diagram

Description automatically generated

Additionally, you must factor in the SSICT Server Cabinet/Racks

Graphical user interface, application

Description automatically generated

Your network should have:

* Both sets of Lab Computers have access to
  + External Internet by SSICT via Wireless or Ethernet
  + The internal Cyber Range
* BOYD (student laptops) have access to
  + External Internet by SSICT via wireless
  + Internal Cyber Range via wireless
* Teacher devices
  + External Internet by SSICT via wireless
  + Internal Cyber Range via wireless
* Restrictions
  + The Cyber range has no access to external networks
  + Lab, Teacher, and BOYD must be on different network and should be isolated from each other.
* The Cyber range is an intranet and has the following properties
  + We can use any IT address on the 10.1.0.0/16 subnet. However, you must allow for as much expansion as possible.
  + Provides DNS for internal domains for the cyber range
  + Provides DHCP for all devices connecting to it.
* Test requirements:
  + Demonstrate connectivity between:
    - A LAB PC
      * Can access the external gateway
      * Can access bushranger.playground.cbrc
    - A BOYD Laptop
      * Can access the external gateway
      * Can access bushranger.playground.cbrc
    - A Teacher Laptop
      * Can access the external gateway
      * Can access bushranger.playground.cbrc

NOTE: PCs on packet tracer can only have one network device. If you want to have multiple network devices on the same computer you’ll need to use a server.

You will be assessed on your technical understanding and efficiency.

### Technical Writeups

A Technical writeup is similar to a recipe that we have been doing in class. They are designed to teach people how to replicate your process and to explain why your decisions make sense. In an academic sense, you are to treat this as a professional analysis of your own work.

* Configuring network equipment including routers, switches, servers, and clients to keep one set of users away from others.
* How user requirements and use cases impacted the network design process.

#### An example of a technical recipe:

|  |
| --- |
| Configuring the router via TFTPProblem: You want to load configuration commands via TFTP. Solution: You can use copy tftp: command to configure the router via the Trivial Fire Transfer Protocol (TFTP)   Discussion: Generally, most people configure their routers by using telnet/ssh and the configure terminal command. However, for large configuration changes people tend to resort to cutting and pasting a large set of commands. While this method works, it is inefficient and slow, particularly if you have to configure a large number of routers.  Using TFTP to download a large set of configuration commands, the router doesn’t need to echo each character to your screen, which reduces the overhead and increase the speed of the interaction.  In this example, the router is configured by downloading a file called NEWCONFIG from a server at 192.168.10.1 by using the Trivial File Transfer Protocol (TFTP). The router will copy the entire file by TFTP before entering the commands into the running configuration.  This is useful because sometimes some commands in the middle of a configuration could disrupt your access to the router, but the rest of the commands might fix the problem. If you tried to enter them manually using telnet/ssh and configure terminal, you could simply lock yourself out of the router. A typical example of this problem happens when you replace an active access-list. When you enter the first line the router puts an implicit deny all at the end which can break your session. Using TFTP avoids this problem. |

### Challenge Response

Lastly, you must submit the response to the Networking Challenge issued as a part of your Labs. This challenge-response will require the subnetting calculations and Network Configuration for the following Network

Diagram, schematic

Description automatically generated

NOTE: This network is incomplete and will be updated early this week.