**Task**

You are tasked with designing, implementing, and documenting a solution (in packet tracer) and responding to major unit goals.

NOTE: the intention of this assessment isn't for all students to submit a complete network solution for all requirements. It is, in effect, allowing for extension and differentiation.

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

* A packet tracer file
* Evidence that your network design completes the testable requirements.
* Evidence of meeting the overall unit goals.

# Tools of Learning

### Network Design

In response to the interest in Cyber Security, Canberra College plans to build two dedicated cybersecurity classrooms.

Diagram

Description automatically generated

Partial classroom diagram

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

Graphical user interface, application

Description automatically generated

The use case scenario is to create a network solution where students (and teachers)

Your ideal network solution should have:

* Two sets of Lab Computers that 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 a different network and should be isolated from each other.
  + Considerations for reliability, growth, etc.
* 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 the intranet
* 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. You'll need to use a server if you want multiple network devices (Network Interface Cards) on the same computer.

You will be assessed on:

* Evidence of technical understanding
* Depth of solution provided
* Effectiveness/efficiency of network design

Your packet tracer solution must include labels/notes describing each subnet, including:

* Subnet range
* Gateway
* DNS
* DHCP
* DHCP range and size

### Technical evidence

One of the requirements of a Network Engineer is to produce documentation that describes what it is they did, how they did it, and how it can be replicated. In addition, you are required to analyse what you did and provide, where applicable, an evaluation of why your approach was better than others.

You are not required to create evidence for all elements in your solution. Instead, you must create evidence that responds to the following unit goals.

* Justify your design process and how it relates to the network solution's design and configuration regarding handling the intranet's significant features (lab1, lab2, BOYD, and Teacher Laptops) and access to cyber range (DNS, DHCP, bushranger.playground.cbrc).
* Evaluate different strategies or approaches in creating the most effective and secure network between our intranet, SSICT intranet, and the Internet.