# Task

You have been asked to design and implement an office networking solution. The office has the following staffing makeup:

* One Managing Director
* Two people are working in sales/account management.
* Two project managers
* Two business analysts
* Two user-experience designers
* Six software developers
* Two system administrators

The office also has the following physical requirements:

* Management and sales work in one large office space.
* Analysts, User Experience, and Developers work in another large office.
* System Administrators work in a smaller office.
* The company internally hosts the following services:
  + internal email
  + A business server - which has a web service and FTP
  + Two additional servers:
    - development - which has a web service and FTP
    - production - which also has a web service and FTP (production is a mirror of the live service)

The client has the following requirements, if possible:

* For security reasons:
  + Management and sales should only be able to access email, the business server, and the external internet. They should not be able to access any other part of the business. They get their IP allocated by DHCP. Their devices are laptops and mobile phones.
  + Analysts, user experience, and software can access email, development servers, and the internet. They should not be able to access any other part of the system. They get their DHCP allocated by IP. Their devices are laptops.
  + System Admins should be able to access the entire internet. Their devices are PCs.
* The business has the following IP address range 10.13.37.0/24

## **Instruments of assessments**

The heart of Networking and Security is designing and implementing network solutions that meet your client's needs.

### Assessment Guide

* NOTE: The "internet" can be a final router.
* Your network environment must include "boxed areas" which have the details for that part of the network (IP range, gateway,
* Each part of the network is isolated from each other appropriately.
* You should choose the most appropriate solutions for your client’s needs.

## Task 1: Evidence Guide

## Rubric

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Knowledge, Comprehension & Application** |  |  |  |  |  |
| **CRITERIA** | **EXPECTATIONS** | **POSS** | **STUDENT** | **GIVEN** | **MULTI** | **TOTAL** |
| **Submission of core material** | You have submitted a design for a mechatronic thing. At the minimum your submission contains   * A network design/implementation in packet tracer * A screenshot/image of your network * Diagramming “boxes” indicating each seperate area on the network design / screenshot * A text/markdown file which documents core networking services | 2 | \_\_/2 | \_\_/2 | A x2  T x1 | A \_\_/ 4  T \_\_/ 2 |
| **A Script/notes for your interview** | You have submittee your notes/script that you intend to use for your interview. | 2 | \_\_/2 | \_\_/2 | A x2  T x1 | A \_\_/ 4  T \_\_/ 2 |
| **Attendence to Interview** | You attended the interview | 2 | \_\_/2 | \_\_/2 | A x2  T x1 | A \_\_/ 4  T \_\_/ 2 |
|  | **Analysis, Synthesis & Evaluation** |  | | **SUBTOTAL** | | **A \_\_ / 12**  **T\_\_ / 6** |
| **Communicate complex ideas** | Your notes and interview expressed your nuanced knowledge and understanding of presenting/communicating complex ideas for technical and non-technical users. | 4 | \_\_/4 | \_\_/4 | - | \_\_/ 4 |
| **Network Design** | In your notes and interview, you highlighted your ability to think of, consider, or implement access and secure systems strategies through topology and networking fundamentals. You express a nuanced knowledge of your design's nature and how you made informed decisions on implementing them. | 4 | \_\_/4 | \_\_/4 | - | \_\_/ 4 |
| **Technical Design** | Your design is intended to take the full range of Networking theory considered so far. It uses the appropriate services to deliver correct solutions for problems at hand. | 4 | \_\_/4 | \_\_/4 | - | \_\_/ 4 |
|  | **Submission Guidelines** |  | | **SUBTOTAL** | | **\_\_ / 12** |
| **Overall presentation quality** | Overall, the presentation **was well presented**. **Ideas were structured** well and **made sense within their contexts**. Answers were **direct and to the point**. | 4 | \_\_/4 | \_\_/4 | - | \_\_/ 4 |
|  |  |  | | **SUBTOTAL** | | **\_\_ / 4** |
|  | DAYS LATE \_\_\_/7 = \_\_\_% |  |  | **FINAL** | | **A \_\_/28 T \_\_/22** |

## Rubric sections

##### Section 1: Knowledge Comprehension and Application

This section of the rubric consists of the required elements of the assignment. Students should take special care to include ALL these elements as they are often extended in the following sections

##### Section 2: Analysis, Synthesis, and Evaluation.

This section will evaluate your ability to include critical thinking and justification elements into your work. Often the requirements for extension are not explicitly given, so it will be up to you to decide how best to demonstrate what you have learned beyond the required unit goals and curriculum. Items such as 3D models, pictures, drawings, diagrammatic responses, notes, evidence of problem-solving, advanced programming concepts, elegant responses, media, etc., are all available options.

##### Section 3: Submission Guidelines

Students are expected to provide a submission that fulfils the requirements listed in style guides while also submitting at an appropriate quality. Be aware that points in this section could be 2- or 4-point items. Treat them accordingly.

## Submission

All submission items should be stored in an appropriate format. For example, code must be stored in a programmatical format so it can be evaluated (**images of code or code copied and pasted into a document may not be marked**)

Evidence of working material must be recorded where appropriate. For example, to show how your robot meets a requirement, you must submit a recording of it completing that requirement. Similarly, if you need to show how your program can download a file from the internet and crack a password, you must submit a recording of it doing that.

Ask the teacher if you are unsure if an element needs to be recorded**.**

All materials must be submitted to Google Classroom.

Students are responsible for keeping backups/master copies.

## **Scoring Notes**

Formatting for all typed/written assessments should be as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Google Doc** | 11-12 Pt | 1.15-1.5 Line Spacing | 1 Space between paragraphs | Spelling and Grammar “Soft Limit” | In-Text Citations with footnotes | Title Page/Slide:   * Name * Date * Class * Aim * Assessment title |
| **Slides** | 10-12 pt. font text  14-24 pt. font titles | 1.0 1.15 Line Spacing | Bullet Points Preferred | Word Count per slide >100-110 “Soft Limit.” | Approved Templates and Themes |
| **Python** | We apply the following style guide to Python files. However, in general, most programs follow this overall layout.    [PEP 8: The Style Guide for Python Code](https://pep8.org/) | | | | | |
| **Arduino**  **C/C++** | We apply the following style guide to C/C++ files. However, in general most programs follow this broad layout.    I accept both K&R and K&R alternative bracing format. As long as it is consistent in your file.  [Arduino Style Guide for Creating Libraries | Arduino Documentation | Arduino Documentation](https://docs.arduino.cc/learn/contributions/arduino-library-style-guide) | | | | | |
| **Markdown** | We apply the following style guide to markdown documents. However, in general, most documents follow some variation of the following layout:    <https://github.com/google/styleguide/blob/gh-pages/docguide/style.md> | | | | | |

“Soft Limits” are not rigidly defined limits and will be assessed on a case-by-case basis. Ask for clarification on specific tasks

## Possible Scoring Groups are out of 2 or 4 Points.

##### 2-Point Criteria - Knowledge and Understanding

Criteria assessed as 2-Points are classified as Knowledge and Understanding criteria. These will examine and evaluate a student’s ability to effectively state facts and define terms and concepts. Analysis and synthesis of the information will not be assessed through these criteria.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **0 Points** | **1 Point** | **2 Points** |
| **2 Point Criteria** | **Not present** or **not able to be assessed** as the required criteria | Item is presented but **does not meet expectations** for quality, rigour, or detail. | Item is presented and **does meet expectations** for quality, rigour, or detail |

##### 4-Point Criteria - Analysis and Synthesis and Expert Review

To show true mastery of your developing skills, students must show that they can go beyond simple repetition of the given tasks or an explanation of processes. Students will demonstrate their ability to show higher-order thinking through analysis, evaluation, or linking multiple fields of learning to solve problems in novel ways.

## Analysis and Synthesis

Analysis and Synthesis components evaluate a student’s ability to effectively review data and understandings and develop these into a coherent and relevant statement. Analysis refers to the generating of thoughts from interpreting the data. In contrast, synthesis combines experience from one area with other pertinent knowledge to develop an original and compelling solution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **0 Points** | **1 Point** | **2 Points** | **3 Points** | **4 Points** |
| **4 Point Criteria** | **Not present** or **not able to be assessed** as the required criteria | Evidence is presented and explained. However, it **does not show appropriate evidence of higher-order thinking** such as analysis, evaluation, or synthesis. | Evidence is presented and **shows appropriate evidence of higher-order thinking** such as analysis, evaluation, or synthesis. | Evidence is presented and **exceeds expectations for evidence of higher-order thinking** such as analysis, evaluation, or synthesis.  **-or-**  Item is presented and shows appropriate evidence of higher-order thinking such as analysis, evaluation, or synthesis and **exceeds expectations for quality or rigour** of understanding of the selected mastery. | Evidence is presented and **exceeds expectations for evidence of higher-order thinking** such as analysis, evaluation, or synthesis. **Additionally, this item exceeds expectations for quality or rigour** of understanding of the selected mastery. |

##### Expert Review

Expert Reviews evaluate a student’s ability to build solutions using the skills taught during the semester. Criteria assessed as 4-Points are classified as Analysis and Synthesis criteria. These will examine and evaluate a student’s ability to effectively review data and understandings and develop these into a coherent and relevant statement. Analysis refers to the generating of thoughts from interpreting the data. In contrast, synthesis combines experience from one area with other pertinent knowledge to develop an original and compelling solution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **0 Points** | **1 Point** | **2 Points** | **3 Points** | **4 Points** |
| **4 Point Criteria** | **Not present** or **not able to be assessed** as the required criteria | Evidence is presented and broadly solves the problem. However**, the evidence does not show appropriate mastery** upon review. | Evidence is presented and broadly solves the problem. On review, it **does show appropriate evidence** of mastery. | Evidence is presented and solves the specific problem. On review, the evidence **shows understanding beyond expected mastery**.  **-or-**  Item is presented and broadly solves the problem. On review, it does show appropriate evidence of mastery and is **done so in a well-constructed or design method** that clearly shows higher levels of understanding**.** | Evidence is presented and solves the specific problem. On review, **the evidence shows understanding well beyond expected mastery** and is **done so in a well-constructed or designed method** that clearly indicates higher levels of understanding. |

##### Multiplier

Criteria will be combined with a **Multiplier**. While each criterion will be scored on the 0-1-2-4 scale, the multiplier will attach relevant worth to each criterion. Be aware of these multipliers and dedicate appropriate time to ensure you achieve your best result.

## Achievement Standards:

## Evidence of higher-order learning:

What is it that I mean by “higher-order thinking”?

It means I want you to go beyond replicating what we do in class. I want you to dig into your brain and understand why you did something, what about it was great, and what could be improved.

Why is this important? Reflective thinkers can go beyond what they are taught and can customise their learning to ben

