**Course: Networking & Security T**

**Unit: Networking & Cyber Security**

**Unit Value: 1.0 Semester 1, 2020 Assessment Value:** XX%

**Assessment Item:** Project **Teacher**: Mr C. Johnson

**Date Notified**: XXXXXXXXX 2020 (Week XX)

Draft Due: XXXXXXXXX 2020 (Week XX)

**Date Due:** XXXXXXXXX 2020 (Week XX)

**TASK SUMMARY:**

In Part A you will research about buying some networking equipment to meet specific requirements. You will need to select the equipment and write a brief report showing how the selected equipment meets the requirements. You will submit your completed report with evidence of product information and pricing.

In Part B you will make a two short videos on how to configure a WiFi router, including explanations. You will be provided with a physical router or access to an online simulator. You will submit the completed videos, as well copies of manuscripts and excerpts from the relevant router user manual.

Work submitted should not be hand-written, including text, diagrams, equations, tables, graphs. Appropriate computer applications should be used to produce you work. As an exception, complex diagrams may be hand drawn if they are difficult to produce with a computer, but they should be scanned or photographed for insertion into your work.

**NOTE**: This assignment is to be your own individual work, and there should be no collaboration between students. You may consult with your teacher if you are uncertain about what is required.

*Drafts will not be accepted after the due date above. The draft is for general feedback only and will not be marked and graded, and marks will be based only on the final submission.*

**Submission Instructions:**

1. All work needs to be submitted electronically via Schoolbox by 1.15 pm on the day it is due, including a copy of the College Assessment Task Cover Sheet (including the Declaration of Original Work). **Problems with printing or associated computer/internet problems are not regarded as valid reasons for late submission of work.**
2. For clarification on BSSS Policies on penalties for late submission and plagiarism where work is completed out of class, students should refer to one or more of the following; Unit Outlines, the BCC Student Assessment Booklet, the BCC Year 11 and 12 Student Handbook, the BSSS publication, ‘What’s Plagiarism: How you can avoid it” and the BSSS Website <http://www.bsss.act.edu.au/The_Board/policy_and_procedures_manual>.

**TASK DETAILS:**

**Part A – Selecting Devices**

A small charity hub has had their only router die, and they need to buy some new equipment. Also their requirements have increased a little, so it is kind of good timing. Since they heard you know a bit about networking, they have asked for your advice. Here are their requirements that you need to meet:

* They have an nbnTM FTTN connection. The already installed and working nbnTM equipment provides a single RJ45 ethernet port to provide access to the internet. (This is what was connected directly to the router which died.)
* The don’t want to only rely on the nbnTM connection, and want the facility to use 4G mobile network SIM card to provide backup internet access in the case of nbnTM failure.
* The charity hub has a laser multifunction copier they need to be connected to the local network via its RJ45 port. They also have three desktop PCs that need to be connected to the network via network cables, and four laptops to be connected via WiFi (using at least 802.11n). Possibly they may add extra desktop PCs or laptops in the future, but there are no immediate plans to do so.
* The three desktop PCs should all be connected via Gigabit ethernet, and the WiFi should either be part of the same device, or connected to the PC network with Gigabit. The copier and the connection to nbnTM (or backup 4G) need only be 10/100 Mbps.
* The charity group has up to $150 of credit they can use at <https://www.officeworks.com.au/> to buy any new equipment.

You are to write a brief report on your solution, including the following information:

* A list of equipment to purchase, including all pricing.
* A network diagram showing the all the different components will be connected together, ie the nbnTM equipment, the copier, the three PCs, the four laptops, and whatever equipment you select to purchase.
* A brief explanation of how the selected equipment meets all the requirements, and any other reasons you had for selecting the equipment. Also note any possible downsides or weaknesses with your solution. This should be a maximum of one A4 page. It needs to be clear and easy to understand for the general person who does not know a lot about networking.
* Attach copies of manufacturer product specifications with relevant sections highlighted to show features or specifications needed to meet the requirements (which should have been mentioned in your explanation above).
* Attach screenshots of items selected from the Office Works website showing the pricing.

On completion of Part A, you should submit your report online to Schoolbox.

**Part B – Instructional Videos**

Each student will be supplied with a specific model WiFi router, either physically or an online simulator. Using this specific model, you will make two short videos on how to configure that WiFi router, including explanations.

You are to create short (2-5 minute) videos on each of the following configuration topics, including explanations of what you are doing, as well as important theory related to the topic:

1. **Router Access**: A short video covering these three topics:
   1. Restoring to factory defaults (include explanation of why this might be important)
   2. Access web interface via IP address (include explanation of what an IP address is)
   3. Changing the Administrator Password (include explanation of why this is important, and what kind of password to use)
2. **Port Forwarding**: A short video showing how to use port forwarding to give public access to Remote Desktop control of a Windows Computer inside the network (include explanation of public and private IP addresses, NAT, server ports, and possible security risks)

On completion of Part B, you should submit the following online to Schoolbox:

* Completed videos as separate files, in a common file format (eg \*.wmv, \*.mp4 etc)
* Copies of the scripts or plans used in producing your videos (these will mainly be used if there is difficulty understanding any parts of the videos)
* Excerpts from the relevant router user manual that relate to the features you cover in the video.

**ASSIGNMENT MARKING SCHEME** (T Course – Total 34 Marks)

| **Item Assessed** | **A Grade**  (100% - 85% marks) | **B Grade**  (84% - 70% marks) | **C Grade**  (69% - 55% marks) | **D Grade**  (54% - 40% marks) | **E Grade**  (39% - 0% marks) | **Marks** |
| --- | --- | --- | --- | --- | --- | --- |
| Part A: Solution meets requirements | ▪ Proposed solution meets all requirements  ▪ Explanation is clear and easy to understand, concisely demonstrating a confident, accurate and in-depth understanding of the requirements and relevant technologies, justifying the proposed solution  ▪ Critically analyses the proposed solution evaluating its appropriateness and effectiveness and identifying possible downsides and weaknesses  ▪ Always uses appropriate terminology with full understanding | ▪ Proposed solution meets all essential requirements  ▪ Explanation is mostly clear, demonstrating an accurate understanding of the requirements and relevant technologies, justifying the proposed solution  ▪ Analyses the proposed solution explaining its appropriateness and effectiveness and identifying some possible downsides and weaknesses  ▪ Mostly uses appropriate terminology with full understanding | ▪ Proposed solution meets most essential requirements  ▪ Explanation is generally clear, demonstrating a mostly accurate understanding of the requirements and relevant technologies, somewhat justifying the proposed solution  ▪ Explains the appropriateness and effectiveness of the proposed solution  ▪ Generally uses appropriate terminology with full understanding | ▪ Proposed solution meets some essential requirements  ▪ Explanation demonstrates some accurate understanding of the requirements and relevant technologies  ▪ Some description of the appropriateness and effectiveness of the proposed solution  ▪ Sometimes uses appropriate terminology correctly | ▪ Proposed solution has little or no relation to essential requirements  ▪ Explanation demonstrates some accurate understanding of relevant technologies  ▪ Some identification of the appropriateness and effectiveness of the proposed solution  ▪ Never uses appropriate terminology correctly | /9 |
| Part A: Documentation | ▪ Network diagram correctly and clearly represents all significant network components  ▪ Includes copies of manufacturer product specifications with relevant sections highlighted  ▪ Includes all of the relevant excerpts from Office Works website showing pricing of selected items | ▪ Network diagram correctly and clearly represents most significant network components  ▪ Includes copies of manufacturer product specifications with most relevant sections highlighted  ▪ Includes all of the relevant excerpts from Office Works website showing pricing of selected items | ▪ Network diagram represents most significant network components  ▪ Includes copies of manufacturer product specifications  ▪ Includes all of the relevant excerpts from Office Works website showing pricing of selected items | ▪ Network diagram represents some significant network components  ▪ Does not includes copies of manufacturer product specifications  ▪ Includes some of the relevant excerpts from Office Works website showing pricing of selected items | ▪ Network diagram not included or does not represents any significant network components  ▪ Does not includes copies of manufacturer product specifications  ▪ Does not include any of the relevant excerpts from Office Works website showing pricing of selected items | /4 |
| Part B: Router Access Video Content | ▪ Demonstrates thorough and extensive knowledge and understanding of factory default settings, IP addressing, web-based administrative access and router passwords, with confident and accurate analysis and explanations, and also relevant configuration settings for a specific model router | ▪ Demonstrates broad and in-depth knowledge and understanding of factory default settings, IP addressing, web-based administrative access and router passwords, with mostly accurate analysis and explanations, and also relevant configuration settings for a specific model router | ▪ Demonstrates broad and general knowledge and understanding of factory default settings, IP addressing, web-based administrative access and router passwords, with mostly accurate and explanations, and also relevant configuration settings for a specific model router | ▪ Demonstrates some general knowledge and understanding of factory default settings, IP addressing, web-based administrative access and router passwords, with some accurate descriptions, and also relevant configuration settings for a specific model router | ▪ Demonstrates some limited knowledge and understanding of factory default settings, IP addressing, web-based administrative access and router passwords, and also relevant configuration settings for a specific model router | /6 |
| Part B: Router Access Video Communication | ▪ Consistently communicates clearly, concisely, and coherently with flair  ▪ Style and methods of communicating are always appropriate, and the result is highly effective and very engaging  ▪ Always uses technical terminology appropriately and correctly | ▪ Generally communicates clearly and logically with confidence  ▪ Style and methods of communicating are mostly appropriate, and the result is effective and somewhat engaging  ▪ Mostly uses technical terminology appropriately and correctly | ▪ Generally communicates clearly  ▪ Style and methods of communicating are generally appropriate, and in general can be readily understood.  ▪ Often uses technical terminology inappropriately and/or incorrectly | ▪ Often communicates without clarity  ▪ Style and methods of communicating demonstrate some attempt to be appropriate, and is often difficult to follow and understand.  ▪ Occasionally uses technical terminology appropriately and/or correctly | ▪ Consistently communicates without clarity  ▪ Style and methods of communicating are not appropriate, and is mostly difficult to follow and understand.  ▪ Never uses technical terminology appropriately and/or correctly | /3 |
| Part B: Port Forwarding Video Content | ▪ Demonstrates thorough and extensive knowledge and understanding of public and private IP addresses, NAT, server ports, port forwarding, remote desktop access and possible security risks, with confident and accurate analysis and explanations, and also relevant configuration settings for a specific model router | ▪ Demonstrates broad and in-depth knowledge and understanding of public and private IP addresses, NAT, server ports, port forwarding, remote desktop access and possible security risks, with mostly accurate analysis and explanations, and also relevant configuration settings for a specific model router | ▪ Demonstrates broad and general knowledge and understanding of public and private IP addresses, NAT, server ports, port forwarding, remote desktop access and possible security risks, with mostly accurate and explanations, and also relevant configuration settings for a specific model router | ▪ Demonstrates some general knowledge and understanding of public and private IP addresses, NAT, server ports, port forwarding, remote desktop access and possible security risks, with some accurate descriptions, and also relevant configuration settings for a specific model router | ▪ Demonstrates some limited knowledge and understanding of public and private IP addresses, NAT, server ports, port forwarding, remote desktop access and possible security risks, and also relevant configuration settings for a specific model router | /6 |
| Part B: Port Forwarding Video Communication | ▪ Consistently communicates clearly, concisely, and coherently with flair  ▪ Style and methods of communicating are always appropriate, and the result is highly effective and very engaging  ▪ Always uses technical terminology appropriately and correctly | ▪ Generally communicates clearly and logically with confidence  ▪ Style and methods of communicating are mostly appropriate, and the result is effective and somewhat engaging  ▪ Mostly uses technical terminology appropriately and correctly | ▪ Generally communicates clearly  ▪ Style and methods of communicating are generally appropriate, and in general can be readily understood.  ▪ Often uses technical terminology inappropriately and/or incorrectly | ▪ Often communicates without clarity  ▪ Style and methods of communicating demonstrate some attempt to be appropriate, and is often difficult to follow and understand.  ▪ Occasionally uses technical terminology appropriately and/or correctly | ▪ Consistently communicates without clarity  ▪ Style and methods of communicating are not appropriate, and is mostly difficult to follow and understand.  ▪ Never uses technical terminology appropriately and/or correctly | /3 |
| Part B: Documentation | ▪ Includes scripts/plans used in producing both videos, matching content of the videos  ▪ Includes all of the relevant excerpts from the router user manual which relate to the features covered in the videos | ▪ Includes scripts/plans used in producing both videos, mostly matching content of the videos  ▪ Includes most of the relevant excerpts from the router user manual which relate to the features covered in the videos | ▪ Includes scripts/plans used in producing both videos, generally matching content of the videos  ▪ Includes some of the relevant excerpts from the router user manual which relate to the features covered in the videos | ▪ Includes scripts/plans used in producing both videos, with some relevance to content of the videos  ▪ Includes some relevant excerpts from reliable sources which relate to the router features covered in the videos | ▪ Does not include scripts/plans used in producing both videos, or scripts/plans have no relevance to content of the videos  ▪ Does not include any relevant excerpts from reliable sources which relate to the router features covered in the videos | /3 |
| **TOTAL MARK** | | | | | | **/34** |