Unit 2: Networking

Assignment 2 Brief

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| Student Name/ID Number |  |
| Unit Number and Title | 2: Networking |
| Academic Year |  |
| Unit Tutor |  |
| Assignment Title |  |
| Issue Date |  |
| Submission Date |  |
| Submission Format | |
| *Format:* This assignment is an Individual assignment and specifically including 1 document:  You must use font *Calibri size 12, set number of the pages and use multiple line spacing at 1.3. Margins must be: left: 1.25 cm; right: 1 cm; top: 1 cm and bottom: 1 cm.* The reference follows Harvard referencing system. The recommended word limit is *2.000-2.500 words*. You will not be penalized for exceeding the total word limit. The cover page of the report has to be the Assignment front sheet 2.  *Submission* Students are compulsory to submit the assignment in due date and in a way requested by the Tutors. The form of submission will be a soft copy posted on  <https://cms.btec.edu.vn/>  *Note:* The Assignment *must* be your own work, and not copied by or from another student or from books etc. If you use ideas, quotes or data (such as diagrams) from books, journals or other sources, you must reference your sources, using the Harvard style. Make sure that you know how to reference properly, and that understand the guidelines on plagiarism. *If you do not, you definitely get fail.* | |
| Unit Learning Outcomes | |
| **LO3** Design efficient networked systems  LO4 Implement and diagnose networked systems | |
| Transferable skills and competencies developed | |
| On successful completion of this unit, students will have gained the knowledge and  skills needed to successfully install, operate and troubleshoot a small network; and  the operation of IP data networks, router, switching technologies, IP routing technologies, IP services and basic troubleshooting. Supporting a range of units in the Higher National suite, this unit underpins the principles of networks for all and enables students to work towards their studies in vendor units, if applicable. Students will develop skills such as communication literacy, critical thinking, analysis, reasoning and interpretation, which are crucial for gaining employment and developing academic competence. | |
| **Vocational scenario** | |
| You are employed as a Network Engineer by Nguyen Networking Limited, a high-tech networking solution development company, which have branches in Ho Chi Min City, Hanoi, Da Nang and Can Tho.  The company has been contracted to implement a networking project from a local educational institute. The specification of the project is given below:  People: 200 students, 15 teachers, 12 marketing and administration staff, 5 higher managers including the head of academics and the programme manager, 3 computer network administrators.  Resources: 50 student lab computers, 35 staff computers, 3 printers.  Building: 3 floors, all computers and printers are on the ground floor apart from the IT labs – one lab located on the first floor and another located on the second floor. | |
| Assignment activity and guidance | |
| To complete this task successfully you will have to work through a number of parts:  The CEO Mr. Nguyen is happy with your first report and now he has asked you to analyze the specification from the institution, as given earlier.  You need to design and implement the networking project within a given timeframe:  Part 2 Design efficient networked systems  1. Prepare a written step-by-step plan of how you are going to design a Local Area Network including a blueprint of your LAN.  2. Justify your choice of devices for your network design.  3. Produce a test plan to evaluate this design for the requirements of bandwidth and cost constraints as per user specifications.  4. Justify the security requirements and quality of services needed for selection of accessories.  5. Suggest a maintenance schedule to support the networked system.  Part 3 Implement test and diagnose networked systems  1. Implement a networked system based on your prepared design.  2. Conduct verification with e.g. Ping, extended ping, trace route, telnet, SSH, etc.  3. Record the test results and analyze these against expected results.  4. Investigate what functionalities would allow the system to support device growth and the addition of communication devices.  5. Discuss the significance of upgrades and security requirements in your recommendations. | |
| **Recommended Resources**  **Textbooks**  Burgess, M. (2003) Principles of Network and System Administration. 2nd edn. John Wiley  and Sons Ltd.  Donahue, G. A. (2011) Network Warrior 2nd edn. O’Reilly Media.  Goransson, P. Black, C. et al (2016) Software Defined Networks: A Comprehensive  Approach 2nd edn. Morgan Kaufmann.  Hallberg, B. (2005) Networking: A Beginner’s Guide. 4th edn. Osborne/McGraw-Hill US.  Limoncelli, T. and Hogan, C. (2001) The Practice of System and Network Administration.  Addison-Wesley.  Lowe, D. (2005) Networking All-in-One Desk Reference for Dummies. 2nd edn. Hungry  Minds Inc.  Olifer, N. and Olifer, V. (2005) Computer Networks: Principles, Technologies and Protocols  for Network Design. John Wiley and Sons Ltd.  Stallings, W. (2003) Data and Computer Communications. 7th edn. (Prentice Hall).  Tanenbaum, A. (2002) Computer Networks. Prentice Hall PTR. | |

**Learning Outcomes and Assessment Criteria**

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| Pass | Merit | Distinction |
| **LO3** Design efficient networked systems. | | **LO3 and LO4**  **D2** Critically reflect on the  implemented network,  including the design and  decisions made to enhance  the system. |
| **P5** Design a networked  system to meet a given  specification.  **P6** Design a maintenance  schedule to support the  networked system. | **M3** Analyse user feedback on your designs with the aim of optimising your design and improving efficiency. |
| **LO4** Implement and diagnose networked systems. | |
| **P7** Implement a networked system based on a prepared design. **P8** Document and analyse test results against expected results. | **M4** Recommend potential  enhancements for the  networked systems. |