ASSIGNMENT BRIEF SHEET

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| **QUALIFICATION** | BTEC HN Diploma in Computing and system Development | |
| **UNIT** | **Unit 43**: Networking Infrastructure | |
| **UNIT CODE** | A/601/1964 | |
| **QCF LEVEL 5** | **BTEC HIGHER NATIONAL DIPLOMA** | |
| **CREDIT VALUE** | **15** | |
| **Assignment Issue Date**: | **Assignment Due**: | **Submitted**: |
| **Assessor Name** : |  | |

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| **Assignment Title:** | Networking Infrastructure |
| **Aim of the assignment** | To enable learners to understand computer networking concepts, how they work, how they operate and the protocols, standards and the models associated with networking technology. |
| **Unit Learning Outcomes** | LO1: Examine networking principles and their protocols.  LO 2: Explain networking devices and operations. |
| **Assignment Brief & Guidance**  *(see Appendix for assessment criteria and grade descriptors)* | You are employed as a Network Engineer by an SME [insert here either a named SME or enable students to choose an SME and use the following insertion ‘an SME of your choice’. Students should be encouraged to use their own place of work, if appropriate] and have been asked to investigate and explain networking principles, protocols and devices.  You will need to produce a report for the CEO that includes the following:   1. An introduction to provide an overview of your report. 2. An explanation of networking principles, protocols and devices, including benefits and constraints of networked solutions, the impact of network topology, communication and bandwidth requirements, effectiveness of networking systems, operating principles of networking devices and server types and networking software. |
| **Unit Learning Outcomes** | LO3 Design efficient networked systems.  LO4 Implement and diagnose networked systems. |
| **Assignment Brief and Guidance** | You are employed as a network engineer by a high-tech networking solution development organisation and are working on a project for a local educational institution. You will need to analyse the specification from the institution below for completion of this project within a given timeframe:  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.  **Part 1 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 2 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 analyse 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. |
| **Student guidelines** | **The objective for this task is to address and exhibit understand networking principals.**  You are required to carry out research by using supportive materials like books, websites, etc., and give a feedback of the findings on all assessment criteria  1. The answers need to be reflected to the given case study. |
| **Assignment Format** | **Fonts**   * Use a clear, readable font such as Verdana, Calibri, Tahoma or Arial, and be consistent and use the same font throughout * Use black text on a white background. Avoid coloured backgrounds or text in a colour other than black unless you have special permission to use them (for example, if you’re dyslexic) * Use 12 point for the body of your assignment   **Spacing**   * Use 1.5 or double spacing and fairly wide margins:   **Word Count**   * The (approx.) word limit for this assignment 4000 to 4500 words * Any specified word limit in the assignment brief is for guidance purpose only. It is there to give an indication of the level of depth that may be needed to provide sufficient evidence.   **Reference List**   * You must ensure that all external sources used to provide evidence in your work must be referenced accordingly to avoid plagiarism and collusion * You must use correct and consistent Harvard referencing style * A full reference list should be at the end of the assignment, and should start on a new page labelled ‘References’ or ‘Reference List’ |
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| **Submission Format** | The submission is in the form of an individual written report. This should be written in a concise, formal business style using single spacing and font size 12. You are required to make use of headings, paragraphs and subsections as appropriate, and all work must be supported with research and referenced using the Harvard referencing system. Please also provide a bibliography using the Harvard referencing system. The recommended word limit is 2,000–2,500 words, although you will not be penalised for exceeding the total word limit. |
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| Learners declaration |
| I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.  Student signature: Date: |

**Criteria Reference**

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| **LO** | **Learning Outcome (LO)** | **AC** | **In this assessment you will have the opportunity to present evidence that shows you are able to:** | **Task No.** |  |
| LO 1 | Examine networking principles and their protocols | P 1 | Discuss the benefits and constraints of different network types and standards. | x |  |
| P 2 | Explain the impact of network topology, communication and bandwidth requirements. | x |
| LO 2 | Explain networking devices and operations | P 3 | Discuss the operating principles of networking devices and server types.  Implement a network design topology infrastructure based on a prepared design and list the different type of topologies. | X  1/2 |
|  |  | P 4 | Discuss the inter-dependence of workstation hardware with relevant networking software. | x |
| LO3 | Design efficient networked systems | P5 | Design a networked system to meet a given specification. | x |  |
| P6 | Test and evaluate the design to meet the requirements and analyse user feedback. | x |
| LO4 | Implement and diagnose networked systems | P7 | Implement a networked system based on a prepared design. | x |
| P8 | Document and analyse test results against expected results. | x |

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| **Higher Grade Achievement (Where applicable)** | | | |
| **Grade Descriptor** | **Comment’s /tick** | **Grade Descriptor** | **Comment’s /tick** |
| M1: Compare common networking principles and how protocols enable the effectiveness of networked systems. | ? | D1: Considering a given scenario, identify the topology protocol selected for the efficient utilisation of a networking system. | 1/2 |
| M2: Explore a range of server types and justify the selection of a server, considering a given scenario regarding cost and performance optimisation. | x | D2: Design a maintenance schedule to support the networked system | x |
| M3: Install and configure network services and applications on your choice | X | D3: Use critical reflection to evaluate own work and justify valid conclusions | ??? |
| M4: Recommend potential enhancements for the networked systems. | ½ ??? |  |  |

**Assignment Feedback**

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| Formative Feedback: Assessor to Student | | | |
| Action Plan | | | |
| Summative feedback | | | |
| **Assessor Signature** |  | **Date** |  |
| **Student Signature** |  | **Date** |  |
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