# Luminus Technical University College - Assignment Brief (RQF)

## Higher National Diploma in cloud computing

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| **Student Name** | | **SHAHED MONTASER** | | | **Language of assessment** | | | **AR** | **EN** | |
| **College ID:** | | | **22036814** | | |
| **Pearson ID:** | | | **RE67234** | | |
| **Unit Number and Title** | |  | **2 Networking in the Cloud** | | | | | | | |
| **Academic Year** | | **2022/2023** | | | | | | | | |
| **Unit Tutor** | | **Rama Al-Share** | | | | | | | | |
| **Internal Verifier Name and Approval (Signature)** | | **Abdelbaset Assaf** | | | | **Approval Date:5-4-2023** | | | | |
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| **Assignment number and Title** | | **1** | **Investigating Cloud Technologies** | | | | | | | |
| **Issue Date (1St Submission)** | | **5/4/2023** | | **Submission Date (1st Submission)** | | | **5/6/2023** | | | |
| **Issue Date (2nd Submission)** | | **16/6/2023** | | **Completion Date (2nd Submission)** | | | **20/6/2023** | | | |
| **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. | | | | | | | | | | |
| **Unit Learning Outcomes** | | | | | | | | | | |
| **LO1** | Examine commonplace networking principles used in a cloud infrastructure to support communication. | | | | | | | | | |
| **LO2** | Explain the operation of networking technologies within a cloud infrastructure. | | | | | | | | | |
| **LO3** | Explain the operation of networking technologies within a cloud infrastructure. | | | | | | | | | |
| **LO4** | Enhance network performance for a cloud-based system developed for a given business use case. | | | | | | | | | |
| Transferable skills and competencies developed | | | | | | | | | | |
| • Research skills  • Analytical skills to conduct own analysis to draw conclusions  • Design and documentation skills  • Communicating effectively in all forms, written, visual and oral, for operating efficiently in the international business environment. | | | | | | | | | | |
| **Vocational scenario:** | | | | | | | | | | |
| You work for a company that provides training facilities, colleges, and universities with educational software and materials. You are a part of their IT team. 250 individuals work for the company across three offices, and its instructional platforms have more than 800 external users. You are responsible for creating and maintaining a sophisticated network of programs and systems to service both internal and external clients, including servers, e-learning programs, and custom software.  To improve the security, performance, and resilience of the network, servers, and storage, the business needs a significant infrastructure update. The changeover to a cloud infrastructure is covered in this. A system review, in the opinion of the technology director, is crucial in order to fully understand the current systems and the improvements that need to be made. You've been asked to provide a thorough evaluation as a member of the internal IT team. This entails evaluating the network environment and internal servers that support the company's three regional offices, as well as providing recommendations for the network architecture of the company's cloud infrastructure. You have been asked to put together a report using cloud network graphics for a meeting with the technology director and your colleagues in the near future. Prior to the meeting, you will provide the information in your briefing paper to the team and respond to their requests. | | | | | | | | | |
| Assignment activity and guidance | | | | | | | | | | |
| **Task A**  1.  Resolve and list the advantages and constraints of network architectures and standards within the cloud. Finally explain at least three of the used network standards in the company.  2.  Summarize how network communication operates within the cloud and give an example for cloud communications could be used in the company.  3.  Contrast at least four common networking standards and how they facilitate cloud computing for the company.  4.  Assess the impact of a cloud environment on the performance of the network as a whole.  5.  Make clear how remote operating systems are deployed and how remote clients interact with cloud services including the benefits of remote client.  6.  Investigate the performance effects of remote operating system optimization in the cloud  **Task B**  Based on what you learned in Task A, management decided to go to the cloud, giving the business the chance to change its culture because operations will have to work more closely with developers.  Create a simple application that demonstrates how to move a system to the cloud to demonstrate your ideas for going to the cloud. You should enhance, strengthen, and cloud-optimize it as you move it from its current location to the cloud. To do this, you need to make the subsequent.  A thorough design of your cloud-based network solution that takes the specified business case into account, including  .7   1. Create and apply 3 Virtual Networks (Vnets) in East US, UK South and Canada central.   (evidence of implementing)   1. For East US and UK south create and apply 2 subnets in each subnet there are 20 users, name the subnets, and install IP addresses. (Evidence of implementing) 2. For Canada central Vnet , create and apply 2 subnets in each subnet there are 10 users, name the subnets and install IP addresses. (Evidence of implementing) 3. Write the subnets IP’s with its prefix and calculate the number of waste IP’s in each subnet 4. Differentiate between public IP and private IP   8.  Check your connections by create a Public IP address and justify your options is it Standard or Basic and determine the class of it and explain how the public IP affect the performance and scalability. (Evidence of justifying and implementing).  9.  a. Use cloud concepts to suggest method to enhance cloud results, explain why you select this enhancement. (evidence of implementing)  b. Perform the enhancement and Create one Virtual Machine in East US and UK south Vnets. (Evidence of implementing)  10.  Using Peering Check the connection between the two VMs and explain how the enhancement affect the performance and scalability. (evidence of testing)  11.  Give a comprehensive explanation for your design, with a description of its effectiveness, how scalable it is and details of its performance before and after your enhancement.  . | | | | | | | | | | |
| **Recommended Resources**  **Please note that the resources listed are examples for you to use as a starting point in your research – the list is not definitive.**  **Textbooks** | | | | | | | | | | |

**Learning Outcomes and Assessment Criteria**

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| Pass | Merit | Distinction |
| **LO1** Examine commonplace networking principles used in  a cloud infrastructure to support communication | | **D1** Review how creating a  cloud environment affects  network implementation  and overall performance. |
| **P1** Discuss the benefits  and constraints of different network architectures and standards within the cloud.  **P2** Describe how network  communication operates  within the cloud. | **M1** Compare common  networking standards and how they facilitate cloud  computing. |
| **LO2** Explain the operation of networking technologies  within a cloud infrastructure | |
| **P3** Explain how remote  operating system services  are deployed within the  cloud.  **P4** Explain how remote  clients interact with cloud  services. | **M2** Explore the impact of  remote operating system  optimisation within the  cloud on performance. |
| **LO3** Design a networking solution for a cloud-based  system for a business use case | | **D2** Justify the effectiveness  of your design, based  on performance and  scalability results from  testing. |
| **P5** Design a networked  solution for a cloud-based  system for a given business  use case.  **P6** Implement the  networking solution  designed for a cloud  system. | **M3** Test the cloud-based  network, for performance  and scalability. |
| **LO4** Enhance network performance for a cloud-based  system developed for a given business use case | | **D3** Justify the resulting  networking improvements  against the original  network design. |
| **P7** Recommend network  enhancements based on  cloud test results.  **P8** Implement network  enhancements for a cloud  system. | **M4** Test network  enhancements for  further performance and  scalability improvements. |