

Learning Guide Unit 6

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Description

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Overview

UNIT 6: Secure Storage, Virtualization, and Cloud Computing

Topics

- Virtualization
- Storage technology overview
- Cloud computing

Learning Objectives

By the end of this Unit, you will be able to:

1. Explain cloud computing service models' characteristics, benefits, and limitations, and form an informed opinion on their future prospects.
2. Explain future data storage technologies and virtualization security threats and suggest countermeasures to mitigate potential risks in a cloud computing environment.

Tasks

- Peer assess Unit 5 Written Assignment
- Read through the Learning Guide and the Reading Assignment
- Complete the Discussion Assignment by posting in the Discussion Forum
- Respond to three of your fellow classmates' posts in the Discussion Forum
- Complete and submit the Learning Journal
- Take the Self-Quiz
- Take the Graded Quiz

Introduction

Cloud computing is arguably a major revolutionary technology that incorporates concepts such as resource pooling, virtualization, services on-demand, speedy elasticity, and scalability. Concepts in Cloud computing are constantly changing and its frontiers of applications rapidly expanding. A major application area of virtualization is in the area of storage. Virtualization and cloud computing have made affordable storage accessible, with on-demand services like google drive, etc. However, the ever-evolving cloud computing platform is beset by numerous security concerns. In this unit, you shall delve into the exciting field of virtualization and cloud computing. You will also be introduced to security considerations in cloud computing.

Watch

Reference:

- PowerCert Animated Videos. (2022, September 27). *Virtualization explained* [Video]. YouTube. <https://www.youtube.com/watch?v=UBVVq-xz5i0>

Reading Assignment

As you read through the learning resource consider the following:

- *How does virtualization impact the way businesses manage and deploy their IT resources in cloud computing environments?*
- *What are the potential implications of cloud computing on the future of technology and society as a whole?*
- *How can advancements in virtualization security and data storage technologies facilitate the growth and development of cloud computing?*

Read

1. Chen, L., Xian, M., Liu, J., & Wang, H. (2019, April 17). [Research on virtualization security in cloud computing. International conference on AI and big data application \(AIBDA 2019\) 20-22 December 2019, Guangzhou, China](#). IOP Publishing.

- Read this paper for an overview of virtualization security in cloud computing.

2. Montini, H. (2022, November 25). [The future of data storage technologies](#). SALVAGEDATA.

- Read this article on overview of storage and future trends in data storage.

3. Perry, Y. (2022, June 24). [The future of cloud computing: 5 trends you must know about](#). NetApp BlueXP.

- Read this article to know the future trends in cloud computing.

4. Rashid, A., & Chaturvedi, A. (2019). [Cloud computing characteristics and services: A brief review](#). *International Journal of Computer Sciences and Engineering*, 7(2), 421-426.

- Read this paper for an overview of cloud computing.

5. Rashid, A., & Chaturvedi, A. (2019). [Virtualization and its role in cloud computing environment](#). *International Journal of Computer Sciences and Engineering*, 7(4), 1131-1136.

- Read this paper for an overview of Virtualization.

Discussion Assignment

In this discussion, you are tasked with exploring the world of cloud computing service models. Specifically, you will focus on **any two** of the following service models: SaaS, IaaS, PaaS, or more recently RaaS.

For each service model you choose, please provide a detailed description, including:

- Benefits of using the service model
- Possible disadvantages (if any)
- Practical areas of application

Finally, share your opinion on the future prospects of cloud computing. What trends do you see emerging, and what impact do you think these trends will have on businesses and individuals?

Please support your opinions with evidence and examples from credible sources. You should also engage in active dialogue with your peers by comparing and contrasting your answer to those of your peers.

Your Discussion should be a minimum of 200 words in length.

Learning Journal

You are a cloud security expert who has been hired by a company that is preparing to migrate its operations to the cloud. The company's management is concerned about the security of their data, especially with the increasing amount of data projected due to the Internet of Things (IoT) and Big Data. During your security assessment, you have identified several virtualization security threats that could impact the company's data and operations if not addressed. As a cloud security expert, you need to choose any one of the following proposed future data storage technologies and explain how it could be a possible solution for the company.

Proposed Future Storage Technology:

Option 1: Frozen Data

Option 2: Shingled Magnetic Recording (SMR)

Option 3: DNA Data Storage

Option 4: 5D Optical Data Storage

Option 5: Helium Drives.

Task

In this assignment, you will choose one proposed future storage technology and write a brief write-up on how it could be a possible solution for the company. You will also explain any three virtualization security threats and suggest countermeasures to mitigate the risks associated with each security threat.

Your assignment should have a minimum of 400 words and a maximum of 750 words.

Use APA citations and references if you use ideas from the readings or other sources.

Self-Quiz

The Self-Quiz gives you an opportunity to self-assess your knowledge of what you have learned so far.

The results of the Self-Quiz do not count towards your final grade. However, the quiz is an important part of the University's learning process and it is expected that you will take it to ensure understanding of the materials presented. Reviewing and analyzing your results will help you perform better on future Graded Quizzes and the Final Exam.

Please access the Self-Quiz on the main course homepage; it is listed inside the Unit.

Graded Quiz

The Graded Quiz will test your knowledge of all the materials learned thus far. The results of the quiz will count towards your final grade.

Please access the Graded Quiz on the main course homepage; it will be listed inside the Unit. After you click on it, the quiz's introduction will inform you of any time or attempt limits in place.

Good luck!

Checklist

- Peer assess Unit 5 Written Assignment
- Read through the Learning Guide and the Reading Assignment
- Complete the Discussion Assignment by posting in the Discussion Forum
- Respond to three of your fellow classmates' posts in the Discussion Forum
- Complete and submit the Written Assignment
- Complete and submit the Learning Journal
- Take the Self-Quiz
- Take the Graded Quiz