Learning Guide Unit 7

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Description

Learning Guide Unit 7

Table of contents

Overview

UNIT 7: Computer Cloud Security

Topics

- Cloud computing basics
- Network security and compliance in the cloud
- Identity Management System
- Data risks in cloud security

Learning Objectives

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

1. Elaborate on the most recent data breach in the cloud or web.
2. Compare cybersecurity products and services.
3. Explore data security in cloud computing.

Tasks

- Peer assess Unit 6 Written Assignment
- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Written Assignment
- Make entries to the Learning Journal
- Take the Self-Quiz

Introduction

Cloud computing finds its application in various sectors, business, and/or personal use. Cloud services are used to store data, run applications, for backups and archiving, social networking, and so on. Cloud resources can also be used as a platform. There are a variety of cloud services and products that are offered by high-tech companies.

In cloud adoption, Galov (2021) describes several points to consider. His stats say that by 2023 the public cloud service market would reach about $623.3 billion. Further in his stats, he concludes that 94% of the enterprises use cloud service and about 50% of enterprises spend on an average about $ 1.2 million annually on cloud services. Concerning organizations, his stats tell us that they leverage around 5 different cloud platforms on an average; with 30% of the IT budgets allocated towards cloud computing. He had also predicted that by 2020, 83% of enterprise workloads would be in the cloud. Considering the scale of cloud infrastructure and service usage and the growing trend for further expansion, it is imperative to consider cyber security implications related to cloud operations and data storage.

In this unit, we discuss cyber security aspects related to cloud networks, identity management and access control, data risks, and cloud computing in general.

References:

Galov, N. (2021, August 9). *Cloud adoption statistics for 2021*. hosting tribunal. https://hostingtribunal.com/blog/cloud-adoption-statistics/#gref

Cloud computing basics

Cloud is a model that allows worldwide, appropriate, and on request access to a shared pool of configurable computing resources. For example- networks, servers, storage, applications, and services that can be rapidly provided. It is published with minimal management effort or interaction with the service provider.

Users can access IT services via the cloud when necessary without interacting with the service provider. Cloud services are extensively available over the network using the tools preferred by the users (laptops, desktops, smartphones, etc.).

Reading Assignments:

Read What is a Cloud Service – Cloud Service Definition

Watch Cloud Computing Tutorial for Beginners | Cloud Computing Explained | Cloud Computing | Simplilearn

References:

Amazon Web Services. (2021, July 15). *What is cloud computing? | Amazon web services* [Video]. YouTube. https://www.youtube.com/watch?v=mxT233EdY5c

Simplilearn. (2018, May 18). *Cloud computing tutorial for beginners | cloud computing explained | cloud computing | simplilearn* [Video]. YouTube. https://www.youtube.com/watch?v=RWgW-CgdIk0

What is a cloud service. (n.d.). Citrix. https://www.citrix.com/solutions/digital-workspace/what-is-a-cloud-service.html

Network security and compliance in the cloud

"Cloud networking is a type of IT infrastructure in which some or all of an organization's network capabilities and resources are hosted in a public or private cloud platform, managed in-house or by a service provider, and available on demand." (Cloud networking, n.d., para 1).

As we have discussed, cloud network security is about the implementation of cybersecurity measures to IT cloud infrastructure. In a way, cloud cybersecurity measures are like those that cybersecurity professionals implement for traditional computer networks. Access, interaction with the cloud data and services is supported by the web interface. Thus, all aspects of web applications cybersecurity that we discussed in previous units are fully applicable to cloud computing.

Watch the video to understand the difference between security and compliance.

Reading Assignments:

Read Security and Compliance Management in Cloud Computing

Watch Cloud Networking Overview

Resources

Cisco Data Center and Cloud Made Easy. (2020, November 19). *Cloud networking overview (Using AWS as reference)* [Video]. YouTube. https://www.youtube.com/watch?v=WmyiE27uKOo

Cloud networking. (n.d.). VMware. https://www.vmware.com/topics/glossary/content/cloud-networking

Hashmi, A., Ranjan, A., Anand, A. (2018, January 31). 7(1). Security and compliance management in cloud computing. International journal of advanced studies in computer science and engineering IJASCSE. https://cutt.ly/8nIriNP[UK1]

Tripwire, Inc. (2019, October 16). *Understanding security vs. compliance: What's the difference?* [Video]. YouTube.
https://www.youtube.com/watch?v=2PJEPEn1spA

Identity Management System

Yeluri & Castro-Leon (2014, para 3) explain, *"Identity management encompasses the management of individual identities and their authentication, authorization, roles, and privileges and permissions within or across system and enterprise boundaries, with the goal of increasing security and productivity while decreasing cost, downtime, and repetitive tasks."*

Identity management is the key component to support trust for cloud computing, and a particular cloud provider. Due to the distributed nature of cloud computing, access control may represent some challenges. Some of the most common challenges are password control, access tokens, and federated identity management. In simple terms, federated identity management means the ability of the cloud users to access cloud services and data using one single login.

Reading Assignments:

Read What Is Federated Identity?

Watch Identity and Access Management: Technical Overview

Resources:

Microsoft Security. (2020, September 17). *What is identity and access management (IAM) and how to use it* [Video]. YouTube. https://www.youtube.com/watch?v=iHKkzK-WR-c

What Is federated identity? (n.d.). okta. https://www.okta.com/identity-101/what-is-federated-identity/

VMware End-User Computing. (2019, June 7). *Identity and access management: Technical overview* [Video]. YouTube. https://www.youtube.com/watch?v=Tcvsefz5DmA

Yeluri, R., & Leon, E.C. (2014, March 27). Identity management and control for clouds. *Building the infrastructure for cloud security*, 141-161. https://link.springer.com/content/pdf/10.1007%2F978-1-4302-6146-9.pdf

Data risks in cloud security

As it was noted earlier, that cloud security in many ways is similar to web security identity theft, malware, data breaches, and compliance violations are also the most common risks to cloud security

Reading Assignments:

Read Cloud computing security risks in 2021, and how to avoid them

Watch Securing Data In The Cloud

Resources:

Bushkovskyi, O. (2019, July 26). *Cloud computing security risks in 2021, and how to avoid them*. The APP solutions. https://theappsolutions.com/blog/development/cloud-security-risks/

Enigma Forensics, Inc. (2020, March 4). *Securing data in the cloud* [Video]. YouTube. https://www.youtube.com/watch?v=oiuRZxQ-IpA

Google Cloud Tech. (2020, March 3). *Top 3 data risks in cloud security* [Video]. YouTube. https://www.youtube.com/watch?v=QJcRkpzW8Mw&t=24s

Reading Assignment

1. Bushkovskyi, O. (2019, July 26). *Cloud computing security risks in 2021, and how to avoid them*. The APP solutions. **https://theappsolutions.com/blog/development/cloud-security-risks/**
2. Cloud networking. (n.d.). VMware. **https://www.vmware.com/topics/glossary/content/cloud-networking**
3. Galov, N. (2021, August 9). *Cloud adoption statistics for 2021*. hosting tribunal. **https://hostingtribunal.com/blog/cloud-adoption-statistics/#gref**
4. Hashmi, A., Ranjan, A., Anand, A. (2018, January 31). 7(1). Security and compliance management in cloud computing. International journal of advanced studies in computer science and engineering IJASCSE. **https://cutt.ly/8nIriNP[UK1]**
5. *What is a cloud service*. (n.d.). Citrix. **https://www.citrix.com/solutions/digital-workspace/what-is-a-cloud-service.html**
6. What Is federated identity? (n.d.). okta. **https://www.okta.com/identity-101/what-is-federated-identity/**
7. Yeluri, R., & Leon, E.C. (2014, March 27). Identity management and control for clouds. *Building the infrastructure for cloud security*, 141- 161. **https://link.springer.com/content/pdf/10.1007%2F978-1-4302-6146-9.pdf**

Video Resources

1. Amazon Web Services. (2021, July 15). *What is cloud computing? | Amazon web services* [Video]. YouTube. **https://www.youtube.com/watch?v=mxT233EdY5c**
2. Cisco Data Center and Cloud Made Easy. (2020, November 19). *Cloud networking overview (Using AWS as reference)* [Video]. YouTube. **https://www.youtube.com/watch?v=WmyiE27uKOo**
3. Enigma Forensics, Inc. (2020, March 4). *Securing data in the cloud* [Video]. YouTube. **https://www.youtube.com/watch?v=oiuRZxQ-IpA**
4. Google Cloud Tech. (2020, March 3). *Top 3 data risks in cloud security* [Video]. YouTube. **https://www.youtube.com/watch?v=QJcRkpzW8Mw&t=24s**
5. Microsoft Security. (2020, September 17). *What is identity and access management (IAM) and how to use it* [Video]. YouTube. **https://www.youtube.com/watch?v=iHKkzK-WR-c**
6. Simplilearn. (2018, May 18). *Cloud computing tutorial for beginners | cloud computing explained | cloud computing | simplilearn* [Video]. YouTube. **https://www.youtube.com/watch?v=RWgW-CgdIk0**
7. Tripwire, Inc. (2019, October 16). *Understanding security vs. compliance: What's the difference?* [Video]. YouTube. **https://www.youtube.com/watch?v=2PJEPEn1spA**
8. VMware End-User Computing. (2019, June 7). *Identity and access management: Technical overview* [Video]. YouTube. **https://www.youtube.com/watch?v=Tcvsefz5DmA**

Discussion Assignment

Data (information) has become a valuable commodity. Cybercriminals target organizations and individuals who represent precious data. Data is being stolen and sold on Dark Web. Motivations of cybercriminals may differ, among those could be material gains, political, elimination of competitors, revenge, and just causing harm for no reason.

For this discussion, research on the internet, find a data breach in the cloud (or web) that occurred within the last 12 months from the current date. Study the breach and:

- Explain why it occurred, and what was the damage inflicted on the business.
- Elaborate on the lessons learned from this case. In your opinion, what cybersecurity measures could prevent or reduce the occurrence of this type of data breach?

Your Discussion should be a minimum of 200 words in length and not more than 500 words. Please include a word count. Following the APA standard, use references and in-text citations for the textbook and any other sources.

Written Assignment

Submit a paper that is 2-3 pages in length, exclusive of the reference page, double-spaced using 12-point Times New Roman font. The paper must cite at least two (2) outside sources in APA format and be well-written. Check all content for grammar, spelling and be sure that you have correctly cited, all resources (in APA format) used. Refer to the UoPeople APA Tutorials in the LRC for help with APA citations.

Cloud computing has become commonplace for business and private individuals. There are a few cloud computing providers who gained world popularity, i.e. Microsoft, Google, IBM, and others. Conduct internet research for the most trusted and popular cloud computing providers, and:

- Select two cybersecurity products and services of your choice, compare them and enter into agreements between them.
- Elaborate on the advantages and disadvantages of each selected business.
- List the businesses that offer better cyber security services and/or products? And why?

NOTE: If you have difficulty starting your research, feel free to check Top cloud providers in 2021: AWS, Microsoft Azure, and Google Cloud, hybrid, SaaS players

Reference:

Dignan, L. (2021, December 22). *Managing the multicloud*. ZDNet. https://www.zdnet.com/article/the-top-cloud-providers-of-2021-aws-microsoft-azure-google-cloud-hybrid-saas/

Written Assignment Peer Assessment

In the unit following the submission of your written assignment, you will peer assess three (3) of your classmates' assignments according to the instructions found in the Assessment Form. During this peer assessment period, you are expected to provide details in the feedback section of the Assessment Form, indicating why you awarded the grade that you did to your peer. The written assignment grade is comprised of a combination of your submission (90%) and your peer assessments (10%).

Written Assignment Peer Assessment Rubric

Learning Journal

The Learning Journal is a tool for self-reflection on the learning process. In addition to completing directed tasks, you should use the Learning Journal to document your activities, record problems you may have encountered, and draft answers for Discussion Forums and Assignments. The Learning Journal should be updated regularly (weekly), as your instructor will assess the learning journals as part of your Final Grade.

In this unit, we discussed the various types of cyber threats to cloud computing. To reflect on what you have learned, answer each of the following questions:

1. Describe what was the most interesting facts about cyber threats to cloud computing you learned in this unit. Think about reasons why you noticed these facts, your impression, your plans for further exploration of cyber threats to cloud computing.
2. Describe your personal experience with cloud computing and user data protection.

The Learning Journal entry should be a minimum of 500 words and not more than 750 words. Use APA citations and references if you use ideas from the readings or other sources.

Refer Learning Journal Rubrics

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.

Checklist

- Peer assess Unit 6 Written Assignment
- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Written Assignment
- Make entries to the Learning Journal
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