Learning Guide Unit 3

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Description

Learning Guide Unit 3

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Overview

UNIT 3: Access Control

Topics

- Introduction
- Firewalls and their applications in Cybersecurity
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Learning Objectives

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

1. Explain the role of firewalls and access control in protecting computer networks from cyber threats.
2. Discuss four types of IDS used for network protection.
3. Outline biometric authentication method.

Tasks

- Peer assess Unit 2 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
- Take the Graded Quiz

Introduction

Cybersecurity professionals use a variety of tools and techniques to protect computer networks and data. In 1994, Checkpoint launched Firewall-1 that was extremely important for the development and maturation of the security market, pioneering the GUI (Graphic User Interface) concept, as well as other technologies directly related to security (OSTEC, 2020, Timeline: Firewall in the 90's section).

In recent times, cybersecurity is supported by three types of firewalls: stateless, stateful, and proxy servers. The reading assignment and introductory videos provide a more detailed overlook of existing types of Firewalls and their applications in Cybersecurity.

Another fundamental concept in Cybersecurity is Access Control. Access control defines the "Who", "How", and "When" for access to computer networks, data, and use of resources. "Through authentication and authorization, access control policies make sure users are who they say they are and that they have appropriate access to company data. Access control can also be applied to limit physical access to campuses, buildings, rooms, and data centers" (Secure Access, n.d., para 1).

In this unit, we discuss and explore the role of Firewalls Access Control, its requirements, and access control models used in cybersecurity.

Resources:

Firewall: history. (2015, July 21). OSTEC. https://ostec.blog/en/perimeter/firewall/

Kantech Support. (2017, July 5). *Basics of access control* [Video]. YouTube. https://www.youtube.com/watch?v=2QTFiQVdrgg

Secure access. (n.d.). Citrix. https://www.citrix.com/en-in/solutions/secure-access/what-is-access-control.html

Firewalls and their applications in Cybersecurity

Firewalls protect the network from malicious attacks by filtering received data packets using prescribed rules. Here, we will be discussing three basic types of Firewalls: stateless, stateful, and proxy servers.

Reading Assignments:

Read: Introduction of Firewall in Computer Network

Watch: Introduction to Firewalls

Resources

Networklessons.com. (2017, September 26). *Introduction to firewalls* [Video]. YouTube. https://www.youtube.com/watch?v=JtKq39I7z6k

PowerCert Animated Videos. (2019, June 17). *What is a firewall?* [Video]. YouTube. https://www.youtube.com/watch?v=kDEX1HXybrU

Introduction of firewall in computer network. (2019, November 21). GeeksforGeeks. Retrieved January 1, 2022, from https://www.geeksforgeeks.org/introduction-of-firewall-in-computer-network/

Access Control

Access control is a security technique or access restriction that regulates who or what can view or use resources in an IT environment. There are four basic access control models **Mandatory Access Control** (MAC), **Discretionally Access Control (**DAC), **Role-based Access Control** (RBAC), and **Attribute-Based Access Control** (ABAC).

Reading Assignments:

Read:

Cybersecurity (CS 3550): Lecture 11: Identity & Access Management

Access Control Models: MAC, DAC, RBAC, & PAM Explained

Watch:

Access Control Models

Attribute-Based Access Control

Resources

Everything security. (2019, May 5). *Access control models* [Video]. YouTube. https://www.youtube.com/watch?v=TXCim0E8W8M

Intricity101. (2021, January 12). *What is access control?* [Video]. YouTube. https://www.youtube.com/watch?v=GgquXOl4_t0

Risk, E. (2021, July 30). *Access control models: MAC, DAC, RBAC, & PAM explained*. Twingate. https://www.twingate.com/blog/access-control-models/

Study Notes and Theory. (2020, August 28). *Attribute-based access control* [Video]. YouTube. https://www.youtube.com/watch?v=KU-yyj2e7Ig

Whiteman, M. (2020). *Cybersecurity (CS 3550): lecture 11: Identity & access management* [PowerPoint slides]. Baruch college Open Educational Resources. https://academicworks.cuny.edu/bb_oers/12/ licensed under Creative Commons 4.0.

Reading Assignment

1. *Firewall: history*. (2015, July 21). OSTEC. **https://ostec.blog/en/perimeter/firewall/**
2. *Introduction of firewall in computer network*. (2019, November 21). GeeksforGeeks. Retrieved January 1, 2022, from **https://www.geeksforgeeks.org/introduction-of-firewall-in-computer-network/**
3. Risk, E. (2021, July 30). *Access control models: MAC, DAC, RBAC, & PAM explained*. Twingate. **https://www.twingate.com/blog/access-control-models/**
4. *Secure access*. (n.d.). Citrix. **https://www.citrix.com/en-in/solutions/secure-access/what-is-access-control.html**
5. Whiteman, M. (2020). *Cybersecurity (CS 3550): lecture 11: Identity & access management* [PowerPoint slides]. Baruch college Open Educational Resources. **https://academicworks.cuny.edu/bb_oers/12/** licensed under Creative Commons 4.0.

Video Resources

1. Everything security. (2019, May 5). *Access control models* [Video]. YouTube. **https://www.youtube.com/watch?v=TXCim0E8W8M**
2. Intricity101. (2021, January 12). *What is access control?* [Video]. YouTube. **https://www.youtube.com/watch?v=GgquXOl4_t0**
3. Kantech Support. (2017, July 5). *Basics of access control* [Video]. YouTube. **https://www.youtube.com/watch?v=2QTFiQVdrgg**
4. Networklessons.com. (2017, September 26). *Introduction to firewalls* [Video]. YouTube. **https://www.youtube.com/watch?v=JtKq39l7z6k**
5. PowerCert Animated Videos. (2019, June 17). *What is a firewall?* [Video]. YouTube. **https://www.youtube.com/watch?v=kDEX1HXybrU**
6. Study Notes and Theory. (2020, August 28). *Attribute-based access control* [Video]. YouTube. **https://www.youtube.com/watch?v=KU-yyj2e7lg**

Discussion Assignment

We are surrounded by digital devices. Look around yourself and identify a device with a biometric authentication method, and:

- Provide a detailed description of the device, the method of authentication, and how you use it. Share your experience of using this biometric authentication.
- Identify and discuss the technical details about this method, the feature vector, the authentication process, and the accuracy of the method used. Determine if this authentication method could be bypassed, and/or if there are any other issues related to biometric authentication.

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.

In some ways, Intrusion Detection Systems are similar to Firewalls.

Read What Is an Intrusion Detection System?, and answer the following questions on the types of IDS used for network protection: (Make sure you write the answers in your own words to avoid plagiarism)

- Describe each of the four IDS types.
- Explain how each of the IDS types operates. What is the best suited operational environment in terms of both network & business?
- In the concluding part of your assignment compare the types of IDS against each other. Explain why all these IDS exist with their Pros and Cons.

Resource:

Velimirovic, A. (2021, September 2). *What is an intrusion detection system?.* PhoenixNAP Global IT Services. https://phoenixnap.com/blog/intrusion-detection-system

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%).

Refer 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. 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.

In this unit, we learned about the role of Firewalls and Access Control in securing computer networks. To reflect on what you have learned, please, answer the following question:

- Describe the most interesting facts you learned about Firewalls and Access Control (think about reasons why you noticed these facts, your impression, your plans for further exploration of firewalls and access control).

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.

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

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