

Syllabus

Course Overview

This course will strengthen your understanding of cloud computing concepts, including hybrid cloud deployment models, compound design patterns, and architectures that involve both on-premise and cloud environments. You will place an emphasis on cloud security and the mechanisms and controls to prevent and respond to threats and attacks. Additionally, you will examine the migration of current applications and data storage infrastructure to the cloud, as well as the identification and provisioning of required cloud services to support cloud-based applications. Finally, you will employ a hands-on experience to explore and demonstrate configuration, automation, and monitoring of cloud applications and services, and their ongoing operational support.

Technology Resources

Use of the following third-party resource is strongly recommended to support you in completing the course objectives. If you have access to other tools that you believe may still meet course requirements or if you have any difficulties accessing this resource or completing the related assignments, please contact your course faculty member to discuss potential alternatives.

- This course offers labs through Qwiklabs, an online learning environment that simulates a live, real-world, scenario-based use case. In a lab, you will have access to the actual environment you want to learn about, not a simulation or demo environment. You can access the lab environment from anywhere on the Internet using a standard browser. Most labs require credits to access, but there are a variety of free introductory labs available as well.
- Get started with [Qwiklabs help](#).

Course Competencies

(Read Only)

To successfully complete this course, you will be expected to:

- 1 Evaluate the risks and advantages of hybrid cloud deployment models.
- 2 Apply mechanisms and controls to address key threats and attacks that focus on real-world cloud computing vulnerabilities.
- 3 Identify applications and IT infrastructure suitable for migration to the cloud.
- 4 Select from among available services those required to support applications and IT infrastructure to be migrated to the cloud.
- 5 Configure and deploy a cloud application.
- 6 Demonstrate proficiency in providing user support for common issues that arise in cloud-based application deployment.
- 7 Communicate effectively with key stakeholders.

Course Prerequisites

ITEC5050

Syllabus >> Course Materials

Required

The materials listed below are required to complete the learning activities in this course.

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Amazon Web Services. (2015). [Introduction to AWS Lambda - Serverless compute on Amazon Web Services \[Video\]](https://www.youtube.com/watch?v=eOBq__h4OJ4). | [Transcript](#) Retrieved from https://www.youtube.com/watch?v=eOBq__h4OJ4
- Amazon Web Services. (2018). [Overview of Amazon Web Services](https://aws.amazon.com/whitepapers/overview-of-amazon-web-services/). Retrieved from <https://aws.amazon.com/whitepapers/overview-of-amazon-web-services/>
- Amazon Web Services. (n.d). [Amazon Redshift Documentation](https://docs.aws.amazon.com/redshift/index.html#lang/en_us). Retrieved from https://docs.aws.amazon.com/redshift/index.html#lang/en_us
- Amazon Web Services. (n.d). [IAM Roles](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html). Retrieved from https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html
- Amazon Web Services. (n.d). [Virtual Private Cloud Documentation](https://docs.aws.amazon.com/vpc/index.html#lang/en_us). Retrieved from https://docs.aws.amazon.com/vpc/index.html#lang/en_us
- Amazon Web Services. (n.d). [Building a Modular and Scalable Virtual Network Architecture with Amazon VPC](https://docs.aws.amazon.com/quickstart/latest/vpc/overview.html). Retrieved from <https://docs.aws.amazon.com/quickstart/latest/vpc/overview.html>
- Amazon Web Services. (n.d). [What is AWS CloudTrail?](https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html) Retrieved from <https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html>
- Amazon Web Services. (n.d). [Amazon ECS Clusters](https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ECS_clusters.html#cluster_concepts). Retrieved from https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ECS_clusters.html#cluster_concepts
- Amazon Web Services. (n.d). [Amazon Web Services Key Management Service \(KMS\)](https://aws.amazon.com/kms/). Retrieved from <https://aws.amazon.com/kms/>
- Amazon Web Services. (n.d). [AWS Lambda Permissions](https://docs.aws.amazon.com/lambda/latest/dg/lambda-auth-and-access-control.html). Retrieved from <https://docs.aws.amazon.com/lambda/latest/dg/lambda-auth-and-access-control.html>
- Amazon Web Services. (n.d). [What is Amazon DynamoDB?](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html) Retrieved from <https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html>

- Amazon Web Services. (n.d.). [What is an Amazon API Gateway?](https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html) Retrieved from https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html
- Amazon Web Services. (n.d.). [What is AWS Lambda?](https://docs.aws.amazon.com/lambda/latest/dg/welcome.html) Retrieved from https://docs.aws.amazon.com/lambda/latest/dg/welcome.html
- Amazon Web Services. [AWS Cloud Adoption Readiness Tool \(CART\)](https://cloudreadiness.amazonaws.com/#/cart). Retrieved from https://cloudreadiness.amazonaws.com/#/cart
- AWS Online Tech Talks. (2017). [How to Deploy .NET Code to AWS from within Visual Studio \[Video\]](https://www.youtube.com/watch?v=pgRzdZeNx8). | [Transcript](#) Retrieved from https://www.youtube.com/watch?v=pgRzdZeNx8
- Barr, Jeff. (2014). [New AWS Key Management Service \(KMS\)](https://www.tcdi.com/information-security-compliance-which-regulations/). Retrieved from https://www.tcdi.com/information-security-compliance-which-regulations/
- Deloitte. (2014). [Cloud Computing: What Auditors Need to Know](https://www.ucop.edu/ethics-compliance-audit-services/_files/webinars/10-14-16-cloud-computing/cloudcomputing.pdf). Retrieved from https://www.ucop.edu/ethics-compliance-audit-services/_files/webinars/10-14-16-cloud-computing/cloudcomputing.pdf
- Freeman, Jonathan. (2018). [What is an API? Application Programming Interfaces Explained](https://www.infoworld.com/article/3269878/apis/what-is-an-api-application-programming-interfaces-explained.html). Retrieved from https://www.infoworld.com/article/3269878/apis/what-is-an-api-application-programming-interfaces-explained.html
- MartyAWS. (2017). [AWS: How to place your Lambda Functions in a VPC \[Video\]](https://www.youtube.com/watch?v=yMzb48BL7qQ). | [Transcript](#) Retrieved from https://www.youtube.com/watch?v=yMzb48BL7qQ
- Mulesoft. (n.d.). [What is an API? \(Application Programming Interfaces\)](https://www.mulesoft.com/resources/api/what-is-an-api). Retrieved from https://www.mulesoft.com/resources/api/what-is-an-api
- Qwiklabs. (n.d.). [Introduction to AWS Lambda](https://amazon.qwiklabs.com/catalog_lab/222). Retrieved from https://amazon.qwiklabs.com/catalog_lab/222
- Qwiklabs. (n.d.). [Working With Amazon Redshift](https://amazon.qwiklabs.com/catalog_lab/123). Retrieved from https://amazon.qwiklabs.com/catalog_lab/123
- Qwiklabs. (n.d.). [Building Your First Amazon Virtual Private Cloud](https://amazon.qwiklabs.com/catalog_lab/135). Retrieved from https://amazon.qwiklabs.com/catalog_lab/135
- Qwiklabs. (n.d.). [Introduction to Amazon API Gateway](https://www.qwiklabs.com/focuses/269?catalog_rank=%7B%22rank%22%3A1%2C%22num_filters%22%3A2%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=2157704). Retrieved from https://www.qwiklabs.com/focuses/269?catalog_rank=%7B%22rank%22%3A1%2C%22num_filters%22%3A2%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=2157704
- Qwiklabs. (n.d.). [Introduction to Amazon Elasticsearch Service](https://www.qwiklabs.com/catalog_lab/231). Retrieved from https://www.qwiklabs.com/catalog_lab/231
- Qwiklabs. (n.d.). [Introduction to AWS Key Management Service](https://amazon.qwiklabs.com/catalog_lab/220). Retrieved from https://amazon.qwiklabs.com/catalog_lab/220
- Qwiklabs. (n.d.). [Performing a Basic Audit of your AWS Environment](https://amazon.qwiklabs.com/catalog_lab/188). Retrieved from https://amazon.qwiklabs.com/catalog_lab/188
- Qwiklabs. (n.d.). [Programming AWS Lambda for Windows](https://amazon.qwiklabs.com/catalog_lab/244). Retrieved from https://amazon.qwiklabs.com/catalog_lab/244
- Qwiklabs. (n.d.). [Serverless Web Apps using Amazon DynamoDB - Part 1](https://amazon.qwiklabs.com/catalog_lab/281). Retrieved from https://amazon.qwiklabs.com/catalog_lab/281
- Qwiklabs. (n.d.). [Serverless Web Apps using Amazon DynamoDB - Part 2](https://amazon.qwiklabs.com/catalog_lab/282). Retrieved from https://amazon.qwiklabs.com/catalog_lab/282
- Qwiklabs. (n.d.). [Serverless Web Apps using Amazon DynamoDB - Part 3](https://amazon.qwiklabs.com/catalog_lab/283). Retrieved from https://amazon.qwiklabs.com/catalog_lab/283
- Qwiklabs. (n.d.). [Update Security Groups Automatically Using AWS Lambda](https://amazon.qwiklabs.com/catalog_lab/299). Retrieved from https://amazon.qwiklabs.com/catalog_lab/299
- Sahoo, Narendra, (n.d.). [Audits and Compliance Requirements for Cloud Computing](https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing) Retrieved from https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing
- Simplilearn. (2018). [AWS Lambda Tutorial for Beginners | What is AWS Lambda? | AWS Tutorial for Beginners \[Video\]](https://www.youtube.com/watch?v=97q30JjEq9Y). | [Transcript](#) Retrieved from https://www.youtube.com/watch?v=97q30JjEq9Y
- Vandenburg, Eric. (n.d.). [Information Security Compliance: Which regulations relate to me?](https://www.tcdi.com/information-security-compliance-which-regulations/) Retrieved from https://www.tcdi.com/information-security-compliance-which-regulations/

Suggested

The following materials are recommended to provide you with a better understanding of the topics in this course. These materials are not required to complete the course, but they are aligned to course activities and assessments and are highly recommended for your use.

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Qwiklabs. (n.d.). [Sign in to Qwiklabs Support](https://qwiklab.zendesk.com). Retrieved from https://qwiklab.zendesk.com

Optional

The following optional materials are offered to provide you with a better understanding of the topics in this course. These materials are not required to complete the course.

Unit 1 >> Clustering

Introduction

This week you will:

- Study Amazon Elasticsearch Service.
- Complete a lab on Amazon Elasticsearch Service.
- Complete a lab on Amazon Redshift.

Welcome to the course! In ITEC5050 we explored the introductory concept of cloud storage within a single container, and ITEC5060 expands on what we learned.

In Unit 1 you will explore the concept of "clustering." Some of you may ask, what is clustering? Instead of a single storage instance, clustering can be a group of computer or containers that work as one. For example, several Amazon Elastic Compute Cloud (EC2) instances may be viewed as a single system from a customer's perspective. The advantages of clustering are to improve performance and availability of a single service or a group of related services. This is another advantage of cloud computing: there are cost savings when running virtual instances over having to procure physical computers (cost, maintenance, licensing) to perform the same function.

Learning Activities**u01s1 - Software Preparation and Technology Access**

In this course, you will be using software and technology that is needed to complete designated activities and assignments. There is no additional cost for this software and technology. Some software packages will be made available to you at no additional cost through Capella's subscription with Microsoft, while other software packages are available for free download through open-source licensing.

Capella University requires learners to meet certain minimum [computer requirements](#). Please note that some software required for a course may exceed these minimum requirements. Check the requirements for the software you may need to download and install to make sure it will work on your device. Most software will require a Windows PC. If you use a Mac, refer to [Installing a Virtual Environment and Windows on a Mac](#).

The software and technologies below are strongly recommended to support you in completing the course objectives. If you have access to other tools that you believe may still meet the requirements of this course, please discuss your selected alternatives with your instructor.

If you use assistive technology or any alternative communication methods to access course content, please contact DisabilityServices@Capella.edu with any access-related questions or to request accommodations.

Use of the following third party resource is strongly recommended to support you in completing the course objectives. If you have access to other tools that you believe may still meet course requirements or if you have any difficulties accessing this resource or completing the related assignments, please contact your course faculty member to discuss potential alternatives.

For this course, follow the instructions provided through the steps below to register for an account.

Qwiklabs

As a part of this course, you will access official Amazon Web Services training labs through Qwiklabs. The labs you are required to complete will be linked in the courseroom. Some of the labs are free, and you will need to "pay" for some labs with credits that will be provided to you by the Capella QwikLabs Administrator. After you create your Qwiklabs account, credits will be made available to you. Please make sure you use the credits ONLY to access the assigned labs for the course.

Please follow these instructions carefully to get set up on Qwiklabs and check your credit balance:

1. Go to [Qwiklabs](#) and click **Join** in the upper right corner of the page.
2. Select **Join with Email**.
3. Complete the form using your Capella University email address.
4. Provide Capella University as the Company Name.

Note: You may receive an e-mail at this point inviting you to join. Please disregard if you have already done so.

To check your credits:

1. Sign in and click the user icon in the upper right corner.
2. Select **My Account** from the dropdown menu.

3. Click **Credits & Subscriptions** on the top of the menu column on the left and your credits will be displayed. If you have 0 credits, send an email to: qwiklabs-admin@capella.edu requesting lab credits for your course.

To use Qwiklabs, open the lab. Here are some important points to consider:

- The labs run best using either the Chrome or Firefox web browser.
- The window displays the following:
 - The credit cost of the lab.
 - The amount of time you will have to complete the lab.
 - The time anticipated to complete the lab.
 - The time you accessed the lab.
- **Each time you start a lab**, credits will be subtracted from your credit balance. Therefore, make sure you allocate sufficient time to complete the lab.
- Labs are designed to be completed in one attempt. You **may not** save your work and resume it later.
- You have been allocated sufficient credits to complete a lab multiple times, as needed.
- Note that each time you start a lab, whether you actually complete the lab or not, Qwiklabs generates an automatic email when the lab timer runs out. Be aware that such notification emails are **not** valid evidence of completing a lab.

If you need help, click the Help icon on the main Qwiklabs menu and review the items on Running a Lab.

If you have difficulty running a lab, visit the Qwiklabs community portal and submit a ticket at: <https://qwiklab.zendesk.com>. You will receive a response within 24 hours.

If you encounter any difficulties in the download and installation process, post a detailed question in the Ask Your Instructor section of the course. Your instructor should be able to help you or point you in the right direction for the answers you need.

u01s2 - Clustering

For Unit 1, read the two Amazon Docs titled, "Amazon ECS Clusters" and "Amazon Redshift Documentation."

- Amazon Web Services. (n.d.). [Amazon ECS Clusters](https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ECS_clusters.html#cluster_concepts). Retrieved from https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ECS_clusters.html#cluster_concepts
- Amazon Web Services. (n.d.). [Amazon Redshift Documentation](https://docs.aws.amazon.com/redshift/index.html#lang/en_us). Retrieved from https://docs.aws.amazon.com/redshift/index.html#lang/en_us

u01s2 - Learning Components

- Determines whether or not clustering is beneficial to the organization.
- Evaluates the steps necessary to implement a secure cluster
- Identifies services needed to implement clustering from a physical to hybrid infrastructure with a cloud provider.

u01a1 - Introduction to Amazon Elasticsearch Service

Assignment Overview

Review the following documentation:

- Amazon Web Services. (n.d.). [Amazon ECS Clusters](https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ECS_clusters.html#cluster_concepts). Retrieved from https://docs.aws.amazon.com/AmazonECS/latest/developerguide/ECS_clusters.html#cluster_concepts

For this assignment you will log into your Qwiklabs account that you created in the course ITEC5050 Cloud Architecture and Distributed Systems, either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d.). [Introduction to Amazon Elasticsearch Service](https://www.qwiklabs.com/catalog_lab/231). Retrieved from https://www.qwiklabs.com/catalog_lab/231

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 3 - Step 33 - Screenshot of Creation of Subscription Filter.
2. Screenshot at the end of Task 5 - Step 52 - Screenshot of statistics of the Cluster.

Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the advantages or challenges of implementing this cloud service for your organization. Are there any security concerns? Consider suitability in terms of acquisition, budgeting, training, and overall feasibility for your organization. Finally, examine the service from an end user perspective. How can end users benefit from this service?

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing a hybrid cloud infrastructure for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

u01a2 - Working with Amazon Redshift

Assignment Overview

Review the following documentation:

- Amazon Web Services. (n.d.). [Amazon Redshift Documentation](https://docs.aws.amazon.com/redshift/index.html#lang/en_us). Retrieved from https://docs.aws.amazon.com/redshift/index.html#lang/en_us

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d). [Working With Amazon Redshift](https://amazon.qwiklabs.com/catalog_lab/123). Retrieved from https://amazon.qwiklabs.com/catalog_lab/123

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 5 - Step 43 - Screenshot of Query of Most-Flown Aircraft.
2. Screenshot at the end of Task 7 - Step 59 - Screenshot of Snapshot of Cluster.

Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the advantages or challenges of implementing this cloud service for your organization. Are there any security concerns? What are the benefits of distributing queries across multiple nodes? Consider suitability in terms of any potential cost savings for analyzing your data using these intelligence tools. Finally, examine the service from an end user perspective. How can end users benefit from this service?

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
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- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

Introduction

This week you will:

- Study Virtual Private Cloud-Based Subnets.
- Reflect upon Virtual Private Cloud-Based Network Architecture.
- Complete a lab for an Amazon Virtual Private Cloud.

In Unit 1 we examined the concept of clustering for using several nodes as one. In this unit we will cover managing your network over the cloud. Just a like physical network with layer 1, layer 2, and layer 3 security, your virtual network can be the same. Managing virtual switches, routers, and firewalls will control access to the cloud-based, virtual network. Like a physical network, end users need servers and gateways to reach the internet. End users are placed into IP blocks called "subnets." The advantages of subnets are that you can group users by job function, location, or a combination thereof. We will examine virtual private cloud networks and complete a lab for creating and managing a virtual private cloud.

Learning Activities

u02s1 - Virtual Private Cloud-Based Subnets

For Unit 2, read the following:

- Amazon Web Services. (n.d). [Virtual Private Cloud Documentation](https://docs.aws.amazon.com/vpc/index.html#lang/en_us). Retrieved from https://docs.aws.amazon.com/vpc/index.html#lang/en_us
- Amazon Web Services. (n.d.) [Building a Modular and Scalable Virtual Network Architecture with Amazon VPC](https://docs.aws.amazon.com/quickstart/latest/vpc/overview.html). Retrieved from <https://docs.aws.amazon.com/quickstart/latest/vpc/overview.html>

u02s1 - Learning Components

- Evaluates potential gaps between a physical and virtual network.
- Evaluates the benefits of the cloud technology from an end user's perspective.
- Identifies services necessary to implement a virtual private cloud-based network.

u02d1 - Virtual Private Cloud-Based Network Architecture: A Self-Reflection

For this discussion topic, you have read the Unit 2 Amazon Documentation regarding virtual private clouds. Now, perform a "self-reflection" on your networking knowledge and ability to create virtual private cloud with subnets. Understanding internet gateways, switch security, routing, routing protocols, access control lists, subnets and the OSI model are key to building a virtual private cloud. What further training do you envision either for yourself, staff, or colleagues to create a network architecture over a cloud provider's network. You are encouraged to research these topics that may be unknown to you prior to posting your response.

Your initial discussion post must be submitted by 11:59 PM Thursday.

Response Guidelines

Return to the discussion by the end of the week to read and review the posts of your peers. Does anyone else's topic coincide or complement your own? Post a comment and add questions to further explore the experiences of your classmates. Also, in your response, comment on a topic described by a peer. In your discussion post, remember to give credit to your external sources.

Your responses must be submitted by 11:59 PM Sunday.

Course Resources

Graduate Discussion Participation Scoring Guide

u02d1 - Learning Components

- Communicates in a manner suited for a technical or non-technical audience as appropriate
- Determines if a virtual private cloud is suitable to the organization.
- Identifies the advantages and disadvantages of implementing a Virtual Private Cloud

u02a1 - Building Your First Amazon Virtual Private Cloud

Assignment Overview

Review the following documentation:

- Amazon Web Services. (n.d.) [Virtual Private Cloud Documentation](https://docs.aws.amazon.com/vpc/index.html#lang/en_us). Retrieved from https://docs.aws.amazon.com/vpc/index.html#lang/en_us
- Amazon Web Services. (n.d.) [Building a Modular and Scalable Virtual Network Architecture with Amazon VPC](https://docs.aws.amazon.com/quickstart/latest/vpc/overview.html). Retrieved from <https://docs.aws.amazon.com/quickstart/latest/vpc/overview.html>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d.). [Building Your First Amazon Virtual Private Cloud](https://amazon.qwiklabs.com/catalog_lab/135). Retrieved from https://amazon.qwiklabs.com/catalog_lab/135

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 4 - Step 29 - Screenshot of Creation of Two Subnets and Internet Gateway.
2. Screenshot at the end of Task 11 - Step 86 - Screenshot of Connecting to your Database.

Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the advantages or challenges of implementing this cloud service for your organization. Are there any security concerns? Consider suitability in terms of acquisition, budgeting, training, and overall feasibility for your organization. Finally, examine the service from an end user perspective. How can end users benefit from this service?

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

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- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
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- **Font and font size:** Times New Roman, 11 pt.

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[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)**Unit 3 >> Application Programming Interfaces****Introduction****This week you will:**

- Study Application Programming Interfaces (APIs).
- Evaluate the use of APIs for a given context.
- Complete a lab on Application Programming Interfaces.

What is an API? An API is an Application Programming Interface. For example, when you use your smartphone's browser to connect to a remote server, such as a web server that stores a web page, the application (your phone's browser) connects to the Internet and sends data to a the web server. The web server then retrieves that data, interprets it, performs the necessary actions and sends it back to your phone's browser which conveniently display it in the form of a web page with colorful pictures, links and all. In other words, the browser is interpreting the data sent to you from the remote web server and is displaying it with information that you wanted in a human-readable way.

To explain this better, let us take a familiar example.

Mulesoft.com provides a simple example: "Imagine you're sitting at a table in a restaurant with a menu of choices to order from. The kitchen is the part of the "system" that will prepare your order. What is missing is the critical link to communicate your order to the kitchen and deliver your food back to your table. That's where the waiter or API comes in. The waiter is the messenger – or API – that takes your request or order and tells the kitchen – the system – what to do. Then the waiter delivers the response back to you; in this case, it is the food."

Reference

Mulesoft. (n.d.) [What is an API? \(Application Programming Interfaces\)](https://www.mulesoft.com/resources/api/what-is-an-api). Retrieved from <https://www.mulesoft.com/resources/api/what-is-an-api>

Learning Activities**u03s1 - Application Programming Interfaces**

For this unit, you will read the documentation from Info World and Mulesoft regarding an introduction to Application Programming Interfaces.

- Freeman, Jonathan. (2018). [What is an API? Application Programming Interfaces Explained](https://www.infoworld.com/article/3269878/apis/what-is-an-api-application-programming-interfaces-explained.html). Retrieved from <https://www.infoworld.com/article/3269878/apis/what-is-an-api-application-programming-interfaces-explained.html>
- Mulesoft. (n.d.) [What is an API? \(Application Programming Interfaces\)](https://www.mulesoft.com/resources/api/what-is-an-api). Retrieved from <https://www.mulesoft.com/resources/api/what-is-an-api>

u03s1 - Learning Components

- Evaluates the benefits of Application Programming Interfaces from an end user's perspective.

u03d1 - Application Programming Interfaces

For this discussion topic, you have read the Unit 3 Documentation regarding Application Programming Interfaces (APIs). Examine APIs in terms of your own IT budget and having web pages stored on a remote server. Imagine your organization with several cloud provider services (with EC2 instances) and how APIs can aid in preparing more accurate, faster, and more efficient return of data to your device.

Your initial discussion post must be submitted by 11:59 PM Thursday.

Response Guidelines

Return to the discussion by the end of the week to read and review the posts of your peers. Does anyone else's topic coincide or complement your own? Post a comment and add questions to further explore the experiences of your classmates. Also, in your response, comment on a topic described by a peer. In your discussion post, remember to give credit to your external sources.

Your responses must be submitted by 11:59 PM Sunday.

Course Resources

Graduate Discussion Participation Scoring Guide

[What is an API? Application Programming Interfaces Explained.](#)

[What is an API? \(Application Programming Interfaces\).](#)

u03d1 - Learning Components

- Determines the Suitability of Application Programming Interfaces
- Identifies the advantages and challenges with Application Programming Interfaces in a hybrid cloud environment.

u03a1 - What is an API? Application Programming Interfaces Explained

Assignment Overview

Review the following documentation:

- Freeman, Jonathan. (2018). [What is an API? Application Programming Interfaces Explained.](https://www.infoworld.com/article/3269878/apis/what-is-an-api-application-programming-interfaces-explained.html) Retrieved from <https://www.infoworld.com/article/3269878/apis/what-is-an-api-application-programming-interfaces-explained.html>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d.). [Introduction to Amazon API Gateway.](https://www.qwiklabs.com/focuses/269?catalog_rank=%7B%22rank%22%3A1%2C%22num_filters%22%3A2%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=2157704) Retrieved from https://www.qwiklabs.com/focuses/269?catalog_rank=%7B%22rank%22%3A1%2C%22num_filters%22%3A2%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=2157704

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 1, Step 14, "Creating a Lambda Function."
2. Screenshot at the end of Task 2, Step 24, "Testing the Lambda Function."

Scenario: Your Chief Information Officer has tasked you with creating a technical paper on the benefits and usefulness of APIs. Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of Application Programming Interfaces in managing your day-to-day budget as well as long-term planning. Are there any security concerns? Consider the overall feasibility of implementing APIs to include any additional training for IT employees. Finally, examine the service from an end user perspective. How can end users benefit from this service?

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

Qwiklabs. (n.d.). [Introduction to Amazon API Gateway](https://www.qwiklabs.com/focuses/269?catalog_rank=%7B%22rank%22%3A1%2C%22num_filters%22%3A2%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=2157704). Retrieved from https://www.qwiklabs.com/focuses/269?catalog_rank=%7B%22rank%22%3A1%2C%22num_filters%22%3A2%2C%22has_search%22%3Atrue%7D&parent=catalog&search_id=2157704

Unit 4 >> Introduction to Serverless Computing (AWS Lambda)

Introduction

This week you will:

- Study serverless computing.
- Evaluate the use of serverless computing for a given context.
- Complete a lab that introduces serverless computing.

AWS Lambda or "serverless" computing can be confusing. Because of this complexity, "serverless" computing with Lambda is covered in both this unit and Unit 5.

As information technology professionals, many of us still operate within a "paradigm" that a network infrastructure requires servers: whether they be physical or virtual, we need servers nonetheless. With Lambda we can operate our cloud resources in a serverless environment. So you may ask: how is this possible? Think of your network infrastructure in terms of code and not servers. As with all cloud computing services, Lambda is event-driven, on-demand service—yet another way to save on infrastructure costs. So where does the code run on and where is the code deployed? The code is deployed within containers and when you deploy your code into the cloud, Lambda handles the creation of all needed resources by itself. Every time a AWS Lambda Function is created, a container is spun up to serve it. It's actually not a Docker container in the traditional sense, rather a proprietary container built by AWS. Once your code is deployed into the container, it is executed, making each request faster because AWS is skipping the initial

creation of containers (or in a traditional sense, EC2 instances). Serverless computing can be complex; this unit contains study material, discussion thread, and a hands-on lab and after of these activities, you will gain basic understanding and appreciation of serverless computing.

Learning Activities

u04s1 - Introduction to AWS Lambda

For this unit, you will watch two videos and read the AWS documentation for Lambda.

- Amazon Web Services. (2015). [Introduction to AWS Lambda - Serverless compute on Amazon Web Services \[Video\]](https://www.youtube.com/watch?v=eOBq__h4OJ4). | [Transcript](#). Retrieved from https://www.youtube.com/watch?v=eOBq__h4OJ4
- Simplilearn. (2018). [AWS Lambda Tutorial for Beginners | What is AWS Lambda? | AWS Tutorial for Beginners \[Video\]](https://www.youtube.com/watch?v=97q30JjEq9Y). | [Transcript](#). Retrieved from <https://www.youtube.com/watch?v=97q30JjEq9Y>
- Amazon Web Services. (n.d.). [What Is AWS Lambda?](https://docs.aws.amazon.com/lambda/latest/dg/welcome.html) Retrieved from <https://docs.aws.amazon.com/lambda/latest/dg/welcome.html>

u04s1 - Learning Components

- Determines whether or not a serverless environment is advantageous to the organization.
- Evaluates steps needed to enhance security within a serverless environment.
- Identifies requirements to move infrastructure from a physical to a serverless environment into the cloud.

u04d1 - Introduction to AWS Lambda

For this discussion topic, you have read the Unit 4 Amazon Documentation regarding Lambda and listened to the two Youtube videos provided. Examine AWS Lambda in terms of your own understanding between a server and serverless environment. In your discussion response, imagine that you have been tasked to provide a briefing to senior leadership at your organization your organization explaining the potential advantages of switching from a server environment (whether physical or virtual) to a serverless environment with AWS Lambda. What key talking points would you provide to senior leadership? How could you clearly explain the advantages of serverless computing to senior leaders with limited technical knowledge?

Your initial discussion post must be submitted by 11:59 PM Thursday.

Response Guidelines

Return to the discussion by the end of the week to read and review the posts of your peers. Does anyone else's topic coincide or complement your own? Post a comment and add questions to further explore the experiences of your classmates. Also, in your response, comment on a topic described by a peer. In your discussion post, remember to give credit to your external sources.

Your responses must be submitted by 11:59 PM Sunday.

Course Resources

Graduate Discussion Participation Scoring Guide

[Introduction to AWS Lambda - Serverless compute on Amazon Web Services \[Video\]](https://www.youtube.com/watch?v=eOBq__h4OJ4). | [Transcript](#)

[What Is AWS Lambda?](https://www.youtube.com/watch?v=97q30JjEq9Y)

[AWS Lambda Tutorial for Beginners | What is AWS Lambda? | AWS Tutorial for Beginners \[Video\]](https://www.youtube.com/watch?v=97q30JjEq9Y). | [Transcript](#)

u04d1 - Learning Components

- Determines whether or not a serverless environment is advantageous to the organization.
- Identifies advantages and challenges of a serverless cloud deployment.

u04a1 - Introduction to AWS Lambda

Assignment Overview

Review the following resources:

- Amazon Web Services. (2015). [Introduction to AWS Lambda - Serverless compute on Amazon Web Services \[Video\]](https://www.youtube.com/watch?v=eOBq__h4OJ4). Retrieved from https://www.youtube.com/watch?v=eOBq__h4OJ4
- Simplilearn. (2018). [AWS Lambda Tutorial for Beginners | What is AWS Lambda? | AWS Tutorial for Beginners \[Video\]](https://www.youtube.com/watch?v=97q30JjEq9Y). Retrieved from <https://www.youtube.com/watch?v=97q30JjEq9Y>
- Amazon Web Services. (n.d.). [What Is AWS Lambda?](https://docs.aws.amazon.com/lambda/latest/dg/welcome.html) Retrieved from <https://docs.aws.amazon.com/lambda/latest/dg/welcome.html>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d). [Introduction to AWS Lambda](https://amazon.qwiklabs.com/catalog_lab/222). Retrieved from https://amazon.qwiklabs.com/catalog_lab/222

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 2 Creating Lambda Function - Step 25.
2. Screenshot at the end of Task 4 Viewing Log Message Details – Step 39.

Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of AWS Lambda in managing your IT budget on a day-to-day basis (short-term and long-term savings). Do you see any potential security concerns? Consider the overall feasibility of implementing these services to include any additional training for IT employees. Finally, examine the service from an end user perspective. How can end users benefit from this service?

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

Unit 5 >> AWS Lambda (Security and Programming for Windows)

Introduction

This week you will:

- Study serverless computing security and programming for Windows.
- Complete a lab for managing security groups for serverless computing.
- Complete a lab on programming serverless computing for Windows.

In this unit, we will continue with our exploration of AWS Lambda and operating within a serverless environment and complete 2 hands-on lab activities.

In addition to creating code for services that are event-driven, we can also use Lambda to enhance our security. For example, we can use update our Virtual Private Cloud security groups to allow access from only predefined AWS services. As a result, the security rules we create within AWS would not be bypassed by malicious activity against our EC2 instances. EC2 instances can be proprietary or open source platforms, and we will also complete a lab of programming Lambda for proprietary applications, specifically Microsoft Windows.

Learning Activities

u05s1 - AWS Lambda (Security and Programming for Windows)

For this unit, you will watch a video and read the AWS documentation for Lambda.

- AWS Online Tech Talks. (2017). [How to Deploy .NET Code to AWS from within Visual Studio \[Video\]](https://www.youtube.com/watch?v=pgRzdZeNxD8). | [Transcript](#). Retrieved from <https://www.youtube.com/watch?v=pgRzdZeNxD8>
- Amazon Web Services. (n.d.). [AWS Lambda Permissions](https://docs.aws.amazon.com/lambda/latest/dg/lambda-auth-and-access-control.html). Retrieved from <https://docs.aws.amazon.com/lambda/latest/dg/lambda-auth-and-access-control.html>

Optional Resource

This is an optional video you can watch about using AWS Lambda.

- MartyAWS. (2017). [AWS: How to place your Lambda Functions in a VPC \[Video\]](https://www.youtube.com/watch?v=yMzb48BL7qQ). | [Transcript](#). Retrieved from <https://www.youtube.com/watch?v=yMzb48BL7qQ>

u05s1 - Learning Components

- Determines suitability of Lambda implementation.
- Evaluates security mechanisms for Lambda in Windows.

u05a1 - Managing Security Groups with AWS Lambda

Assignment Overview

Review the following video:

- Amazon Web Services. (n.d.). [AWS Lambda Permissions](https://docs.aws.amazon.com/lambda/latest/dg/lambda-auth-and-access-control.html). Retrieved from <https://docs.aws.amazon.com/lambda/latest/dg/lambda-auth-and-access-control.html>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d.). [Update Security Groups Automatically Using AWS Lambda](https://amazon.qwiklabs.com/catalog_lab/299). Retrieved from https://amazon.qwiklabs.com/catalog_lab/299

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 1 Creating your Security Group Tag - Step 11.
2. Screenshot at the end of Task 4 Verify your Security Group Update - Step 44.

Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of AWS Lambda in managing the security of your Virtual Private Cloud? Do you see any potential security concerns or improvements? Consider the overall feasibility of implementing these services to include any additional training for IT employees. Finally, examine the service from an end user perspective. How can end users benefit from enhanced security?

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

u05a2 - AWS Lambda for Windows

Assignment Overview

Review the following video:

- AWS Online Tech Talks. (2017). [How to Deploy .NET Code to AWS from within Visual Studio \[Video\]](https://www.youtube.com/watch?v=pgRzdZeNx8). Retrieved from <https://www.youtube.com/watch?v=pgRzdZeNx8>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

Access the following lab:

- Qwiklabs. (n.d.). [Programming AWS Lambda for Windows](https://amazon.qwiklabs.com/catalog_lab/244). Retrieved from https://amazon.qwiklabs.com/catalog_lab/244

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 5 Publish Your Code to Lambda as a Function - Step 52.
2. Screenshot at the end of Task 8 Run Your Lambda Function - Step 67.

Write a 2-3-page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of AWS Lambda in programming on proprietary platforms/applications? Do you see any potential security concerns or improvements? Consider the overall feasibility of implementing these services to include any additional training for IT employees (especially from a programming perspective). Finally, examine the service from an end user perspective.

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

[APA Style and Format](#)

Unit 6 >> Introduction to Amazon DynamoDB

Introduction

This week you will:

- Study database deployment for cloud computing.
- Evaluate database deployment for cloud computing in a given context.
- Complete a lab using database deployment for cloud computing.

Many of you have worked on databases and are familiar with common database terms such as tables, fields, relationships, primary keys, etc. Amazon offers a fully managed NoSQL database that can be created in a serverless environment and replicated across different EC2 Instances in different availability zones. For high availability and durability, DynamoDB automatically spreads data and traffic for your tables over a sufficient number of servers to handle an organization's throughput and storage requirements. The traditional administrative burdens such as hardware provisioning, setup, configuration, replication, software patching/cluster scaling are performed automatically. DynamoDB will be covered in this unit and the following unit. For this unit, you will complete an introductory lab and provide a summary of your lab experience as well as participate in a discussion on the advantages and potential challenges for your organization in implementing an Amazon Database solution.

Learning Activities

u06s1 - Introduction to Amazon DynamoDB

For this unit, read [What is Amazon DynamoDB?](#)

- Amazon Web Services. (n.d.). [What is Amazon DynamoDB?](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html) Retrieved from <https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html>

u06s1 - Learning Components

- Determines the potential implementation of Amazon DynamoDB for the Organization.
- Evaluates security features of Amazon's DynamoDB.

u06d1 - Introduction to Amazon DynamoDB (What is Amazon DynamoDB)?

For this discussion topic, you have read the Unit 6 Amazon Documentation regarding Amazon DynamoDB. Using documentation provided in u06s1 and other scholarly resources of your choice, examine the potential implementation of Amazon DynamoDB for your organization. What are some of the unique features of this "cloud" database as compared to a physical database (i.e. Windows Database Server running SQL, Oracle Database)? Examine these topics in terms of your own IT budget? What are the gaps in terms of knowledge to implement a DynamoDB solution and are there any potential training costs? Finally, consider security in your response. How does Amazon's DynamoDB differ from traditional database servers in terms of security services offered?

Your initial discussion post must be submitted by 11:59 PM Thursday.

Response Guidelines

Return to the discussion by the end of the week to read and review the posts of your peers. Does anyone else's topic coincide or complement your own? Post a comment and add questions to further explore the experiences of your classmates. Also, in your response, comment on a topic described by a peer. In your discussion post, remember to give credit to your external sources.

Your responses must be submitted by 11:59 PM Sunday.

Course Resources

Graduate Discussion Participation Scoring Guide

[What is Amazon DynamoDB?](#)

u06d1 - Learning Components

- Determines the potential implementation of Amazon DynamoDB for the Organization.
- Identifies advantages and challenges of implementing DynamoDB for the Organization.

u06a1 - Serverless Web Apps using Amazon DynamoDB - Part 1

Assignment Overview

Review the following documentation:

- Amazon Web Services. (n.d.). [What is Amazon DynamoDB?](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html) Retrieved from https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

In this first part of the lab, you will build the infrastructure you will need in subsequent labs. You will create a DynamoDB table and add data, then build the necessary IAM roles and policies.

Access the following lab:

- Qwiklabs. (n.d.). [Serverless Web Apps using Amazon DynamoDB - Part 1](https://amazon.qwiklabs.com/catalog_lab/281). Retrieved from https://amazon.qwiklabs.com/catalog_lab/281

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 3 Add Items via JSON - Step 15.
2. Screenshot at the end of Task 4 Super DynamoDB Query Policy - Step 24.

Write a 2-3-page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of AWS DynamoDB over programming on proprietary physical platforms/applications. Do you see any potential security concerns or improvements? Consider the overall feasibility of implementing these services to include any additional training for IT employees (especially from a programming perspective). Finally, examine the service from an end user perspective.

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

Unit 7 >> Building IAM Roles and API Gateways for DynamoDB

Introduction

This week you will:

- Study Application Programming Interfaces (API), roles, and gateways.
- Complete a lab to build the necessary Identity and Access Management (IAM) roles and policies to access a database via API Gateway.
- Complete a lab to configure an API to set up a public website and retrieve information from a database.

In this unit, we continue with DynamoDB, specifically building IAM Roles and API Gateway. In ITEC5050 we learned that an IAM role defines a set of permissions for making various AWS service requests. IAM roles play a crucial role in database access by creating policies to support access to the various functions within a database. An Application Programming Interface (API) Gateway is like a physical default gateway commonly applied on a router. However, an API gateway is programming-software based and sits in front of an API and acts as a single point of entry for a defined group of services within that application. For this unit, there will be two hands-on labs working with DynamoDB and there will be no discussion topic.

Learning Activities

u07s1 - Building IAM Roles and API Gateways for DynamoDB

For this unit, please read the attached study guides provided by Amazon.

- Amazon Web Services. (n.d.). [What is Amazon DynamoDB?](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html) Retrieved from https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html
- Amazon Web Services. (n.d.). [IAM Roles](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html). Retrieved from https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html
- Amazon Web Services. (n.d.). [What is an Amazon API Gateway?](https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html) Retrieved from https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html

u07s1 - Learning Components

- Determines the potential implementation of Amazon DynamoDB for the Organization.
- Evaluates security features of Amazon's DynamoDB.
- Evaluates the benefits of the cloud technology from an end user's perspective.

u07a1 - Serverless Web Apps using Amazon DynamoDB - Part 2

Assignment Overview

Review the following documentation:

- Amazon Web Services. (n.d.). [What is Amazon DynamoDB?](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html) Retrieved from <https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html>
- Amazon Web Services. (n.d.). [IAM Roles](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html). Retrieved from https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html
- Amazon Web Services. (n.d.). [What is an Amazon API Gateway?](https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html) Retrieved from <https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

In the part of the lab, you will go on to create Lambda functions that interact with the DynamoDB table and add data, then build the necessary IAM roles and policies to support access to the functions and database via API Gateway.

Access the following lab:

- Qwiklabs. (n.d.). [Serverless Web Apps using Amazon DynamoDB - Part 2](https://amazon.qwiklabs.com/catalog_lab/282). Retrieved from https://amazon.qwiklabs.com/catalog_lab/282

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 1 Check Cloud Formation Status - Step 5.
2. Screenshot at the end of Task 2 Testing a Lambda Function to Check Mission Details for DynamoDB - Step 27.

Write a 2-3-page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of with the association between IAM roles and API Gateways when using DynamoDB. How do IAM roles enhance security? Consider the overall feasibility of implementing these services to include any additional training for IT employees (especially from a programming perspective). Finally, examine the service from an end user perspective.

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

u07a2 - Serverless Web Apps using Amazon DynamoDB - Part 3

Assignment Overview

Review the following documentation:

- Amazon Web Services. (n.d.). [What is Amazon DynamoDB?](https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html) Retrieved from <https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html>
- Amazon Web Services. (n.d.). [IAM Roles](https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html). Retrieved from https://docs.aws.amazon.com/IAM/latest/UserGuide/id_roles.html
- Amazon Web Services. (n.d.). [What is an Amazon API Gateway?](https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html) Retrieved from <https://docs.aws.amazon.com/apigateway/latest/developerguide/welcome.html>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

In this lab you will configure an API using Amazon API Gateway and set up a public website to retrieve information from your DynamoDB table via Lambda functions, using what you learned in all three labs.

Access the following lab:

- Qwiklabs. (n.d.). [Serverless Web Apps using Amazon DynamoDB - Part 3](https://amazon.qwiklabs.com/catalog_lab/283). Retrieved from https://amazon.qwiklabs.com/catalog_lab/283

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 3 Create and Deploy an API - Step 33.
2. Screenshot at the end of Task 5 Publish with S3 - Step 60.

Write a 2-3 page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits of Application Programming Interfaces. Are there any security considerations when using API with S3? Consider the overall feasibility of implementing these services to include any additional training for IT employees (especially from a programming perspective). Finally, examine the service from an end user perspective.

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

[Example Screenshot](#)

[APA Style and Format](#)

Unit 8 >> Amazon Web Services Key Management Service and Regulatory Compliance

Introduction

This week you will:

- Study cloud computing regulatory and compliance issues.
- Evaluate an organization's readiness to address regulatory and compliance requirements in a cloud architecture.
- Complete a lab for managing the use of encryption keys.

Most organizations have regulatory and compliance requirements. For example, educational institutions have FERPA compliance, Sarbanes-Oxley for public company auditing and compliance, HIPAA for healthcare, and the list goes on. Encryption key management is one step we can take to meet regulatory and compliance issues.

Amazon Web Services (AWS) Key Management Service (KMS) is a managed service that makes it easy for you to create and control the encryption keys used to encrypt your data. AWS KMS uses FIPS 140-2 validated hardware security modules to protect the security of your keys, and it is integrated with most other AWS services to protect data stored within. It is also integrated with AWS CloudTrail to provide logs of all key usage to help meet your regulatory and compliance needs. In this unit, we will read about Amazon's KMS, participate in a discussion about the regulatory and compliance challenges facing your organization, and complete a hands-on lab for AWS KMS.

Learning Activities

u08s1 - Amazon Key Management Service and Regulatory Compliance

For this unit, please read the following materials:

- Amazon Web Services. (n.d.). [Amazon Web Services Key Management Service \(KMS\)](https://aws.amazon.com/kms/). Retrieved from <https://aws.amazon.com/kms/>
- Barr, Jeff. (2014). [New AWS Key Management Service \(KMS\)](https://www.tcdi.com/information-security-compliance-which-regulations/). Retrieved from <https://www.tcdi.com/information-security-compliance-which-regulations/>
- Vandenburg, Eric. (n.d.). [Information Security Compliance: Which regulations relate to me?](https://www.tcdi.com/information-security-compliance-which-regulations/) Retrieved from <https://www.tcdi.com/information-security-compliance-which-regulations/>

u08s1 - Learning Components

- Determines suitability of implementing an encryption key service
- Evaluates the Overall Security of Cloud Services
- Identifies benefits and challenges in implementing security with AWS Lambda.

u08d1 - Regulatory Compliance for Organizations and Encryption Key Management

In this unit you read that Amazon also provides key management services for accountability, control, authentication, auditing, and compliance. Amazon's KMS is one method you can choose to begin meeting your organization's regulatory and compliance issues. For the Unit 8 discussion, share your organization's regulatory and compliance requirements with the rest of the class. Are they being met? Is exchange of encryption keys a method to enhance regulatory and compliance requirements? Would moving organizational resources to the cloud improve or detract from your organization's ability to meet regulatory requirements? **NOTE:** If for confidentiality reasons you cannot discuss your organization, you may research another organization of your choice.

Your initial discussion post must be submitted by 11:59 PM Thursday.

Response Guidelines

Return to the discussion by the end of the week to read and review the posts of your peers. Does anyone else's topic coincide or complement your own? Post a comment and add questions to further explore the experiences of your classmates. Also, in your response, comment on a topic described by a peer. In your discussion post, remember to give credit to your external sources.

Your responses must be submitted by 11:59 PM Sunday.

Course Resources

Graduate Discussion Participation Scoring Guide

[Amazon Web Services Key Management Service \(KMS\).](#)

[New AWS Key Management Service \(KMS\).](#)

[Information Security Compliance: Which regulations relate to me?](#)

u08d1 - Learning Components

- Determines suitability of implementing an encryption key service
- Identifies benefits and challenges in implementing security with AWS Lambda.

u08a1 - Introduction to AWS Key Management Service

Assignment Overview

Review the following resources:

- Amazon Web Services. (n.d.). [Amazon Web Services Key Management Service \(KMS\)](#). Retrieved from <https://aws.amazon.com/kms/>
- Barr, Jeff. (2014). [New AWS Key Management Service \(KMS\)](#). Retrieved from <https://www.tcdi.com/information-security-compliance-which-regulations/>
- Vandenburg, Eric. (n.d.). [Information Security Compliance: Which regulations relate to me?](#) Retrieved from <https://www.tcdi.com/information-security-compliance-which-regulations/>

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

This lab provides a basic understanding and hands-on experience of AWS Key Management Service. It will demonstrate the basic steps required to get started with Key Management Service, creating keys, assigning management and usage permissions for the keys, encrypting data and monitoring the access and usage of keys. For the lab to function as written, please DO NOT change the auto assigned region.

Access the following lab:

- Qwiklabs. (n.d.). [Introduction to AWS Key Management Service](https://amazon.qwiklabs.com/catalog_lab/220). Retrieved from https://amazon.qwiklabs.com/catalog_lab/220

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 3 Uploading an Image to S3 and Encrypt It - Step 24.
2. Screenshot at the end of Task 6 Managing Encryption Keys - Step 56.

Write a 2-3-page double spaced paper summarizing your lab experience. While summarizing your lab experience, consider the benefits using encryption keys to control and audit data for regulatory compliance. How does the use of encryption keys enhance security? Consider the overall feasibility of implementing these services to include any additional training for IT employees (especially from a security perspective). Finally, examine the service from an end user perspective.

Submit both the screenshots and the paper summarizing your lab experience to the assignment for this unit. You may embed the 2 screenshots into your paper and submit a single document if you wish.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify the strengths and threats of implementing technology for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Complete the lab to configure and deploy a cloud application.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 2–3 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

Unit 9 >> Auditing Your Data Maintained over the Cloud

Introduction

This week you will:

- Study cloud computing regulatory and compliance issues.
- Evaluate auditing data over the cloud to ensure regulatory and compliance requirements are met.
- Complete a lab to perform a basic audit of a cloud architecture.

In this unit, we continue to explore the importance of security and compliance issues in managing electronic data maintained in the cloud. Auditing is important to ensure your organization is following external laws, rules, and regulations or internal guidelines, such as corporate bylaws, controls, and policies and procedures. Audits may also determine if an organization is conforming to an agreement, such as when an entity accepts government or other funding. Specifically, Amazon's CloudTrail is a service that enables governance, compliance, and risk auditing of your AWS account. With CloudTrail, you can log, continuously monitor, and retain account activity related to actions across your AWS infrastructure. For this unit, you will read documentation with regard to auditing over the cloud, participate in a discussion, and complete a hands-on lab.

Learning Activities

u09s1 - Auditing Your Data Maintained over the Cloud

For this week's study, you will be required to read the Amazon Documentation regarding CloudTrail, the Computer Weekly article about regulatory and compliance requirements, and the Deloitte article regarding auditing data over the cloud.

- Amazon Web Services. (n.d.) [What is AWS CloudTrail?](https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html) Retrieved from <https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html>
- Sahoo, Narendra, (n.d.). [Audits and Compliance Requirements for Cloud Computing](https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing) Retrieved from <https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing>
- Deloitte. (2014). [Cloud Computing: What Auditors Need to Know](https://www.ucop.edu/ethics-compliance-audit-services/_files/webinars/10-14-16-cloud-computing/cloudcomputing.pdf). Retrieved from https://www.ucop.edu/ethics-compliance-audit-services/_files/webinars/10-14-16-cloud-computing/cloudcomputing.pdf

u09s1 - Learning Components

- Evaluates the Overall Security of Cloud Services

u09d1 - Cloud Computing Provider Auditing Services

ITEC5060 has focused on the various Amazon Web Services for maintaining data over the cloud. However, there are other cloud service providers and platforms (i.e. Google, Microsoft Azure, Rackspace) to choose from. For this discussion, perform research to examine a software or service and provide a comparison and contrast to Amazon's CloudTrail for how your data can be audited over the cloud to ensure regulatory and compliance requirements are met. In your response, describe how is your chosen software different from CloudTrail? Does the service or software meet the regulatory compliance within your current organization? What are the advantages and disadvantages as compared to CloudTrail? Consider pricing, budgeting and training issues in your response.

Your initial discussion post must be submitted by 11:59 PM Thursday.

Response Guidelines

Return to the discussion by the end of the week to read and review the posts of your peers. Does anyone else's topic coincide or complement your own? Post a comment and add questions to further explore the experiences of your classmates. Also, in your response, comment on a topic described by a peer. In your discussion post, remember to give credit to your external sources.

Your responses must be submitted by 11:59 PM Sunday.

Course Resources

Graduate Discussion Participation Scoring Guide

[What is AWS CloudTrail?](https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html)

[Audits and Compliance Requirements for Cloud Computing](https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing)

[Cloud Computing: What Auditors Need to Know](#)

u09d1 - Learning Components

- Evaluates the Overall Security of Cloud Services

u09a1 - Performing a Basic Audit of Your AWS Environment

Assignment Overview

Review the following resources:

- Amazon Web Services. (n.d.) [What is AWS CloudTrail?](https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html) Retrieved from <https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-user-guide.html>
- Sahoo, Narendra, (n.d.). [Audits and Compliance Requirements for Cloud Computing](https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing) Retrieved from <https://www.computerweekly.com/tip/Audits-and-compliance-requirements-for-cloud-computing>
- Deloitte. (2014). [Cloud Computing: What Auditors Need to Know](https://www.ucop.edu/ethics-compliance-audit-services/_files/webinars/10-14-16-cloud-computing/cloudcomputing.pdf). Retrieved from https://www.ucop.edu/ethics-compliance-audit-services/_files/webinars/10-14-16-cloud-computing/cloudcomputing.pdf

For this assignment you will log into your Qwiklabs account either by clicking the link in the assignment Resources or logging into Qwiklabs and searching for the lab by name. **Note:** The labs run best in either the Chrome or Firefox web browser. Please plan to complete your lab in one session, as your work is not saved when you exit the lab.

This lab leads you through the steps to perform basic audits of core AWS resources. You will use the AWS Management Console to understand how to audit the use of multiple AWS services, Amazon EC2, Amazon VPC, Amazon IAM, Amazon Security Groups, AWS CloudTrail and Amazon CloudWatch.

Access the following lab:

- Qwiklabs. (n.d.). [Performing a Basic Audit of your AWS Environment](https://amazon.qwiklabs.com/catalog_lab/188). Retrieved from https://amazon.qwiklabs.com/catalog_lab/188

Assignment Instructions

You will take 2 screenshots during this lab and copy them into a Word document.

1. Screenshot at the end of Task 3 Inbound/Outbound Rules for ACL - Step 51.
2. Screenshot at the end of Task 5 Viewing JSON File (Audit Log) - Step 73.

Create a 7-10 slide PowerPoint presentation aimed at a technical audience to convey the importance of auditing your cloud environment for regulatory compliance. Include your organization's legal requirements for protecting data in the cloud and benefits of using Amazon's CloudTrail. How does the use of this auditing service enhance security? Consider the overall feasibility of implementing these services to include any additional training for IT employees (especially from a security perspective).

Organize your presentation with the following:

1. A title slide including your name.
2. An introduction slide.
3. A series of slides covering your main points.
4. A conclusion slide.

Avoid using full paragraphs of narration and focus on short sentences and bullet point statements. Adding visuals such as illustrations, pictures, graphs and figures is encouraged.

Submit both the screenshots and the PowerPoint presentation to the assignment for this unit.

Submit your assignment documents by 11:59 on Sunday of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Complete the lab to configure and deploy a cloud application.

- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use communication style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **Lab output:** Lab screenshots with your Qwiklabs ID and a date stamp.
- **Written communication:** Presentation is free of errors that detract from the overall message.
- **Length of presentation:** Approximately 7-10 presentation slides not including the title or reference slides.
- **Resources:** Cite your data and sources as appropriate.
- **Document format guidelines:** Use the Academic and Professional Document Guidelines linked in the Resources as appropriate for your deliverable.
- **Font and font size:** As appropriate for a PowerPoint presentation.

Course Resources

[Academic and Professional Document Guidelines](#)

Example Screenshot

[APA Style and Format](#)

Unit 10 >> An Amazon Cloud Solution for Your Organization

Introduction

This week you will:

- Review the Amazon Cloud Computing Services.
- Complete the AWS Cloud Adoption Readiness Tool (CART).
- Complete a final assignment to propose an Amazon Cloud-Based Solution for your organization.

We have explored a variety of cloud computing services in this course. One of the main drivers in this course was to convey that rather than purchasing expensive systems and equipment for your business, you can reduce your costs by using the resources of your cloud computing service provider; specifically, to make you aware that the cloud computing offers the benefits of zero costs of system upgrades, no new hardware or software purchases: that in most cases these services are included in your contract with the cloud provider.

We have explored management and control of EC2 instances, creating our own virtual private cloud infrastructure, learning the concept of operating in a serverless environment, security, and auditing and compliance issues. In this final unit, you will provide a cloud computing solution for your organization. This solution will be based on all learning materials and assignments covered in units 1 through 9. To assist you in the final assignment for this course, you will also complete a AWS Cloud Adoption Readiness Tool (CART) for your organization and incorporate the results (the report) into your assignment.

Learning Activities

u10s1 - An Amazon Cloud Solution for Your Organization

For this week, download and read the Amazon whitepaper for an overview of all Amazon Cloud Computing Services. In addition, complete the AWS Cloud Adoption Readiness Tool (CART).

- Amazon Web Services. (2018). [Overview of Amazon Web Services](https://aws.amazon.com/whitepapers/overview-of-amazon-web-services/). Retrieved from <https://aws.amazon.com/whitepapers/overview-of-amazon-web-services/>
- Amazon Web Services. [AWS Cloud Adoption Readiness Tool \(CART\)](https://cloudreadiness.amazonaws.com/#/cart). Retrieved from <https://cloudreadiness.amazonaws.com/#/cart>

u10s1 - Learning Components

- Evaluates the Overall Security of Cloud Services
- Determines if a virtual private cloud is suitable to the organization.
- Evaluates the benefits of the cloud technology from an end user's perspective.
- Identifies requirements to move infrastructure from a physical to a serverless environment into the cloud.

u10a1 - Final Assignment: An Amazon Cloud Solution for Your Organization

Assignment Overview

This final assignment is a culmination of all learning materials and assignments covered in units 1 through 9. Review the Amazon white paper "Overview of Amazon Web Services" for a comprehensive overview of cloud computing architecture and the AWS Cloud Platform. To assist you in this assignment, you must complete a AWS Cloud Adoption Readiness Tool (CART) for your organization and incorporate the results (the report) into your assignment.

- Amazon Web Services. (2018). [Overview of Amazon Web Services](https://aws.amazon.com/whitepapers/overview-of-amazon-web-services/). Retrieved from <https://aws.amazon.com/whitepapers/overview-of-amazon-web-services/>
- Amazon Web Services. [AWS Cloud Adoption Readiness Tool \(CART\)](https://cloudreadiness.amazonaws.com/#/cart). Retrieved from <https://cloudreadiness.amazonaws.com/#/cart>

Assignment Instructions

In this assignment, write a 5-7 page double spaced paper to propose an Amazon Cloud-Based Solution for your organization. Organize your response into 5 main points:

1. Introduction.
2. Infrastructure as a Service.
3. Platform as a Service.
4. Software as a Service.
5. Conclusion.

Your response can include a myriad of Amazon provided services or just a few. In addition to the 5-7 page double-spaced capstone project, submit your CART report as an appendix to your paper or as a second document in the assignment.

Submit both documents, i.e., the paper and the CART report in the assignment for this unit. **NOTE:** You may add the CART report as an appendix to your paper and submit a single document if you wish.

Submit your assignment documents by **5:00 pm on Friday** of this week.

Assignment Criteria

Your assignment must meet this criteria, please refer to the scoring guide for this assignment.

- Identify strengths and threats of implementing a hybrid cloud infrastructure for the organization.
- Evaluate tasks that are needed or those already completed to enhance the security of the cloud service.
- Determine suitability of implementing the technology for the organization.
- Identify the services necessary to support applications and to successfully migrate the physical network infrastructure to a cloud provider.
- Note how the chosen technology will enhance user support in a real-world, cloud deployment model.
- Use style and vocabulary inappropriate to the message and intended audience.

Assignment Requirements

- **CART report:** Completed complete a AWS Cloud Adoption Readiness Tool (CART) report.
- **Communication:** Communicate in a manner that is scholarly, professional, respectful, and consistent with expectations for professional practice in technology. Assignment submission must be original work that reflects critical thinking with clear organization of concepts and ideas.
- **Paper length:** Minimum of 5–7 pages, not including the title page or reference page.
- **Resources:** At least three scholarly resources. Include a reference page at the end of the paper.
- **APA guidelines:** Double-spaced paragraph formatting in the body of the paper. When appropriate, use APA-formatted headings. Resources and citations are formatted according to current APA style and format.
- **Font and font size:** Times New Roman, 11 pt.