AWS

Introduction to AWS for Non-Engineers

How did we get in the cloud?

- You've probably heard of the cloud in the past few years referring to ambiguous things that no one quite seems to be able to define. You might have also heard about Amazon Web Services. Perhaps your company is considering utilizing it or you're looking to find out more about this cloud computing platform that's taking the world by storm for your own career advancement. Whatever the reason may be that got you to click on this course, I'm glad you're here. I want to help you start from what even is the cloud to getting excited about Amazon Web Services, cloud computing, and potentially even considering taking the AWS Certified Cloud Practitioner Exam. My mission is to introduce cloud computing and Amazon Web Services to people with non-traditional technical backgrounds. In Introduction to AWS for Non-Engineers One, Cloud Concepts, we will be starting from the beginning, and by beginning I mean the 50s, to begin exploring how cloud computing came to be, why it's important, and how Amazon Web Services, or AWS, fits into the picture. We will also be reviewing various cloud computing concepts that will help you begin studying for the AWS Certified Cloud Practitioner Exam, which is the most fundamental certification exam that AWS offers. I can't wait to begin our cloud journey. Let's get started.

AWS Certified Cloud Practitioner exam

The AWS Certified Cloud Practitioner exam confirms a candidate's overall understanding of cloud computing and Amazon Web Services. It also provides an industry-recognized validation of their knowledge. Candidates are encouraged to have at least six month of experience with AWS Cloud, as well as basic understanding of IT services and their uses within the AWS Cloud infrastructure. The exam is 100 US dollars, and candidates have 90 minutes to complete the multiple choice exam at a test center or remotely at home. Upon completion of the exam, they immediately get a pass or fail notification. The exam is available in English, Japanese, Korean, and simplified Chinese. The Certified Cloud Practitioner exam covers four domains which are, cloud concepts, security, technology, and billing and pricing. The second largest portion of the exam is the cloud concepts domain, which makes up 28% of the exam. You would be asked to define the AWS Cloud, why it's desirable over alternatives, identify aspects of AWS Cloud economics, and describe the different cloud architecture design

principles. The security domain makes up 24% of the questions on this exam. This section asks you to define the AWS shared responsibility model and the AWS Cloud security and compliance concepts. It also wants you to identify AWS access management capabilities and ways to find resources for troubleshooting security related issues. The largest portion of the exam is the technology domain, which makes up 36% of the exam. You would need to define methods for deploying and operating IT applications in the AWS Cloud, define the AWS global infrastructure, identify core AWS services, and identify ways to contact or receive technical support if you ran into issues. Last but not least, the billing and pricing domain makes up 12% of the exam. While this domain makes up the smallest portion of the exam, the questions are a little trickier because you need to memorize the different pricing models for AWS. They also want you to recognize the various account structures in relation to AWS billing and pricing, and identify resources available for billing support. The AWS Cloud Practitioner certification exam wants you to have a very broad understanding of AWS Cloud, but you do not need to do anything hands-on in order to pass the exam. All of the questions are multiple choice and completed at the test center or on your laptop at home. **While working within AWS Cloud is definitely recommended, it is not mandatory for you to have six months of hands-on experience before you have enough knowledge to pass the exam.**

Cloud Concepts domain

There are four domains in the AWS Certified Cloud Practitioner Exam. They are cloud concepts, security, technology, and billing and pricing. The four courses in the Introduction to AWS for Non-Engineers series follow these four domains. This first course mainly covers the cloud concepts domain of the certification exam and provides vital fundamental information about cloud computing, its history, and the major players in the cloud computing platforms. Cloud concepts is the second largest domain in the exam and goes over many of the core concepts and benefits of utilizing cloud computing services. For this portion of the exam, AWS wants you to define the AWS Cloud and its value proposition, identify aspects of AWS Cloud economics, and list the different cloud architecture design principles. In this course, you will contemplate questions like what exactly is cloud computing? What makes it different from legacy IT infrastructure? How is the way you pay for resources different from buying and setting up the hardware in your on-premises data centers? You will also learn about concepts like well-architected framework for building IT infrastructure, types of cloud computing, type of cloud computing deployments, and advantages of cloud computing over legacy IT infrastructure. Let's get started with learning about what the cloud is, why cloud computing is taking the world by storm, and what Amazon Web Services, the largest cloud computing platform in the world, is used for.

What is the cloud?

The cloud, you've heard it, it's on the cloud, we can do that on the cloud, back it up to the cloud. It's impossible to escape it in the tech world, but what exactly is it? I imagine you have a big idea of what the cloud is as something floating up there in the sky that has something to do with data storage, somehow. Yeah, you're on the right track. In reality the cloud is actually just a new hip way to refer to the internet. Nothing mysterious at all. We all use it every day. But now we have to consider, do we really know what the internet is? In the most fundamental sense, the internet is a worldwide network of billions and billions of devices. These devices can be computers, servers, cell phones, tablets, or Amazon Alexas. As long as they are connected using the global network, any computer can communicate with any other computer thanks to the internet. And despite things like wifi and cell phone services making it seem like the internet is up there in the sky, the internet is still created and connected using physical cables. These can be TV cables, fiber optic cables, or copper telephone wires. When you open your favorite web browser and type in a website URL, it sends a request. The request is sent to your internet service provider, which is the company you contract with to provide you internet service. Your internet service provider then sends your request to a server which searches for the domain name you requested. If it finds a match it will route your request to the IP address of the server hosting the website. Once your request hits the server of the website you wanted to load, the server responds by sending the web page in little packets back to your computer. The packets are very small and acts like jigsaw pieces that your computer reassembles to load the whole entire web page. So the cloud is the internet and the internet is a global network of billions and billions of devices communicating with each other. And you, as a user of the internet, and the cloud, facilitate the transfer of information across the world faster than ever before.

What is cloud computing?

So, we have this cloud that connects all of our devices together. Through it, we can pass information back and forth, store data, and do other cool stuff. You have to be wondering, what powers the cloud? How does it get its energy? How does it stay on? The answer to that, my friends, is cloud computing. You're used to storing files on your hard drive, right? Sometimes, it's a pain to transport that data wherever you go. I know I've forgotten that precious USB stick before. Well, cloud computing solves that issue. It lets you access your data from wherever, as long as you have an internet connection. The technical definition of cloud computing is the on-demand delivery of

compute, database storage, application, and other IT resources. This means through cloud computing services, you have instantaneous access to computational, storage, and software using the internet. Computing resources available when you want it, where you want it. So, cloud computing is quite convenient. It's also very flexible when it comes to cost. Instead of the traditional buy first to use model, like when you buy a computer or car, cloud computing utilizes the pay as you go model. This means that you only pay for resources you use when you use them. For example, say you wanted a server to run your applications on. In the traditional way, you would have to go through a procurement process at your work to find an appropriate server with all the necessary bells and whistles. You would then have to make sure the capacity you are purchasing for isn't too much or too little. Then you have to get the quote from the manufacturer and then wrestle with the finance department to get the budget approved and device purchased. If the demands from the applications are much higher or lower than expected, you have to go back and go through the procurement process all over again to get a more appropriate server. Your department or company needs to have the funds to then purchase that equipment outright. Cloud computing allows you to pay to use only as much server space and capacity as you need at that moment. When you need more or less, you can adjust the rented capacity and your monthly bill will adjust along with it. Instead of a large overhead bill on purchasing a piece of hardware that may or may not even match your needs, you get a monthly statement billing you only for as much as you used last month. Cloud computing facilitates collaborations by allowing you to hold virtual meetings, edit documents together, and communicate via email or messaging services. Many of these services that used to cost a lot of money to purchase and maintain can now be purchased by bootstrap startups for $10 a user a month. Cloud computing allows for instantaneous access to computational, storage, and software resources using the internet when and where you want it. It allows for increased flexibility and affordability, because you are only charged for what you consume when you consume. They allow what used to be only possible with big corporate IT budgets to almost anyone with internet access and a few dollars.

A brief history of the cloud

How did the idea of cloud computing develop? To start from the beginning we have to go all the way back to the 1950s with the invention of mainframe computing. Mainframe computing is the concept of having a central computer accessed by numerous user devices. The central computer which had all the compute capabilities was called the mainframe computer. All the user devices which sent requests out to the mainframe computer were called dumb terminals. These days if you peek into a college computer lab there are computers at every desk fully independent from the ones around it. Back in the '50s however, computers were extremely expensive to buy and maintain. So instead

of placing one at every seat organizations would buy one mainframe computer and allow the dumb terminals to share its compute resources. In the '70s the concept of virtual machines emerged. Virtual machines are multiple complete operating systems that quote unquote live in a single piece of hardware. For example, you can have multiple Windows virtual machines living in your single Mac laptop. Suddenly, one single mainframe computer could have multiple operating systems running at the same time to do many different things. Then, a new idea hit them. What if we could use lots of mainframe computers' resources as if it's just one computer? This was the beginning of the modern concept of cloud computing. To make pooling resources a reality developers created a software called a hypervisor that could be installed onto multiple pieces of hardware such as a server. They could then link all of those hardwares and use their combined computational storage powers as one giant resource. Imagine the amount of storage and computing power you can harness by adding up all the memory and hard drive space of every computer in your office. Programs will run super fast and you can store a lot of files and you will be able to analyze data at blazing speed. This is what cloud computing allows people to do in an extremely large scale using the Internet to connect end users to huge computational hardwares in their data centers.

Cloud computing in daily life

The cloud, it's everywhere. I bet you use it more than you think. Let's start with email, something you use everyday. Cloud computing powers the storage and transfer of your messages so you can communicate with your friends and family. Streaming services. You know, Netflix, Hulu, that kind of thing. When we stream movies and TV shows, we benefit from streaming of video resources using cloud computing. These companies store video files on a cloud computing platform and allow thousands of people to access the same video at once. The bandwidth necessary for each video changes every second and cloud computing services can adjust it depending on the traffic. Many people use the personal account features of Office 365, like Outlook.com, without realizing it's a cloud computing platform. Google Cloud encompasses many of the features of your Google account, which includes popular services like Gmail, Google Drive, Google Photos, Google Hangouts, Google Calendar, and YouTube. Google Drive is a cloud storage platform for your photos, files, and videos. You can set up automatic backup to the Google Drive so you can save important files directly from your computer's hard disk to the cloud. It can also be used a cloud computing power collaboration tool for you to edit files with your colleagues or friends. You can get real-time feedback from your collaborators and as soon as a change is made by another user, you can see it reflected on your browser. For many popular cloud computing services, there is a free tier that most of us use. If you decide

you need more space or features, they have subscription plans available for all different levels of computational needs, such as more space or accounts. The change in the amount or type of resources you can access is instantaneous and you can immediately enjoy your expanded storage space or added services. When you no longer want the extra perks, you can change your account tier again and from then on you will only be charged for the new amount of resources you're consuming. Cloud computing services allow us to consume, produce, and collaborate like never before and instantaneously. Many of them are quite inexpensive and some are even free. Can you think of other popular websites or services you often use that utilize cloud computing?

Wrapping up: Cloud computing

The cloud and cloud computing permeate many parts of our daily lives as we utilize the internet for work, school, and personal life. We check emails, post on social media, share documents via online file sharing services, stream hours and hours of videos, and use cloud-based car navigation apps. In this wrap-up study break, we will be reviewing concepts like what is the cloud, what is cloud computing, quick history of the cloud, and why we utilize cloud computing over legacy IT infrastructure. Let's get started. When someone mentions the cloud, they are referring to the internet. The internet is made of copper wires in a global network of billions and billions of devices. These devices can be computers, tablets, cell phones, Google Home, really anything that can connect to the network to send or receive information. Even though most people did not begin using the internet on a daily basis until the late '90s, the concept of cloud computing dates all the way back to the '50s, with the development of mainframe computers accessed by dumb terminals. Dumb terminals themselves didn't have any compute powers, but users could send queries to the mainframe computers using the terminals. Development of virtualization together with a piece of software called the hypervisor allowed us to think big. And by big, I mean pulling together multiple servers and using all of their compute and storage resources together as if we're using one extremely large server. While in the past, the amount of resources you could link together was limited by what was in your physical data center, with cloud computing, you have the ability to access as much resources as the service provider can give you. With the internet, you have almost limitless potential with as much computing power as you can get. It's almost as though we're back in the '50s with our laptops and desktops serving as the dumb terminals, and our cloud computing service providers hosting the mainframe computers. Instead of connecting to the mainframe computer in the data center on the same floor, we use the internet to connect to the countless servers linked by hypervisors through big service providers like Amazon Web Services, Microsoft Azure, and Google Cloud.

Advantages of cloud computing

So, why cloud computing? Think of it this way, you don't have to buy a computer with a huge hard disk because you can save your files on the cloud using services like Dropbox. Not only that, but these files are available from any machine connected to the internet. You don't need to buy an expensive gaming computer to play graphics-heavy games because you can use a web service like Parsec to play games on their server loaded with enough memory for seamless playing. Instead of paying hundreds of dollars for a program that you install onto your computer, you could pay a $10 a month, subscribe to a service, to use it through your web browser. How does this work for large businesses? If you are thinking in terms of your company's IT infrastructure, you no longer need to have people setting up physical servers and cabling. The countless hours and dollars spent maintaining a server room and the technology inside can now be used elsewhere. Even things like temperature regulation in a server room could be a source of headaches when setting up the IT department. When a piece of hardware breaks, you have to go through the whole procurement and setup process, which could take months. Cloud computing makes all of that the service provider's issue to solve and gives you a set fee to use the services over the internet. With cloud computing, you pay only when and what you consume. This avoids the overhead cost of buying too much physical space on-premises. If you are about to run out, you can simply scale up on the cloud within minutes. I don't know about you, but I'm into saving money wherever possible. The cloud computing service providers take care of the physical infrastructure and their own huge data centers, so you and your engineers can worry about other more interesting things, saving you manpower and money. You also benefit from the massive economy of scale, since larger cloud computing providers buy their capacities in huge quantities, they are able to offer a portion of their capacity to you for a much lower price than if you try to go out and get it for yourself. There are six major advantages to cloud computing. You can trade capital expense for variable expense. Benefit from massive economies of scale. Stop guessing about capacity. Increase speed and agility. Stop spending money running data centers. And go global in minutes. You no longer have to worry about buying too little or too much of something, and you only pay as you go, allowing you to focus your attention and money elsewhere.

Cloud computing models

There are three main cloud computing models, software as a service or SaaS, platform as a service or PaaS, and infrastructure as a service or IaaS. Infrastructure as a service also known as IaaS refers to the basic building blocks of cloud IT infrastructure. You have control over the networking, security, computer, and servers. IaaS provides the most flexibility and management control of all the different types of cloud computing models, and it's the closest in features to having the traditional on-premises data center. Some examples of infrastructure as a service platforms are Amazon Web Services, Microsoft Azure, and Google Cloud. You can modify and control almost all parts of the infrastructure in the cloud to fit your needs without having to purchase or manage actual hardware. Platform as a service known as PaaS allows you to deploy and manage applications without worrying about the underlying hardware infrastructure. Services offered could be web servers, databases, operating systems, or environments where you can execute specific programming languages to host applications. Some examples of PaaS are Microsoft Azure web hosting, Google App Engine, and Heroku. You can focus on deploying the applications instead of the operational side of deployment. PaaS is different from IaaS in that there is less flexibility as packages are preconstructed. But, you also have to deal with less of the infrastructure deployment and maintenance allowing you more time and resources to focus on the project at hand as opposed to the infrastructure. Software as a service, SaaS, describes completed products managed by the service provider. You get the whole package of the service complete with user interfaces. It's ready for use by an end user regardless of their technical backgrounds. You don't have to worry about how the service infrastructure is maintained or managed. You only have to worry about how you might use the service to fulfill a need. A very popular example of SaaS platform is a cloud-based email service such as Outlook and Gmail. As the user you only need to create an account to log in to send and receive emails, no need to worry about anything else. In terms of complexity and level of involvement required, infrastructure as a service is the most involved and requires the highest level of technical knowledge to execute, followed by platform as a service. Software as a service generally does not require much technical knowledge and it's extremely intuitive and features are ready to use quote unquote out of the box. So you and your team will have to decide which choice is right for your needs and circumstances.

Cloud computing deployments

Analogous to different cloud computing services, there are also different deployment models that have organizations deploy their cloud infrastructure. And thankfully, their names are fairly intuitive. Cloud, on-premises, and hybrid deployment. When an

organization utilizes cloud deployment, it means that all parts of its IT infrastructure reside and run on the cloud. All applications were either migrated to or created in the cloud. And the organization relies on internet and their cloud-computing service providers to fulfill their computational and IT requirements. Many small startups utilize this model, as it allows them to be flexible and scalable in their resources while removing the roadblock of costly and time-consuming procurement and management processes for on-premises infrastructure. They may use services like Office 365 for emails, Microsoft Teams for on-demand communication, and Microsoft Azure for their app development and hosting. All resources in a cloud deployment infrastructure live on the cloud. With on-premises deployment, often referred to as private cloud, organizations use virtualization to deploy resources in their on-premises data centers. In many cases, the execution of on-premises deployment looks like the traditional IT infrastructure with its servers, network cables, and data center management. The setup does not provide a lot of benefits of cloud computing. The resources are not accessed using the internet because they are on-site. This means you can access them really quickly because nothing has to be uploaded or downloaded using the internet. However, it could utilize application management and virtualization technologies to increase efficiency of the available resources, such as by deploying virtual machines and internet resources behind a firewall. On-premises deployment provides dedicated resources which means that the organization is not sharing any part of their resources with another organization. This may be a requirement for certain industries that take data privacy very seriously, such as the medical field. The last type of deployment is hybrid deployment which connects on-premises tech with cloud-based resources. This is a very common setup for many established companies that already have their own on-premises data centers, but are in the process of migrating over to the cloud. Hybrid deployment allows organizations to extend and scale their infrastructure into the cloud while still maintaining access to on-premises resources living on on-site servers. Another common use case is to use the cloud deployment as backup in disaster recovery solution. An organization can maintain a working copy on premises, but make sure they have durable backup in the cloud. Because migration of existing IT systems take a long time and is costly, hybrid deployment is a very effective in-between as resources are migrated to the cloud. Flexibility, scalability, and finding your perfect fit are features of cloud computing that shine when considering which model of cloud computing deployment is the best fit for your organization. For organizations that don't have very many IT resources deployed yet, cloud deployment would allow them to utilize the complete flexibility and affordability which are signatures of cloud computing services. For those who need all of their data secured and on-premises, either due to retrieval speed or security requirements, private cloud utilizing virtualization of legacy resources is a good fit. For companies with legacy IT resources that would take a long time to upload to the

cloud, but would like to extend their computing stores capacity economically, hybrid cloud deployment might be preferable. Many companies utilize hybrid cloud deployment to have quick access to on-premises resources, but have a very safe backup in case of an emergency.

Design principles of cloud computing

Knowing how to create a well-architected infrastructure allows organizations to build the most secure, durable, efficient, and high-performing IT infrastructure possible. So, how can we do that? First, avoid unnecessary costs. Use only what you need and turn off any servers or resources you aren't using. Reserve resources in advance if you know you'll need a certain amount of compute power, as many services give discounts for reservations and upfront payment. Don't forget to continue monitoring for more ways to optimize as your organizational needs change, and know which resources are causing which charges on your bills. Best practice number two, reliability. A reliable system has the ability to recover from service disruptions often by itself. They can also dynamically adjust computing resources to meet demand. You should be testing your disaster recovery settings and incorporating redundancies in your infrastructure. Redundancy refers to the concept of having duplicate copies of resources so that when one goes down, the other can take over to provide seamless cut over experience for end users. The third best practice, efficiency. Performance efficiency is the ability to use computing resources to adjust to system requirements. It should allow for more experimentation and when a change is set in motion, should be able to go global in minutes. A fourth best practice to consider, infrastructure security. This includes security of information, systems, and assets. Security best practices should be automated. Data should be protected in transit and at rest, which means when it's being moved from one location to another, as well as when it's being stored. For example, when someone sends an email, the data is in transit, being transferred using the internet. If you have a file uploaded to a server, it's at rest. Traceability should be enabled, along with strong identity foundation. This means that in case of a security breach, you are able to see who did what at any point, because every user has a unique user account or access key. Who can do and access what should be well defined and followed. The fifth best practice is operational excellence. This is your ability to run and monitor systems while constantly improving processes and procedures. Everything should be documented and operational procedures should be frequently refined. Failures should be anticipated and learned from, and systems and processes updated to take them into account. If an incident occurs, such as a major service downtime, the whole team should come together to discuss what went wrong, how it could have been prevented, and set up procedures in case it happens again. So, there are five best practices when architecting cloud-based IT infrastructure, cost optimization,

reliability, performance efficiency, security, and operational excellence. When all five pillars are taken into account and optimized, you will have a highly performing, stable IT infrastructure that allows your organizations to save money, time, and resources.

Study break: Reviewing cloud computing

Welcome to the Study Break for cloud computing concepts that will come up in the AWS Certified Cloud Practitioner Exam. The major concepts to remember are, the advantages of cloud computing over legacy on-premises IT infrastructure, cloud computing models, types of cloud computing deployments, and design principles of cloud computing, such as the as the Well-Architected Framework of a solid cloud computing IT infrastructure. Let's start with the advantages of cloud computing over legacy on-premises IT infrastructure. AWS calls these the six advantages of cloud computing. The advantages are, trade capital expense for variable expense, benefit from massive economies of scale, stop guessing about capacity, increase speed and agility, stop spending money running and maintaining data centers, and go global in minutes. There are three cloud computing models and there are three cloud computing deployments. The cloud computing models are, Software as a Service, SaaS, Infrastructure as a Service, IaaS, and Platform as a Service, PaaS. The cloud computing deployments are, public cloud, hybrid cloud, and private cloud, otherwise known as on-premises cloud. Finally, the Well-Architected Framework of cloud computing provides best practices framework for designing a stable, robust, and secure IT infrastructure on the cloud. The five pillars of a Well-Architected Framework are, cost optimization, reliability, operational excellence, performance efficiency, and security. If you are unsure about any of the concepts mentioned in this video, feel free to pause and go back to the specific videos. Knowing these concepts and models could mean a few extra points on the exam which could go a long way in securing you the certification. Most importantly, the six advantages of cloud computing comes up again and again in the exam, so it's well worth your time to make sure you know what these phrases mean in layman's terms.

A brief history of AWS

Add to cart, checkout, confirm payment. Rejoice. I imagine most of you have experienced this cycle, that visceral joy you get from online retail therapy, and no other company is better at facilitating it than the e-commerce giant, Amazon. A company had a market cap of $1 trillion in 2018 becoming only the second company in the United States to ever hit that mark. Amazon was founded by Jeff Bezos in 1994 as a humble online bookstore before most of us even considered buying anything online. Amazon

Web Services, or AWS, the cloud services platform did not come around for almost a decade after the bookstore turned retail giant was founded. And it brought a completely new side to their business. The framework for Amazon Web Services was launched internally within Amazon all the way back in 2002. At that time, it was called Amazon.com Web Service. Amazon was planning to launch merchant.com, an e-commerce service that helped third-party shops create online shopping websites using Amazon's e-commerce engine. Developing this platform helped to pave the way for Amazon to evolve from an online store to a service company. Surprisingly, it took several years for any real competitors to arrive in the cloud computing platform arena, which has contributed to AWS maintaining its majority market share in the industry. However, the gap is quickly being bridged by other large cloud computing platforms like Microsoft Azure and Google Cloud gaining more and more of the market share every year. It has only been a little over a decade since the very first service was launched in AWS, but the platform has grown exponentially both in its customer base and service offerings. The cloud computing platform currently has over one million active customers. And in 2017, 10% of Amazon's revenue came from AWS.

What is AWS?

Before I even knew what the cloud meant or what cloud computing does, I had heard of AWS and knew that it was a big deal in the tech industry. It took only a quick Google search to find out that AWS stands for Amazon Web Services. From the name, I surmised that it was an Amazon product. I was however, completely unprepared for the extent of the types and number of services AWS provided for organizations all over the world. AWS offers IT infrastructure services to businesses and organizations as web services to help them scale and grow efficiently. AWS provides what used to be purchased as hardware, such as network switches and servers, as resources to be accessed using the internet. Because of cloud computing's pay as you go model and robust resources, organizations are able to save time, money, and human resources by moving their resources to AWS. As of winter 2020, there are 24 groups of services offered by the platform ranging from compute to storage to game development. Each group contains anywhere between one to 12 services with more being added all the time. You can host your static files using simple stores service, host a WordPress blog using elastic compute cloud, send emails using work mail, stream desktops using workspaces or create games using game lift. It's probably not far from the truth to say that your imagination is the limit for what you can potentially architect and create using Amazon Web Services. As a cloud computing service provider, AWS boasts flexibility, scalability, and reliability alongside affordability that was impossible with traditional on premises IT infrastructure. With AWS, engineers can

concentrate on building your products and features instead of worrying about the it infrastructure's ability to handle their scaling.

Big companies using AWS

So you get it. Amazon Web Services is a pretty big deal and a lot of companies use the platform to serve their computational, storage, hosting, and IT infrastructure needs. AWS has more than a million active customers ranging from Airbnb to General Electric. Let's see how various companies are using AWS to power their infrastructure, to work for them in the background, so they can focus more on growing their businesses. Utilizing the hybrid cloud deployment model, Comcast built an app for Xfinity services that links AWS Cloud and their on-premises data centers seamlessly. Comcast is the world's largest cable company, and thanks to having their hybrid environment, they're able to deploy features to Xfinity X1 several times a week instead of every 12 to 18 months, which was the timeline with their old architecture. Expedia, your friendly travel companion, is in the process of migrating 80% of its mission critical apps to AWS within the next few years. Expedia provides travel related services through expedia.com, and 200 other travel booking sites all around the world. Because of their extensive global footprint that requires continuous updates and innovations, they chose AWS to host a new service called Expedia Suggest Service. At the time, AWS was the only cloud service provider that supported the Asia-Pacific customers. This made them a great fit as the global travel company serves customers from all over the world, including Asia. Investors use Dow Jones to learn about the going ons of the financial markets around the world. When the lease of their physical data center in Asia hosting the Wall Street Journal for agent customers ran out in 2013, they moved to AWS. Now, all of their Asia traffic is running through AWS, and the transition has saved Dow Jones 25% every year over the cost of leasing a data center. Atlassian, who owns popular product and project management tools, such as JIRA and Confluence, uses AWS to scale and enhance availability and disaster recovery. Breakfast cereal tycoon, Kellogg's, has tight margins, and estimates that it will save a million dollars over the next five years in software, hardware, and maintenance costs, by using AWS. Some other companies you might have heard of running on AWS, are Citrix, Square Enix, Spotify, USDA, UK Ministry of Justice, and Netflix. Anyone choosing to run their cloud infrastructure on AWS, will be in good company.

Popular services offered in AWS

Compute services provide virtual server hosting, container management, and serverless computing. You can set code to run to certain triggers using Lambda, run virtual machines using Elastic Compute Cloud or EC2, quickly set up and run small websites

using LightSail, or create a unit of software to ship out to your users using Elastic Container Services or ECS. Compute services are backbones of cloud computing platforms as they provide the much-coveted computing resources that many companies are looking for. Instead of having to host their own servers in their own data centers, they can rent servers from AWS for pennies on the dollar. Storage services provide storage for both in-use and archival files. You can use Elastic File System or EFS to create shared folders in the cloud. You can upload flat files like images, videos, or text files to Simple Storage Service or S3 and link to it directly to use on your website. You can also archive files and store large amounts of data for cheap using Glacier or you can use Storage Gateway to take daily backups of your company's on-premises data and send them to the cloud for safekeeping. Storage solutions are cheaper than ever with cloud computing and AWS provides many options depending on the frequency of access and durability of data you require. AWS also offers fully-managed relational and NoSQL databases. Their cost-efficient relational database is called Relational Database Service or RDS and a highly scalable NoSQL database is called DynamoDB. They also offer a fully managed, easily scalable petabyte-scale data warehouse service called Redshift and a highly scalable caching service called ElastiCache. ElastiCache allows you to run extremely intensive computations by caching necessary data in the cloud. All of the database services are highly scalable and cost efficient so you can crunch all the numbers and data you need for a fraction of the cost of an on-site database server. It's easy to get lost in the abundance of options but it's also exciting to consider the almost limitless potentials in what we can create using these resources.

Create an AWS account

Let's dig right in and create an AWS account. You'll need to go to aws.amazon.com. Just as a warning, creating an account requires to have a valid phone number and a credit card. To create the account, click on the very aptly labeled button here that says "Create an AWS Account." Fill in your email address and create a password. An AWS account name is a unique username for AWS. You might have to try a few times before you hit an account no one has taken yet. Once you're done filling out the form, click Continue. For the account type, choose Personal, as you are creating this account to learn and explore. Enter your full name, phone number, as well as your address. Make sure to read the agreement and check the box before proceeding. Once you're done, click Create Account and Continue. We're almost done. The next page asks for your payment information. For the first 12 months after your account creation, you are eligible for what is called the AWS Free Tier. This means that up a certain usage level, you can try out many of AWS's most popular features for free. The payment information is in case you use features that require payment, or if you go past your free tier limits. They will make a small test charge to make sure your payment method is

valid. It will go away once your account confirmation is complete. Now click Secure Submit. We're almost done. This page will ask you to verify your account creation with a phone verification. They will call you so you can put in a code to verify that you indeed did create this new account. This number can be any phone number that you can receive calls at, so it can be an extension at work if needs be. Put in your phone number, type in the code in the security check, and click on Contact me. When prompted, enter the four numbers that came up after clicking the button when you received the call. Feel free to pause this video now to receive the phone call. Once you complete the verification, click Continue. Now you'll select a support plan for your account. As you can see on this page, there are three kinds of support plans available to you, which are Basic Plan, Developer Plan, and Business Plan. There is also a fourth one, Enterprise, but that's only for bigger companies that require a lot of support. Each plan has different features, support tiers, and costs associated. You can click on the Basic Plan, as it's free and provides you access to health status and notifications for your various services. You can learn more about each support plan by clicking on Learn More. Now we wait for AWS to finish creating your account. The page you're on now helps you personalize your account by picking your role and interests while you wait for the account to be activated. Once your account is fully ready, which generally only takes a few minutes at most, they will notify you by email. There you have it. You've successfully created an AWS account. Go check your email to log in to your own AWS management console for the first time.

Exploring the AWS dashboard

When you first log in to the AWS Management Console, you'll immediately notice that there's a lot going on. No worries. Most of the time, we only work with one or two of the resources on this dashboard. First off, let's take look at the right top corner of the browser. Here, you'll see your user name you chose for yourself when you signed up for an account. When you click on your user name, you can find out information and have a quick way of accessing your security credentials. The billing portion is important as you start exploring different services, as some of them will cost money, even during the free tier. Let's move on to the link near the user name labeled Support. Here, you can explore different ways of finding documentation and support resources for your issues or questions. You can create tickets in the support center or ask peers in the forum. You can also find documentation and tutorials on how to troubleshoot or create certain functions in the documentations and trainings offered by AWS for free. The Services link at the top left corner of the browser takes you to the list of all the services AWS offers. This list expands as new services are announced, and just in October of 2018, AWS added new categories, like Blockchain and Satellite. Some of the most popular categories of services are Storage, Commute, and Database. You can click on any of

them and they will provide you information and introduction to the services, as well as resources you could check out to learn more about them. Back on the main dashboard, there are resources to learn about various services and what they can do for you, such as the Build a solution and Learn to build section. You can also go to the Explore AWS column to the right and see what AWS things you should check out now. There are many parts to the AWS Management Console dashboard, but we've gone over many of the main resources available for you to begin your dive in to AWS. A big portion of learning a new system or technology is knowing where to look for answers. And the support resources available on the dashboard can answer many of your potential questions and issues. Go ahead and take a little while to explore the dashboard on your own.

AWS Free Tier

Go to AWS.Amazon.com/free. AWS Free Tier allows new potential customers to test out and use many services offered by AWS for free. This allows you to become comfortable with many of the services and AWS gains a potential customer. When the 12 months are over, you begin to be charged for services you consume at regular rates. As a warning, you will get a notification when your 12 months are expiring, but you will then need to manually turn down or delete your services if you don't want to be charged. There are three different types of Free Tier offerings. They are 12 months free, always free, and trials. Let's take a look at each option. The first option is 12 months free. As the naming suggests, these are offers that expire 12 months after you sign up for your account. All of the services have usage limits, and if you go above the limit, you will be charged at normal rates even within the first 12 months. Some of the common limitations are use time, number of requests, amount of storage, number of characters, and actions per month. The second option is always free. And, you guessed it, it's always free, up to a certain point. The final type of Free Tier offering is trials. Most of the trials are for less than 12 months, and have stricter limits. Take note, one important thing is that being on the AWS Free Tier plan doesn't mean you have unlimited use of everything. Depending on the service, there are different limits. AWS Free Tier is a generous offering that helps bring in new customers for AWS, and as a brand new user of AWS, it allows you to test out the services and learn and explore this powerful system.

Use case: AWS Free Tier

So, now that we are armed with an AWS account and AWS Free Tier, let's explore a use case for a real project you can create using mostly free resources. Imagine you have to create and host a WordPress website using AWS. You can very quickly spin up an Elastic Compute Cloud or EC2 Instance, that comes loaded with WordPress. AWS has a

marketplace for preconfigured servers called Amazon Machine Images or AMI. These are basically templates of servers that you can create and immediately get it preconfigured to a certain way. In this case, a company called Bitnami has created a WordPress AMI called WordPress Certified by Bitnami. It is Free Tier eligible and runs on an Ubuntu server. You will be led through the setup process and once you're through, you will have a WordPress website set up and ready to go. EC2s have fairly long URLs through, which could be something like ec2-52-204-122-132.compute-1.amazonaws.com. That's usually not a very attractive way to introduce your blog to your new friends. You would probably want something like mycoolblog.com to take your visitors to your brand new blog. AWS has a service to help you do just that. The simplest way is to purchase the domain name that you want using AWS's domain name registrar Route 53. A domain name registrar is like a phone book. To visit a website you input a domain name like mycoolblog.com and the DNS finds it in an online directory of IP addresses. It then sends your request to the appropriate server so you can load the website. By purchasing your domain on Route 53 and matching the domain name with the IP address of your EC2 Instance, you can make the address mycoolblog.com load your WordPress website. Now, Route 53 costs a few dollars a year for the domain registration and charges a separate monthly usage fee, however, the monthly usage fee for me is around 50 cents a month and domain registration itself was around $12, so for a whole year of website hosting the costs are fairly minimal. If you were thinking about starting a blog for cheap using AWS might just be the way to go, and it doesn't hurt that you are getting some hands-on experience with different services at AWS. There are many resources available on how to set one up ranging in complexity from a simple one, like what we just did using Route 53 and EC2, to using other services like CloudFront, AWS Certificate Manager and Elastic Load Balancer to help secure the website and make sure it stays up even if someone tried to take your blog down with a DDoS attack. Your creativity can take the reins to create just the project you were dreaming of with AWS Free Tier and other services.

Study break: Exam tips and resources

We began this course with what even is the cloud? Since then, we've come a long way. Let's get prepped for the exam. We've learned about the cloud, cloud computing, Amazon Web Services, and various but essential cloud computing concepts to help begin the preparation process for the AWS Certified Cloud Practitioner Exam. In this video, we will review major concepts you should know about for the AWS Certified Cloud Practitioner Exam's Cloud Concepts domain. These topics are, what is AWS, six advantages of cloud computing, three cloud computing models, three cloud computing deployments, and five pillars of a Well-Architected Framework. We will also throw in some study tips for memorizing certain concepts in preparation for the

exam. Let's get started. The AWS Certified Cloud Practitioner Exam is the most fundamental certification exam that AWS offers to help validate the candidate's overall fundamental understanding of the AWS Cloud. It includes four domains which are, Cloud Concepts, Security, Technology, and Billing and Pricing. We began with Cloud Computing and then went over to the Cloud Concepts domain. For the Cloud Concepts domain part of the exam, AWS wants you to define the AWS Cloud and its value proposition, identify aspects of AWS Cloud economics, and list the different cloud architecture design principles. AWS, or Amazon Web Services, is a cloud computing platform created by Amazon and currently holds the world's highest market share in the cloud computing sphere. It provides many different IT services on the cloud and helps to make it easier, faster and cheaper to run your IT infrastructure compared with legacy on-premises IT infrastructure. According to AWS, there are six distinct advantages of utilizing cloud computing over on-premises IT infrastructure. The advantages are, trade capital expense for variable expense, benefit from massive economies of scale, stop guessing about capacity, increase speed and agility, stop spending money running and maintaining data centers, and go global in minutes. Basically, utilizing cloud computing is faster, cheaper, and more agile than utilizing your own data centers. There are three types of cloud computing models and three types of cloud computing deployments. The three types of cloud computing models are, Software as a Service, Saas, Infrastructure as a Service, IaaS, and Platform as a Service, PaaS. The three types of cloud computing deployments are, Public Cloud, Hybrid Cloud, and Private or On-Premises Cloud. Want the way to memorize them? Try out my silly memorization method, SIP PHO. SIP is an acronym for the three cloud computing models, Software as a Service, Infrastructure as a Service, and Platform as a Service. And oh boy do I love myself a good bowl of Pho. PHO stands for the cloud computing deployment models, Public, Hybrid, and On-Premises or Private Cloud. There are five pillars of a Well-Architected Framework. They provide best practices for specific areas of running an AWS Cloud IT infrastructure. To help me memorize these five pillars, I created the acronym CROPS. The pillars are, Cost Optimization, Reliability, Operational Excellence, Performance Efficiency, and Security, CROPS. What do you think? Do you think you'll be able to answer questions in regards to all the topics we learned about in this course? If not, please don't hesitate to go back and rewatch some of the videos, and take notes.

Next steps

- Well, that was a lot of information in such a short amount of time. I'm so glad you stuck with me to the end. I hope you not only learned a few things, but enjoyed the process, too. If you are interested in learning more about Amazon Web Services, and even potentially taking the AWS Certified Cloud Practitioner exam, please check out the

rest of the introduction to AWS for non-engineer series here at LinkedIn Learning. The courses cover the four domains of the AWS Certified Cloud Practitioner exam, which are cloud concepts, security, technology, which we refer to as core services, and billing and pricing. If you have questions or want to learn more about cloud computing, and potential careers that work with or in cloud computing, please come visit cloud newbies, a community of cloud newbies and seasoned pros where we learn about cloud computing and study for certifications together. You can visit us at cloudnewbies.com. If you're looking for a resource website while you're beginning your research into Amazon Web Services, you can visit me at awsnewbies.com where I introduce cloud computing in AWS in a jargon-free way. Thanks again for watching and I hope to see you again in one of my other courses or resources. Good luck.