

Activities List - Becoming a Cloud Consultant

Estimated Time: 60 to 90 minutes

After reading, or listening to, the Preface - Cloud Computing file in this directory, please complete the following activities:

1. Watch two short videos, one is from Amazon Web Services, and the other from Microsoft, as an introduction to cloud computing. Be sure to close the YouTube window after each video plays to return here to continue the activities:

[Click Here for first video,](#)

[Click Here for second video.](#)

Here is a summary of what you just viewed:

The first video mentions 2 Amazon competitors, namely Microsoft and Google. Neither video gets into the reasons companies don't want to use the cloud, but the videos are short and easy to understand, and do a good job of introducing why a company would want to use the cloud. The cloud consists of various services being offered via the Internet. The first video promotes an Amazon product at the end which simplifies management of the cloud-based resources, the second video mentions some Microsoft offerings. Remember, just provisioning a server in the cloud is the first step to running business applications, or perhaps using it for backup purposes.

It doesn't hurt to watch the videos a second time to review the basic concepts.

2. Now it's time to read a web page that belongs to an accounting firm in Poland called GetSix, to learn about Cloud services, and the different types of cloud computing.

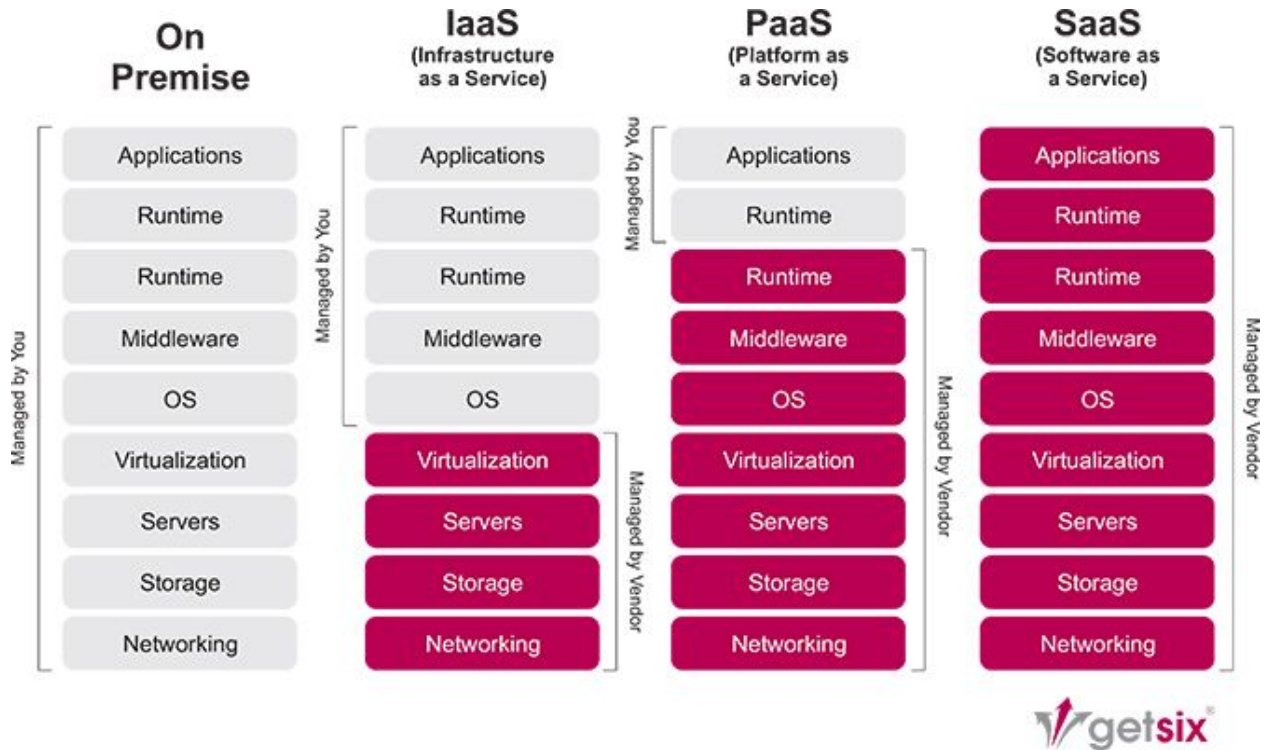
As a preview to what you are about to read, let's discuss two of the diagrams from the site. The diagrams depict the different levels of hardware and software involved in the different types of services offered by these cloud vendors. It is important to understand the jargon describing the different ways to establish and utilize a cloud computing environment.

For example, a business may choose to purchase services at three different levels. In the first diagram below, notice the far right box is labeled Software-as-a-Service (SaaS), and shows the application and everything needed to run the application is located in the cloud. That means all the business needs is an Internet connection to get to the website. Salesforce.com is an example of a SaaS provider, and is the largest SaaS company based on the value of its stock, which is around \$70 billion.. Google is also a SaaS provider, offering 137 products that are focused on Internet-related services, including their search engine, digital analytics, document creation, online advertising. Adobe, MailChimp, SurveyMonkey, are other examples of SaaS providers.

The stacks labeled IaaS and PaaS are offering different levels of hosting services. According to Datamation.com, top PaaS providers are

<ul style="list-style-type: none">● Amazon Web Services● Microsoft Azure● Salesforce Platform● Red Hat Open Shift● Mendix● Google App Engine	<ul style="list-style-type: none">● Dokku● Zoho Creator● SAP HANA Cloud Platform● Platform.sh● Cloud Foundry● IBM Cloud
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On the left, "On Premise" refers to the traditional business computing center that operates everything in house. While this model offers significant security advantages, it costs more to operate.



Top providers of IaaS are

<ul style="list-style-type: none"> ● Google Compute Engine. ● IBM Cloud. ● Rackspace. ● Oracle Cloud. 	<ul style="list-style-type: none"> ● Verizon Enterprise. ● CenturyLink Cloud. ● CloudSigma. ● Vmware vCloud Air
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The site you are about to visit explains that the Cloud can be utilized under several different deployment models:

1. **Private:** The Cloud infrastructure is operated solely for one organisation. This does not imply that it is managed or located within the same organisation – in fact, it can be managed by a 3rd party and located elsewhere;
2. **Community:** The Cloud infrastructure is shared by several organisations, which share common concerns;
3. **Public:** The Cloud infrastructure is made available to the general public, and is owned by an organisation selling Cloud services;
4. **Hybrid:** The Cloud infrastructure is a composition of two or more deployment models above.



Please proceed to the GetSix site and read how they explain these cloud concepts to their clients. <https://getsix.eu/resources/glossary/the-types-of-cloud-computing/>

3. Read a case study from Microsoft about a successful cloud implementation for one of their clients based in the UK. Be sure to listen to the video interviewing the people involved in the project.

<https://customers.microsoft.com/en-gb/story/somerset-county-council-improve-collaboration-and-operations>

4. Read the PDF in this subdirectory titled “How Cloud Skills are Accelerating IT Pros Careers”

5. Read the following paragraphs and study the diagram to learn about:

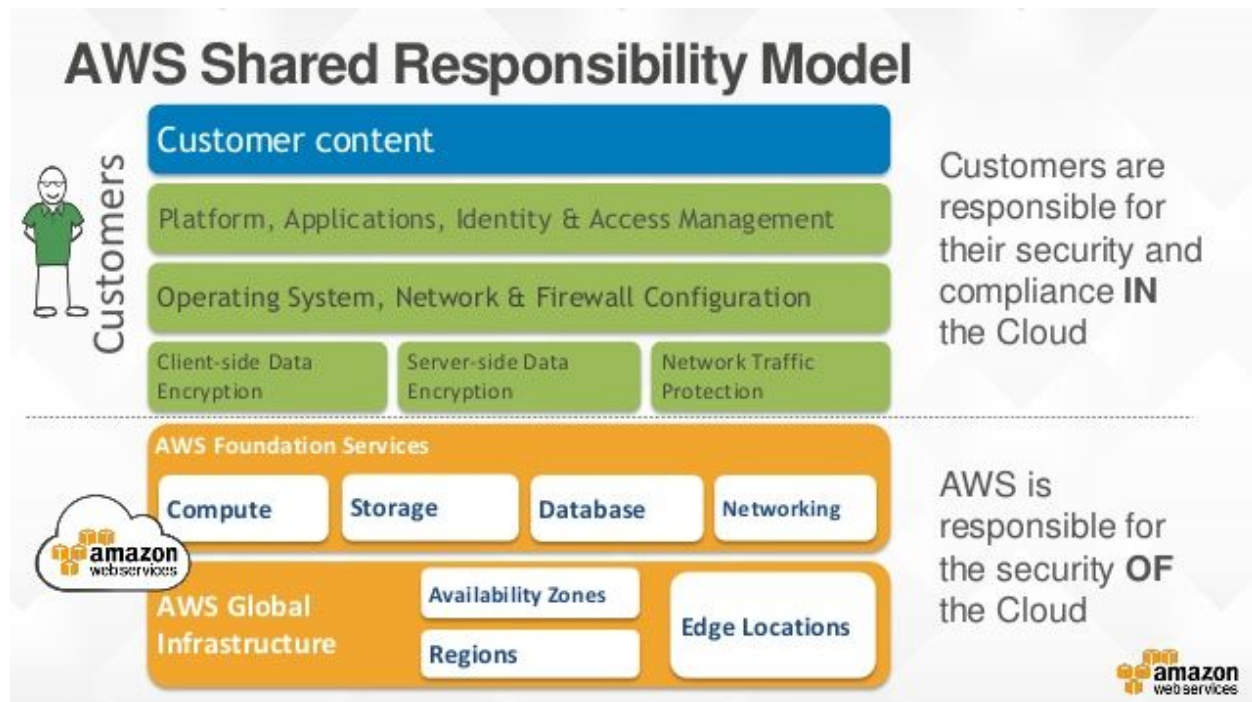
Data Security in the Cloud

Services and Options for hosting data

Those who use a cloud service provider to host their data should understand the security risks.

Security policy differs whether that data is personal data, or if it is corporate data that must be managed according to regulations and laws. Services like Google Drive and Microsoft Onedrive are commonly used options for saving personal data in the cloud. Amazon S3 (Simple Storage Service) and Microsoft Azure are popular options for business though there are countless other service providers to choose from. Market-share leaders in the cloud space are Amazon, Google, IBM, and Microsoft.

Cloud service providers typically offer a shared security model where they protect their computing centers and let the customer handle the rest. Don't get bogged down with all of the details, but please take a moment to study the following diagram which identifies the different layers and components to be considered when providing security. This diagram, from AWS, makes a distinction of physical security, meaning their buildings where servers reside, as being "on the cloud."



Many businesses choose not to host certain types of data “in the cloud.” This is especially true for mission critical or highly sensitive data. ***Companies whose very business is defined by their data sometimes choose the hybrid cloud approach and keep their data hosted at their own facilities, e.g. “on premise.”***

Encryption

Though most data hosting services are relatively secure, data encryption is one option for adding a layer of security to any data you choose to store and make accessible through the cloud. It is still possible that encrypted data could be compromised but would require the files to be decrypted or intercepting the files before they are encrypted.

Authentication

Authentication deals with identity and access management (IAM). For many years userids and passwords were the primary security mechanisms used to protect access, but in recent years additional means have been added. For example, its common for an online service to require two factor authentication at login. Two factor authentication is an added layer of security that requires both a userid and password combination in addition to a second "factor" before access is granted. The second factor is typically something as simple as a pin number, a number sequence from a physical security token, or an access code that is sent to a smartphone.

Recovery

Backups need to be provided for any important data hosted using cloud services. These backup services need to be configured based on how current the data needs to be, and verified that the backups are good and usable.

Availability

Any hosted data will, of course, become unavailable (i.e. the data can't be accessed) if a business has any network connectivity issues to the cloud server where the data resides. The same is true for network connectivity for any data hosted on premise but at least in that instance, the business retains control of the network and its availability.

6. The more a designer or consultant knows about failures the easier it is to avoid making the same mistakes.

Please read these two articles on failures.

<https://www.datamation.com/cloud-computing/slideshows/top-10-cloud-computing-failures.html>

<https://www.readitquik.com/articles/cloud-3/6-cloud-computing-failures-that-shocked-the-world/>

(each article mentions Salesforce and healthcare.gov so there are 14 failures mentioned)

7. Amazon Web Services (AWS) is the dominant company in the cloud computing but don't miss the irony in what they've created. In simplifying how computers are provisioned (i.e. initial set up) and by allowing customers to pay only for what they use, they have attracted a lot of interest. However, at the same time they've made things difficult to keep up for anyone who wants to work with Amazon Web Services based on the sheer volume of services offered and associated terminology. For example, according to their website in their first 10 years they added over 2500 services and features.

“AWS began offering its technology infrastructure platform in 2006. At this point, we have over a million active customers using AWS in every imaginable way, and have developed considerable experience operating at scale. We've also innovated and delivered at a very rapid pace (delivering 159 significant features and services in 2012, 280 in 2013, 516 in 2014, 722 in 2015, and 1,017 in 2016). Expect this focus on rapidly delivering what customers want to continue.”

That's one way to put it. Another is that for the last 10 years business customers have been educating Amazon about the services they have grown accustomed to in the last 50 years operating computers on-premises. The larger the enterprise, the more they require high availability for self-tuning systems that never fail and are highly secure.. When Amazon started its offering, it was leveraging the idea of carving out virtual images that were rudimentary, and they have been closing a huge gap ever since. The huge number of features and services is why some training courses take 17 weeks to prepare the student to qualify to take a certification test as a cloud architect.

A better way to approach cloud consulting is to start from the customer side, determine what business problems they want to solve, create a list of technical requirements, then research those specific capabilities based on service providers in the marketplace. Market leaders have

an advantage of the perception that they may still be around years into the future, but there are no promises in terms of longevity.

As a final step in this module, please go to <https://aws.amazon.com/free/> and create your own free account. While there, also take a look at their dashboard so you can begin to learn and use their technical jargon. Other lessons in this training will direct you how to provision and manage servers under this free service.

Optional Activity:

- If you feel comfortable talking about what you have just learned in this topic, why not begin to approach one or more people who own a business and ask them the diagnostic questions you learned in this lesson? At a minimum, engage them in a conversation about their own use of technology in their business, and ask if they are familiar with the tradeoffs of using cloud-based solutions. If they become interested in learning more about cloud or any other area, please contact ACTS and we'll see if we can help you obtain a consulting engagement.

- Continue reviewing this lesson until you know the content well. Also, explore the web for other articles and case studies. The more you read, or the more videos you watch, the more comfortable you'll become discussing the topic with others, and perhaps you can offer cloud consulting and help businesses adopt cloud-based solutions.