Topics

Following are the topics covered in this module:

- Introduction to Cloud computing
- Introduction to AWS
- AWS services
- DevOps using AWS

Objectives

At the end of this module, you will be able to understand the below topics:

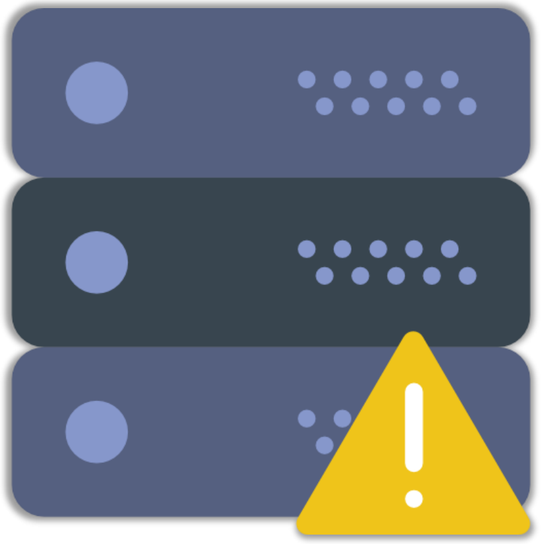
- Why Cloud
- Introduction to Cloud Computing
- Why DevOps on Cloud
- Introduction to AWS
- Various AWS services
- DevOps using AWS

Why Cloud?

Sam’s Curiosity About Cloud

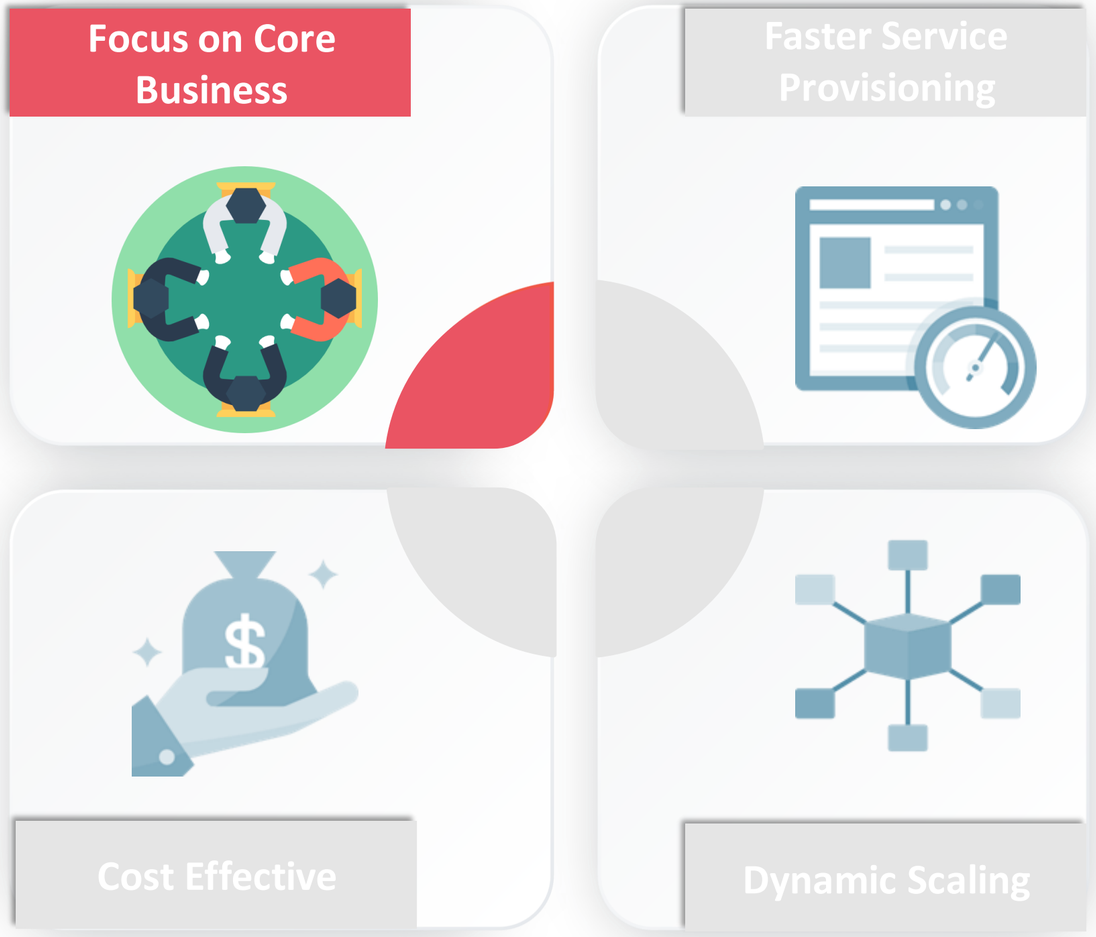
Problems Before Cloud

- Cost of hardware and software and other server resources were high
- Maintenance of server, installation of software or hardware was difficult
- Scaling of server was very difficult and costly
- It was not easy to protect or recover crashed or lost data



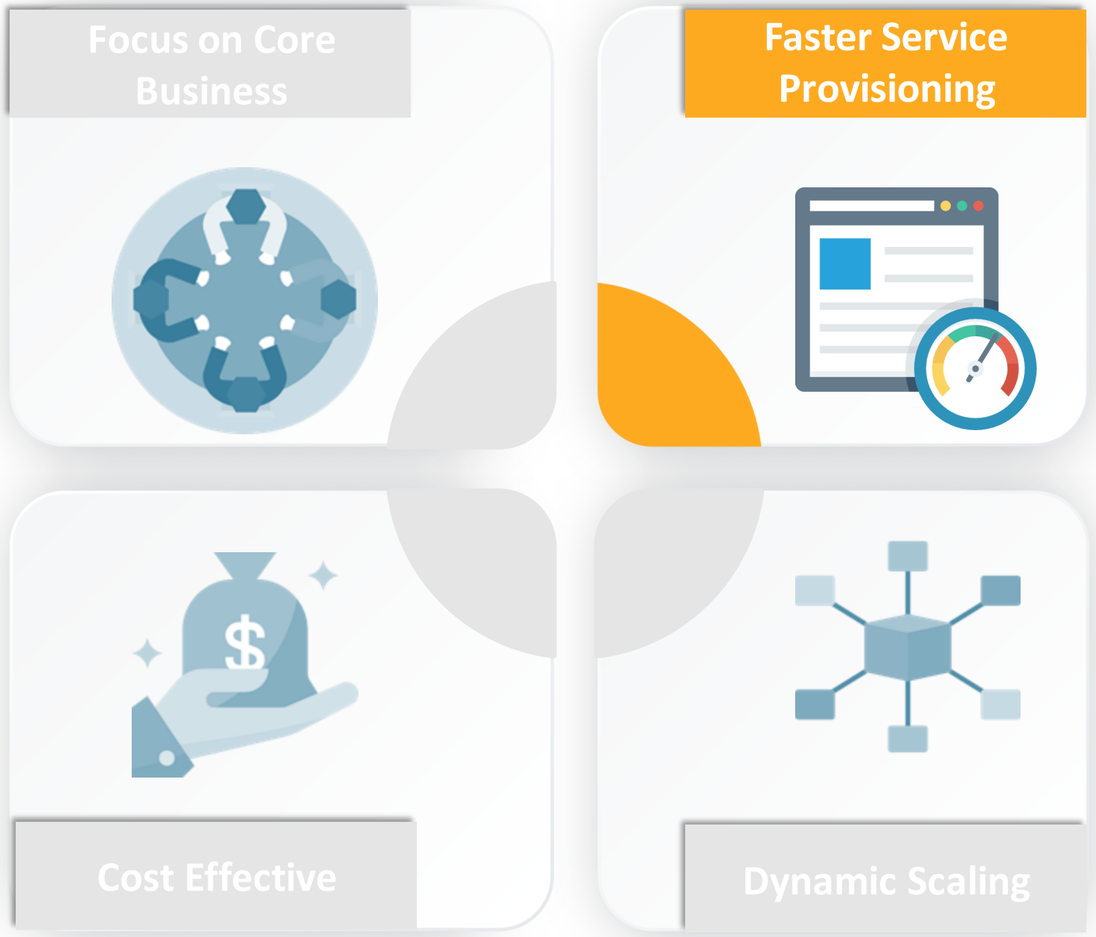
Why Cloud Computing?

- Traditional computing companies had to spent a lot of money and time on infrastructure, hardware and other operational aspects
- But using cloud computing all these troubleshoots are managed by cloud service providers, so you have to just focus on your core business



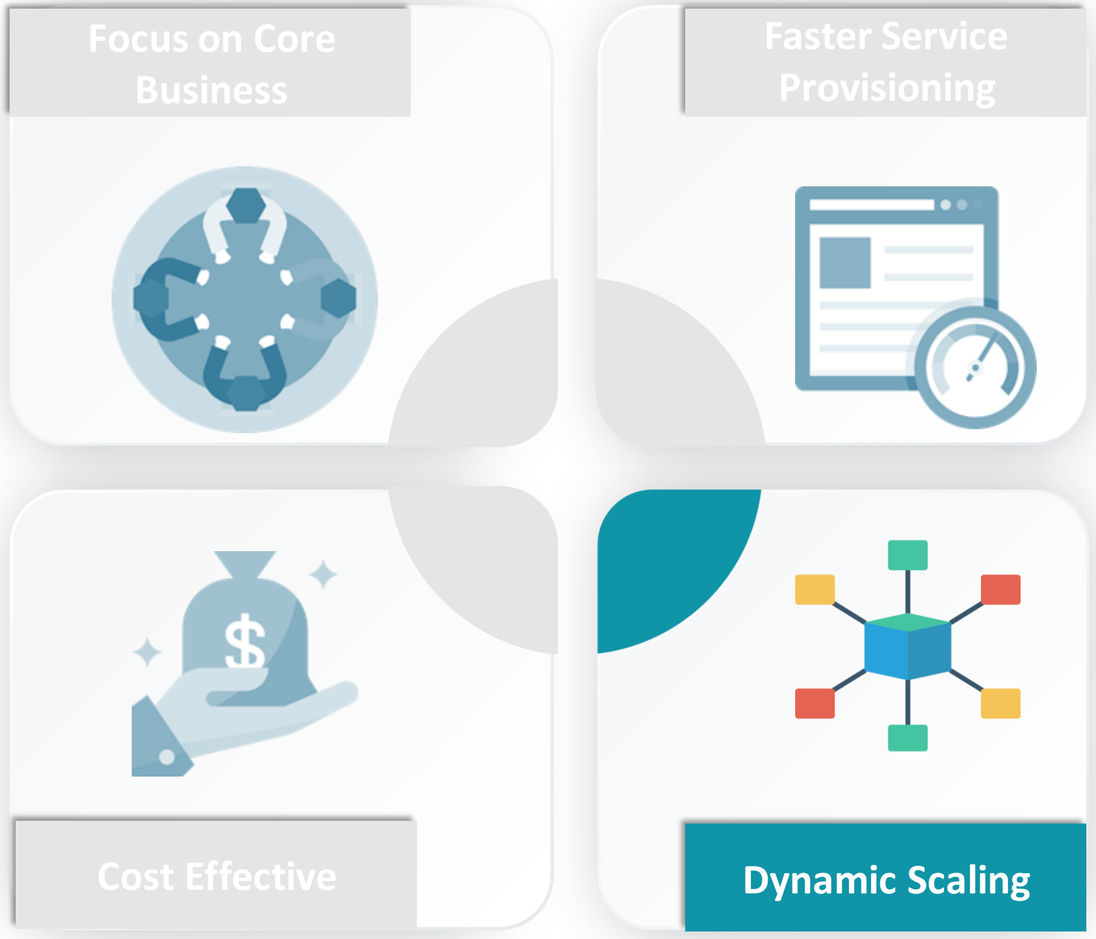
Why Cloud Computing? Contd.

- Cloud enables the developers to get their applications to market quickly
- As long as internet connection is on, user can access their required application
- Even there are some applications that run offline



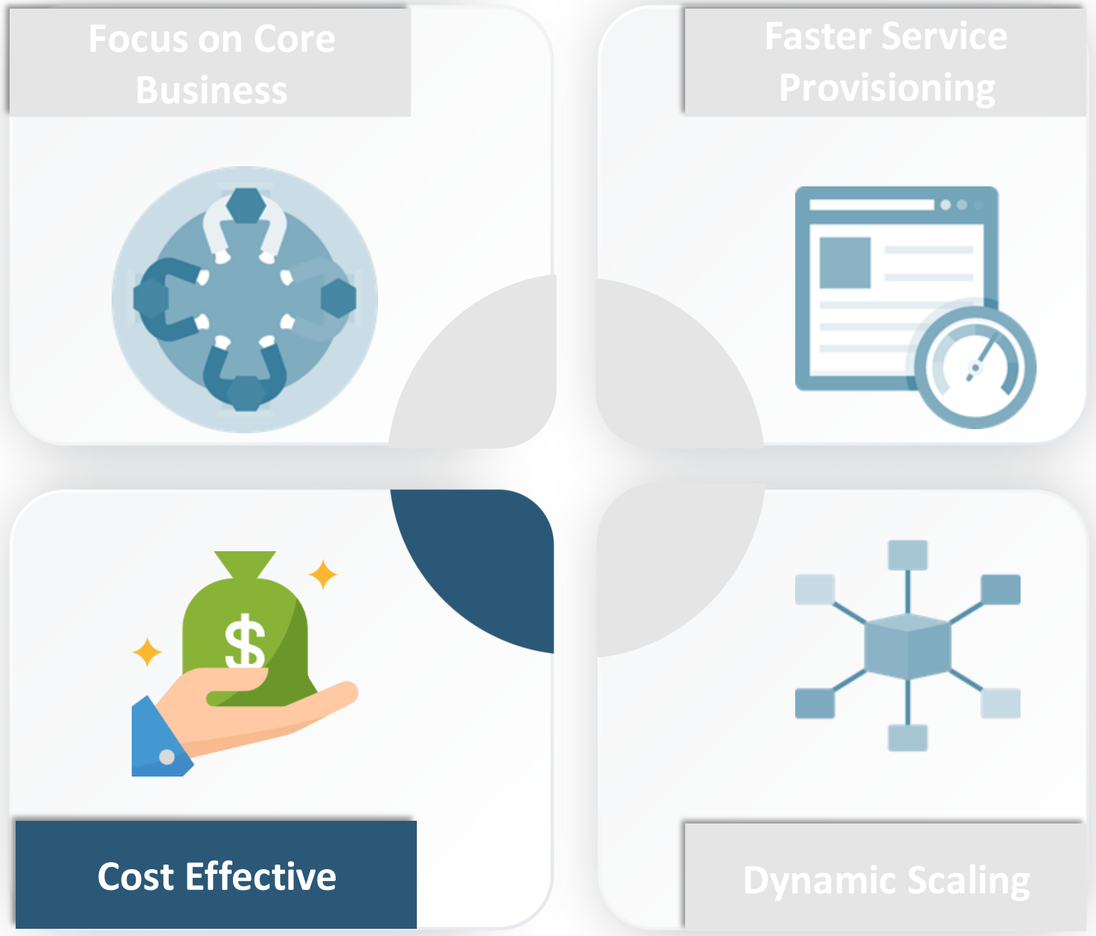
Why Cloud Computing? Contd.

- Cloud based services are ideal for business with growing and fluctuating bandwidth demands
- As it is flexible you can easily scale up or scale down the cloud capacity as per requirement



Why Cloud Computing? Contd.

- Cloud computing reduces the cost of managing and maintaining IT systems
- Cloud service providers offer resources and using these resources rather then expensive systems and equipments you can save money



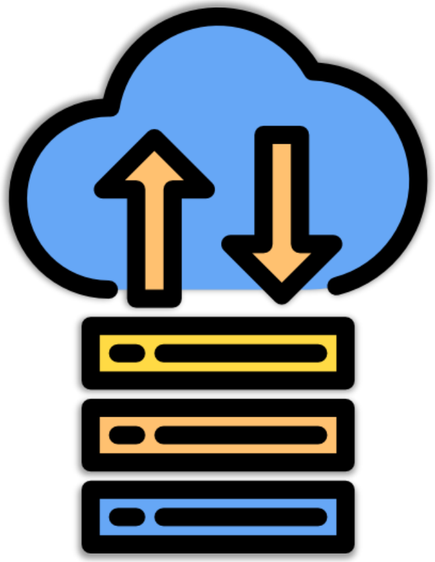
Introduction To Cloud Computing

Cloud Storage

"Cloud Storage provides the functionality to store data remotely over the cloud or internet."

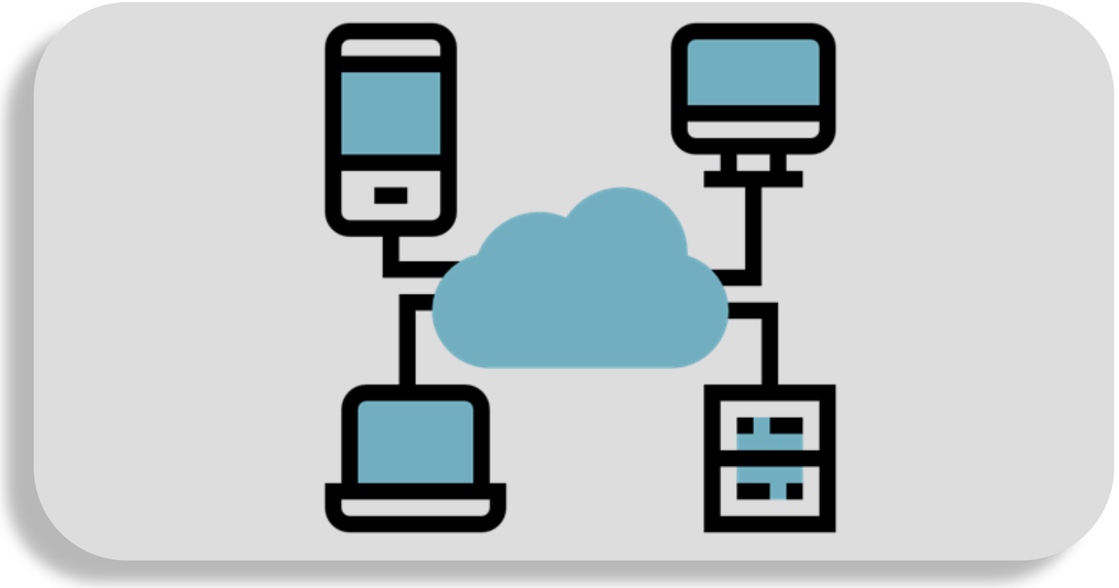
It helps in storing data such as :

- Documents,
- Pictures,
- Videos ,
- Any media

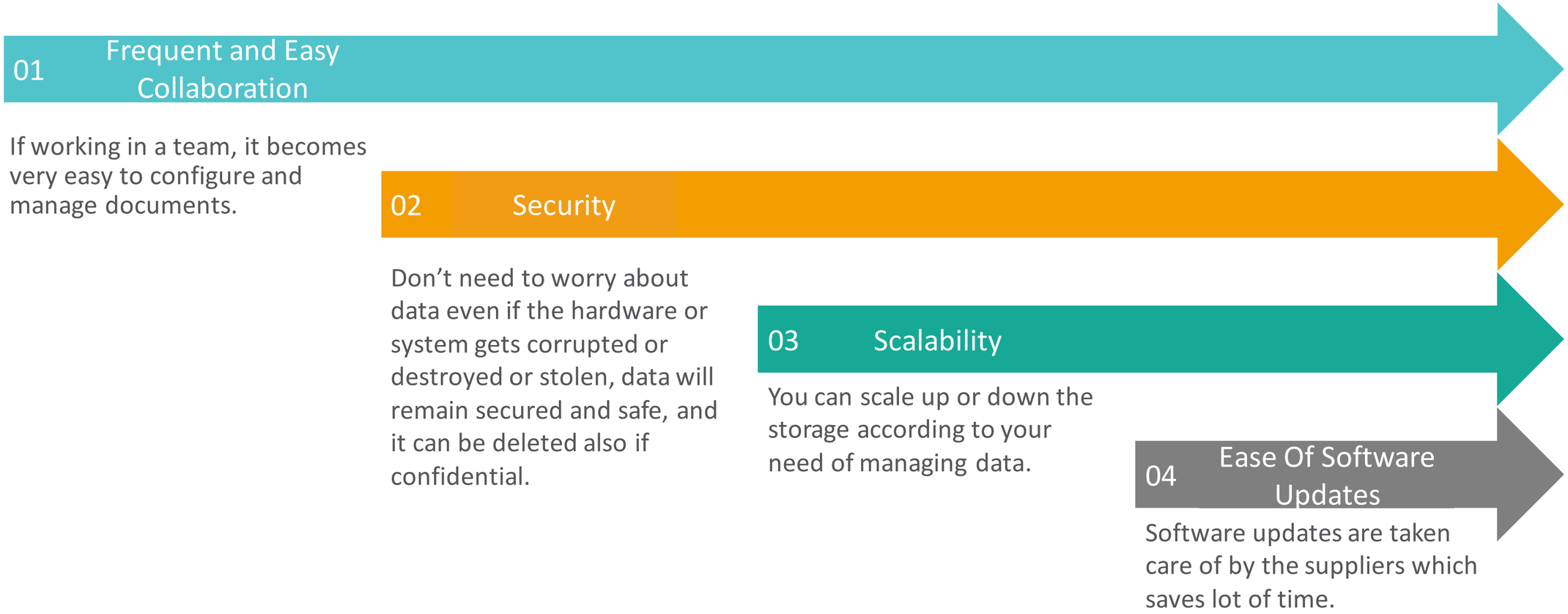


Cloud Computing

“Cloud computing can be simply understood as anything that involves delivering hosted services over the Internet. ”



Benefits Of Cloud Computing



Types Of Cloud Computing

Cloud Services can be described by two different ways:

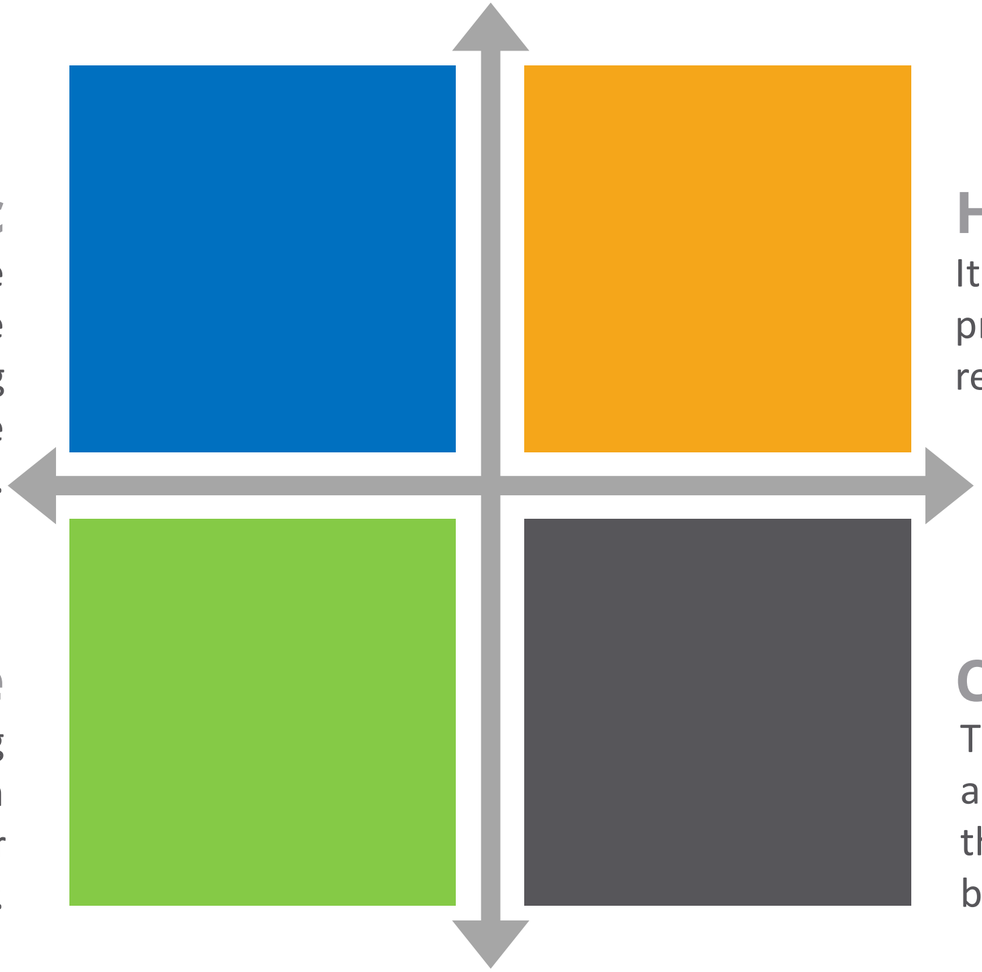
Based on location of cloud

Based on Services provided by cloud

Cloud Computing Based On Location

Public

The computing infrastructure of this type is located on the premises of a cloud computing company which is offering the services of cloud.



Hybrid

It uses both public as well as private cloud depending on the requirements.

Private

This type of computing infrastructure runs within an organization or for a particular customer.

Community

These can be located both on and off the premises, mostly they are used to share data between organizations.

Cloud Computing Based On Services

IaaS(Infrastructure as a Service)

- It provides virtual servers and data storage disks.
- It also prevents from buying and managing personal physical servers and other data centre infrastructure

PaaS(Platform as a Service)

It provides services in terms of platform such as:

- operating system
- programming language execution environment
- database
- web server

SaaS(Software as a Service)

It uses free client software

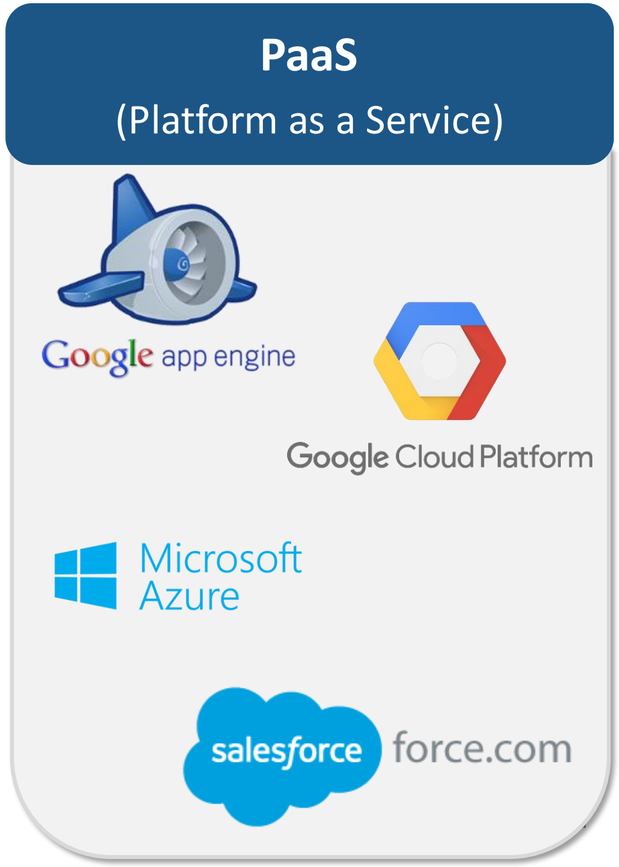
- Users can access SaaS app and data from any Internet-connected computer
- When app data is in the cloud, no data will be lost if a user's computer or device corrupts or fails

Cloud Computing Service Models – IaaS

Infrastructure as a Service

Here the cloud service providers offer virtual machines, IT infrastructure, storage, network & operating system to their customers as a service and customers pay them as per use

Cloud Computing Service Models – PaaS



Platform as a Service

PaaS provides on demand environment for testing, developing, delivering applications

It makes easy for developers to quickly create web or mobile applications and deliver it to market

Cloud Computing Service Models – SaaS

Software as a Service

It delivers the software applications over internet, on demand, and on subscription basis

Here cloud providers manage software applications, underlying infrastructure plus handles software updates and security patches

Users connect to these software applications via browser, PC or mobile

Why DevOps On Cloud?

DevOps And Cloud Relation

- **DevOps** and **Cloud** go hand in hand
- They can be implemented individually but are quite efficient and beneficial when clubbed together
- They can help an organization to deliver new software features much faster and in a more efficient manner

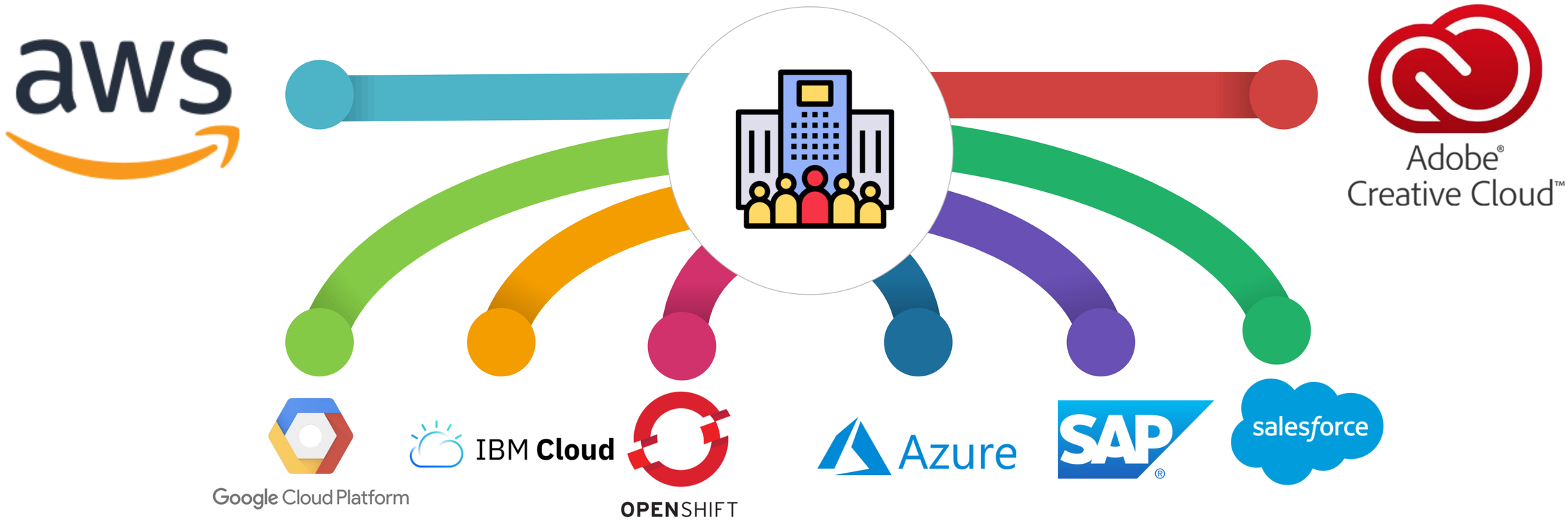
DevOps On Cloud

- Many organizations are trying to fix their application development processes by shifting from waterfall to DevOps
- They have this understanding that DevOps alone won't be that much effective
- DevOps and public and private cloud solutions are now evolving together
- Most of the organizations are extending DevOps processes and automation into public and/or private clouds

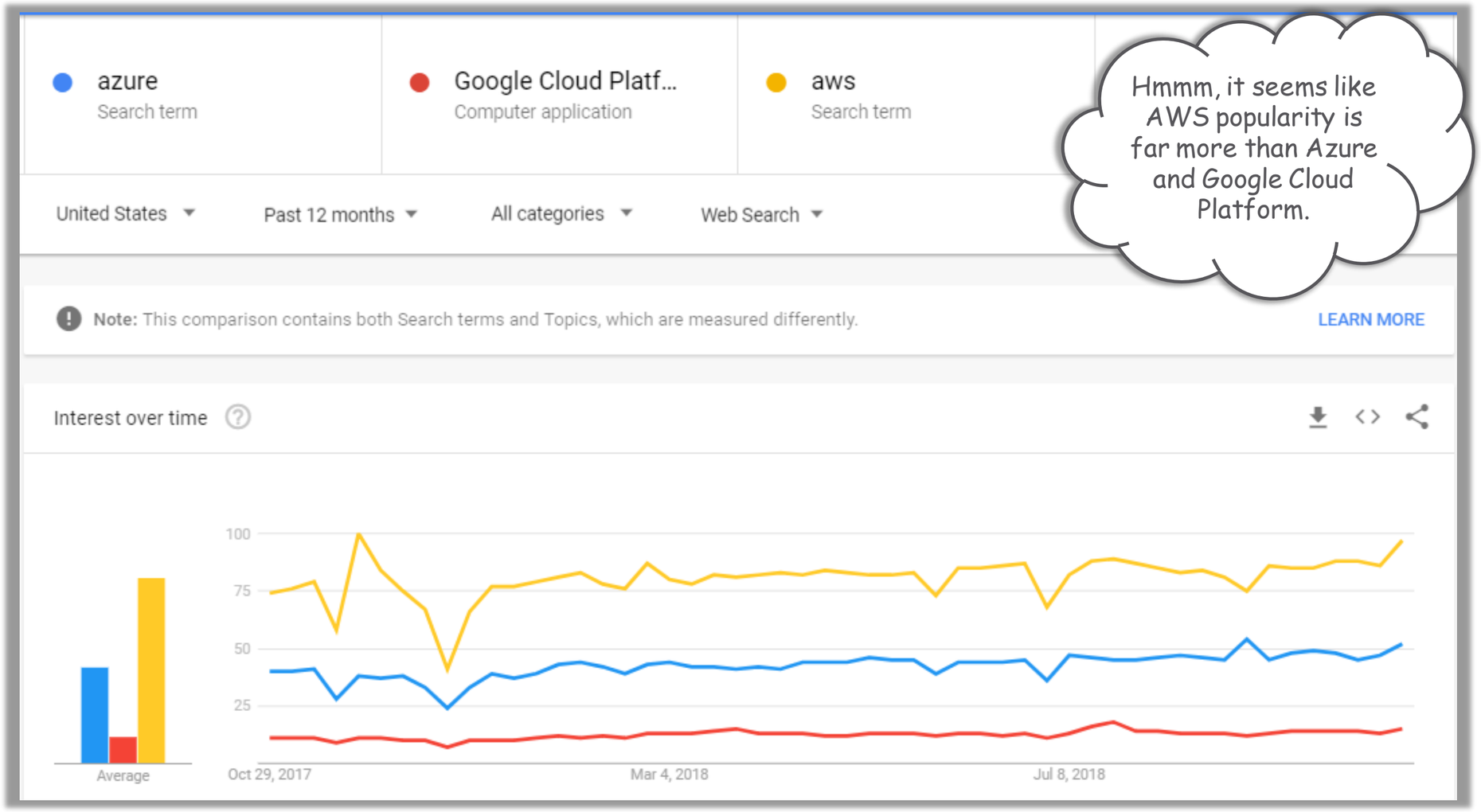
How DevOps And Cloud Together Improve Productivity?

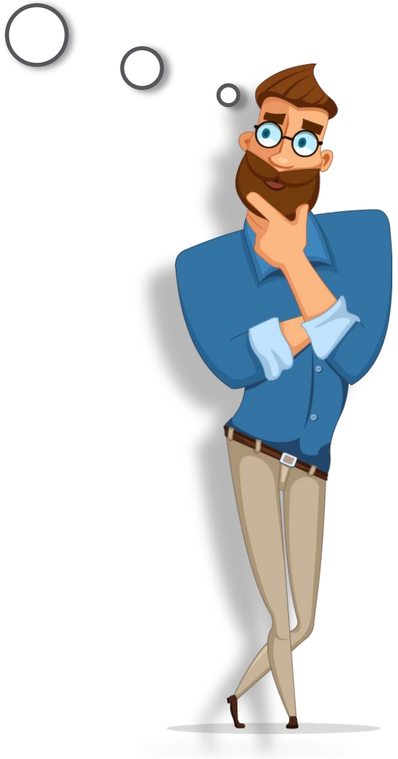
- They together helps in bringing products faster to market through quick access to development environments and streamlined developer processes
- Infrastructure as code and automation together reduces cloud complexity and maintenance of server and resources
- Security highly increases with automated, repeatable processes that serve to eliminate error that can cause further problem and, even more importantly, build security controls from the very beginning
- Eliminate downtime through cloud-based continuous operations
- When DevOps and cloud clubbed together, **Scalability** is also one of the most important factor for apps as they are developed, it reduces the cost of infrastructure and global reach also increases

Top Companies Providing Cloud Computing Services



Google Trends Result : AWS vs AZURE vs GCP





Service Comparison: AWS, Azure And GCP

Amazon AWS	Microsoft Azure	GCP
S3	Blob Storage	Storage
EC2	Virtual Machines	Compute Engine
EC2 Container Service	Container Service	Kubernetes Engine
Elastic Beanstalk	Cloud Services	App Engine
DynamoDB	Cosmos DB	Bigtable
Redshift	SQL Database	BigQuery
Lambda	Azure Functions	Cloud Functions
DynamoDB	Cosmos DB	Cloud Datastore

Introduction To AWS

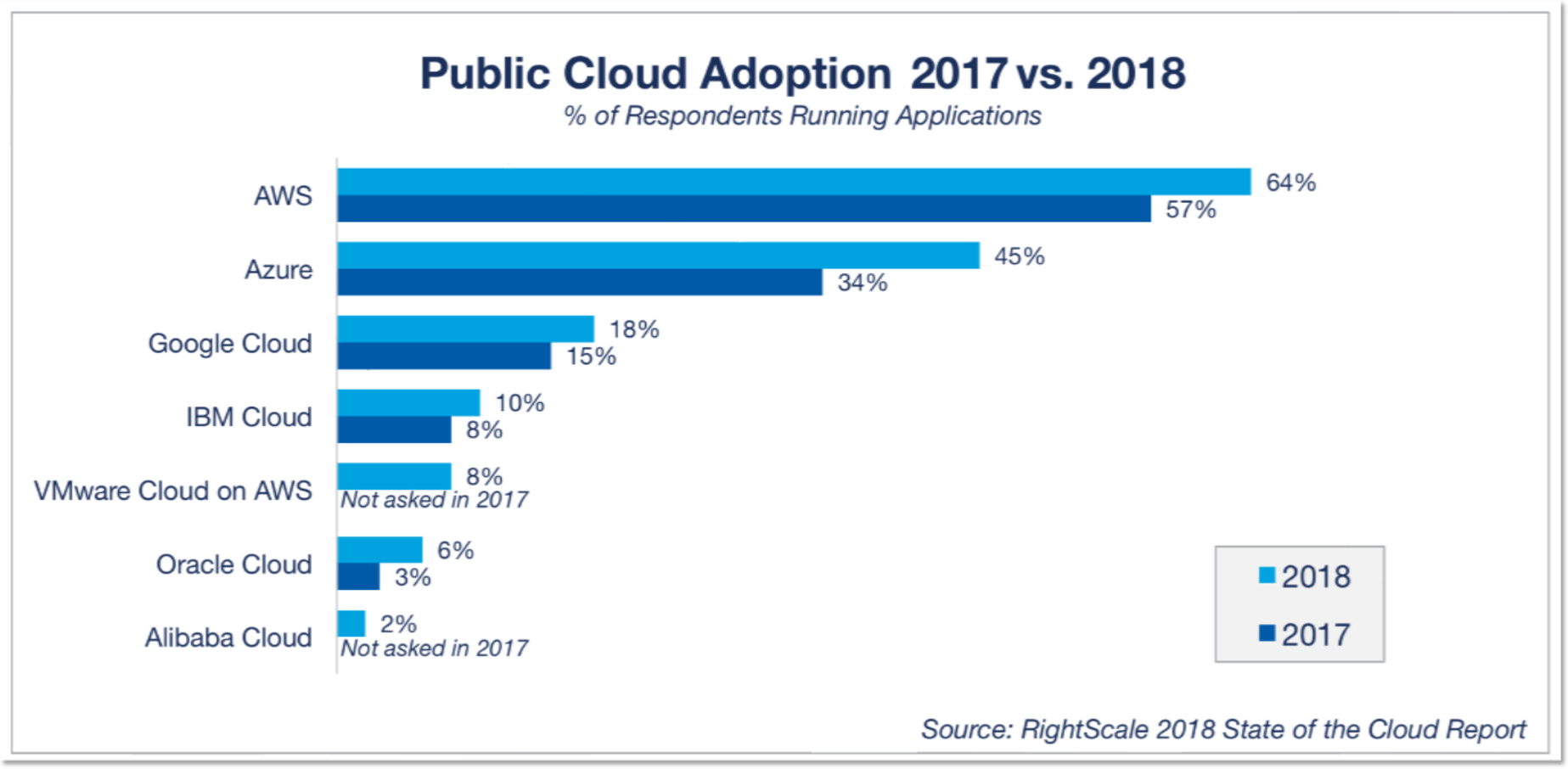
Amazon Web Services (AWS)

AWS is a secure cloud service platform which offers compute power, database storage, content delivery and other functionality to help the business scale and grow

- All over the world AWS technology is implemented at various server farms and is maintained by Amazon
- It provides 90 plus services
- Here the user is charged per hour only for the resources which he is using

Market Survey Of AWS

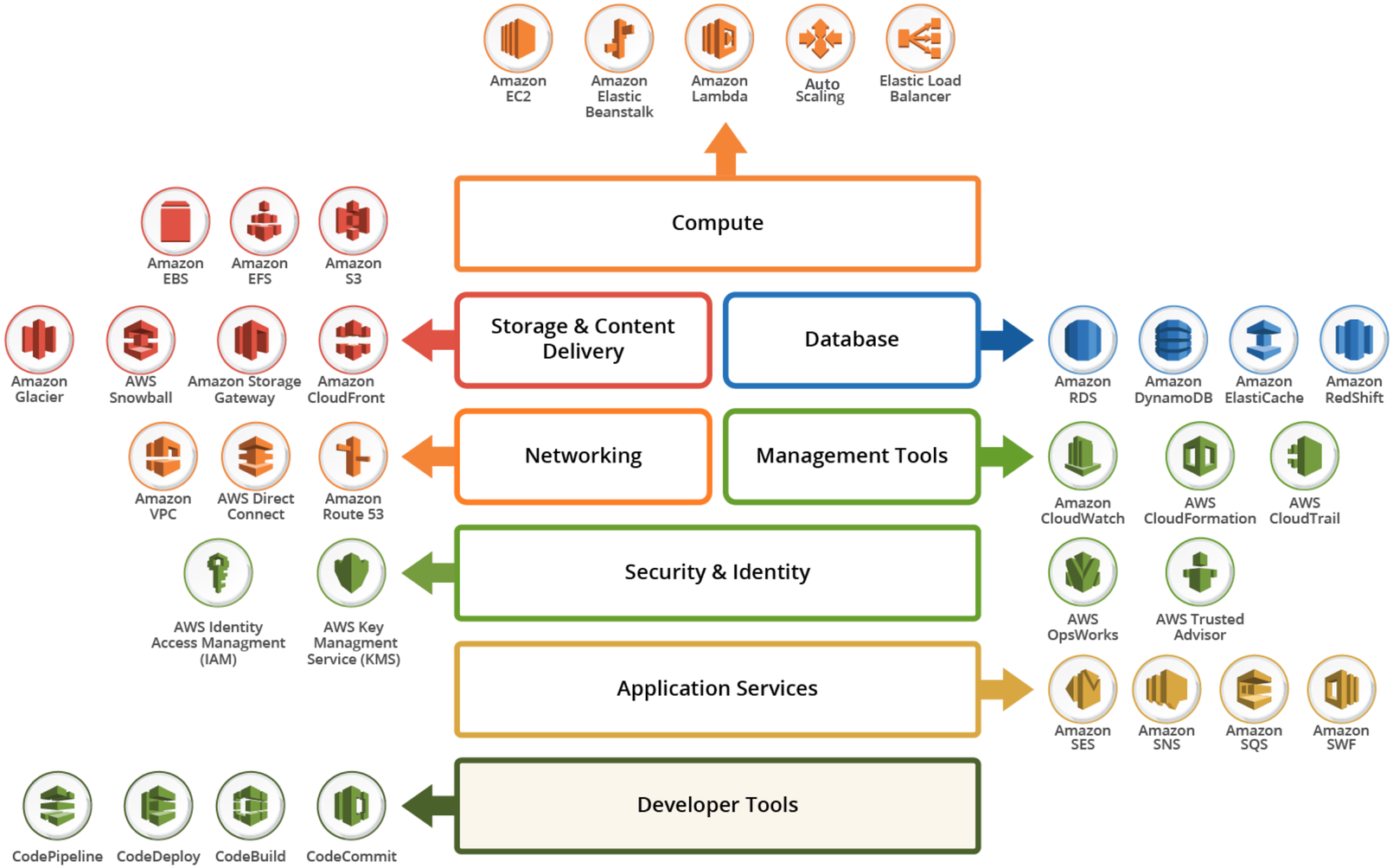
As per the Right Scale's annual state of cloud survey, AWS is market leader in Cloud computing



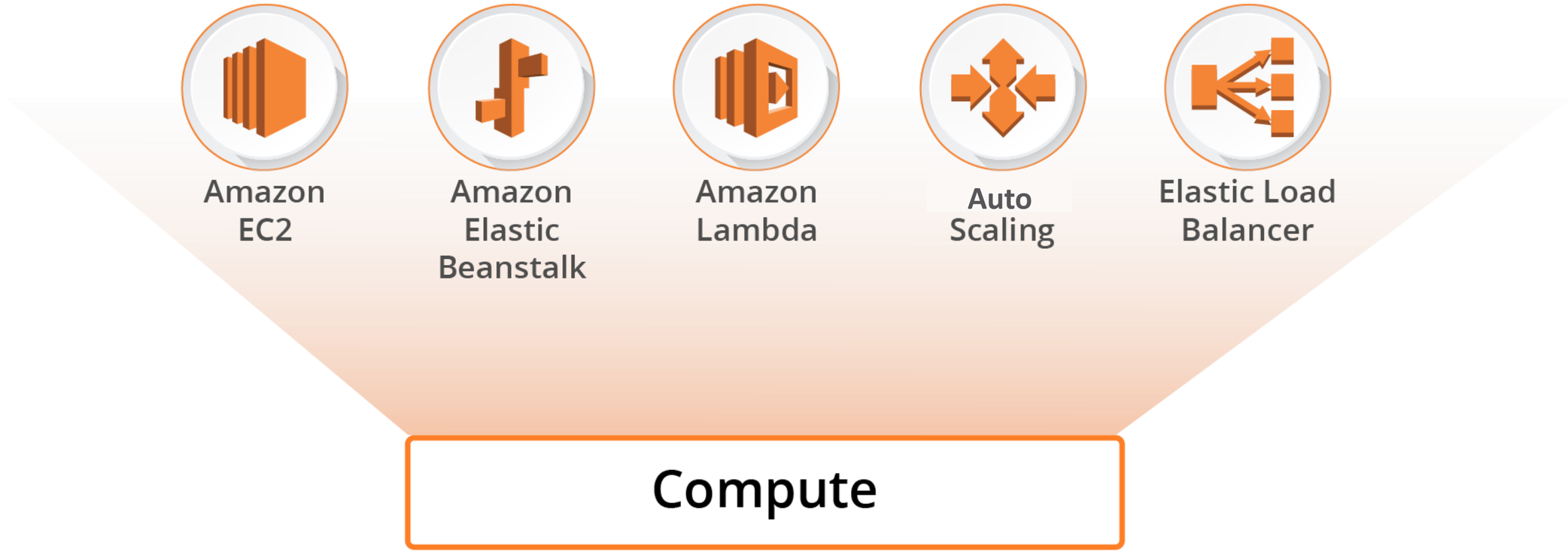
Benefits Of AWS

Various AWS Services

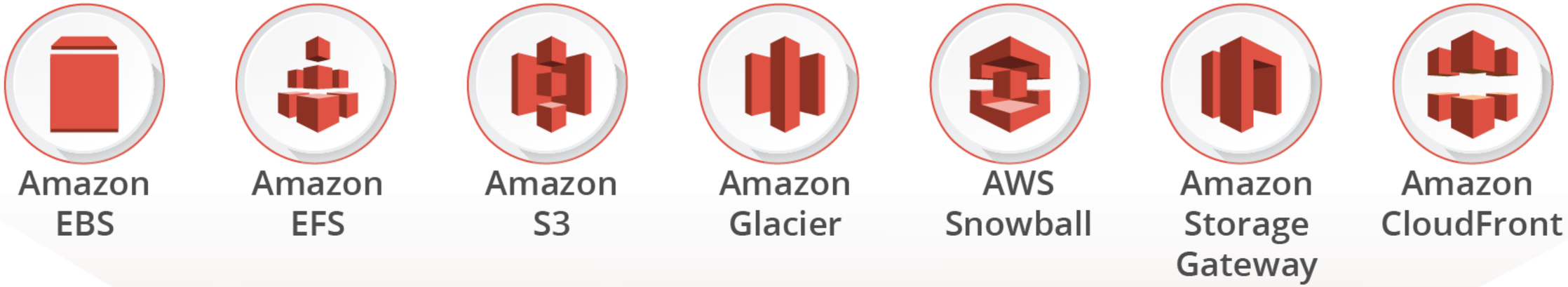
AWS Services



Compute Services



Storage Services



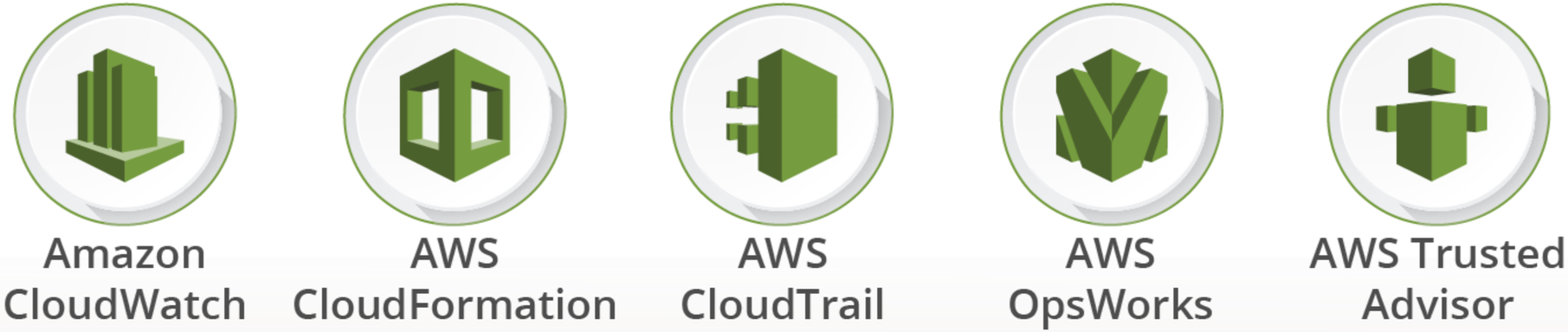
Storage & Content Delivery

Database Services

Database

Networking Services

Management Tools



Security And Identity

AWS Identity
Access Management
(IAM)

AWS Key
Management Service
(KMS)

Security And Identity

Application Services

Developer Tools

Developer Tools

DevOps Using Aws

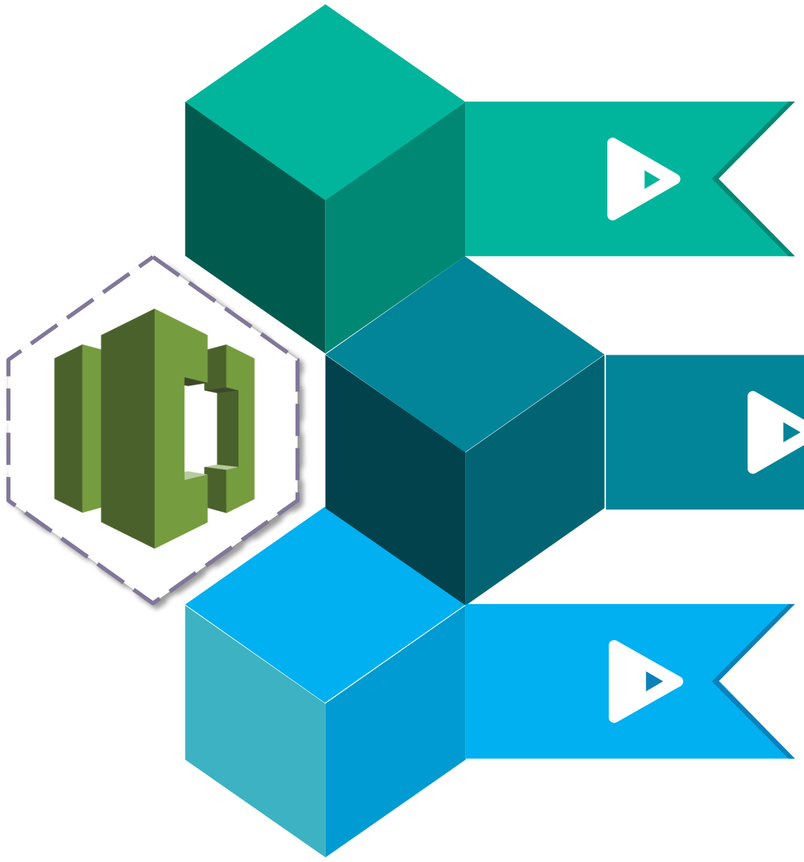
Important Steps Involved In AWS DevOps

DevOps when implemented on AWS, becomes lot more efficient and effective for a product lifecycle. Steps involved in AWS DevOps are mentioned below :

- Aws CodeCommit
- Aws CodePipeline
- Aws CodeDeploy

AWS CodeCommit

AWS CodeCommit



AWS CodeCommit is a fully managed source control service that hosts secure and highly scalable private **Git repository** without the need of operating the system

It is mainly designed for the **developers** who are supposed to **store** and ***version*** their code **securely** and **reliably**

Example- IT administrators to store their scripts and configurations; web designers to store HTML page and images etc.

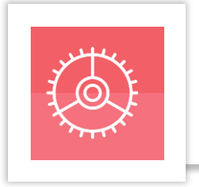
AWS CodePipeline

What Is AWS CodePipeline?

AWS CodePipeline is a combination of **continuous integration** and **continuous delivery** service for quicker and more reliable infrastructure and application updates

It **automatically builds, tests** and **deploys** an user **code** whenever there is a **code change**, based on user defined release **process models**

It **integrates** with AWS services like **AWS CodeCommit**, **Amazon S3**, **AWS CodeDeploy**, **AWS Elastic Beanstalk**, **AWS OpsWorks**, and **AWS Lambda**



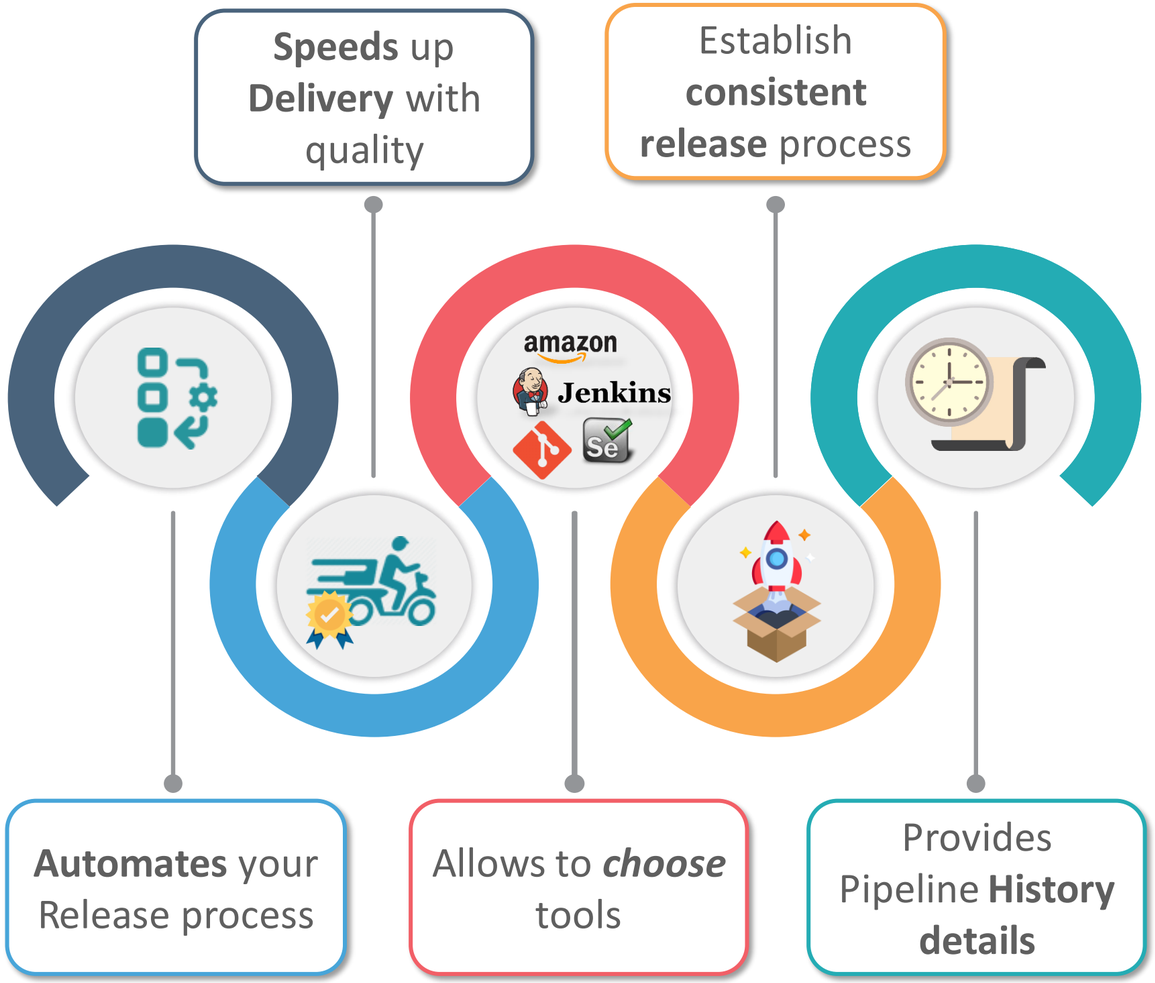
You can ***configure*** the pipeline with a **GUI** or **CLI**

AWS CodePipeline

Note: With AWS CodePipeline you have to **pay** only for what you ***use***

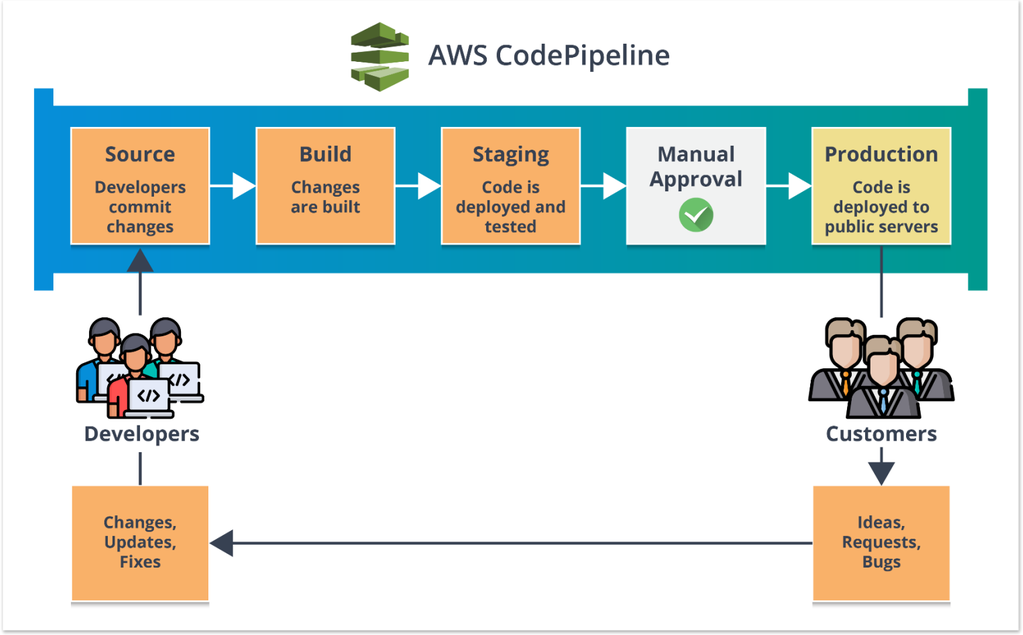
Why Should We Use CodePipeline?

By automating your software build, test, and release processes, **AWS CodePipeline** enables you to increase the **speed** and **quality** of your software updates by running all new changes through a consistent set of quality checks



Working Of AWS CodePipeline

1. When a developer completes working on the code, he **commits** it to the source repository
2. AWS CodePipeline **automatically detects** the changes and **builts** those changes
3. After that, the built code is **deployed** to the staging server for testing
4. From the staging server, AWS CodePipeline runs **additional tests**, such as **integration** or **load tests**
5. Once all tests are done, if code receives **manual approval** then AWS CodePipeline deploys the tested and approved code to **production instances**



AWS CodeDeploy

AWS CodeDeploy

CodeDeploy is a service that coordinates your application deployment and updates across the **fleet** of AWS **EC2** of any size

01 Automates code deployment to any instance

02 Handles the complexity of updating your instances

03 Avoid downtime during application deployment

04 Rolls-back automatically if failure detected

05 Integrates with third-party tools and AWS

AWS CodeDeploy

Why To Use AWS CodeDeploy?

AWS CodeDeploy

- It supports both **server** and **serverless** application deployment i.e via **EC2** and **Lambda function version** respectively
- It can **deploy any type** of **application**, just you have to specify files to copy and scripts to run on instances while deployment
- It works with variety of **configuration management systems**, **CI-CD systems** and **source control systems**
- It **minimizes downtime** of an application by tracking the application **health** as per the **configured rules**

Summary

Why Cloud Computing?

- Traditional computing companies had to spent a lot of money and time on infrastructure, hardware and other operational aspects
- But using cloud computing all these troubleshoots are managed by cloud service providers, so you have to just focus on your core business

Cloud Computing

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amazon web services

AWS Services

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Why DevOps Masters?

Why DevOps master after DevOps certification?

Now that I have completed DevOps certification course, why should I go for DevOps masters course?

Some information about DevOps certification course

Yeah, that's an excellent question!
So, while going through DevOps certification course, you must have got the overview of tools such as **Git**, **Jenkins**, **Selenium**, **Docker**, **Ansible**, **Puppet**, **Kubernetes** and **Nagios**. Also, you must have learnt about **DevOps** and **Cloud** integration .

Now what?

Now that a learner has got the understanding of DevOps environment and the tools that can be used in it, following are the queries that the learner might have -

- Now that I know how all the tools play along in DevOps environment, how do I dive deeper into those tools?
- Some of the stages seemed so important such as Continuous Integration and Continuous Deployment. How can I learn more about those stages?
- How do I know more about tools like Docker, Kubernetes, Ansible, and Jenkins?
- DevOps and cloud integration seems quite interesting as it makes DevOps even more powerful. How do I get resources to learn about them ?
- How should I proceed and improve my technology stack from now onwards ?
- How do I pursue some cloud based courses and learn about the services that cloud is offering ?
- Where should I learn python scripting in details as it plays a greater role in DevOps environment ?

DevOps Masters Program has all the answers

01 DevOps Masters Program will provide the learners with the detailed information regarding all those important tools such as Git, Docker, Kubernetes, Ansible, Jenkins, and Splunk

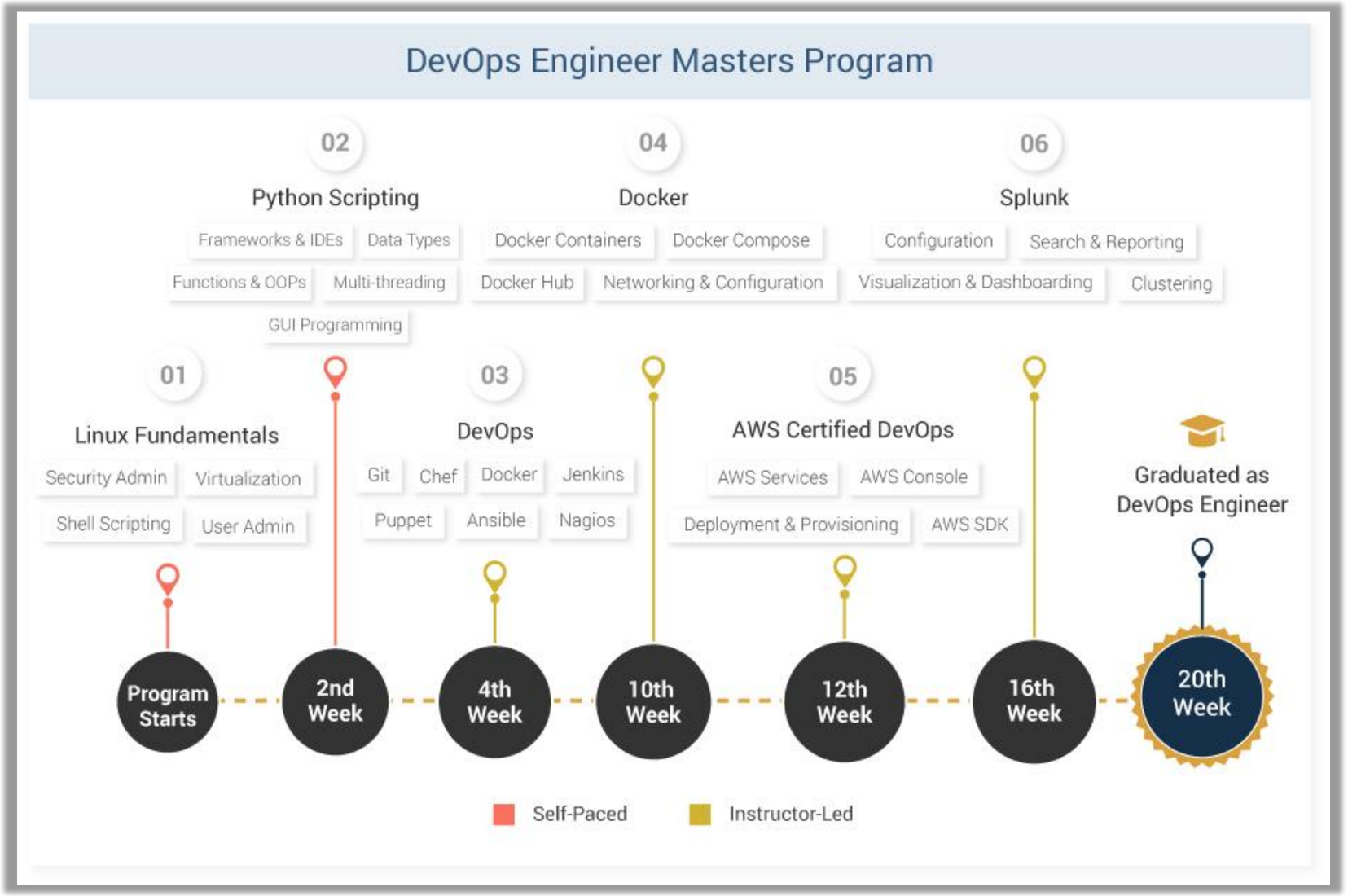
02 It can help them understand how DevOps and cloud work together with the course i.e., AWS Certified DevOps

03 With the help of AWS Certified DevOps course, they can learn about some most important cloud services that AWS is providing these days and how those services are being used in DevOps environment

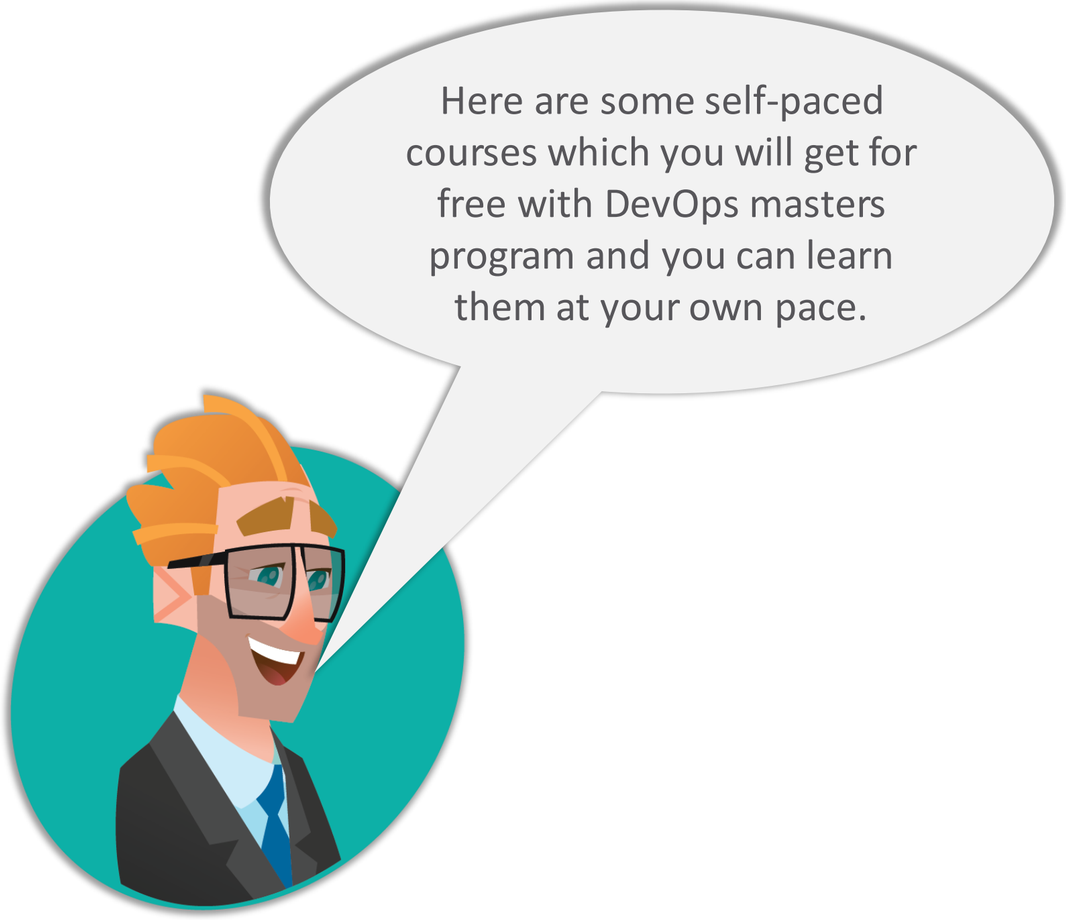
04 It will increase the stack of certification for leaners as they will be provided with certification for each of the courses that will covered in DevOps Masters Program

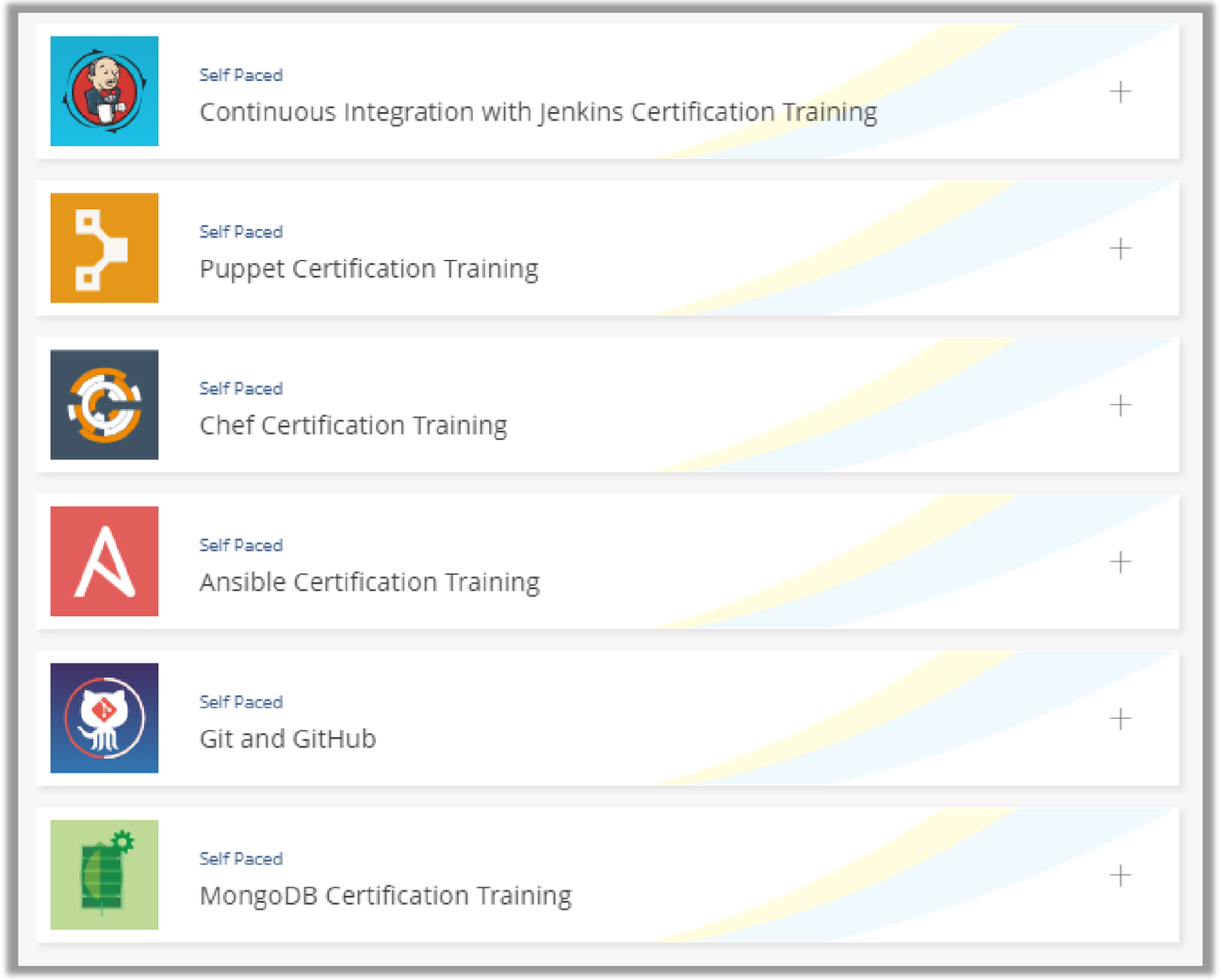
05 DevOps Masters program will provide them with self-paced course of Python Scripting and many

DevOps Masters Program: The more the better



DevOps Masters Program: The more the better





DevOps Masters Program: The more the better

You'll be provided with certificate of completion for every course that is a part of the learning pathway, once you have successfully submitted the final assessment and it has been verified by our subject matter experts.

Global Market Analysis of DevOps

2.4 Million

Career Opportunities

for experienced Devops practitioners in the IT industry

22.00%

Annual growth

in job opportunities for Devops professionals during the last two years, worldwide.

Salary Trend

In Big companies (revenue - exceeding **$1 billion**) median salary for a Devops team of 20 members is **$118,867**. Even small companies pay their Devops staffers an average of **$87,058**.

Top Industries

Demand for Devops experts is increasing in economic sectors which include

- Retail
- Defense
- Healthcare
- Business / IT services

Job titles include

- DevOps Engineer
- Automation Engineer
- DevOps Architect
- Security Engineer
- Integration Specialist

Jobs availability for DevOps Engineer

DevOps Engineer

NESTAWAY ★★★★☆ 8 reviews - Bengaluru, Karnataka

Apply Now

Preferred Qualifications

- Experience in managing microservice environments
- Experience in managing Kubernetes clusters
- Expert in handling Docker ecosystem
- Has experience in working on multiple cloud infrastructures (AWS & GCP)
- Experience in automation tools like Salt/Ansible/Cloud formation
- Strong desire to build, sense of ownership, urgency, and drive
- Excellent written communication and verbal agility are strong assets

Basic Qualifications

- A technical background (BS/MS in Computer Science/Engineering or related discipline/experience) with 3-4 years of experience
- Build and Release experience with Jenkins/Docker
- Strong Unix base OS experience
- Ability to do scripting (any one of Shell, Perl, Python, Go etc.)
- Good understanding of standard networking protocols and components such as HTTP, DNS, TCP/IP, the OSI Model, networking and load balancing
- Strong debugging/troubleshooting skills
- Strong understanding of support - tickets, monitoring, processes and metrics

Dev Ops Engineer

DELL ★★★★☆ 9,176 reviews - Bengaluru, Karnataka

Apply On Company Site

Hands-on experience of automating the full build, test and deployment lifecycle for a range of applications using CI/CD Frameworks.

Ability to collaborate across geographies to work as a team in building, testing & releasing software frequently with quality

Build highly automated code/build/test environment in making continuous delivery a reality at RSA, DELL EMC.

Expertise on a wide variety of open source technologies and cloud services (such as AWS, Azure) including hands on.

Experience with automation/configuration management using either Jenkins, Dockers, Ansible, Chef or equivalent.

Agile Software development experience. Understanding of Development & Operations challenges and how they can be addressed during design and development

Appreciates quality and has understanding about Software testing & Quality Engineering

Logical approach to problem solving, willingness to learn new technologies

Skills required for DevOps engineer

In the previous slides, you saw the Global market analysis for DevOps, and how DevOps is gaining its popularity

You also saw some job opportunities, and skills required by the companies for DevOps engineer roles

Following are those skills that are required :

- CI/CD frameworks
- Expertise on cloud services such as AWS or Azure
- Experience on automation/configuration management tools such as Jenkins, Ansible, Docker, Chef or equivalent
- Experience in managing Kubernetes cluster
- Adequate knowledge on shell scripting such as Python or Perl scripting

Note :- All the above skills have been covered in our DevOps Master Program in detail