



What is Cloud Computing?

What is Cloud Computing?

The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.

OR

Using someone else's computer to do your job.

A deep-dive - Why Cloud?

What works?

- No capital investment in hardware
- No need for managing the hardware
- Still accessible from anywhere
- No risk of data loss due to any calamity (like fire) due to multiple back up
- Pay per use and stop anytime

What are the Challenges?

- Data privacy may be compromised (depends on type of cloud)
- Compliance and cross-border data storage issues
- Elaborate Access control is required (with type of communication channel with cloud)
- Enterprise paradigm shift needed (e.g. DevOps)

Public Cloud Introductory type

- Available for general public for a very cheap cost
- Data stored in Provider's environment
- Insecurity Or Perception of Insecurity
- Amazon Web Services, Microsoft Azure, Google Cloud Platform, Oracle Cloud etc

Private Cloud Uses Advanced Computing & Resources

- Hardware and Software dedicated to the tenant
- Data stored behind dedicated Firewall
- More expensive than public cloud but secure
- Netmagic Solutions, Hewlett Packard Enterprise (HPE), Dell EMC.

Hybrid Cloud Benefits of Public & Private cloud

- Some services can be on Public Cloud for lower cost
- Other sensitive data and operations managed on Private.



Trinity of Cloud Providers





AWS Success Stories



Amazon is Achieving Database Freedom Using AWS

Today, Amazon stands on the verge of completing the migration of about 50 petabytes of data & shutting down last of those 5,000 Oracle databases. How did it pull off this massive migration? [View more](#)

Samsung Migrates 1.1 Billion Users across Three Continents from Oracle to Amazon Aurora with AWS Database Migration Service. [View more](#)

HPC on AWS for COVID-19 Research and Development

Researchers and scientists working on time-critical projects are using AWS to instantly access virtually unlimited infrastructure capacity, & the latest technologies in compute, storage and networking to accelerate time to results.

[View more](#)

AWS In India's Public Sector

Thousands of active customers from India use AWS to deliver flexibility, scalability, and reliability. [View more](#)

Netflix on AWS

Netflix uses AWS for nearly all its computing and storage needs, including databases, analytics, recommendation engines, video transcoding, and more—hundreds of functions that in total use more than 100,000 server instances on AWS. [View more](#)



AWS Success Stories

Dropbox Migrates 34 PB of Data to an Amazon S3 Data Lake for Analytics

Dropbox has moved 34 PB of analytics data to a data lake in **Amazon Simple Storage Service (Amazon S3)**—an object storage service that offers industry-leading scalability, data availability, security, and performance - and uses Amazon Elastic Compute Cloud (Amazon EC2) and Amazon EC2 Spot Instances to power the compute for its Hadoop clusters. [View more](#)

Airbnb on AWS

<https://aws.amazon.com/solutions/case-studies/airbnb/?pg=CRHuB>

Star TV

<https://aws.amazon.com/solutions/case-studies/star-tv/>

Matchmaking Site Shaadi.com Doubles Algorithm Testing Using AWS

<https://aws.amazon.com/solutions/case-studies/shaadi/>

Faasos Grows its Business by up to 30% by using AWS

<https://aws.amazon.com/solutions/case-studies/faasos/>

NDTV

<https://aws.amazon.com/solutions/case-studies/ndtv/>

Start up success on AWS



Enabling Your Digital Transformation



Fast Deployments

Access computing infrastructure in minutes



Low Cost

Pay-as-you-go pricing



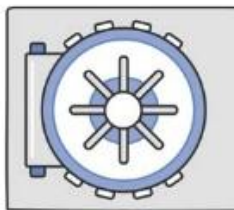
Elastic

Easily add or remove capacity



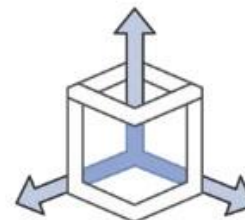
Globally Accessible

Easily support customers around the world



Secure

A collection of tools to protect data and privacy



Scalable

Access to effectively limitless capacity

What sets AWS apart?



Experience

Building and managing cloud since 2006



Service Breadth & Depth

165+ services to support any cloud workload



Pace of Innovation

Over 1,957 significant features and services launched in 2018



Global Footprint

22 Regions, 69 Availability Zones, 187 points of presence



Pricing Philosophy

74 proactive price reductions as of September 4, 2019



Partners

Thousands of consulting and technology partners

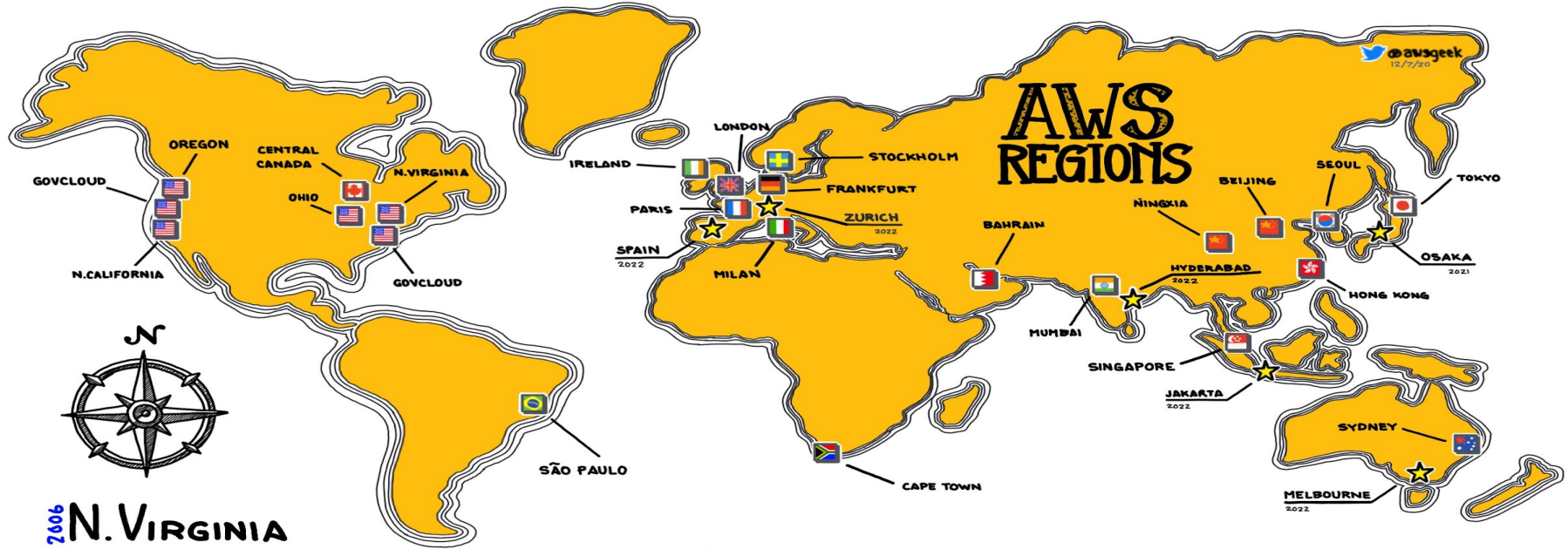


aws INITIATE
PUBLIC SECTOR

* As of July 30, 2019



AWS Global Infrastructure



2006 N. VIRGINIA
2008 IRELAND
2009 N. CALIFORNIA
2010 SINGAPORE
2017 GOVCLOUD
2017 OREGON
2011 SÃO PAULO

2011 TOKYO
2012 SYDNEY
2014 BEIJING
2014 FRANKFURT
2016 SEOUL

2016 MUMBAI
2016 OHIO
2016 CANADA
2016 LONDON
2017 PARIS
2017 NINGXIA

2018 GOVCLOUD EAST
2018 STOCKHOLM
2019 HONG KONG
2019 BAHRAIN
2020 CAPE TOWN
2020 MILAN

2021 OSAKA
2022 SPAIN
2022 JAKARTA
2022 ZURICH
2022 HYDERABAD
2022 MELBOURNE





AWS Infrastructure-New Region



- Hyderabad Region
 - [AWS Announces Plans to Launch a Second Region in India](#)

What do Customers do?

Customers configure their security in the cloud



Customer applications & content

Platform, applications, identity & access management

Operating system, network, & firewall configuration

Client-side data
encryption

Server-side data
encryption

Network traffic
protection

AWS Foundation Services

Compute

Storage

Database

Networking

AWS Global
Infrastructure

Availability Zones

Regions

Edge
Locations





Current Market Intelligence Reports

IDC is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets.

Forrester is an American market research company that provides advice on existing and potential impact of technology, to its clients and the public

Gartner is a global research and advisory firm providing insights, advice, and tools for leaders in IT, finance, HR, customer service and support, legal and compliance, marketing, sales, and supply chain functions across the world.



Gartner Quadrant Descriptions

Leaders

- Leaders distinguish themselves by offering a service suitable for strategic adoption and having an **ambitious roadmap**.
- Leaders in this market **have appreciable market share and many referenceable customers**.
- Can serve a **broad range of use cases**, although they do not excel in all areas, may not necessarily be the best providers for a specific need and may not serve some use cases at all.

Challengers

- Challengers are well-positioned to serve some current market needs.
- They deliver a good service that is targeted at a particular set of use cases, and they have a track record of successful delivery.
- However, they **are not adapting to market challenges sufficiently quickly, or do not have a broad scope of ambition**.

Gartner Quadrant Descriptions

Visionaries

- Visionaries **have an ambitious vision of the future**, and are making significant investments in the development of unique technologies.
- Their services are still emerging, and they have many capabilities in development that are not yet generally available. Although they may have many customers, they might not yet serve a broad range of use cases well.

Niche Players

- The Niche Players in the market for cloud IaaS **may be excellent providers for particular use cases or in regions in which they operate**, but they should ultimately be viewed as specialist providers of cloud IaaS.
- They often do not serve a broad range of use cases well or have a broadly ambitious roadmap.
- Some may have solid leadership positions in markets adjacent to this market, but have developed only limited capabilities in cloud IaaS.

Magic Quadrant for Cloud Infrastructure as a Service (2018)



Magic Quadrant - Cloud Infrastructure as a Service (2019)

Figure 1. Magic Quadrant for Cloud Infrastructure as a Service, Worldwide



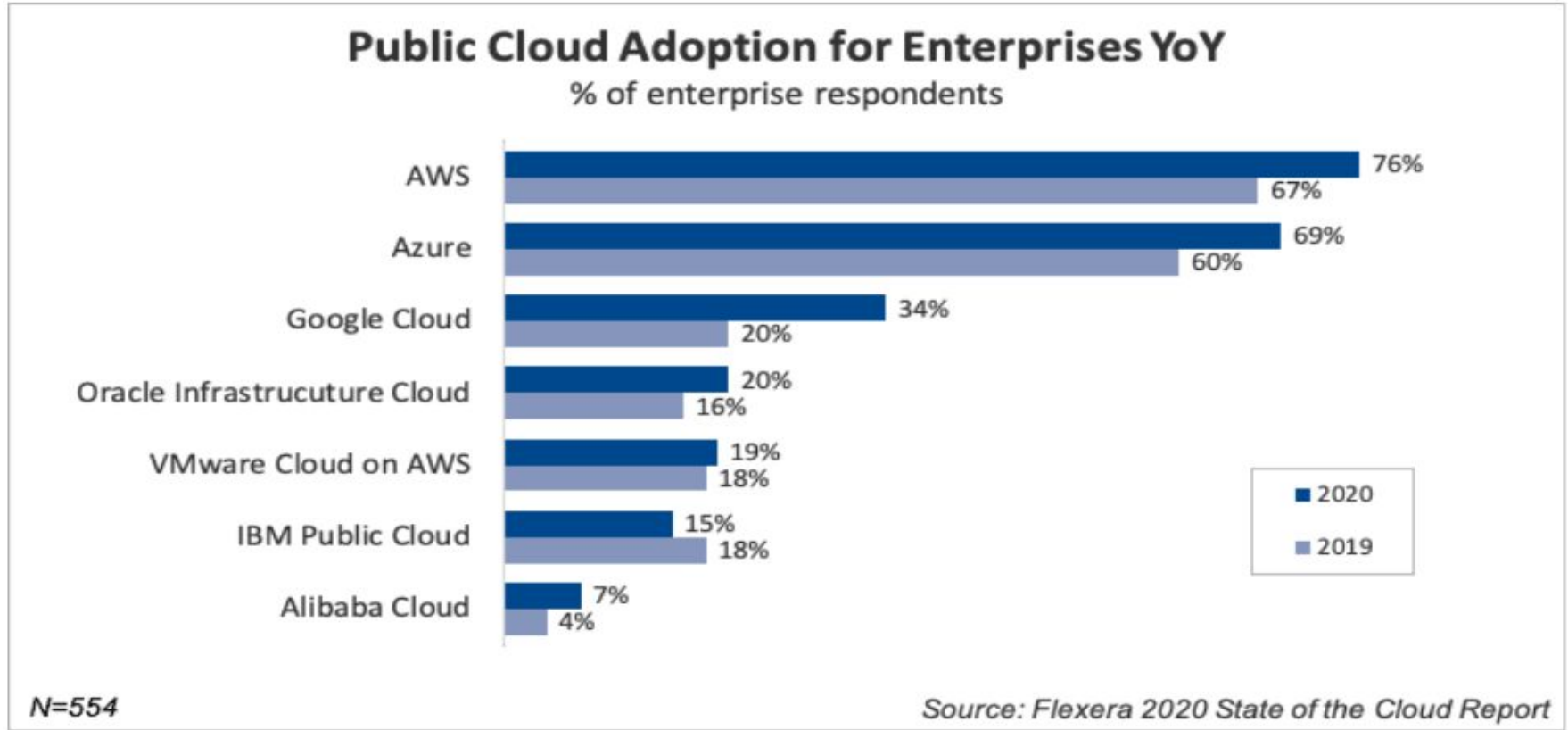
Source: Gartner (July 2019)

Magic Quadrant - Cloud Infrastructure as a Service (2020)



<https://pages.awscloud.com/GLOBAL-multi-DL-gartner-mq-cips-2020-learn.html>

So how many cloud service providers are there?



<https://www.flexera.com/blog/industry-trends/trend-of-cloud-computing-2020/>



Oracle's Cloud Prediction

- Oracle's predictions of Cloud-Native estimates that by 2025, 80% of the IT sector will move to the cloud.

<https://www.oracle.com/a/ocom/docs/cloud/oracle-cloud-predictions-2020.pdf>



Available AWS Certifications

Professional

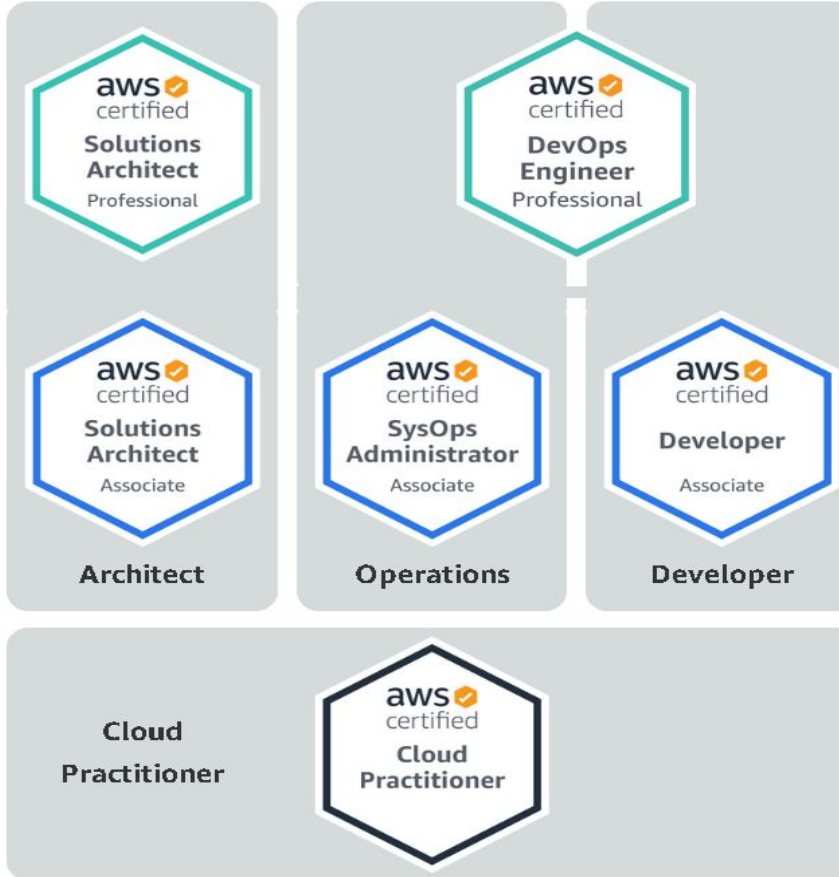
Two years of comprehensive experience designing, operating, and troubleshooting solutions using the AWS Cloud

Associate

One year of experience solving problems and implementing solutions using the AWS Cloud

Foundational

Six months of fundamental AWS Cloud and industry knowledge



Specialty

Technical AWS Cloud experience in the Specialty domain as specified in the **exam guide**





Outline - DevOps

- Challenges in the software and IT service delivery
- What is DevOps?
- How Devops Works?
- Benefits of DevOps
- Devops Practices
- How does DevOps relates to Agile?
- Why AWS for DevOps?

Challenges in the software and IT service delivery

- Difficulties in developing new products.
- UI changes happen in different interval with back.
- No tools for continuous development and testing.
- Software has to run on a server to become a service, delivering a service from inception to its users is too slow and error prone.
- Requirement changes happen concurrently.
- Manual deployment and roll out of the code.
- Major features release takes 2 complete days/weeks



DEV or OPS

Issues:

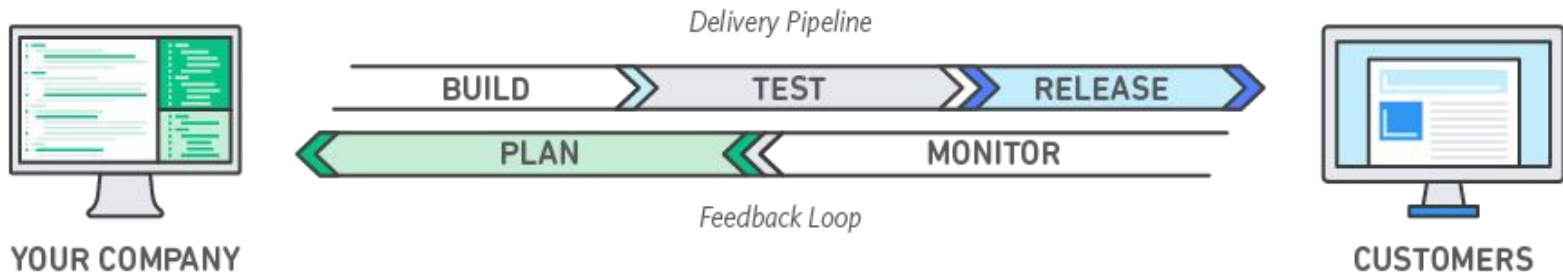
- Few Days after the deployments, the server experiences a high load.
- Application is deployed to test environment, but i am not able to login.
- It works on my machine - Developer
- It's not the environment issue, there is an issue with your code - Operations

Symptoms

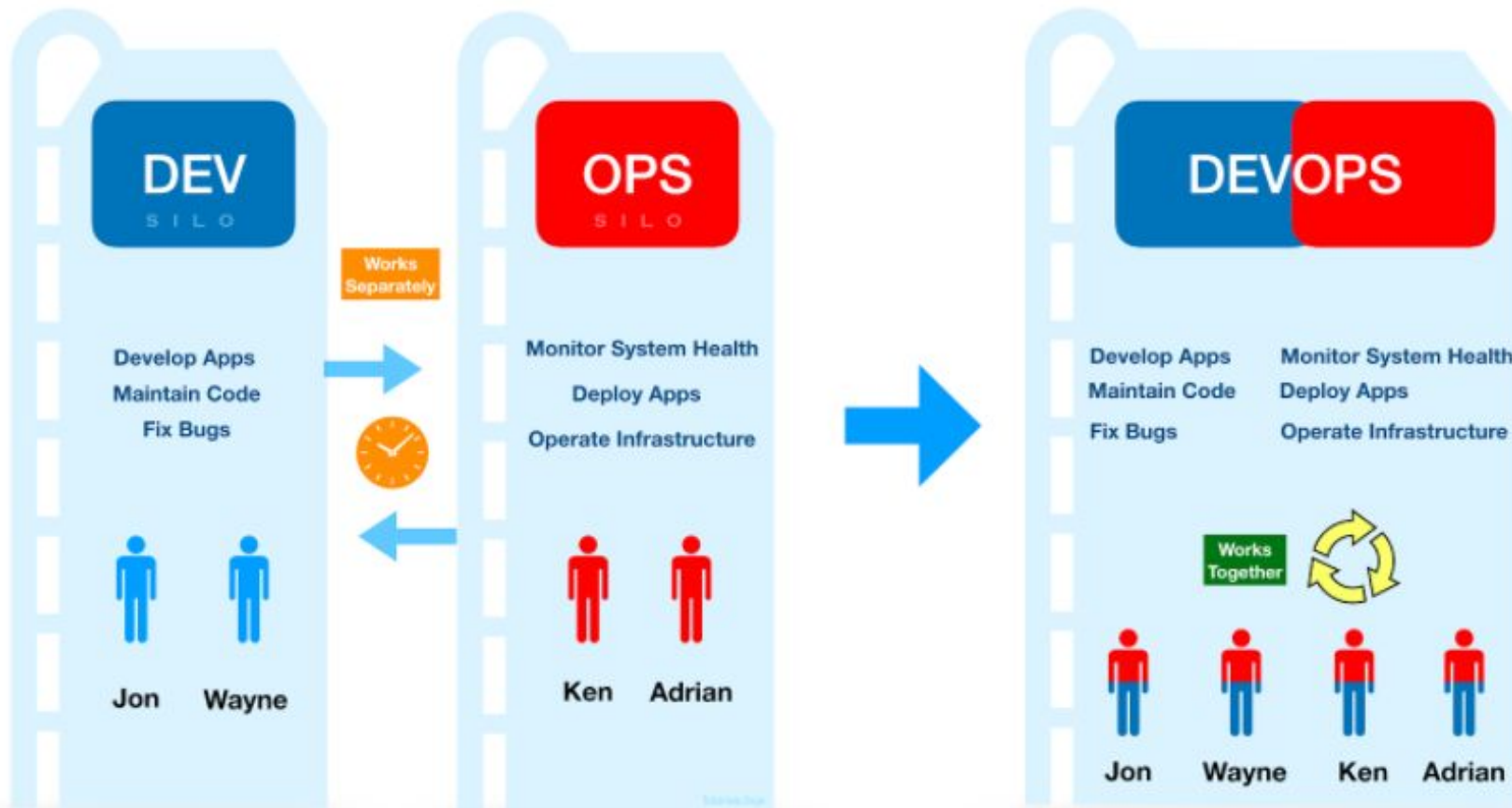
- Defects are released into production, causing outages.
- Problems occur in some environment only.
- Long delays while Dev, QA or any another Team waits on resource or response from other teams.

What is DevOps?

- Combination of cultural philosophies, practices, and tools.
- It also increases an organization's ability to deliver applications and services at high velocity.
- Thus evolving and improving products at a faster pace to better serve their customers and compete more effectively in the market.



What is DevOps?

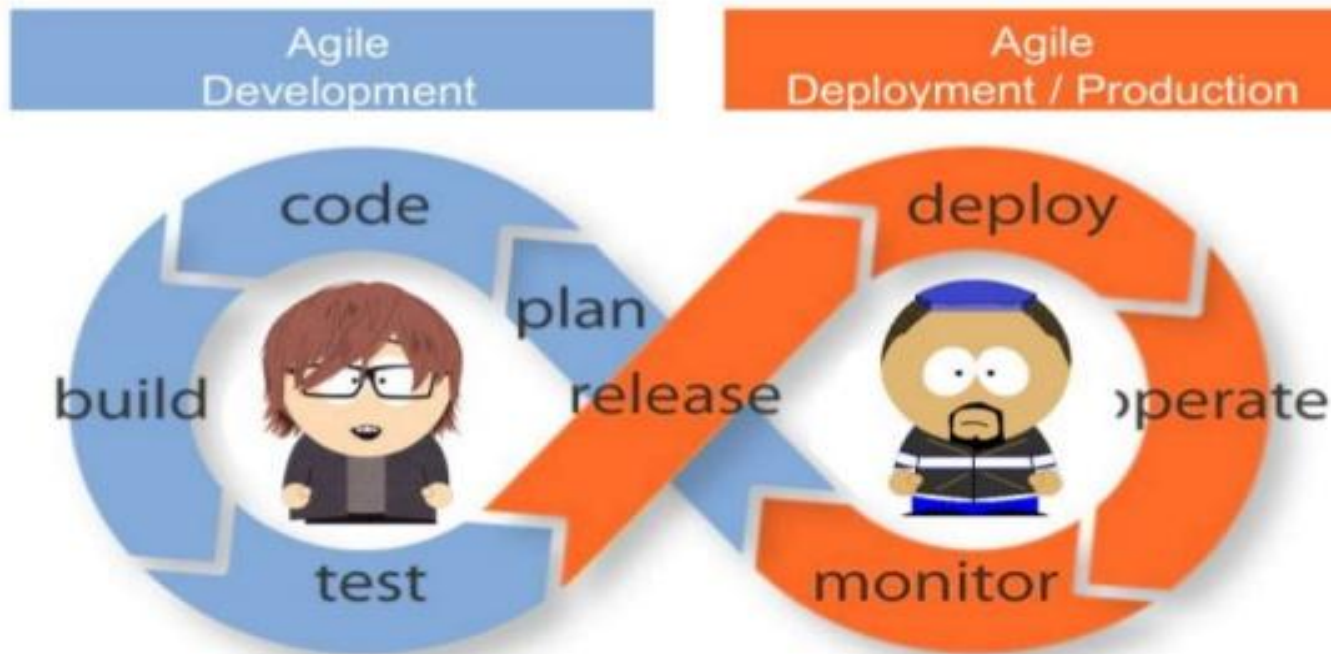




How DevOps Works?

- Under a DevOps model, development and operations teams are no longer working independently.
- Sometimes, these two teams are merged together where they work across the entire application lifecycle, from dev and test to deployment operations.
- These teams use practices to automate processes that historically have been manual and slow.
- They use a technology stack and tooling which help them operate and evolve applications quickly and reliably.

Extend Agility to Production:



How ?



1. Infrastructure as Code

2. Continuous Delivery

3. Culture of Collaboration



Benefits of DevOps

- **Speed**

Move at high velocity so you can innovate for customers faster and adapt changes for growth.

- **Rapid Delivery**

Increase the frequency and pace of releases.

- **Reliability**

Ensure the quality of application updates and infrastructure changes.

- **Scale**

Operate and manage your infrastructure and development processes at scale.

- **Improved Collaboration**

Emphasize values in the team such as ownership and accountability



DevOps Practices

- **Continuous Integration**

- This is a software development practice where developers regularly merge their code changes into a central repository(Github, CodeCommit, BitBucket etc), after which automated builds and tests are run.

- **Continuous Delivery**

- This is a software development practice where code changes are *automatically built, tested, & prepared for a release to production.*
- It expands upon continuous integration by deploying all code changes to a testing and/or a production environment after the build stage.

- **Security**

- Move quickly while retaining control and preserving compliance



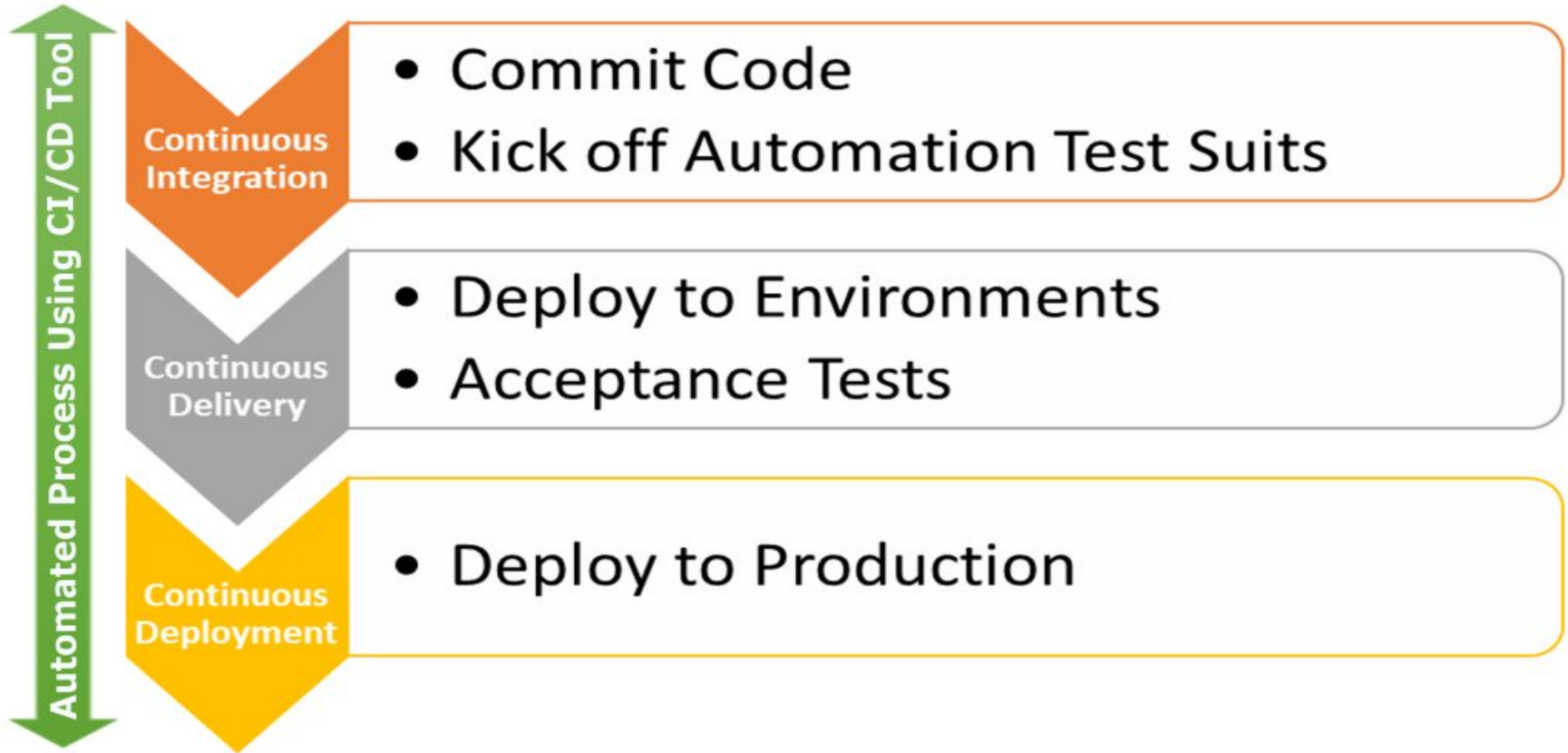
DevOps Practices

- **Infrastructure as Code**

- Infrastructure as code is a practice in which infrastructure is provisioned and managed using code and software development techniques, such as version control and continuous integration.

- **Monitoring and Logging**

- Capture, analyze data and logs generated by application and infrastructure.



1. Infrastructure as Code

- Automate provisioning
- Speed up deployments
- Make them repeatable and reliable

2. Continuous Delivery

- Improve TTM
- Lower TTR
- Zero Downtime Deployments

3. Collaboration culture

- Continuous Improvement
- Operational Efficiency
- Operators are the other users of the IS

TTM : Time To Market
TTR : Time To Repair/Resolution

How does DevOps relates to Agile?



Agile

focuses on
processes

highlighting
change

while accelerating
delivery



CI/CD

focuses on
software-defined life cycles

highlighting
tools

that emphasize
automation



DevOps

focuses on
culture

highlighting
roles

that emphasize
responsiveness

IT MUST EVOLVE TO STAY AHEAD OF DEMANDS

TRADITIONAL

Development Process

Waterfall



Application Architecture

Monolithic



Deployment & Packaging

Physical Servers



Application Infrastructure

Datacenter



MODERN



Agile



N-Tier



Virtual Servers



Hosted

OUTCOMES

Speed



Agility



Control

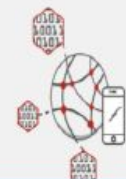


DIGITAL

DevOps



Microservices



Containers



Cloud



Table 1. Worldwide Public Cloud Service Revenue Forecast (Millions of U.S. Dollars)

	2019	2020	2021	2022
Cloud Business Process Services (BPaaS)	45,212	43,438	46,287	49,509
Cloud Application Infrastructure Services (PaaS)	37,512	43,498	57,337	72,022
Cloud Application Services (SaaS)	102,064	104,672	120,990	140,629
Cloud Management and Security Services	12,836	14,663	16,089	18,387
Cloud System Infrastructure Services (IaaS)	44,457	50,393	64,294	80,980
Desktop as a Service (DaaS)	616	1,203	1,951	2,535
Total Market	242,697	257,867	306,948	364,062

BPaaS = business process as a service; IaaS = infrastructure as a service; PaaS = platform as a service; SaaS = software as a service

Note: Totals may not add up due to rounding.

Source: Gartner (July 2020)

<https://www.gartner.com/en/newsroom/press-releases/2020-07-23-gartner-forecasts-worldwide-public-cloud-revenue-to-grow-6point3-percent-in-2020>

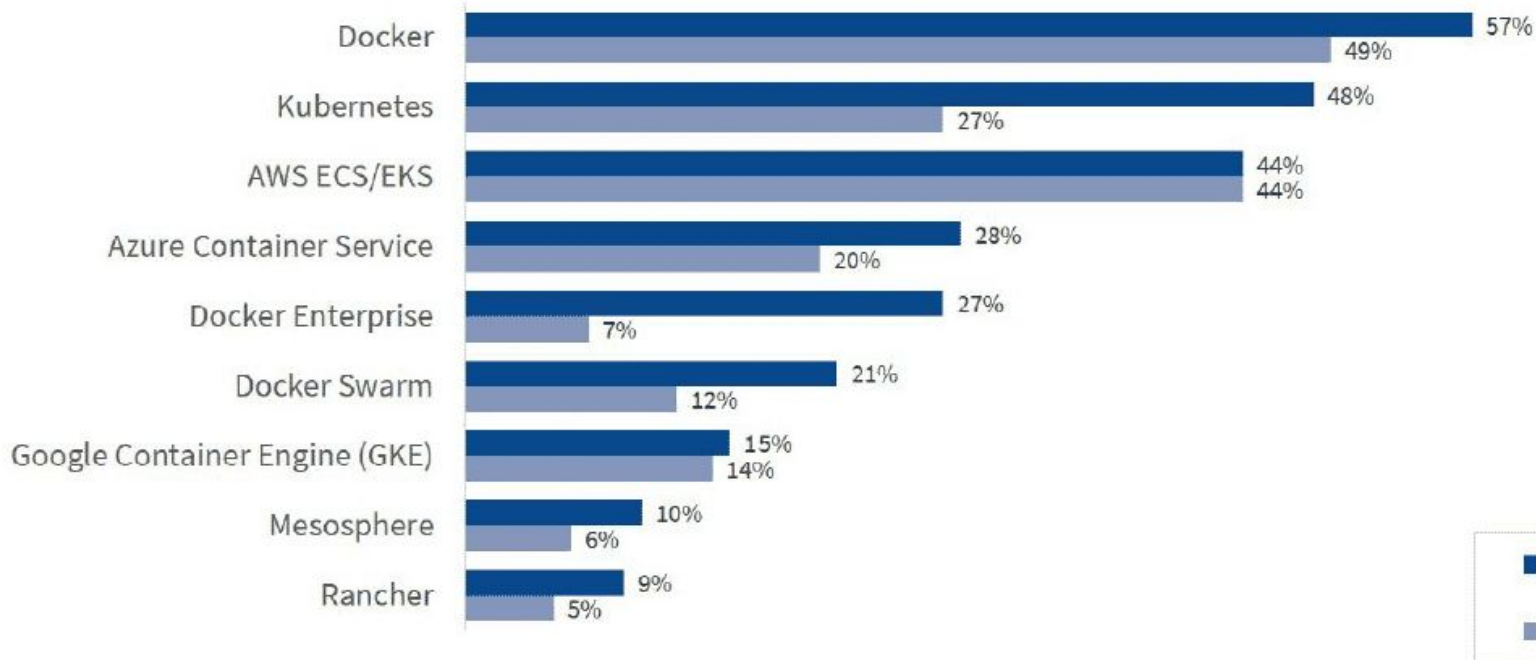


Why AWS for DevOps?

- .Get Started fast
- .Pay-As-You-Go
- .Fully Managed Services
- .Built for scale.
- .Programmable
- .Automation
- .Secure
- .Large Partner Ecosystem

Container Tools Used

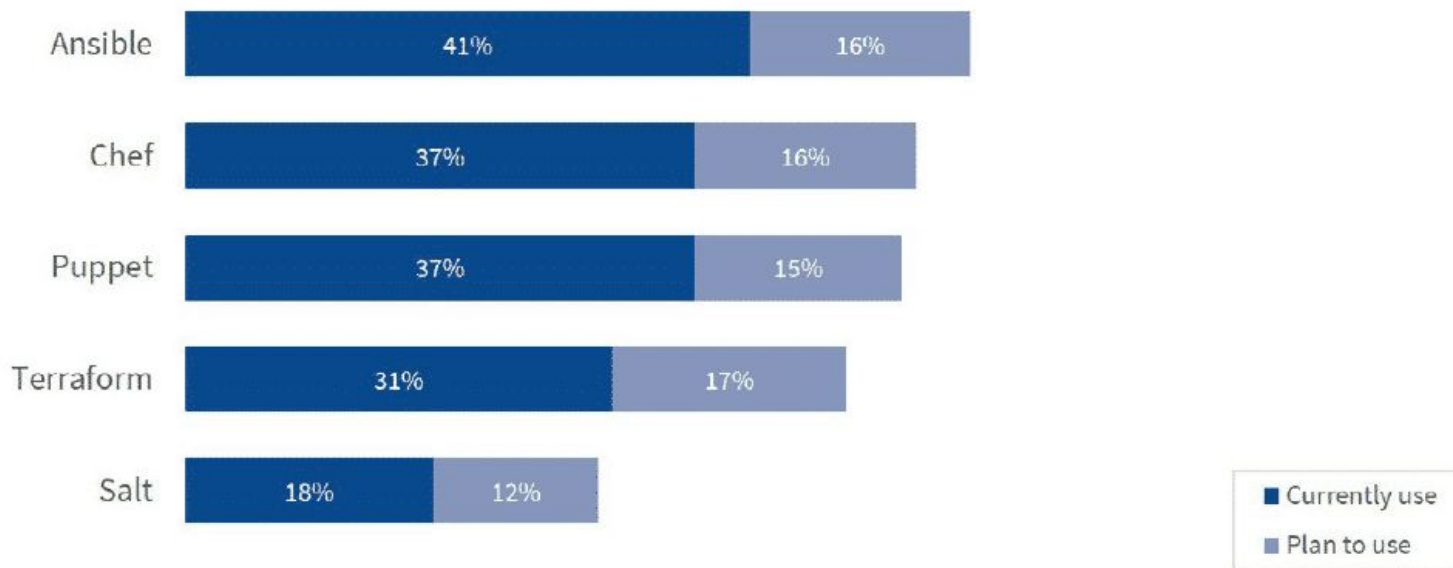
% of All Respondents



Source: RightScale 2019 State of the Cloud Report from Flexera

Configuration Tools Used

% of All Respondents



Source: RightScale 2019 State of the Cloud Report from Flexera

