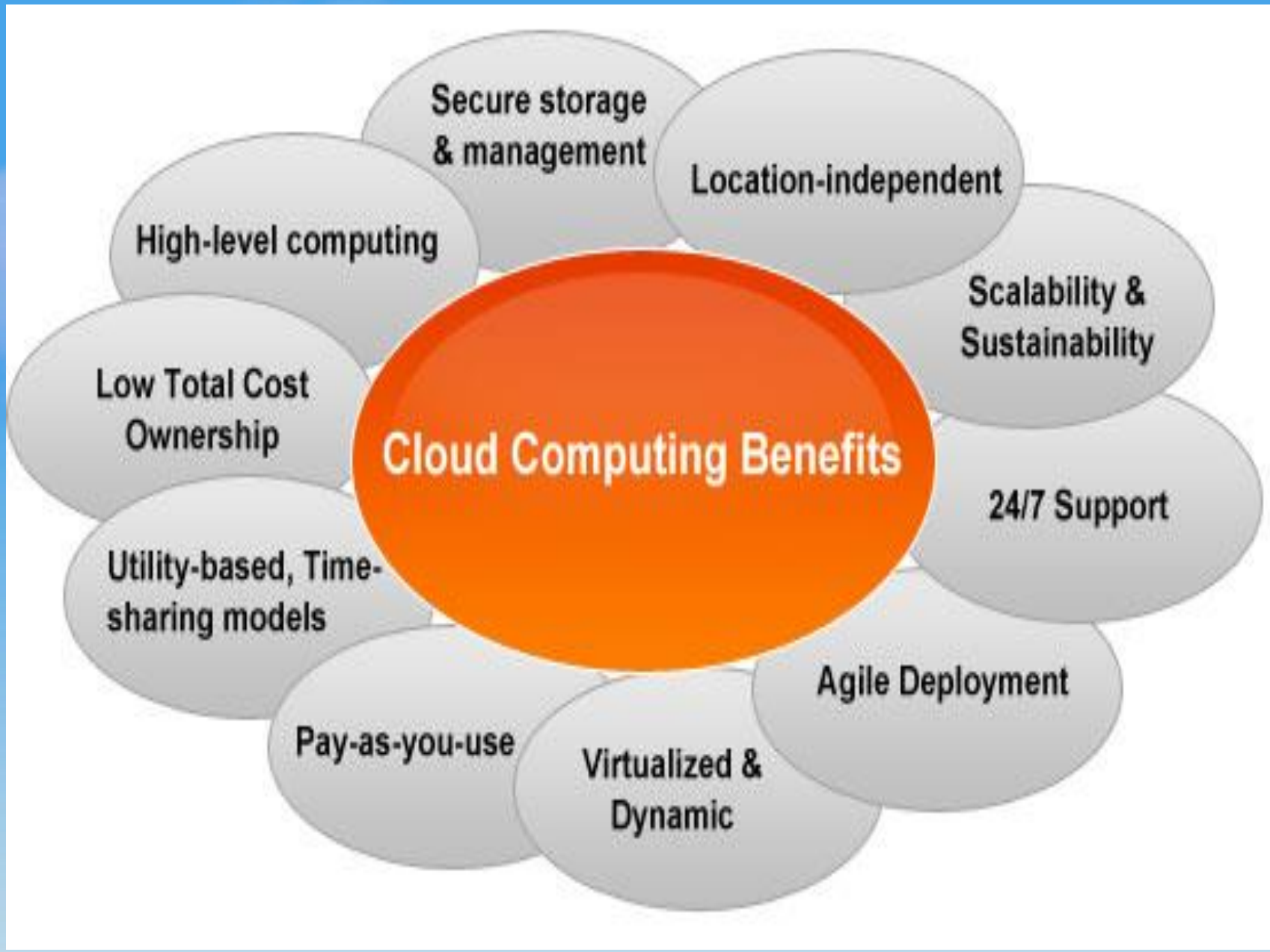
Introduction to Cloud Computing

INTRODUCTION

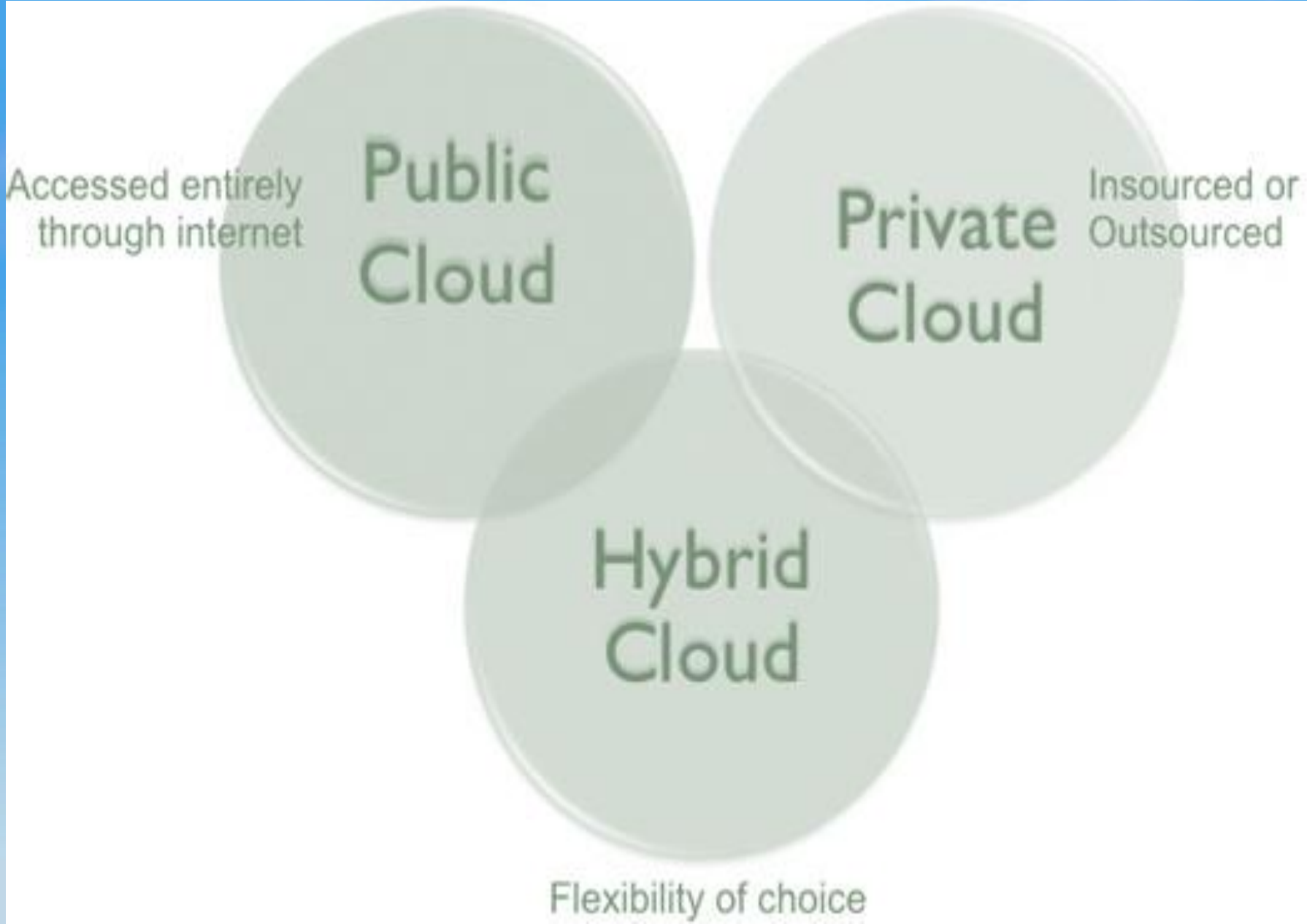
What is Cloud Computing?

- Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

- Cloud computing is a collection of computing resources, networking devices, storage management solutions, and virtualization applications which are available on demand, and delivered economically.


Secure storage & management
Location-independent
High-level computing
Scalability & Sustainability
Low Total Cost Ownership
Cloud Computing Benefits
24/7 Support
Utility-based, Time-sharing models
Agile Deployment
Pay-as-you-use
Virtualized & Dynamic

Types Of Clouds



Cloud Service models

- **Infrastructure-as-a-service (IaaS)**
- **Platform-as-a-service(PaaS)**
- **Software-as-a-service (SaaS)**

INFRASTRUCTURE-AS-A-SERVICE (IAAS)

- **Infrastructure-as-a-service (IaaS)**, can be defined as the use of servers, storage, network ,operating systems and virtualization to enable utility like services for users.

- IaaS enables on-demand provisioning of computational resources in the form of virtual machines in cloud data center.

- E.g.Rackspace,AWS,Windows Azure etc.

PLATFORM-AS-A-SERVICE(PAAS)

- **Platform-as-a-service(PaaS)**, can be defined as a computing platform that allows the creation of web applications quickly and easily and without the complexity of buying,installing and maintaining the software and infrastructure underneath it

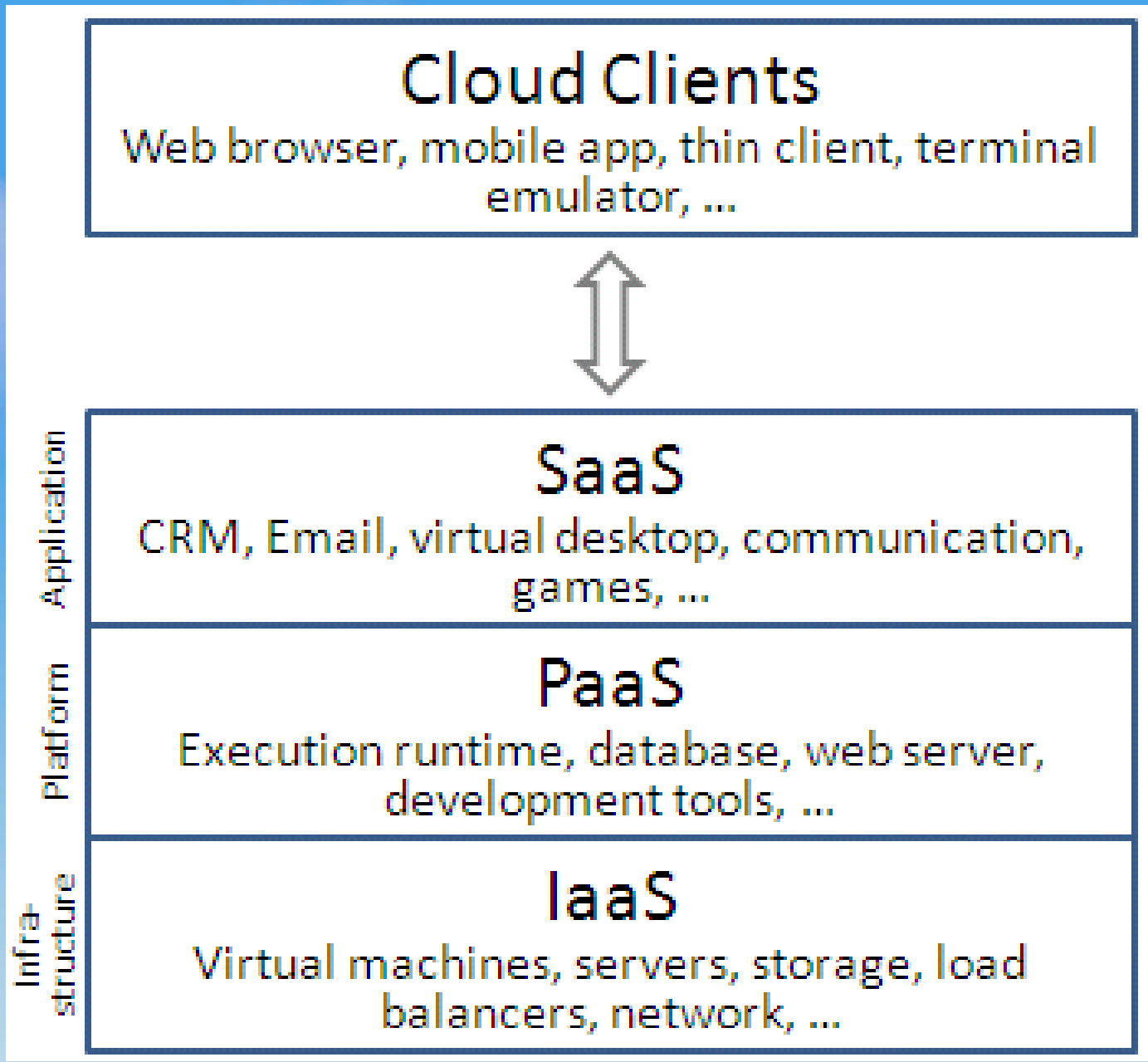
- E.g.Googleapp Engine, Windows Azure etc.

SOFTWARE-AS-A-SERVICE(SAAS)

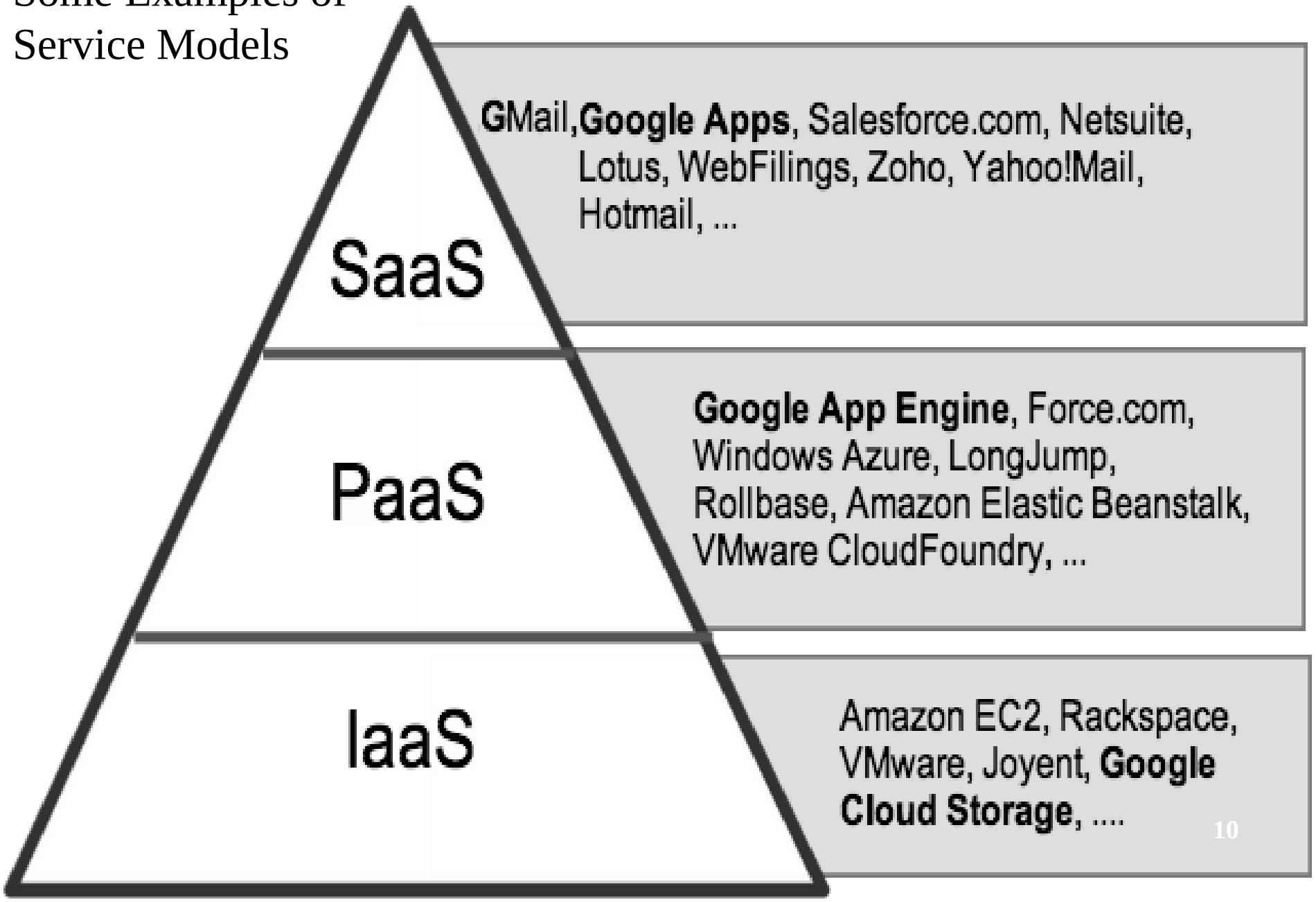
- **Software-as-a-service (SaaS)** provides on demand Application delivery using cloud infrastructure to the user without any installation

- Software-as-a-Service gives subscribed or pay-per-use users access to software or services that reside in the cloud and not on the user's device.

- E.g.Googledocs,Salesforce, Gmail etc.


Cloud Clients
Web browser, mobile app, thin client, terminal emulator, ...
Application
SaaS
CRM, Email, virtual desktop, communication, games, ...
Platform
PaaS
Execution runtime, database, web server, development tools, ...
Infra-structure
IaaS
Virtual machines, servers, storage, load balancers, network, ...

Some Examples of Service Models

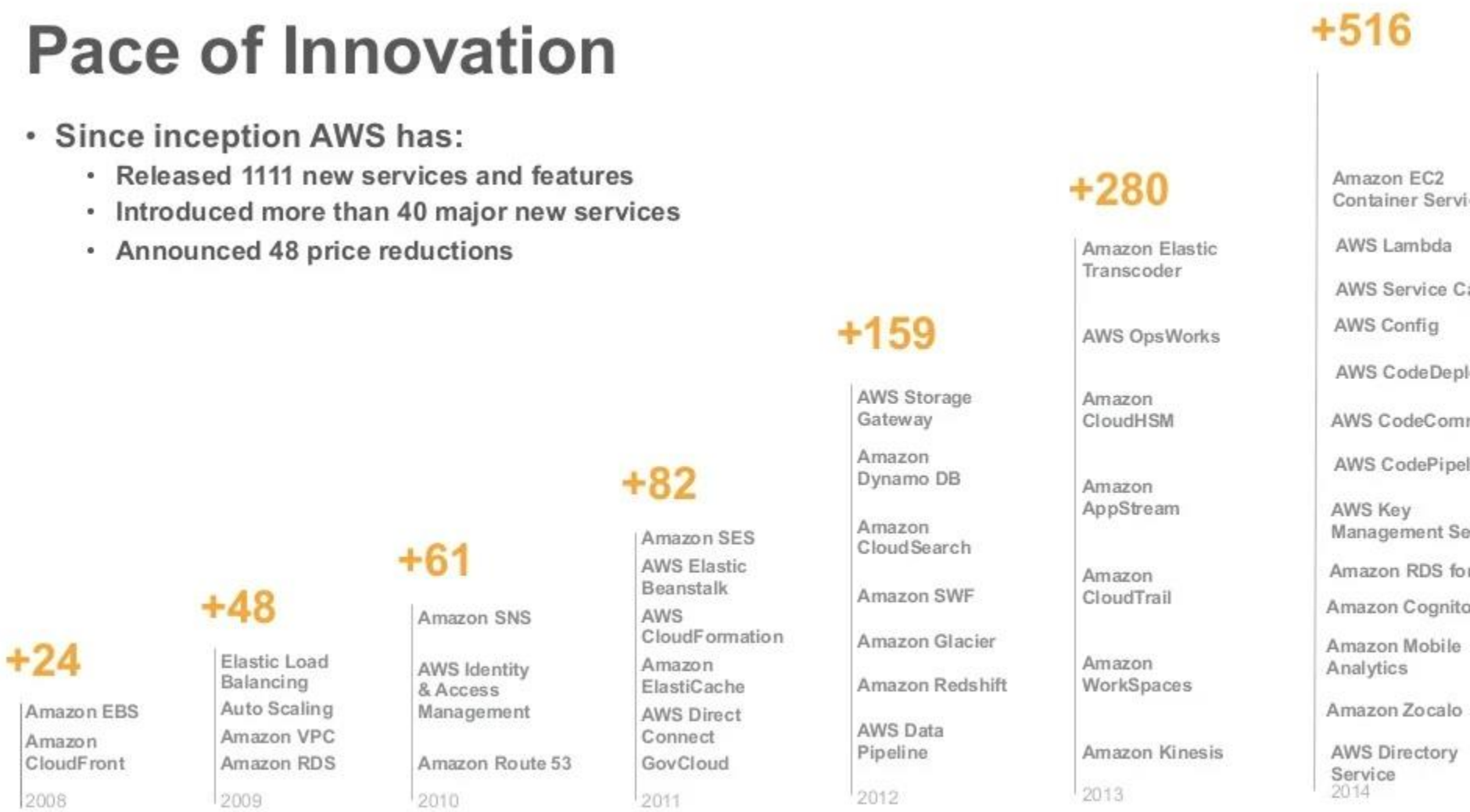


Introduction to AWS

Service Breadth & Depth

Pace of Innovation

- **Since inception AWS has:**
  - **Released 1111 new services and features**
  - **Introduced more than 40 major new services**
  - **Announced 48 price reductions**



*as of Dec 30, 201

Global Footprint

Everyday, AWS adds enough new server capacity to support Amazon.com when it was a $7 billion global enterprise.

- Over 1 million active customers across 190 countries
- 900+ government agencies
- 3,400+ educational institutions
- 11 Regions
- 28 Availability Zones
- 53 Edge Locations

amaz
webser

Benefits of Using AWS

Architected To Meet Your Security Requirements

Certifications and accreditations for workloads that matter

"Based on our experience, I believe that we can be even more secure in the AWS cloud than in our own data centers."

– Tom Soderstrom, CTO, NASA JPL

Experience with Operational Reliability

Our goal is to make our operational performance indistinguishable from perfect.

- We have spent over a decade building the world's most reliable, secure, scalable, and cos effective infrastructure.
- Service SLAs between 99.9% and 100% availability. Amazon S3 maintains a durability of 99.999999999%.
- Availability Zones exist on isolated fault lines, flood plains, and electrical grids to substantially reduce the chance of simultaneous failure.
- The AWS Service Health Dashboard provides 24/7 visibility in the real-time operational status of all services around the globe.

Many Purchase Options to Support Different Needs

Free Tier

Get Started on AWS with free usage & no commitment

Good for Initial evaluation

On-Demand

Pay for compute capacity by the hour with no long-term commitments

Ideal for Development & Test

Reserved

Make a low, one-time payment and receive a significant discount on the hourly charge

Ideal for baseline workloads

Spot

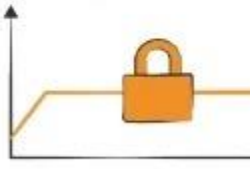
Bid for unused capacity, charged at a Spot Price which fluctuates based on supply and demand

Ideal for Test scenarios, Simulations

Dedicated

Launch instances within Amazon VP that run on hardwa dedicated to a sing customer

For highly sensitiv compliance relate workloads



Increased agility has become the #1 reason businesses use the AWS cloud

AWS Services

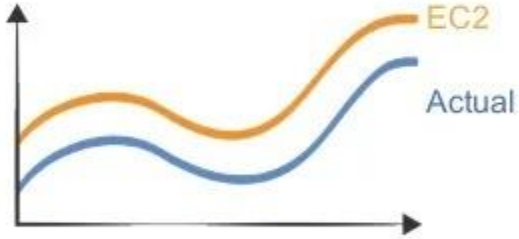
Compute Services

Amazon EC2

Elastic **Virtual servers** in the cloud

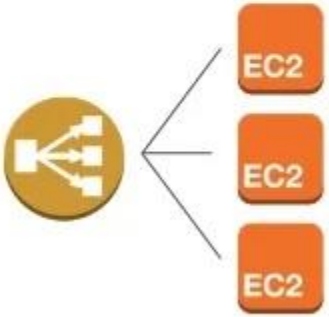
Auto Scaling

Automated scaling of EC2 capacity



Elastic Load Balancing

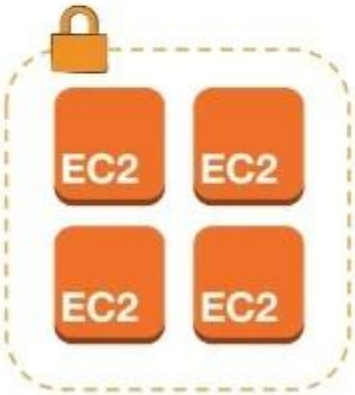
Dynamic **traffic distribution**



Networking Services

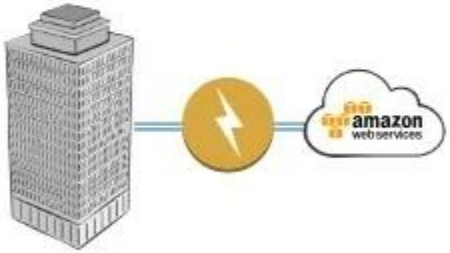
Amazon VPC:

Private, isolated section of the AWS Cloud



AWS DirectConnect

Private connectivity between AWS and your datacenter



Amazon Route 53

Domain Name System (DNS) web service.

Storage Services

Amazon EBS

Block storage for use with Amazon EC2

Amazon S3

Internet scale storage via API

Images
Videos
Files
Binaries
Snapshots

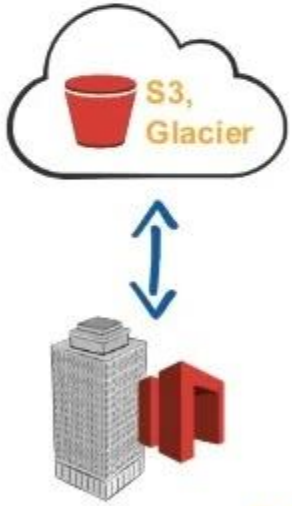
Amazon Glacier

Storage for archiving and backup

Images
Videos
Files
Binaries
Snapshots

AWS Storage Gateway

Integrates on-premises IT and AWS storage



Database Services

Amazon RDS

Managed **relational database service**

Amazon DynamoDB

Managed **NoSQL database service**

Amazon ElastiCache

In-Memory **Caching** Service

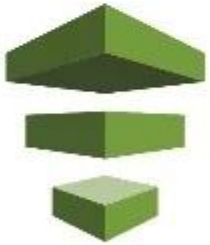
Big Data Services

Amazon EMR (Elastic Map Reduce)

Hosted Hadoop framework

AWS Data Pipeline

Move data among AWS services and on-premises data sources



Amazon Redshift

Petabyte-scale data warehouse service

Application Services

Amazon CloudFront

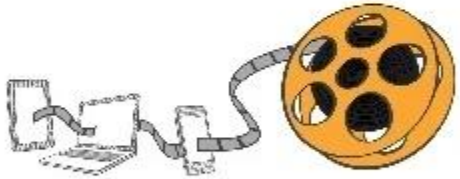
distribute content globally

Amazon CloudSearch

Managed search service

Amazon Elastic Transcoder

Video transcoding in the cloud



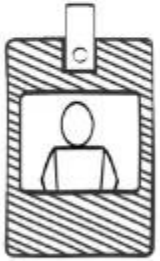
Deployment & Administration

Amazon CloudWatch

Monitor resources

AWS IAM (Identity & Access Mgmt)

Manage **users, groups & permissions**



AWS CloudFormation

Templates to deploy & manage

AWS OpsWorks

Dev-Ops framework for application lifecycle management

AWS Elast Beanstalk

Automate resou management

Introduction to DevOps

What is DevOps?

What is DevOps?

- DevOps (a combination of development and operations) is a software development method that stresses communication, collaboration and integration between software developers and information technology(IT) professionals thereby
  - Enable rapid evolution of products or services
  - Reduce risk, improve quality across portfolio, and

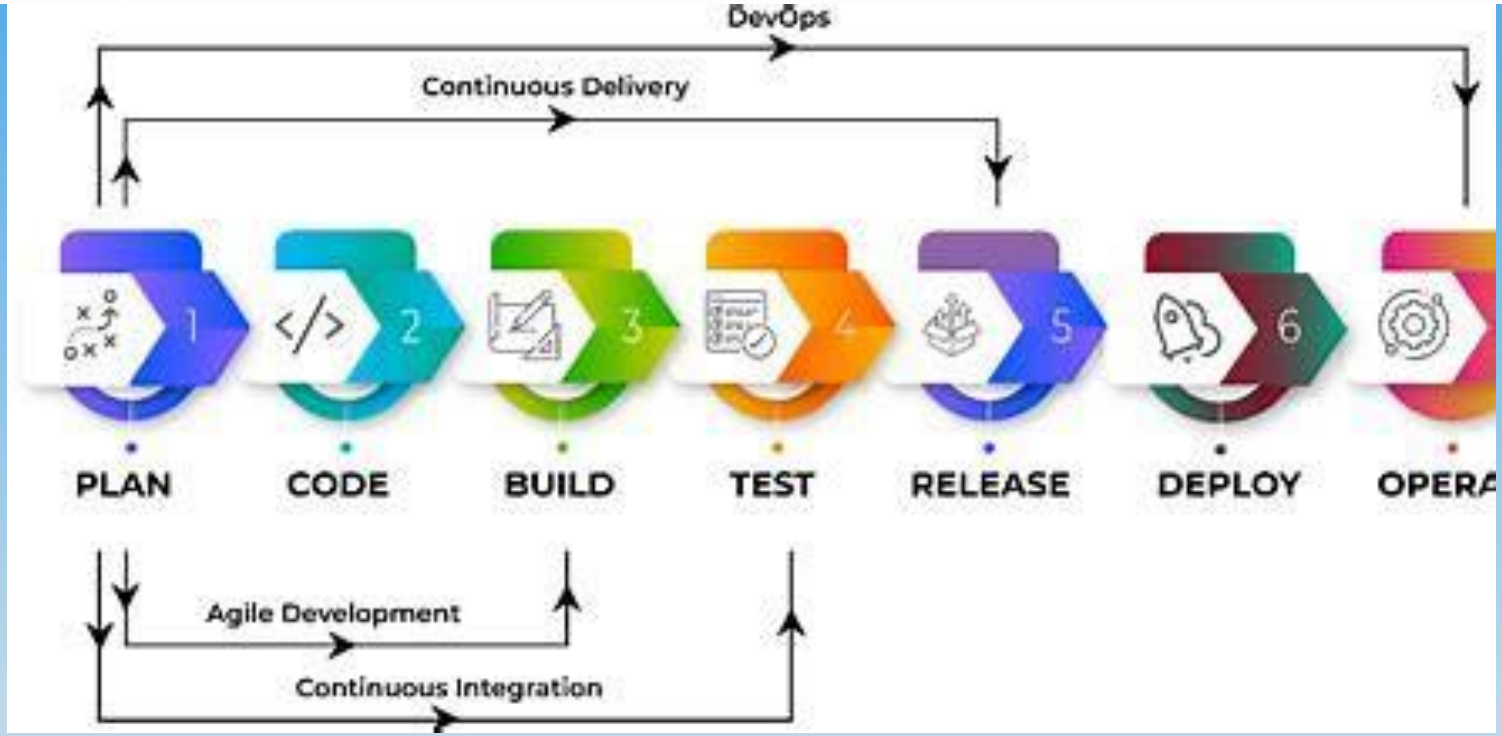
What is DevOps?

- DevOps integration targets product delivery, quality testing, feature development and maintenance releases in order to improve reliability and security and faster development and deployment cycles.
- The adoption of DevOps is being driven by factors such as:
- Use of agile and other development processes and methodologies
- Demand for an increased rate of production releases from application and business stakeholders
- Wide availability of virtualized and cloud infrastructure from internal and external providers
- Increased usage of data center automation and

Principles of DevOps

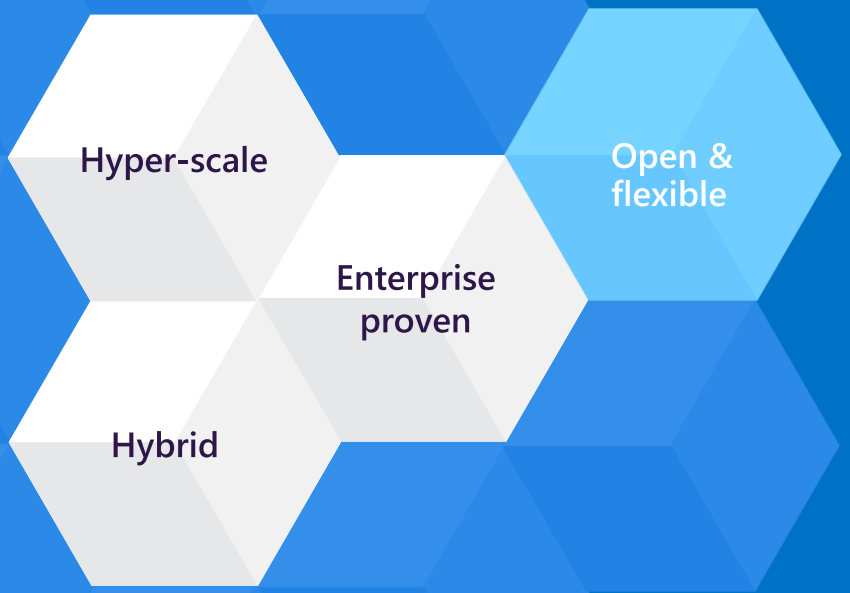
- Develop and test in an environment similar to production
- Deploy builds frequently
- Validate operation quality continuously


git
JIRA
Gradle
Jenkins
Maven
CODE
PLAN
BUILD
TEST
RELEASE
DEPLOY
OPERATE
MONITOR
DEV
OPS
JUnit
Nagios
New Relic


DevOps
Continuous Delivery
PLAN
CODE
BUILD
TEST
RELEASE
DEPLOY
Agile Development
Continuous Integration

Dev and Ops

- Developers work with Ops to understand the impact of code changes
- Developers now work more closely with production-equivalent systems
- Developers focuses on metrics required by Ops team like PSR
- Ops now have more clarity on infrastructure needs
- More automation on deployment
- Closely monitors the Dev – Test – Prod pipeline for each deployment with immediate feedback
- Better collaboration and communication



Open + Flexible

Management

puppet labs · CHEF · ANSIBLE · Apache MESOS

Applications

apprenda · WordPress · Joomla! · Drupal · CLOUD FOUNDRY

App Frameworks

node.JS · python · Java · php · Ruby

Databases & Middleware

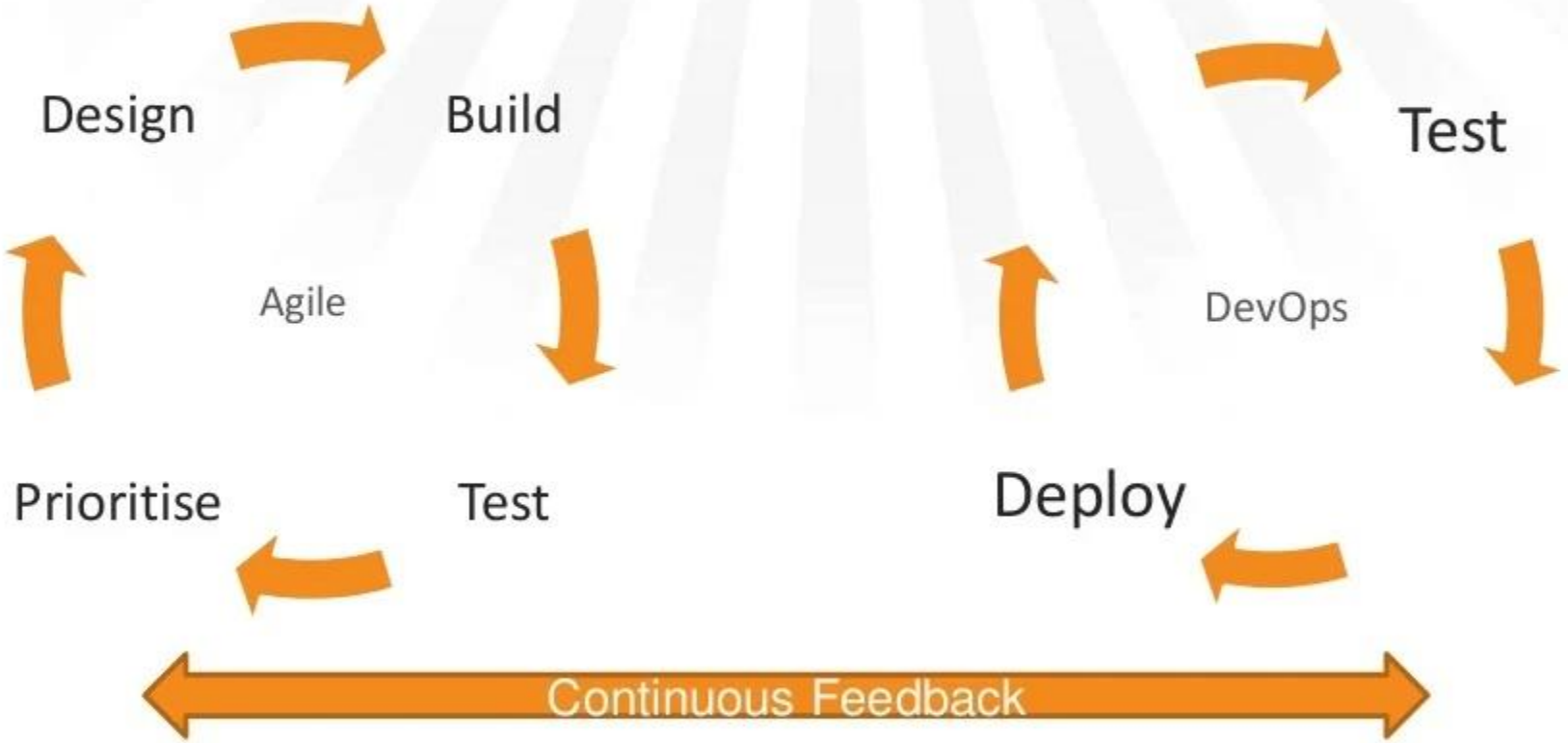
cloudera · mongoDB · hadoop · MySQL

Infrastructure

FreeBSD · Linux · docker · redhat

Agile + DevOps

Continuous Integration extended as Continuous Delivery



Thank You