INTRODUCTION
TO
CLOUD COMPUTING

Outline

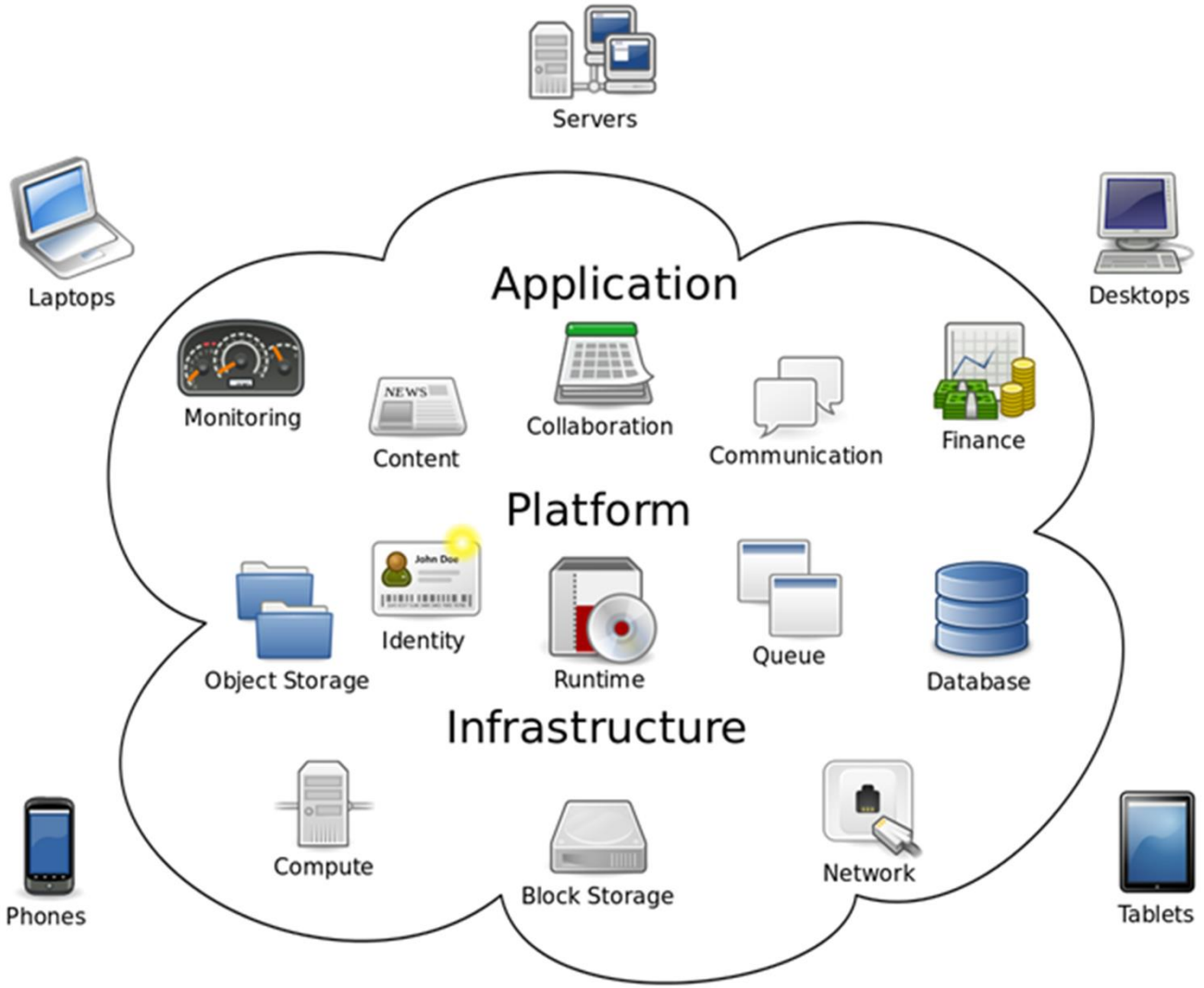
- What is Cloud Computing?
- Cloud Computing Characteristics
- Evolution of Cloud Computing
- Cloud Computing Architecture
- Cloud Computing Models
- Pros and Cons
- Cloud Service Providers

What is Cloud Computing?

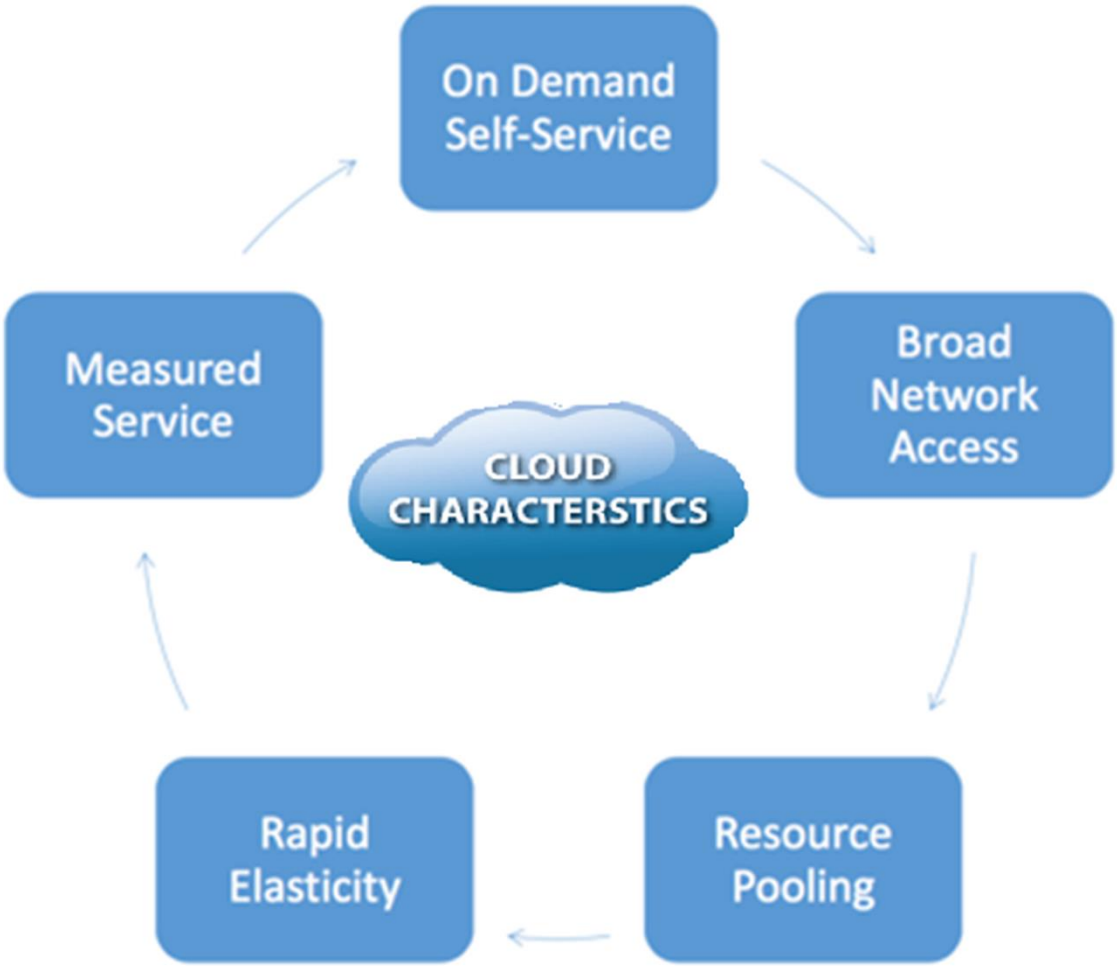
Cloud computing is on-demand delivery of IT resources and applications via the Internet with pay-as-you-go pricing.

Cloud computing is an information technology (IT) paradigm, a model for enabling ubiquitous access to shared pools of configurable resources (such as computer networks, servers, storage, applications and services), which can be rapidly provisioned with minimal management effort, often over the Internet. *Source:Wikipedia*

Cloud Computing Overview

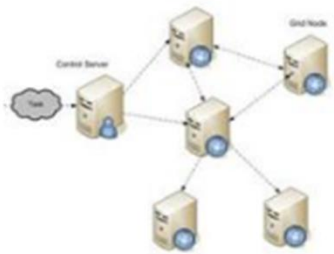


Cloud Computing – Characteristics



Evolution of Cloud Computing

Grid Computing
- Solving large problems with parallel computing
- Made mainstream by Globus Alliance



Utility Computing
- Offering computing resources as a metered service
- Introduced in late 1990s

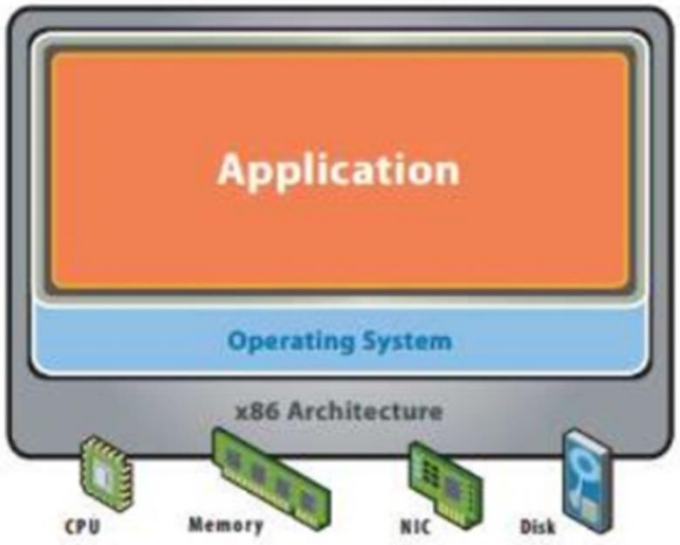
Software as a Service
- Network-based subscription to applications
- Gained momentum in 2001

Cloud Computing
- Next-Generation Internet computing
- Next Generation Data Centers

Supporting Factors for Cloud Computing

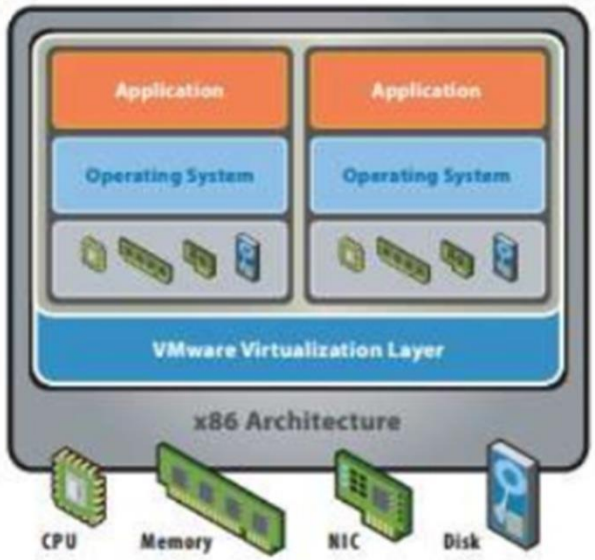
- Advancement in processors
- Virtualization technology
- Distributed Storage
- Automated Management
- Broadband internet Access
- Fast and Inexpensive Servers

Virtualization Overview



Before Virtualization:

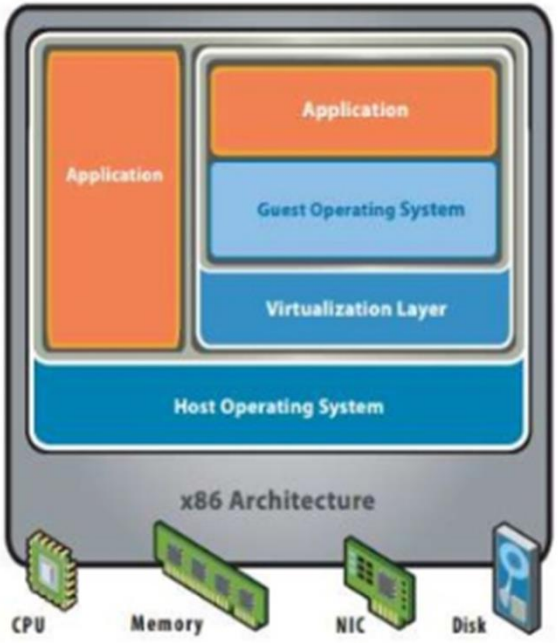
- Single OS image per machine
- Software and hardware tightly coupled
- Running multiple applications on same machine often creates conflict
- Underutilized resources
- Inflexible and costly infrastructure



After Virtualization:

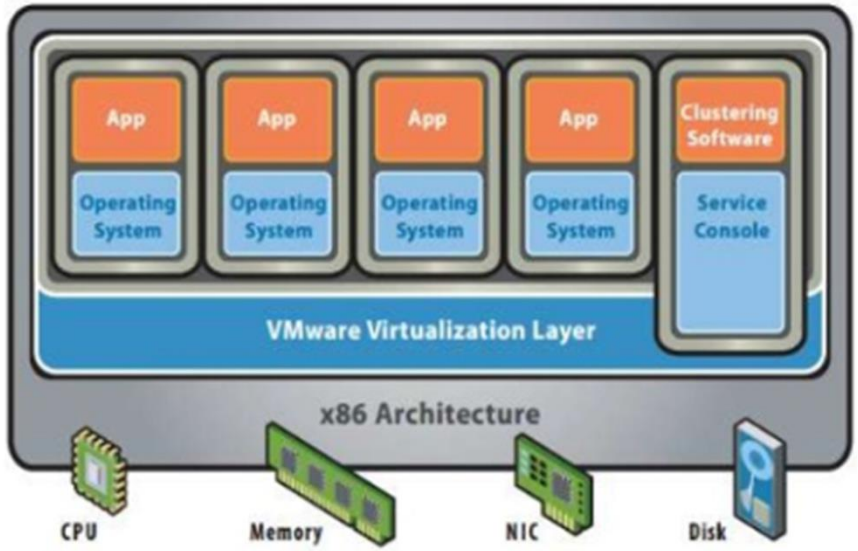
- Hardware-independence of operating system and applications
- Virtual machines can be provisioned to any system
- Can manage OS and application as a single unit by encapsulating them into virtual machines

Virtualization Approaches



Hosted Architecture

- Installs and runs as an application
- Relies on host OS for device support and physical resource management

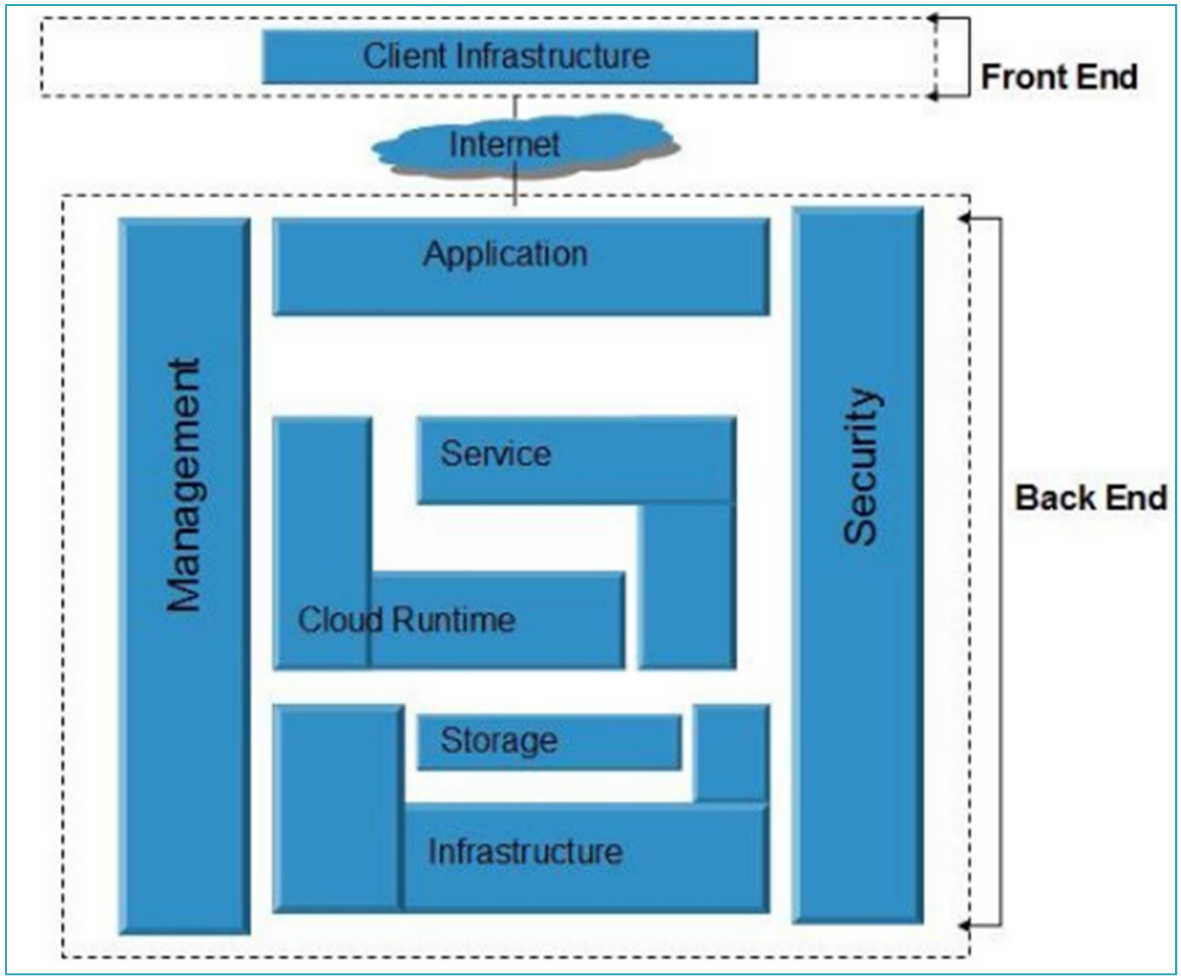


Bare-Metal (Hypervisor) Architecture

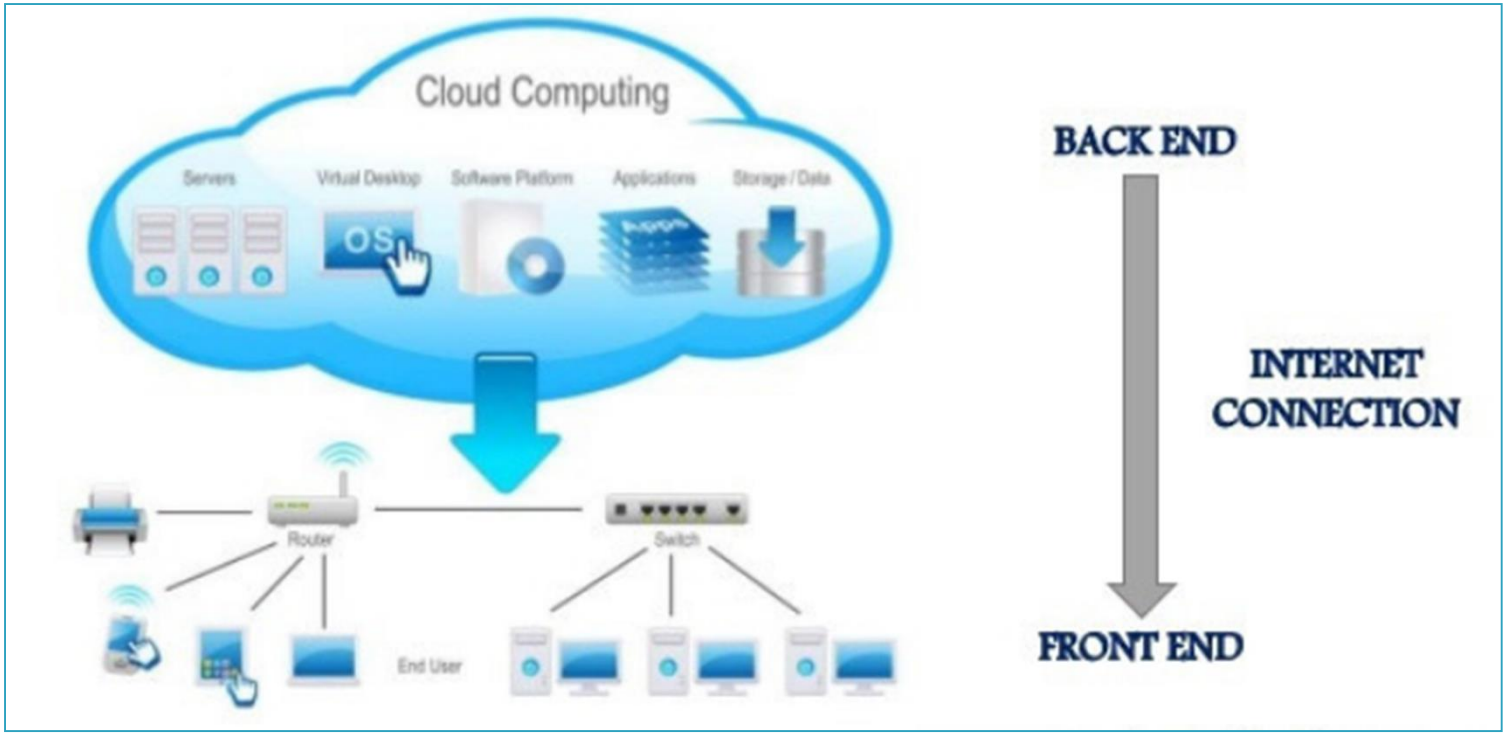
- Lean virtualization-centric kernel
- Service Console for agents and helper applications

Cloud Computing Architecture

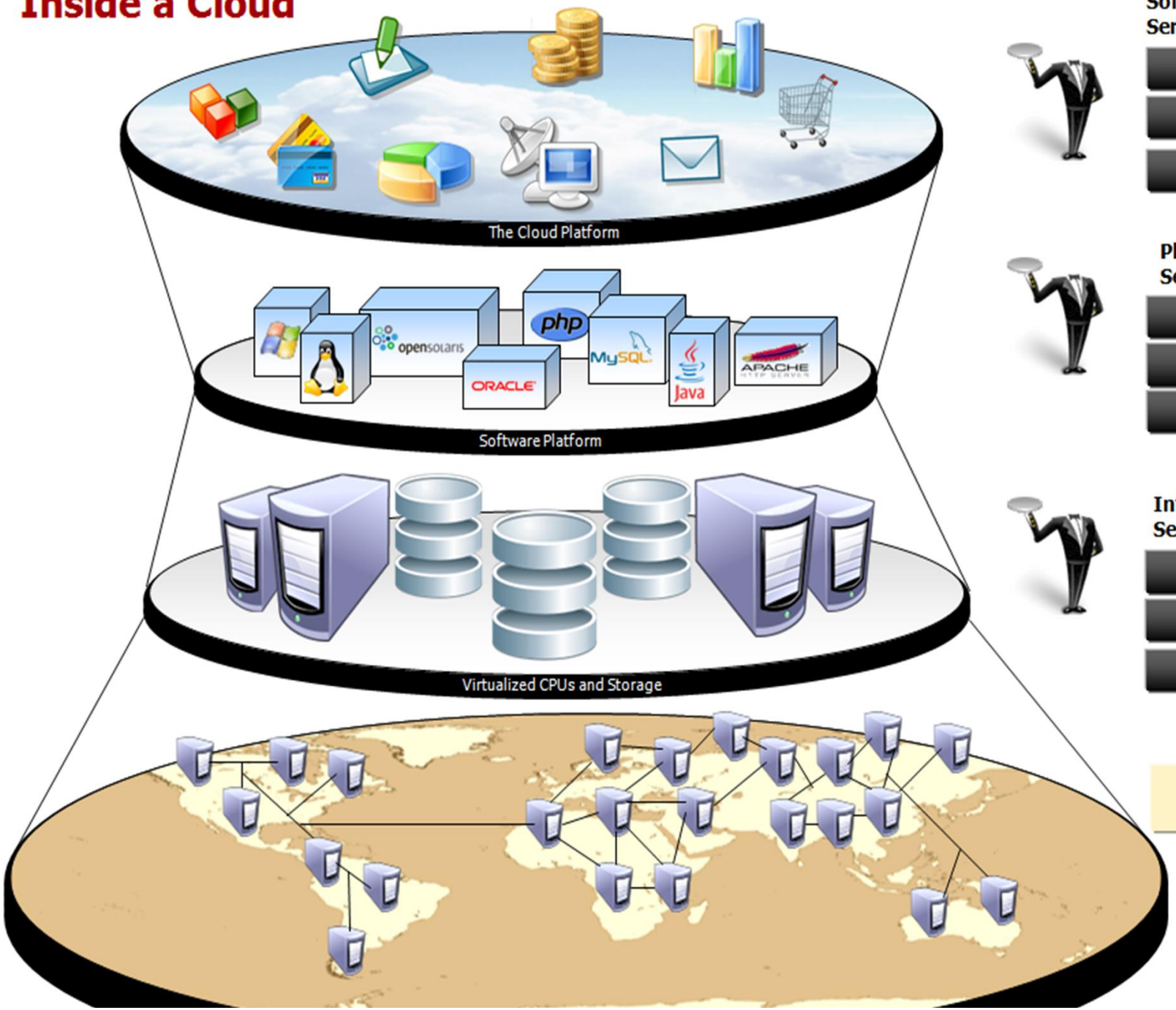
Cloud computing architecture refers to the components and subcomponents required for cloud computing. These components typically consist of a front end platform (fat client, thin client, mobile device), back end platforms (servers, storage), a cloud based delivery, and a network (Internet, Intranet, Intercloud).



Cloud Computing Architecture (contd.)



Inside a Cloud



Software as a Service (SaaS)

- Corporate Email
- CRM, ERP, HR
- Business Processes

Platform as a Service (PaaS)

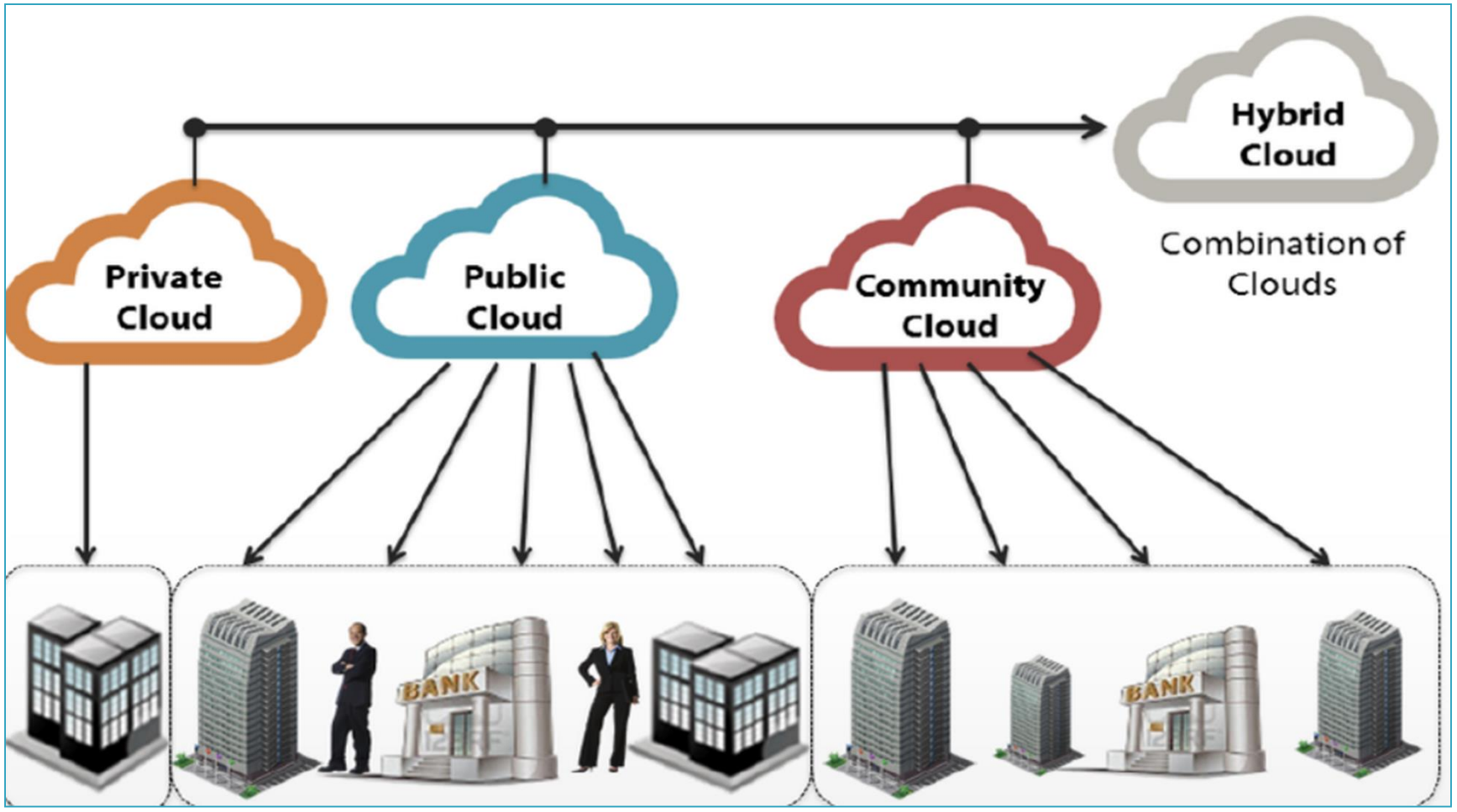
- Java Runtime
- Web 2.0 Runtime
- LAMP / WAMP

Infrastructure as a Service (IaaS)

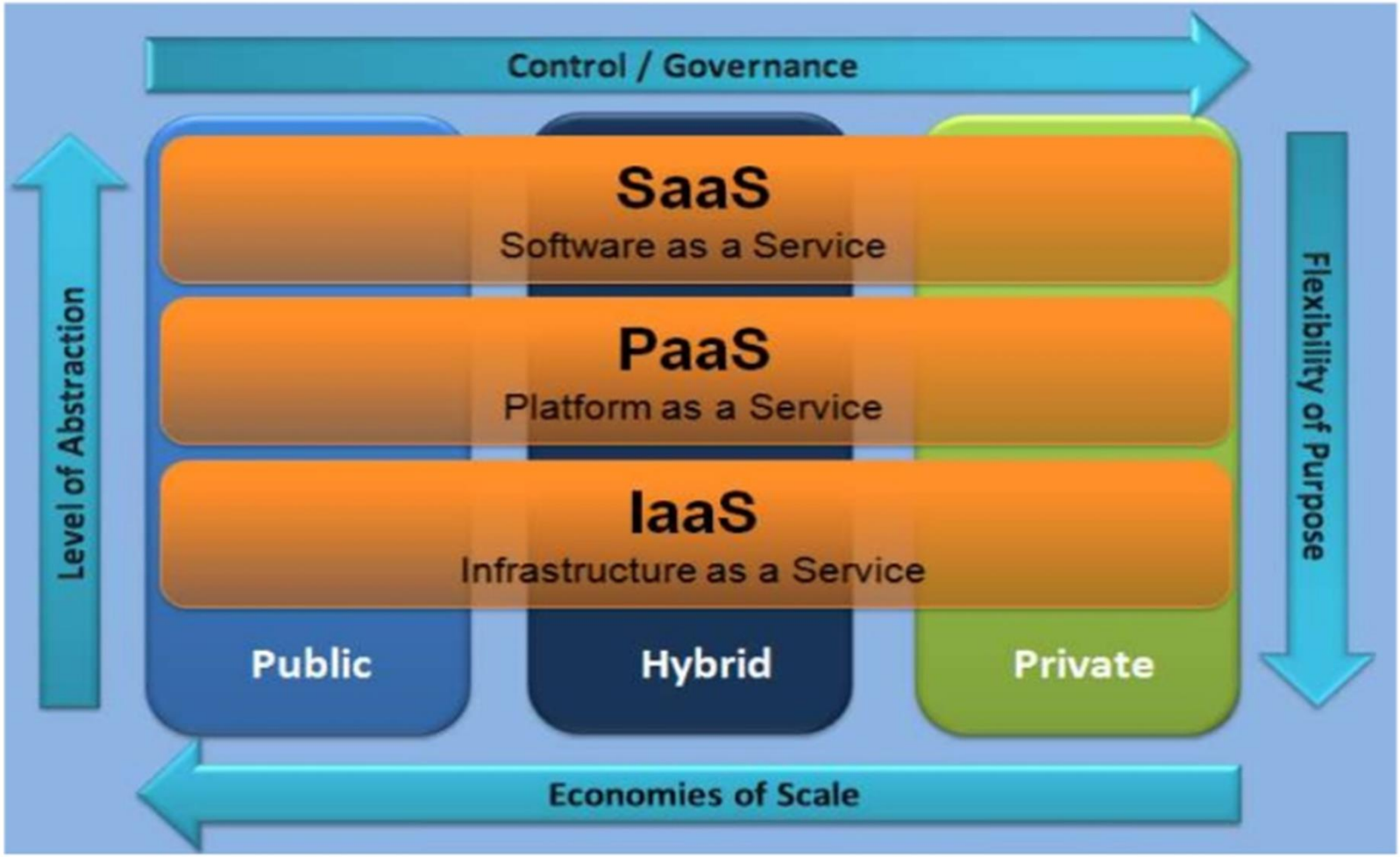
- Virtual Servers
- Virtual Storage
- Network Routers

Physical Servers

Cloud Deployment Models



Cloud Computing Service Model



Pros and Cons of Cloud Computing

Cloud Providers – A Birds Eye View

Infrastructure as a Service

Google Cloud Platform

Platform as a Service

CLOUDFOUNDRY

AWS Elastic Beanstalk

Software as a Service

Adobe®
Creative Cloud™

INTRODUCTION TO AWS

Outline

- What is AWS?
- AWS Platform and Services
- AWS Global Infrastructure
- Regions/Availability Zones
- Benefits
- Customers

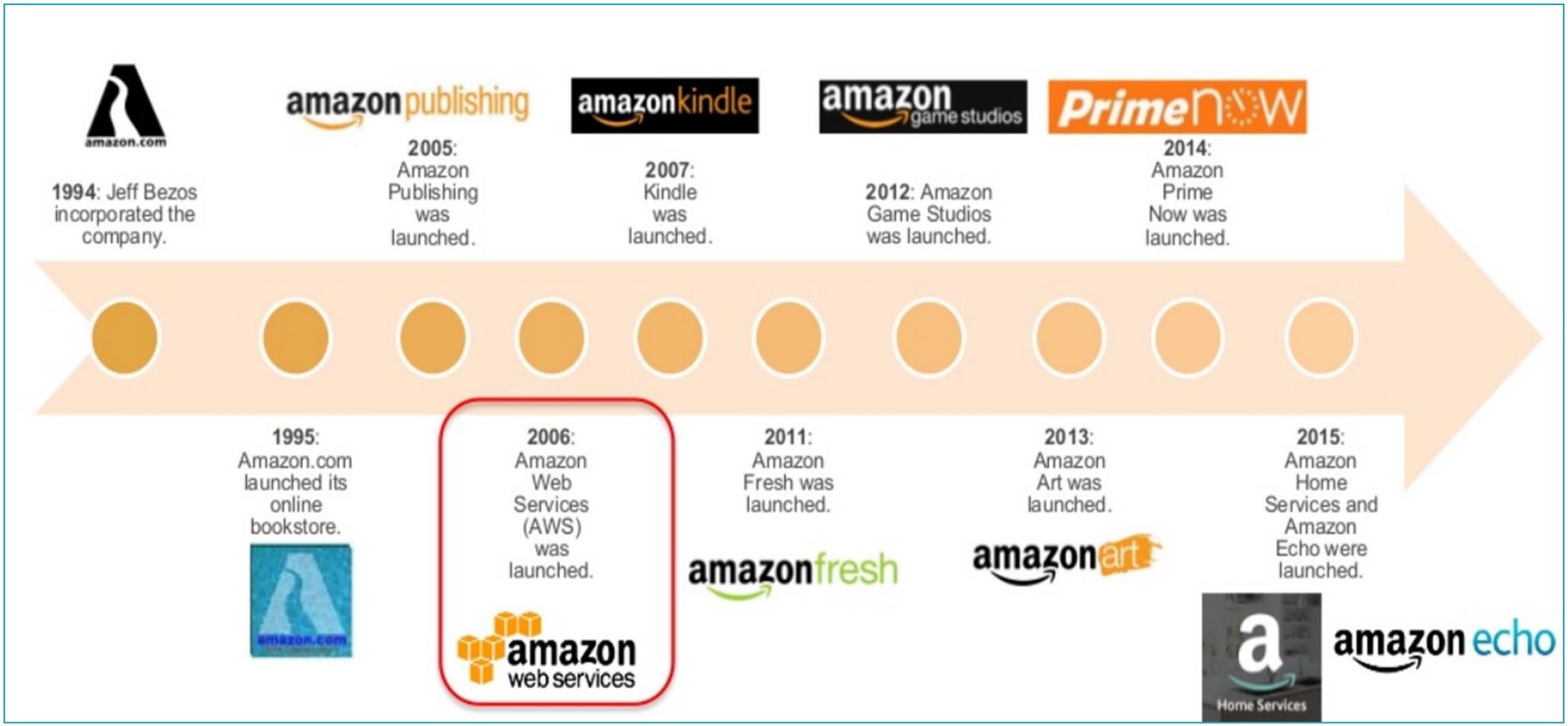
What is AWS?

Amazon Web Services (AWS) is a secure cloud services platform, offering compute power, database storage, networking, content delivery and other functionality to help businesses scale and grow

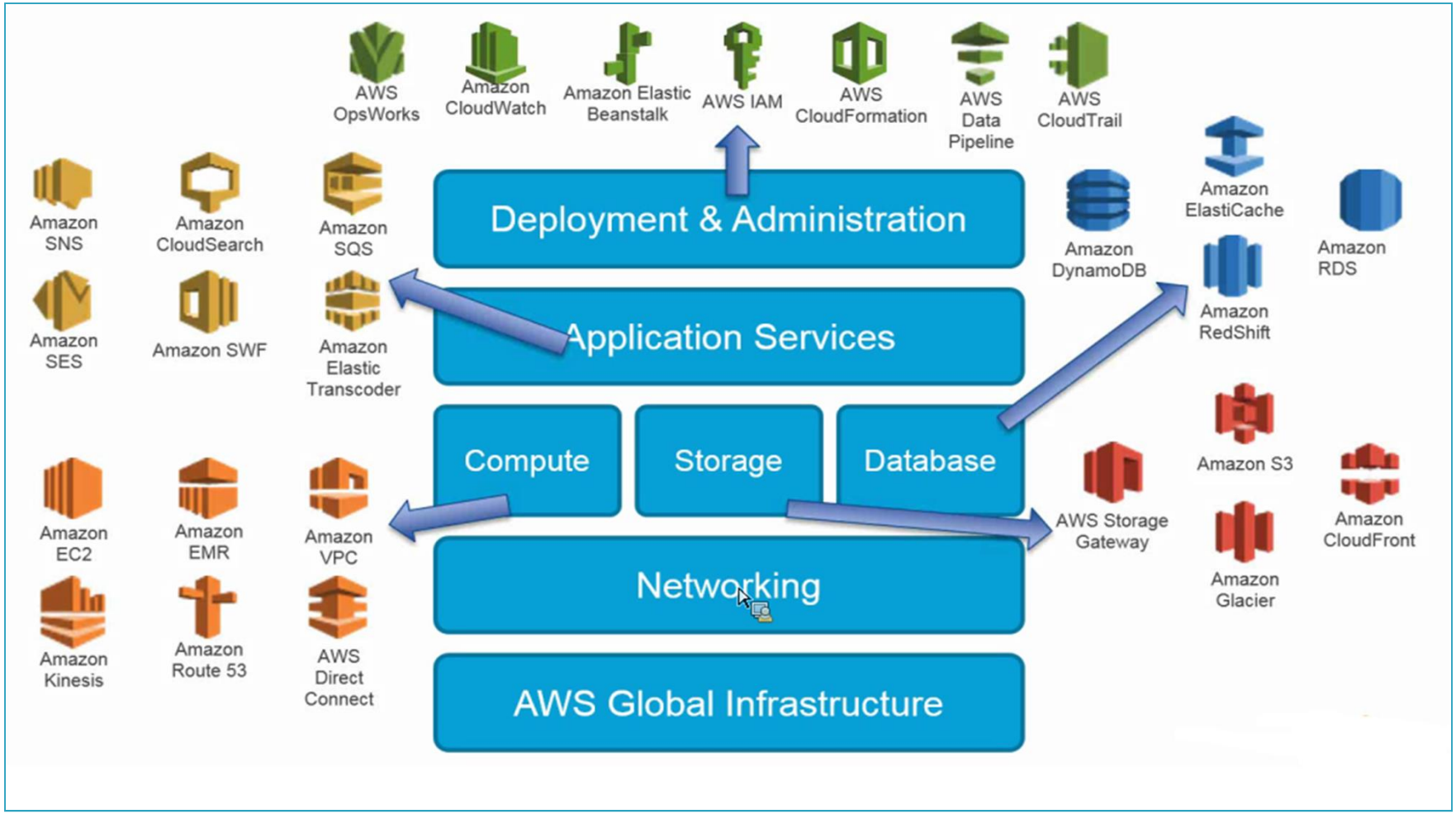
Enable businesses and developers to use web services to build scalable, sophisticated applications.

amazon web services

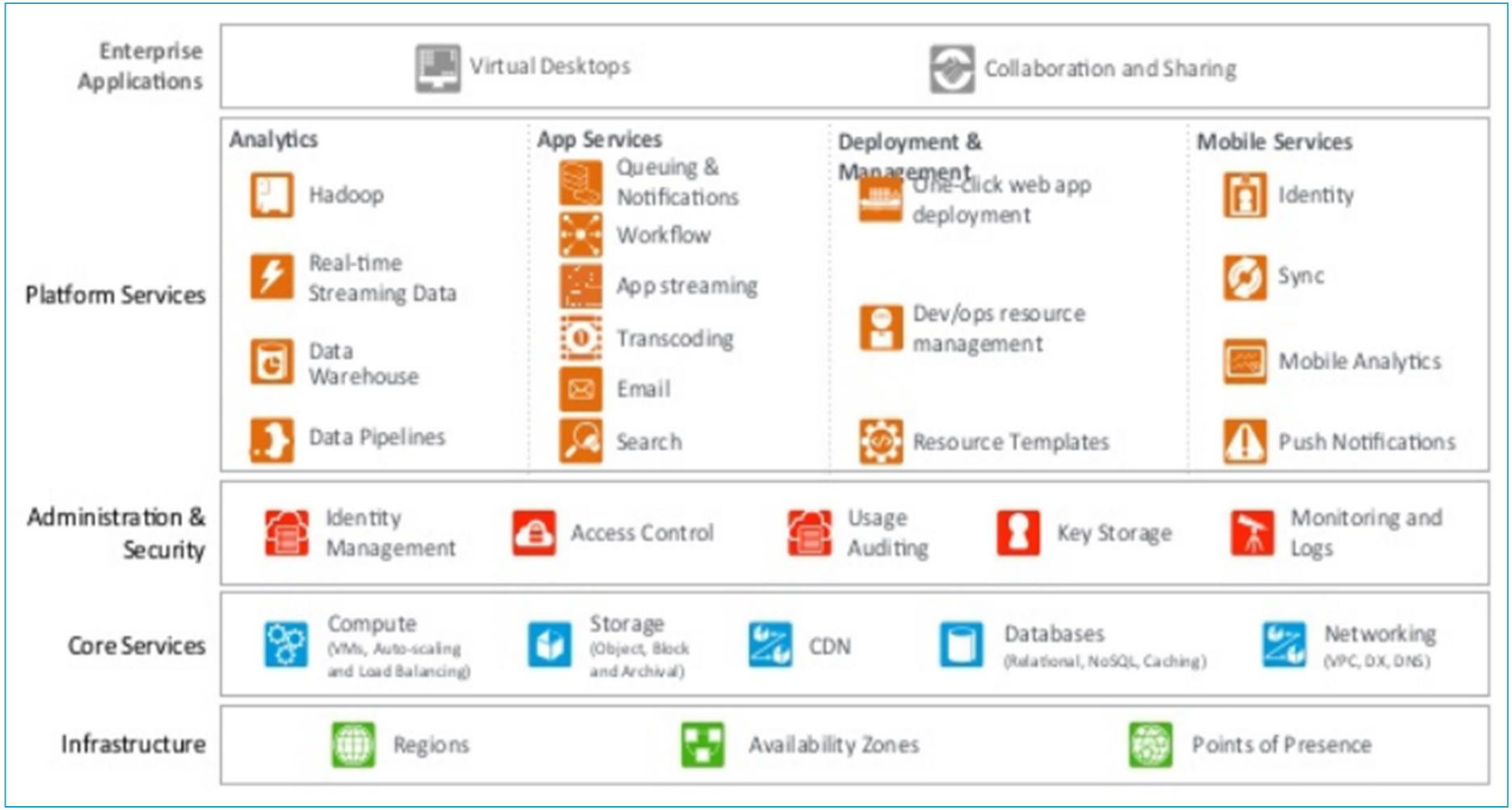
Amazon History



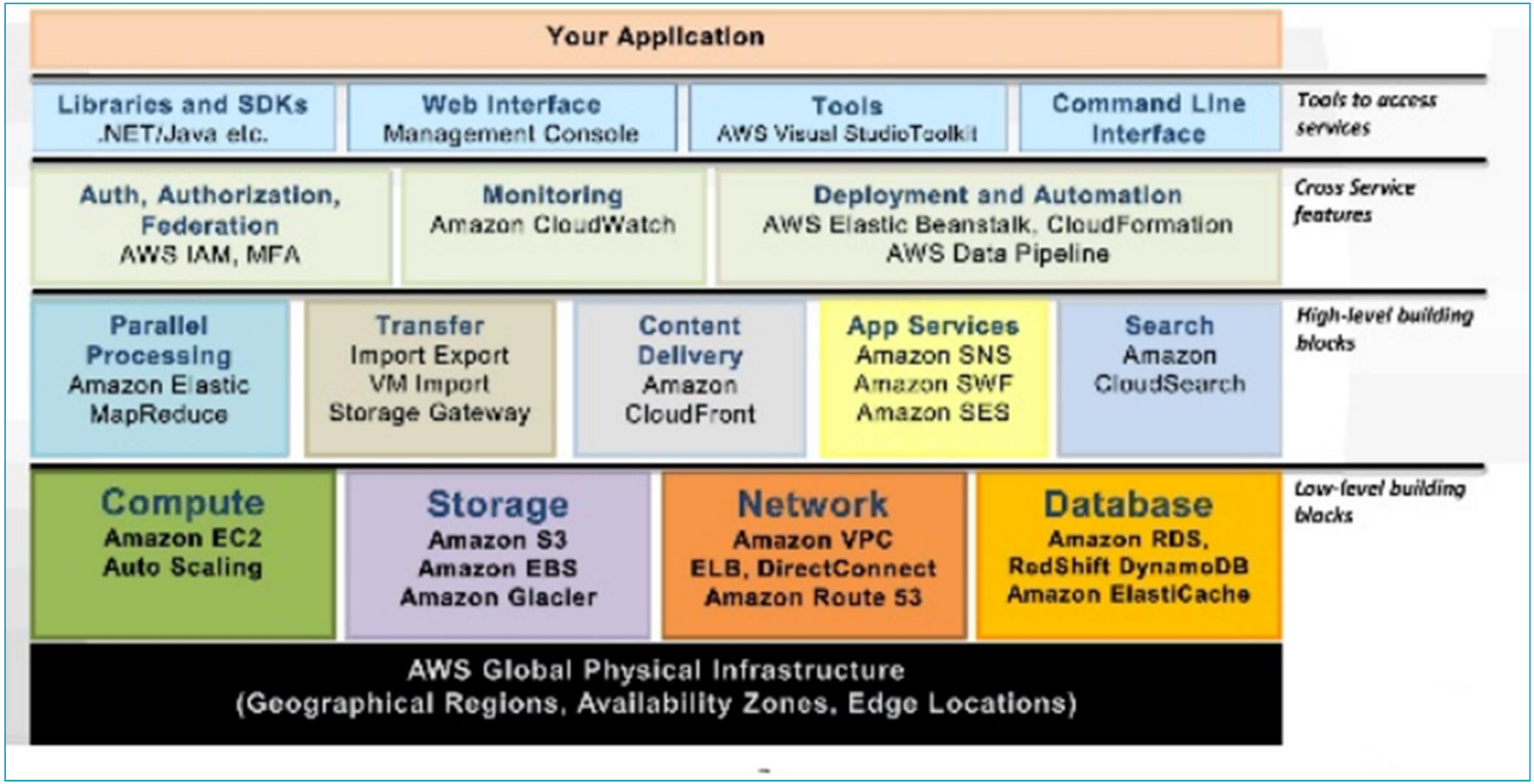
AWS Platform



AWS Platform

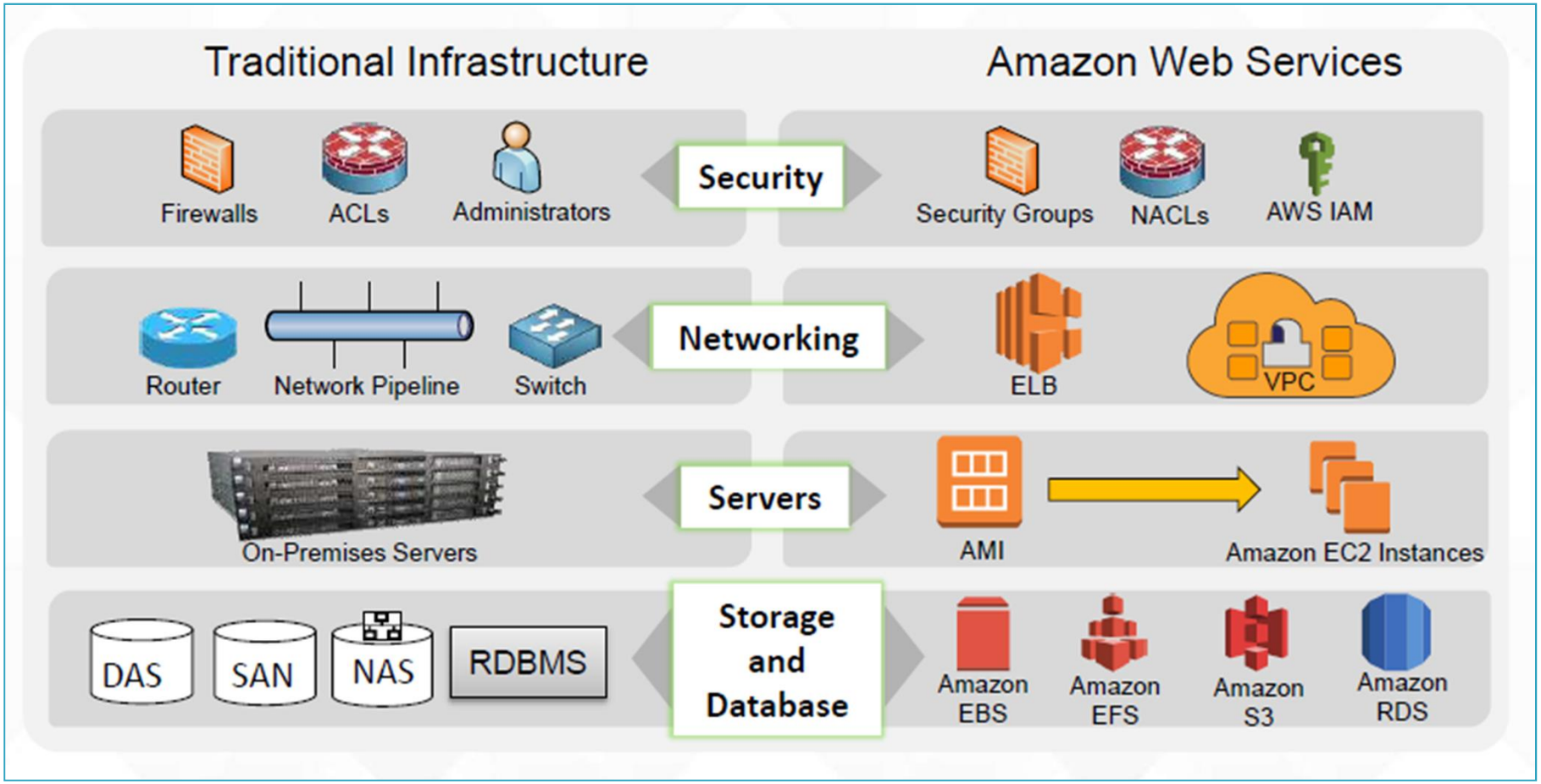


AWS Cloud Layers



AWS Services Overview

AWS Core Infrastructure and Services



AWS Global Infrastructure

https://aws.amazon.com/about-aws/global-infrastructure/

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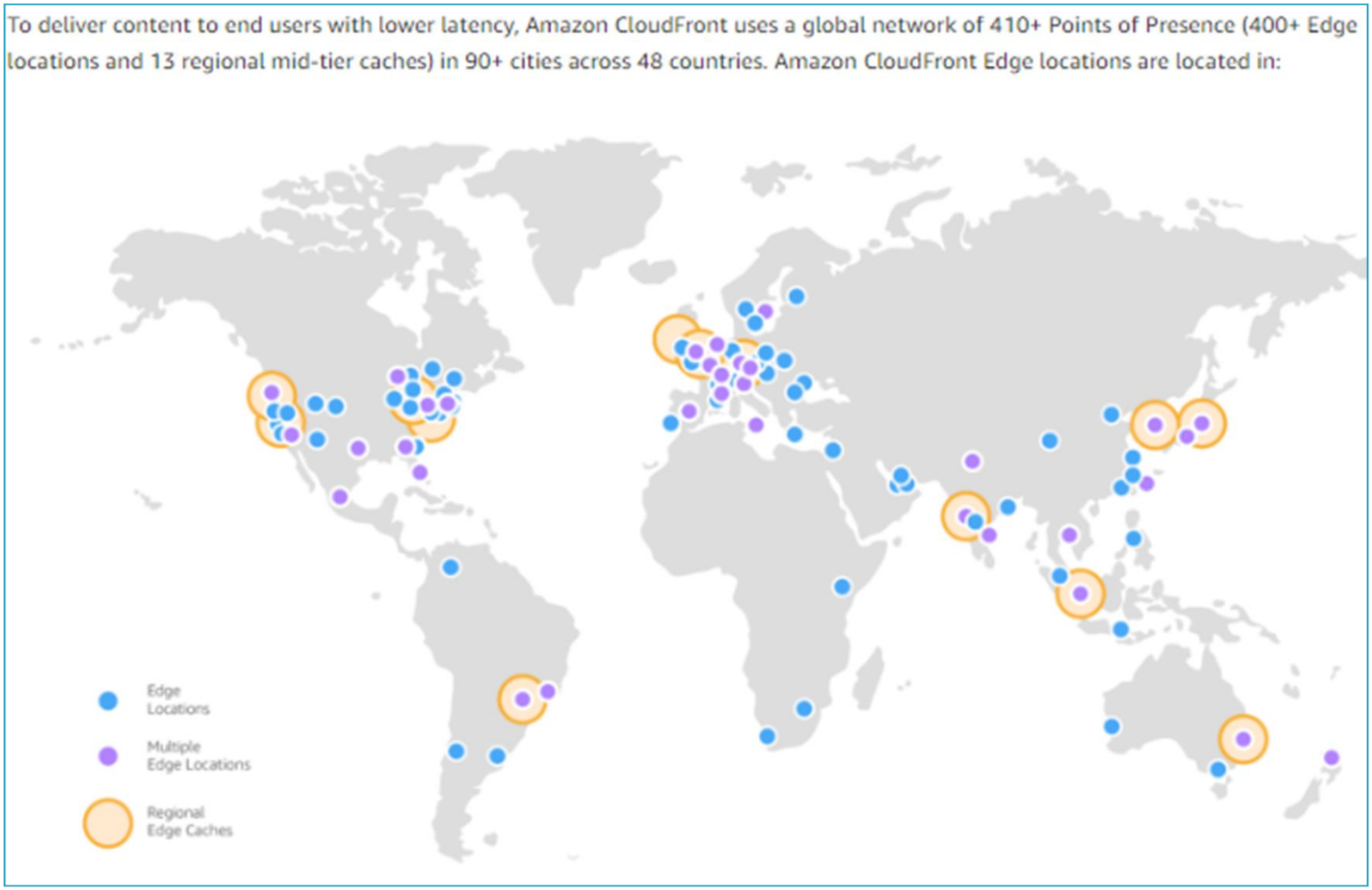


https://aws.amazon.com/cloudfront/features/

AWS Global Infrastructure

REGIONS:

- Geographic Locations
- Consists of at least two Availability Zones (Azs)

AVAILABILITY ZONES:

- Clusters of Data Centers
- Isolated from failures in other Availability Zones

What about "Data Locality"?

- Customer chooses where to place data
- AWS regions are geographically isolated by design
- Data is not replicated to other AWS regions and doesn't move unless you choose to move it

AWS Global Infrastructure

At least 2 AZs per region.

Examples:

US East (N. Virginia)

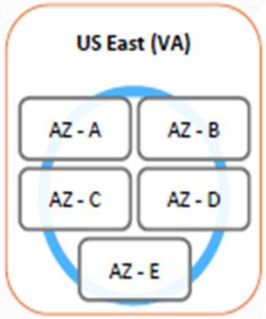
us-east-1a

us-east-1b

us-east-1c

us-east-1d

us-east-1e

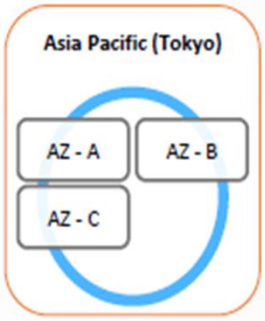


Asia Pacific (Tokyo)

ap-northeast-1a

ap-northeast-1b

ap-northeast-1c



AWS Global Infrastructure

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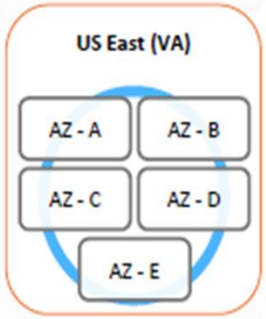

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ap-northeast-1a

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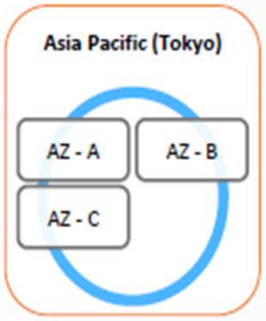
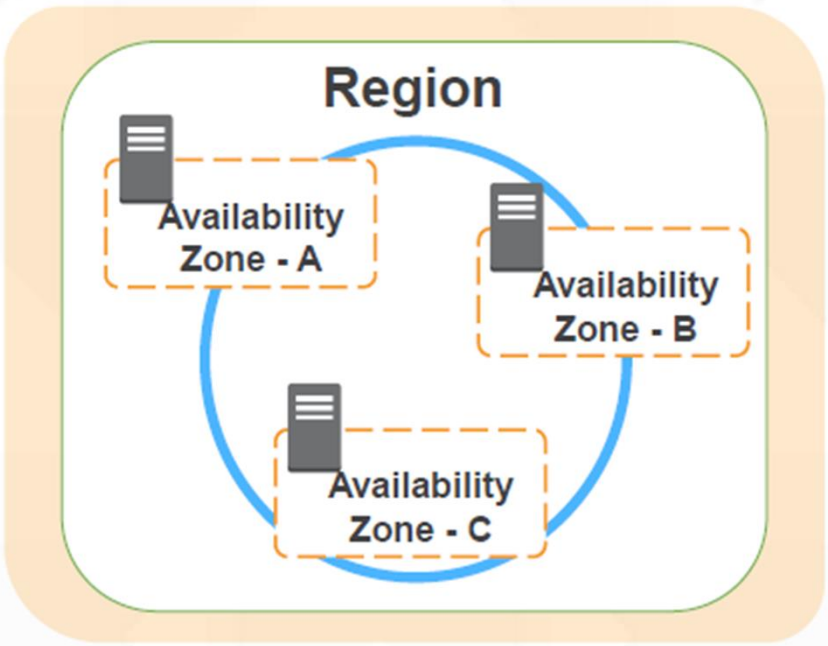


High Availability with Multi-AZ



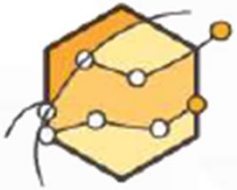
Benefits of AWS Cloud Computing

Trade capital expense for variable expense.

Increase speed and agility.

Benefit from massive economies of scale.

Stop spending money on running and maintaining data centers.



Stop guessing capacity.

Go global in minutes.

AWS Customers

Over 1 million **Active** customers in 190 countries

Create AWS Account

https://aws.amazon.com/free

Thank You!