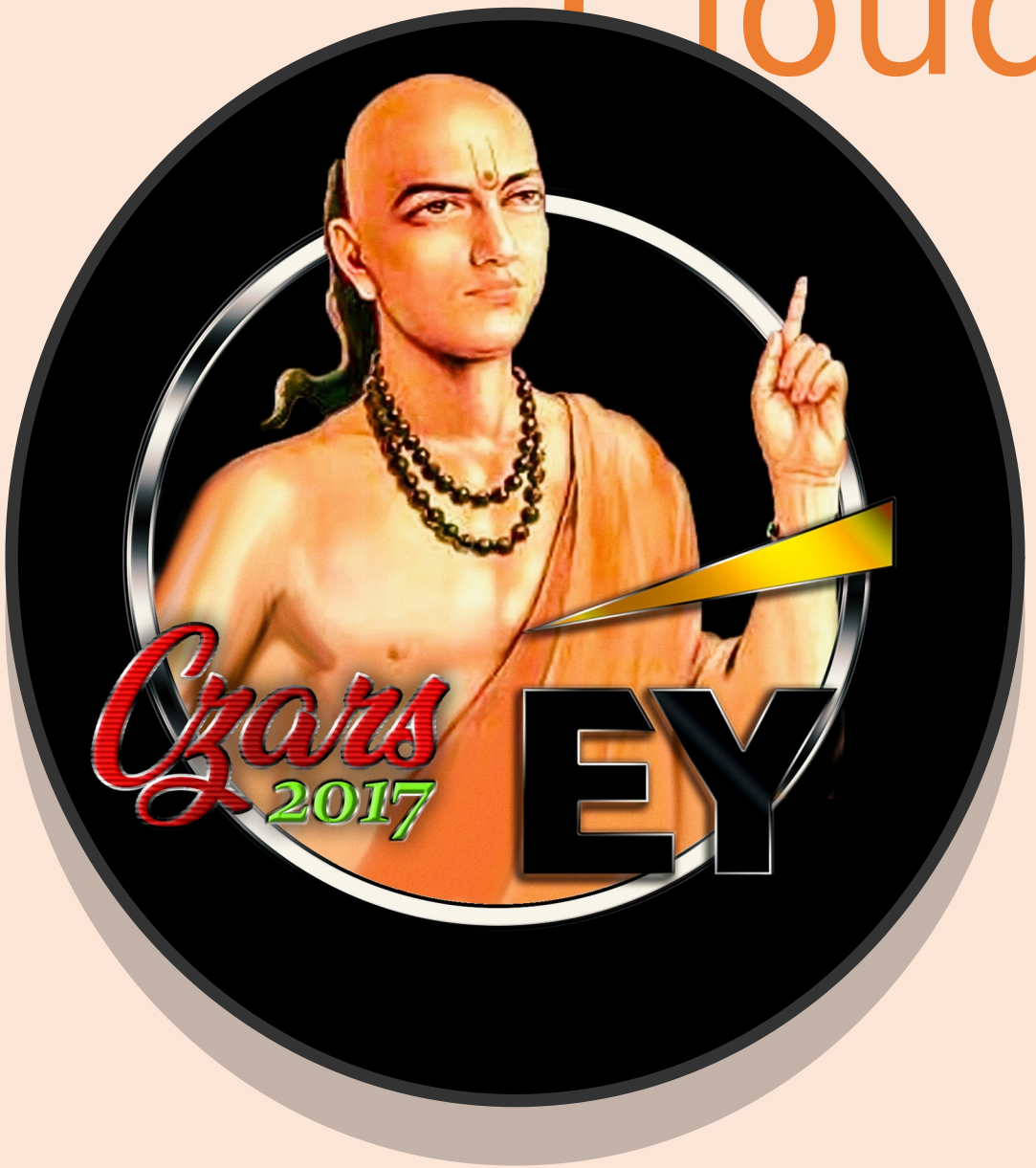
Cloud computing



Presented by:K.HARSH Singh
(EY STUDENT)

PART-1

- What is cloud computing?
  - A cloud service has three distinct characteristics:
  - Cloud computing deployment models
    - Public cloud
    - Private cloud
    - Hybrid cloud
  - Cloud computing characteristics and benefits
  - Types of cloud computing services
    - Infrastructure-as-a-Service (IaaS)
    - Platform-as-a-Service (PaaS)
    - Software-as-a-Service (SaaS)
  - Security

What is cloud computing in simple terms?

- In the simplest terms, cloud computing means storing and accessing data and programs over the internet instead of your computer's hard drive.

DEFINITION

- *AMAZON*

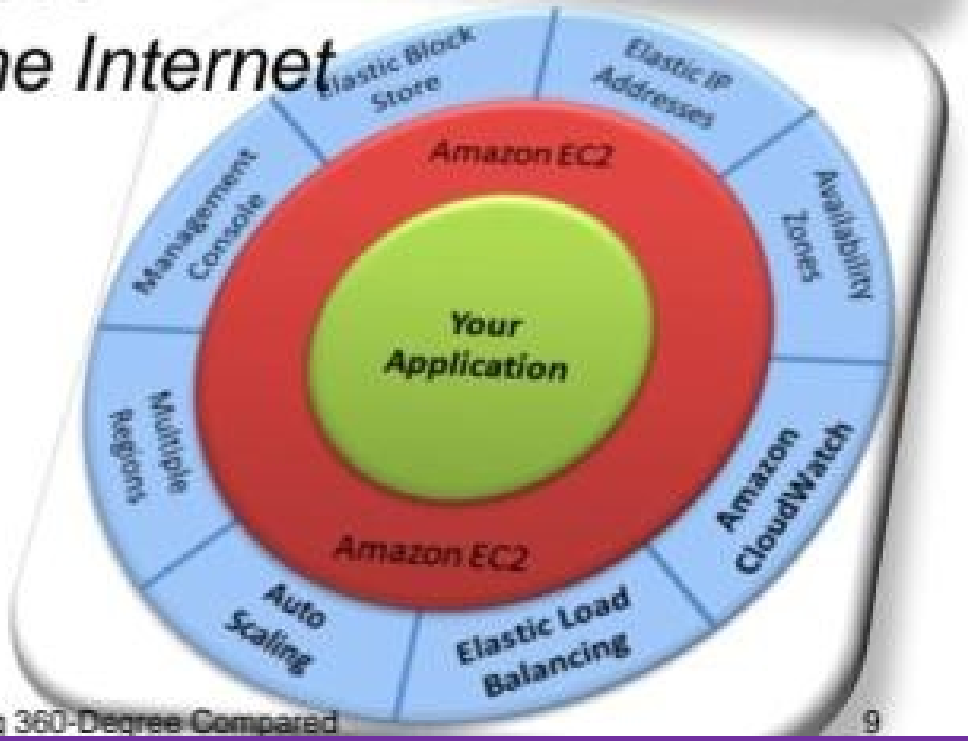
  "Cloud Computing refers to the on-demand delivery of IT resources via the Internet with pay-as-you-go pricing"

- *WIKIPEDIA*

  "phrase used to describe a variety of computing concepts that involve a large number of computers connected through a real-time communication network such as the Internet"

- *A large-scale distributed computing paradigm driven by:*
  1. *economies of scale*
  2. *virtualization*
  3. *dynamically-scalable resources*
  4. *delivered on demand over the Internet*

Clouds ~ hosting



An Example of an Application in the Cloud

- Animoto
  - Makes it r… te videos with …

Characteristics of cloud services

- A cloud service has three distinct characteristics:
- It is sold on demand, either by minutes or hours.
- It is elastic – A user can assign any amount of work that he/she wants to.
- The services are fully managed by the provider. You just need a laptop and a good Internet connection.
- Significant innovations in virtualization and distributed computing, as well as improved access to high-speed Internet, have accelerated interest in cloud computing

- **Public cloud**
-

  In the public cloud model, a third-party cloud service provider delivers the cloud service over the Internet. Public cloud services are sold on-demand, typically by the minute or hour, though long-term commitments are available for many services. Customers only pay for the CPU cycles, storage or bandwidth they consume.

Cloud deployment models

a.public

B.hybrid

C.private

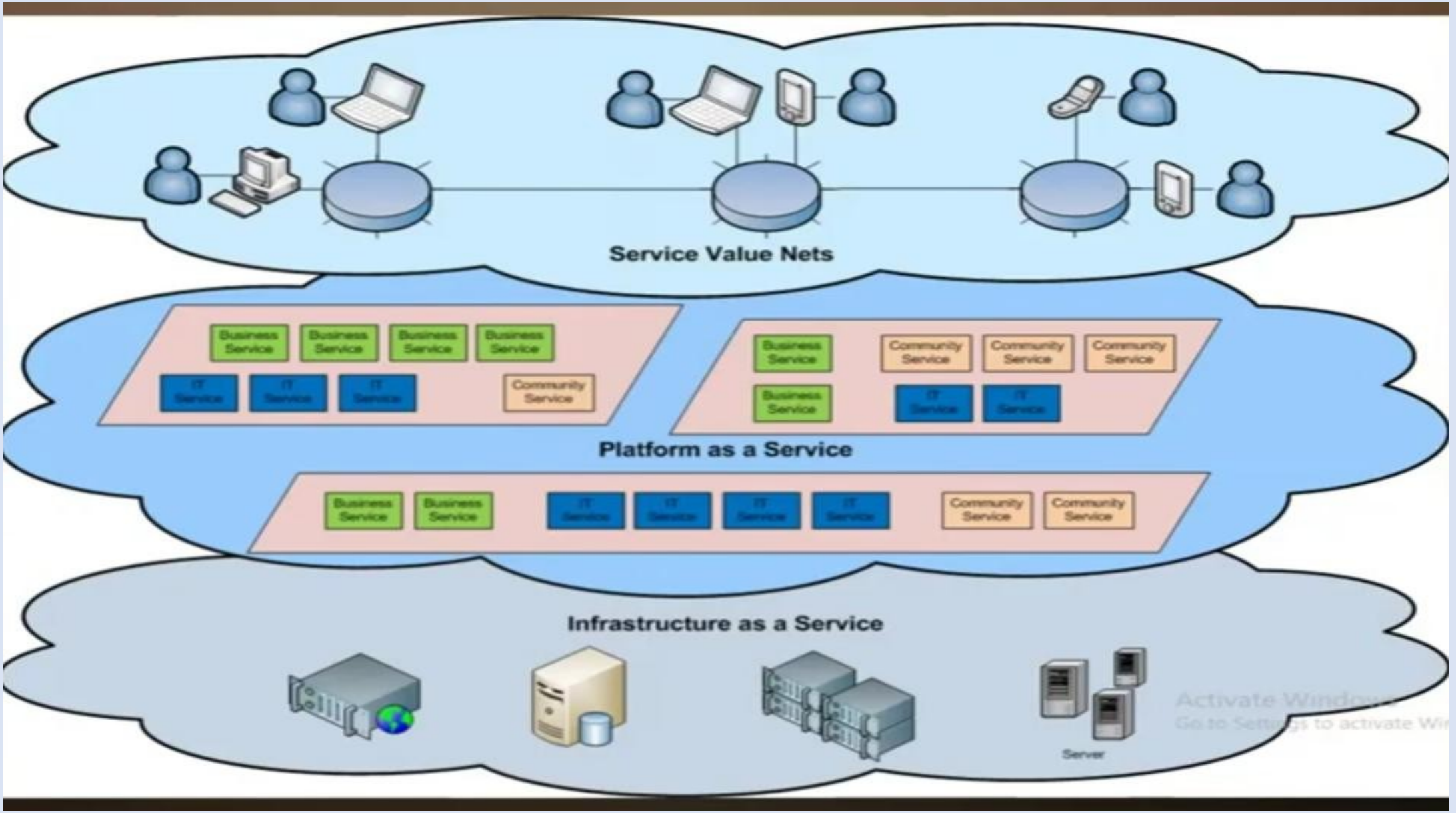
- **Private cloud**
-

  Private cloud services are delivered from a business's data center to internal users. This model offers the versatility and convenience of the cloud while preserving the management, control, and security common to local data centers.
- Internal users may or may not be billed for services through IT chargeback. Common private cloud technologies and vendors include VMware and OpenStack

- **Hybrid cloud**
-

  A hybrid cloud is a combination of public cloud services and an on-premises private cloud, with orchestration and automation between the two. Companies can run a mission-critical workload or sensitive applications on the private cloud and use the public cloud to handle workload bursts or spikes in demand.
- The goal of a hybrid cloud is to create a unified, automated, scalable environment that takes advantage of all that a public cloud infrastructure can provide, while still maintaining control over mission-critical data.

- Some of the benefits of cloud computing are:
- **Self-service provisioning:** End users can spin up compute resources for almost any type of workload on-demand. This eliminates the traditional need for IT administrators to provision and manage compute resources.
- **Elasticity:** Companies can scale up as computing needs increase and scale down again as demands decrease. This eliminates the need for massive investments in local infrastructure, which may or may not remain active.
- **Pay per use:** Compute resources are measured at a granular level, enabling users to pay only for the resources and workloads they use.
- **Workload resilience:** Cloud service providers often implement redundant resources to ensure resilient storage and to keep users' important workloads running often across multiple global regions.
- **Migration flexibility:** Organizations can move certain workloads to or from the cloud or to different cloud platforms – as desired or automatically for better cost savings or to use new services as they emerg


Service Value Nets
Business Service
Business Service
Business Service
Business Service
IT Service
IT Service
IT Service
Community Service
Business Service
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Business Service
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Platform as a Service
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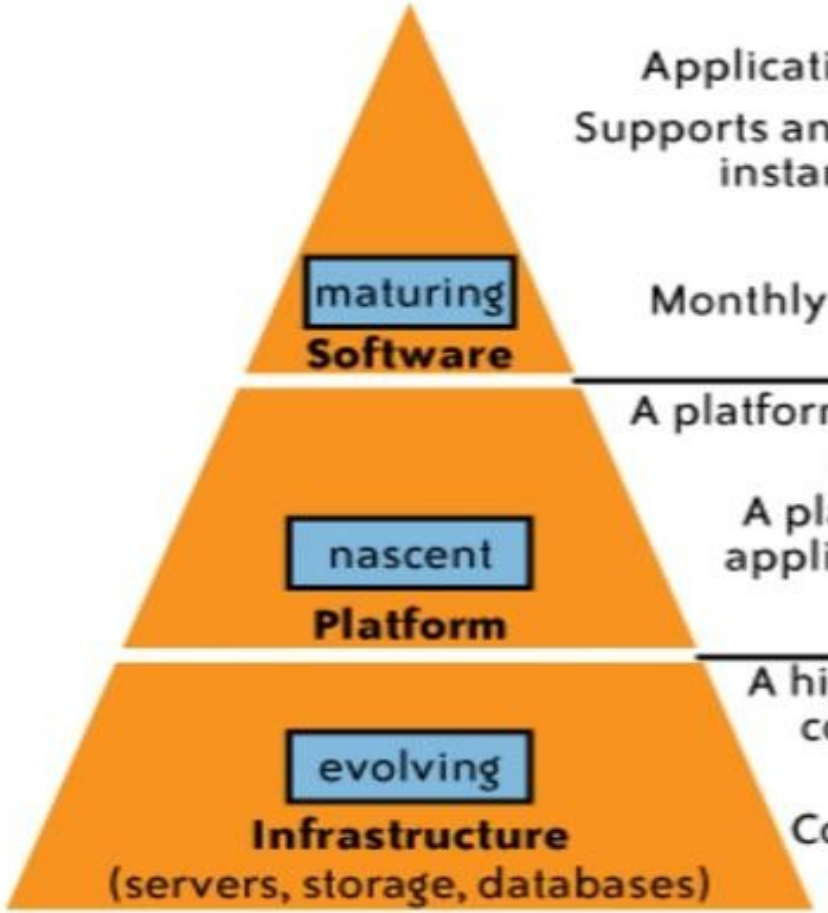
IT Service
Community Service
Community Service
Infrastructure as a Service
Server

Delivery Models



	Definition	Examples
Software	Applications that are enabled for the cloud Supports an architecture that can run multiple instances of itself regardless of location Stateless application architecture Monthly subscription-based pricing model	• Google Docs • MobileMe • Zoho
Platform	A platform that enables developers to write applications that run on the cloud A platform would usually have several application services available for quick deployment	• Microsoft Azure • Google App Engine • Force.com
Infrastructure (servers, storage, databases)	A highly scaled redundant and shared computing infrastructure accessible using Internet technologies Consists of servers, storage, security, databases, and other peripherals	• Amazon EC2, S3, etc. • Rackspace Mosso offering • Sun's cloud services • Terremark cloud offering

- Types of cloud computing services
-

  Although cloud computing has changed over time, it has been divided into three broad service categories:
- **Infrastructure-as-a-Service (IaaS)**
-

  IaaS providers, such as AWS, supply a virtual server instance and storage, as well as APIs that enable users to migrate workloads to a VM. Users have allocated storage capacity and can start, stop, access and configure the VM and storage as desired.
- IaaS providers offer small, medium, large, extra-large and memory- or compute-optimized instances, in addition to customized instances, for various workload needs.

- **Platform-as-a-Service (PaaS)**
-

  In the PaaS model, cloud providers host development tools on their infrastructures. Users access these tools over the Internet using APIs, web portals or gateway software. PaaS is used for general software development and many PaaS providers host the software after it's developed. Common PaaS providers include Salesforce's Force.com, AWS Elastic Beanstalk, and Google App Engine.

- **Software-as-a-Service (SaaS)**
-
  SaaS is a distribution model that delivers software applications over the Internet — these applications are often called web services.
- Users can access SaaS applications and services from any location using a computer or smartphone that has Internet access.
- An example of a SaaS application is the VLC media player, used for media access and streaming videos online.

Security:

- Security remains a primary concern for businesses contemplating cloud adoption — especially public cloud adoption. Public cloud service providers share their underlying hardware infrastructure between numerous customers, as the public cloud is an environment where many users exist and operate.
- This environment demands copious isolation between logical compute resources. At the same time, access to public cloud storage and compute resources is guarded by account login credentials.
- Several organizations bound by complex regulatory obligations and governance standards are still hesitant to place data or workloads in the public cloud for fear of outages, loss or theft.

- What is Amazon Web Services (AWS)
- AWS's development
- AWS statistics
- Top companies using AWS
- Why companies use cloud computing
- Scope of cloud computing
- AWS vs Azure vs GCP:
  - Amazon Web Services
  - Microsoft Azure
  - Google Cloud Platform
- Strategies:
  - Amazon
  - Microsoft
  - Google

PART-2

The Amazon Web Services (AWS), Google Cloud Platform (GCP)

The Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure are among the top players in the world of cloud computing.

SaaS Examples

salesforce.com
Success On Demand.

NETSUITE
ONE SYSTEM. NO LIMITS.

postini

Microsoft Online Services: Business Productivity Online Suite

SharePoint Online
Office Communications Online
Exchange Online
Office Live Meeting

facebook

- What is Amazon Web Services (AWS)?
-
  Amazon Web Services (AWS) is a comprehensive, evolving cloud computing platform provided by Amazon. It provides a mix of IaaS, PaaS, and SaaS offerings.
- AWS launched in 2006 from the internal infrastructure that Amazon.com built to handle its online retail operations. AWS was one of the first companies to introduce a pay-as-you-go cloud computing model that scales to provide users with computing, storage or throughput as needed.

IaaS Examples

- Amazon Web Services provides services from dozens of data centers spread across availability zones (AZs) in regions across the world. An AZ represents a location that typically contains multiple physical data centers, while a region is a collection of AZs in geographic proximity connected by low-latency network links.
- An AWS customer can spin up virtual machines (VMs) and replicate data in different AZs to achieve a highly reliable infrastructure that is resistant to failures of individual servers or an entire data center

- AWS' strategy was evident at its re:Invent conference. They introduced a package of services, new products, and developer goodies that was hard to track. There is a good growth slope in the field of artificial intelligence. As AWS becomes a machine learning platform, it also pitches up its sales.
- In the first quarter of 2019, Amazon's profits were again powered by AWS. CFO Brian Olsavsky said AWS now has an annualized run rate of over $30 billion. He highlighted AWS's customer wins for the quarter, including deals with Volkswagen, Ford, Lyft, and Gogo

CLOUD STORAGE PROVIDING COMPANIES

AMAZON POPULAR AND FASTEST SERVICES:

- Popular services
  The cloud platform's popular services include **Amazon Virtual Private Cloud, AWS Data Transfer, Amazon Simple Storage Service, Amazon Relational Database Service, and Amazon Simple Email Service.**
- Fastest services
  Amazon's fastest services include **Amazon Athena, Amazon Elastic Container Service for Kubernetes, AWS OpsWork, Amazon EC2 Container Service, and GuardCuty**

- AWS’s development
- Amazon Web Services is launching its analytics and forecasting services. Hence it is going to be a full business package.
- AWS’ reach continues to expand in multiple directions, but perhaps the one to watch the most is the database market. AWS is capturing more database workloads and has emphasized its customer wins. A move to launch a fully managed document database takes direct aim at MongoDB. Should AWS capture more enterprise data, it will be entrenched for decades to come as it continues to evolve services and sell them to you.

AWS STATISTICS:

- Amazon Web Services (AWS) has an estimated 2018 annual revenue of **$25.65 billion**.
- For AWS, 2019 is a year of investment.
- Since the establishment of AWS, it still maintains a very strong growth rate and satisfactory delivery to the customers. The company primarily aims towards providing customers an incredible experience.
- AWS is the leader in infrastructure-as-a-service and it is also excelling in artificial intelligence, augmented reality, and analytics. AWS is far more than the IaaS platform these days. It grew 45% in the fourth quarter of 2018, and they have maintained this since last year.

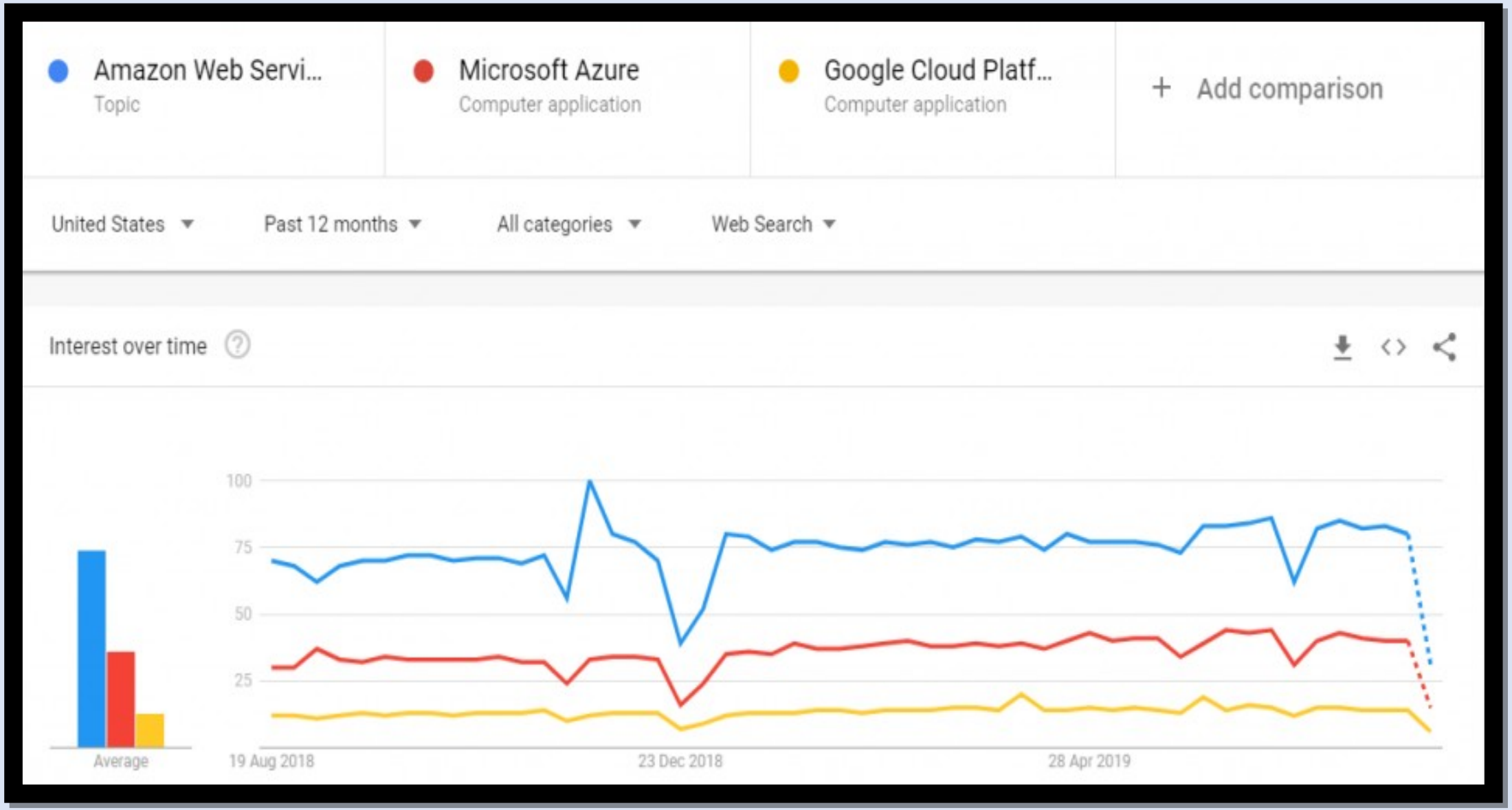
- Top companies using AWS
- Netflix – $19 million
- Twitch – $15 million
- LinkedIn – $13 million
- Facebook – $11 million
- Turner Broadcasting – $10 million
- BBC – $9 million
- Baidu – $9 million
- ESPN – $8 million
- Adobe – $8 million

- Why companies use cloud computing
-

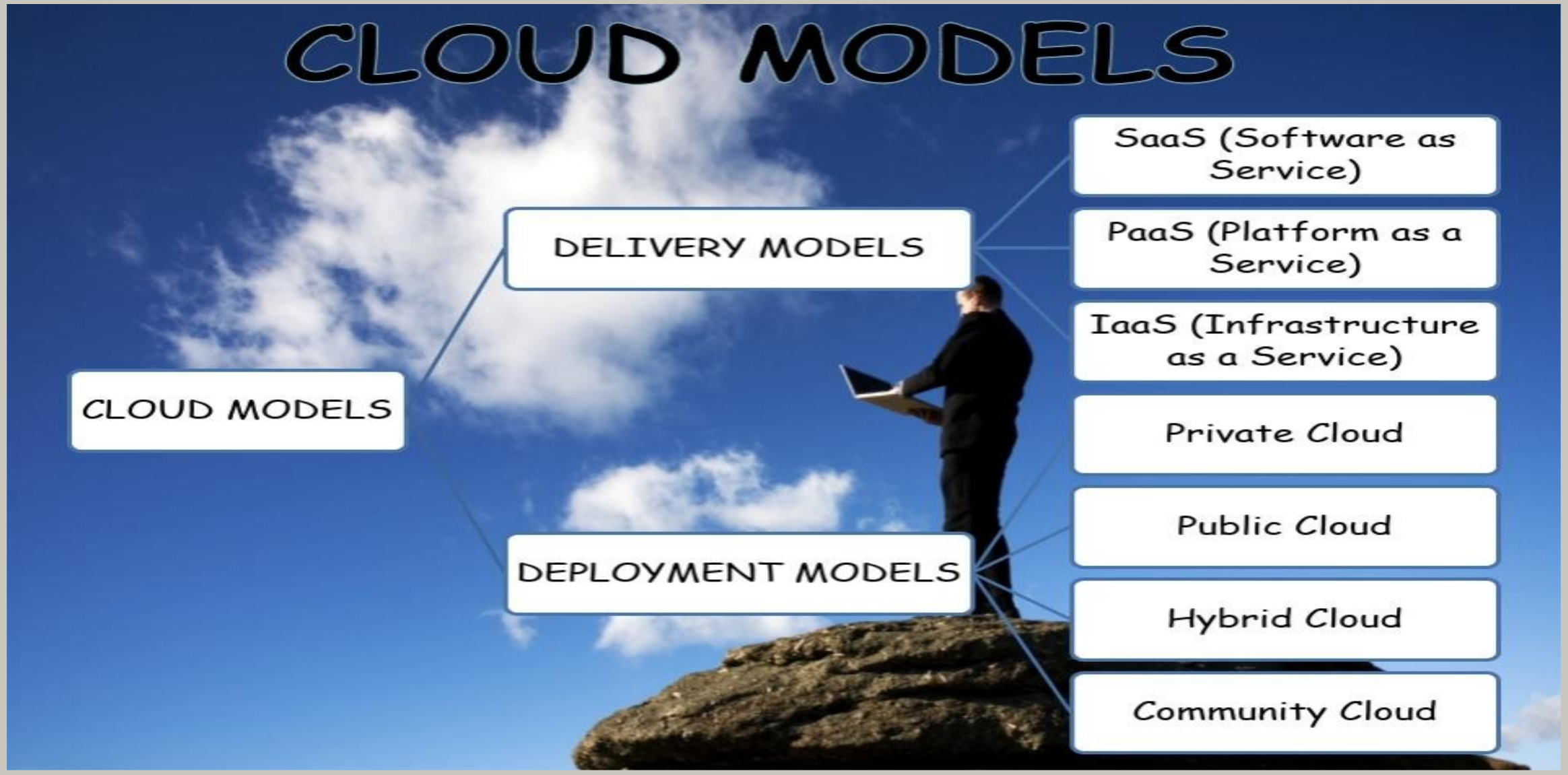
  Taking about business, cloud computing finds good applications there. It could potentially lower expenses on hardware and IT. Also, it makes upgrades flawless.
- For individuals, the cloud acts as a backup store and they don’t have to fear about any unexpected hard drive crash.
- Cloud computing is also integral to the Internet of Things (IoT), which brings everything from cars and home appliances to medical and farm equipment into the connected world.

- Scope of cloud computing
-
  This is the reason why many small businesses and tech giants are opting for cloud computing technologies. Matter of fact, they are including these services at the inception.
- So this means that these companies need cloud-computing engineers. If you want to make your career in this, if all goes well, there is a high potential for growth, both financially and professionally

- AWS vs Azure vs GCP: What's going on?



Strategies


CLOUD MODELS
CLOUD MODELS
DELIVERY MODELS
DEPLOYMENT MODELS
SaaS (Software as Service)
PaaS (Platform as a Service)
IaaS (Infrastructure as a Service)
Private Cloud
Public Cloud
Hybrid Cloud
Community Cloud

- Amazon

AWS had the fastest growth in 2018. Its sales jumped to an awesome 50%, making a total of $26 billion.

- Cloud computing is on the rise, and AWS is topping the charts since its inception in 2006. Amazon depends heavily on the cloud. The cloud comprises of 60% of Amazon's total operating income of $12.4 billion in 2018, despite sales comprising only 11% of the company's total revenue
- Amazon's non-cloud business had an operating income of $5.1 billion, lesser than it's cloud operating income. Also, the operating margin was too low, only 2.4%.
- By now, you can clearly observe that Amazon's corporate business relies on its cloud services. Should the cloud services fail, the e-commerce giant will need to find a new growth engine quickly to drive the profits of the company.
- It is estimated that AWS will contain 52% of the cloud market, with Azure having 21% and Google's is 18%

- Microsoft:
  Microsoft's cloud growth has been impressive, but the business is part of a more balanced business portfolio compared to Amazon. Operating margins for Microsoft were about 35.7%, up about 200 basis points from the year prior. Microsoft's two other units – **Productivity and Business Processes** and **More Personal Computing**. They represent 32% and 38% respectively. The lower percentage of operating income may give Microsoft the ability to be more patient with its approach to growing its cloud business. However, Microsoft needs to continue growing cloud sales to avoid total revenue from halting or slowing too much.

- Google:
  For Google, cloud computing is not a major contributor to its business and is not likely to be anytime soon. Google makes around $4.7 billion a year with its cloud services. The company wants to speed up work on the cloud platform. In April 2019, Google announced its new service named Anthos. This service allows its customers to move their computing workloads between its cloud platform, their own data centers, and the competing clouds of Amazon and Microsoft.

Thank you!