Cloud Computing

CT-7

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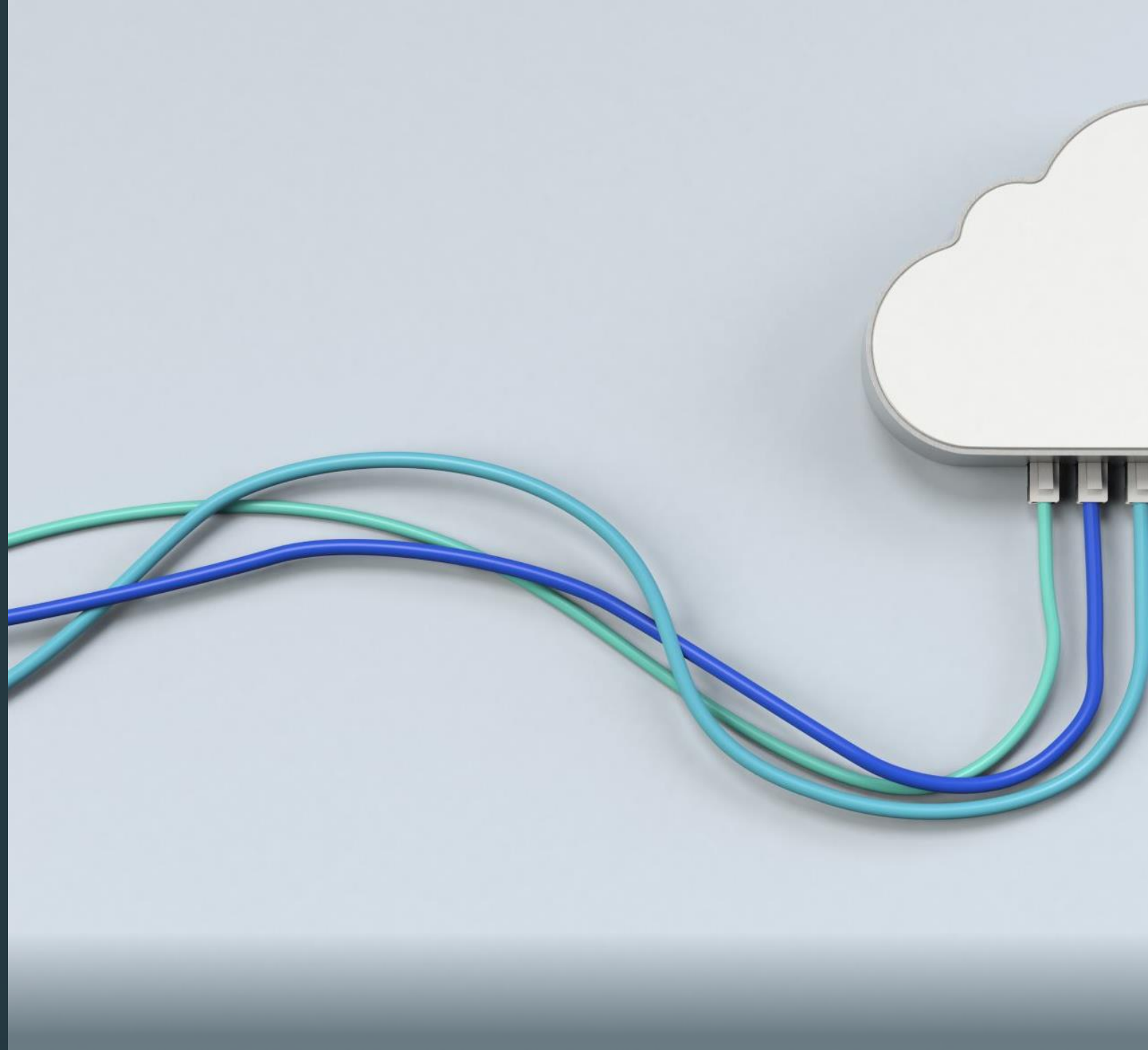


What is Cloud Computing?

- Cloud computing is the delivery of different services through the Internet.
- These services can include different applications through a Software as a Service model.
- Other services provide environments and hardware in Platform and Infrastructure as a Service, respectively.
- The practice of using a network of remote servers hosted on the internet to store, manage, and process data, rather than using a local server or a personal computer.
- While using cloud computing , users can access software and applications from wherever they may need.

Development models

Public Cloud

Acessible to Everyone

Private Cloud

Owned by one peron/ entity

Hybrid Cloud

Rent a private cloud

PUBLIC CLOUD

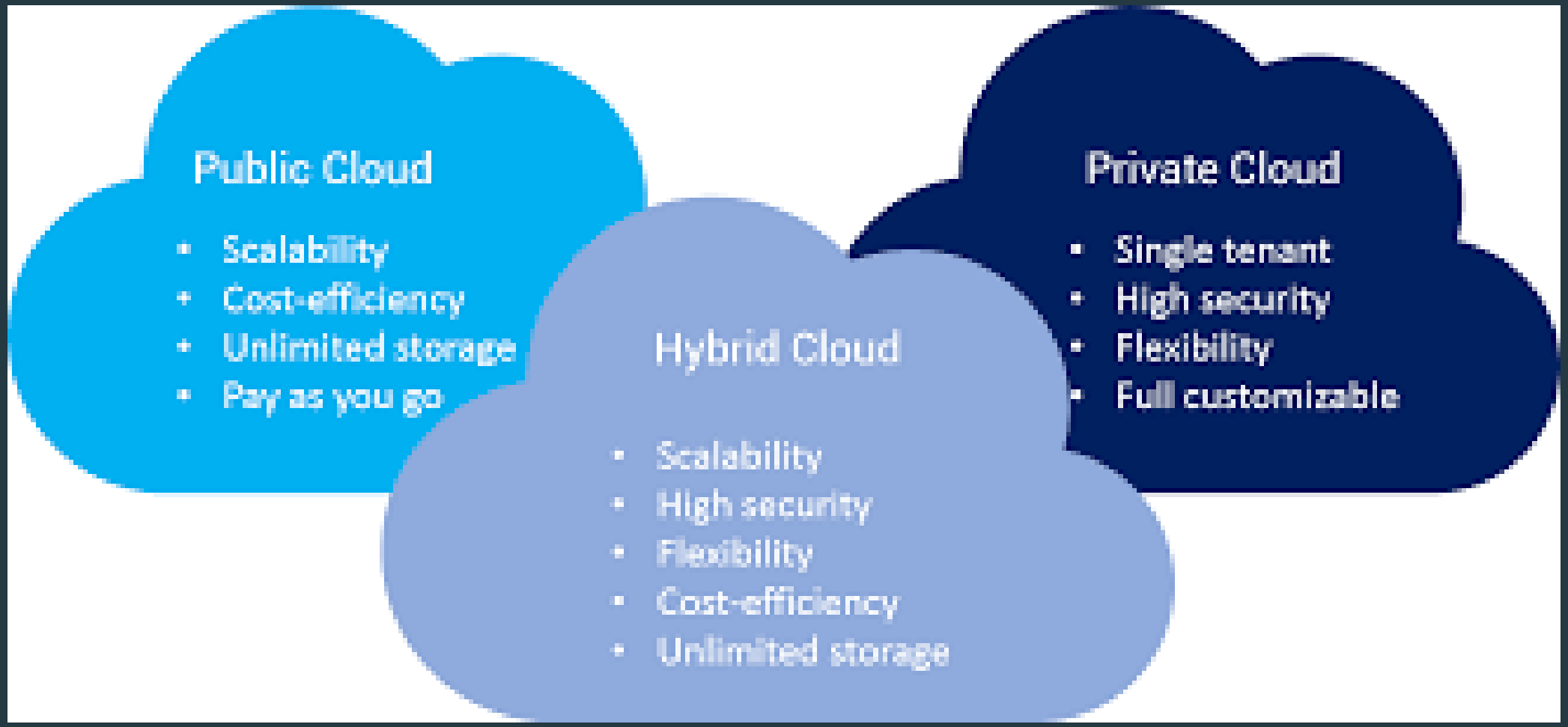
- The Cloud infastructure is made by cloud provider and is made available to the general public over the internet
- Examples: AWS , Microsoft Azure, IBM's Blue Cloud, Suncloud

PUBLIC CLOUD

- Is exclusively operated by a single organization.
- Can be managed by the organization or by a third party
- Can exist on-site or off-site.

HYBRID CLOUD

- Consists of a a mixture of both functionalities
- Example: Federal agencys use tprivate clouds when sesitive materials, but use public clouds to share data to other government departments or the general public


Public Cloud
Scalability
Cost-efficiency
Unlimited storage
Pay as you go
Private Cloud
Single tenant
High security
Flexibility
Full customizable
Hybrid Cloud
Scalability
High security
Flexibility
Cost-efficiency
Unlimited storage

Software as a Service

- SaaS refers specifically to business software applications that are delivered on demand via a cloud provider instead of being deployed on local platforms.
- The main way to identify a SaaS model is that the customers device does not perform the logic in the application, it is handled on the providers end allowing companies to save money on hardware because there is less performance required.
- These services are generally a subscription-based payment model where a company will only pay for the amount of subscriptions they need and this can change month to month to keep costs down by not paying for unneeded access.
- For example, if a company is working on a large project and needs a large amount of editing software for several teams to use they can easily buy licenses for said editing software but after the project the company doesn't need the software anymore and can reduce the licenses back down to what is normal for maintaining their active projects.

Platform as a Service

- Platform as a Service is a model that allows customers to develop, run, and manage applications without the complexity of building and maintaining the infrastructure typically associated with developing and launching an application.
- This type of service is described by having the customer be able to use any software they prefer to design and develop an application and then have the provider manage and maintain the hardware required to host and run the application through its lifecycle.
- This model saves a company money by reducing the cost of running an app after development by shifting the workload onto the provider to build up the servers and manpower required to maintain expensive equipment to run applications.
- A prime example of this is the concept of server hosting in video games, rarely does a developer host the game servers in house, instead they contract out to hosting companies that already have the infrastructure and challenges taken care of a well known company that does this exact thing is Nitrado.

History of Cloud Computing

- Cloud computing started as early as the 1960's.
- In the 1900's is where it really took off, when companies would start to use a virtual private network (VPN).
- In August 2006, Amazon created subsidiary Amazon Web Services and introduced its Elastic Compute Cloud, this was the first major company to start.
- In April 2008, Google released the beta version of Google App Engine.

Cloud Computing in 2020

- Cloud computing is modern computing itself, where everything is a service ; that can connect and combine with other services to meet and infinite number of needs.
- IDG's just-published 2020 Cloud Computing Survey of 551 tech buyers; 59% of respondents said their organizations would be mostly or all in the cloud within 18 months and already about 32 percent of their organizations' budgets are being spent on cloud computing.
- Serverless computing platforms are rising currently, which enables developers to assemble services from functions stored in a shared repository – without needing to think about underlying infrastructure at all.
- The Cloud is where the future of computing will be built in.

Why Cloud computing ?

ON PREMISE

- Lack of Flexibility
- No Automatic Updates
- Less Collaboartion
- Data cannot be accessed remotely
- Longer Implemetation time
- Bad data Security
- Higher costs, less scalabilty
- Huge Space for servers

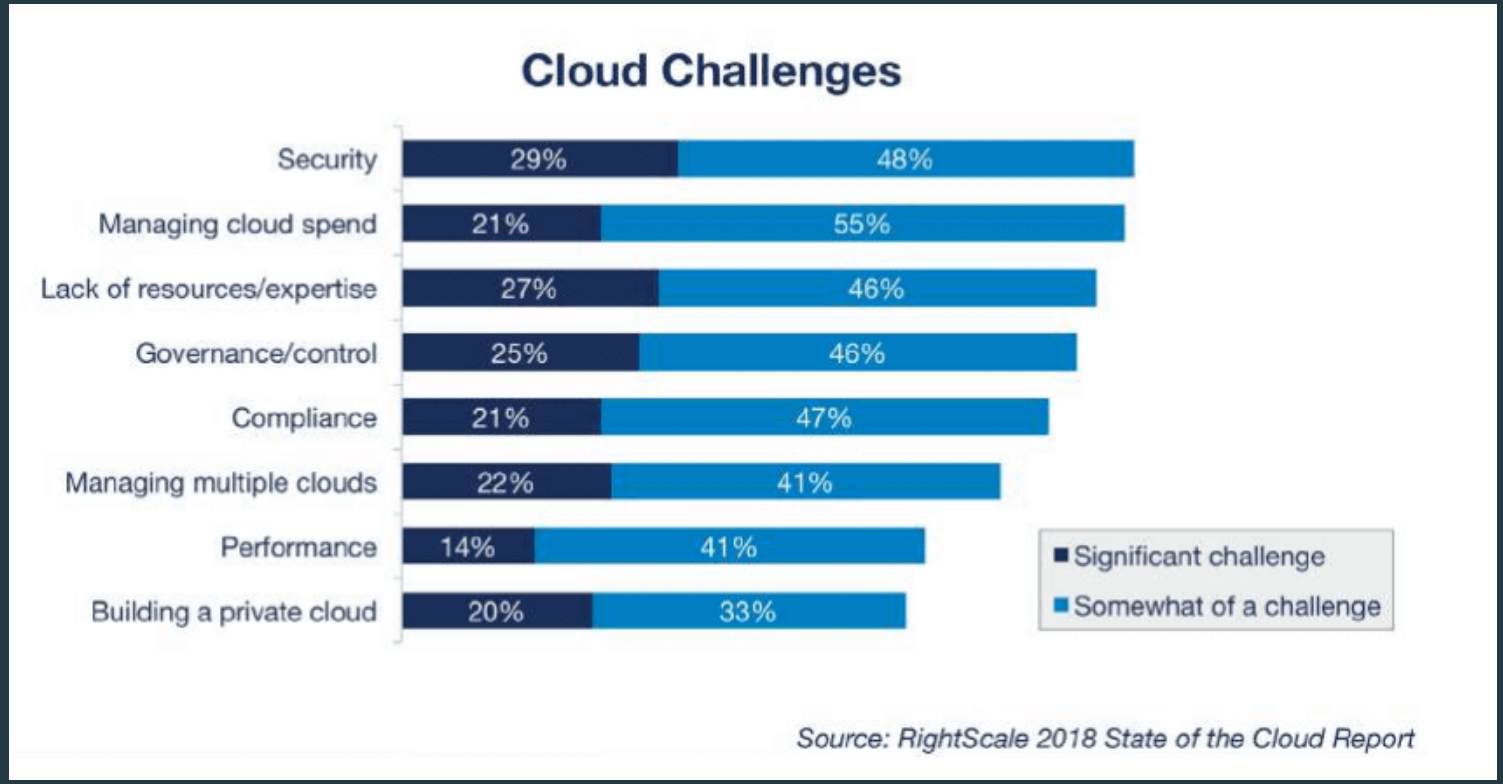
CLOUD COMPUTING

- High Flexibility
- Automatic Software Updates
- Teams can collaborate from far locations
- Data can be accessed and shared anywhere over the internet
- Rapid implementation
- Better Data Security
- Pay for what you use
- No Server space required

Issues With Cloud Computing

What do professionals think ?

- In January 2018, RightScale conducted its annual State of the Cloud Survey on the latest cloud trends. They questioned 997 technical professionals across a broad cross-section of organizations about their adoption of cloud infrastructure.
- Their results were kindly put into a readable table



Security issues

Security has a been a valid and primary issue since the beginning of cloud computing

One big issue being that you cannot see the location where your data is being stored or processed

This increases the cloud computing risks that can arise during the implementation or management of the cloud.

Storing data and important files on external service providers always opens up risks

Example: Code Space and the hacking of their AWS EC2 console, which led to data deletion and the eventual shutdown of the company.

Downtime

- While this may be seen as something that might not be that influential but can have serious financial losses.
- One of the biggest disadvantages.
- Since cloud computing systems are internet-based, service outages are always an unfortunate possibility and can occur for any reason.
- No organization is immune especially when important business services cannot afford to be interrupted.
- Example: An outage on Amazon Web Services in 2017 cost publicly traded companies up to $150 million dollars.

Migration

- One of the main cloud computing industry challenges in recent years concentrates on migration. This is a process of moving an application to a cloud. An although moving a new application is a straightforward process, when it comes to moving an existing application to a cloud environment, many cloud challenges arise

- Some if the issues include;

1. Extensive trouble shooting
2. Security Challenges
3. Slow data migration
4. Application Downtime
5. Cutover Complexity

Governance/Control

- In today's cloud-based world, IT does not always have complete control over infrastructure delivery, provisioning, and operation.
- This has increased the difficulty of IT to provide the necessary governance, compliance, risks, and data quality management.
- To mitigate the various risks and uncertainties in transitioning to the cloud, IT must adapt its traditional IT governance and control processes to include the cloud.