

The background features a light blue and white color palette with stylized clouds. In the center, there are several blue gears of different sizes, some with arrows indicating a clockwise flow. A dotted blue line forms a circle around the gears. Two hands, one from the left (tan skin, blue sleeve) and one from the right (brown skin, grey sleeve), are reaching towards the center. A laptop is visible in the background on the right side.

# **Understanding and Working with Multi-Cloud Environments**



Every  
Industry  
needs  
Software for  
efficiency in  
their  
workflow

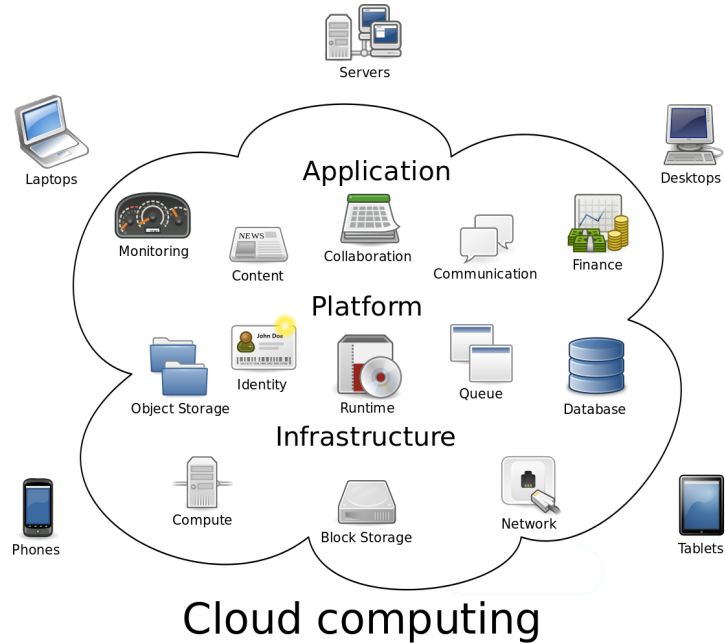
# Operational Complexities

- Simplify
- Standardise
- Scale
- Speed
- Save

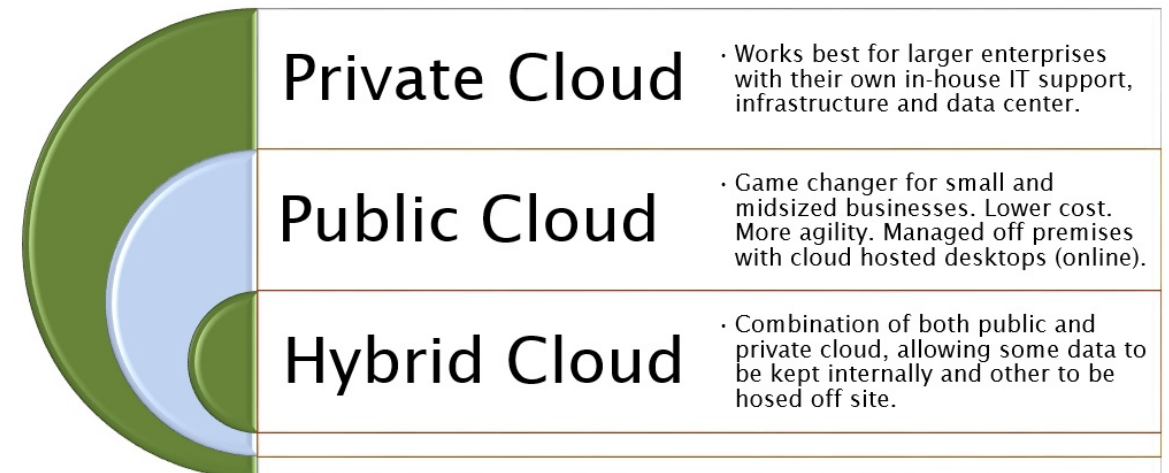


# Cloud Computing

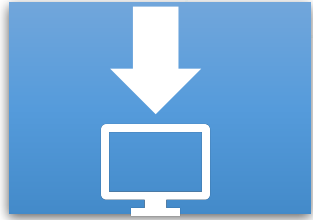
**Cloud computing** is an information technology (IT) paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet.



## Deployment Models



# Cloud Computing – Service Models



**SAAS**

Software as a Service

- Email
- CRM
- Collaborative
- ERP

**Consume**

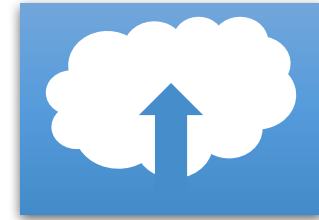


**PAAS**

Platform as a Service

- Application development
- Decision Support
- Web
- Streaming

**Build on it**



**IAAS**

Infrastructure as a Service

- Caching
- Legacy
- Networking
- Security

**Migrate to it**



# The Amazon S3 Service Disruption in the Northern Virginia (US-EAST-1) Region

## Public Cloud Outage









Example: Amazon S3, Feb 2017

- ~150K websites affected
- ~121K domains
- Quora, Expedia, Trello and several others
- Impacted AWS status indicators
- “Outage caused by Human Error”

**No cloud is Immune.** Other public and private clouds have similar issues from time to time



After that, the status page of S3 showed this image:

Recent Events	Details
 Amazon API Gateway (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon AppStream 2.0 (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon Athena (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon CloudSearch (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon CloudWatch (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon Cognito (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon EC2 Container Registry (N. Virginia)	Increased Error Rates <a href="#">more</a>
 Amazon Elastic Compute Cloud (N. Virginia)	Increased Error Rates <a href="#">more</a>

# A Bad Christmas for Netflix



■ Affected areas due to downtime

# Multi-Clouds

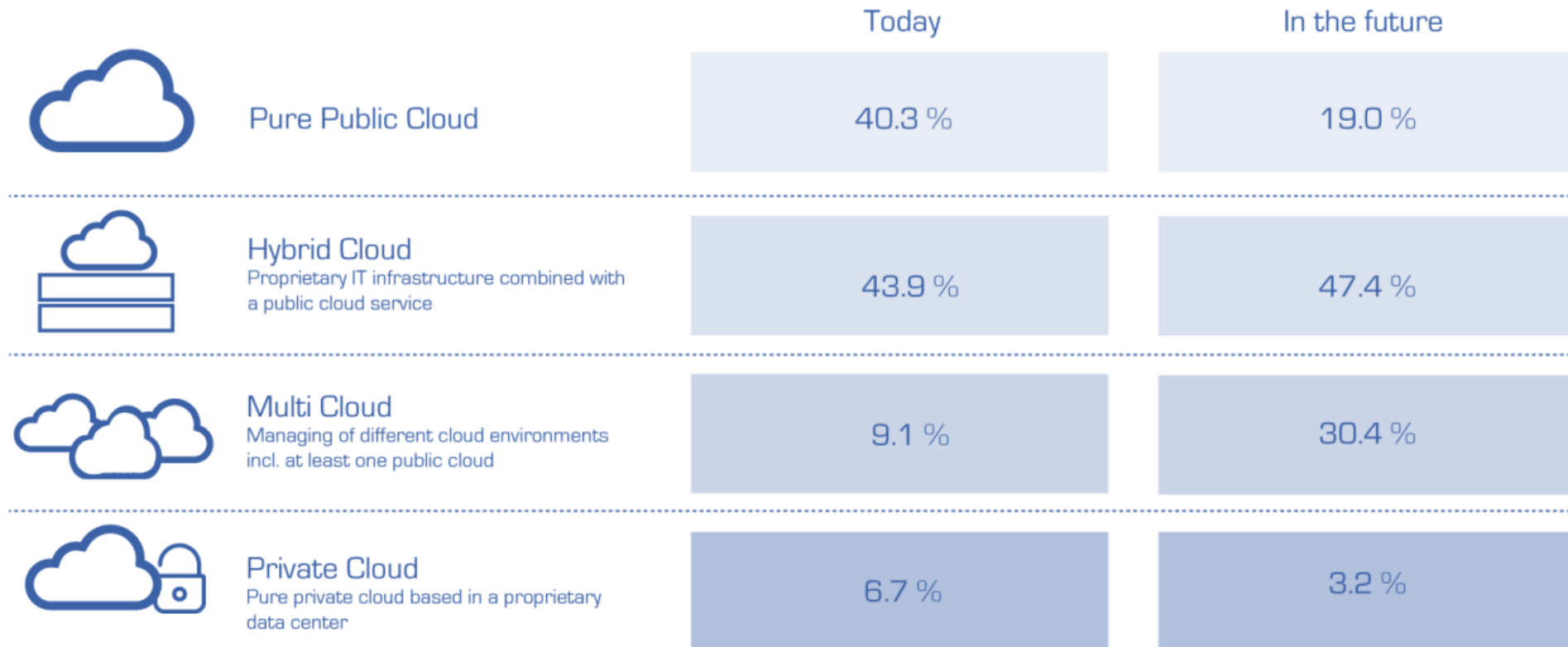
Multi-cloud is a deployment model that involves using multiple cloud services from multiple public cloud hosting providers, often in combination with on-premises physical, virtual, and private cloud infrastructure.





# Future aspects of Multi-Clouds

Which is your favorite cloud deployment model today and in the future (2020)?



# Why Multi-Clouds?

Multi cloud environment helps in managing for intelligent operations from application to infrastructure. Multi cloud is all about the choice. You can choose the cloud with the most appropriate service to meet your application and customer needs.



## Benefits

- Agility
- Faster time to market
- Scalability

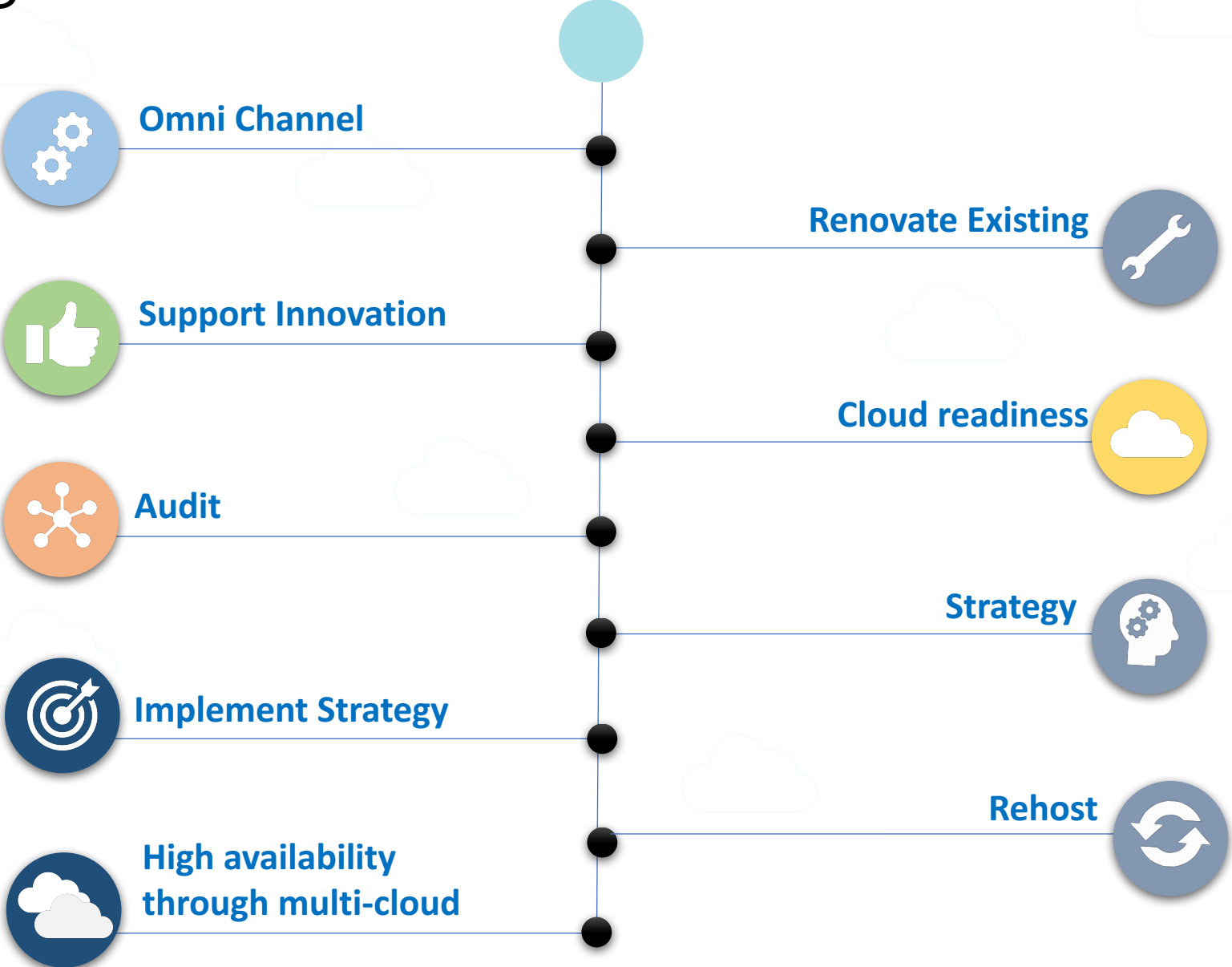


## Challenges

- Great complexity
- Higher cost
- Increased Security concerns



# Implementing Multi Cloud



# Use-Cases for Multi-Cloud



**High availability**



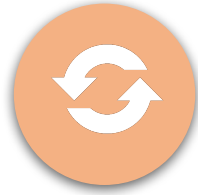
**Cost optimization**



**Scalability**



**Avoid vendor lock-in**



**Disaster recovery**



**Compliance**



**More edge locations**

# Benefits of Multi-Cloud



**Lower risk of DDoS attacks**



**Power of choice**



**Reliability**



**Data management**



**Avoiding vendor lock-in**



**Flexibility**

# Multi-Cloud Management Tools

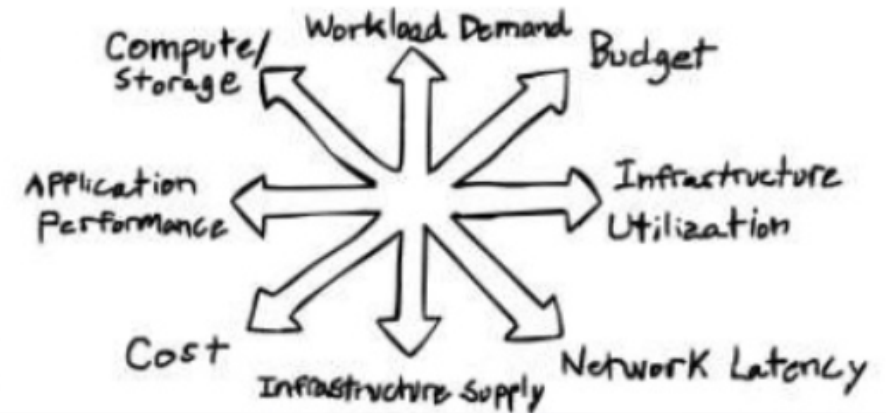


# It's not just about Cost, It's about Trade-offs

It is not simply about cost, but how to get the best possible performance for the business at the cheapest possible price. To get to that sweet spot requires the management of tradeoffs between those competing goals. Budget and performance.

Regulation and customer locality. Inter-server communication and network latency. That complexity can be handled by allowing the virtual server itself to buy the resources to deliver the best possible performance at the cost you provide.

A Desired State—  
Continuously Changing Tradeoffs Between...



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