CS351 - Cloud Computing

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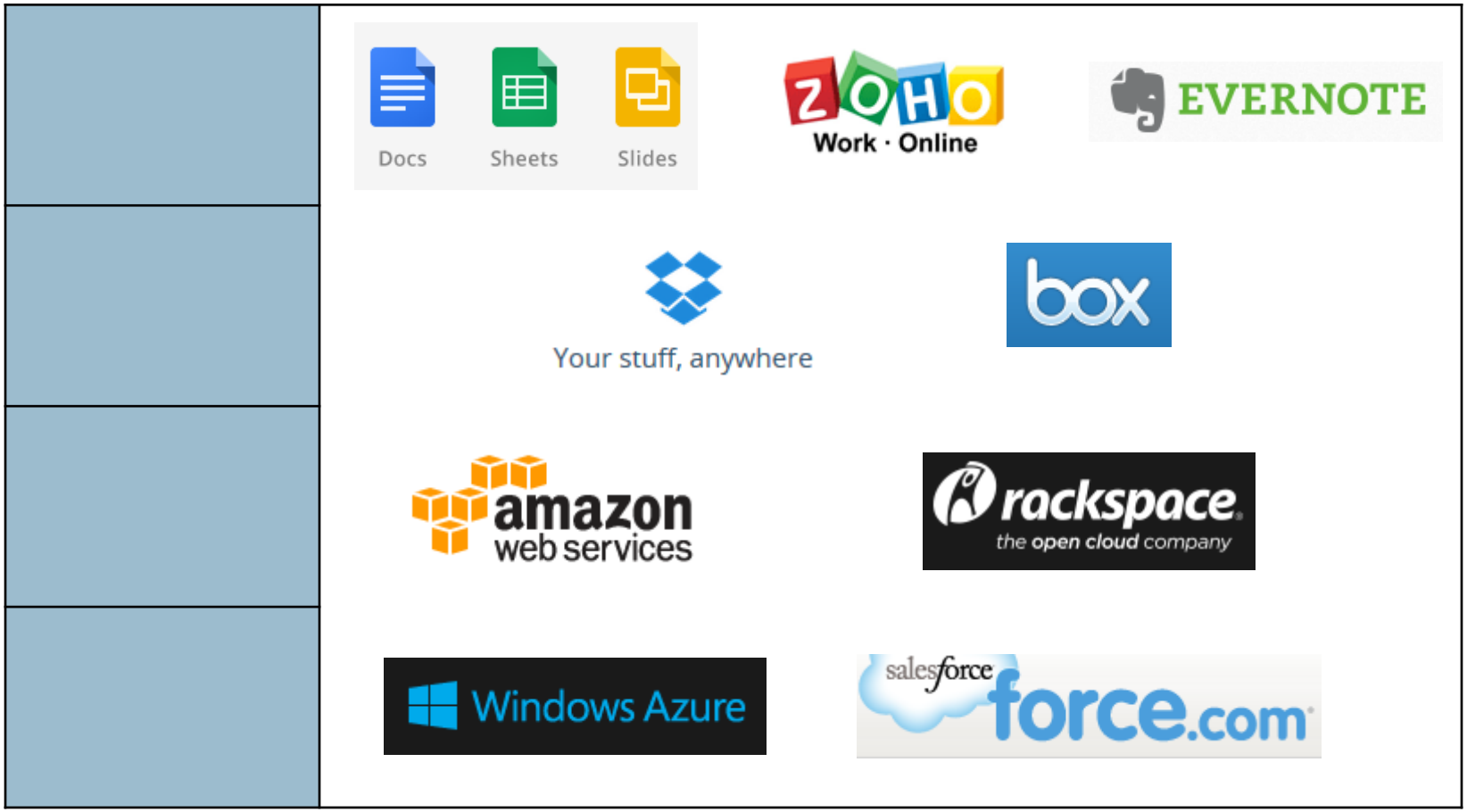
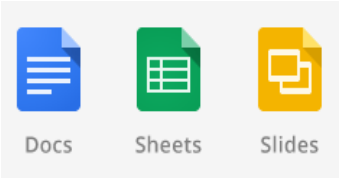
THE BIG PICTURE

Cloud Computing Landscape

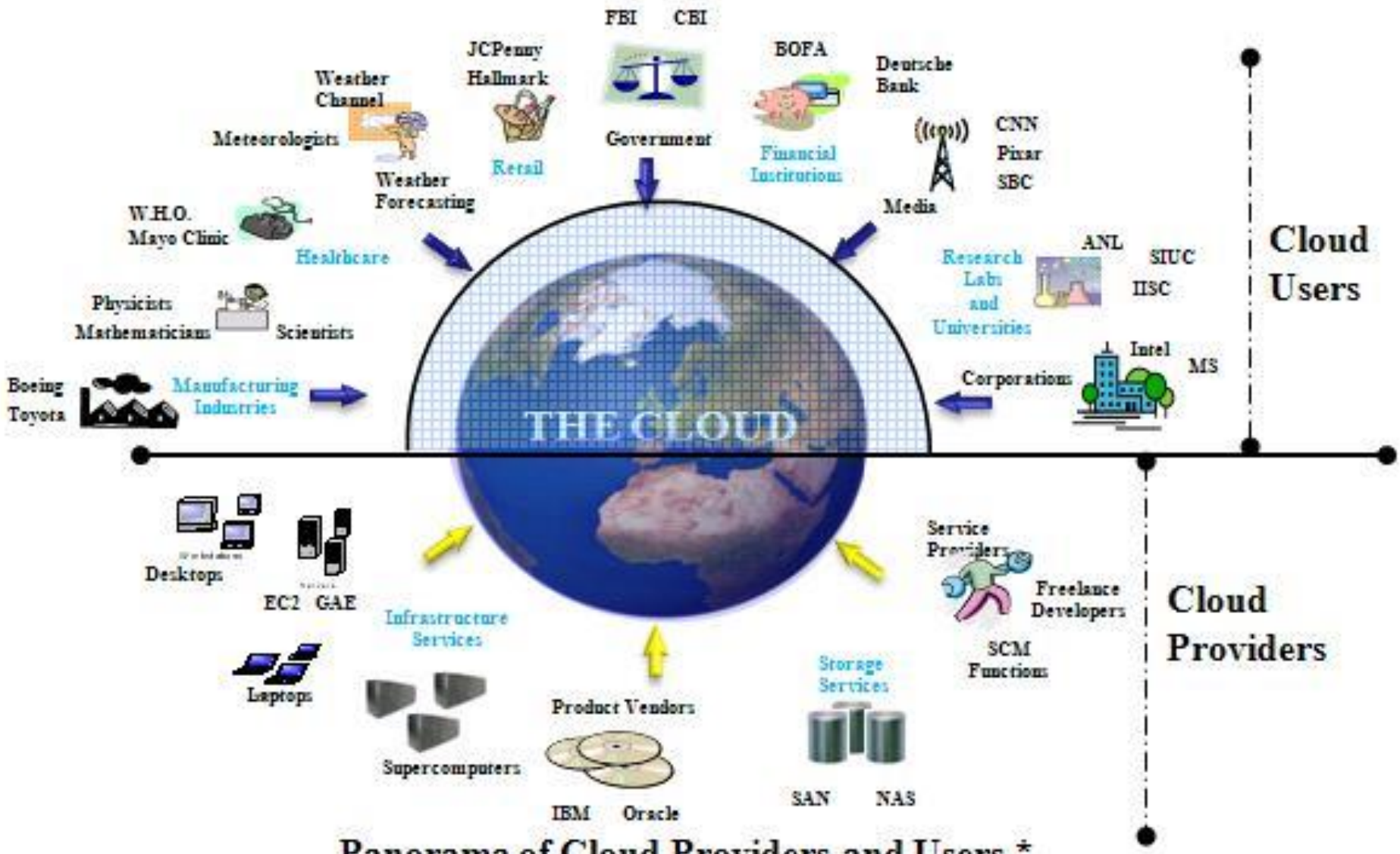


Cloud Computing Landscape

Applications	
Storage	
Computing	
Development platform	

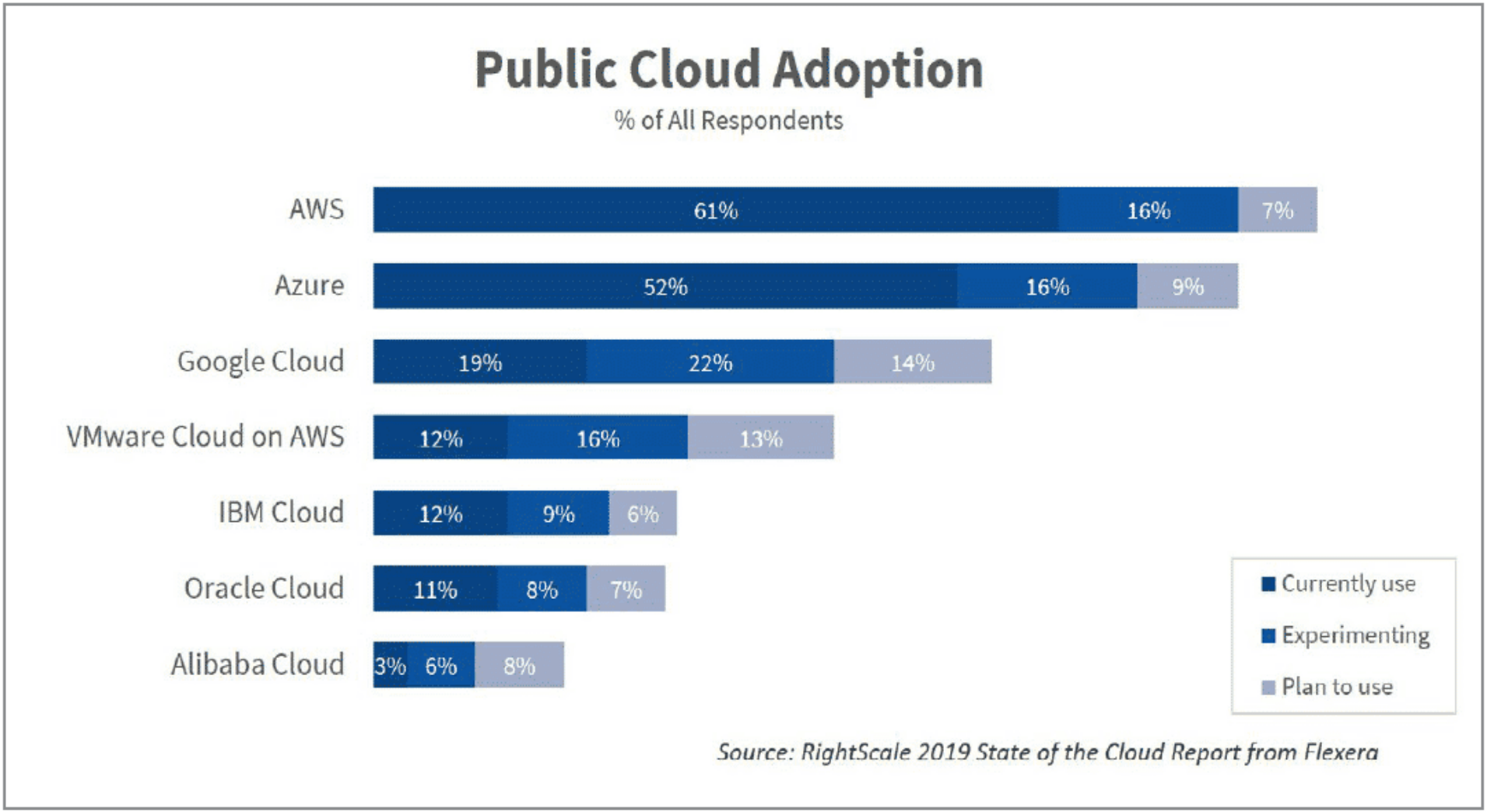
Gartner predicted revenue of USD 131billion in 2013, now 312.4 with 24.1% growth

Who uses cloud computing?



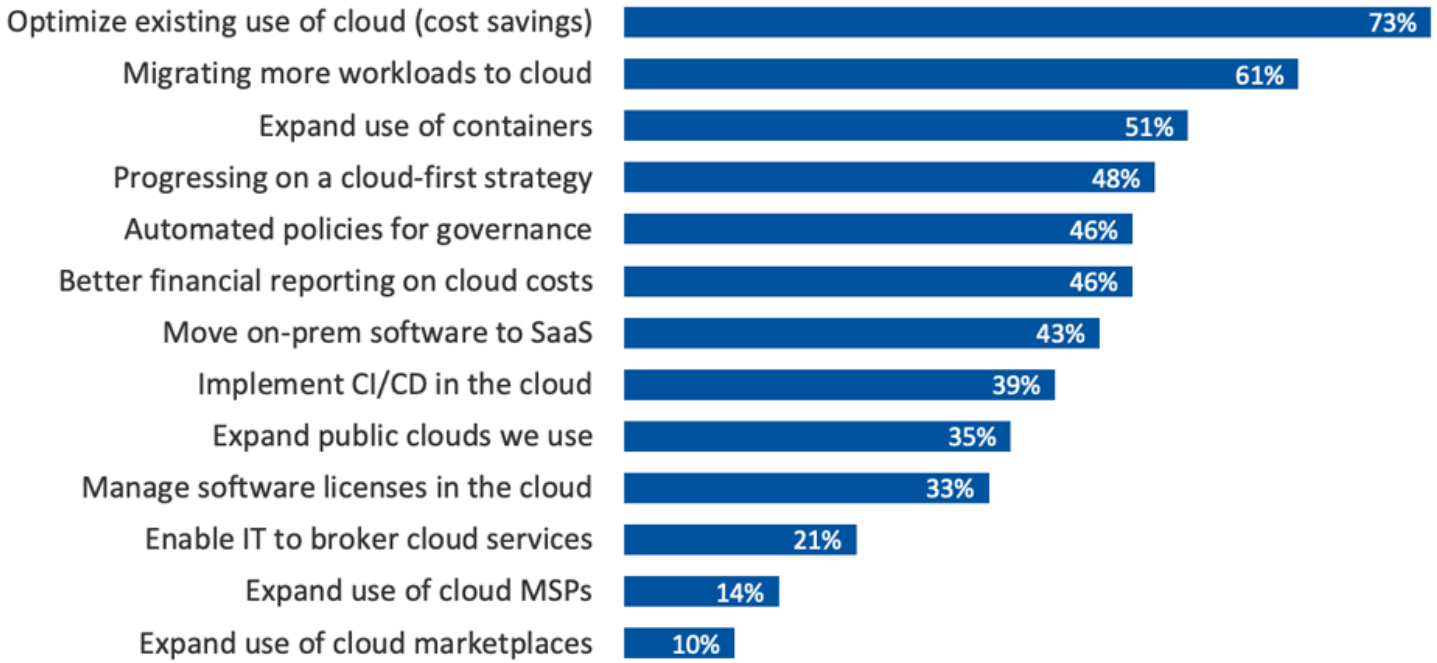
Panorama of Cloud Providers and Users.*

Adoption trends



Top Cloud Initiatives for 2020

% of all respondents



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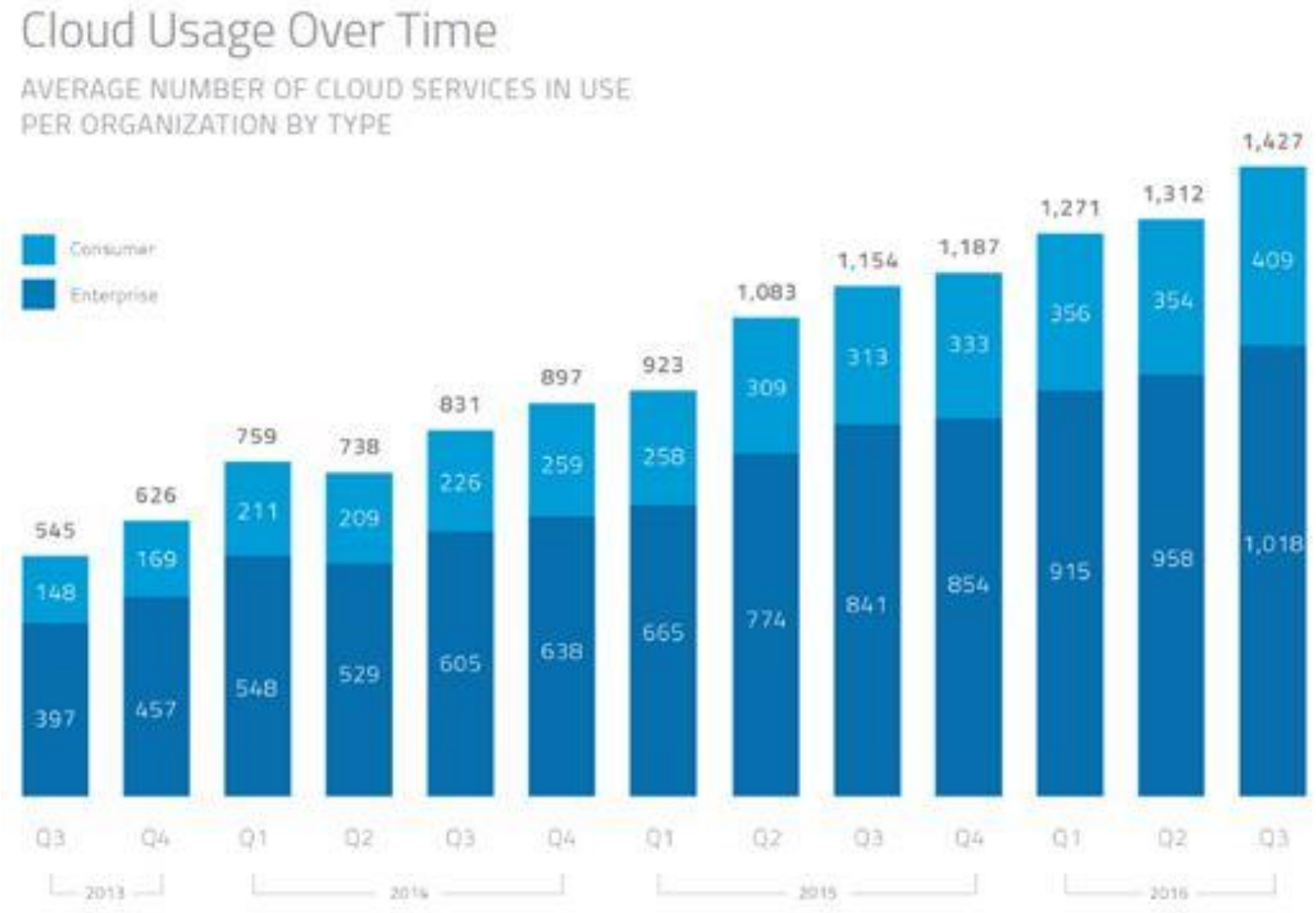
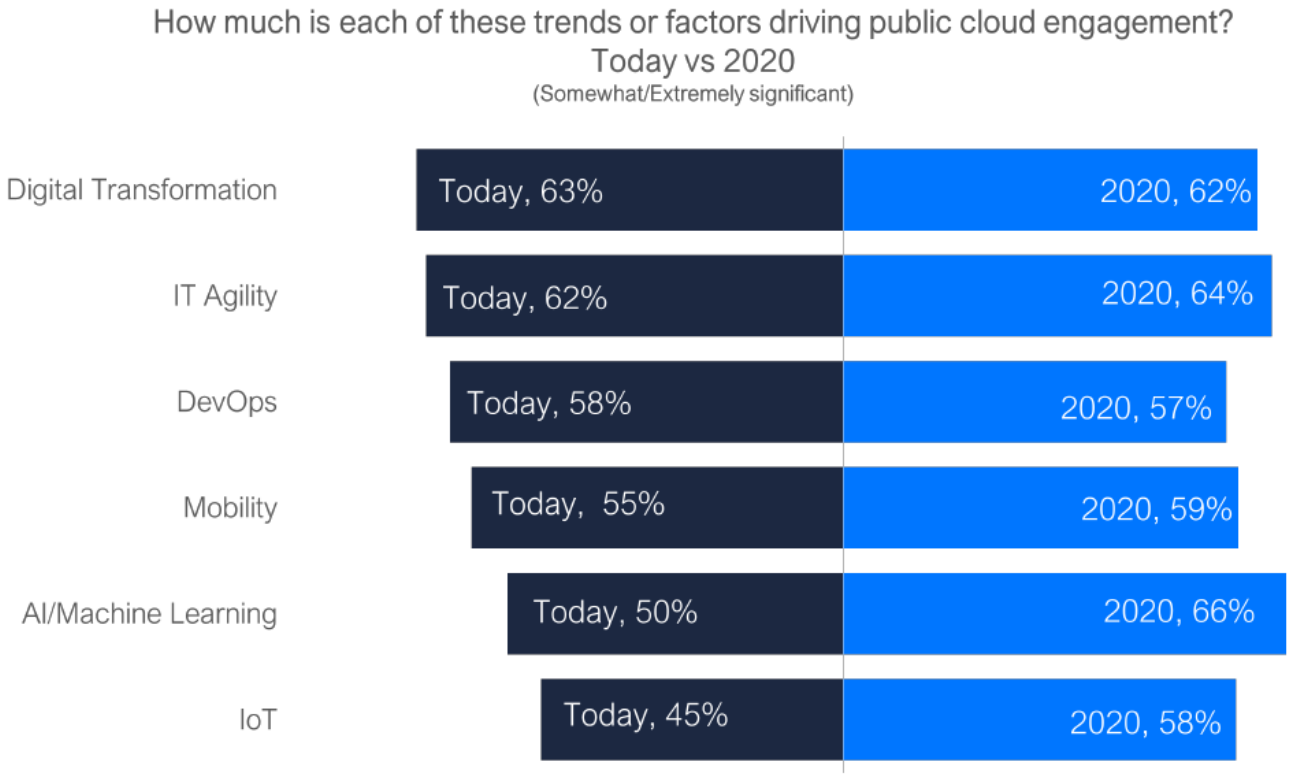
Source: Flexera 2020 State of the Cloud Report

Adoption trends



Why do customers use the cloud?

Public Cloud Drivers



Source: Forbes

CLOUD ANATOMY

What is a “cloud”?

- Attributes
  - Multi-tenancy (shared-resources)
  - Massive scalability
  - Elasticity
  - Pay per use
  - Self-provisioning of resources

A simple definition

"In simple words, the Cloud refers to the process of sharing resources (such as hardware, development platforms and/or software) over the internet. It enables On-Demand network access to a shared pool of dynamically configurable computing resources. These resources are accessed mostly on a pay-per-use or subscription basis."

The Cloud Changing the Business Ecosystem, KPMG, 2011

Service and deployment models

Service models	Deployment models
Software-As-A-Service (SaaS)	Public
Platform-As-A-Service (PaaS)	Private
Infrastructure-As-A-Service (IaaS)	Hybrid

SPI (SaaS, PaaS, IaaS)

Model	Cloud Service Provider (CSP) will provide	E.g.
SaaS	Application hosting, updates, Internet delivery/access to app, data partitioning	Google Docs, Evernote
PaaS	Browser-based software IDE (development, test, production), integration with external web services and databases, deploys customer apps on provider platform	Force.com, Microsoft Azure
IaaS	Infrastructure (server/VM, storage, network etc.) that can run arbitrary software	Amazon S3 and EC2, Rackspace

Public, Private, Hybrid

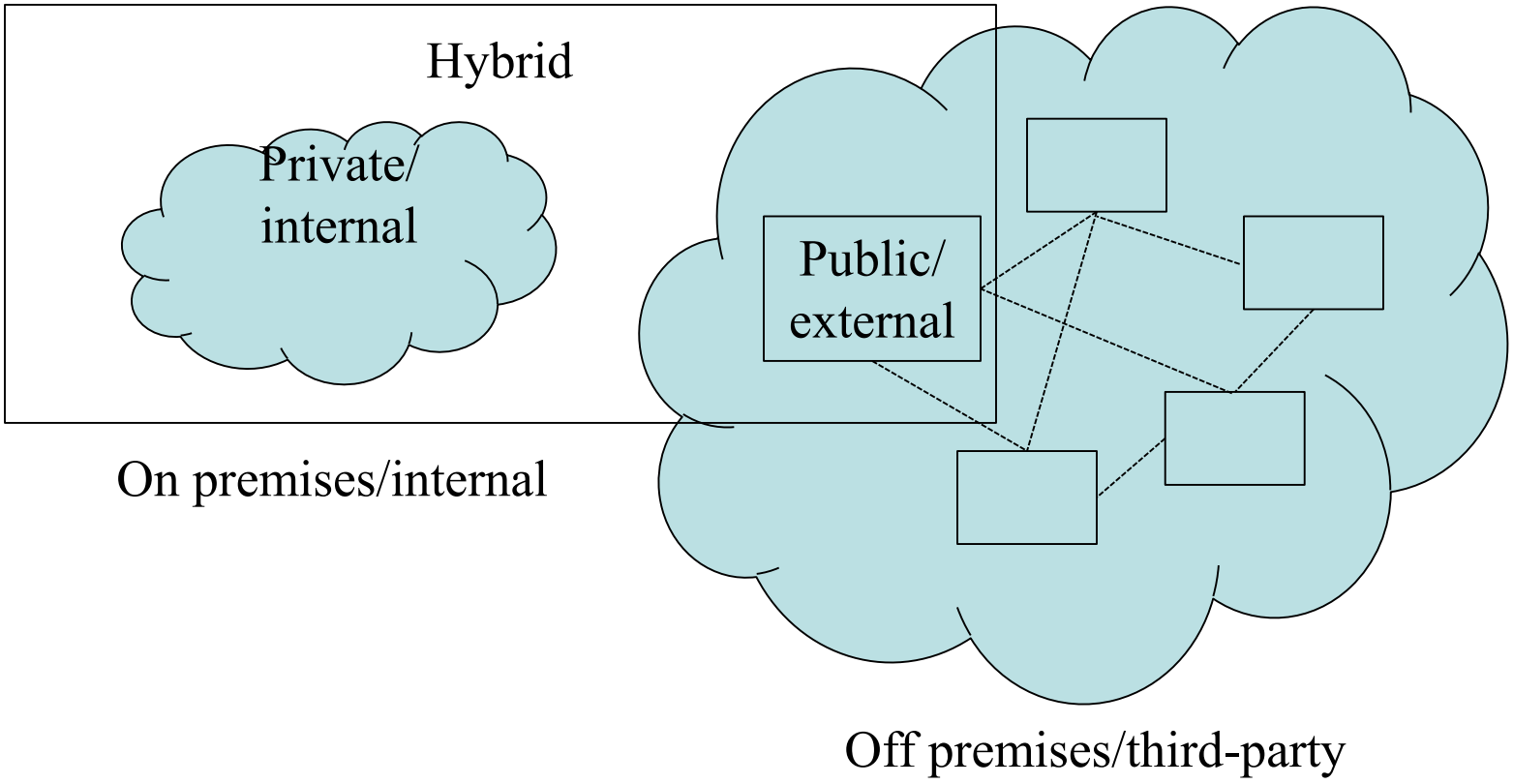


Image reproduced from Cloud security and privacy, 2009, Mather et al.

CHALLENGES

Challenges in using the cloud

- Security
- Privacy
- Compliance