Cloud

Dr. Fatma SIALA KALLEL

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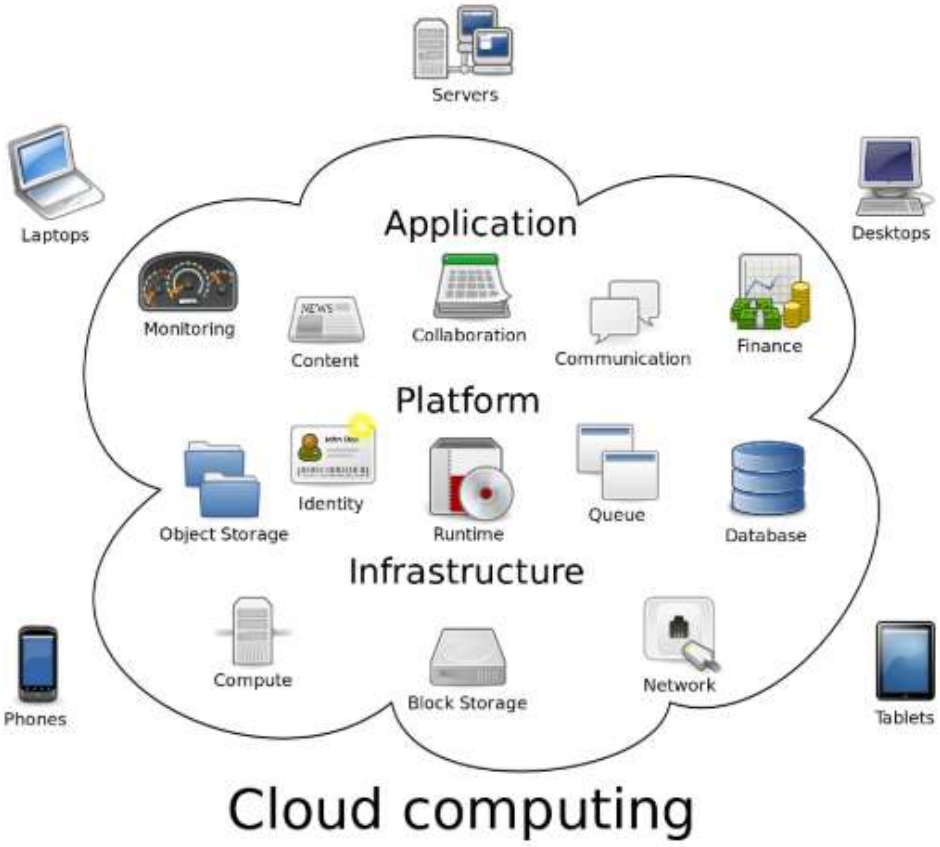
Nombre d'années d'expérience : 15 ans

Etudes : Mathématiques-Informatique
Université de Tunis El Manar & Université de Poitiers

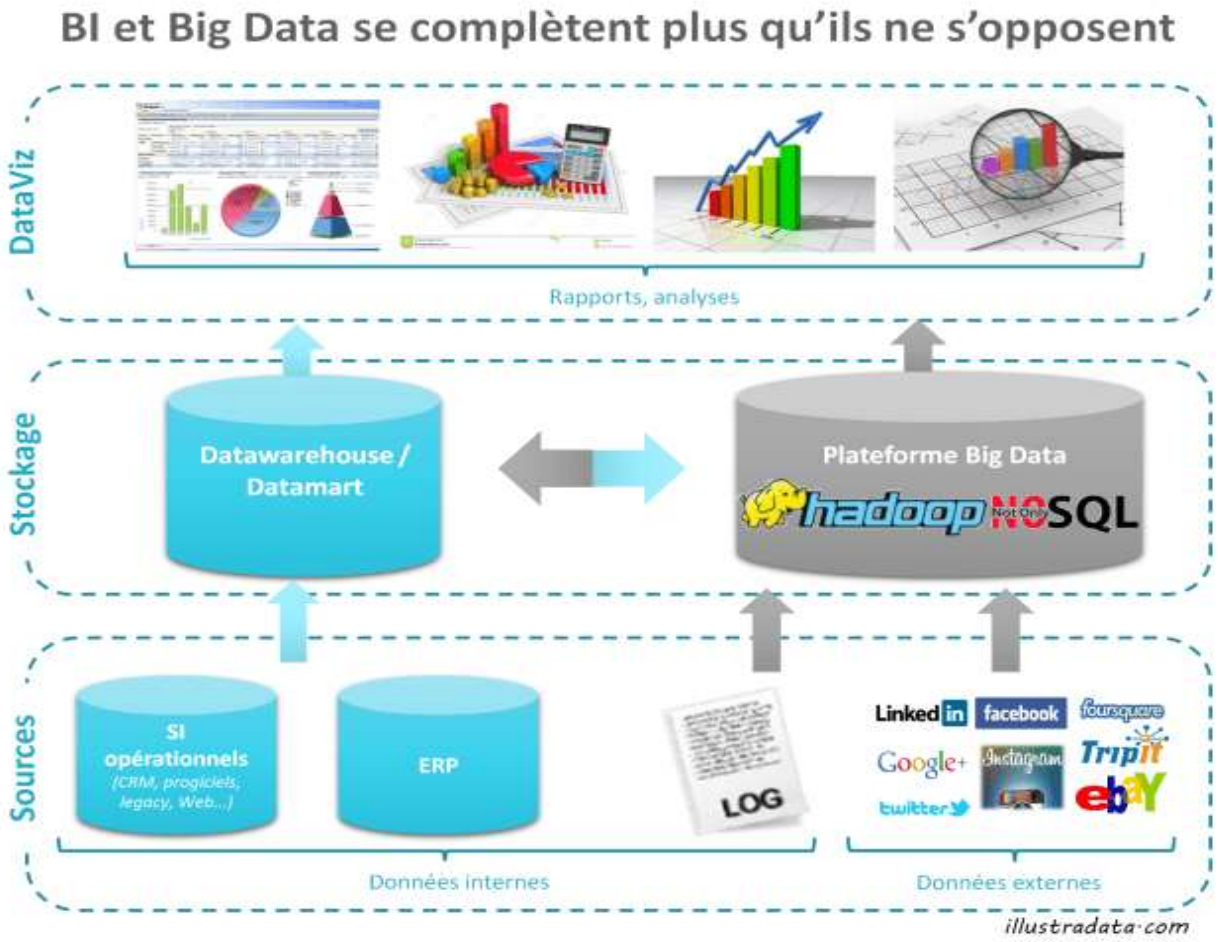
-Docteur en informatique (IA)
-Enseignante universitaire
-Maître assistante à l'ISAMM (Institut Supérieur des Arts Multimédias de la Manouba)
-Enseignante à l'université de Paris (Master MEDAS) & Esprit
-Consultante en IT

Domaines : Big Data – Cloud – IA - BI

Activités :
- Membre du comité d'organisation d'un congrès international (Paris8) : *https://aibigdata20.sciencesconf.org/*
- Responsable communication de l'ATIA : *http://atia.org.tn/*


Servers
Laptops
Desktops
Application
Monitoring
Content
Collaboration
Communication
Finance
Platform
Identity
Object Storage
Runtime
Queue
Database
Infrastructure
Compute
Block Storage
Network
Phones
Tablets
Cloud computing

Analogie BI & Big Data



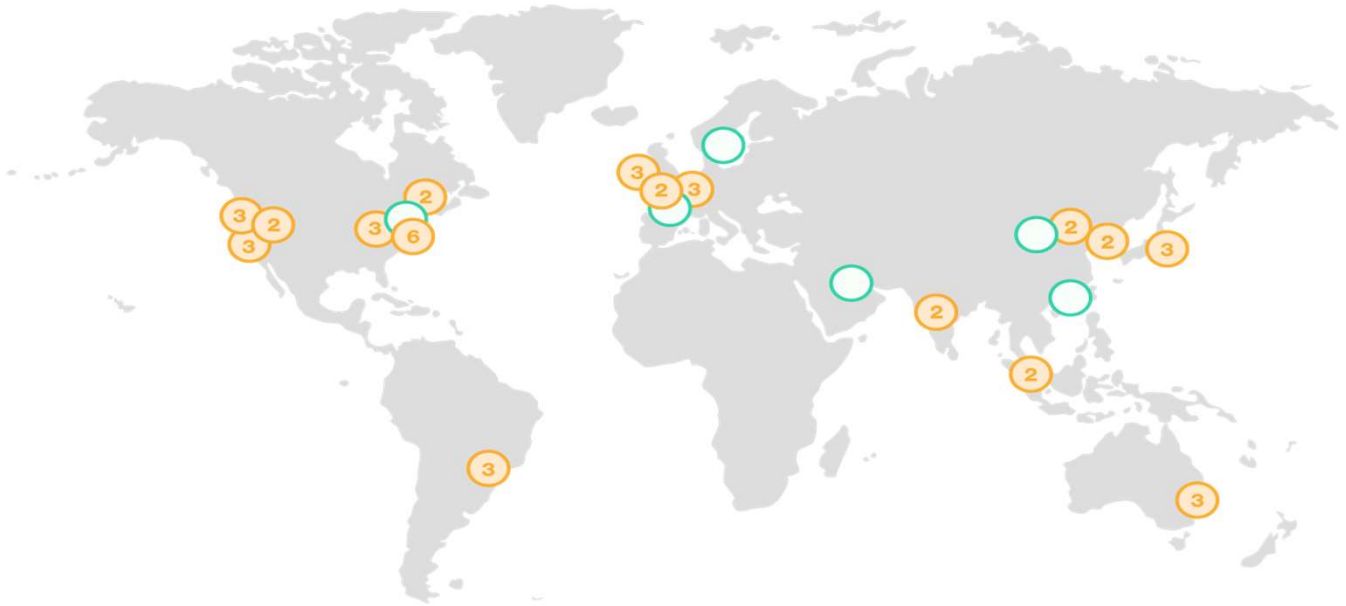
Ces technologies peuvent s'avérer complémentaires : les SGBDR pour la robustesse et les nouvelles technologies 'Big Data' pour la flexibilité.

Naissance du cloud

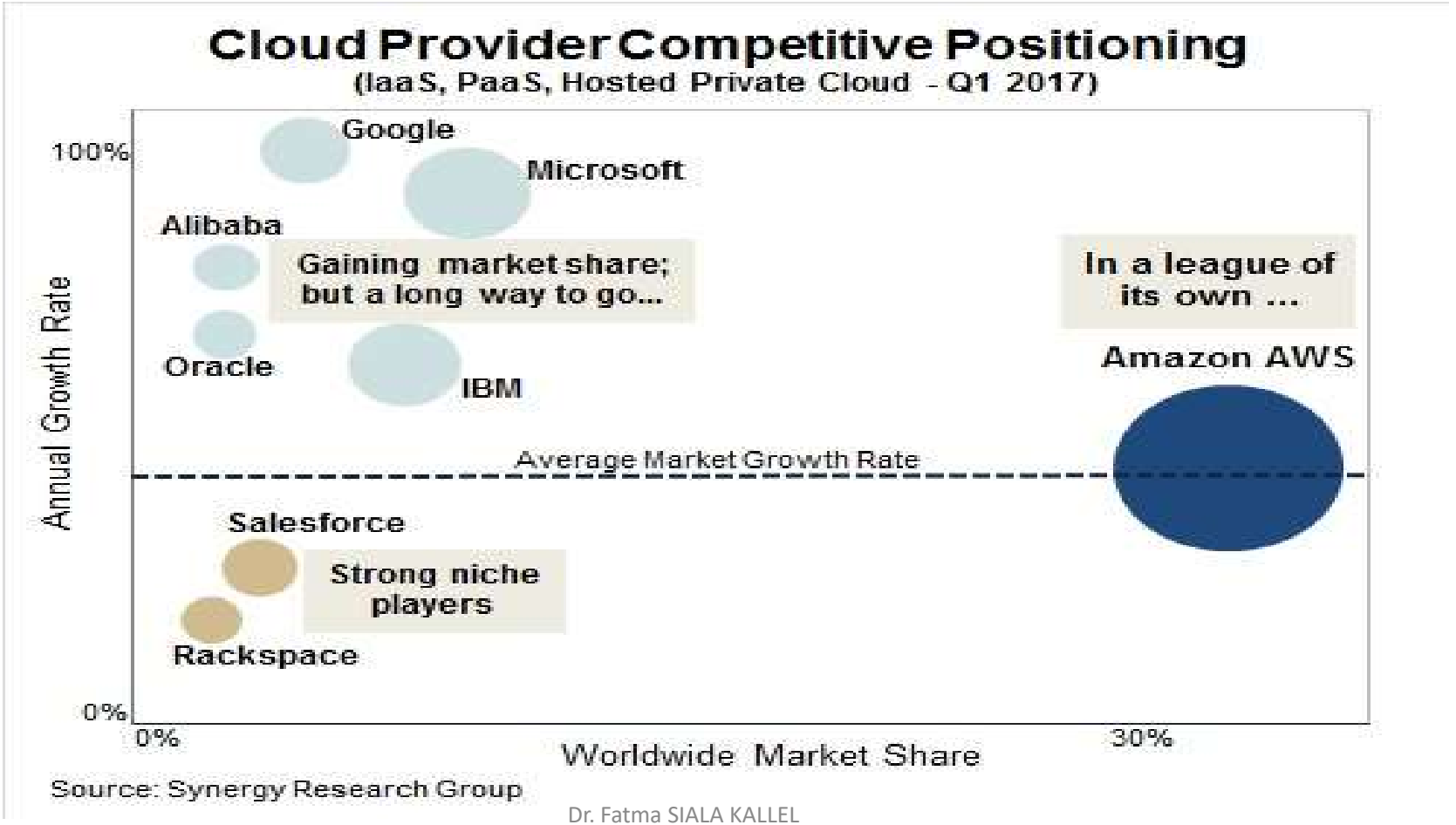
- L'idée du **cloud** computing a pris naissance en 1990 et surtout en 1991 avec la naissance d'Internet et la mise sur le marché du logiciel CERN qui a été le premier logiciel accessible par le Web
- La popularisation d'Internet grâce aux navigateurs (1994) amena des cadres de Compaq et Sean O'Sullivan (en) à proposer le concept du 'cloud computing', mais l'idée n'a pas rencontré de succès à l'époque.
- July 2002 : Amazon is an online sales site that is a hit.
- Originally a simple book selling site, we can now buy everything: video games, hi-fi equipment, clothes, shoes, etc,
- To evolve and manage more and more customers, Amazon had to build itself a very large technical infrastructure.

Naissance du cloud

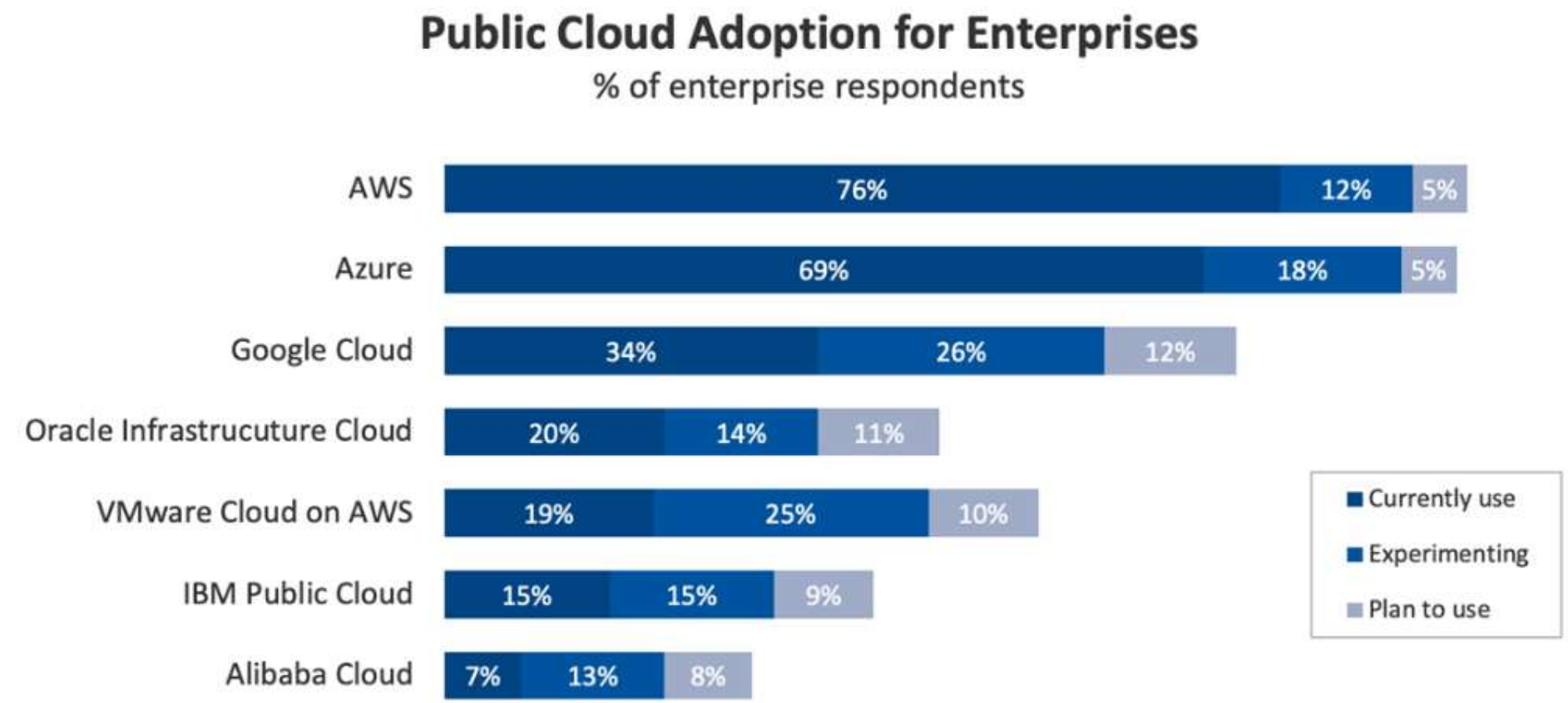
- To meet the growing demand of each day, Amazon had to install tens of thousands of servers around the world, themselves distributed in multiple datacenters
- Amazon engineers had the idea of renting them to other web developers. So companies will no longer need to buy tons of servers,just to be ready in the event of a traffic spike



Cloud Provider Competitive Positioning



Cloud Provider Competitive Positioning



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Source: Flexera 2020 State of the Cloud Report

Microsoft Azure vs AWS services

Nom	**Amazon DynamoDB X**	**Microsoft Azure Cosmos DB X**
La description	Service de base de données hébergé et évolutif par Amazon avec les données stockées dans le cloud Amazons	Service de base de données multimodèle distribué à l'échelle mondiale, évolutif horizontalement
Modèle de base de données primaire	Magasin de documents Magasin de valeurs-clés	Magasin de documents Graph SGBD Magasin de valeurs-clés Magasin de colonnes étendues
Classement DB-Engines Tableau de bord 	But 69,14 Rang # 17 Global # 2 Magasins de documents # 2 Magasins de valeurs clés	But 32,97 Rang # 25 Global # 3 Magasins de documents # 2 SGBD graphique # 3 Magasins de valeurs clés # 3 Magasins à colonnes larges
Site Internet	aws.amazon.com/dynamodb	azure.microsoft.com/services/cosmos-db
Documentation technique	docs.aws.amazon.com/dynamodb	docs.microsoft.com/azure/cosmos-db
Développeur	Amazone	Microsoft
Première version	2012	2014
Licence	commercial	commercial
Basé sur le cloud uniquement	Oui	Oui

- *https://db-engines.com/en/system/Amazon+DynamoDB%3BMicrosoft+Azure+Cosmos+DB

Cloud computing

With Amazon Web Services you will find a complete cloud platform ready to use for virtually any workload

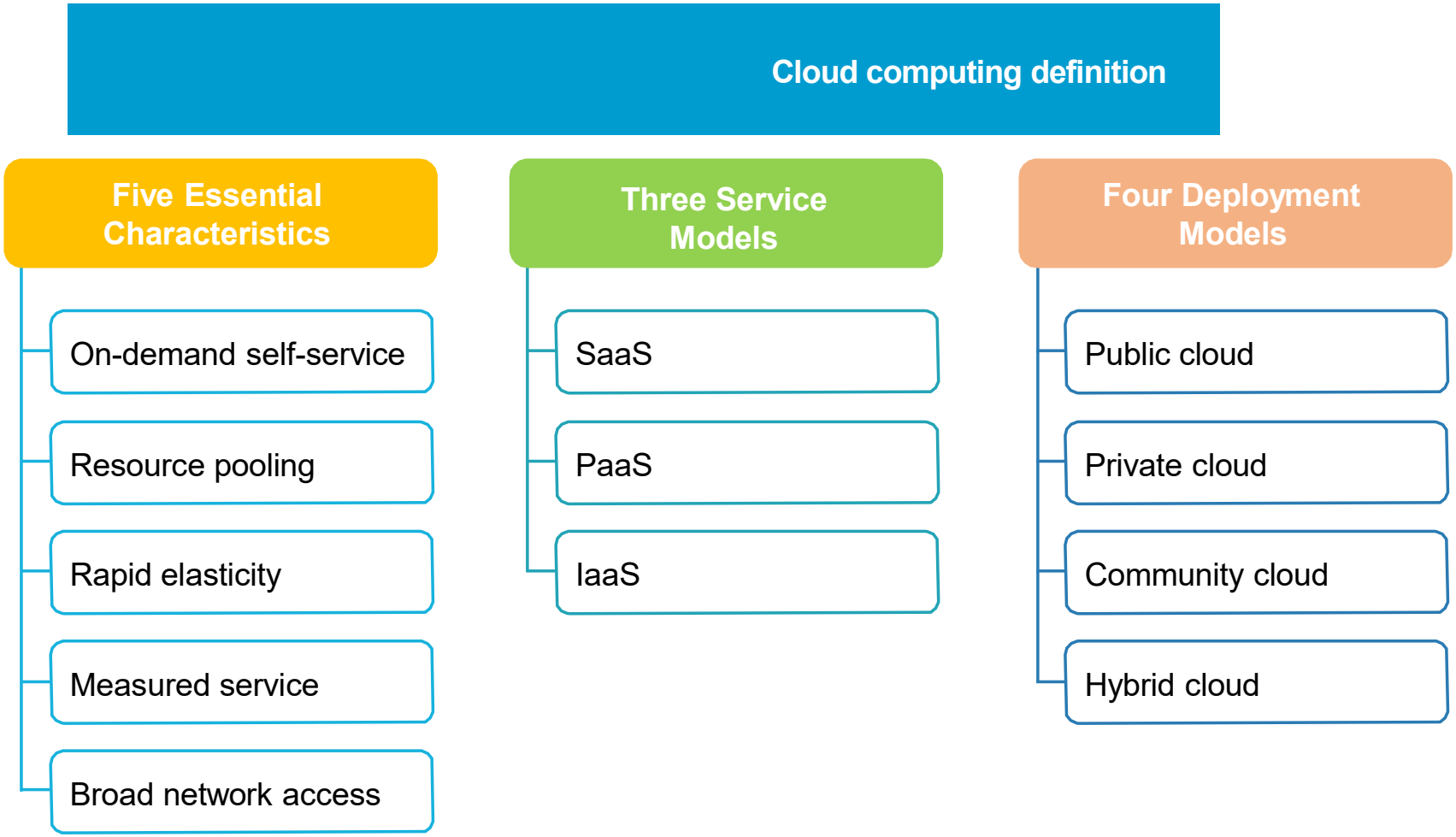
Scalability

Storage

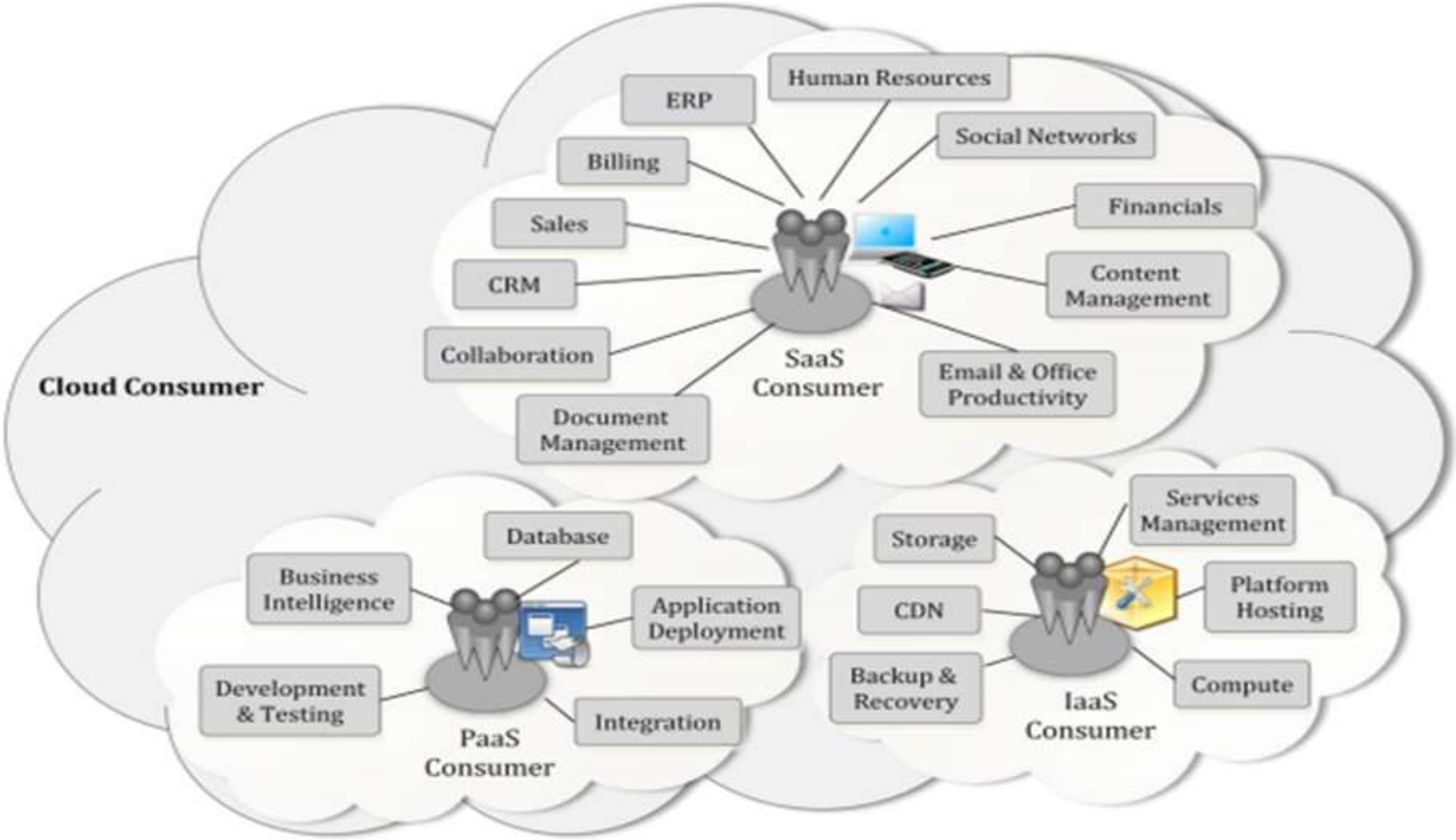
Productivity

App Development

Data Analytics



Cloud models



Cloud models

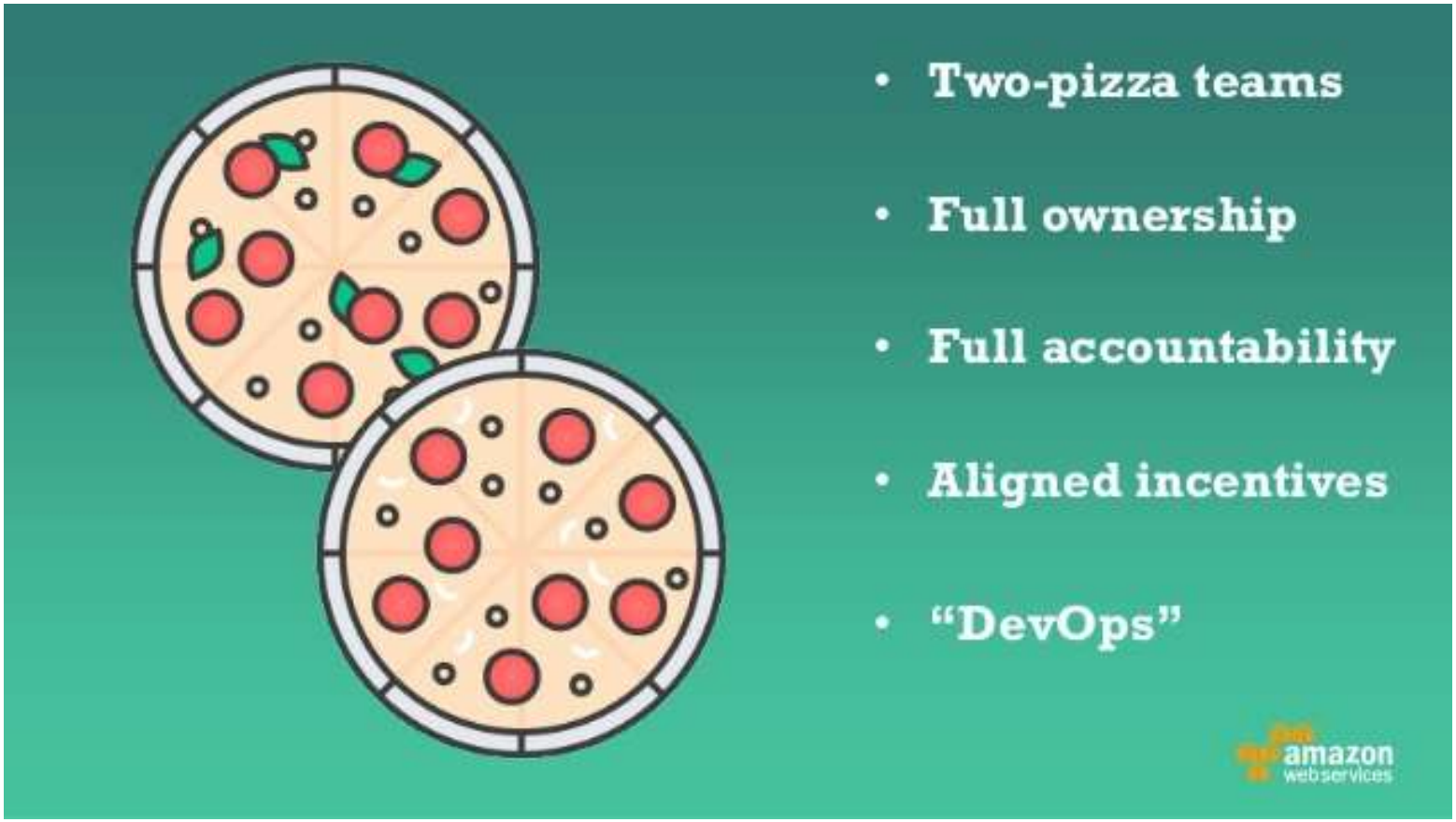
YOUR OWN CAR
On-premises solution

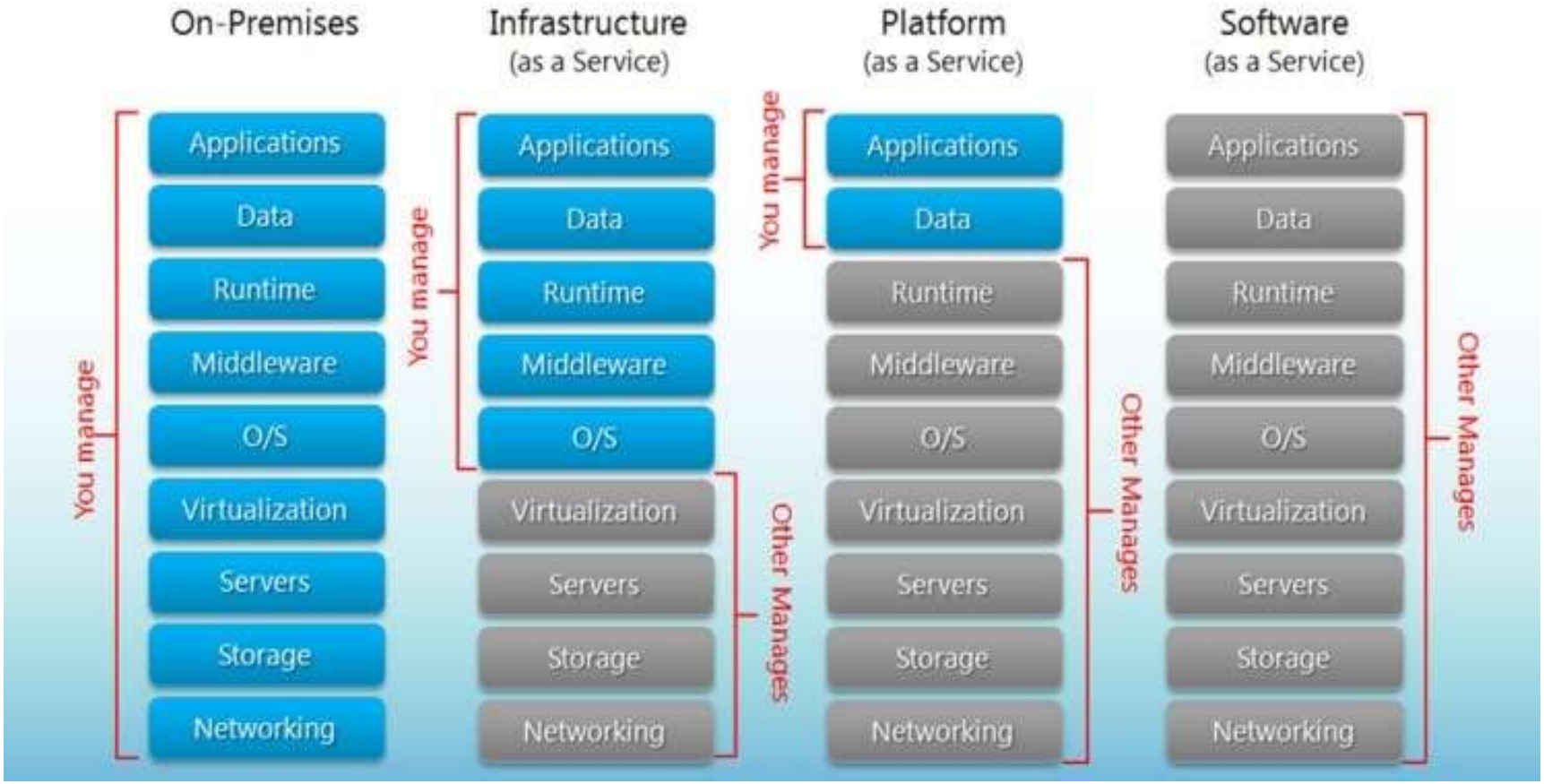
LEASED CAR
IaaS

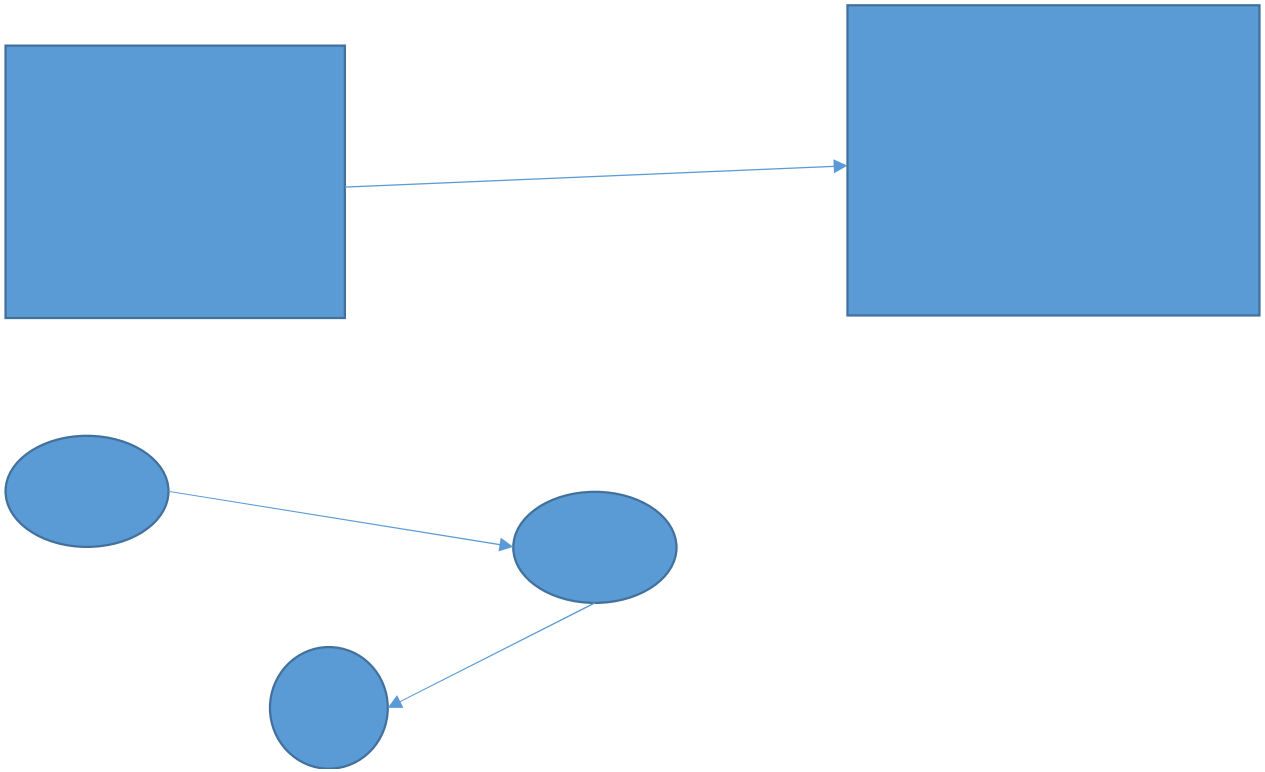
TAXI
PaaS

BUS
SaaS

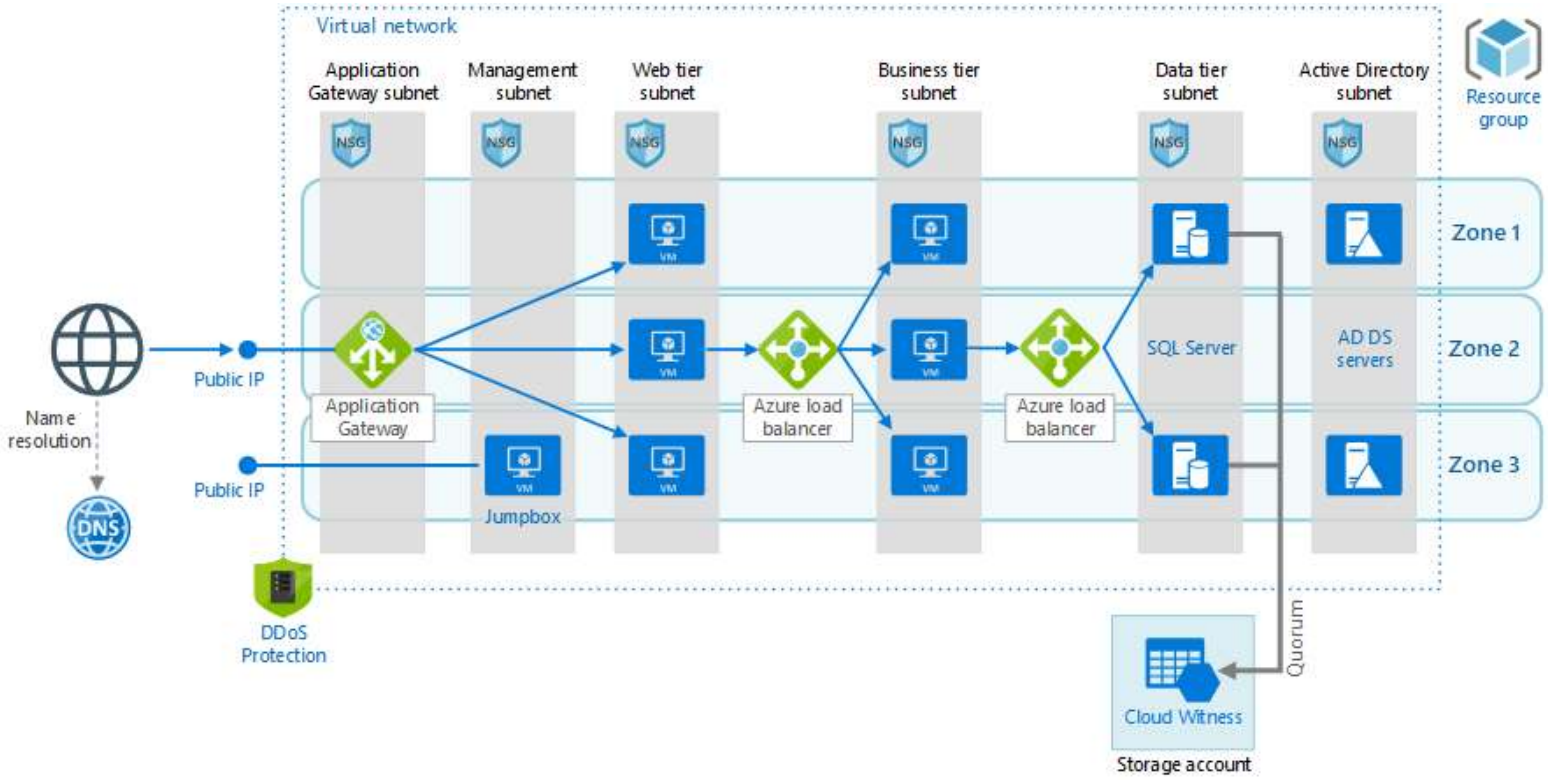
- Vendorlok-in
- SLA
- Broker
- Log
- Gouvernance
- RGPD
- spot
- Cli
- legacy system


• Two-pizza teams
• Full ownership
• Full accountability
• Aligned incentives
• "DevOps"
amazon
webservices

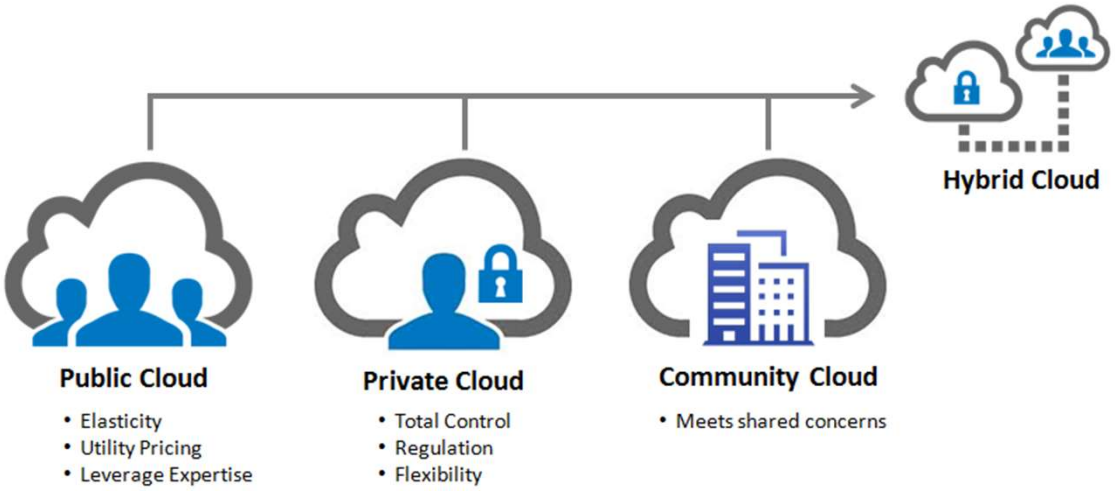

On-Premises
Infrastructure
(as a Service)
Platform
(as a Service)
Software
(as a Service)
Applications
Data
Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking
You manage
You manage
You manage
Other Manages
Other Manages
Other Manages



Exemple d’architecture sur Azure

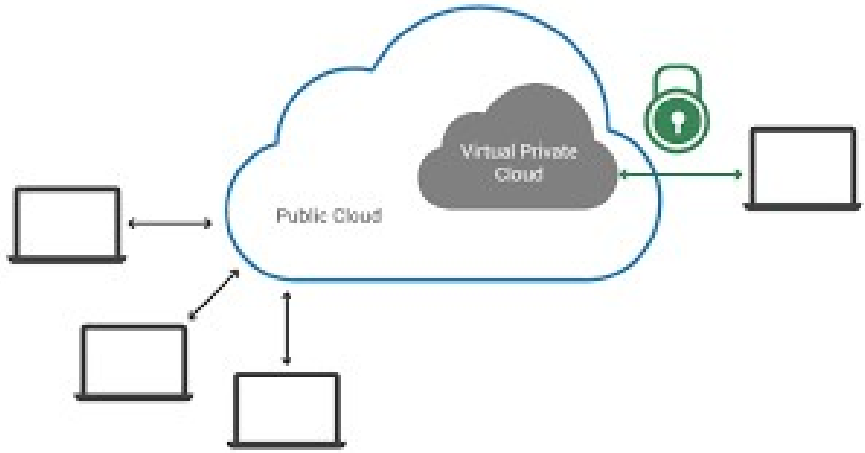


Cloud models



Public cloud

- Third-party cloud provider hosts a public cloud
- Most widely deployed cloud model

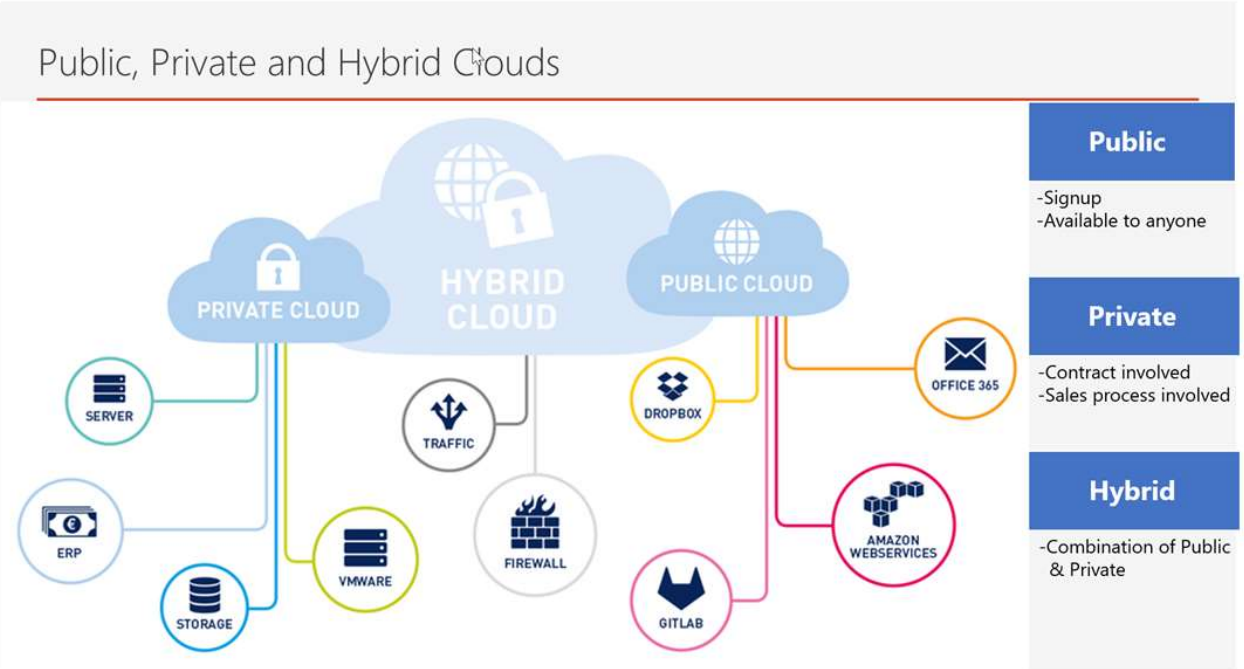


Private cloud

- A private cloud gives a single Cloud consumer organization the exclusive access to and usage of the infrastructure and computational resources.
- There are two types of Private Cloud, On-site and Outsourced. It may be managed either by the organization (on-site) or by a third-party provider (outsourced).

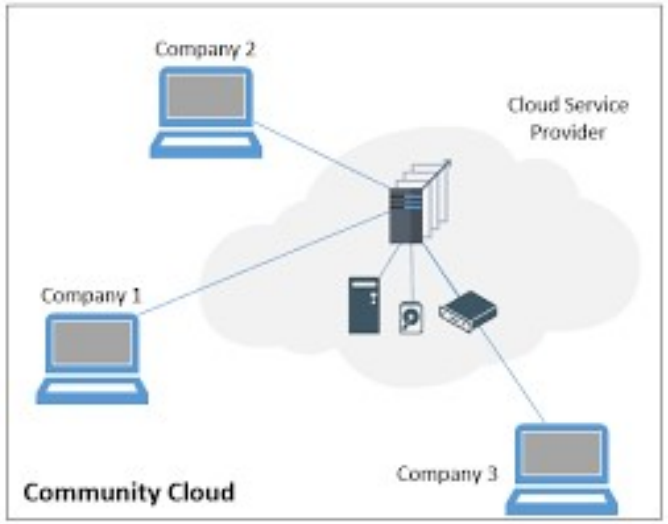
On-site Private Cloud **Outsourced Private Cloud**

Hybrid cloud



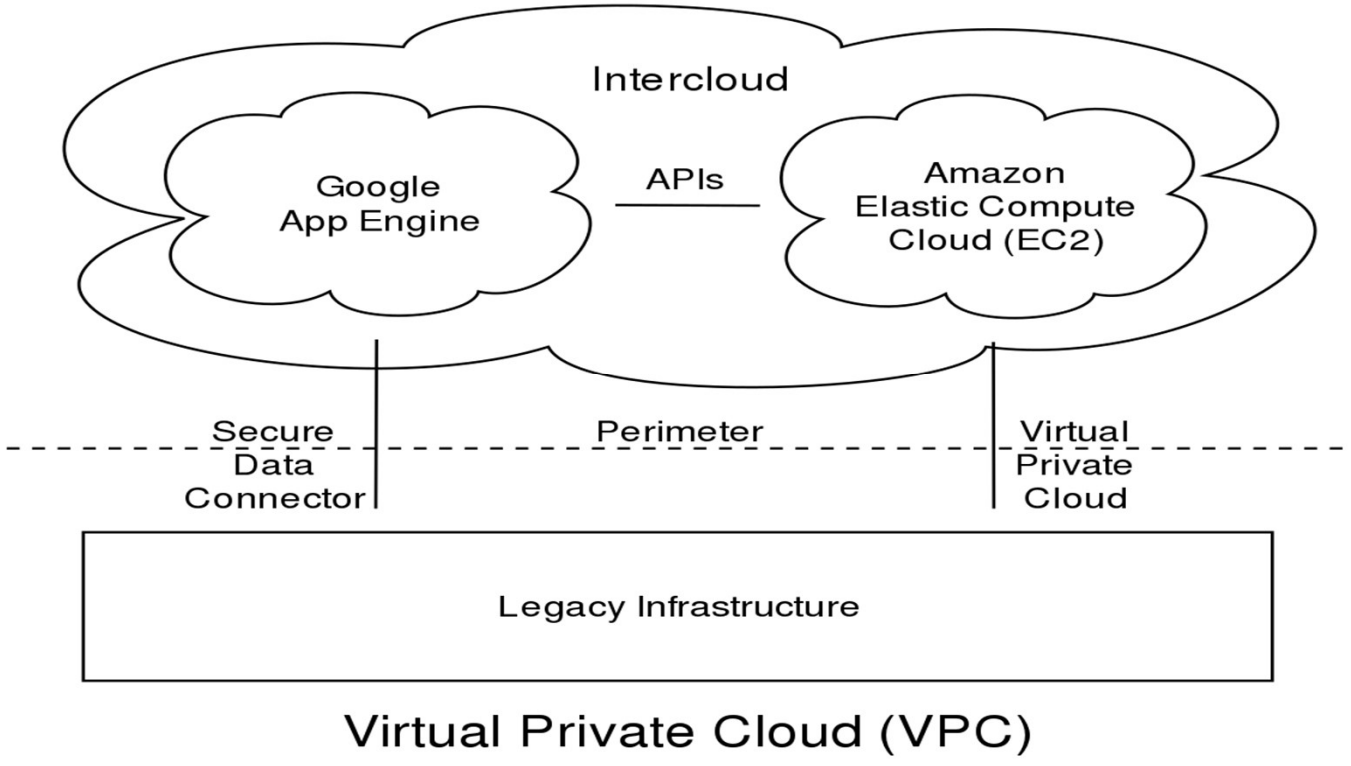
Community cloud

A community cloud serves a group of cloud consumers, rather than serving a single organization such as private cloud. Community cloud have shared concerns, such as on-site and outsourced community cloud as shown in the following figure.



On-site Community Cloud **Outsourced Community Cloud**

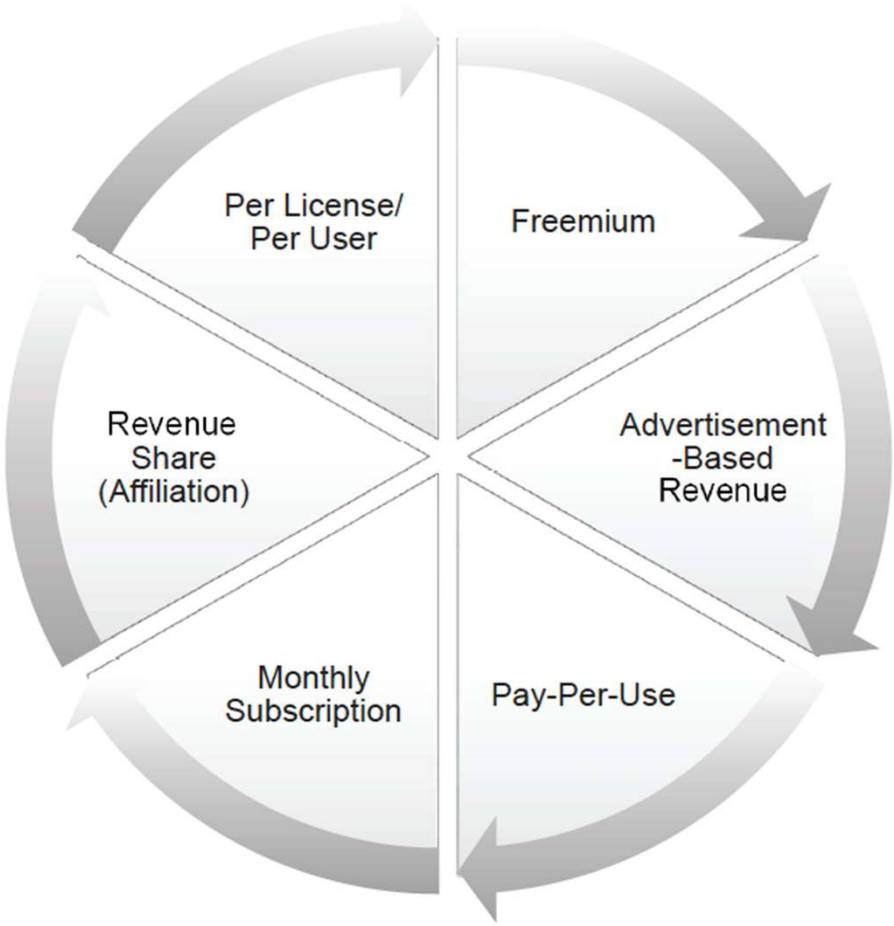
Multi-cloud



Virtual Private Cloud (VPC)

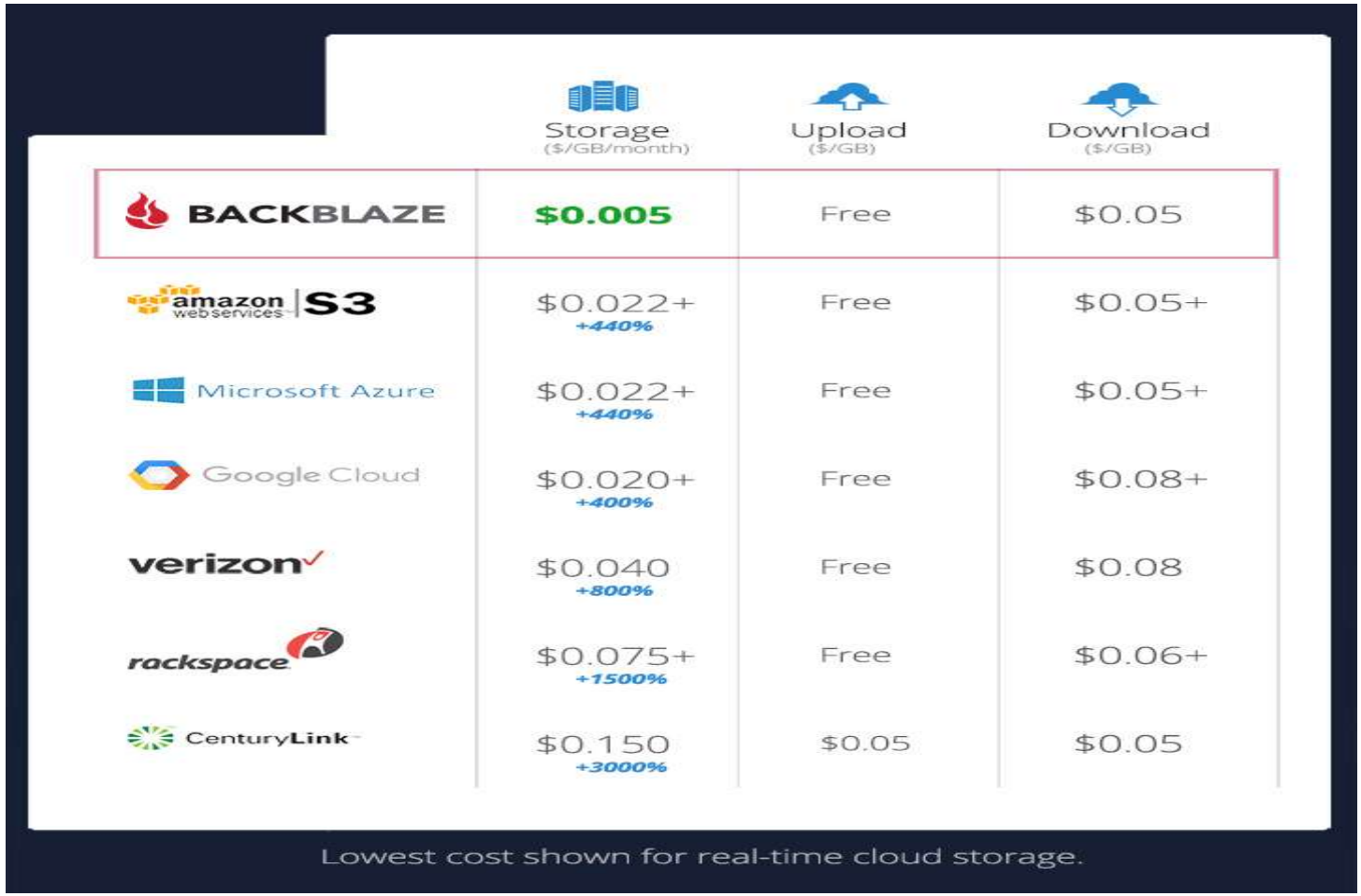
Pricing Models for Cloud Services

Consumption-Based Charging



Pay-Per-Reservation

Pricing Models for Cloud Services



Pricing Models for Cloud Services

Discounted Pricing For 1-Year Commitment With No Upfront Cost

Instance Type	AWS	Azure	Google	AWS pricing (per hour)	Azure Pricing (per hour)	Google pricing (per hour)
General purpose	m6g.xlarge	B4MS	e2-standard-4	$0.0924	$0.0974	$0.0137
Compute optimized	c6g.xlarge	F4s v2	c2-standard-4	$0.0816	$0.10	$0.0229
Memory optimized	r6g.xlarge	E4a v4	m1-ultramem-40	$0.1212	$0.1482	$0.0265
Accelerated computing	p2.xlarge	NC4as T4 v3	a2-highcpu-1g	$0.54	$0.3367	$2.419

SIMFORM

Thank you