ASIX2 - M14: Projecte d'administració de sistemtes informàtics en xarxa
PJ10: Cloud Computing
Curs 2024-2025

# Cloud Computing: basic ideas

# Table of contents

# 1- Some ideas about cloud computing

1.-What is a cloud computing service?

It is  a network of remote servers hosted on the internet that enables users to access and use easily and efficiently computing resources.

Typical computing resources: software applications, servers (web, mail..), storage devices, databases, networks, etc..

Advantages for companies and users: Hosting these computing resources on local computers, servers and networks is not required or can be drastically reduced.

# 1- Some ideas about cloud computing

## 2.-Who uses a cloud computing service?

Computing services are consumed by different kind of users:

- IT administrators
- Software developers
- End-users
- Companies.

# 1- Some ideas about cloud computing

2.-Who uses a cloud computing service?

- IT administrators: create and manage infrastructures such as networks, servers, storage devices, applications deployment to production servers, databases, monitoring, scalability, security, etc…

- Software developers: develop, build, test and deployment of new applications and updates.

# 1- Some ideas about cloud computing

2.-Who uses a cloud computing service?

- End users consume computing services by:

- Accessing a wide range of software applications hosted in the cloud such as applications for productivity, communication, collaboration, entertainment, etc..
- Storing and retrieving documents, imagesm videos and others files through cloud storage solutions.
- Interacting with web services such as social media services, streaming services, online shopping services, etc..

# 1- Some ideas about cloud computing

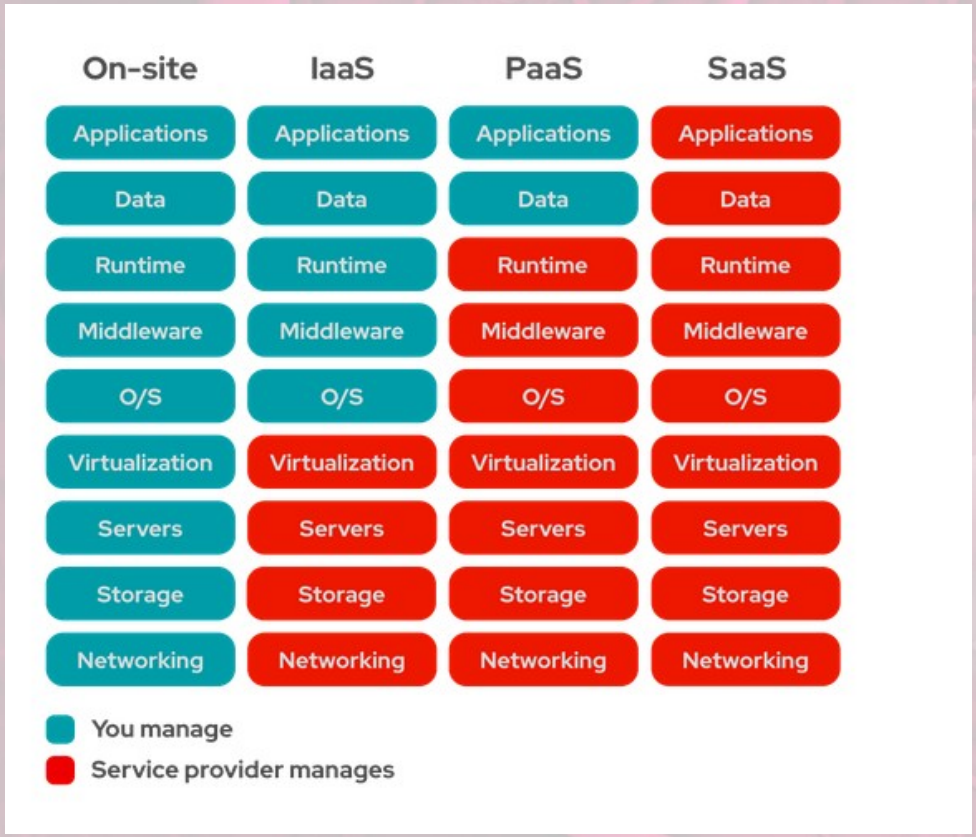
2.-Who uses a cloud computing service?

-Companies: scalability (increase or decrease resources based on demand), innovation, cost optimization (by paying for the computing resources they actually use), remote working, etc...

# 1- Some ideas about cloud computing

## 3.Typical cloud computing models

- Typical models: IaaS, PaaS and SaaS



# 1- Some ideas about cloud computing

3.-Typical cloud computing service models?

- IaaS → IT administrators can easily manage virtual machines and networks, operating systems and applications but usually they do not manage physical hardware. Example: AWS.

- PaaS → Sofware Developers can easily deploy apps to a server but they can not manage, servers, operating systems or middleware.Example: Openshift Red Hat or Heroku

- SaaS → SaaS → End-Users just run applications but they do not anything about the underlying infrastructure of servers, software, operating systems, etc..Examples: Google Drive, GMail, Google Docs, Microsoft 365 suite.

- Another models: On-premise, rent of dedicated servers, VPS. Example: https://www.ovhcloud.com

# 1- Some ideas about cloud computing

4.-CIaaS-PaaS-SaaS vs On-premise

- IaaS, PaaS and SaaS providers typically offer a pay-as-you-go or subscription-based pricing model. Organizations pay for resources on a usage basis, allowing them to align costs with actual demand. This can be more cost-effective than investing in fixed infrastructure capacity.

- On-premise: On-premise solutions often involve upfront capital expenditures for hardware and software. However, once the infrastructure is in place, ongoing costs may be more predictable, as they are not tied to usage-based pricing models that can fluctuate with cloud services. Could be a better solution in the long term.

# 2- Impact on companies

- Cost Savings
- Scalability and Flexibility
- Agility and Speed
- Global Reach
- Collaboration and Remote Work
- Innovation Acceleration
- Improved Security
- Business Continuity and Disaster Recovery
- Cost Predictability
- Environmental Impact

# 3- Costs savings and competitive advantages

- Pay-as-You-Go Model
- Reduction of Capital Expenditure
- Resource Scaling
- No Physical Infrastructure Maintenance
- Global Reach without Physical Presence
- Cost Predictability
- Reduced Energy Consumption
- Focus on Core Competencies
- Reduction of software license costs

# 4- AWS, Heroku and Google Workspace

- AWS (Amazon Web Services):
  - IaaS
  - Computing services (virtual machines)→ Amazon EC2
  - Storage and database services → Amazon S3 and Amazon RDS
  - Networking services
  - Monitoring services
  - Developers tools
  - Etc...

# 4- AWS, Heroku and Google Workspace

- Heroku:
  - PaaS that allows developers to build, deploy, and scale applications without the need to manage the underlying infrastructure.
  - Support for Multiple Programming Languages.
  - Developer-Friendly Environment: Developers can deploy applications with just a few commands, and the platform takes care of the underlying infrastructure, such as servers and networking.

# 4- AWS, Heroku and Google Workspace

- Google Workspace:
  - SaaS → Google Workspace is a suite of cloud computing, productivity, and collaboration tools developed by Google. It includes a variety of applications and services designed to enhance communication and collaboration within organizations.
  - Tools → GMail, Google Drive, Google Docs, Google Sheets, Google Slides, Google Calendar, Google Meet,  Google Chat, etc...