

Cloud Computing 101

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Cloud Computing Principles

- Technology is abstracted away from the user.
 - e.g. hardware and software management is the responsibility of the cloud provider
- Location-independent (if you have enough bandwidth)
- Cloud Services have a scalable architecture
- Dynamic
- Request-driven
- Clouds have multi-tenancy
- Several clients using the same resources

Features of Cloud

- Scale and Elasticity
- Resource pooling
- Location independence
- On-demand self-service provisioning
- Web services interfaces
- Billing and metering services
- Monitoring and measuring performance
- Providing security to customers

What is Cloud Computing?

Gartner

 Cloud computing is a style of computing in which scalable and elastic IT - enabled capabilities are delivered as a service using internet technologies.

Forrester Research

• A standardized IT capability (services, software, or infrastructure)delivered in a pay-peruse, self-service way.

NIST

• Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Everything as a Service

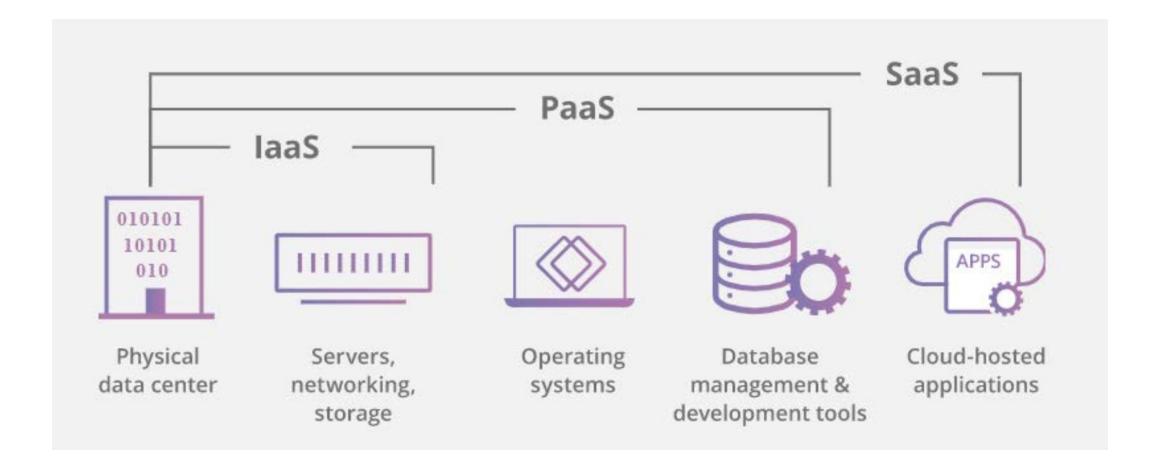
- Traditionally applications ran on dedicated hardware
- Clouds provide everything (hardware, software, applications, etc.) as a service

The Business Case for the Cloud

- Supporting business agility
- Reducing capital expenditure

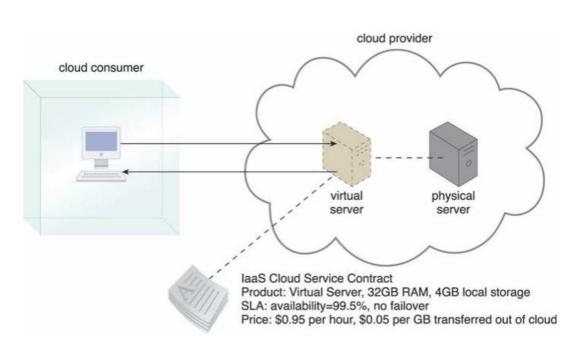
Cloud Service/ Delivery Models

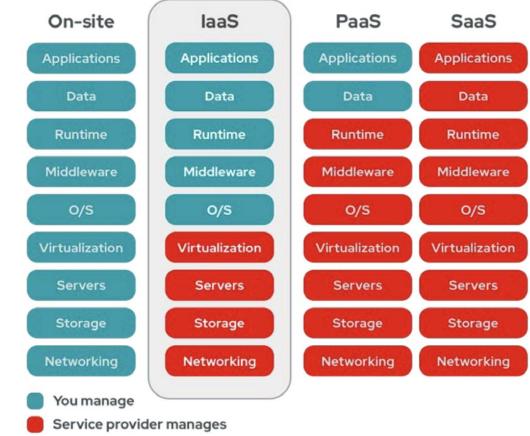
- Cloud Software as a Service (SaaS)
 - Use provider's applications over a network
- Cloud Platform as a Service (PaaS)
 - Deploy customer-created applications to a cloud
- Cloud Infrastructure as a Service (laaS)
 - Rent processing, storage, network capacity, and other fundamental computing resources



Infrastructure as a Service (laaS)

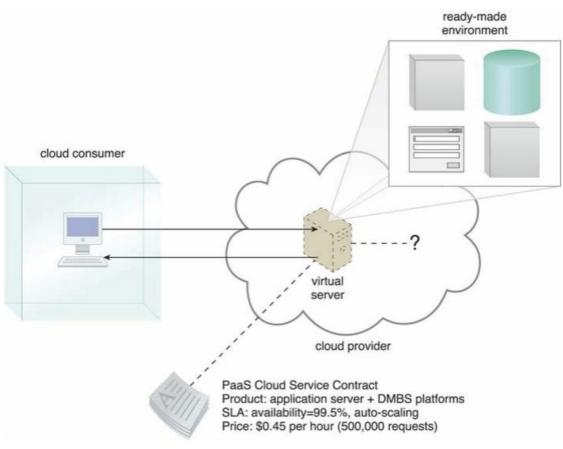
- Delivery of a compute foundation as a service.
 - servers
 - networking technology
 - storage
 - data center space
- Includes the delivery of
 - operating systems and
 - virtualization technology to manage the resources.
- Customer rents computing resources rather than buying and installing them
- Paid on a usage basis
- May include dynamic scaling
- Agreed on service level



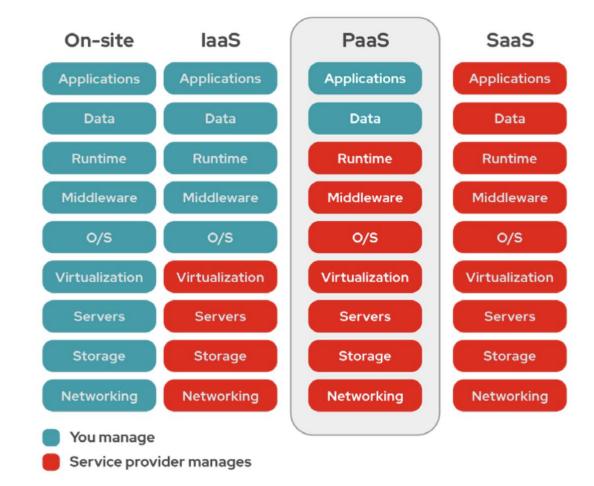


Platform as a Service (PaaS)

- Delivers a solution stack (ready-made) for both
 - software development and
 - a runtime environment
- Easy to develop applications
- May be constrained
- Danger of lock-in
- allow you to focus on the deployment and management of your applications.
- Cloud consumer is spared the administrative burden of setting up and maintaining the bare infrastructure IT resources

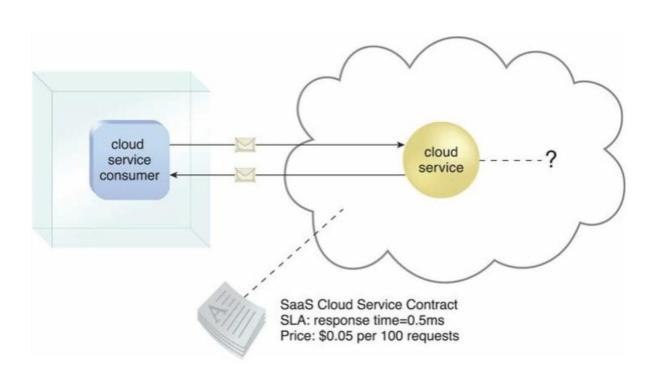


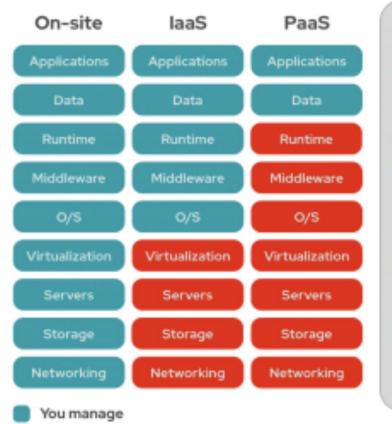
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Software as a Service (SaaS)

- Service provider offers specific applications offered as a "product"
 - hosted by the provider
 - Consumed by the customer
- May be customised by the customer
- Information stored by the provider
- No necessity to purchase any hardware
- The SaaS vendor
 - Operates
 - Maintains and
 - Supports all the software, hardware, and communications technology
- The price is on a per-use basis and involves no upfront capital costs.





Service provider manages

SaaS

Applications

Data

Runtime

Middleware

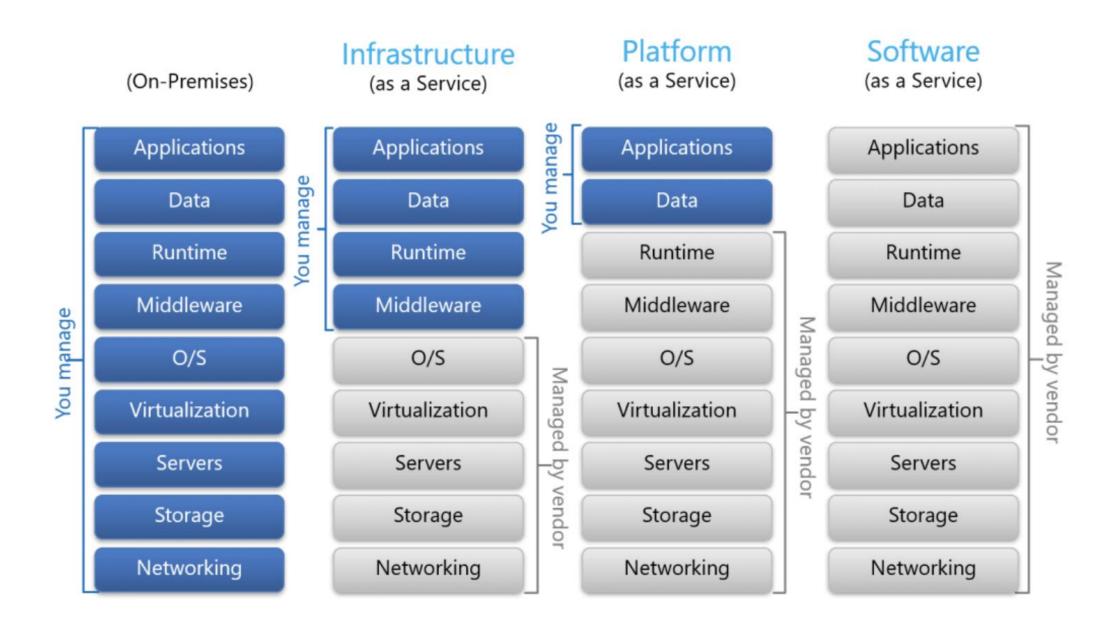
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Virtualization

Servers

Storage

Networking



Choosing between laaS, PaaS, SaaS

laaS

- Flexibility, finer control, & performance
- Still need some level of infrastructure maintenance
- Scaling, configuration, security

PaaS

- Speedy development, better integration, automated scaling, no maintenance needs
- Relatively low-customization, Vendor lock-in

SaaS

- Fastest for common applications
- Little customization

Cloud service/ delivery models variations

Many specialized variations of the three base cloud delivery models have emerged

- Storage as a Service
- Database as a Service
- Security as a Service
- Communication as a Service
- Integration as a Service
- Testing as a Service
- Process as a Service

Cloud Deployment Models

Private cloud

- enterprise owned or leased. Resources are dedicated to enterprise

Public cloud

Sold to the public, mega-scale infrastructure

Hybrid cloud

 composition of two or more clouds. Mostly deployment between public and private

Community cloud

shared infrastructure for specific community

Personal cloud

your own cloud – belongs to you

Cloud computing often leverages:

- Massive scale
- Virtualization
- Resilient computing
- Low cost software
- Geographic distribution
- Service orientation
- Advanced security technologies

Selection of a Cloud Service

Know what you want first

- What services are available?
- What is your pricing model?
- What are your scaling options?
- What are your security measures?
- Where are your datacenters located?
- What are SLA terms?
- Customer support
- Reputation

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