CLOUD

Deployment & Service Model

Prepared From:
[An Introduction to SaaS and Cloud Computing presentation By Ross Cooney]

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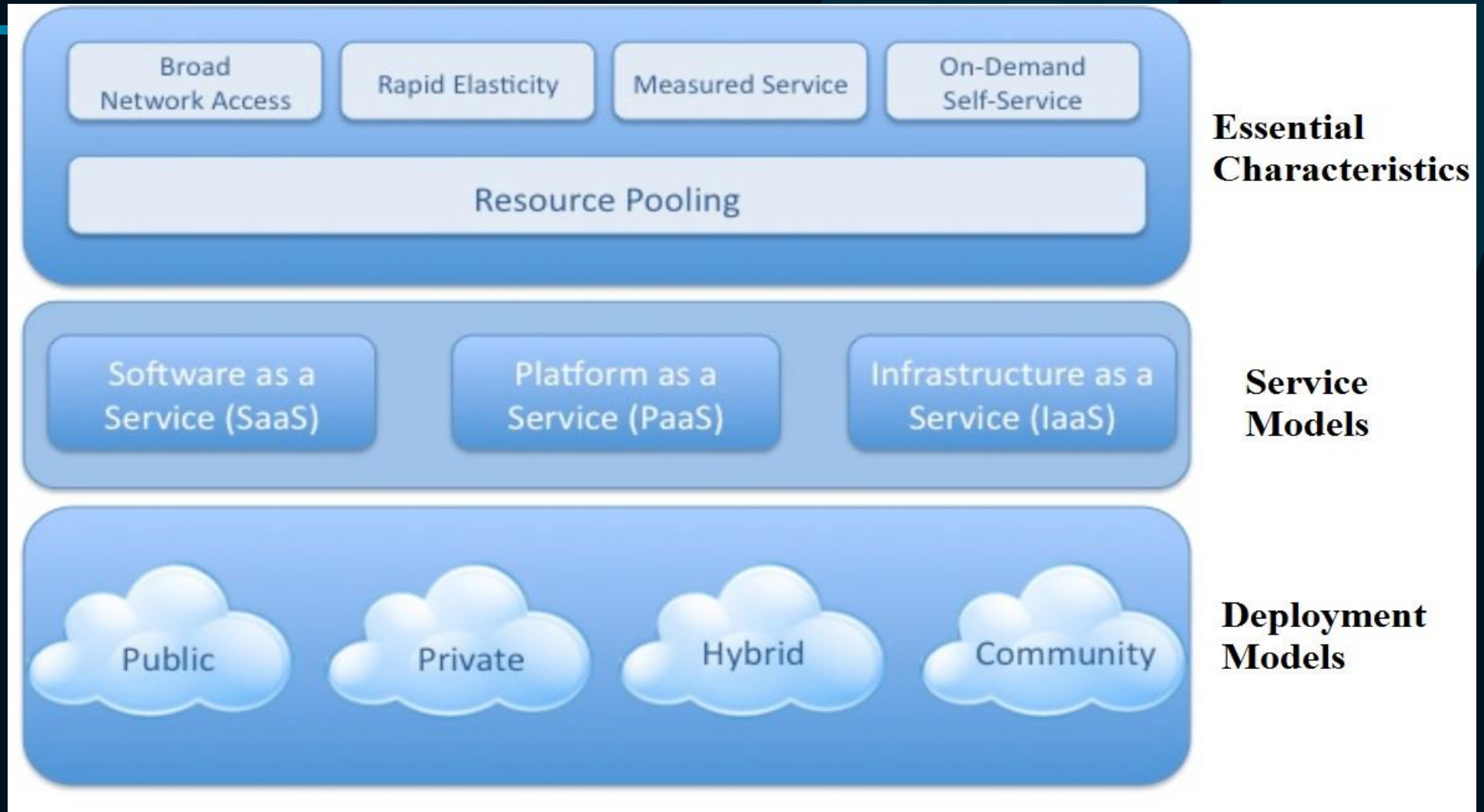
Architecture Overview



Cloud Deployment Models

Public/Internet Clouds

3rd party, multi-tenant Cloud infrastructure & services:

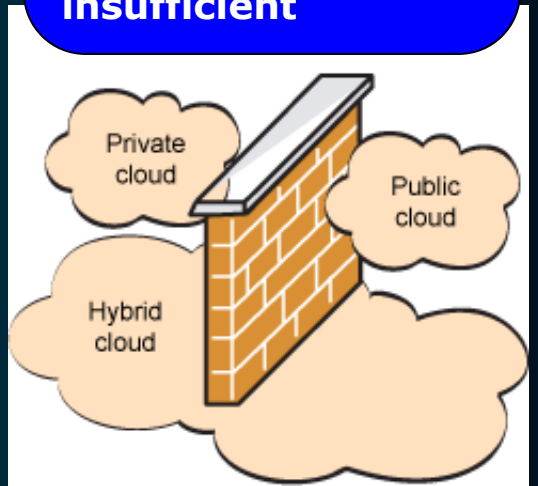
* available on subscription basis

Private/Enterprise Clouds

Cloud model run within a company's own Data Center / infrastructure for internal and/or partners use.

Hybrid/Inter Clouds

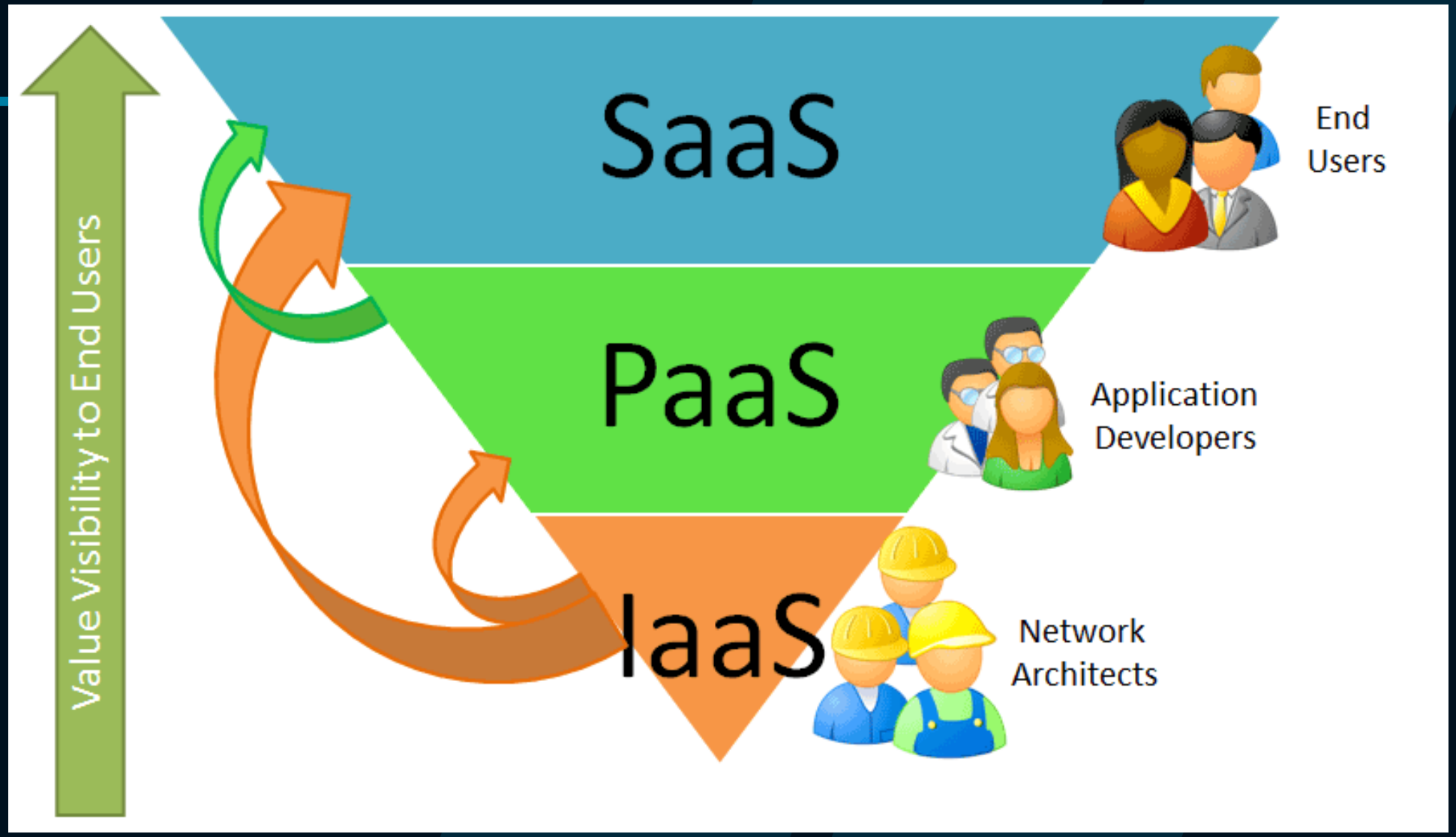
Mixed usage of private and public Clouds: Leasing public cloud services when private cloud capacity is insufficient



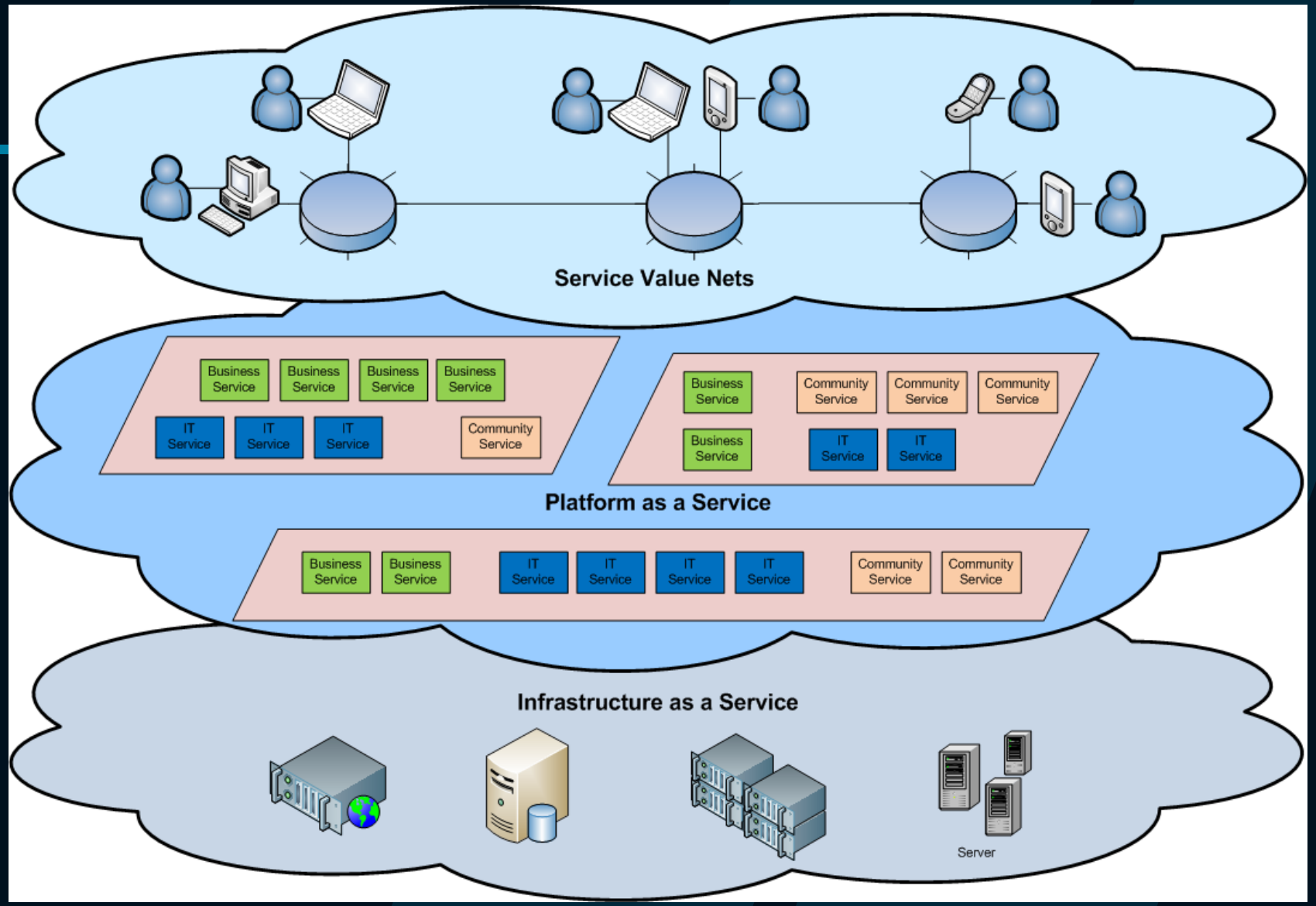
Cloud Deployment Models

	Public Cloud	Private Cloud	Hybrid Cloud
Description	Multi-tenant environment with pay-as-you-grow scalability	Scalability plus the enhanced security and control of a single-tenant environment	Connect the public cloud to your private cloud or dedicated servers — even in your own data center
Physical hardware	Shared	Dedicated	Shared + Dedicated
Best for	Non-sensitive, public-facing operations and unpredictable traffic	Sensitive, business-critical operations	Combine public, private and/or dedicated servers, for the best of each
Scalable	Yes	Yes	Yes
Customizable	No	Yes	Yes
High Performance	No	Yes	Yes
Enhanced security and control	No	Yes	Yes
Low cost, utility billing	Yes	No	Yes
Flexible	Yes	No	Yes

Cloud Service Models

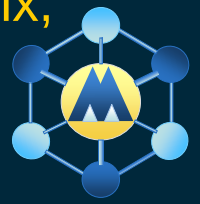


Cloud Service Models



Rentable Cloud Services

- Software as a Service (SaaS)
  - SalesForce.Com
- Platform as a Service (PaaS)
  - Google App Engine, Microsoft Azure, Manjrasoft Aneka..
- Infrastructure as a Service (IaaS)
  - CPU, Storage: Amazon.com, Nirvanix, Go

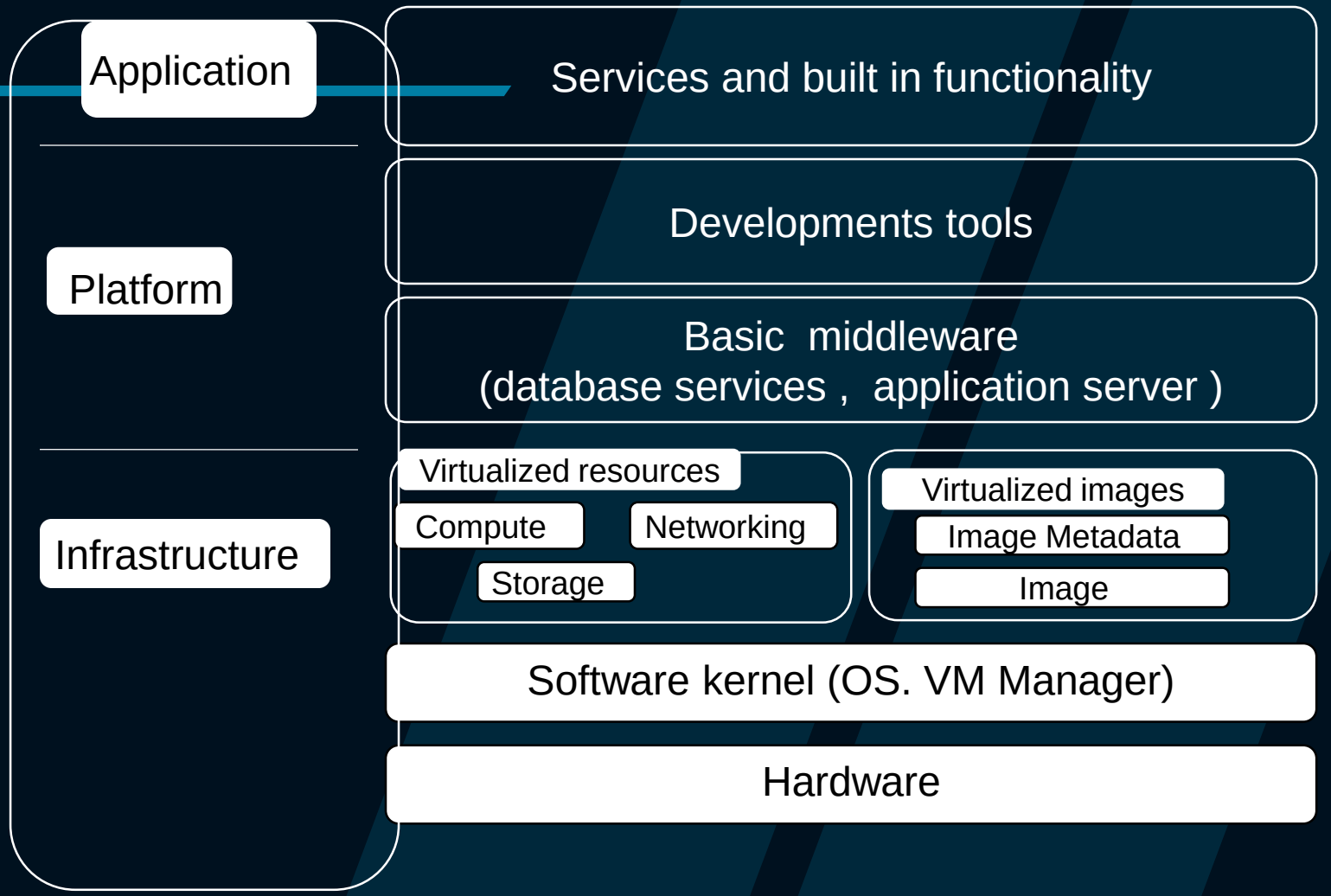


Software as a Service (SaaS)

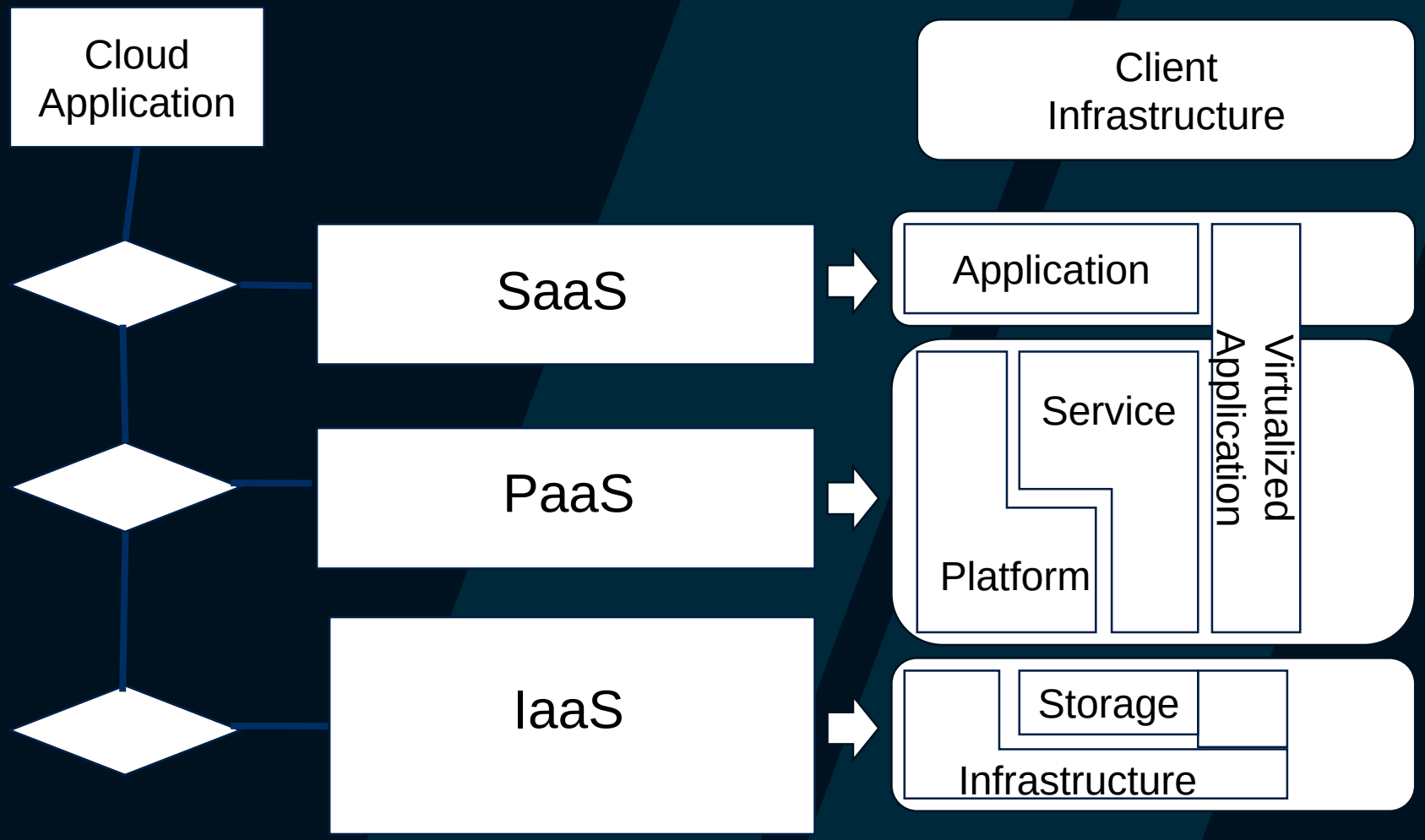
Platform as a Service (PaaS)

Infrastructure as a Service (IaaS)

Framework of cloud computing



View of Cloud Deployment



SaaS
Software as a Service

SaaS

Software delivery model

- Increasingly popular with SMEs
- No hardware or software to manage
- Service delivered through a browser

SaaS

Advantages

- Pay per use
- Instant Scalability
- Security
- Reliability
- APIs

SaaS

Examples

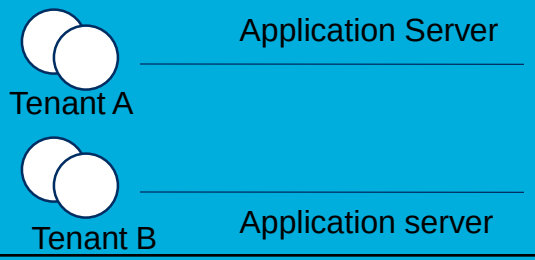
- CRM
- Financial Planning
- Human Resources
- Word processing

Commercial Services:

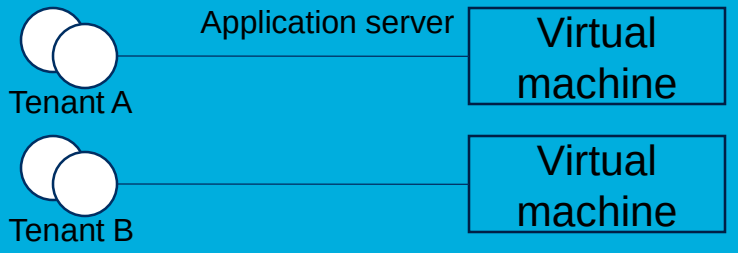
- Salesforce.com
  - https://www.salesforce.com/in/
- Emailcloud
  - http://www.emailcloud.com/

Multi-tenants Deployment Modes for Application Server

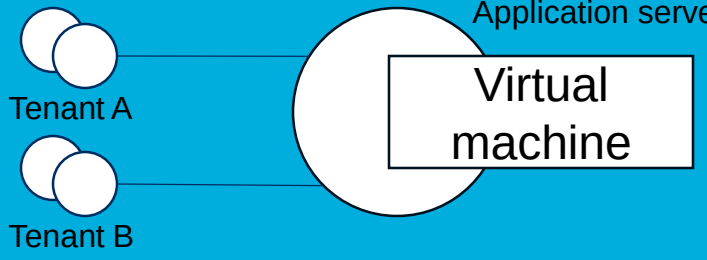
Fully isolated Application server
Each tenant accesses an application server running on a dedicated servers.



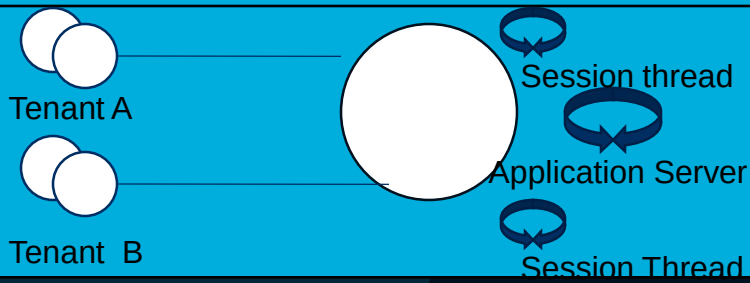
Virtualized Application Server
Each tenant accesses a dedicated application running on a separate virtual machine.



Shared Virtual Server
Each tenant accesses a dedicated application server running on a shared virtual machine.

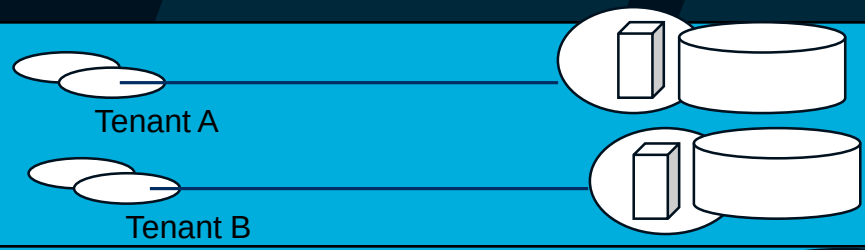


Shared Application Server
The tenant shared the application server and access application resources through separate session or threads.

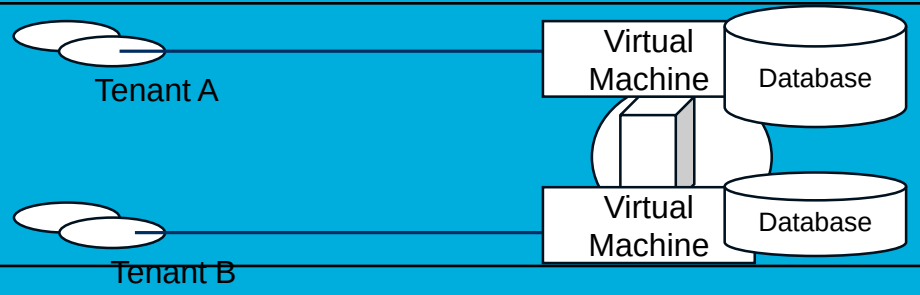


Multi-tenants Deployment Modes in Data Centers

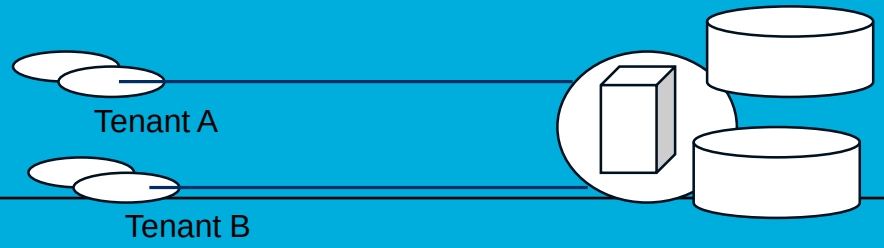
Fully isolated data center
The tenants do not share any data center resources



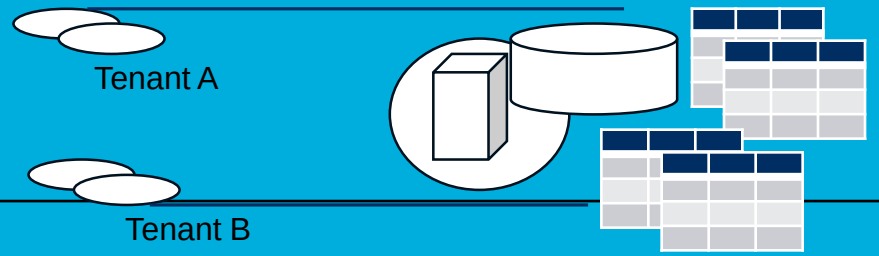
Virtualized servers
The tenants share the same host but access different databases running on separate virtual machines



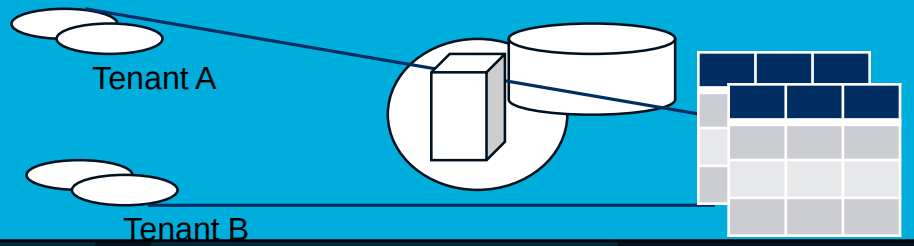
Shared Server
The tenants share the same server (Hostname or IP) but access different databases



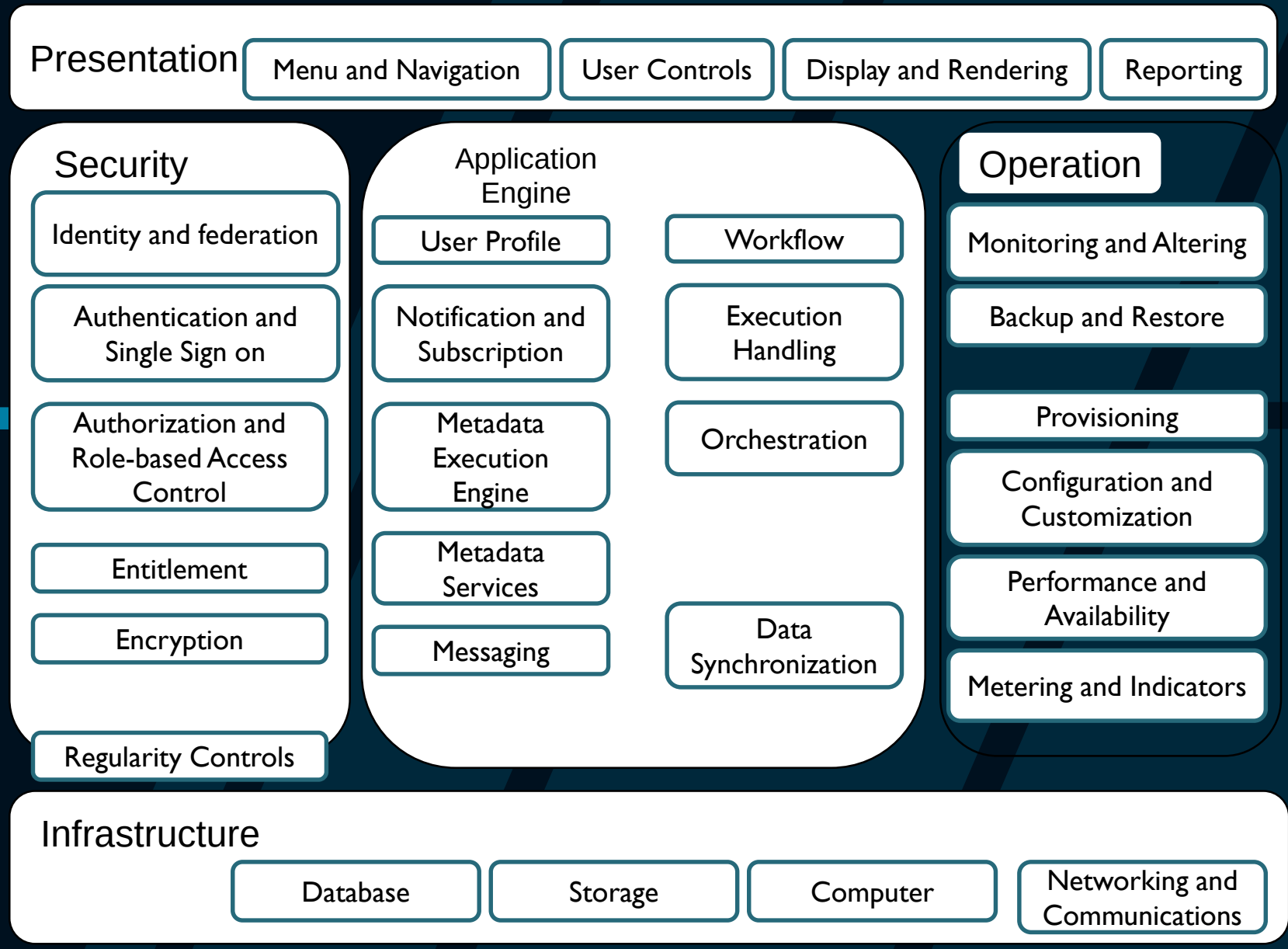
Shared Database
The tenants share the same server and database (shared or different ports) but access different schema(tables)



Shared Schema
The tenants share the same server, database and schema (tables). The irrespective data is segregated by key and rows.



Conceptual framework of Software as a Service



PaaS
Platform as a Service

Platform delivery model

PaaS

- Platforms are built upon Infrastructure, which is expensive
- Storage
- Database

Advantages

PaaS

- Pay per use
- Instant Scalability
- Security
- Reliability
- APIs

Examples

PaaS

- Google App Engine
- Mosso
- AWS: S3

IaaS
Infrastructure as a Service

Computer infrastructure delivery model

Access to infrastructure stack:

- Full OS access
- Firewalls
- Routers
- Load balancing

IaaS

Advantages

- Pay per use
- Instant Scalability
- Security
- Reliability
- APIs

IaaS

Examples

- Flexiscale
- AWS: EC2

IaaS

SaaS

PaaS

IaaS

Common Factors

- Pay per use
- Instant Scalability
- Security
- Reliability
- APIs

Advantages

- Lower cost of ownership
- Reduce infrastructure management responsibility
- Allow for unexpected resource loads
- Faster application rollout

Cloud Economics

- Multi-tenented
- Virtualisation lowers costs by increasing utilisation
- Economies of scale afforded by technology
- Automated update policy

Clouds Examples

- Amazon.com
  - Amazon Simple Storage Service (Amazon S3) .
  - Amazon Elastic Compute Cloud (Amazon EC2)
- Hadoop (Map/Reduce)
  - Large scale information processing, i.e. parallel computing

Windows Azure

- Enterprise-level on-demand capacity builder
- Fabric of cycles and storage available on-request for a cost
- You have to use Azure API to work with the infrastructure offered by Microsoft
- Significant features: web role, worker role , blob storage, table and drive-storage

Amazon EC2

- Amazon EC2 is one large complex web service.
- EC2 provided an API for instantiating computing instances with any of the operating systems supported.
- It can facilitate computations through Amazon Machine Images (AMIs) for various other models.
- Signature features: S3, Cloud Management Console, MapReduce Cloud, Amazon Machine Image (AMI)
- Excellent distribution, load balancing, cloud monitoring tools

Google App Engine

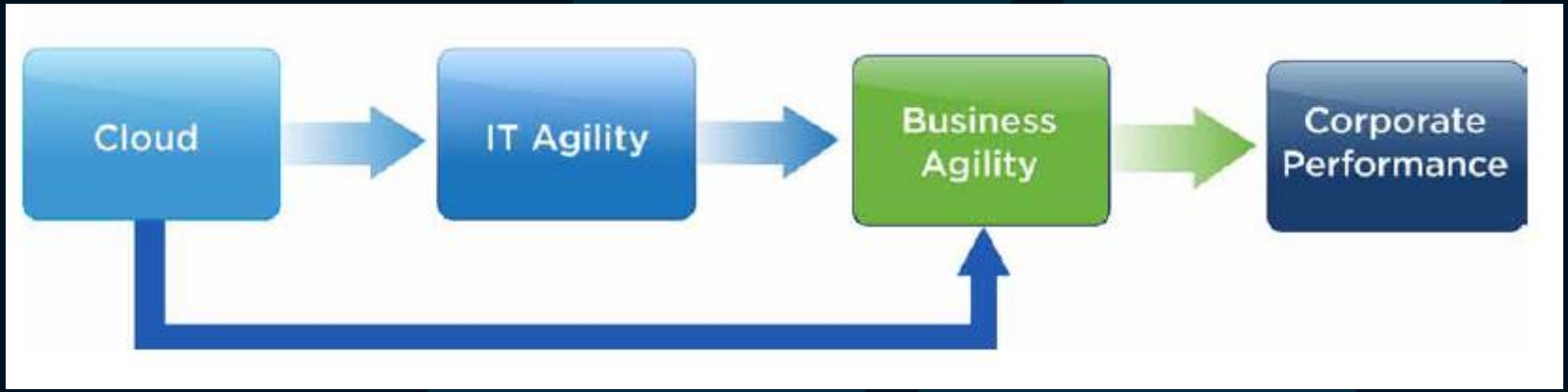
- This is more a web interface for a development environment that offers a one stop facility for design, development and deployment Java and Python-based applications in Java, Go and Python.
- Google offers the same reliability, availability and scalability at par with Google’s own applications
- Interface is software programming based
- Comprehensive programming platform irrespective of the size (small or large)
- Signature features: templates and appspot, excellent monitoring and management console

Challenges to Cloud Computing

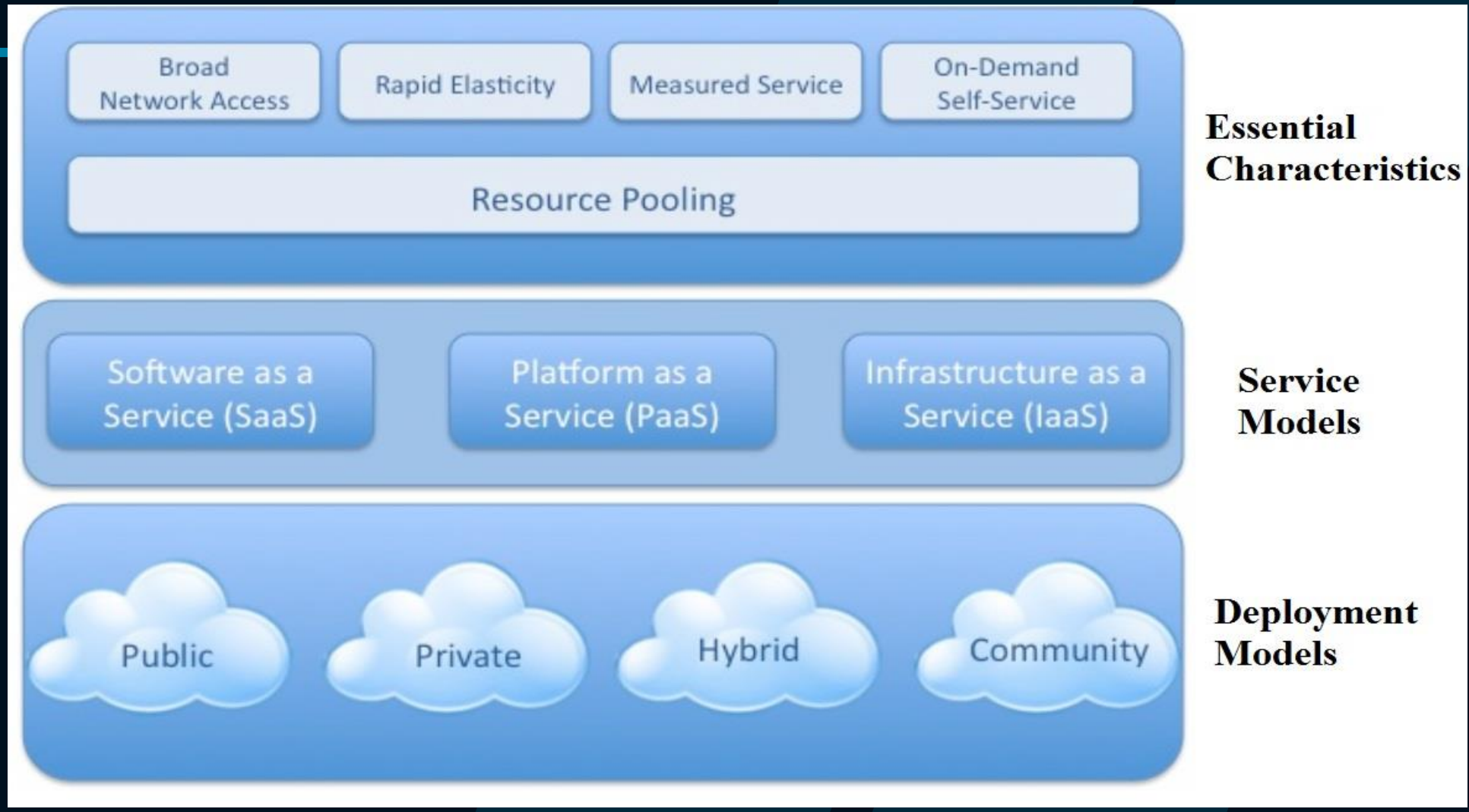
- Security and Privacy
- Interoperability and Portability
- Reliability and Availability
- Service Quality
- Performance and Bandwidth Cost

Computing & Business Agility

- Agility is achieved in cloud computing because of its elasticity and flexibility.
- Cloud models support agility in certain key areas for business enterprises, they are:



Summary


Broad Network Access
Rapid Elasticity
Measured Service
On-Demand Self-Service
Resource Pooling
Essential Characteristics
Software as a Service (SaaS)
Platform as a Service (PaaS)
Infrastructure as a Service (IaaS)
Service Models
Public
Private
Hybrid
Community
Deployment Models

Thank You