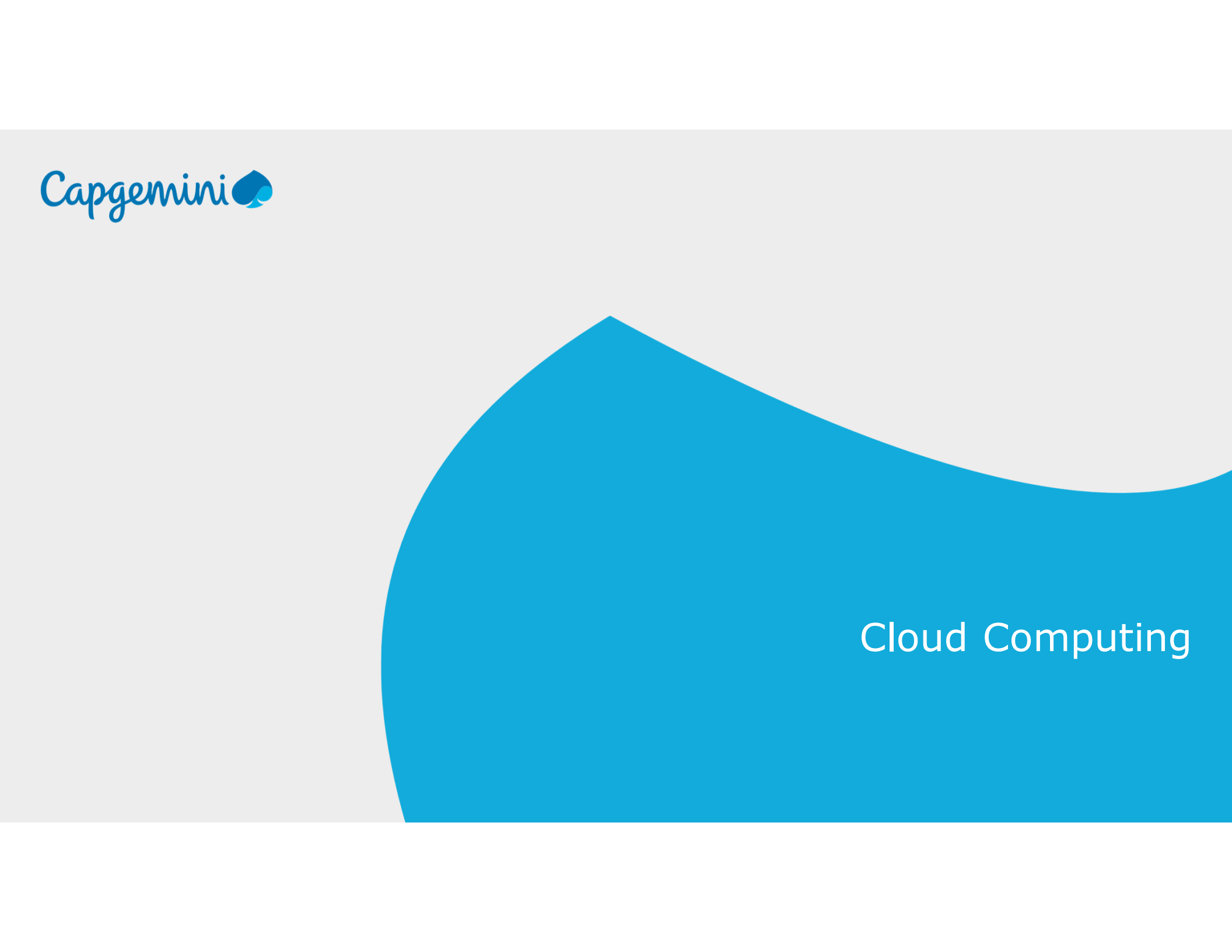

Capgemini
Cloud Computing

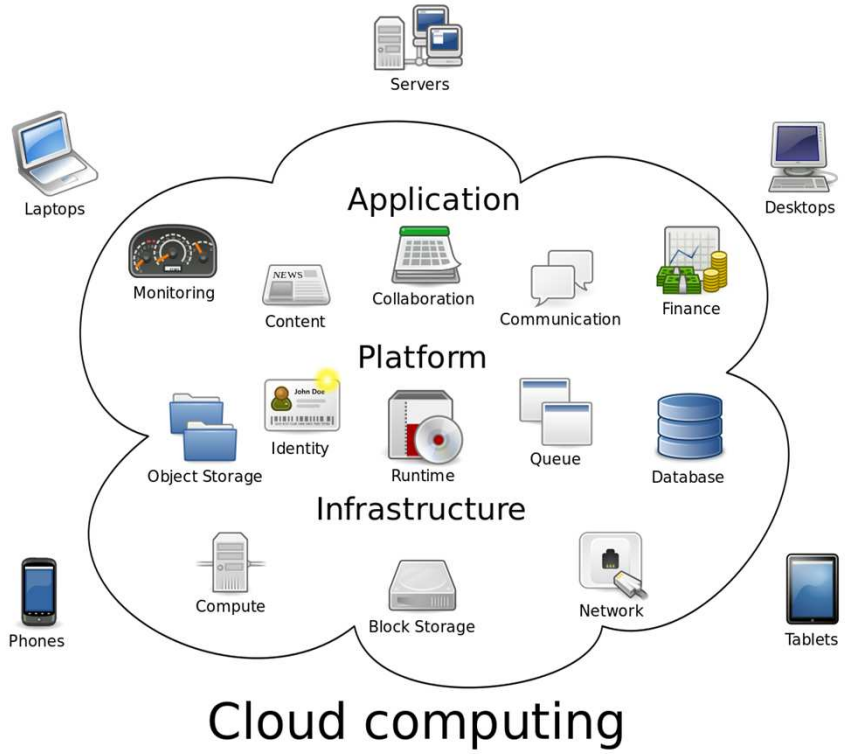
Lesson Objectives

At the end of this module you will be able to:

- ✓ Understand the fundamentals Cloud Computing
- ✓ Get an overview of cloud applications, cloud platform and private cloud
- ✓ Understand the difference between SaaS, PaaS and IaaS
- ✓ List out the benefits and limitations of SaaS, PaaS and IaaS

Introduction to Cloud Computing

- Cloud computing is a virtualized computing platform that provides infinite resources for running our applications.
- It leverages economies of scale to save our money by only requiring us to pay for what we use.



Cloud Providers

- A cloud provider is a company that offers some component of cloud computing services like servers, storage, databases, networking analytics and more over the internet.
- Cloud providers are sometimes referred to as cloud service providers or CSPs

Cloud Computing Benefits

- We move towards an operational expenditure model(OpEx) instead of capital expenditure (CapEx)
  - No need to worry about upfront cost for provisioning space, adequate environment with redundant power and air conditioning, the server racks. Cloud provider takes care of that for you
- Stay on the cutting edge with latest technology.
  - No need to worry about hardware infrastructure to support it
- Ensures redundancy i.e. up-time and availability.
- Can be scaled geographically to lower the latency.

Elements of the Cloud Computing

Elasticity

- Dynamically adjusting your infrastructure to service demand

Scalability

- Scale your virtual machine instances up or down dynamically, and horizontal scaling, where you can spawn multiple instances of a server for load balancing.

Pooling

- Virtually unlimited compute storage and network power, which can be made available on demand and pay only for what you use.

Provisioning

- Supports self-service provisioning, no need to be a full administrator to provision resources

Cloud Computing Categories

Cloud Applications

Running applications in data centers owned by third parties and accessed via the internet

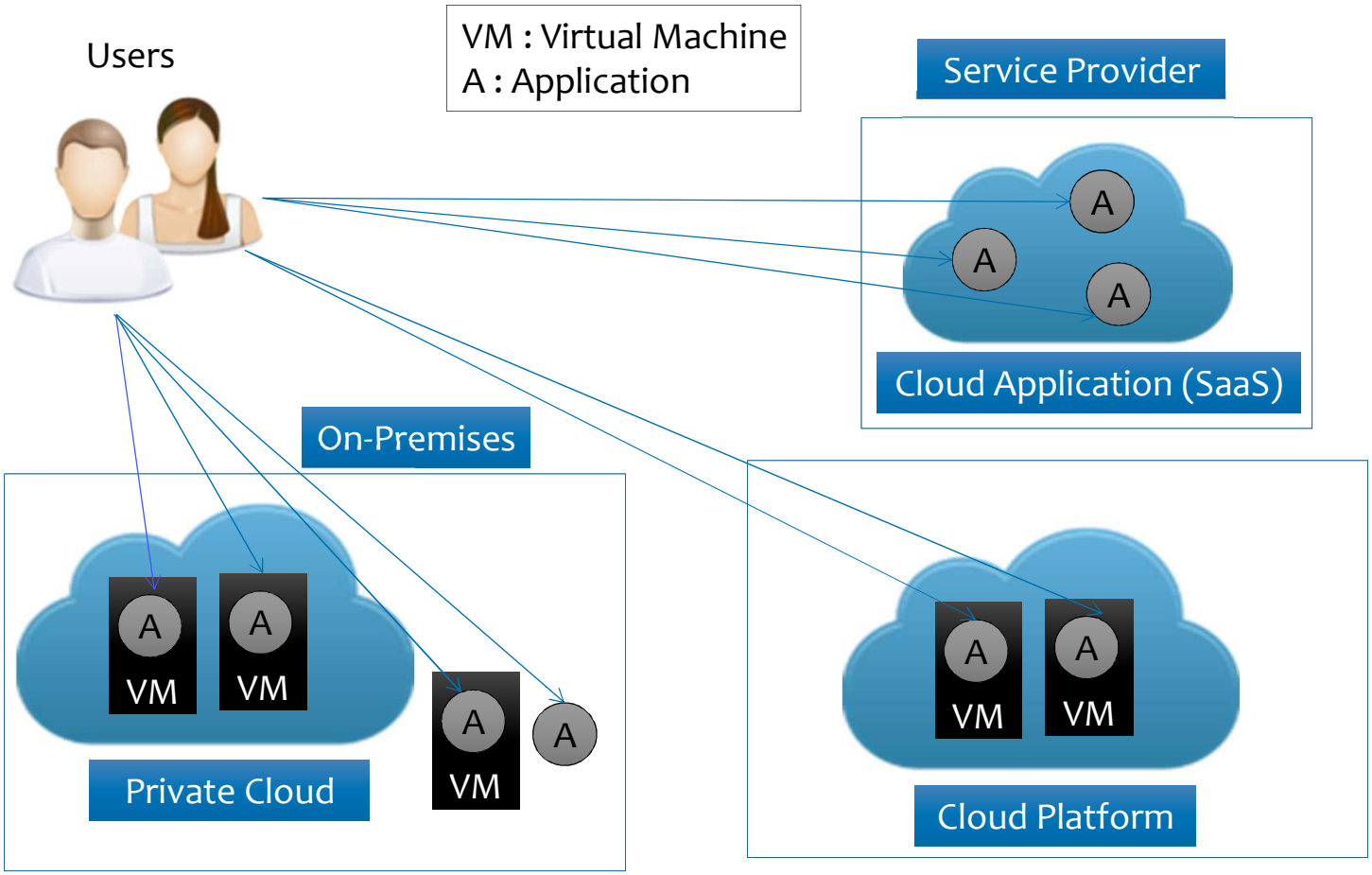
Cloud Platforms

Computing resources at data centers across the internet.

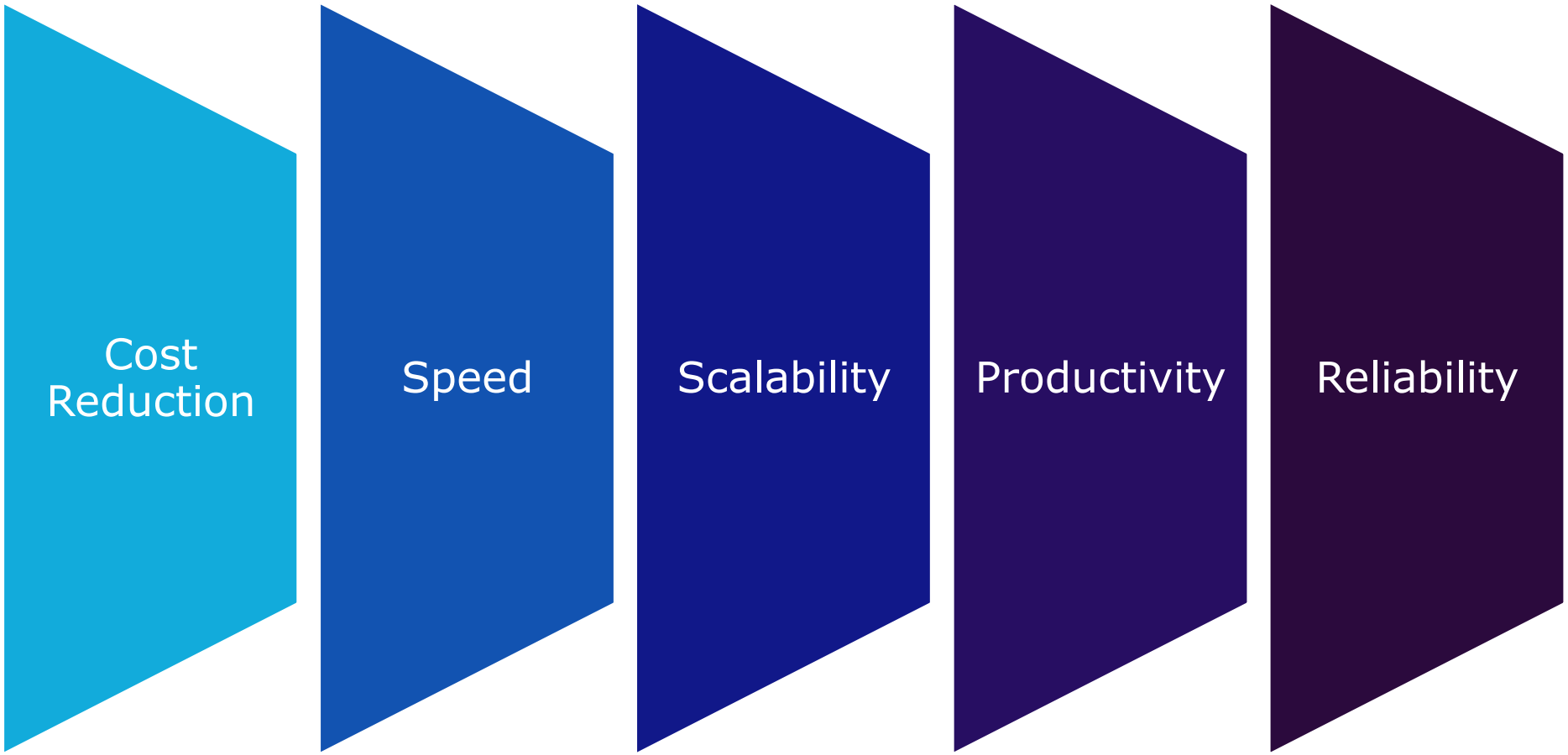
Private Clouds

Cloud platforms used by a single organization inside their own on-premise data center

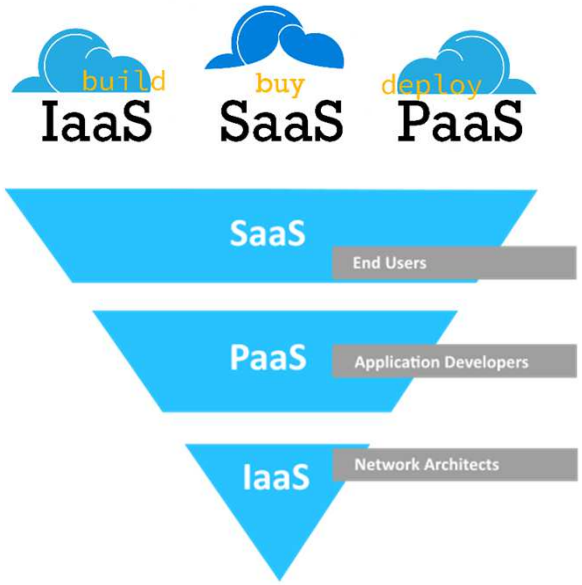
Cloud Computing Categories

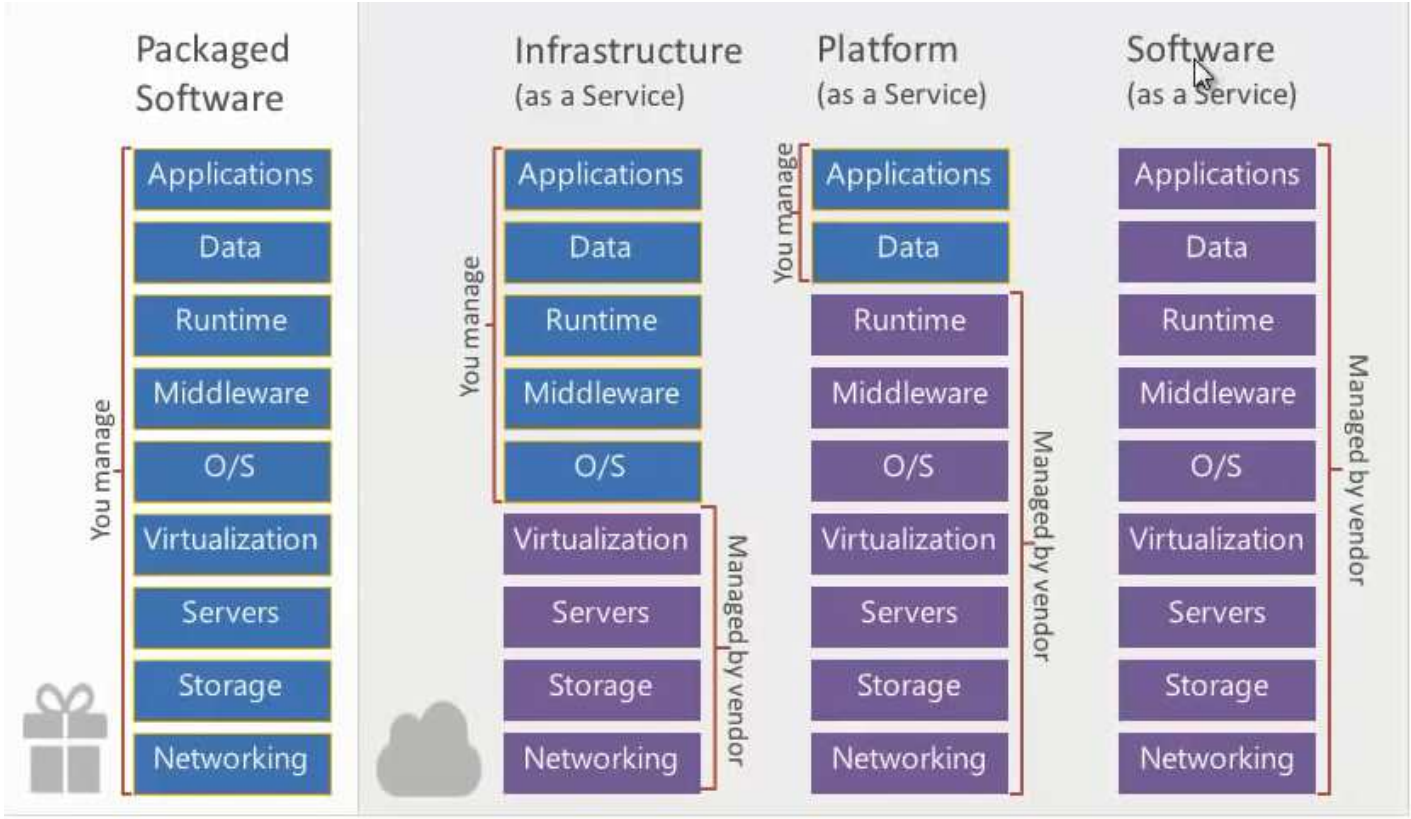


Benefits of cloud computing



Cloud Services

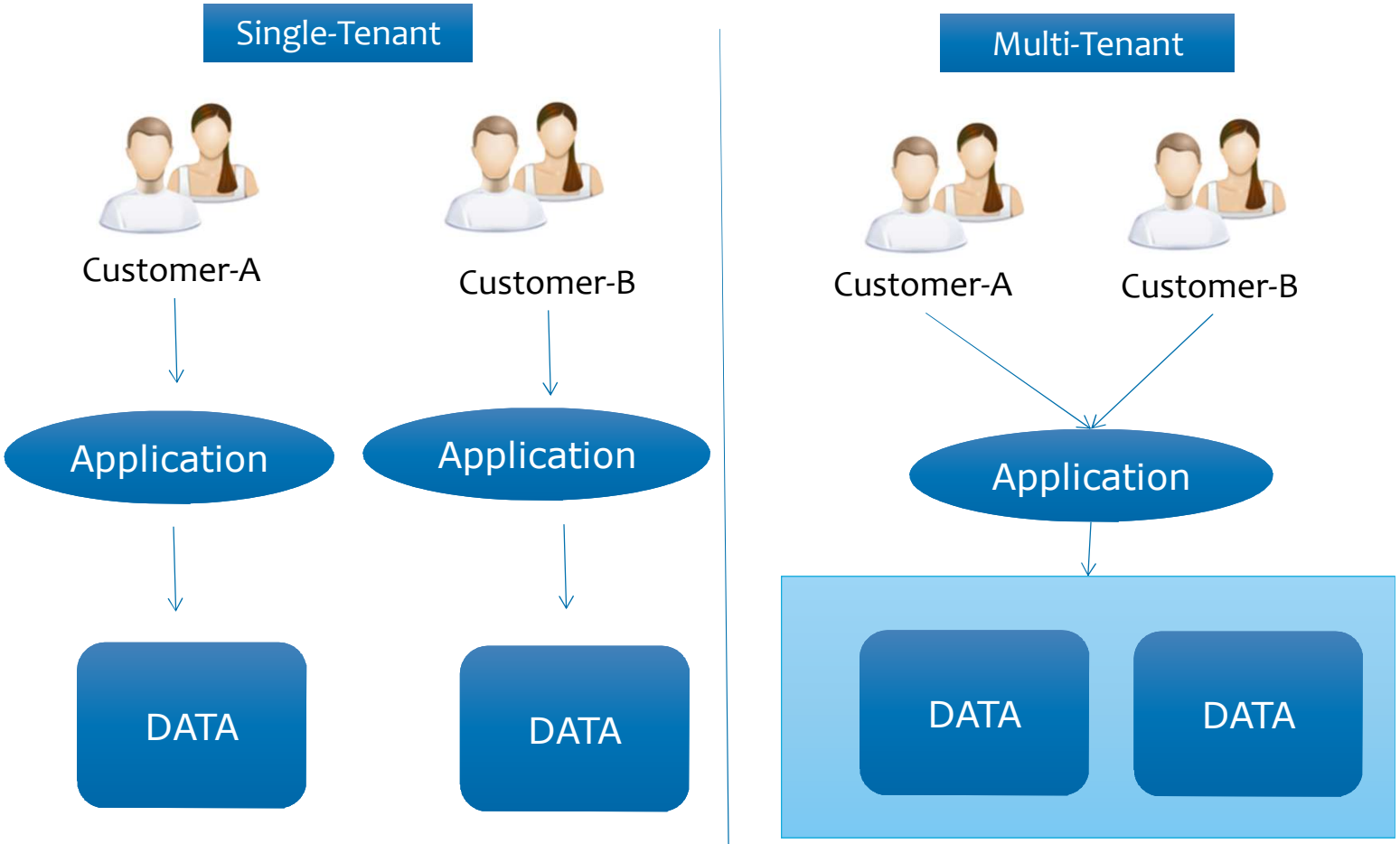




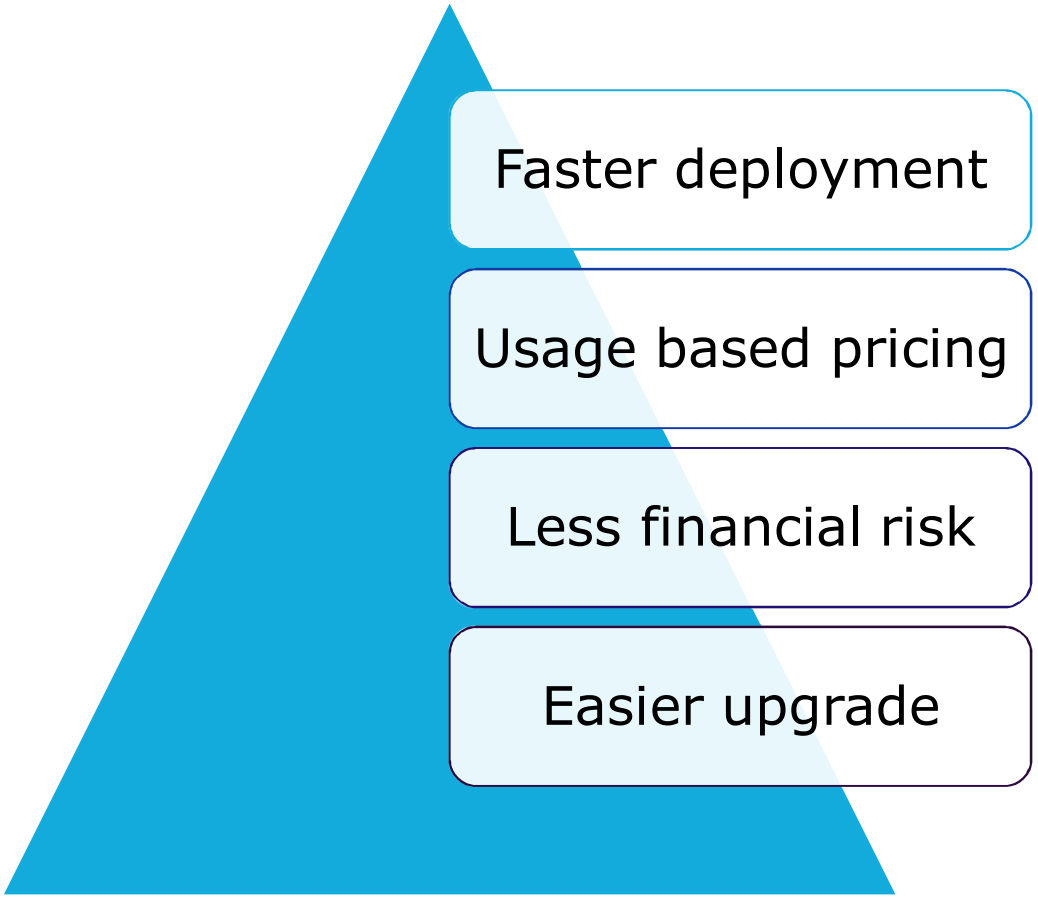
Cloud Applications (SaaS)

- Running applications on the public cloud is commonly referred as Software as a Service(SaaS)
- Cloud applications is nothing but an application which offers CRM(Customer Relationship Management), Email, ERP, collaboration, productivity etc.
- Microsoft, Google, Salesforce, SAP, IBM, Oracle, NetSuite & Zoho were some of the important service providers to offer cloud applications.

Single-Tenant vs. Multi-Tenant Applications



SaaS Advantages



SaaS Limitations

Requires trusted SaaS Provider

Legal concerns

Limited App customization

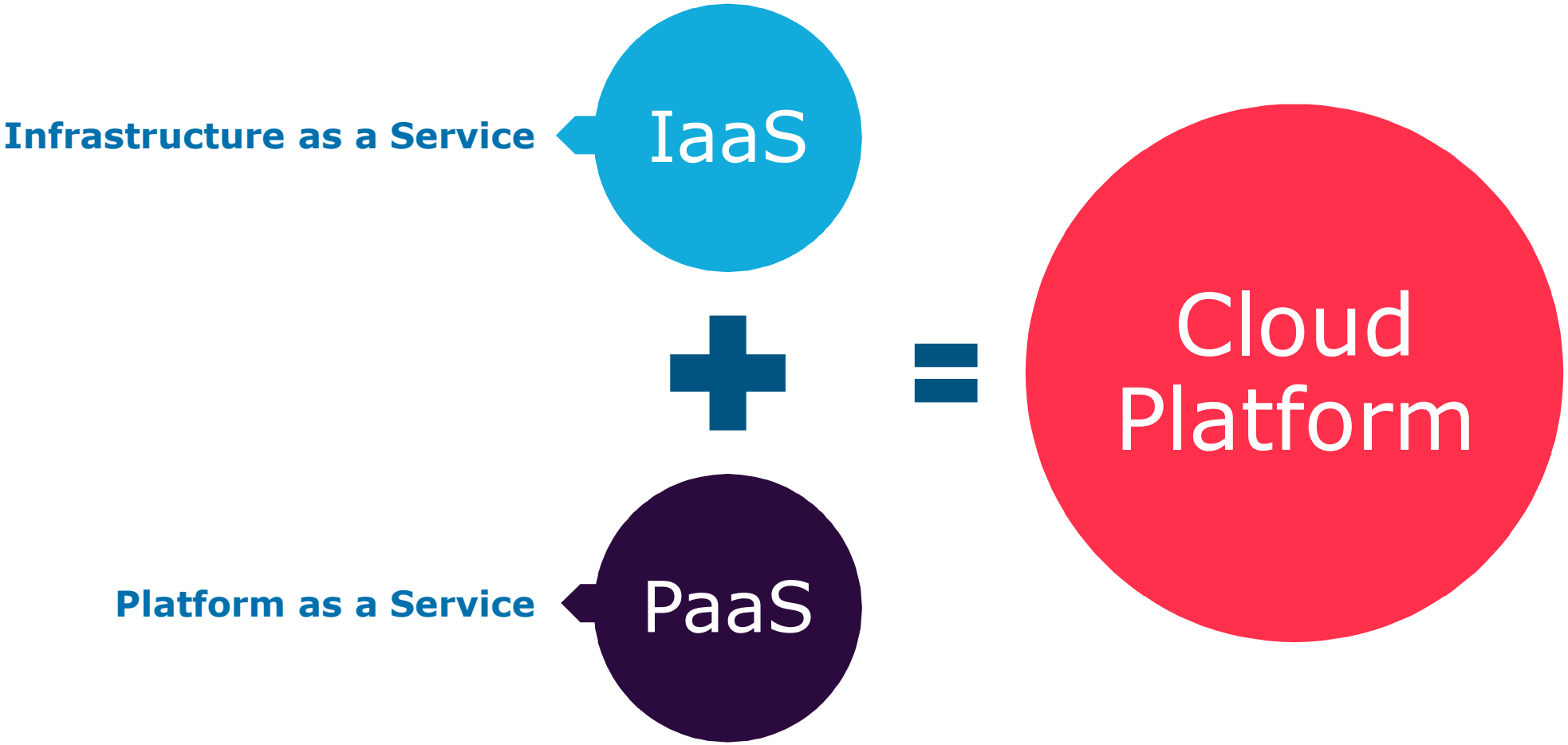
Integration issues with on-premises applications

Requires good internet connectivity

Cloud Platform

- Cloud platform provides an environment with that developers can build applications on that and users can then use it.
- Cloud platform is a platform not an application. It allows developers to create application, run applications, store data and more
- Cloud platform provides self service access to resources such as a virtual machine , storage , service through a browser interface.
- Cloud platform allows us charging only for the resources an application uses. i.e. we can use a VM for an hour or Giga bytes of storage for a day.

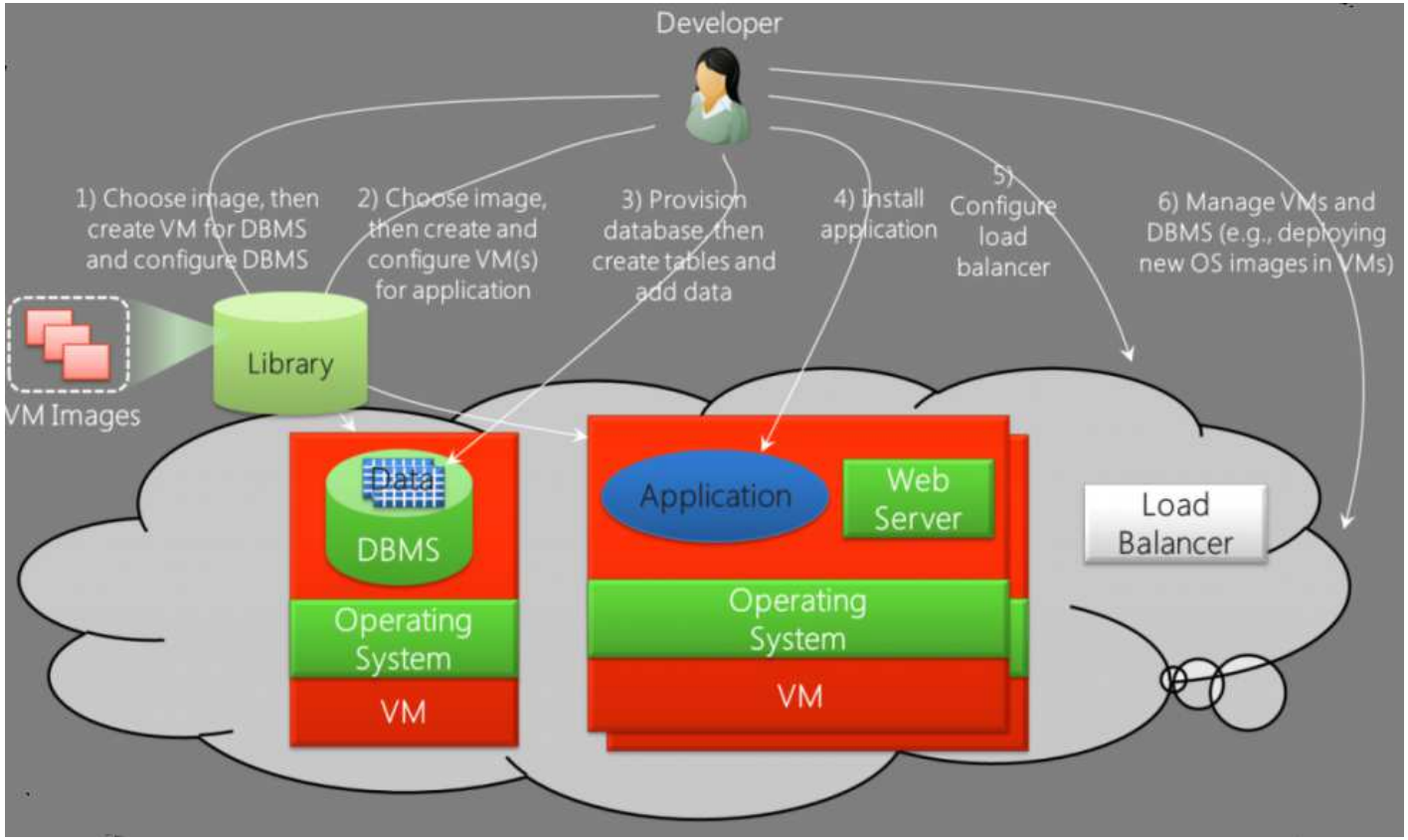
Cloud Platform categories



IaaS vs PaaS

IaaS	PaaS
Higher degree of control	Higher agility
Higher support for legacy apps	Higher ease of management
Lower ease of management	Lower degree of control
Lower agility	Lower support for legacy apps

Setting-up an Application on IaaS Environment



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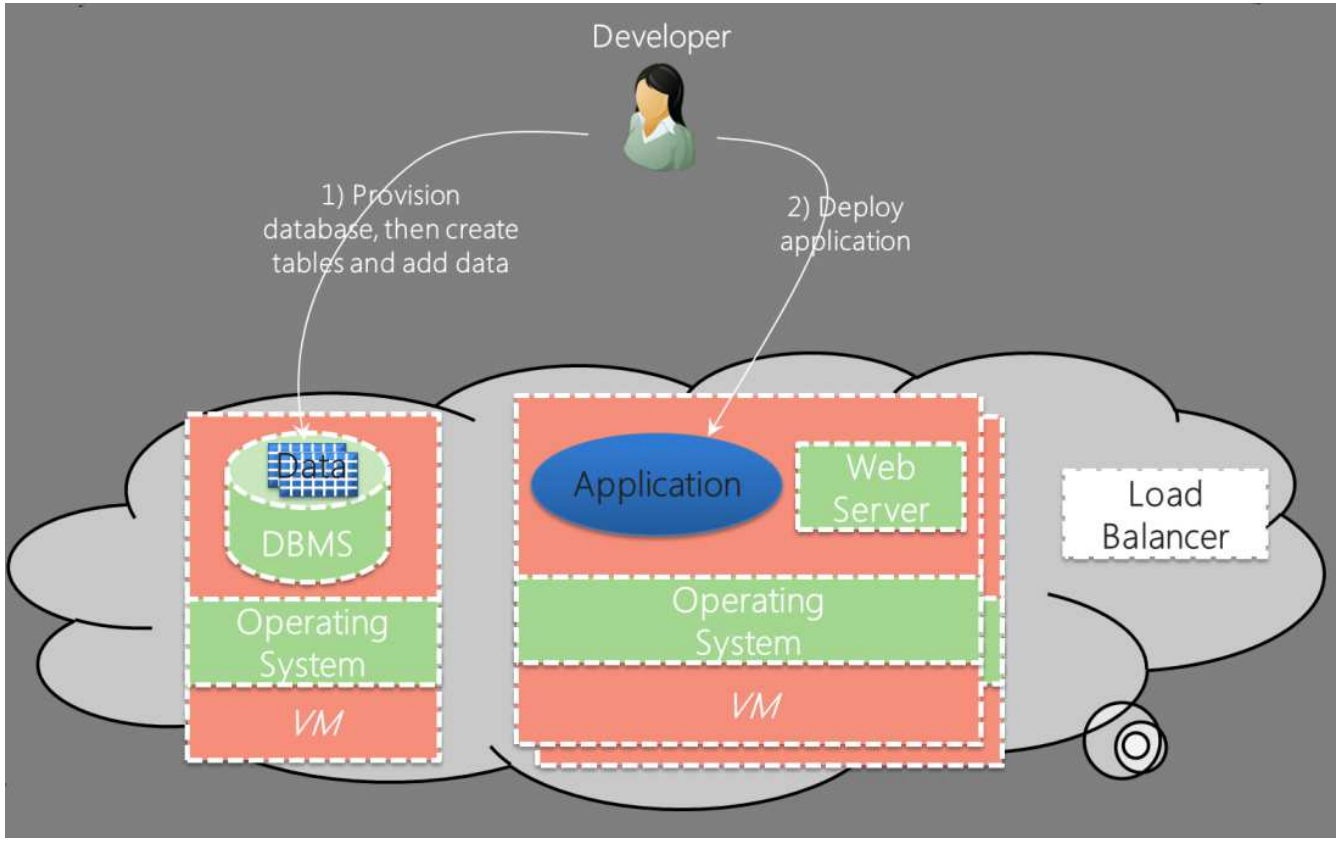
Setting-up an Application on PaaS Environment



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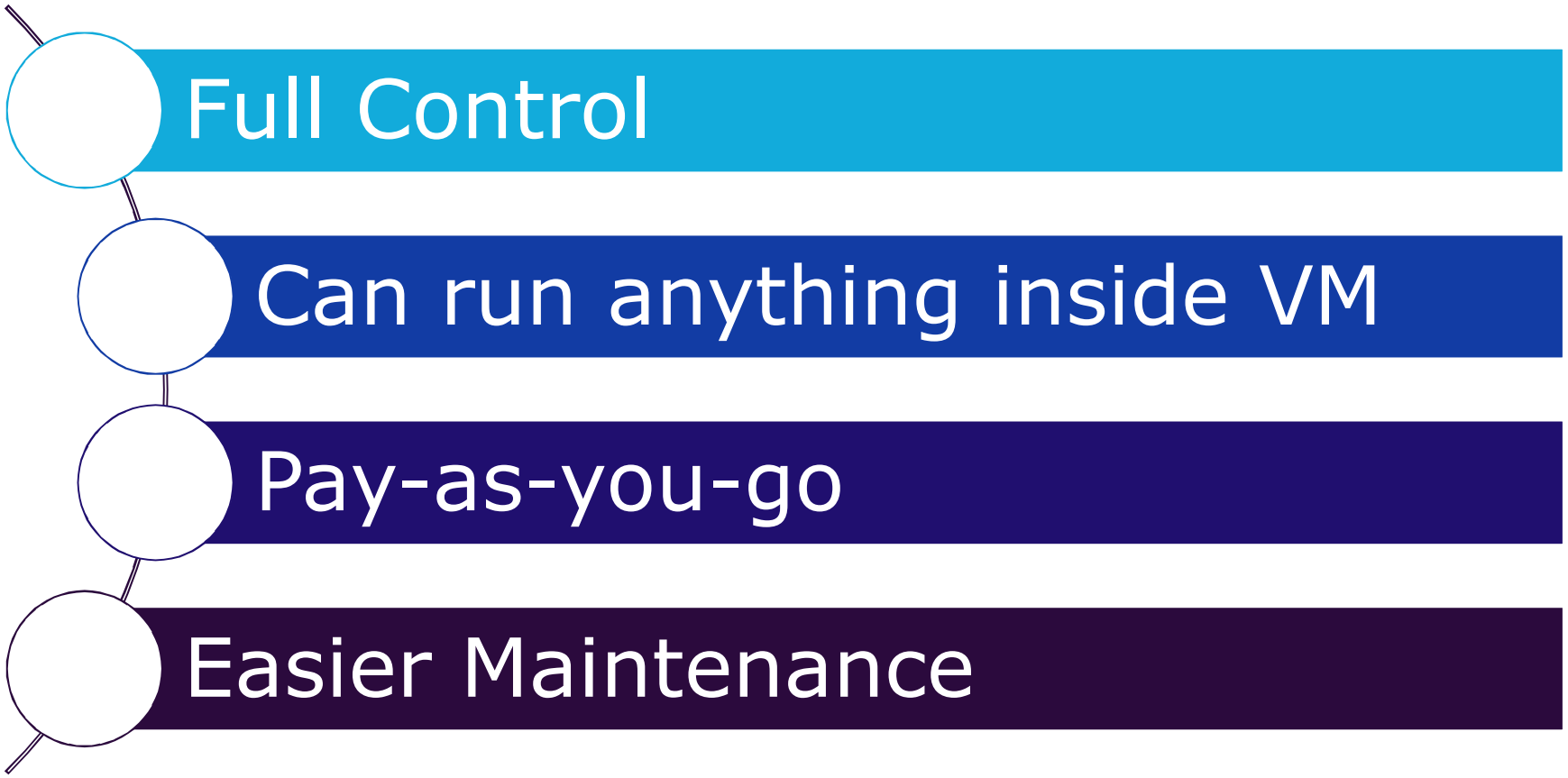
IaaS Advantages

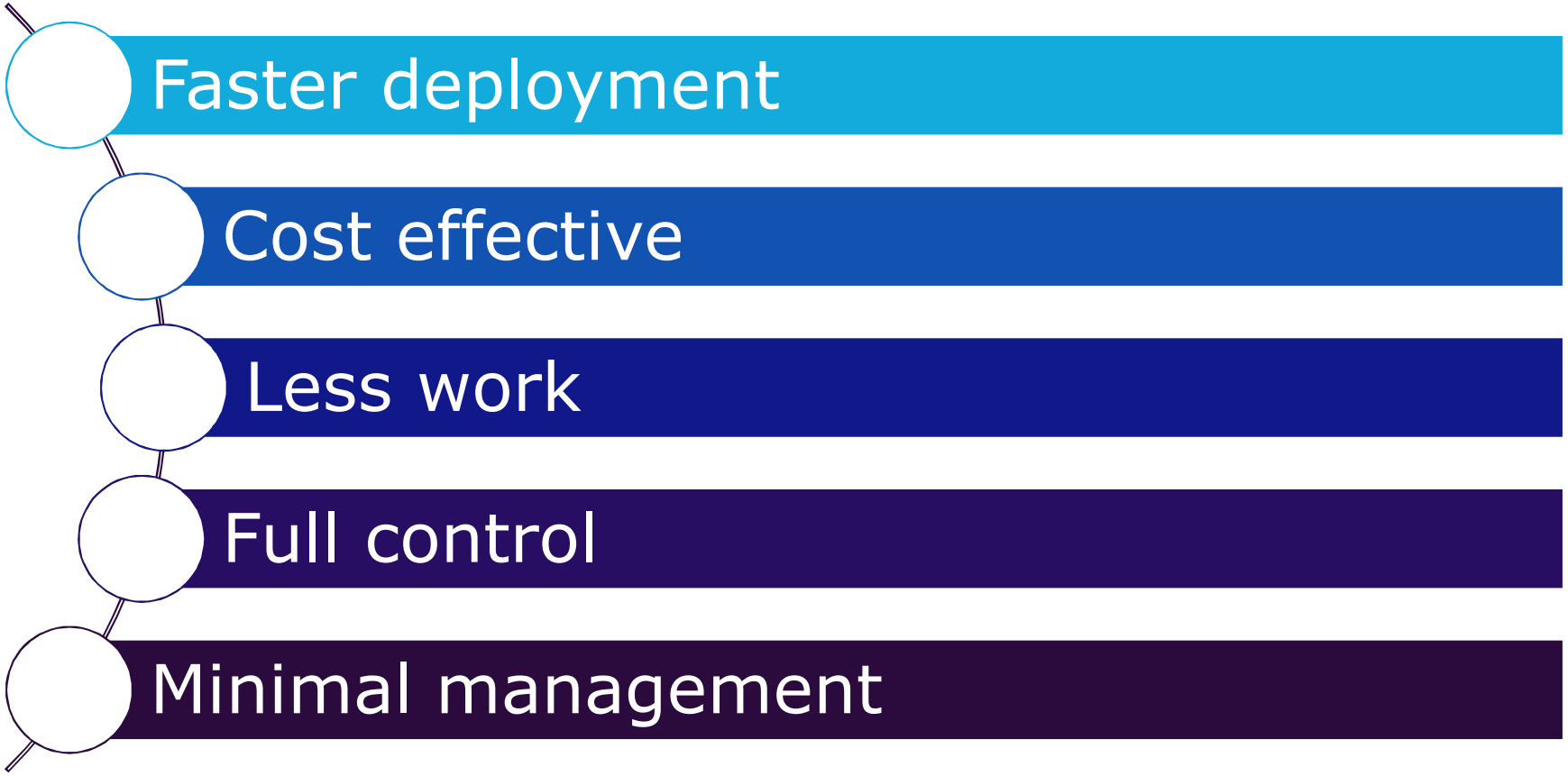


IaaS Limitations

Most expensive

More responsibility

PaaS Advantages



PaaS Limitations

Less familiarity

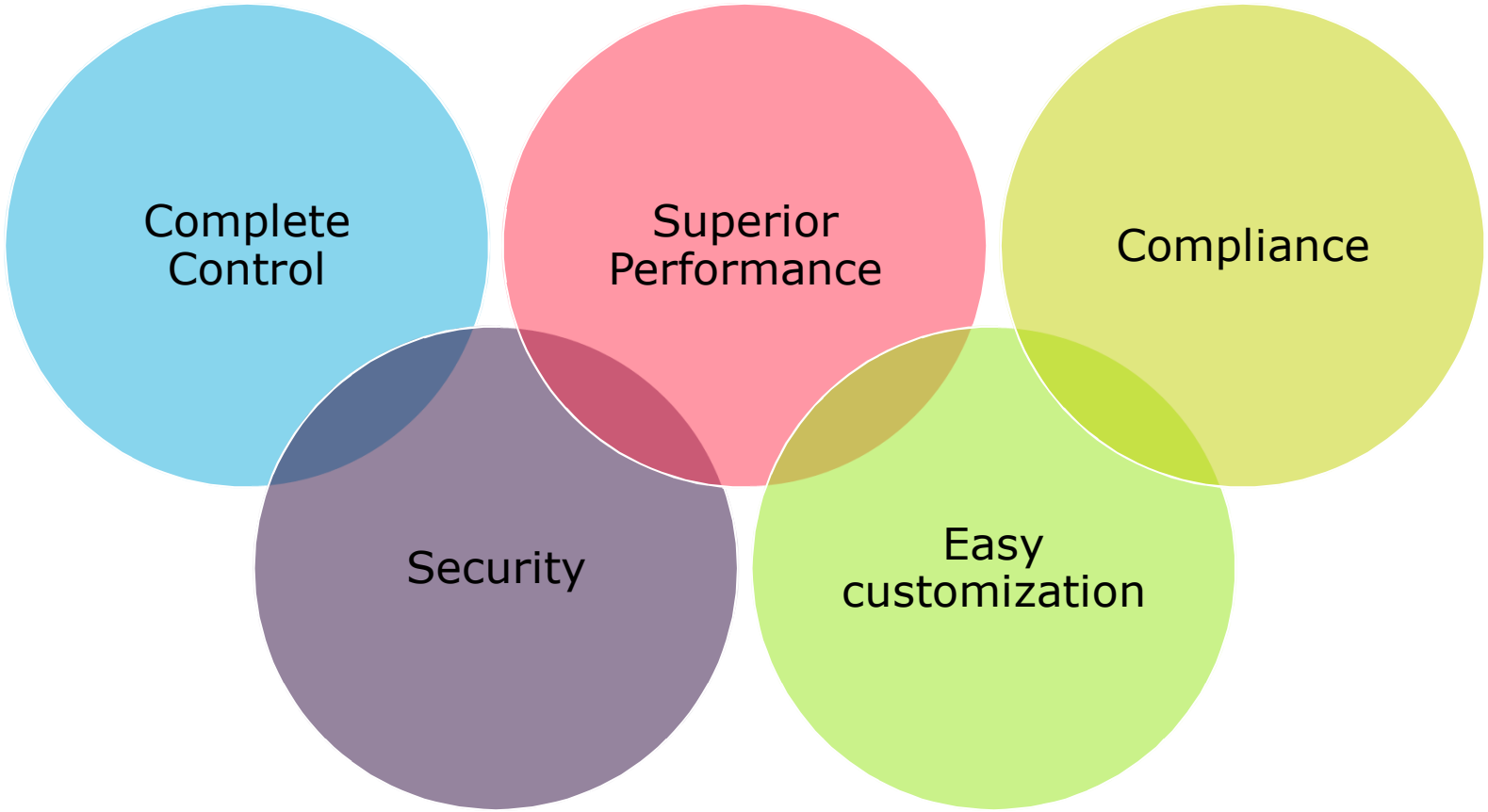
Need to work with constraints

Vendor lock-in

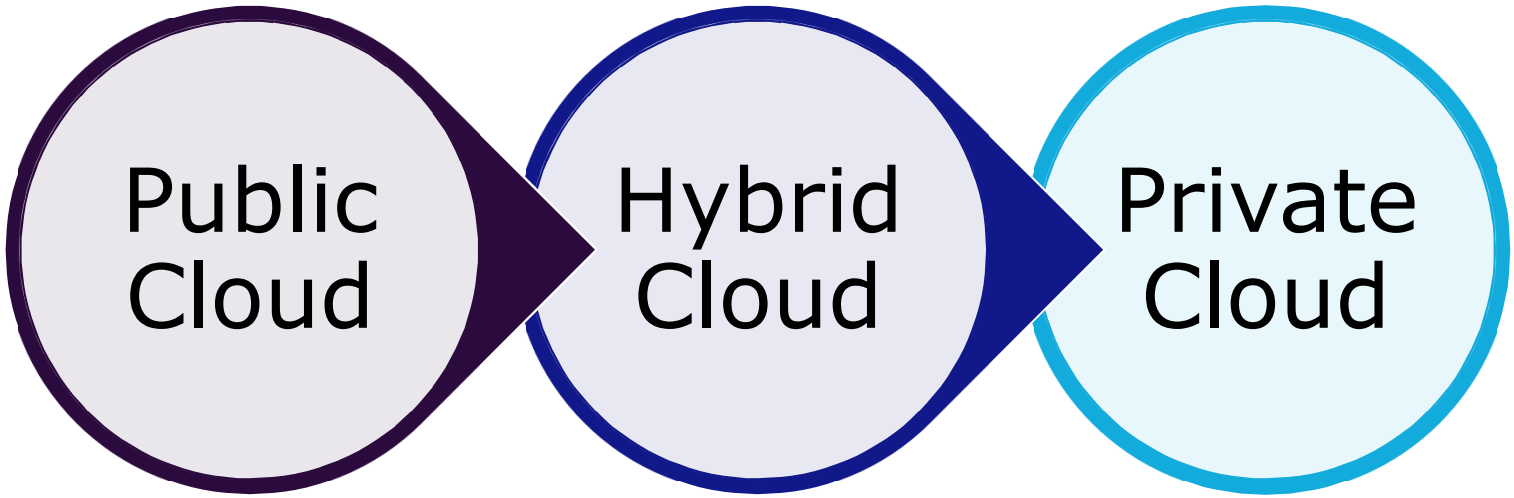
Introduction to Private Cloud

- Private cloud infrastructure is a dedicated infrastructure provided to one single organization or client.
- Deployed inside firewalls and offer robust IT security for the organization
- Companies also pay third-party service providers to host their private cloud.
- Using Private clouds VM admin in an organization can create a predefined services with predefined users, access rights, and quotas so that it will be immediately available to IT user as soon as they make the request.

Benefits of Private Cloud



Cloud Deployment Models



Summary

- A cloud environment can be accessed from anywhere in the world as long as the user has access to the internet
- Cloud computing leverages economies of scale to save our money by only requiring us to pay for what we use
- Single tenant application, requires one instance for each customer, so there's no cost advantage for SaaS application provider
- Multi tenant applications is easy to update, to maintain, to work with, and also provides cost saving to customers

Summary

- PaaS doesn’t support VMs for On-Demand Use, where as IaaS supports it.
- PaaS gives developers less control, they must work with the constraints of PaaS technology
- Private clouds have value, only if users have customized and unique requests
- Private cloud is allowing automated VM on demand requests, organizations cannot claim their data centers as private cloud without this facility

People matter, results count.

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