

Infrastructure as a Service

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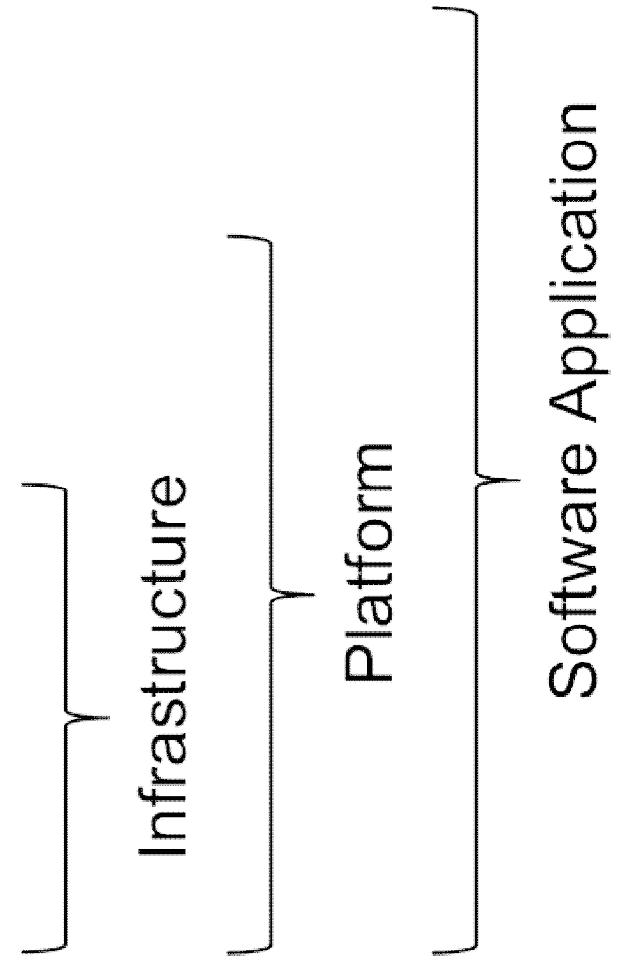
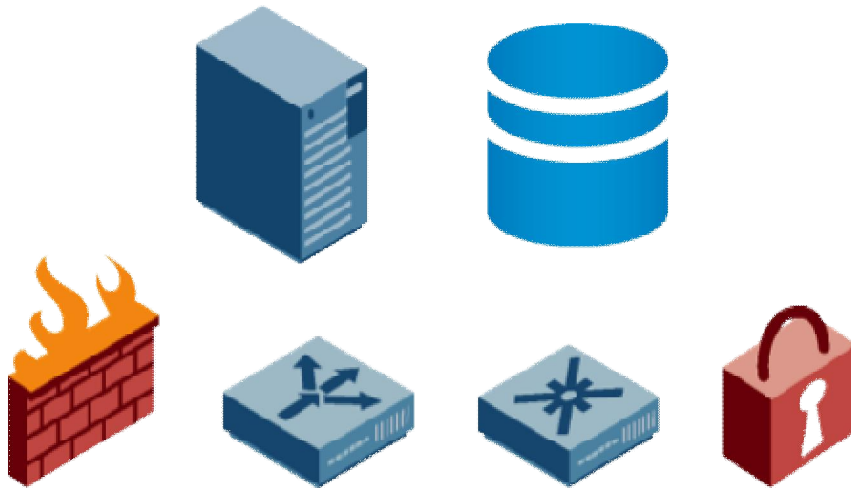
What is IaaS?

- ▶ **Infrastructure as a Service (IaaS)** is a provision model in which an organization outsources the equipment used to support operations, including **storage, hardware, servers** and **networking components**.
- ▶ The service provider owns the equipment and is responsible for **housing, running** and **maintaining** it.

Cloud Architecture

Application

OS + App Server Stack



IaaS: Reasons to Use

- ▶ **Scalability**

Pay-as-you-go model which allows you to **scale up or down** depending on your needs.

- ▶ **Disaster Recovery**

Your hardware and the data located on them are housed in secure data centers which are **mirrored and backed up**.

- ▶ **Time Back**

With your infrastructure being hosted offsite you free up your IT staff to **focus on value-added tasks** such as planning and development, instead of running around patching machines and fixing bugs.

IaaS: Providers

- ▶ **Amazon Web Services (aws.amazon.com)**
- ▶ Bluelock (bluelock.com)
- ▶ **GoGrid (gogrid.com)**
- ▶ Hosting.com (hosting.com)
- ▶ Joyent (joyent.com)
- ▶ Oxygen Cloud (oxygencloud.com)
- ▶ **Rackspace Cloud (rackspacecloud.com)**
- ▶ ReliaCloud (reliacloud.com)
- ▶ Skytap (skytap.com)
- ▶ **Terremark (terremark.com)**
- ▶ ... and many others

Amazon Web Services



- ▶ **Amazon Elastic Compute Cloud (EC2)**
Service that provides resizable compute capacity in the cloud.
- ▶ In conjunction with **Amazon Simple Storage Service (S3)**, **Amazon Relational Database Service (RDS)** and **Amazon Simple Queue Service (SQS)** can provide a complete solution for computing, query processing and storage across a wide range of applications.
- ▶ Number of **EC2 Instance Types** (Standard, Micro, High-Memory, High-CPU, etc.).
- ▶ Monthly calculated price ("**Pay only for what you use**").

... more details: <http://aws.amazon.com/ec2/>

Amazon EC2: Features



- ▶ **Amazon Elastic Block Store** (storage for EC2 instances)
- ▶ **Multiple Locations** (ability to place instances in multiple locations)
- ▶ **Elastic IP Addresses** (static IP addresses designed for dynamic cloud computing)
- ▶ **Amazon Virtual Private Cloud** (secure and seamless bridge between a company's existing IT infrastructure and the AWS cloud)
- ▶ **Amazon CloudWatch** (provides monitoring for AWS cloud resources)
- ▶ **Auto Scaling** (allows you to automatically scale your EC2 capacity up or down according to conditions you define)
- ▶ **Elastic Load Balancing** (automatically distributes incoming application traffic across multiple EC2 instances)
- ▶ **VM Import** (easily import virtual machine images from existing environment to EC2 instances)

... more details: <http://aws.amazon.com/ec2/#features>

GoGrid



- ▶ **GoGrid** allows to build **scalable** cloud infrastructure in multiple datacenters using **dedicated and cloud servers**, elastic hardware **load balancing**, and **Cloud Storage** with **total control** through automation and self-service.
- ▶ Pay-as-you-go ("**Pay only for the resources you deploy**") and Pre-paid price models (**Fixed monthly costs**).
- ▶ **Feature comparison** of GoGrid, Amazon EC2 and Rackspace: <http://www.gogrid.com/cloud-hosting/compare-gogrid-ec2-rackspace.php>
- ▶ **No new technical skills or specialized equipment** is required to get started.

... more details: <http://www.gogrid.com/>

GoGrid: Features



- ▶ **Windows and Linux Cloud Servers** (quick provision of Virtual Servers to meet demand, scale down when demand drops)
- ▶ **On-demand Dedicated Servers** (standard and custom configurations)
- ▶ **Multi-Data Center Provisioning** (deploying infrastructure in multiple geographic locations)
- ▶ **Content Delivery Network** (fast media delivery to end users)
- ▶ **MyGSI - Custom Server Images** (creating, saving, and deploying custom images for rapid horizontal scaling)
- ▶ **F5 Hardware Load Balancing** (quick and easy traffic distribution)

... more details: <http://www.gogrid.com/cloud-hosting/>

Rackspace Cloud



Cloud Servers and Cloud Files

- ▶ Servers on demand
- ▶ **Scalable** cloud-driven **platform** of virtualized servers
- ▶ **Customizing** and **spinning** up or down new **instances**
- ▶ All with **root access**
- ▶ **Easy-to-use** management tools
- ▶ “Fanatical **support**”
- ▶ Pricing starts at **1.5¢/Hr.** for Servers and at **15¢/GB** for Files
- ▶ **Feature comparison** with Amazon EC2:
http://www.rackspacecloud.com/cloud_hosting_products/servers/compare/

... more details: <http://www.rackspacecloud.com/>

vCloud Express Features

- ▶ Fully Redundant Architecture
- ▶ Flexible, Reconfigurable Computing Configurations
- ▶ Hardware Load Balancing
- ▶ Comprehensive Choice of Operating Systems
- ▶ Pay as You Go
- ▶ Web-Based Management Console
- ▶ Server Cloning
- ▶ Integrated Firewalls

Pricing starts at **3.6¢/Hr.**

... more details: <http://vcloudexpress.terremark.com/>

vCloud Express



- ▶ General Navigation Overview:
<http://vcloudexpress.terremark.com/howitworks.aspx>

How to Choose

- ▶ **Financial stability**. Obtain records that can prove the financial stability of the cloud vendor.
- ▶ Make sure that the **security policies and measures** that the cloud vendor has established correspond with your security requirements.
- ▶ Find out who is allowed **access to your data**.
- ▶ The IaaS vendor should have no issues with taking prospective customer on a tour of their data center and allow you to assess the **quality of the back end systems**.
- ▶ Find out if cloud provider's data center infrastructure is **highly ranked** (Tier 2 or Tier 3 standards).

How to Choose (cont'd)

- ▶ Ensure that the **infrastructure can be configured** to meet the changing needs.
- ▶ Cloud vendor should provide **high Service Level Agreement (SLA) guarantees** for their services.
- ▶ Learn about the cloud provider's **key risks** and **performance indicators**.
- ▶ Learn if you **can easily switch to another provider** if the need arises.
- ▶ Finally, check the **quality of customer service and support**.

References

- ▶ <http://searchcloudcomputing.techtarget.com/definition/Infrastructure-as-a-Service-iaaS>
- ▶ <http://www.zhen.org/zen20/2008/06/03/defining-saas-paas-iaas-etc/>
- ▶ <http://www.thrivenetworks.com/resources/march-2009-software-as-a-service.html>
- ▶ <http://www.vmware.com/solutions/cloud-computing/public-cloud/vcloud-express.html>
- ▶ <http://technology.ezinemark.com/choosing-the-right-cloud-iaas-provider-16f5f664bc3.html>

Thank you for attention

Questions?