Cloud Computing is a general term used to describe a new class of network based computing that takes place over the Internet,
- a collection/group of integrated and networked hardware, software and Internet infrastructure (called a platform).
- Using the Internet for communication and transport provides hardware, software and networking services to clients
- These platforms hide the complexity and details of the underlying infrastructure from users and applications by providing very simple graphical interface or API (Applications Programming Interface).
What is Cloud Computing?

- The platform provides on demand services, that are always on, anywhere, anytime and any place.
- Pay for use and as needed, elastic
  - scale up and down in capacity and functionalities
- Hardware and software services are available to
  - general public, enterprises, corporations and businesses markets
Cloud Service Models

Software as a Service (SaaS)

Platform as a Service (PaaS)

Infrastructure as a Service (IaaS)

SalesForce CRM
LotusLive

Google App Engine

Windows Azure

amazon web services™

rackspace®

Software as a Service (SaaS) Providers Applications

Platform as a Service (PaaS) Deploy customer created Applications

Infrastructure as a Service (IaaS) Rent Processing, storage, N/W capacity & computing resources
Cloud Models

Windows Azure

On Premises
- Applications
- Data
- Runtime
- Middleware
- O/S
- Virtualization
- Servers
- Storage
- Networking

Infrastructure (as a Service)
- Applications
- Data
- Runtime
- Middleware
- O/S
- Virtualization
- Servers
- Storage
- Networking

Platform (as a Service)
- Applications
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Software (as a Service)
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- Storage
- Networking
1) Choose image, then create VM for DBMS and configure DBMS

2) Choose image, then create and configure VM(s) for application

3) Provision database, then create tables and add data

4) Install application

5) Configure load balancer

6) Manage VMs and DBMS (e.g., deploying new OS images in VMs)
PaaS

1) Provision database, then create tables and add data

2) Deploy application

Developer

1) Provision database, then create tables and add data

2) Deploy application

DBMS

Data

Operating System

VM

Application

Web Server

Operating System

VM

Load Balancer
Advantages of PaaS

- Advantages of shift in hosting applications from on-premise to cloud
  - flexibility,
  - scalability,
  - reduced capital expenses,
  - 24h x 7d availability,
  - geographical access
  - lower total cost of ownership.
Windows Azure as PaaS

- With PaaS model, you deploy your application into an application-hosting environment provided by the cloud service vendor.

- The developer provides the application, and the PaaS vendor provides the ability to deploy and run it.

- This frees up developers from infrastructure management, allowing them to focus strictly on development.

- Developers have multiple ways to deploy their application without knowing anything about the nuts and bolts supporting it.

- Developers don’t have to create VMs, use Remote Desktop (RDP) to log into each one, and install the application.

- They just hit a button (or pretty close to it), and the tools provided by Microsoft provision the VMs and then deploy and install the application on them.
Azure services

- **Compute services** includes the Microsoft Azure Cloud Services (web and worker roles), Azure Virtual Machines, Azure Websites, and Azure Mobile Services.

- **Data services** includes Microsoft Azure Storage (comprised of the Blob, Queue, Table, and Azure Files services), Azure SQL Database, and the Redis Cache.

- **Application services** includes services that you can use to help build and operate your applications, such as the Azure Active Directory, Service Bus for connecting distributed systems, HDInsight for processing big data, the Azure Scheduler, Azure Media Services, Azure Machine Learning, etc.

- **Network services** includes Azure features such as Virtual Networks, the Azure Content Delivery Network, and the Azure Traffic Manager.
Windows Azure Platform