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A
Project Report
On
Microsoft Azure

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ABSTRACT

Cloud computing is the set of technologies and infrastructure capabilities being offered in a utility based consumption model. Windows Azure is Microsoft's Cloud Computing offering to help its customers realize the benefits of cloud computing. This paper is an introduction on Windows Azure and provides insights into different aspects of Azure based development especially for those who are interested in adopting Windows Azure within their Enterprise IT landscape.

Windows® Azure™ platform App Fabric provides common building blocks required by .NET applications when extending their functionality to the cloud, and specifically, the Windows Azure platform.

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CLOUD COMPUTING

The term **Cloud** refers to a **Network** or **Internet.** In other words, we can say that Cloud is something, which is present at remote location. Cloud can provide services over public and private networks, i.e., WAN, LAN or VPN.

Applications such as e-mail, web conferencing, customer relationship management (CRM) execute on cloud.

What is Cloud Computing?

Cloud Computing refers to **manipulating, configuring,** and **accessing** the hardware and software resources remotely. It offers online data storage, infrastructure, and application.

Cloud computing offers **platform independency,** as the software is not required to be installed locally on the PC. Hence, the Cloud Computing is making our business applications **mobile** and **collaborative.**

Basic Concepts

There are certain services and models working behind the scene making the cloud computing feasible and accessible to end users. Following are the working models for cloud computing:

- Deployment Models
- Service Models

Deployment Models

Deployment models define the type of access to the cloud, i.e., how the cloud is located? Cloud can have any of the four types of access: Public, Private, Hybrid, and Community.

Public Cloud

The **public cloud** allows systems and services to be easily accessible to the general public. Public cloud may be less secure because of its openness.

Private Cloud

The **private cloud** allows systems and services to be accessible within an organization. It is more secured because of its private nature.

Community Cloud

The **community cloud** allows systems and services to be accessible by a group of organizations.

Hybrid Cloud

The **hybrid cloud** is a mixture of public and private cloud, in which the critical activities are performed using private cloud while the non-critical activities are performed using public cloud.

Service Models

Cloud computing is based on service models. These are categorized into three basic service models which are -

- Infrastructure-as–a-Service (IaaS)
- Platform-as-a-Service (PaaS)
- Software-as-a-Service (SaaS)

Anything-as-a-Service (XaaS) is yet another service model, which includes Network-as-a-Service, Business-as-a-Service, Identity-as-a-Service, Database-as-a-Service or Strategy-as-a-Service.

The **Infrastructure-as-a-Service (IaaS)** is the most basic level of service. Each of the service models inherit the security and management mechanism from the underlying model, as shown in the following diagram:

Infrastructure-as-a-Service (IaaS)

IaaS provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.

Platform-as-a-Service (PaaS)

PaaS provides the runtime environment for applications, development and deployment tools, etc.

Software-as-a-Service (SaaS)

SaaS model allows to use software applications as a service to end-users.

List of Cloud Computing Platforms

1. Microsoft Azure

Azure has long been regarded as one of the greatest cloud services platforms accessible, given to Microsoft's extensive suite of services. The extensive list of offered services is sufficient to meet the demands of any company in any sector.

You may operate services on the cloud or mix them with any of your current infrastructures using Azure. Microsoft Azure was first published in 2010, and it has since shown to be a reliable solution for businesses trying to digitally change.

2. Amazon Web Services

AWS (Amazon Web Services) is a comprehensive, evolving cloud computing platform provided by Amazon that includes a mixture of infrastructure as a service (IaaS), platform as a service (PaaS) and packaged software as a service (SaaS) offerings.

AWS hybrid cloud services deliver a consistent AWS experience wherever you need it – from the cloud, to on premises, and at the edge. Select from the broadest set of compute, networking, storage, security, identity, data integration, management, monitoring, and operations services to build hybrid architectures that meet your specific requirements and use cases.

3. Google Cloud

Google Cloud is a dependable, user-friendly, and secure cloud computing solution from one of the world's most powerful ITcompanies.

Although Google Cloud's service offering isn't as extensive as Azure's, it's still sufficient to meet all of your IaaS and PaaS requirements. Its headlines include user-friendliness and security

4. IBM Cloud

IBM Cloud is another cloud computing platform that focuses on IaaS (Infrastructure as a Service), SaaS (Software as a Service), and PaaS (Platform as a Service).

It's one of the more cost-effective pricing plans on the market, and it's totally configurable, so you may save even more money. Using their APIs, creating an account is a breeze.

IBM claimed in April 2011 that 80% of Fortune 500 companies were using IBM cloud, and that their software and services were used by more than 20 million end-user customers, with clients including American Airlines, Aviva, Carfax, Frito-Lay, IndiaFirst Life Insurance Company, and 7-Eleven.

5. CloudLinux

CloudLinux is the way to go if you wish to construct your own IT infrastructure rather than depending on a third-party service. It's not just another cloud provider; it's a cloud platform for setting up your own infrastructure. It is a Linux-based operating system, as indicated by its name.

Working with CloudLinux comes with a lot of obstacles, but it also comes with a lot of benefits and advantages, such as total control, flexibility, security, and deep customization

6. Hadoop

Apache Hadoop is a free and open source framework for processing massive amounts of data on commodity hardware. Hadoop is a Google-developed implementation of MapReduce, an application programming model. This paradigm includes two basic data processing operations: map and reduce

Hadoop is a key component of the Yahoo! Cloud architecture, supporting a variety of corporate business activities.

Yahoo! now manages the largest Hadoop cluster in the world, which is also open to academic institutions.

7. Force.com and Salesforce.com

Force.com is a cloud computing platform that allows users to create social enterprise apps. SalesForce.com, a Software-as-a-Service solution for customer relationship management, is built on the platform.

Force.com enables the creation of applications by assembling ready-to-use blocks: a comprehensive collection of components covering all aspects of an organization's operations is accessible.

Force.com assists with everything from data layout design to business rule creation and user interface design. This platform is entirely hosted in the cloud, and it allows full access to all of its features, as well as those incorporated in the hosted apps, using Web services technologies.

MICROSOFT AZURE

Azure is Microsoft's cloud platform, just like Google has it's Google Cloud and Amazon has it's Amazon Web Service or AWS.000. Generally, it is a platform through which we can use Microsoft's resource. For example, to set up a huge server, we will require huge investment, effort, physical space and so on. In such situations, Microsoft Azure comes to our rescue. It will provide us with virtual machines, fast processing of data, analytical and monitoring tools and so on to make our work simpler. The pricing of Azure is also simpler and cost-effective. Popularly termed as "Pay As You Go", which means how much you use, pay only for that.

Azure fundamentals is a series of six learning paths that familiarize you to Azure and its many services and features.Whether you're interested in Azure's core compute, network, storage, and database services, learning about cloud security best practices, or exploring the cutting edge in IoT and machine learning, think of Azure fundamentals as your curated guide to Azure.

Azure fundamentals include interactive exercises that give you hands-on experience with Azure. Many exercises provide a temporary Azure environment called the sandbox, which allows you to learn for free and at your own pace.

Technical IT experience is not required; however, having general IT knowledge will help you get the most from your learning experience.

Azure portal:

- Build, manage, and monitor everything from simple web apps to complex cloud deployments.
- Create custom dashboards for an organized view of resources.
- Configure accessibility options for an optimal experience.

Azure provides more than 100 services that enable you to do everything from running your existing applications on virtual machines, to exploring new software paradigms, such as intelligent bots and mixed reality. Many teams start exploring the cloud by moving their existing applications to virtual machines that run in Azure. Migrating your existing apps to virtual machines is a good start, but the cloud is much more than a different place to run your virtual machines.

For example, Azure provides AI and machine-learning services that can naturally communicate with your users through vision, hearing, and speech. It also provides storage solutions that dynamically grow to accommodate massive amounts of data. Azure services enable solutions that aren't feasible without the power of the cloud.

PROPERTIES OF AZURE

- **Capital less:** We don't have to worry about the capital as Azure cuts out the high cost of hardware. You simply pay as you go and enjoy a subscription-based model that's kind to your cash flow. Also, to set up an Azure account is very easy. You simply register in Azure Portal and select your required subscription and get going.

- **Less Operational Cost:** Azure has low operational cost because it runs on its own servers whose only job is to make the cloud functional and bug-free, it's usually a whole lot more reliable than your own, on-location server.

- **Cost Effective:** If we set up a server on our own, we need to hire a tech support team to monitor them and make sure things are working fine. Also, there might be a situation where the tech support team is taking too much time to solve the issue incurred in the server. So, in this regard is way too pocket-friendly.

- **Easy Back Up and Recovery options:** Azure keep backups of all your valuable data. In disaster situations, you can recover all your data in a single click without your business getting affected. Cloud-based backup and recovery solutions save time, avoid large up-front investment and roll up third-party expertise as part of the deal.

- **Easy to implement:** It is very easy to implement your business models in Azure. With a couple of on-click activities, you are good to go. Even there are several tutorials to make you learn and deploy faster.

- **Better Security:** Azure provides more security than local servers. Be carefree about your critical data and business applications. As it stays safe in the Azure Cloud. Even, in natural disasters, where the resources can be harmed, Azure is a rescue. The cloud is always on.

- **Work from anywhere:** Azure gives you the freedom to work from anywhere and everywhere. It just requires a network connection and credentials. And with most serious Azure cloud services offering mobile apps, you're not restricted to which device you've got to hand.

- **Increased collaboration:** With Azure, teams can access, edit and share documents anytime, from anywhere. They can work and achieve future goals hand in hand. Another advantage of the Azure is that it preserves records of activity and data. Timestamps are one example of the Azure's record keeping. Timestamps improve team collaboration by establishing transparency and increasing accountability.

Microsoft Azure Services

Some following are the services of Microsoft Azure offers:

1. **Compute:** Includes Virtual Machines, Virtual Machine Scale Sets, Functions for serverless computing, Batch for containerized batch workloads, Service Fabric for microservices and container orchestration, and Cloud Services for building cloud-based apps and APIs.

2. **Networking:** With Azure you can use variety of networking tools, like the Virtual Network, which can connect to on-premise data centers; Load Balancer; Application Gateway; VPN Gateway; Azure DNS for domain hosting, Content Delivery Network, Traffic Manager, ExpressRoute dedicated private network fiber connections; and Network Watcher monitoring and diagnostics

3. **Storage:** Includes Blob, Queue, File and Disk Storage, as well as a Data Lake Store, Backup and Site Recovery, among others.

4. **Web + Mobile:** Creating Web + Mobile applications is very easy as it includes several services for building and deploying applications.

5. **Containers:** Azure has a property which includes Container Service, which supports Kubernetes, DC/OS or Docker Swarm, and Container Registry, as well as tools for microservices.

6. **Databases:** Azure has also includes several SQL-based databases and related tools.

7. **Data + Analytics:** Azure has some big data tools like HDInsight for Hadoop Spark, R Server, HBase and Storm clusters

8. **AI + Cognitive Services:** With Azure developing applications with artificial intelligence capabilities, like the Computer Vision API, Face API, Bing Web Search, Video Indexer, Language Understanding Intelligent.

9. **Internet of Things:** Includes IoT Hub and IoT Edge services that can be combined with a variety of machine learning, analytics, and communications services.

10. **Security + Identity:** Includes Security Center, Azure Active Directory, Key Vault and Multi-Factor Authentication Services.

11. **Developer Tools:** Includes cloud development services like Visual Studio Team Services, Azure DevTest Labs, HockeyApp mobile app deployment and monitoring, Xamarin cross-platform mobile development and more.

Prerequisites

- If you don't have an Azure subscription ,create a free account before you begin.
- A QnA Maker resource created in the Azure portal. Remember your Azure Active Directory ID, Subscription, QnA resource name you selected when you created the resource.

Create a knowledge base

1. Sign in to the QnAMaker.ai portal with your Azure credentials.
2. In the QnA Maker portal, select **Create a knowledge base**.
3. On the **Create** page, skip **Step 1** if you already have your QnA Maker resource.If you haven't created the resource yet, select **Stable** and **Create a QnA service**. You are directed to the Azure portal to set up a QnA Maker service in your subscription. Remember your Azure Active Directory ID, Subscription, QnA resource name you selected when you created the resource.When you are done creating the resource in the Azure portal, return to the QnA Maker portal, refresh the browser page, and continue to **Step 2**.
4. In **Step 3**, select your Active directory, subscription, service (resource), and the language for all knowledge bases created in the service.
5. In **Step 3**, name your knowledge.
6. In **Step 4**, configure the settings add url or files(.pdf|.txt|.tsv)
7. In **Step 5**, Select **Create your KB**.

qnamaker.ai/Create
tive Services | QnA Maker My knowledge bases Create a knowledge base
STEP 2
Connect your QnA service to your KB.
After you create an Azure QnA service, refresh this page and then select your Azure service using the options below
Refresh
* Microsoft Azure Directory ID
lohithakaduru111gmail (Default Directory)
* Azure subscription name
Free Trial
* Azure QnA service
QnAbotmaker
* Language
English
STEP 3
Name your KB.
The knowledge base name is for your reference and you can change it at anytime.
Type here to search
32°C Light rain

Question	Answer
What is cloud computing?	Cloud computing is an internet based new age computer technology. It is the next stage technology that uses the clouds to provide the ser
What are the different layers in cloud computing?	Infrastructure as a service (IaaS),Platform as a service (PaaS),Software as a service (SaaS)
What are the different models for deployment in cloud computing?	Private cloud,Public cloud,Hybrid cloud,Community cloud
what are Key Features of cloud computing?	Reliable,Scalable,Agile,Location Independent
Who are the direct consumers in a cloud ecosystem?	The individuals who utilize the service provided by your company, build within a cloud environment.
What is meant by Microsoft Azure	Microsoft Azure is a cloud computing interface that is implemented by Microsoft so as to get benefited from cloud computing.

Edit knowledge base

Test the Knowledge Base and then publish it

Web App Bot

CONCLUSION

Here we learn how to deploy both Windows and Linux virtual machines, and you'll get a demonstration of how to deploy and connect to each. Rounding off the course is a section on basic management tasks; you'll learn how to start, stop, restart, redeploy, and resize virtual machines.

The real-world demonstrations from within the Azure portal to give you first-hand experience of how to get the most from Azure Virtual Machines.

Learning Objectives

- Gain a foundational understanding of Azure virtual machines, their features, and their pricing
- Learn how to set up availability sets
- Learn how to create and connect to both Windows and Linux virtual machines with Azure
- Learn how to manage your Azure VMs including starting, stopping, restarting, redeploying, and resizing VMs