

# Microsoft - Windows Azure Data Services (basics)

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<b>Code:</b>	55093
<b>Length:</b>	3 days
<b>URL:</b>	<a href="#">View Online</a>

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This three day course introduces into Windows Azure Storage consisting of features like tables, blobs, queues and drives and how these features can be used in combination between IaaS and PaaS as well as on-premise components and how Azure Storage can be combined with classic SQL concepts. New no-sql storage mechanisms substitute relational database engines, old terms like database and foreign keys are substituted with new paradigm changing concepts like collections of entities, primary keys providing data flow controls through datacenter, key/value pair constructs for metadata based mass structured data access, and binary data stores via Blob services. High performance, secure and reliable message handling for string, xml or binary content via Azure and Windows Azure Drives that allow you to read and write data to blob storage using standard file system functions will be explored from a developer, ITPro and end-user perspective.

## Skills Gained

- Handle programmatically secured massive storage for structured and unstructured data
- Code a PaaS communication pipeline
- Converse programmatic a non-Azure Application to use cloud and on premise storage
- Create Programmatic Message storage and structured data retrieval from non-SQL mass data storage to Web Tier.
- Create Content type coding for metadata contingent blob storage access VI. Retrieving Blob Data from Storage.
- Establish programmatic metadata enrichments for Blobs (basics).
- Introduce Metadata contingent Blob handling.
- Establish Programmatic Blob delete.
- Establish Programmatic Blob copy.
- Establish Programmatic safeguarding of Blobs from deleting.
- Establish Programmatic message handling from Web app to log emulator via Microsoft Azure Queues (basics).
- Create the Initial Solution.
- Code a PaaS communication pipeline.
- Retrieving Messages from the Queue.
- Establish a programmatic exposure of regular file system APIs as an Azure service (no-code integration for non-Azure apps).
- Create programmatic conversion of a non-Azure Application to use cloud and on premise storage.
- Move complex applications to the cloud without changes to its code via dynamic store relocator.
- Programmatically implement and deploy a corporate private Cloud App Drive.
- Create and configure a VM.
- Modify a given PaaS application.
- Establish bridge communication to an IaaS application.

- Understand deployment scenarios for PaaS/IaaS application referenced as Cloud App in Microsoft Azure.
- Connect a sample Web application with the SQL Server using a public endpoint.
- Deploy a sample Web application to a Cloud App in Microsoft Azure.

## Who Can Benefit

This course is intended for IT Professional (IT Pros), Developers and Architects.

IT Professional (IT Pros) who also create software applications, build or write computer code or develop Web sites or complex macros as a secondary responsibility and Developers who create software applications, develop web sites and create complex macros. Both should have a minimum of three months programming experience in C# and have basic Visual Studio 2010 or Visual Studio 2012 or Visual Studio 2013 navigation skills as well as Architects tasked with transitioning of on-Premise Data to Microsoft Azure Cloud or tasked to build Hybrid solution defined as continuous data pipe between on-premise and Cloud.

## Prerequisites

- Knowledge and Skills to accomplish a given assignment in Visual Studio when using the General Development Settings collection in Visual Studio 2010 or Visual Studio 2012 or Visual Studio 2013. There is no prerequisite nor a requirement to use a credit card to establish a Microsoft Azure Account or to have a Microsoft Azure Account at all. Every student receives one or more than one dedicated cloud service(s) in VBICs cloud based virtual classroom. Students can be virtually anywhere and at different timezones and require only a Windows based OS device to utilize their Remote Desktop Connection tool, available on all Microsoft Windows Desktop operating systems > Windows XP.

## Course Details

### Outline

Module 1: Massive Storage handling for structured data (basic procedures)

This module explains how to programmatically establish high performance, secure and reliable Microsoft Azure Data Services usage scenario consisting of features like tables, blobs, queues and drives.

#### Lessons

- Define the Microsoft Azure storage and the benefits this service provides
- Understand a Microsoft Azure storage account
- Apply security principles

Lab 1: PaaS WebRole Development for Massive Storage handling (Basic Procedures)

- Utilize Visual Studio 2012
- Access programmatically Microsoft Azure Data services
- Update the service definition
- Define the configuration settings required to access Microsoft Azure Data service

Lab 2: Storage Emulator coding via WCF Data Services

- Establish Services access via class modeling of schemas and mandatory properties and attributes

- Customize mandatory properties and attributes, e.g. Timestamp, PartitionKey and RowKey property as well as attribute DataServiceKey
- Reuse pre-fabricated class templates to standardize the procedure
- Allow access control service architecture to trace and track mass storage structured data access for the organization as an enterprise
- Utilize TableServiceEntity class and namespace Microsoft.WindowsAzure.StorageClient constructs for mandatory properties/attributes

Lab 3: Programmatic Message storage and structured data retrieval from non-sql mass data storage to Web Tier

- Create storage tables via ASP.NET

After completing this module, students will be able to:

- Handle Massive Storage for structured data (basic procedures)
- Develop PaaS WebRoles for Massive Storage handling (Basic Procedures)
- Code Storage Emulator coding via WCF Data Services including creation and reading of metadata
- Code Message Storage and structured data retrieval from non-sql mass data storage to Web Tier

Module 2: Content type coding for metadata contingent blob storage access

This module explains how to use a web page as presentation layer referenced to as image gallery to visualize Microsoft Azure storage retrieval.

#### **Lessons**

- REST API for the Blob service exposed
- Hierarchical namespace transitions into a file system
- Blob services definitions
- Blob types
- Immediate and delayed Blob operations
- Ad-hoc and Policy based access to Blobs

Lab 1: Retrieving Blob Data from Storage

- Code Presentation layer modifications to visualize and retrieve Microsoft Azure storage
- Utilze methods in CloudBlobContainer object to retrieve Blob objects

Lab 2: Programmatic metadata enrichments for Blobs (basics)

- Data and metadata persistence in Microsoft Azure storage

Lab 3: Metadata contingent Blob handling

- Event handler contingent retrieval of blob metadata

Lab 4: Programmatic Blob delete

- Engage the blobMetadata repeater control for secured blob deletes

Lab 5: Programmatic Blob copy

- Programmatically copy images from the gallery container

## Lab 6: Programmatic safeguarding of Blobs from deleting

- Add code to implement command handler

After completing this module, students will be able to:

- Code Content Type for metadata contingent blob storage access
- Retrieve Blob Data from Storage
- Programmatically enrich metadata Blobs (basics)
- Establish Metadata contingent Blob handling
- Programmatically delete Blob delete
- Programmatically copy Blobs
- Programmatically safeguard Blobs from deleting

## Module 3: Programmatic message handling from Web app to log emulator via Microsoft Azure Queues (basics)

This module explains how to create and configure the initial solution to work with queues in Microsoft Azure.

### **Lessons**

- Queue Name scope
- Usage scenario for blob vs. queue
- Queue integration patterns

## Lab 1: Creating the Initial Solution

- Microsoft Azure Cloud Service project templates
- Engage Web Role and Worker Role

## Lab 2: Coding a PaaS communication pipeline

- Create and feed Azure message queues

## Lab 3: Retrieving Messages from the Queue

- Obtain instances and retrieve references to messages queues

After completing this module, students will be able to:

- Create the initial solution to work with queues in Microsoft Azure

## Module 4: Programmatic exposure of regular file system APIs as an Azure service (no-code integration for non-Azure apps)

This module explains how to build a bridge connectivity between a PaaS Web Application and an IaaS Host services application located on an IaaS VM, via public and private endpoint mechanisms.

### **Lessons**

- Differences and commonalities for the three established industry terms for cloud services
- Set of features of Virtual Machines
- Virtual Machine Portability to other cloud provider
- Mounting of durable drives

## Lab 1: Programmatic conversion of a non-Azure Application to use cloud and on premise storage

- Expose FileInfo objects as Cloud Service
- Generic REST access to Azure Data Services

Lab 2: Moving complex applications to the cloud without changes to its code via dynamic store relocator

- Reference Azure Data Services as local configuration parameters

Lab 3: Programmatically implement and deploy a corporate private Cloud App Drive

- Presentation layer access to Azure Data Services

After completing this module, students will be able to:

- Programmatically convert a non-Azure Application to use cloud and on premise storage
- Programmatically expose regular file system APIs as an Azure service (no-code integration for non-Azure apps)
- Move complex applications to the cloud without changes to its code via dynamic store relocator
- Programmatically implement and deploy a corporate private Cloud App Drive

## Module 5: Data Exchange between IaaS and PaaS

This module explains how to build a bridge connectivity between a PaaS Web Application and an IaaS Host services application located on an IaaS VM, via public and private endpoint mechanisms. Two different worlds are being connected via two different applications. One application being a PaaS application the other application being an IaaS Application. You will focus on the infrastructure part by building a VM performing classic SQL Server functionality by using click box scenarios to build an application (Host Service) for IaaS and utilizing the MAMP (Microsoft Azure Management Portal). You will then focus on a very basic and simple PaaS application. In this first scenario a very basic Web application has been pre-fabricated for you, and you'll perform change procedures to build a bridge connectivity between this PaaS Web Application and the IaaS Host services application via public endpoint mechanisms. This sample should provide first understandings how fast and effective communication structures between cloud applications can be built as a basis for upcoming challenges that are waiting for you in our endeavor to establish Identity & Access controls during advanced VBIC Identity & Access Curriculum Courses. As a summary should you have learned the very basics about host service instantiation, accomplished communication between different instances and leave both with a running ongoing fault tolerant communication and get accustomed to new terminology, e.g. referencing from now on the accomplished procedures as Simple Mixed Mode Communication in upcoming architectural design discussions.

### Lessons

- Connect a PaaS application to an IaaS Application
- Building a VM performing classic SQL Server functionality via Microsoft Azure Management Portal (MAMP)
- Utilize a basic and simple PaaS application to build a bridge connectivity between this PaaS Web Application and the IaaS Host services application via public endpoint mechanisms
- Operationalize basic host service instantiation procedures to accomplish communication between different instances
- Instantiate with OOB fault tolerant communication

Lab 1: Build an IaaS application via MAMP

- Build an IaaS application via MAMP
- Attach additional IaaS components

Lab 2: IaaS application (Microsoft SQL Server 2012 SP1 Standard on Windows Server 2012) configuration

- Configure Protocols, Firewalls and Endpoints in IaaS application

Lab 3: Download and install sample database to prep for PaaS app connection

- Release Databases to Public Access

Lab 4: PaaS Application to IaaS connectivity in the Cloud

- Utilize Virtual Studio 2012 to connect IaaS & PaaS

Lab 5: Cloud TDD for rapid PaaS/IaaS data exchange

- Publish an Microsoft Azure Application

After completing this module, students will be able to:

- Create and configure a VM
- Modify a given PaaS application
- Establish bridge communication to an IaaS application
- Understand deployment scenarios for PaaS/IaaS application referenced as Cloud App in Microsoft Azure
- Connect a sample PaaS Web application with classic SQL Server utilizing endpoints
- Deploy a sample Web application as a Cloud App in Microsoft Azure

Module 6: Assessment (if time permits): Data Exchange between IaaS and PaaS across geographically dispersed Datacenter  
Add French, German, English and Italian as a multilingual integration of traditional ASP.NET Web Sites into your Enterprise Security Service Bus (ESSB)

#### **Lessons**

- Code a multilingual Enterprise Security Service Bus (ESSB)

Lab 1: Logon with your VBIC OA

- For this Lab has a new dedicated Cloud Service in VBICs virtual cloud classroom been issued
- Every student is using his dedicated developer environment and in addition has been granted Co-administrator access privileges in VBICs Enterprise Cloud Access Suite and every student has therefore been granted an organizational account and executes this training as organizational member of VBIC.

Lab 2: Repeat Module 5 from Step 1 until step 146

- Repeat Module 5 from Step 1 until step 146

Lab 3: Modify Module 5 step 7

- Modify Module 5 step 7 to utilize new and different Cloud Services that have been placed by VBIC staff for you in a different, additional Virtual Classroom, located in an Azure Datacenter that is geographically dispersed and distinct from your US WEST based VBIC Virtual Classroom you will be performing these activities from.

Lab 4: Modify Module 5 step 8 to utilize a new and different VM name

- Modify Module 5 step 8 to utilize a new and different VM name

Lab 5: Keep all default values from Module 5 step 9 and continue

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Lab 6: Repeat all remaining steps from Module 5 and apply all necessary modifications for the remaining steps

- Repeat all remaining steps from Module 5 and apply all necessary modifications for the remaining steps

Lab 7: Inform your instructor and VBIC Help Desk ([info@vbic.net](mailto:info@vbic.net)) if you have reached step 84 of Lab 5. Logout and close your

RDP session.

- Inform your instructor and VBIC Help Desk ([info@vbic.net](mailto:info@vbic.net)) if you have reached step 84 of Lab 5. Logout and close your RDP session.

After completing this module, students will be able to:

- The Assessment is only optional, only if time permits, voluntary at the discretion of the student and does not have a solution folder as there are many ways to achieve the to be assessed target of evaluation and is subject of evaluation by instructor or VBIC staff
  - If assessment is taken by students will student receive either an assessment from instructor about assessment passing during class or will receive a follow up email for assessment validation result from/by VBIC staff, 5 days after last day of class.
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## Schedule (as of 4 )

Date	Location

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