Toc: Microsoft Azure and its Services

Delivery Mode:

No of Days: 4 Days

Number of participants: 15 to 20

Prerequisite for Labs:

- Chrome browser latest version on laptops
- Access to Azure Portal with admin access to Azure Active directory and Owner access to the subscription

Prerequisite for Participants:

- Participants knows the basic cloud concepts
- Participants should be from Computer Scient/IT background only
- Participants should have good working knowledge of Python scripting already with at least 2 years of working experience in Python.

Suggestions for training duration and time management:

- To utilize the time properly, there will be a upper cap on the duration on each topic. In case participants are unable to complete the hands-on in that duration, they need to do those offline or during the breaks.
- If required participants should be able to allocate 1 hour extra post training with the trainer to cover up the pending hands-on.

Important Note:

There are few topics related to Azure Board and Azure Test Plans. These topics have been highlighted in Yellow. As agreed these topics will not be covered in the training delivery and will be excluded to give more focus on other important topics

Day 1: Azure Fundamental

Topic	Allocated time
Cloud Computing • Introduction of Cloud Computing • Types of Cloud Computing • Cloud Computing Deployment Models • Characteristics of Cloud Computing	**30 Minute**

Microsoft Azure • Introduction of Microsoft Azure • Concept of Region & Availability Zone • Azure Services • Concept of Resource Group • Introduction of Azure Virtual Machine (Windows & Linux) **Lab: Planning and implementing VM** • Creating the manage azure virtual Machine using Portal • Creating the manage azure virtual Machine using CLI	**90 Minute**
Azure Storage Account • Introduction of Microsoft Azure Storage Account • Core Storage Services • Types of Storage Accounts • Securing the Data **Lab : Planning and implementing storage** ▪ Creating and manage Storage Accounts ▪ Create and manage containers ▪ Create and manage Blobs, Queues, Files and Tables	**90 Minute**
Azure Management and Governance ▪ Concept of Azure Advisor ▪ Cost management ▪ Azure Blueprints ▪ Azure Dashboard **Lab : Azure Management and Governance** ▪ Creating Azure Advisor ▪ Understand the concept of Cost management and billing ▪ Implementation of Azure Blueprints	**180 Minute**
Azure Networking • Introduction of VNet and Security Group • Concept of azure load balancer • Azure Virtual Machine Scale • VNet Peering Lab: **Azure Networking** • Implementation of VNet • Configure of public and private LB • Configuration of VM scale Set • Implementation of global and local peering	**180 Minute**

Day 2: Azure Devops and Git Action

Topic	Allocated time
Azure AD Authentication ▪ What is Azure Active Directory ▪ Azure AD Dashboard ▪ Type of Permissions ▪ User, Groups & Audit Logs ▪ Manage Subscriptions ▪ Role Base Access Control (RBAC) ▪ Custom Roles (RBAC) ▪ AD Connect Overview ▪ AD - Multifactor Authentication (MFA) **Lab : Azure AD Authentication** • How to create management group • How to manage Subscription • How to create user and groups • Implementation of permission • Implementation of MFA	**240 Minute**
DevOps strategy • What is DevOps and Its use case • Migration and consolidation strategy for DevOps tools • Agile work management approach • quality strategy • secure development process • tool integration strategy • application configuration and secrets **Create Azure App service** • Introduction • Deploy a sample app • Understand Blue/Green deployment • Create Deployment Slot • Swap the slots	**180 Minutes**
Day 3	
GitHub Actions • What is GitHub Actions?	**60 Minutes**

Commented [SR1]: We need a good overview of this + a lab/hands-on

Commented [AG2R1]: Addedd section for 60 minutes for GitHub actions

Commented [SR3]: Also cover aspects like Blue/Green or Rolling deployment or Canary deployment. Use Azure App Service or Azure Functions to demonstrate it (e.g. using deployment slots).

Commented [AG4R3]: Added a section for - **Create Azure App service**

• Create Workflow to build Python project on Push • Test Workflow	
Create Azure Pipeline • Create Build Pipeline to build git project • Create release pipeline • Connect Azure Devops to Azure Portal using Service connections • Deploy to Azure Web App using release pipeline • Introduction to deployment gates • Swap the slots after approval using deployment gates	**120 Minutes**
Azure Test Plans • Managing Artifacts • Universal package Repository **Azure Artifacts** • Test Cases Build • Build alerts Configuration	**60 Minutes**
Azure Data Lake account • Introduction to Azure Data Lake account • Top level Concepts in Azure Data Factory • Creating first data factory • Pipelines and Activity • Linked Services and Datasets • Copy Data Activity - Copy Specific file Within ADLS • Copy Data Activity – from ADL to SQL • Implementation of Triger	**120 Minutes**
Azure Kubernetes Services ▪ Introduction of Kubernetes ▪ Deploy Azure Kubernetes Service in Subscription ▪ Configure Networking in AKS Deployment ▪ Integration of AKS with Azure Container Registry	**120 Minutes**

Commented [SR5]: Let's use these 120mins for a DevOps use case (lab + handson)

Commented [AG6R5]: Remove Azure Boards and added Azure Devops Pipeline use case instead

Day 4: Azure Databricks and Azure Kubernetes service

Topics	Allocated Time

• Describe Azure Data Bricks
  ○ Introduction
  ○ Explain Azure Data Bricks
  ○ Create an Azure Databricks Workspace and cluster
  ○ Understand Azure Databricks Notebooks
  ○ Exercise: Work with Notebooks
• Spark Architecture fundamentals
  ○ Introduction
  ○ Understand the architecture of Azure Databricks spark cluster
  ○ Understand the architecture of spark job
• Read and write data in Azure Databricks
  ○ Introduction
  ○ Read data in CSV file
  ○ Read data in JSON file
  ○ Read Data in Parquet file
  ○ Read Data stored in tables and views
  ○ Write data
  ○ Exercise: Read and write data
• Work with DataFrames in Azure Databricks
  ○ Introduction
  ○ Describe a DataDrame
  ○ Use Common DataFrame Methods
  ○ Use the display function
  ○ Exercise: Distinct articles
• Describe lazy evaluation and other performance features in Azure databricks
  ○ Introduction
  ○ Describe the difference between eager and lazy execution
  ○ Describe the fundamentals of how the Catalyst Optimizer works
  ○ Describe and identify actions and transformations
  ○ Describe performance enhancements by shuffle operations and Tungsten
	8 Hrs

Commented [SR7]: Have a lab for this covering the following:
1. ELT use case where the data is ingested in batch mode. Then show how basic transformations can be done to move the data from Bronze -> Silver -> Gold
2. Do the same for Streaming data (say, from a Kafka endpoint)

Commented [AG8R7]: Added 1 topic to cover this ETL use case.

• Work with Dataframes Columns in Azure Databricks
  ○ Introduction
  ○ Describe the columns class
  ○ Work with Columns expressions
• Work with DataFrames advanced methods in Azure Databricks
  ○ Introduction
  ○ Perform date and time manipulations
  ○ Use aggregate functions
  ○ Exercise: Deduplication of data
• Describe platform architecture, security and data protection in Azure Databricks
  ○ Describe Azure key vault and Databricks security scopes
  ○ Secure access with Azure IAM and authentication
  ○ Describe security
  ○ Exercise: Access Azure storage with key vault backed secrets
• Describe Databricks Delta Lake architecture
  ○ Introduction
  ○ Describe bronze, silver, and gold architecture
  ○ Perform batch and stream processing
• Create production workloads on Azure Databricks with Azure Data Factory
  ○ Introduction
  ○ Schedule Databricks jobs in a data factory pipeline
  ○ Pass parameters into and out of Databricks jobs in data factory
• Lab: ETL using Batch
  ○ Ingest data in batch.
  ○ Do basic transformations to move the data from Bronze -> Silver -> Gold
  ○ Do basic transformation for Streaming data (say, from a Kafka endpoint)	