Azure



Table of content:

Introduction to the Cloud

- Current Status in Computing
- What is the Cloud?
- Characteristics of the Cloud
- CapEx vs OpEx
- IaaS, PaaS, SaaS
- Types of Clouds
- Main Cloud Providers

Introduction to Azure

- Introduction
- Regions and Zones
- Azure Services
- **Creating Account**

First Look at Azure

- The Azure Portal
- Accessing the Portal in the future
- Account and Subscription
- Changes in Azure portal
- Creating Resource
- Finding the Resource
- The Resource Page
- Removing a Resource
- siness Solution Azure CLI & PowerShell

Azure Basic Concepts

- Regions
- Resource Groups
- Storage Accounts
- SLA
- **SLA Calculators**
- Cost
- Setting Budget
- Architects and the Cloud

Introducing Our App

- Introduction
- ReadIt Demo
- Installing .NET SDK
- Installing VS Code

- Installing Extensions
- Running the Catalog Locally
- Going Through the Code

Azure Compute

- Introduction
- Virtual Machines
- Creating Virtual Machine
- The Real Cost of VM
- Reducing the Cost of VM
- Availability of VMs
- Creating Available & Cost Effective VM
- ARM Template
- Using ARM Template
- Deleting Virtual Machines
- Virtual Machine Scale Set
- Using Scale Set
- Azure Instance Metadata Services
- ReadIt Resources Helper List
- Setting Up the Catalog App
- Setting Up the Weather API
- Virtual Machines Tips and Tricks
- Azure Architecture Diagrams
- Shut Down the Machines
- App Services
- App Service Tiers
- Auto Scaling App Service
- Setting the Inventory App Service
- App Services Tips and Tricks
- AKS
- Containers
- Introduction to Docker
- Containers Management
- Introduction to Kubernetes
- Installing Docker on Windows 10/11 Home
- Working with Containers
- Working with AKS
- Current Architecture
- Azure Functions
- Azure Functions Hosting Plan

Azure Networking

- Networking in Azure
- Virtual Networks
- CIDR Notation
- CIDR Notation Tip
- Subnets
- Looking at the ReadIt VNet

olutio

- Creating a Virtual Network
- Working with VNets
- **Network Security Groups**
- Setting Up the Catalog's NSG
- Setting Up the Weather API's NSG
- Moving the Weather API to a New Subnet
- Network Security Groups Tips and Tricks
- Network Peering
- Moving the Weather API to a New VNet
- Using Network Peering
- Network Topology
- Current Architecture
- Secure VM Access
- Using Bastion
- Service Endpoint
- Private Link
- Service Endpoint vs Private Link
- VNet Integration
- Access Restrictions
- ASE
- Load Balancer
- Application Gateway
- **Creating Application Gateway**
- Connecting the Inventory App Service to the Application Gateway
- Connecting the Catalog VM to the Application Gateway
- Cost of Application Gateway in This Course
- **Application Gateway and AKS**
- Application Gateway and Function Apps
- Current Architecture
- Affinity
- Stateless Architecture
- dess Solutio Application Gateway and Cookies
- Secure Network Design

Data in Azure

- Introduction
- Major Database Features
- Database on VM
- Azure SQL
- Azure SQL Pricing
- Which Azure SQL to Choose?
- Creating and Connecting to Azure SQL
- Connecting the Catalog to the Database
- Securing the Database Connection
- Connecting the Inventory to the Database
- A Quick Reminder...
- Cosmos DB
- SQL vs NoSQL Databases



- Cosmos DB Consistency Levels
- Cosmos DB Pricing
- Creating and Using Cosmos DB
- Connecting the Orders Function to Cosmos DB
- Cosmos DB Tips and Tricks
- Azure MySQL
- Azure MySQL Pricing
- Creating and Using Azure MySQL
- Azure PostgreSQL
- Azure Storage
- Azure Blob Storage Pricing
- Creating and Using Storage Account
- Accessing Private Blobs with Keys and SAS Token
- Networking and Fail Over of Storage Account
- CDN and Automation
- Creating Storage Account for the ReadIt App
- Azure Storage Explorer
- Azure Redis
- Azure Redis Pricing
- Creating Redis and Connecting the Catalog
- Connecting the Shopping Cart to Redis
- Current Architecture
- How to Select Data Store Solution

Messaging in Azure

- Storage Queue
- Using Storage Queue
- Event Grid
- **Event Grid Pricing**
- A note about using EventGrid in code
- Connecting Event Grid to the Orders Function
- ness Solution Connecting the Shopping Cart to the Storage Account
- Protecting the Orders Function
- Service Bus
- Service Bus Pricing
- Using Service Bus
- Event Hubs
- **Event Hubs Pricing**
- Using Event Hubs
- Selecting Messaging Solution
- **Current Architecture**

Azure AD

- Introduction
- Tenants
- A Look Around Azure AD
- Users and Groups
- Working with Users and Groups

- Azure AD Licenses
- MFA
- Security Defaults
- Using Security Defaults
- RBAC
- Azure Roles
- Using Azure Roles
- Managed Identities
- Using Managed Identity with the Inventory App Service
- Using Azure AD to Authenticate our App
- OAuth & JWT
- Configuring Azure AD and the Inventory App Service for Authentication
- Adapting the Inventory Code and Using Azure AD
- Azure AD B2C
- Current Architecture
- Synchronizing Azure AD with On-Prem AD

Monitoring in Azure

- Introduction
- Resource Monitoring
- Using Metrics
- Azure Dashboard
- Alerts
- Using Alerts
- Logs & Analytics Workspace
- Creating and Using Log Analytics
- Connecting Log Analytics to Event Logs and Performance Counters
- Log Analytics with Dashboard and Alerts
- App Service Logs
- Insights
- Using Insights
- Azure Monitor
- Using Azure Monitor and Application Insights
- Application Insights Tips and Tricks
- Tags
- Using Tags and the Resource Graph Explorer
- Current Architecture

Security in Azure

- Introduction
- VM Security Best Practices
- Networking Security Best Practices
- Database Security Best Practices
- App Services Security Best Practices
- KeyVault
- Troubleshooting KeyVault
- Using KeyVault in the Catalog App
- Publishing the KeyVault Code and Using Insights

- KeyVault Tips and Tricks
- A quick note about security center
- Security Center
- Using Security Center
- **Current Architecture**

DR in Azure

- Introduction to DR
- **DR** Concepts
- Basics of DR Implementation
- DR of Data in Azure
- DR of Compute in Azure
- Routing in DR
- Azure Traffic Manager
- Using Azure Traffic Manager
- Azure Front Door
- Using Azure Front Door
- Traffic Manager vs Front Door
- Current Architecture

Managing Costs in Azure

- Introduction
- Looking at Cost Management

Azure Policy

- Introduction
- Defining Initiative and Policies
- Custom Policies
- Defining Custom Policy and Testing the Policies
- Completing the demo and saving costs

Architecting Apps for Azure

- Choosing Data Platform
 Choosing Messaging Platform
 Implementing Security
 Implementing Logging and Monitor
 Azure Architectur

Migrating to the Cloud

- Introduction
- The Migration Process
- Motivation Assessment
- Migration Strategies
- System Assessment
- Migration
- App Enhancements

Advanced Services

- Introduction
- IOT Hub
- Notification Hub
- Cognitive Services
- Summary

