

Document Generated: 02/02/2026

Learning Style: Virtual Classroom

Technology: Microsoft

Difficulty: Intermediate

Course Duration: 5 Days

## Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack (MS-20537)



## About this course:

This is a five-day course, which has been designed to include information regarding the key information which can be used to implement and configure Microsoft Azure Stack. Additionally, students will get to experience and deploy the lessons they have learned through hands on labs, via which they will learn about the following:

- Microsoft Azure Stack overview and an explanation the key features along with their functionality.
- Microsoft Azure Stack detailed explanation along with how it is different from Windows Azure Pack, and Microsoft Azure.
- Microsoft Azure Stack structure and the different components it contains.
- Microsoft Azure Stack and the process of implementing it.
- Microsoft Azure Stack usage and the different roles and features of Windows Server, which can be used in it.
- Microsoft Azure Stack and the process of authentication and identification in it. How identity and authentication works.
- Enabling DevOps using Microsoft Azure Stack and its process.
- The process of developing and managing the templates available in Azure Resource Manager.
- The process of developing and managing plans
- The process of developing and managing Delegation and Offers.
- Microsoft Azure Stack and the proper method of managing a Marketplace through it.
- Microsoft Azure Stack and how to use Software Defined Networking in it.
- Microsoft Azure Stack storage and the process of provisioning and managing the storage in it.
- Virtual Machines and the process of provisioning them in Microsoft Azure Stack.
- Microsoft Azure Stack and the process of configuring resource providers.
- The process of monitoring and troubleshooting in Microsoft Azure Stack.
- Microsoft Azure Stack and gaining an understanding of the process of billing

and licensing in it.

On average, a Solutions Developer, having Microsoft Azure Skills can earn up to **\$136,750/-** annually.

## **Course Objective:**

Once the course is complete, students will gain the capabilities to:

- Explain the structure of Microsoft Azure Stack and its components.
- Microsoft Azure Stack and understanding its implementation
- Microsoft Azure Stack and understanding the features of Windows Server 2016 that can be used in it.
- Understanding the process of using Microsoft Azure Stack and how it can be used by DevOps
- Microsoft Azure Stack and the Offer Resources available in it.
- Microsoft Azure Stack and how IaaS can be managed in it.
- Microsoft Azure Stack and how PaaS can be managed in it.
- Microsoft Azure Stack and how updates can be managed in it.
- Understand the process of monitoring and troubleshooting in Microsoft Azure Stack
- Microsoft Azure Stack and learning the process of billing and licensing in it.

## **Audience:**

The azure course has been designed to be undertaken by DevOps, services administrators, cloud architects and other IT professionals who want to learn about how to use Microsoft Azure Stack for providing cloud services to customers or their end users. Additionally they will get to learn how all of this can be done via their own datacenters.

## **Prerequisite:**

Prior to being enrolled in this course, students should have a basic knowledge of:

- Windows Server 2016 and how it works.
- SQL Server 2014 and how it works.

- Microsoft Azure and how it works.

## **Suggested Prerequisite:**

- Securing Windows Server 2016 (MS-20744)

## **Course Outline:**

### **Module 1: Overview of Azure Stack**

In this first module, the key concepts associated with Azure Stack are described that will help you understand what Azure Stack is and the functionality it provides. You will also learn about the differentiators between Azure Stack, Microsoft Azure, and Windows Azure Pack.

#### **Lessons**

- What is Azure Stack?
- Comparing Azure Stack with Microsoft Azure.
- Comparing Azure Stack to Windows Azure Pack.

After completing this module, students will be able to:

- Describe the key features and functionality of Azure Stack.
- Understand the differences between Azure Stack and Microsoft Azure.
- Understand the differences between Azure Stack and Windows Azure Pack.

### **Module 2: Foundational Components of Microsoft Azure Stack**

In this module, you will learn about the Windows Server 2016 features that Azure Stack uses and optional System Center 2016 components that can be added to further manage and maintain an Azure Stack environment. You will also learn how Azure Stack manages authentication and the various authentication providers that are available.

#### **Lessons**

- Windows Server 2016 and System Center 2016.
- Identity and Authentication.

### **Lab : Reviewing the Azure Stack Infrastructure**

- Reviewing the Azure Stack Infrastructure Components.

After completing this module, students will be able to:

- Understand how Windows Server 2016 and the optional System Center 2016 features are used in Microsoft Azure Stack.
- Understand how identity and authentication works in Microsoft Azure Stack.

### **Module 3: Deploying Microsoft Azure Stack**

This module introduces some of the internal architecture of Azure Stack and how it forms the basis of the system. It will discuss various Azure Stack concepts such as: Software Defined Datacenter Internal Architecture of Azure Stack Azure Stack Infrastructure Azure Stack Prerequisites Planning and Installation of Azure Stack

#### **Lessons**

- Microsoft Azure Stack Architecture.
- Azure Stack Prerequisites.
- Installing Azure Stack.

#### **Lab : Confirming prerequisites and installing Microsoft Azure Stack**

- Confirming the prerequisites.
- Confirming the installation was successful.

After completing this module, students will be able to:

- Describe the Architecture of Microsoft Azure Stack.
- Understand the prerequisites for Microsoft Azure Stack.
- Install Microsoft Azure Stack.

### **Module 4: Offering Microsoft Azure Stack Resources**

This module discusses some of the key features in Azure Stack that provide the mechanisms used by tenants when consuming resources such as virtual machines and SQL Server databases.

#### **Lessons**

- Working with Plans and Offers.
- Microsoft Azure Stack Marketplace.
- Enabling Multi-Tenancy in Azure Stack.
- Integrating Azure Stack with Windows Azure Pack.

#### **Lab : Managing Offers and Plans in Microsoft Azure Stack**

- Configuring Plans.

- Configuring Offers.
- Subscribing to an Offer.
- Creating a new Marketplace Item

After completing this module, students will be able to:

- Configure Offers and Plans in Microsoft Azure Stack.
- Manage the Microsoft Azure Stack Marketplace.
- Enable multi-tenancy in Azure Stack.
- Integrate Azure Stack with Windows Azure Pack.

## **Module 5: Microsoft Azure Stack and DevOps**

This module discusses the fundamentals of how Azure Stack enables organizations to leverage DevOps. It details the underpinnings of Azure Stack, the Azure Resource Manager, the SDKs and APIs available and also how configuration management technologies such as PowerShell Desired State Configuration and Chef and Puppet can be used to facilitate fast and consistent deployment of applications along with stability.

### **Lessons**

- Technologies used in Microsoft Azure Stack for DevOps.
- Azure Resource Manager Templates.
- Third-party Resource Providers.

### **Lab : Debugging and Deploying ARM Templates**

- Using Windows PowerShell to obtain API versions.
- Debug an ARM Template with Visual Studio.

After completing this module, students will be able to:

- Understand the technologies used by DevOps in Microsoft Azure Stack.
- Understand Templates in Azure Resource Manager.
- Understand the third-party Resource Providers available for Microsoft Azure Stack.

## **Module 6: Infrastructure as a Service and Microsoft Azure Stack**

This module discusses Infrastructure as a Service in Azure Stack. This covers the following areas: Software Defined Datacenter Hyper-V Network Virtualization External Connectivity to Azure Stack Azure Consistent Storage in Azure Stack Virtual Machines in Azure Stack

### **Lessons**

- Software Defined Networking improvements with Microsoft Azure Stack and Windows Server 2016.
- Azure Stack Storage.
- Virtual Machines in Microsoft Azure Stack.

### **Lab : Provisioning Storage and Virtual Machines in Microsoft Azure Stack**

- Creating a Subscription and Resource Groups.
- Creating Storage Accounts.
- Creating a Virtual Network.
- Creating Virtual Machines.

After completing this module, students will be able to:

- Understand the Software Defined Networking improvements with Microsoft Azure Stack and Windows Server 2016.
- Configure Azure Stack Storage.
- Deploy Virtual Machines in Microsoft Azure Stack.

### **Module 7: Platform as a Service and Microsoft Azure Stack**

Azure Stack is more than just an Infrastructure as a Service (IaaS) platform. Azure Stack brings Platform as Service (PaaS) based offerings from Microsoft Azure to Azure Stack. Microsoft Azure was originally designed for PaaS based application development with IaaS based services added later. With the initial release of Azure Stack, Microsoft are offering 4 PaaS based services: SQL and MySQL Databases App Service for websites Key Vault for securely storing secrets such as passwords and certificates Azure Functions for serverless compute This Module will detail each offering and show how these can be utilized.

#### **Lessons**

- Understanding the Platform as a Service.
- SQL Server and MySQL Server Providers in Microsoft Azure Stack.
- App Service Resource Provider.
- Azure Key Vault.
- Azure Functions.

### **Lab : Configuring Platform as a Service in Azure Stack**

- Adding hosting servers.
- Configuring a Plan and Offer.
- Creating SQL Server databases.
- Configuring a Plan and Offer for App Service.

After completing this module, students will be able to:

- Describe Platform as a Service.

- Configure the SQL and MySQL Resource Provider.
- Configure the App Service Resource Provider.
- Understand how Key Vault operates in Azure Stack.
- Understand how Azure Functions operate in Azure Stack.

## **Module 8: Monitoring in Microsoft Azure Stack**

In this module, you will learn how Azure Stack is monitored and updated. You will also learn how to monitor guest workloads that tenants have provisioned using Azure Stack. Finally, you will learn how to troubleshoot the core components of Azure Stack.

### **Lessons**

- Field Replaceable Unit.
- Azure Stack Control Plane Monitoring.
- Patching the Azure Stack Infrastructure.
- Monitoring Guest Workloads in Microsoft Azure Stack.
- Troubleshooting Azure Stack.
- Protecting Azure Stack and Tenant Workloads.

### **Lab : Troubleshooting and Monitoring Microsoft Azure Stack and Guest Operating Systems**

- Monitoring Azure Stack.
- Monitoring Guest Operating Systems.
- Troubleshooting Azure Stack using the Audit Logs and Alerts.

After completing this module, students will be able to:

- Describe the Field Replaceable Unit concept in Microsoft Azure Stack.
- Describe Control Plane Monitoring in Microsoft Azure Stack.
- Understand how Patching is managed in Microsoft Azure Stack.
- Monitor Guest Workloads in Microsoft Azure Stack.
- Troubleshoot Microsoft Azure Stack.

## **Module 9: License Microsoft Azure Stack and Billing Tenants**

In this module, you will learn how Azure Stack is licensed by Microsoft including the two charging models for Azure Stack and what other costs are typically involved in an Azure Stack deployment.

### **Lessons**

- How to license and pay for Azure Stack.
- Azure Consistent Usage API.



- Business Costs and Models with Azure Stack.

## Lab : Obtaining Usage Information

- Obtaining tenant and Azure Stack usage information.

After completing this module, students will be able to:

- Understand how Azure Stack is billed.
- Use the Azure Consistent Usage API.
- Understand business costs and models in Azure Stack.

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