



Global Knowledge®

Implementing Microsoft Azure Infrastructure Solutions Specialist Boot Camp

Case Studies 70-533, Student Guide

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Printed in Canada

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About this course

Course description

The content within this document is supplemental and based on writing material located within MOC course 20533C (current version). The course covers key topics that map directly to Microsoft Exam 70-533. This course utilizes scenario-based training and includes case studies and hands-on learning exercises.

Course objectives

After completing this course, you will be able to:

- Plan and configure Azure Virtual Machines.
- Plan and configure Azure Virtual Networks.
- Plan and configure Azure websites.
- Plan and configure Azure storage.
- Plan and configure Azure Active Directory.

Company exam

After completing this class, you may elect to take Microsoft Exam 70-533 at your local testing center.

Acknowledgments

Global Knowledge wants to acknowledge and thank the following for their contribution toward developing this title. Their effort at various stages in the development has ensured that you have a good classroom experience.

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Font conventions used in this guide

Different fonts and font styles signify different items or tasks. The following is a key to font usage.

Font	Item or task	Examples
Bold	<ul style="list-style-type: none">Commands, directory paths, folders, file names, Web and e-mail addresses, registry keys, icons, and anything you would see in a command line or when programmingText that can be manipulated in windows or dialog boxes	<ul style="list-style-type: none">The dir commandc:\winnt\systemnotepad.exeam.globalknowledge.comYesNoDialog is a subclass of Object, not Dialog.Check the Write the event to a system log box.
ALL CAPS	<ul style="list-style-type: none">Key namesMessages	<ul style="list-style-type: none">CTRL+ALT+DELETE (Press the CTRL, ALT, and DELETE keys simultaneously)SYN/ACK messageCALL PROCEEDING message
Consolas	<ul style="list-style-type: none">Computer-generated text	<ul style="list-style-type: none">Input a valid user id and password.
Consolas bold	<ul style="list-style-type: none">Code or commands not in text flow or tables that are entered by the user	<ul style="list-style-type: none"><h1>Global Knowledge</h1>\$ show cluster /continuous
Italic	<ul style="list-style-type: none">Placeholder variables	<ul style="list-style-type: none">\$ more [file1 [file2...]]The example runs cmd2 if cmd1 returns success.

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Case Study Day 1: Implementing Virtual Machines

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Stakeholder assessment on Physical Locations.

Stakeholder conceptual assessment on Azure infrastructure end state.

Stakeholder logical architecture assessment on Azure Infrastructure end state.

Stakeholder requirements, including planned changes, security requirements, auditing requirements, compliance requirements, and hybrid requirements.

Case Study challenge.

Lab: Implementing Virtual Machines.

Case Study reflection.

Module overview

Azure Virtual Machines are one of the central features of Infrastructure-as-a-Service (IaaS), coupled with Virtual Networks. Azure Virtual Machines support Windows or Linux Virtual Machines. If your Workloads require near total control over infrastructure: operating system configuration, disk persistence, and much, much more, then Azure Virtual Machines are the right fit.

Objectives

After completing this module, you will be able to:

- Plan Infrastructure-as-a-Service Virtual Machines.
- Deploy Virtual Machines.
- Explain Virtual Machines.

Scenario

In this lab, you will: Review the Case Study information provided by your instructor and, based on information located within the Case Study, you will provide a solution.

Objectives

- Review Case Study Day 1.
- Read the Case Study and answer the question based on information in the Case Study.
- Using the Lab Answer Key, you must implement the solution by following the steps below.

Lab duration: Estimated time: 45 min

Scenario

Wunhill Transport Company has hired Striker Technologies to implement a suite of custom enterprise applications to reduce costs and increase market share in emerging transportation markets.

Wunhill CEO-Jacob Brady has been interviewed by Striker Technologies SMEs and Consultants.

Note

Please locate below interviews and analysis on requirements from key stakeholders

CEO - Jacob Brady

“Wunhill is a transportation company with several offices in the US, and has been operating for almost 45 years.”

“We have hired Striker Technologies to scale out our current infrastructure in light of current growth trends. Our analysts have substantiated data which displays an influx of traffic using our ShipSmart and TruckSmart applications. Due to this anticipated traffic, we have agreed to scale out.”

“I have also included other stakeholders, from our IT Director Elizabeth Stein to the Marketing Manager. They will assist with oversight on all phases of planning, preparation, and implementation”.

“You will be provided information to assist with all phases; which includes but is not limited to physical locations, existing environments, and security compliance requirements.”

CEO - Jacob Brady

Physical Locations:

Wunhill has several offices. The two offices that are of key interest are located in New York and Dallas.

New York and Dallas both contain a data center:

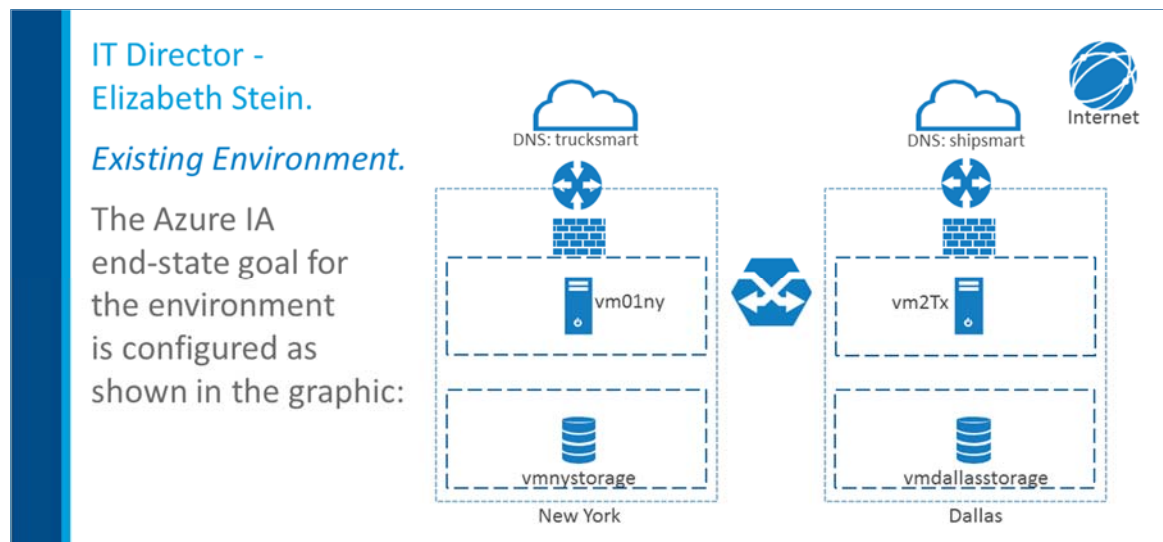
The New York and Dallas data centers connect to each other using a direct WAN link.

The Dallas office has external access to the internet.

Out of 750 employees, only 25% work in the New York office.

IT Director - Elizabeth Stein

Existing Environment:



The Wunhill Azure Infrastructure Architecture end-state should have the following components:

- *DNS Name Labels: Trucksmart and Shipsmart.*
- *VMs: vm01ny and vm2Tx*
- *Storage accounts: vmnystorage and vmdallasstorage.*
- *The New York Data Center is located in the East US location, with Dallas in the Central US location.*

IT Director - Elizabeth Stein

Requirements.

Planned Changes:

Wunhill has provided you objectives that are located in this list.

You will be provided with elevated credentials to administer necessary tasks.

- *Create a resource group and select the central US location.*
- *Create a storage account and set Geo Redundant Storage.*
- *Create and configure a network in the central US location.*
- *Create and configure a Virtual Machine on the network subnet located in the central US location.*

IT Director - Elizabeth Stein

Requirements.

Security Requirements:

Wunhill identifies the following security requirements:

- *Ensure that the VM IP addresses provided for this pilot remain dynamic.*
- *Ensure that the VIP/Public IP addresses for the service remain dynamic during this pilot.*
- *Ensure that the VMs located in the central US VNET can be accessed directly from the internet.*

CEO - Jacob Brady

Requirements.

Auditing Requirements:

Wunhill identifies the following requirements:

The managers of the legal department will require administrators to remote in and review event logs from their domain joined clients.

The manager of operations will require administrators to remotely manage the Virtual Machines via PowerShell, where RBAC can control all cmdlets.

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CEO - Jacob Brady

Requirements.

Compliance Requirements:

Wunhill is still working on preparing the organization's compliance needs for live production. Compliance will not be enforced on the pilot.

Please note that this is subject to change.

CEO - Jacob Brady


Requirements.

Azure Hybrid Requirements:

Wunhill identifies the following Azure Hybrid requirements:

The pilot implementation in the central US location, including VMs and storage, will not be configured with a site-to-site VPN or use any form of coexistence until the current pilot is successful.

Virtual Machines



Provision Windows and Linux virtual machines in minutes

Please review the Case Study and provide a solution based on the following:

- Physical Locations
- Existing Environment
- Requirements

Lab answer key: Implement and manage Virtual Machines

Exercise 1: Configure and create a Virtual Machine in PowerShell

Task 1: Utilizing PowerShell ISE to create and configure a Virtual Machine

1. Ensure that the **20533C-MIA-CL1** Virtual Machine is running, then log on to **20533C-MIA-CL1** as **Student** with the password **Pa\$\$w0rd**.
2. On the taskbar, right-click **Microsoft Azure PowerShell** and click **Run ISE as Administrator**. Click **Yes** when prompted.
3. In the **PowerShell ISE**, click **File** and then click **Open**.
4. In the **Open** dialog, browse to **D:\GK 20533 Custom\Labfiles**
5. Click **CaseStudyDay1.ps1** and then click **Open**.
6. If the **Script** pane is not visible, in the **View** menu, click **Show Script Pane**.
7. In the **PowerShell ISE**, in the **Script** pane, locate and select the following lines of code:
`$cred = Login-AzureRmAccount`
`$Subscription = Get-AzureRmSubscription`
`$setsubsc = Get-AzureRmSubscription | Set-AzureRmContext`
8. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

Note: Enter the username@Outlook.com and password that were created earlier when creating an Azure account.

Task 2: Create Resource Group and Location name

1. In the **Script** pane, locate and select the following lines of code:
`$ResourceGroupName = "CentralUsGroup1"`
`$Location = "Central US"`

Note: The storage name must be unique, 3-24 characters, and all lower case.

2. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

Task 3: Create storage account and storage type name

1. In the **Script** pane, locate and select the following lines of code:

```
$storageName = "vmdallasstorage01"  
$storageType = "Standard_LRS"
```
2. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)
3. In the **Script** pane, locate and select the following lines of code:

```
$InterfaceName = "VM2TxNICCard01"  
$Subnet1Name = "FrontEndSubnet1"  
$VNetName = "CentralUsVNet01"  
$VNetAddressPrefix = "10.0.0.0/16"  
$VNetSubnetAddressPrefix = "10.0.0.0/24"  
$PublicIPAddressName = "shipsmartvip002"  
$DNSNameLabel = "shipsmart002"
```

Note: The variables for both the DNS Name Label and Public IP address must be unique; i.e., "shipsmartvipXXXX, where "X" values are unique.

4. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)
5. In the **Script** pane, locate and select the following lines of code:

```
$VMName = "VM2Tx"  
$ComputerName = "Server01"  
$VMSize = "Standard_A2"  
$blobPath = "vhds/WindowsOSDisk.vhd"
```
6. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)
7. In the **Script** pane, locate and select the following lines of code:

```
New-AzureRMResourceGroup -Name $ResourceGroupName -Location  
$Location
```

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- On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

- In the **Script** pane, locate and select the following lines of code:

```
$StorageAccount = New-AzureRmStorageAccount -ResourceGroupName  
$ResourceGroupName -Name $StorageName -Type $StorageType -  
Location $Location
```

- On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

- In the **Script** pane, locate and select the following lines of code:

```
$PIP = New-AzureRmPublicIpAddress -Name $PublicIPAddressName -  
DomainNameLabel $DNSNameLabel -ResourceGroupName  
$ResourceGroupName -Location $Location -AllocationMethod  
Dynamic  
  
$SubnetConfig = New-AzureRmVirtualNetworkSubnetConfig -Name  
$Subnet1Name -AddressPrefix $VNetSubnetAddressPrefix  
  
$VNet = New-AzureRmVirtualNetwork -Name $VNetName -  
ResourceGroupName $ResourceGroupName -Location $Location -  
AddressPrefix $VNetAddressPrefix -Subnet $SubnetConfig  
  
$Interface = New-AzureRmNetworkInterface -Name $InterfaceName  
-ResourceGroupName $ResourceGroupName -Location $Location -  
SubnetId $VNet.Subnets[0].Id -PublicIpAddressId $PIP.Id
```

- On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

- In the **Script** pane, locate and select the following lines of code: Note the credentials: The password must be at 12-123 characters long and have at least one lower case character, one upper case character, one number, and one special character.

```
$Credential = Get-Credential  
  
$VirtualMachine = New-AzureRmVMConfig -VMName $VMName -VMSize  
$VMSize  
  
$VirtualMachine = Set-AzureRmVMOperatingSystem -VM  
$VirtualMachine -Windows -ComputerName $ComputerName -  
Credential $Credential -ProvisionVMAgent -EnableAutoUpdate  
  
$VirtualMachine = Set-AzureRmVMSourceImage -VM $VirtualMachine  
-PublisherName MicrosoftWindowsServer -Offer WindowsServer -  
Skus 2012-R2-DataCenter -Version "Latest"  
  
$VirtualMachine = Add-AzureRmVMNetworkInterface -VM  
$VirtualMachine -Id $Interface.Id
```

```
$OSDiskUri = $StorageAccount.PrimaryEndpoints.Blob.ToString()  
+ $blobpath
```

```
$OSDiskName = "WindowsOSDisk"
```

```
$VirtualMachine = Set-AzureRmVMOSDisk -VM $VirtualMachine -  
Name $OSDiskName -vhdUri $OSDiskUri -CreateOption FromImage
```

14. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)
15. In the **Script** pane, locate and select the following lines of code:

```
New-AzureRmVM -ResourceGroupName $ResourceGroupName -Location  
$Location -VM $VirtualMachine
```
16. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)
17. Note that it will take 15 - 20 minutes for the **Virtual Machine Object** to be created: do not proceed until the creation is complete.

Results

At the end of this exercise, you will have written PowerShell commands that configure a Virtual Machine, Storage, and Network Resources.

Case Study reflection

Striker Technologies utilized PowerShell to configure and create Virtual Machines based on requirements provided in this Case Study. Based on what you have learned today and your experience with the skill challenge, how would you approach deploying Virtual Machines for your own organization?

Note

The following are references and Insight on Azure Virtual Machines:

MOC 20533C Module 3#: *Implement and manage Virtual Machines*

Exam Domain: *Implement Virtual Machines*

Technical references for this question: <https://azure.microsoft.com/en-us/documentation/services/virtual-machines/windows/>

Did you know?

Although Virtual Machines are the primary solution, note that the script used by Striker Technologies engineers required components such as resource groups, storage accounts, a network interface, and the Virtual Network to be configured whilst configuring the Virtual Machine.

Case Study Day 2: Implementing Virtual Networks

Contents

Interview with CEO.

Stakeholder assessment on Physical Locations.

Stakeholder conceptual assessment on Azure infrastructure end state.

Stakeholder logical architecture assessment on Azure Infrastructure end state.

Stakeholder requirements, including planned changes, security requirements, auditing requirements, compliance requirements, and hybrid requirements.

Case Study challenge.

Lab: Implementing Virtual Networks.

Case Study reflection.

Module overview

Azure Virtual Networks are used in Azure to provide isolation to services. Virtual Machines and web applications that are part of the same Virtual Network can access each other. Services outside the Virtual Network cannot access the services within by default.

Objectives

After completing this module, you will be able to:

- Plan Infrastructure-as-a-Service Virtual Networks.
- Configure Virtual Networks.
- Explain Virtual Networks.

Scenario

In this lab, you will: Review the Case Study information provided by your instructor and, based on information located within the Case Study, you will provide a solution.

Objectives

- Review Case Study Day 2.
- Read the Case Study and answer the question based on information in the Case Study.
- Using the Lab Answer Key, you must implement the solution by following the steps below.

Lab duration: Estimated time: 45 min

Scenario

Wunhill Transport Company has hired Striker Technologies to implement a suite of custom enterprise applications to reduce costs and increase market share in emerging transportation markets.

Wunhill CEO-Jacob Brady has been interviewed by Striker Technologies SMEs and Consultants.

Note

Please locate below interviews and analysis on requirements from key stakeholders

CEO - Jacob Brady

“Excellent Job! From the executive staff at Wunhill, on successfully completing the first phase of planning, preparing, and deploying the required components in an effort to scale out the existing on premise infrastructure by using Azure infrastructure solutions.”

“In light of your success and familiarity with the first phase of this project, I have received word from other stakeholders who wish to continue using Striker Technologies to configure components in our current Azure IA with a persistent endpoint for future access and with new and legacy line of business applications.”

“You will be provided information to assist with all phases; which includes but is not limited to physical locations, existing environments, and security compliance requirements.”

CEO - Jacob Brady

Physical Locations:

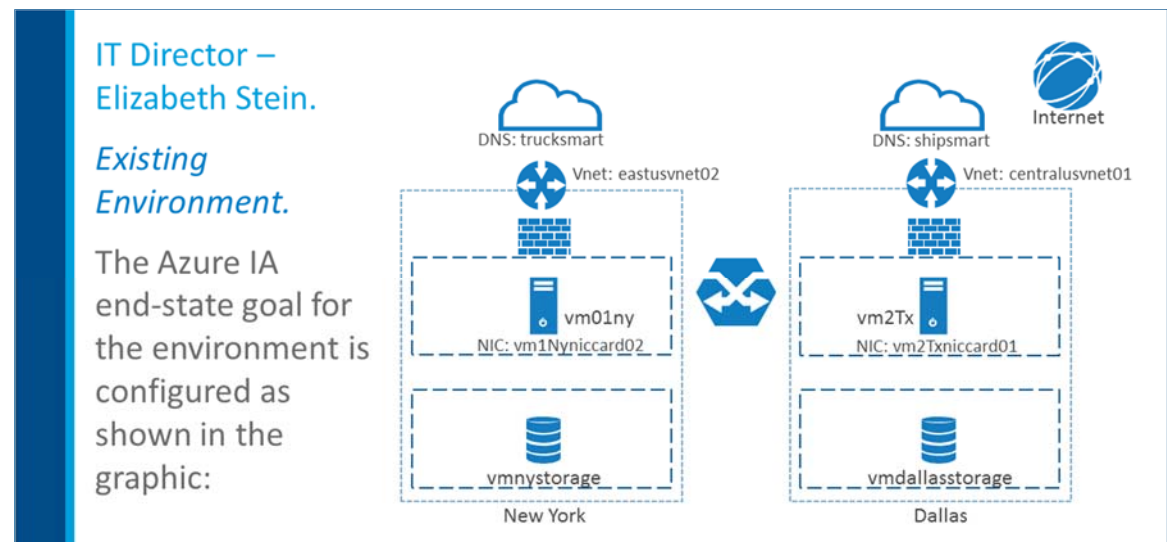
Wunhill has several offices. The two offices that are of key interest are located in New York and Dallas.

New York and Dallas both contain a data center:

- *The New York and Dallas data centers connect to each other using a direct WAN link.*
- *The Dallas office has external access to the internet.*
- *Out of 750 employees, only 25% work in the New York office.*

IT Director - Elizabeth Stein

Existing Environment:



The Wunhill Azure Infrastructure Architecture end-state should include the following components:

- DNS Name Labels: Trucksmart and Shipsmart.
- VNETs: CentralUsVnet01 and EastUsVnet02.
- VMs: vm01ny and vm2Tx.
- Interface Names: vm1nyNICcard02 vm2TxNICcard01.
- Storage accounts: vmnystorage and vmdallasstorage.
- The New York Data Center is located in the East US location, with Dallas in the Central US location.

IT Director - Elizabeth Stein

Requirements.

Planned Changes:

Wunhill has provided you objectives that are located in this list.

- *Add a static private IP address to an existing VM.*
- *Configure the Virtual Machine located in the Central US.*
- *Configure VMs located on the front end subnet.*

IT Director - Elizabeth Stein

Requirements.

Security Requirements:

Wunhill identifies the following security requirements:

- *Ensure that the VM IP allocation method remains static.*
- *Ensure that the VMs located in the central US VNET are accessible from the internet.*

CEO - Jacob Brady

Requirements.

Auditing Requirements:

Wunhill identifies the following requirements:

- *The managers of the legal department will require administrators to remote in and review event logs from their domain joined clients.*
- *The manager of operations will require administrators to remotely manage the Virtual Machines via PowerShell, where RBAC can control all cmdlets.*

CEO - Jacob Brady

Requirements.

Compliance Requirements:

Wunhill is still working on preparing the organization's compliance needs for live production. Compliance will not be enforced on the pilot.

Please note that this is subject to change.

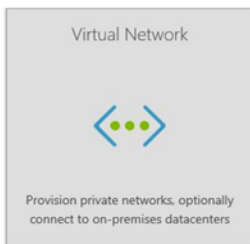
CEO - Jacob Brady

Requirements.

Azure Hybrid Requirements:

Wunhill identifies the following Azure Hybrid requirements:

- *The pilot implementation in the central US location, including VMs and storage, will not be configured with a site-to-site VPN or use any form of Hybrid until the current pilot is successful.*



Please review the Case Study and provide a solution based on the following:

- Physical Locations
- Existing Environment
- Requirements

Lab answer key: Implement and manage Virtual Networks

Exercise 1: Configure a Virtual Network in PowerShell

Task 1: Utilizing PowerShell ISE to create and configure a Virtual Network

Note: Prior to starting the task steps indicated below, please open and run the Case Study Day 1 PS script; for assistance, ask your instructor.

1. Ensure that the **20533C-MIA-CL1** Virtual Machine is running, and then log on to **20533C-MIA-CL1** as **Student** with the password **Pa\$\$w0rd**.
2. On the taskbar, right-click **Microsoft Azure PowerShell** and click **Run ISE as Administrator**. Click **Yes** when prompted.
3. In the **PowerShell ISE**, click **File** and then click **Open**.
4. In the **Open** dialog, browse to **D:\GK 20533 Custom\Labfiles**
5. Click **CaseStudyDay2.ps1** and then click **Open**.
6. If the **Script** pane is not visible, on the **View** menu, click **Show Script Pane**.
7. In the **PowerShell ISE**, in the **Script** pane, locate and select the following lines of code:

```
$cred = Login-AzureRmAccount  
$Subscription = Get-AzureRmSubscription  
$setsubsc = Get-AzureRmSubscription | Set-AzureRmContext
```
8. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

Task 2: Create and configure the Interface Allocation Method

1. In the **Script** pane, locate and select the following lines of code:

```
$nic = Get-AzureRmNetworkInterface -Name $InterfaceName -  
ResourceGroupName $ResourceGroupName  
$nic.IpConfigurations[0].PrivateIpAllocationMethod =  
"Static"  
Set-AzureRmNetworkInterface -NetworkInterface $nic
```

2. On the toolbar, click the **Run Selection** button and wait for the script and its results to be displayed in the **command prompt** pane. (Wait for the command prompt and then **Continue**)

Results

At the end of this exercise, you will have written PowerShell commands that configure an existing Network Interface with a Static IP Allocation Method.

Case Study reflection

Striker Technologies utilized PowerShell to configure a static IP allocation method based on requirements provided in this Case Study. Based on what you have learned today and your experience with the skill challenge, how would you approach deploying a Virtual Network with a static IP for your own organization?

Note

The following are references and Insight on Azure Virtual Networks:

MOC 20533C Module 2#: *Implement and manage Virtual Machines*

Exam Domain: *Implement Virtual Networks*

Technical references for this question: <https://azure.microsoft.com/en-us/documentation/articles/virtual-networks-overview/>

Did you know?

Although configuring a Virtual Network with a static IP allocation method is the primary solution, note that the script used by Striker Technologies engineers required components such as resource groups, storage accounts, a network interface, and the Virtual Network to have been deployed in Azure prior to solution.

Case Study Day 3: Implementing Websites

Contents

Interview with CEO.

Stakeholder assessment on Physical Locations.

Stakeholder conceptual assessment on Azure infrastructure end state.

Stakeholder logical architecture assessment on Azure Infrastructure end state.

Stakeholder requirements, including planned changes, security requirements, auditing requirements, compliance requirements, and hybrid requirements.

Case Study challenge.

Lab: Implementing Virtual Machines.

Case Study reflection.

Module overview

Azure Websites is an App Service, previously known as a cloud service, that allows you to deploy a scalable web application that supports languages that include .NET, Java, PHP, Node.js, and Python. In addition to creating web sites with WordPress and Drupal, Azure also supports continuous deployment with TFS and GitHub.

Objectives

- After completing this module, you will be able to:
- Plan Platform-as-a-Service Azure Websites.
- Deploy web application.
- Explain Azure App Service.

Scenario

In this lab, you will: Review the Case Study information provided by your instructor and, based on information located within the Case Study, you will provide a solution.

Objectives

- Review Case Study Day 3.
- Read the Case Study and answer the question based on information in the Case Study.
- Using the Lab Answer Key, you must implement the solution by following the steps below.

Lab duration: Estimated time: 45 min

Scenario

Wunhill Transport Company has hired Striker Technologies to implement a suite of custom enterprise applications to reduce costs and increase market share in emerging transportation markets.

Wunhill CEO-Jacob Brady has been interviewed by Striker Technologies SMEs and Consultants.

Note

Please locate below interviews and analysis on requirements from key stakeholders

CEO - Jacob Brady

Wunhill has planned to develop customer facing applications, management applications, and service systems that will interoperate with 3PL systems. In order to scale down costs, we will develop solutions in the cloud.

Striker Technologies continues to exceed expectations and, with the time available, has made gains where we can successfully scale out the on premise workloads to Azure. ShipSmart, our signature application, will be among the first on premise developed applications to be staged in Azure.

I have also included other stakeholders, from our IT Director Elizabeth Stein to the Marketing Manager. They will assist with oversight on all phases of planning, preparation, and implementation.

You will be provided information to assist with all phases; which includes but is not limited to physical locations, existing environments, and security compliance requirements.

CEO - Jacob Brady

Physical Locations:

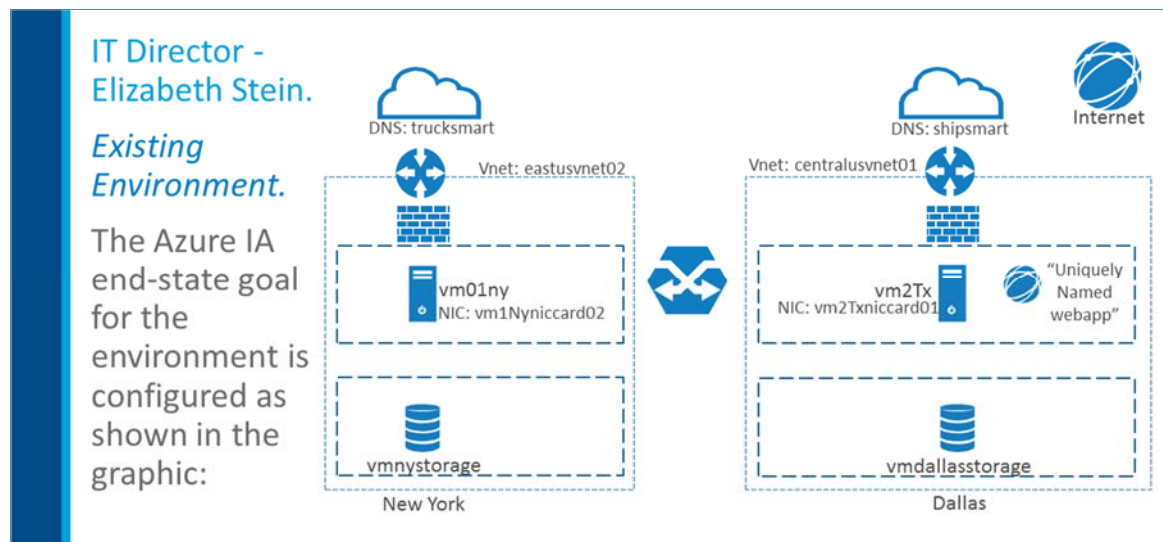
Wunhill has several offices in various regions within the US.

East US and Central US both contain an on-premises data center:

- *The New York and Dallas Data Centers connect to each other using a direct WAN link.*
- *The Dallas Office has External access to the internet*
- *Out of 750 Employees, only 25% work in the New York Office*

IT Director - Elizabeth Stein

Existing Environment:



The Wunhill Azure Infrastructure Architecture end-state should include the following components:

- DNS Name Labels: Trucksmart and Shipsmart.
- Uniquely named web application.
- VNETs: CentralUsVnet01 and EastUsVnet02.
- VMs: vm01ny and vm2Tx.
- Interface Names: vm1nyNICcard02 vm2TxNICcard01.
- Storage accounts: vmnystorage and vmdallasstorage.
- The New York Data Center is located in the East US location, with Dallas in the Central US location.

IT Director - Elizabeth Stein

Requirements.

Planned Changes:

Wunhill has provided you objectives that are located in this list.

- *Create a pilot web application.*
- *Add a deployment slot for staging and testing purposes.*

IT Director - Elizabeth Stein

Requirements.

Security Requirements:

Wunhill identifies the following security requirements:

- *Approve and Validate web app changes in a staging slot before swapping it with production.*
- *App service must provide a native identity provider: for this pilot, Wunhill will leverage Azure Active Directory.*
- *Azure web app has to have enabled HTTPS and provide certificate based encryption.*
- *All communications between your app and external resources, such as PowerShell, Azure SDKs, Rest APIs, and Hybrid, are encrypted.*
- *Connections strings to Database Resources are encrypted.*

CEO - Jacob Brady

Requirements.

Auditing Requirements:

Wunhill identifies the following requirements:

- *The pilot implementation will not need to enable logging at this time.*
- *Wunhill management needs to verify that the pilot web app can in the future provide a detailed error log, failed request tracing, and web server logging, if the need to enable logging arises.*

CEO - Jacob Brady

Requirements.

Compliance Requirements:

Wunhill is still working on preparing the organization's compliance needs for live production. Compliance will not be enforced on the pilot.

Wunhill has listed some initial compliance prerequisites in an effort to plan and prepare for the future. The Hosting Platform must ensure that our web applications are highly scalable, have isolated secure network access, and have a dedicated computer resource.

Please note that this is subject to change and not an exhaustive list.

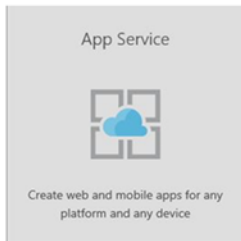
CEO - Jacob Brady

Requirements.

Azure Hybrid Requirements:

Wunhill identifies the following Azure Hybrid requirements:

- *The pilot implementation in the central US location, including web apps, VMs, and storage, will not be configured with a site-to-site VPN or use any form of Hybrid until the current pilot is successful.*



Please review the Case Study and provide a solution based on the following:

- Physical Locations
- Existing Environment
- Requirements

Lab answer key: Implementing WebSites (Azure App Service)

Exercise 1: Creating and configuring web applications

Task 1: Create a web application

Note: Prior to starting the task steps indicated below, please open and run the Case Study Day 1 PS script; for assistance, ask your instructor.

1. Ensure that the **20533C-MIA-CL1** Virtual Machine is running, and then log on to **20533C-MIA-CL1** as **Student** with the password **Pa\$\$w0rd**.
2. Open Internet Explorer, browse to **http://portal.azure.com**, and then sign in using a Microsoft account that is either the **Service Admin** or co-admin of your subscription.
3. In the top-left corner of the portal, click **New**, and then click **Web+Mobile**.
4. In the **Web+Mobile** blade, click **Web App**.
5. In the **Web App** blade, in the **App name** text box, type a unique name. If the name is unique and valid, a green check mark appears.
6. In the **Web App** blade, in the **Resource Group**, verify that **Existing group** is selected from drop down list, "CentralUSGroup1".
7. In the **Web App** blade, click the **App Service plan/Location** link.
8. In the **App Service plan** blade, click **Create New**.
9. In the **App Service plan** text box, type **WebAppStandardPlan**.
10. In the **Location** drop down list, select **Central US**.
11. In **Pricing tier**, select **S1 Standard**, and then click **OK**.
12. In the **Web App** blade, click **Create**. The web-app creation process may take several minutes.

Task 2: Add a deployment slot

1. On the Left of the **Azure** portal, click **Browse**, and then click **App Services**.
2. In the **App Services** blade, click the web app that you created in the first task.
3. In the **Settings** blade, scroll down to locate the **PUBLISHING** section, and then click **Deployment slots**.
4. In the **Deployment slots** blade, click **Add Slot**.
5. In the **Add a slot** blade, in the **Name** text box, type **Staging**.

6. In the **Configuration Source** list, select the web app you created in the first task, and then click **OK**. Azure adds the new deployment slot to the list.
7. Close the **Deployment slots** blade.
8. Open and Run **Windows PowerShell ISE** by right clicking the **PowerShell** shortcut in the taskbar.
9. Login to Azure by using your subscription. Type the following command in the **command line interface for ISE**, and then press **Enter**:
Login-AzureRMAccount
10. If you have Multiple subscriptions, to select the current subscription that you wish to use, type the following commands and then press **Enter**:
Get-AzureRMSubscription
Set-AzureRMContext -SubscriptionName
"YourCurrentSubscriptionGoesHere"
11. Type the following command in **ISE** and then press **Enter**:
Get-AzureRMWebApp
12. Verify that the listed web app displays the web app that you created in Task 1.
13. Type the following **AzurePowerShell** command, and then press **Enter**:
Get-AzureRMWebAppSlot -ResourceGroupName CentralUSGroup1 -Name
"YourCurrentWebAppNameGoesHere"
14. Verify that the Web app is also listing the staging slot you created in this task.

Results

At the end of this exercise, you will have configured a web application and Staging Slot.

Case Study reflection

Striker Technologies configured a web application based on requirements provided in this Case Study. Based on what you have learned today and your experience with the skill challenge, how would you approach deploying a web app for your own organization?

Note

The following are references and Insight on Azure App Service:

MOC 20533C Module 5#: *Implementing Azure App Service*

Exam Domain: *Implement Websites/ Cloud Service*

Technical references for this question: <https://azure.microsoft.com/en-us/documentation/articles/app-service-how-works-readme/>

Did you know?

FAQs: <https://azure.microsoft.com/en-us/documentation/articles/app-service-best-practices/>

Note

Azure app services solutions, which include web app and databases, should be located in the same region per best practice to not incur increased latency in communication between resources and additional costs due to cross-region egress.

Case Study Day 4: Implementing Storage

Contents

Interview with CEO.

Stakeholder assessment on Physical Locations.

Stakeholder conceptual assessment on Azure infrastructure end state.

Stakeholder logical architecture assessment on Azure Infrastructure end state.

Stakeholder requirements, including planned changes, security requirements, auditing requirements, compliance requirements, and hybrid requirements.

Case Study challenge.

Lab: Implementing Virtual Machines.

Case Study reflection.

Module overview

Azure storage is a service that provides scalability and redundancy and includes various services, such as Blob service, File share service, Table service, and Queue service. These services can be accessed from anywhere by using URLs, the REST interface, or Azure SDK.

Objectives

After completing this module, you will be able to:

- Plan Storage accounts.
- Manage storage containers.
- Explain storage accounts.

Scenario

In this lab, you will: Review the Case Study information provided by your instructor and, based on information located within the Case Study, you will provide a solution.

Objectives

- Review Case Study Day 4.
- Read the Case Study and answer the question based on information in the Case Study.
- Using the Lab Answer Key, you must implement the solution by following the steps below.

Lab duration: Estimated time: 45 min

Scenario

Wunhill Transport Company has hired Striker Technologies to implement a suite of custom enterprise applications to reduce costs and increase market share in emerging transportation markets.

Wunhill CEO-Jacob Brady has been interviewed by Striker Technologies SMEs and Consultants.

Note

Please locate below interviews and analysis on requirements from key stakeholders

CEO - Jacob Brady

Wunhill wants to ensure that their IT administrators can track data for each request, including the operations performed and the status of the operation. The application developers will also need transaction and capacity metrics so they can determine how their application is performing.

Striker Technologies will be contracted to ensure that the Azure storage analytics can meet our needs.

I have also included other stakeholders, from our IT Director Elizabeth Stein to the Marketing Manager. They will assist with oversight on all phases of planning, preparation, and implementation.

You will be provided information to assist with all phases; which includes but is not limited to physical locations, existing environments, and security compliance requirements.

CEO- Jacob Brady

Physical Locations

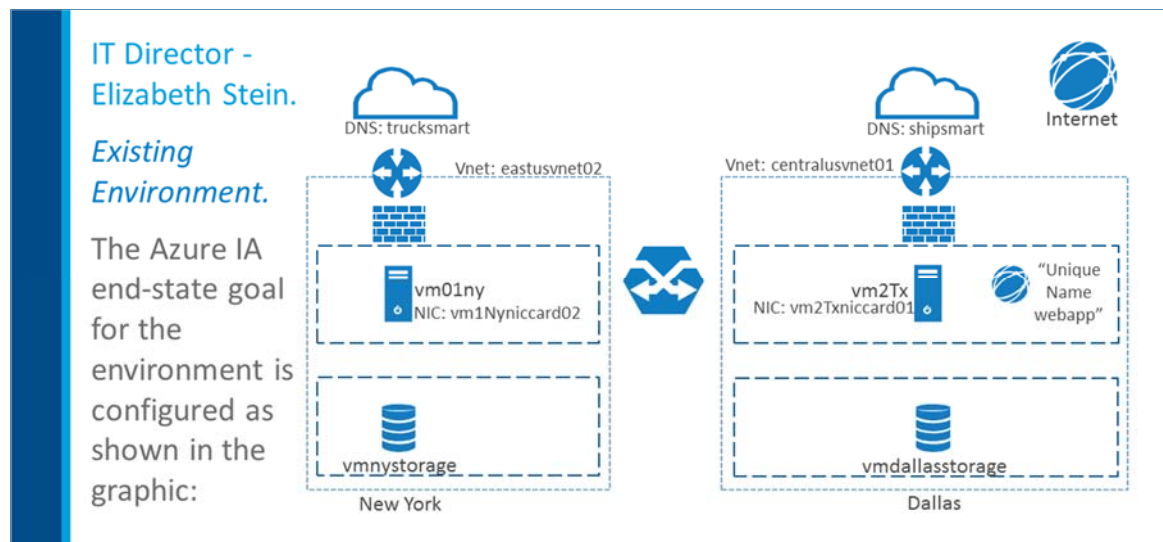
Wunhill has several offices in various regions within the US

East US and Central US both contain an On-Premises Data Center:

- *The New York and Dallas Data Centers connect to each other using a direct WAN link.*
- *The Dallas Office has External access to the internet.*
- *Out of 750 Employees, only 25% work in the New York Office.*

IT Director - Elizabeth Stein

Existing Environment:



The Wunhill Azure Infrastructure Architecture end-state should include the following components:

- DNS Name Labels: Trucksmart and Shipsmart.
- Uniquely named web application.
- VNets: CentralUsVnet01 and EastUsVnet02.
- VMs: vm01ny and vm2Tx.
- Interface Names: vm1nyNICcard02 vm2TxNICcard01.
- Storage accounts: vmnystorage and vmdallasstorage.
- The New York Data Center is located in the East US location, with Dallas in the Central US location.

IT Director - Elizabeth Stein

Requirements.

Planned Changes:

Wunhill has provided you objectives that are located in this list.

- *Enable Azure Storage Analytics.*
- *Enable storage metrics.*
- *Enable storage logging.*
- *Review audit logs.*

IT Director - Elizabeth Stein

Requirements.

Security Requirements:

Wunhill identifies the following security requirements:

- *Approve and Validate Azure Storage Analytics.*

CEO - Jacob Brady

Requirements.

Auditing Requirements:

Wunhill identifies the following requirements:

- *The pilot implementation will now enable logging at this time.*
- *Wunhill management needs to verify that the storage account can provide a detailed error log, failed request tracing, and server side logging.*

CEO - Jacob Brady

Requirements.

Compliance Requirements:

Wunhill is still working on preparing the organization's compliance needs for live production. Compliance will not be enforced on the pilot.

Please note that this is subject to change and not an exhaustive list.

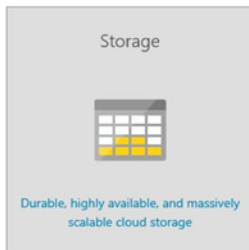
CEO - Jacob Brady

Requirements.

Azure Hybrid Requirements:

Wunhill identifies the following Azure Hybrid requirements:

- *The pilot implementation in the central US location, including web apps, VMs, and storage, will not be configured with a site-to-site VPN or use any form of Hybrid until the current pilot is successful.*



Please review the Case Study and provide a solution based on the following:

- Physical Locations
- Existing Environment
- Requirements

Lab answer key: Implementing Storage

Exercise 1: Configure server side logging and metrics

Task 1: Configure logging

Note: Prior to starting the task steps indicated below, please open and run the Case Study Day 1 PS script; for assistance, ask your instructor.

1. Ensure that you are signed in to **MIA-CL1** as **Student** with the password **Pa\$\$w0rd**.
2. Start **Internet Explorer**, and then browse to **https://portal.azure.com**. When prompted, sign in by using the Microsoft account that is the **Service Administrator** or Co-Administrator of your Microsoft Azure subscription.
3. On the **Hub** menu, click **Resource groups**, and then click **CentralUSGroup##**.
4. In the **CentralUSGroup## Resource group** blade, click the **vmdallasstorage#### Storage** account.
5. In the **vmdallasstorage Storage** account - **General** blade, click **All** settings, and then click **Diagnostics**.
6. In the **Diagnostics, vmdallasstorage####** blade, ensure that the current status displays **On**.
7. In the **Diagnostics, vmdallasstorage####** blade, select the **Blob Logs** radio box.
8. Save and then close the **Diagnostics, vmdallasstorage####** blade.
9. On the **Settings vmdallasstorage####** blade, click on **Audit Logs** and then review the **Events** blade.

Results

At the end of this exercise, you will have configured diagnostic logging and reviewed the audit logs.

Case Study reflection

Striker Technologies configured Azure storage analytics based on requirements provided in this Case Study. Based on what you have learned today and your experience with the skill challenge, how would you approach planning and implementing storage logging for your own organization?

Note

The following are references and Insight on Azure Storage accounts:

MOC 20533C Module 6#: Planning and Implementing storage, backup, and recovery services

Exam Domain: Implement Storage

Technical references for this question: <https://azure.microsoft.com/en-us/documentation/articles/storage-introduction/>

Did you know?

The primary usage for page blobs is for VHD storage, which is used to provide persistent disks for Azure Virtual Machines.

Case Study Day 5: Implementing Azure Active Directory

Contents

Interview with CEO.

Stakeholder assessment on Physical Locations.

Stakeholder conceptual assessment on Azure infrastructure end state.

Stakeholder logical architecture assessment on Azure Infrastructure end state.

Stakeholder requirements, including planned changes, security requirements, auditing requirements, compliance requirements, and hybrid requirements.

Case Study challenge.

Lab: Implementing Virtual Machines.

Case Study reflection.

Module overview

Azure Active Directory is a secure, multitenant directory service from which Azure tenants utilize identity and access management features. Microsoft's cloud services; which include but are not limited to Office 365, and CRM Online all leverage Azure Active Directory to provide a robust directory service.

Objectives

After completing this module, you will be able to:

- Plan Azure Active Directory Hybrid.
- Manage Domain filters.
- Explain Active Directory services.

Scenario

In this lab, you will: Review the Case Study information provided by your instructor and, based on information located within the Case Study, you will provide a solution.

Objectives

- Review Case Study Day 5.
- Read the Case Study and answer the question based on information in the Case Study.
- Using the Lab Answer Key, you must implement the solution by following the steps below.

Lab duration: Estimated time: 45 min

Scenario

Wunhill Transport Company has hired Striker Technologies to implement a suite of custom enterprise applications to reduce costs and increase market share in emerging transportation markets.

Wunhill CEO-Jacob Brady has been interviewed by Striker Technologies SMEs and Consultants.

Note

Please locate below interviews and analysis on requirements from key stakeholders

CEO - Jacob Brady

Wunhill has planned, since the inception of this project, to move certain workloads off premises. We need to ensure that our clients and staff can access line of business applications developed by Wunhill and affiliates and provide access from virtually anywhere, on any device, over secure paths. We have concluded that success will be measured by all phases of the current pilot implementation; including but not limited to Virtual Machines; network configuration; storage; and website planning, preparation, and deployment. Furthermore, Wunhill needs Striker Technologies to integrate Co-Existence, where our internal staff, with a single identity, can utilize our business applications both at home and abroad, which is pivotal for any future web development and will label this pilot a success.

Wunhill management request your assistance in this final task.

I have also included other stakeholders, from our IT Director Elizabeth Stein to the Marketing Manager. They will assist with oversight on all phases of planning, preparation, and implementation.

You will be provided information to assist with all phases; which includes but is not limited to physical locations, existing environments, and security compliance requirements.

CEO- Jacob Brady

Physical Locations

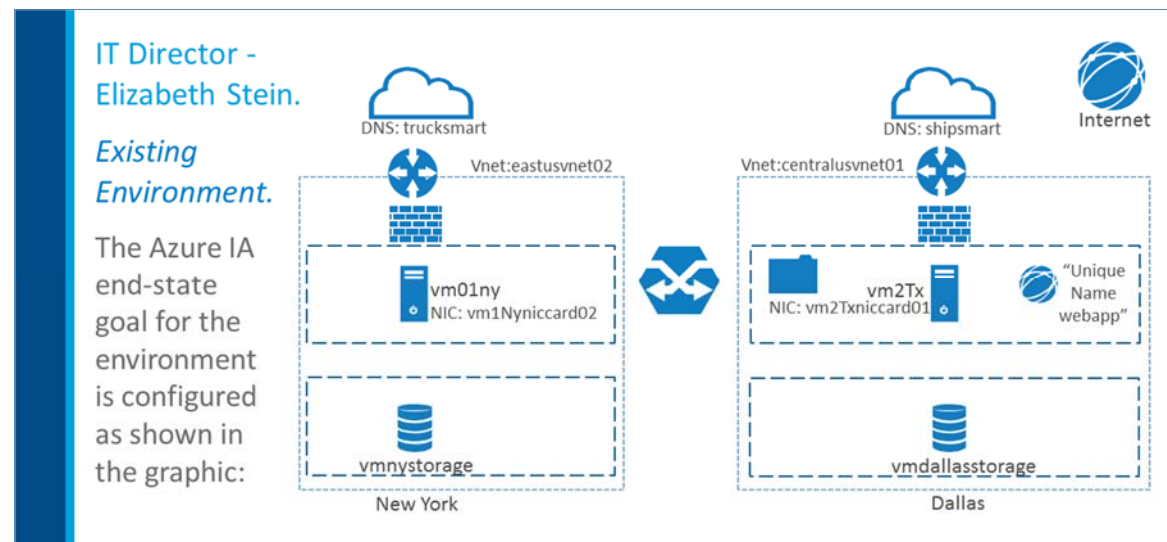
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- *The Dallas Office has External access to the internet.*
- *Out of 750 Employees, only 25% work in the New York Office.*

IT Director - Elizabeth Stein

Existing Environment:



The Wunhill Azure Infrastructure Architecture end-state should include the following components:

- DNS Name Labels: Trucksmart and Shipsmart.
- Azure AD Custom Domain (Sync Domain Users).
- Uniquely named web application.
- VNets: CentralUsVnet01 and EastUsVnet02.
- VMs: vm01ny and vm2Tx.
- Interface Names: vm1nyNICcard02 vm2TxNICcard01.
- Storage accounts: vmnystorage and vmdallasstorage.
- The New York Data Center is located in the East US location, with Dallas in the Central US location.

IT Director - Elizabeth Stein

Requirements.

Planned Changes:

Wunhill has provided you objectives that are located in this list.

- *Integrate on-premises directories with Azure AD.*
- *Install Azure Ad Connect.*
- *Configure domain-based filtering.*
- *Customize Azure AD connect sync.*

IT Director - Elizabeth Stein

Requirements.

Security Requirements:

Wunhill identifies the following security requirements:

- *Azure AD must support token and claim types.*
- *Federation support.*
- *OAuth must be supported.*
- *WS-Federation is also a requirement.*
- *Fine-grained access management (RBAC).*

CEO - Jacob Brady

Requirements.

Auditing Requirements:

Wunhill identifies the following requirements:

- *Access and usage reports.*
- *Error reports.*
- *Activity logs.*

CEO - Jacob Brady

Requirements.

Compliance Requirements:

Wunhill is still working on preparing the organization's compliance needs for live production. Compliance will not be enforced on the pilot.

Please note that this is subject to change and not an exhaustive list.


CEO - Jacob Brady

Requirements.

Azure Hybrid Requirements:

Wunhill identifies the following Azure Hybrid requirements:

- The pilot implementation in the central US location, including web apps, VMs, and storage, will leverage identity and access management provided by Azure Active Directory, which will, while synchronizing approved partitions, allow our end users to continue using a single identity to access resources based on Wunhill's governance documentation.



Active Directory

Synchronize on-premises directories and enable single sign-on

Please review the Case Study and provide a solution based on the following:

- Physical Locations
- Existing Environment
- Requirements

Lab answer key: Implementing Azure Active Directory

Exercise 1: Configure directory partitions in Azure AD-Connect

Note: Because this task requires Module 10 resources, reset-azure should not be run after Module 10. If reset-azure was run in earlier labs, you need to run setup-azure, selecting Module 10 and the location provided by your instructor (duration 15-30 mins).

Task 1: Configure directory partitions

1. Ensure that you are signed in to **MIA-CL1** as **Student** with the password **Pa\$\$w0rd**.
2. Start **Internet Explorer**, and then browse to **https://portal.azure.com**. When prompted, sign in by using the Microsoft account that is the **Service Administrator** or Co-Administrator of your Microsoft Azure subscription.
3. In the **Hub** menu of the **Azure** portal, click **Virtual Machines (classic)**.
4. In the **Virtual Machines (classic)** blade, click **AdatumDC1**.
5. In the **AdatumDC1** blade, click **Connect**.
6. When prompted, click **Save** for the .rdp file.
7. In the **RDP connection** dialog box, click **Connect**.
8. If or when prompted, click **Connect**.
9. In the **windows security** dialog box, enter **ADATUM\Student** and password **Pa\$\$w0rd123**.
10. If or when prompted again, click **Yes**.
11. In **AdatumDC1**, on the **Taskbar**, select the **start** menu.
12. Start typing and select the **Synchronization** service.
13. Select **connectors** and, in the **connectors** list, select the connector with the type **Active Directory Domain Services**. From **actions**, select **properties**.
14. Click **Configure Directory Partitions**.
15. In the **select directory partitions** list, select and unselect the domains as needed. Verify that only the partitions you want to synchronize are selected.
16. Click **OK** to close the **properties** dialog box

Task 2: Continue to adjust the run profiles

Case Study Day 5: Implementing Azure Active Directory

1. In the **connectors** list, make sure the connector you changed in the previous step is selected.
2. From **Actions**, select **Configure Run Profiles**.
3. Adjust the following profiles:
 - a. Full Import, Full Sync, Delta import, delta synchronization
4. **Note:** for each profile:
5. Select **run profile** and click **New Step**
6. On the **Configure Step** page, in the **Type** drop-down, select the step type with the same name as the profile you are configuring. Then click **Next**.
7. On the **connector configuration** page, in the **Partition** drop-down, select the name of the domain you have added to your domain filter.
8. Click **Finish** on the **configure run profile** page.

Results

After completing this exercise, you will have configured Azure AD-Connect.

Case Study reflection

You have configured Azure Active Directory based on requirements provided in this Case Study. Based on what you have learned today and your experience with the skill challenge, how would you approach planning and implementing Azure Active Directory for your own organization?

Note

The following are references and Insight on Azure Active Directory:

MOC 20533C Module 10#: Managing an Active Directory infrastructure

Exam Domain: Implement Azure Active directory

Technical references for this question: Technical references for this question: <https://azure.microsoft.com/en-us/documentation/articles/active-directory-what-is/>

Did you know?

Azure Active Directory: AD-connect tool was formerly known as DirSync.