# Module 6: Planning and implementing storage, backup, and recovery services

# Lab: Planning and implementing Azure Storage

### Scenario

The IT department at A. Datum Corporation uses an asset management application to track IT assets such as computer hardware and peripherals. The application stores images of asset types and invoices for purchases of specific assets. As part of A. Datum's evaluation of Azure, you need to test Azure storage features as part of your plan to migrate the storage of these images and invoice documents to Azure. A. Datum also wants to evaluate Azure File storage for providing SMB 3.0 shared access to installation media for the asset management application client software. Currently, corporate file servers host the media. Additionally, A. Datum wants to evaluate the ability of Azure Backup to protect the content of on-premises computers and Azure IaaS virtual machines.

### Objectives

After completing this lab, you will be able to:

* Create and configure Azure Storage.
* Use Azure file storage.
* Protect data with Azure Backup.

### Lab Setup

Estimated Time: 60 minutes

Virtual machine: **20533C-MIA-CL1**

User name: **Student**

Password: **Pa$$w0rd**

Before starting this lab, ensure that you have performed the "Preparing the environment" demonstration tasks at the beginning of the first lesson in this module and that the setup script has completed.

## Exercise 1: Creating and configuring Azure Storage

### Scenario

A. Datum currently stores images for IT assets as files in a local folder. As part of your Azure evaluation, you want to test storing these images as blobs in Azure so that a new Azure-based version of the asset management application can easily access them.

The main tasks for this exercise are as follows:

1. Create a storage account
2. Install AzCopy
3. Use AzCopy to upload blobs

#### Task 1: Create a storage account

1. Ensure that you are signed in to the MIA-CL1 virtual machine as **Student** with the password **Pa$$w0rd** and that the setup script that you ran in the "Preparing the environment" demonstration has completed.
2. Use Internet Explorer to sign in to the Azure portal at **https://portal.azure.com** by using the Microsoft account that is the Service Administrator or Co-Administrator of your Azure subscription.
3. Create a new storage account with the following settings:

* Name: Enter a valid, unique name consisting of between 3 and 24 lower case characters or digits.
* Deployment model: Classic
* Account kind: General purpose
* Performance: Standard
* Replication: Geo-redundant storage (GRS)
* Subscription: *Your Azure subscription*
* Resource group: make sure that **Create new** radio button is selected and then type **Asset-Management** as the name of the *Resource Group*.
* Location: Select the Azure region nearest to you
* Pin to dashboard: Clear the check box

1. After the storage account creates, add a blob container named **asset-images** with private access.
2. Start the Windows PowerShell ISE as an administrator.
3. Open the **ExampleCommands.ps1** code snippets in the \*\*D:06\* folder, and then record the name of the storage account that you created in the previous task.
4. Leave the Internet Explorer window open. You will use it later in this lab.

#### Task 2: Install AzCopy

1. Download and install AzCopy from **http://aka.ms/AzCopy**. Note that this page also includes documentation and examples for using AzCopy.
2. Add the AzCopy installation path \*\*C:Files (x86)SDKs\* to the *Path* system environment variable.
3. Test the installation by running the following command at a command prompt:

AzCopy /?

1. Keep the Command Prompt window open for the next task.

#### Task 3: Use AzCopy to upload blobs

1. On the Azure portal, identify the keys for your storage account, and then copy the primary access key to the Clipboard.
2. In the Windows PowerShell ISE window, use AzCopy to copy all of the .png files in the **D:06-images** folder to the **asset-images** container in your storage account. Use the code snippets in the **ExampleCommands.ps1** script in the \*\*D:06\*\* folder to help you during this exercise. Ensure that you copy your commands to the Command Prompt window, and do not try to run them as Windows PowerShell commands. This involves replacing all placeholders in the existing script with the corresponding values that represent your storage account name and primary access key, and then running the following command:

AzCopy /Dest:https://<your storage account>.blob.core.windows.net/asset-images /destkey:<your primary access key> /Source:asset-images

1. Wait for the command to complete, and then view the file transfer information that displays.
2. Close the Command Prompt window.

**Result**: At the end of this exercise, you should have created a new Azure storage account with a container named "asset-images."

## Exercise 2: Using Azure File storage

### Scenario

A. Datum currently stores invoices for IT assets in the Microsoft Word format in a local folder. As part of your evaluation of Azure, you want to test the uploading of these files to a file share in your Azure storage account to make it easier for users to access them from VMs in Azure.

The main tasks for this exercise are as follows:

1. Create a file share and upload files
2. Access a file share from a VM

#### Task 1: Create a file share and upload files

1. Use Windows PowerShell ISE to create a Windows PowerShell script that:

* Uses the **Get-AzureStorageKey** cmdlet to retrieve the access key for your storage account.
* Uses the **New-AzureStorageContext** cmdlet to create a storage context that connects to your storage account by using the access key.
* Uses the **New-AzureStorageShare** cmdlet to create a file share named "assets."
* Uses the **New-AzureStorageDirectory** cmdlet to create a folder named "invoices" in the file share.
* Uses the **Set-AzureStorageFileContent** cmdlet to upload each file in the D:06folder to the invoices folder in the file share.

**Note:** You can edit **FileShare.ps1** in the \*\*D:06\* folder if you prefer not to write the script from scratch.

1. Run the script to upload the files.
2. Observe the script as it runs, and then view the output. When you finish, close Windows PowerShell ISE without saving any changes.

#### Task 2: Access a file share from a VM

1. Connect to the AdatumSvr1 VM in your Azure subscription by using the following credentials; the setup script that you ran earlier in the module created this VM:

* User name: \*\*AdatumSvr1\*
* Password: **Pa$$w0rd123**

1. In the Remote Desktop session to AdatumSvr1, turn off **IE Enhanced Security Configuration** for administrators. Use Internet Explorer to sign in to the Azure portal, and then copy the primary access key for your storage account to the Clipboard.
2. At an administrative command prompt, type the following command to map a network drive to the assets file share in Azure storage. Replace both instances of *storage\_account* with the name of your storage account, and then paste your access key in place of *access\_key*.

net use z: \\storage\_account.file.core.windows.net\assets /u:storage\_account access\_key

1. In the Command Prompt window, enter the following command to view the contents of the invoices folder in drive Z, which is now mapped to the assets file share that you created in the previous task:

dir z:\invoices

1. Verify that three invoice files are listed.
2. Sign out of the AdatumSvr1 VM to end the remote desktop session.

**Result**: At the end of this exercise, you should have created a file share named "assets" that contains a folder named "invoices." This folder will contain three invoice documents and will be accessible on the AdatumSvr1 virtual machine (VM).

## Exercise 3: Protecting data with Azure Backup

### Scenario

A. Datum currently uses an on-premises backup solution. As part of your Azure evaluation, you want to test the protection of on-premises master copies of your image files and invoices by backing them up to the cloud. To accomplish this, you intend to use Azure Backup.

The main tasks for this exercise are as follows:

1. Create a backup vault
2. Obtain vault credentials
3. Install and configure the Azure Backup agent
4. Create a backup schedule
5. Run a backup
6. Reset the environment

#### Task 1: Create a backup vault

1. In Internet Explorer, open the full Azure portal.
2. Create a new backup vault in your closest region.

#### Task 2: Obtain vault credentials

1. On the Azure portal, click **Recovery Services**, and then click your new backup vault.
2. On the backup vault **Quick Start** page, click **Download vault credentials**.
3. Click **Save** to download the vault credentials to the Downloads folder.

#### Task 3: Install and configure the Azure Backup agent

1. Download and install the **Agent forWindows Server or System Center Data Protection Manager or Windows Client**.
2. Install any available updates for the backup agent.
3. Use the desktop shortcut that was created, start Azure Backup, and then register the server by using the vault credentials that you downloaded earlier.
4. Generate a password, and then store it in the \*\*D:06\* folder.
5. Leave Azure Backup open for the next task.

#### Task 4: Create a backup schedule

1. Use Azure Backup to schedule a daily backup to run at 4:30 AM, and then protect the following subfolders in the D:06folder:

* asset-images
* invoices

1. Keep the defaults for the other backup settings.

#### Task 5: Run a backup

1. Use Azure Backup to perform an on-demand backup.
2. On the Azure portal, verify that MIA-CL1 has registered, and then note the newest recovery point for the protected items, which should include files and folders on drive D.

#### Task 6: Reset the environment

1. Open Windows PowerShell as an administrator.
2. At the Windows PowerShell command prompt, run the following command:

Reset-Azure

1. When prompted (twice), sign in by using the Microsoft account that is associated with your Azure subscription.
2. If you have multiple Azure subscriptions, select the one that you want to target with the script.
3. When prompted for confirmation, press Y and press Enter.

**Note:** This script will remove Azure services in your subscription. We therefore recommended that you use an Azure trial pass that was provisioned specifically for this course, and not your own Azure account. The script will take 5-10 minutes to reset your Azure environment, ready for the next lab. The script removes all storage, virtual machines, virtual networks, cloud services, and resource groups. Important: The script might not be able to access a storage account to delete it (if this occurs, you will see an error). If you find objects remaining after the reset script is complete, you can rerun the **Reset-Azure** script, or you can use the Azure portal and the Azure classic portal to delete all the objects in your Azure subscription manuallyâ€”with the exception of the default directory.

**Result**: At the end of this exercise, you should have created an Azure Backup vault in your subscription, created Azure Backup vault credentials, and installed the Azure Backup agent on the MIA-CL1 lab computer. You should have backed up the contents of the asset-images and invoices folders to the backup vault.

**Question** The asset management application stores images of hardware components as blobs and invoices as files. If the application also needed to search the location of each asset by using an asset type, a unique asset number, and a text description of the location, what storage options should you consider?

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