Consulace Business Solutions Private Limited

Azure Fundamentals

Hands on Lab

Table of Contents

Introduction

This course includes practical exercises where you can try out the techniques demonstrated in the course for yourself. This guide lists the steps for the individual practical exercises.

Things you should know before you begin...

- **Azure Subscriptions provided for execution of labs have been customized to fulfill the requirements as per the lab manual.**
- **The participant must strictly follow the steps in the lab manual to successfully complete the labs.**
- **Any deviation from the lab instructions and/or unauthorized creation or modification of resources in the given subscription may lead to revocation of access to the subscription without notice.**
- **Follow naming conventions and VM Size specified strictly to avoid any automatic deletion of resources.**
- **In case of any deviation from this manual, the account provided will be deactivated and will be reactivated at any cost.**
- **All Resources should be created in Location Central India or South India or Southeast Asia only unless explicitly specified to some other location.**
- **Delete the Resource Group at the end of every module as directed until if it is not specified.**
- **If you have any queries, please write us to labs@consulace.com**
- **Once all the modules executed, send us the email to above mentioned email ids with your employee id for confirmation.**

Module 1: Introduction to Azure

Objectives

After you complete this Lab, you will be able to:

- **Take an Azure Virtual Data Center Tour**
  In this exercise you will take a virtual tour of the Microsoft Azure Data Center and see the inner workings of the Microsoft data centers.

- **Sign-in and Explore the Classic Azure Portal**
  In this exercise you will sign in to the classic Azure Portal and explore the layout, navigation, and basic functionality.

- **Sign-in and Explore the New Azure Portal**
  In this exercise you will sign in to the new Azure Portal and explore the layout, navigation, and basic functionality. Compare the user experience with the classic Azure Portal. How does it differ from the classic Azure Portal?

- **Azure Subscriptions**
  How can you track your Azure subscription(s) to see the ongoing costs, detailed cost breakdowns, and detailed subscription information? In this exercise you will view the burn rate, cost by service, and subscription properties by using the new Azure Portal.

- **Deploy a New Virtual Machine**
  In this exercise you will create a new virtual machine with a Resource Manager Deployment model

Exercise 1: Take an Azure Virtual Data Center Tour

In this exercise you will take a virtual tour of the Microsoft Azure Data Center and see the inner workings of the Microsoft Datacenters. You do not need a Microsoft Azure subscription for this first exercise but you will need one for the subsequent exercises.

1. Open the Azure Data Center virtual tour.
2. Read the accompanying text as you go to familiarize yourself with how the tour will work and Click **Start Tour** and then **Get Started**.
3. Read the introductory help for information about:
   a. navigation overview,
   b. explore the scenes,
   c. getting more information using hotspot information,
   d. and exploring the media galleries

4. Start in the Lobby, click the **avatar** icon to begin the virtual tour.
5. On the **Servers** section of the tour, review the narrative and the various hotspots clicking the image gallery associated with each hotspot as you go for more detail.
6. Click and drag the mouse to explore the room with 360 degree views.
7. Notice the environmental conditions in the bottom display bar. Click the **Play** icon to hear a sample of the ambient noise in the room.
8. Click the **white avatar** icon to enter one of the server pods. Notice the temperature change in the pod.
9. On the **Cooling** section of the tour, review the narrative and the various hotspots. Click and drag the mouse to explore the room.
10. Locate and click the **Power** hotspot. Then click **Image Gallery**. In the image gallery, notice the various innovations used to maximize cooling and power efficiency across the Azure Datacenter.
11. On the **Power** section of the tour, review the narrative and the various hotspots. Click and drag the mouse to explore the room.
12. Locate and click on the **Scale** hotspot.
13. 13. Notice the scale of the Azure Datacenter and the measures that Microsoft is taking to improve geo-redundancy.
14. On the **Modular Datacenter** section of the tour, review the narrative and the various hotspots. Click and drag the mouse to explore the room.
15. Locate and click the **Deconstruct an ITPAC** hotspot. Click **Image Gallery**. Notice the ease of expandability and scaling capabilities of the modular Datacenter.
16. On the **Conclusion** section of the tour, review the evolution of the Azure Datacenter and plans moving forward.
17. Close the web page to complete the virtual tour.

Exercise 2: Explore the New Azure Portal

In this exercise you will sign in to the new Azure Portal and explore the layout, navigation, and basic functionality. Compare the user experience with the classic Azure Portal. How does it differ from the classic Azure Portal?

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. Review the elements of the user interface such as the Hub menu on the left, the Dashboard in the center, and the menu bar across the top.
3. On the Hub menu, notice the brief list of services shown.

4. Click **More services >**. Review the extended list of available services.
5. Close that service menu blade and click the option at the top to expand the services listed by name or just by icon.
6. Click the **+New** option in the hub menu to see the services listed by category in the **Marketplace** menu.
7. Locate the Active Directory service using **Search the marketplace**. Right click Active Directory and choose to **Pin to dashboard**. Return to the dashboard and verify it has been added.
8. On the Hub Menu, click **New** again to open the Marketplace menu and click **See all**.
9. In the **Everything** blade, scroll down through the list of deployable services. Click More in each section to review additional items in each section.
10. Back in the **Marketplace** menu click **Compute** and click **See all**. Then type **Windows Server** and notice the options returned, then re-type **Windows Server 2012** to provide more specific options.
11. Close the blades and notice the icons in the top right hand corner, and click each in turn
    a. **Notification >** provides details of tasks and actions performed as well as remaining credit
    b. Portal Settings >
        i. You can change a Theme
        ii. You can enable portal functionality
        iii. You can change portal language
        iv. You can change portal language (notice the currently available list of languages in the drop down box) and regional format settings.
        v. Change to a different theme and set the language and regional format to your preferred settings, and click **Refresh**. You can return and apply the default settings later if you wish from this meu
    c. **Send us Feedback >** this allows you send feedback on your experience to Microsoft.
    d. **Support >** this allows you to request help in the subsequent menu, as well as giving you some tips on keyboard shortcuts and other options
    e. You can also click your account icon in the top right to access your account and subscription details
12. Finally return to the dashboard menu and locate the Active directory tile you added earlier.

13. Click the three dots at the top of the tile and choose customize and notice the options. Choose different scaling options available for the tile. Chose one then drag and drop the tile to a different area in the dashboard to customize to your preference.
14. When finished customizing, click the three dots again in the tile and choose Done customizing…
15. You can also click the **X** in the tile to remove it from the dashboard.
16. Back on the dashboard notice the options at the top of the dashboard, for new dashboard, edit dashboard, share, full screen, clone and delete
17. Click New dashboard, drag some tile items in to it, give it a name and choose time format and other settings and click **Done customizing**.
18. When done customizing click the down arrow at the top of the Dashboard and view the new and default dashboard listed, switch between them. It is possible to have multiple dashboards and associate them with your different needs in different subscriptions.
19. Also click the other options listed, for editing, full screen, clone and finally once you are finished, delete.
20. Continue to explore the Portal as you wish.

Exercise 3: Azure Subscription

How can you track your Azure subscription(s) to see the ongoing costs, detailed cost breakdowns, and detailed subscription information? In this exercise you will view the burn rate, cost by service, and subscription properties by using the new Azure Portal.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. On the Hub menu, navigate to **Subscriptions**.
3. Click on your active Azure subscription.
4. Review the Azure subscription blade.
5. In the subscription settings menu on the left, click on **Access control (IAM),** notice the list of users who have access to the subscription details. Click **Roles** in the top of the menu. Scroll down through the available roles such as **Contributor**, **Reader** etc hover over the little "I" associated with each for an explanation of each role.
6. Back on your subscription IAM blade click the three dots beside your subscription and review the available options**.**
7. Back in the subscription settings blade scroll down through the available setting options and click on each one as you go to get an idea of what each one contains and the options and information that is available in each, such as **Payment Methods**, **Partner information**, **Resource groups**, **Resources**, **My Permissions, Properties, Usage and Quotas** and the other options.

8. Notice the availability of a **New Support request** option at the end of the menu also.
9. Continue to explore the Portal as you wish.

Exercise 4: Deploy a New Virtual Machine

In this exercise you will create a new virtual machine with a Resource Manager Deployment model.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. On the Hub menu, click **New**.
3. On the New blade, search for **Windows Server 2016**.
4. In the search results, click **Windows Server 2016 Datacenter**.
5. On the **Everything** blade select **Windows Server 2016 Datacenter** and Click **Create**.
6. On the Create Virtual Machine blade, fill in the following values for basic settings (substituting your information for the user name, subscription, and location) and click **OK**.
    a. Name: **SVR1-<your employee id>**

    *Example: if your employee id is **E00001**. Name the server as **SVR1-E00001***

    b. VM disk type: **HDD**
    c. User name: **<Your first name>**
    d. Password: **Pa$$w0rd12345**
    e. Subscription: **Allocated Subscription**
    f. Resource group: Create a new one named **"RG1-<your employee id>"**

    *Example: if your employee id is **E00001**. Name the Resource Group as **RG1-E00001***

    g. Location: **Central India**
7. On the Choose a size blade, click **View all**. Notice the sizing details in each size available. Some may be greyed out or not be available depending on your subscription type. Click the **A0 Basic** size and then click **Select**.
8. On the Settings blade, review the default options for storage, network, extensions, high availability, and monitoring. Click **OK**.
9. On the Summary blade, review the configuration. Notice a link beside the OK button to download a template and parameters. Click the link and in the Template window browse through the tabs and options available in the template page as well as down through the template itself. Click Download at the top to down load the template to your local drive. If you have time afterwards you can open and view locally as you wish, then close the Template Window.
10. Back on the Summary blade, make sure validation has passed as per a notification at the top of the blade and then click **OK**.

11. Click the Notification icon in the top right to see notifications of the virtual machine deployment. It should say **Deployment started…**
12. Close the notifications menu
13. Open the Virtual machines blade by clicking **Virtual machines** in the left pane.
14. In the Virtual machines blade, click the server name, **SVR1-<your employee id>**, for the VM that you deployed. You may need to refresh the console if it has not yet deployed.
15. On the **Hub** menu, select **Resource Group** and locate the Resource Group **RG1-<your employee id>** which was earlier.
16. Click on the 3 dot besides **RG1-<your employee id>,** and select **Delete**.
17. On the Delete Confirmation blade, Type the Resource Group name **RG1-<your employee id>** and click **Delete**
18. This will ensure there is no unnecessary consumption of azure resource.

Module 2: AZURE VIRTUAL MACHINES

Objectives

After you complete this Lab, you will be able to:

- **Deploy a Virtual Machine (Resource Manager)**
  In this exercise, you will create a new virtual machine with a Resource Manager Deployment model.

- **Sizing Virtual Machines (Resource Manager)**
  In this exercise, you will explore the sizing options for virtual machines. Sizing options impact performance and pricing

- **Pre-Built Linux Image (Resource Manager)**
  In this exercise, you will deploy a new Ubuntu Server virtual machine.

Exercise 1: Deploy a New Virtual Machine

In this exercise you will create a new virtual machine with a Resource Manager Deployment model.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. On the Hub menu, click **New**.
3. On the New blade, search for **Server 2012 R2**.
4. In the search results, click **Windows Server 2012 R2 Datacenter**.
5. In the **Everything** blade, click **Windows Server 2012 R2 Datacenter**.
6. On the Windows Server 2016 R2 Datacenter blade Click **Create**.
7. On the Create Virtual Machine blade, fill in the following values for basic settings (substituting your information for the user name, subscription, and location) and click **OK**.
   a. Name: **SVR2-<your employee id>**
   b. VM disk type: **HDD**
   c. User name: **<Your first name>**
   d. Password: **Pa$$w0rd12345**
   e. Subscription: **Allocated Subscription**
   f. Resource group: Create a new one named **RG2-<your employee id>**
   g. Location: **Central India**
8. On the Choose a size blade, click **View all**. Click the **A0 Basic** size and then click **Select**.

9. When the virtual machine is created, double click on the **SVR2-<your employee id>** virtual machine in the virtual machines blade.
10. In the **SVR2-<your employee id>** settings blade, notice the detail in the Essentials section, such as Resource group, location, status, IP address, operating system, size etc
11. At the top of the setting blade click **Connect** and when prompted download the subsequent .rdp file. This file will allow you to use remote desktop to connect into the virtual machine.
12. Once downloaded, locate the file and double click it.
13. When prompted use the credentials you defined earlier when creating the virtual machine. i.e.
    - User name: **<Your first name>**
    - Password: **Pa$$w0rd12345**
14. You should be able to log in successfully and see the virtual machine desktop. You can perform any action you wish as you would on a windows server installation i.e.
    - open File Explorer
    - Open Server Manager by click on the Server Manager icon in the taskbar, click Local Server in the Server Manager console and notice the properties details.
    - Double click the Windows PowerShell icon on the taskbar at the bottom, once open type **dir** to return a list of directories
15. Leave the rdp console open to view the virtual machine status as you do the next exercise.

Exercise 2: Sizing Virtual Machines for Azure IaaS

In this exercise you will explore the sizing options available for Azure virtual machines. As part of your job managing Azure infrastructure, you need to be familiar with the sizing options so that you can maximize the efficiency of your subscription. Your goal should be to have enough resources to meet your company's requirements but not have more than you need because it impacts your ongoing costs.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. On the Hub menu, click **Virtual machines**.
3. Click the **SVR2-<your employee id>** virtual machine.
4. On the **SVR2-<your employee id>** blade, under Settings, click **Size**. Explore the list of available sizing options. As you move down the list review each of the resource options and the estimated cost per months, such as CPU cores, memory, disk drives, and IOPS. Compare the size offerings between the options.
5. Change your virtual machine size by clicking on the **A1 Basic** and click Select
6. Notice the notification message that appears stating that the virtual machine is re-sizing
7. Return to your rdp connection form the previous exercise.
8. Notice that the virtual machine is re-starting, due to the re-sizing that is taking place.

9. Once the virtual machine restarts, log in again using the .rdp file from earlier and verify you can access successfully
10. Return to the **SVR2-<your employee id>** settings blade and in the Essentials section note the virtual machine size has changed to the value you selected.
11. When you are finished exploring the list of virtual machine sizing options, stop the **SVR2-<your employee id>** VM.

Exercise 3: Pre-Built Linux Images

In this exercise you will deploy a new Ubuntu Server virtual machine running. Even if you aren't an experienced Linux administrator, you can easily deploy new Linux VMs in the Azure portal.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. On the Hub menu, click **New**.
3. On the New blade, search for Ubuntu Server.
4. From the search results, select the latest version of Ubuntu Server LTS. Version numbers will evolve over time.
5. On the Ubuntu Server blade click **Create**.
6. On the Create Virtual Machine blade, fill in the following values for the settings and then click **OK**.
    - Name: **SVR3-<your employee id>**
    - VM disk type: **HDD** (the pricing is the same for SSD or HDD for the system disk but as part of your cloud resource management, you want to stay vigilant with sizing and costs.)
    - User name: **AdatumAdmin**
    - Authentication type: **Password**
    - Password: **Pa$$w0rd1245**
    - Subscription: **Allocated Subscription**
    - Resource Group: **Use existing** and select the resource group you created previously **RG2-<your employee id>**
    - Location: **Central India**
7. On the Size blade, click **View all** and select **F1S Standard**.
8. On the Settings blade, review the default options for storage, network, extensions, high availability, and monitoring. Click **OK**
9. On the Summary blade, review the configuration and click the **download template and parameter link**
10. View the template tabs and script details in the template window.
11. In the template blade, click **Add to Library** and save the template by entering a name and description and clicking save and close the Template blade.

12. Click **OK** on the Summary blade to deploy the Linux virtual machine.
13. Notice the notification that the deployment has started,
14. While its deploying, open the Template library to view your saved template by clicking **More Services** > on the Hub menu and typing templates in the search box
15. Notice **Templates** and that it is in preview. This indicates that it is still in preview and not fully released. Click **Templates**
16. Notice the template you saved earlier is present. This is a repository through which you can save, share, edit and manage your templates.
17. Double click on your template and in the template settings notice some options currently available, notice you have the option to deploy the virtual machine via the template you just created.
18. Close the Templates blades and open the virtual machine blade and the **SVR3-<your employee id>** virtual machine settings
19. Browse through the settings available
20. Click on the **Connect** button
21. Notice the message saying "To connect to your Linux virtual machine using ssh, use the following command **ssh AdatumAdmin@<ipaddres>**
22. If you have a Linux shell available run the above command and connect to the Ubuntu server using the credentials you specified above and run some commands within it to verify you can connect and run commands successfully.
23. Click the Click **OK**.
24. On the **Hub** menu, select **Resource Group** and locate the Resource Group **RG2-<your employee id>** which was earlier.
25. Click on the 3 dot besides **RG2-<your employee id>,** and select **Delete**.
26. On the Delete Confirmation blade, Type the Resource Group name **RG2-<your employee id>** and click **Delete**
27. This will ensure there is no unnecessary consumption of azure resource.

Module 3: AZURE NETWORKING

Objectives

After you complete this Lab, you will be able to:

- **Create and Manage Virtual Networks by Using Azure Portal**
  In this exercise, you will be working with virtual networks within the Azure Portal. You will create a new virtual network and explore the various management options.

- **Deploy a Virtual Machine into a Virtual Network**
  In this exercise, you will deploy a Virtual Machine into a Virtual Network.

Exercise 1: Create and Manage Virtual Networks by Using Azure Portal

In this exercise, you will be working with virtual networks within the Azure Portal. You will create a new virtual network and explore the various management options.

1. Navigate to the Azure Portal and sign in.
2. On the Hub menu, click **More Services**.
3. Type **virtual networks** in the filter to reveal the available options for managing virtual networks in the Azure Portal.
4. Mark Virtual networks as a favorite, by clicking the yellow star beside it in the menu, the star will change from clear to yellow, indicating it has been marked as a favorite and thus adding Virtual Networks to your Hub menu.
5. Click **Virtual networks**. If you have any existing virtual networks, they should appear in this list. Click **Add**.
6. On the Create virtual network blade, fill in the following values to create a new virtual network. Click **Create** when you are finished entering the information
   - Name: **Server-VNET-<your employee id>**
   - Address space: **172.168.0.0/16**
   - Subnet name: **Server-Subnet-<your employee id>**
   - Subnet address range: **172.168.0.0/24**
   - Subscription: **Allocated Subscription**
   - Resource group: **Create a new one named "RG3-<your employee id>"**
   - Location: **Central India**
7. Notice the notifications and click the notifications icon in the top right for details, as the new virtual network is created.
8. On the Hub menu, click **Virtual networks**. Confirm that the new virtual network has been created. Click **Server-VNET-<your employee id>**. You may need to refresh.

9. On the **Server-VNET-<your employee id>** blade, review the list of available management options under Settings, such as address space, connected devices, subnets, DNS servers, and peering.

10. When you are finished exploring the new virtual network, close the virtual networks blade.

Exercise 2: Deploy a Virtual Machine into a virtual network

In this exercise, you will deploy a new Windows Server 2012 R2 VM to a new virtual network within the Azure Portal.

1. Navigate to the Azure Portal and sign in.
2. On the Hub menu, click **New**.
3. On the New blade, search for **Server 2012**.
4. In the search results, click **Windows Server 2012 Datacenter**.
5. On the Windows Server 2012 R2 Datacenter blade, Click **Create**.
6. On the Create Virtual Machine blade, fill in the following values for basic settings (substituting your information for the user name, subscription, and location) and click **OK**.
   - Name: **SVR4-<your employee id>**
   - VM disk type: **HDD**
   - User name: **<Your first name>**
   - Password: **Pa$$w0rd12345**
   - Subscription: **Allocated Subscription**
   - Resource group: **Create a new one named "RG4-<your employee id>"**
   - Location: **Central India**
7. On the Choose a size blade, click **View all**. Click the A0 Basic size and then click **Select**.
8. On the Settings blade, click **Network**.
9. On the Choose virtual network blade, click **Server-VNET-<your employee id>** (created in the previous exercise).
10. On the Settings blade, under Network, confirm that the Virtual network and Subnet reflect your selected network. Click **OK**.
11. On the Summary blade, review the configuration and then click **OK**.
12. When the notification message appears click on it to open a deploying blade. This contains details about the deployment. Close that once you are finished with it.
13. When the VM is created, click **Virtual machines** in the Hub menu.
14. In the Virtual machines blade, click the server name for the VM that you deployed.
15. In the **SVR4-<your employee id>** blade, click Network Interfaces under settings.

16. In the network Interfaces blade notice the name assigned to the NIC and also the IP Addresses listed.
    - Public IP Address > this is a public IP to allow you to connect to the virtual machine, which is dynamically assigned by Azure.
    - Private IP Address > this is within the private IP address range that you specified in the VNET subnet.
    - On the **Hub** menu, select **Resource Group** and locate the Resource Group **RG4-<your employee id>** which was earlier.
    - Click on the 3 dot besides **RG4-<your employee id>,** and select **Delete**.
    - On the Delete Confirmation blade, Type the Resource Group name **RG4-<your employee id>** and click **Delete**
    - On the **Hub** menu, select **Resource Group** and locate the Resource Group **RG3-<your employee id>** which was earlier.
    - Click on the 3 dot besides **RG3-<your employee id>,** and select **Delete**.
    - On the Delete Confirmation blade, Type the Resource Group name **RG3-<your employee id>** and click **Delete**
    - This will ensure there is no unnecessary consumption of azure resource.

Module 4: AZURE STORAGE

Objectives

After you complete this Lab, you will be able to:

- **Create a Storage Account with the Azure Portal**
  Use the portal to create a new storage account and examine the settings.
- **Install Azure Storage Explorer**
  Install the Microsoft Azure Storage Explorer desktop application, connect to your Azure account, and explore the various options for managing your data in the Azure cloud
- **Work with Files using the Azure Portal and Storage Explorer**
  Explore some of the basic file management capabilities using Azure Portal and Storage Explorer

Exercise 1: Create a Storage Account with the Azure Portal

In this exercise, you will create a new storage account in the Azure portal. Once created you will explore some of the features.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. Click **Storage Accounts** on the Hub menu.
   - If you do not see Storage Accounts on the Hub menu, click **More Services**.
   - Type **storage accounts** in the filter to reveal the available options for managing storage accounts in the Azure Portal. Mark Storage Accounts as a favorite to pin it to your Hub menu, by clicking the yellow star beside it in the menu.
3. On the **Storage accounts** blade, if you have any existing storage accounts they will appear in the list.
4. On the Storage accounts blade, click **Add**.
5. On the Create storage account blade, fill in the following values to create a new storage account. Click **Create** when you are finished entering the information. As you enter the information take a moment to use the **Information** icon to view details about the required information.
   - Name (All in lower case): **strg<your employee id>**

     *Example: if your employee id is **E00001**. Name the storage as **strge0001***
   - Deployment model: **Resource Manager**
   - Account kind: **General purpose**
   - Performance: **Standard**
   - Replication: **Read-access geo-redundant storage (RA-GRS)**
   - Storage service encryption: **Disabled**

- Subscription: **Allocated Subscription**
- Resource Group: **Create a new one named "RG5-<your employee id>"**
- Location: **Central India**

6. On the menu bar, monitor the alerts for progress as the new storage account is created.
7. On the Hub menu, click **Storage accounts**. Confirm that the new storage account has been created.
8. Double-click your storage account and review the options that are available. Review the storage account **Essentials** area. Explore the Blobs, Files, Tables, and Queues areas.

Exercise 2: Install Azure Storage Explorer

In this exercise, you will download and install the Microsoft Azure Storage Explorer desktop application, connect to your Azure account, and explore the various options for managing your data in the Azure cloud.

1. Navigate to the Microsoft Azure Storage Explorer download site (storageexplorer.com)
2. Download and install the appropriate version (Windows, Mac, or Linux). Scroll to the end of the page for specific versions download details. Note also the version these steps are based on is version 0.8.6. In later versions there may be some differences to the steps below.
3. Launch the tool.
4. On launch ensure **Sign in using your Azure Account(s)** is selected and click **Connect**.
5. Enter your subscription email adder and password as prompted. You may also be prompted for additional verification.

   If you do not get prompted for account details you can enter them by clicking on the person icon in Microsoft Azure Storage Explorer and clicking the **add an account…**, entering your account details, and then clicking **Apply**

   You may also need to click the checkbox for your Azure subscription (or click **All subscriptions**) and then click **Apply**.
6. Notice that you are able to view Local and Attached storage as well as your subscription storage.
7. If you followed the previous exercises you should see two storage accounts under your subscription.
8. Take a moment to browse the storage accounts. You may see diagnostic tables capturing metric data.

9. In Azure Storage Explorer click on the person icon again and click remove to remove the account details. Click **Yes** to confirm.
10. Return to the Azure Portal and go to storage accounts and open your storage account settings.
11. In the settings menu go to **Access Keys**
12. Go to **Key1** click the icon **Click to copy** to copy the key
13. Return to Microsoft Azure Storage Explorer tool, Click **Connect** Button.
14. Select **Use a storage account name and key** on the **Connect to Azure Storage** page and click **Next.**
15. Paste the copied key into storage Account key box and click **Next**
16. Return to your storage account in the Azure Portal,
17. In your storage account > **Access Keys g**o to **Storage account name** and click the icon **Click to copy**
18. Return to the **Microsoft Azure Storage Explorer** tool again and Paste the Account name into the Account name box and click **Next**.
19. Click **Connect** and then **Apply** in the **Microsoft Storage Explorer** tool
20. Expand **(Local and Attached)** > **Storage Accounts** > **[your azure storage account name]**
21. Right Click **Blob Containers** and select **Create Blob Containers**
22. Enter the name (All in lower case) **container-<your employee id>** and press enter
23. Verify the blob container was created in **Microsoft Azure Storage Explorer**
24. Return to the Azure portal and to your storage account settings
25. In the storage account settings click Overview and then the Blobs Icon
26. Click Refresh and you should now see the blob container in the portal that you created in Microsoft Azure Storage Explorer.
27. Continue to browse the storage accounts and the storage explorer tool as you wish.

Exercise 3: Work with Files using the Azure Portal and Storage Explorer

In this exercise, you will explore some of the basic file management capabilities using Azure Portal and Storage Explorer

3.1. Manage files in the portal

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. On the Hub menu, click **Storage accounts**.
3. Select the storage account you created earlier
4. On the storage account blade, review the list of available management options. Under File Services, click **Files**.
5. On the File service blade, click **+ File Share**.
6. On the New file share blade, fill in the following values to create a new file share. Use the information icon to learn about the quota. Click **Create** when you are finished entering the information.

- Name (All in lower case): **fileshare-<your employee id>**
- Quota: **1**

7. On the menu bar, monitor the alerts for progress as the new file share is created.
8. On the File service blade, click your new file share.
9. Notice the ability to **Connect**, **Upload**, **Add Directory**, and **Delete** share.
10. On the share blade, click **Upload**.
11. Create a new text file on your desktop. Browse to and click the text file. Click **Upload**.
12. On the menu bar, monitor the alerts for progress as the text file is uploaded.
13. On the file share blade, confirm that the new file appears in the list.

3.2. Manage files in Storage Explorer

1. Switch to **Storage Explorer**.
2. Navigate to your storage account.
3. Click **File Shares**. Review the list of available files shares. Ensure your uploaded file is listed. You may need to wait a moment, or refresh, before it appears, depending on your connection.
4. Notice that you can also right-click on File Shares and **Create File Share**.
5. As you have time experiment with creating other files shares, download, open, rename, and delete.
6. On the **Hub** menu, select **Resource Group** and locate the Resource Group **RG5-<your employee id>** which was earlier.
7. Click on the 3 dot besides **RG5-<your employee id>,** and select **Delete**.
8. On the Delete Confirmation blade, Type the Resource Group name **RG5-<your employee id>** and click **Delete**
9. This will ensure there is no unnecessary consumption of azure resource.

Module 5: AZURE IDENTITY

Objectives

After you complete this Lab, you will be able to:

- **Add Custom Domain:**
  In this exercise you will register a new domain and then add that domain as a custom domain to Microsoft Azure.

- **Add user, add group, add user to group:**
  In this exercise you will explore some user and group management tasks using the Azure Portal. You will create a new user, create a new group, and add a user to a group.

Exercise 1: Add custom domain

In this exercise you will register a new domain and then add that domain as a custom domain to Azure Active Directory.

1. Firstly, we'll create a new directory. Within this directory we will then create a new custom domain, which would allow us add users from that domain to provide a more seamless sign on experience for users, i.e. using sign on names familiar to them.
2. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
3. On the hub menu click **Azure Active Directory.**
4. Notice the name at the top of the blade. This is the directory name that you are currently in. Also note the options on the Overview blade to switch open in the Classic Portal and Switch Directory. The directory being the top level, within which you create domains, users, groups etc. you may not have an option to create a domain in the directory you are currently in depending on your subscription permissions.
5. Click on the **Quick Start** item in the menu and in the Quick Start blade scroll down to the end, where it gives you information about Active Directory being in preview mode in the new Azure Portal. We are unable to create directories in the new Azure Portal at the time of writing.
6. On the hub menu click **Azure Active Directory,** Select **Domain names** blade and click **Add** to add a custom domain.
7. Enter a Domain name such as **AppDir-<your employee id>.com** and click **Add Domain**
8. You are prompted for a DNS record details, which Azure AD will then use to verify that you own the domain name. We do not have those details as it is not a registered domain name, so just close the blade.
9. The **AppDir-<your employee id>.com** domain name has been added to the directory. Notice that its status is **Unverified** as it was not verified using DNS records to prove we own the domain name. If we were able to provide the DNS record details Azure would verify we own it and the status would change to Verified

10. You have now added a custom domain to your Azure Active Directory. You could add your work domain names and this the allows you to assign usernames in the directory that people are familiar with such as john@Apdir-<your employee id>.com, which helps improve sign-on experience.

Exercise 2: Add user, add group, add user to group

In this exercise you will explore some user and group management tasks using the Azure Portal. You will create a new user, create a new group, and add a user to a group.

1. Return to the new Azure Portal at https://portal.azure.com
2. Open **Active Directory** and your newly created directory from earlier, **AppDir-<your employee id>**.
3. In the settings blade click **Users and groups**
4. In the users and groups blade click **All users** and click **Add**
5. Enter the following details and then click **Create**
   - Name: **John Reedy**
   - User name: **John@AppDir-<your employee id>.com**
   - In the box that appears you can add a message to include with the invitation. Enter the text "*Welcome to AAD John*" or some random text.
   - Leave the remainder default values.
6. Notice the notifications saying an invitation has been sent to the user. The user is not a real user so we will not receive the email invitation.
7. Refresh the users and groups blade and notice John is now listed
8. Click on **All groups** in the settings and click on **Add**
9. In the **Group** blade enter the values and when finished click **Create**
   - Name: **AppDirGroup-<your employee id>**
   - Description**: test group**
   - Membership type: **Assigned**
   - **Members:** Search John Reedy (the user you just created earlier and add them to the group) and click **Select**
10. Verify the user is successfully added to the new group you just created.
11. You have now created a user and group and added the user to the groups. You could now start to manage permissions and functionality for different services such as Multi-Factor Authentication, Application Access etc. using this groups.
12. Continue to browse around and see what settings and feature options are available within the directory i.e. company branding, password, enterprise applications etc.

Module 6: AZURE PAAS

Objectives

After you complete this Lab, you will be able to:

- **Deploy a Web App in Azure Web Services**
  In this exercise you will deploy a Web App in Azure Web Services
- **Add a Lock to Your Web App to prevent it from being deleted**
  In this exercise you will create a lock to your Web App to prevent from being deleted
- **Customize the dashboard view for your Web App**
  In this exercise you will customize the dashboard view for your web app.

Exercise 1: Deploy a Web App in Azure App Services

In this exercise, you will create a new storage account in the Azure portal. Once created you will explore some of the features.

1. Navigate to the new Azure Portal at https://portal.azure.com and sign in.
2. Click **New** on the Hub menu
3. Then click **Web + Mobile**
4. Click **see all** in the top right on the blade
5. Scroll through the options and notice the options that are available
6. Click **Web App**
7. And on the **Web App** blade, read the accompanying text, then click **Create**
8. Use the following input
   a. App name: **WebApp-<your employee id>**
   b. Subscription: **Allocated Subscription**
   c. Resource Group: select **Create new** and enter a name **RG6-<your employee id>**
   d. App Service plan/Location: **Central India**
   e. In the *App Service plan* blade click **Create New,** and enter the following details for app service
      i. App Service plan: **srvcplan-<your employee id>**
      ii. Location: **Central India**
         1. Pricing Tier > Click the arrow **>**
            a. In the *Choose your pricing tier* blade click **View all**
            b. Scroll through the available tier options and notice the resources, features and pricing for each
            c. Click **F1 Free** and click **Select** button at the bottom of the blade
   f. Click **OK** on the *New App Service Plan* blade

9. Click **Create** to create your Web App
10. Wait for the Web App to deploy, notice the notifications and view them by clicking the notification icon in the top left of the browser.
11. Open up App Services and view your newly deployed Web App.
12. Double click on it to view the Web App settings
13. In the Essential section notice the information displayed and take a moment to read through it. Notice also the monitoring dashboard graph view.
14. Double click on the *URL* in the essential section
15. A web browser page will open and you will be brought to the page http://<yourwebappname>.azurewebsites.net
16. A message will display saying **This web app has been successfully created.**
17. Return to the **Azure Portal**
18. Take an additional few minutes to browse through the available settings for your Web App. Notice it is divided into areas such as
    a. App Deployment
    b. Settings
    c. App Service Plan
    d. Development Tools
    e. Mobile
    f. API
    g. Monitoring
    h. Support and troubleshooting browse through the settings contained within these areas. Some notable ones are
        i. Access Control (IAM)
        ii. Application Settings
        iii. Deployment Options

Exercise 2: Add a Lock to Your Web App to prevent it from being deleted

In this exercise, you will create a lock to prevent your Web App being deleted

1. In the Azure Portal Navigate open up your web App settings
2. Go to the settings section and click on Locks
3. Click **Add** and enter the details below and when finished click **OK**
   - Lock name**: LOCK-<your employee id>**
   - Lock Type: **Delete**
   - Notes: **Do not delete**
4. Go to your web app settings
5. In the settings blade, Select **Overview** and click **Delete**
6. Click **Yes** to confirm
7. Notice you get an error in the Notifications window saying "**Failed to delete web app….**"
8. Click on the message to view it in full and verify it says that the resources are locked ands to remove the lock and try again if you wish to delete it.
9. Go to the Lock Section, Select 3 dots beside **LOCK-<your employee id>** and click **Delete.**

Exercise 3: Customize the dashboard view for your Web App

In this exercise, you will explore customize the dashboard view to make it easier to see data that is important to you.

1. In the Azure Portal, go to the settings of your Web App.
2. Right click the chart and select "**Pin to dashboard**"
3. Close out of the Web App settings in the Portal and return to the root
4. Notice the chart is now present in a dashboard view
5. Right click the three dots in the top right hand corner and select **Customize**
6. Try several different scales and choose one that best fits your needs
7. Continue to customize as you wish and notice the options at the top of the dashboard to create New Dashboards for different workloads, edit dashboard, Share, full screen, clone and delete. Try customize the dashboard using some of these options for your new Web App
8. On the **Hub** menu, select **Resource Group** and locate the Resource Group **RG6-<your employee id>** which was earlier.
9. Click on the 3 dot besides **RG6-<your employee id>,** and select **Delete**.
10. On the Delete Confirmation blade, Type the Resource Group name **RG6-<your employee id>** and click **Delete**

11. This will ensure there is no unnecessary consumption of azure resource.