Windows Server on Azure: Lab Guide

Overview
This lab guide will help you in creating a Windows Server VM, doing basic management operations and taking backup of Virtual Machine on Azure.

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Lab 1: Getting Started with Azure

Lab Overview
This lab will take you through Azure login and portal experience.

Prerequisites
- Windows or a Mac machine with HTML5 supported browser such as Microsoft Edge, Internet Explorer, Chrome or Firefox
- You should have registered in the training portal https://azuretraining.spektrasystems.com and received the confirmation message with the credentials to login to the Azure portal.

Time Estimate
5 minutes
Exercise 1: Log into your Azure Portal

In this exercise, you will log into the Azure Portal using your Azure credentials.

1. **Launch** a browser and **Navigate** to [https://portal.azure.com](https://portal.azure.com). Provide the credentials that you received via email. Click on **Sign In**.

   ![Microsoft Azure Sign In](image)

   *Note*: At the first login, you may have to change the password, if asked for.

2. **Enter** a new **password**. Then select **Update password and sign in**.

   ![Update your password](image)
3. Now, you will be directed to the Azure Dashboard

![Azure Dashboard Image]

**Exercise 2: Verify access to the Subscription**

In this exercise, you will verify the type of role you are assigned in this Subscription.

1. **Launch** a browser and **Navigate** to [https://portal.azure.com](https://portal.azure.com), **Login** with your Microsoft Azure credentials.

![Microsoft Azure Dashboard Image]
2. **Click** on **Microsoft Azure** at the top left corner of the screen, to view the Dashboard.

3. To toggle **show/hide** the Portal menu options with icon, **Click** on the **Show Menu** button.

4. **Click** on the **Resource groups** button in the **Menu navigation** bar to view the **Resource groups** blade.
5. You will see a Resource Group on which you have access, click on it.

Note:
The Resource Group shown here is for demo purpose only. Actual name of the Resource Group that you see may differ.

6. Make a note of location of the resource group (East US in example screenshot). You should deploy all resources described in this lab guide in the same location.

7. From the Resource Group blade that come up, Select the Access Control (IAM) which is on the left side of the blade.
8. In the new blade that come up, you can see the role that is assigned to you.

Lab 2: Create Windows Virtual Machine

Lab Overview
In this lab, you will

- Create a **Windows Server 2012 R2 Datacenter** Virtual Machine.
- Verify the deployed resources.

Prerequisites
- Windows or a Mac machine with HTML5 supported browser such as Microsoft Edge, Internet Explorer, Chrome or Firefox
- Lab 1 must be completed

Time Estimate
20 minutes
Exercise 1: Create a Storage account
In this exercise, you will create a **Standard Storage account** for your **Virtual Machine**.

1. **Launch** a browser and **navigate** to [https://portal.azure.com](https://portal.azure.com). **Login** with your Microsoft Azure credentials.
2. In the Dashboard, **click** on the **Show Menu** button that appears on the top left corner. This will expand the menus in the blade.

3. In the **Menu** that appears, **Select** +**New**.

![Dashboard and Menu Screenshot]
4. In the **New** blade, Select **Storage**.

![Microsoft Azure New](image)

5. In the **Storage** blade that appears, Select **Storage account**.

![New](image)

6. In the **Create Storage Account** blade, configure the settings as follows:
   - **Name**: `winvmstorage`

   **Note:**
   This name should be unique across Azure. Please use a different unique name or follow Instructor Guidelines for details.

   - **Deployment model**: **Resource manager**
   - **Account kind**: **General purpose**
- **Performance**: **Standard**
- **Replication**: **Locally-redundant storage (LRS)**
- **Storage service encryption**: **Disabled**
- **Subscription**: Choose your subscription
- **Resource Group**: **spektra-winvm-intro-trainee** (Choose **Use existing** and scroll down to see the Resource Group.)
- **Location**: **Location of your resource group**
7. After the configuration is done, Click on **Create**. A notification will appear at the top right corner informing the initial status of deployment.

8. **Click** the **notification** icon to see the current status of deployment.

9. When the deployment is completed, a notification is raised as below.

10. To access the **Storage Account** just deployed, Select **Resource Group** in the **Menu navigation** blade.
11. In the **Resource Group** blade, **Select** the Resource Group `spektra-winvm-intro-trainee` in which you deployed your **Storage Account**. Then **Navigate** to **Overview** to see the storage account you created.

12. Repeat the above steps with following configurations to create the diagnostics storage account.
   - **Name**: `winvmdiagstorage`
   - **Deployment model**: **Resource manager**
   - **Account kind**: **General purpose**

   **Note:**
   This name should be unique across Azure. Follow Instructor Guidelines for details.
• **Performance**: Standard
• **Replication**: Locally-redundant storage (LRS)
• **Storage service encryption**: Disabled
• **Subscription**: Choose your subscription
• **Resource Group**: spektra-winvm-intro-trainee (Choose **Use existing** and scroll down to see the Resource Group.)
• **Location**: Location of your resource group

13. Navigate to Resource Groups > spektra-winvm-intro-trainee > Overview to see the newly created diagnostics storage account.

![Resource Groups](image)

**Exercise 2: Create a Virtual Network**

In this exercise, you will create a Virtual Network from Azure Portal.

1. **Launch** a browser and **Navigate** to https://portal.azure.com. **Login** with your Microsoft Azure credentials.
2. **Click** on **New** in the **Menu navigation** bar on the left.

![Microsoft Azure](image)
3. In the new blade, select **Networking** and then select **Virtual Network**.

![Microsoft Azure window showing Networking and Virtual network options](image)

4. Now, in the new blade that come up, select **Resource Manager** as the Deployment Model and **Click** on **Create** button to create a new Virtual Network.

![Virtual network configuration](image)

5. **Provide** the following configuration in the blade that come.
   - **Name**: win-vnet
   - **Address space**: 10.100.0.0/16
   - **Subnet name**: win-vm-subnet
   - **Subnet address range**: 10.100.0.0/24
   - **Subscription**: Choose your subscription.
   - **Resource Group**: spektra-winvm-intro-trainee (Choose **Use existing** and scroll down to see the Resource Group.)
   - **Location**: **Location of your resource group**
6. After the configuration is done, Click on **Create**. A notification will appear at the top right corner informing the initial status of deployment.

7. **Click** the **notification** icon to see the current status of deployment.

8. When the deployment is completed, a notification is raised as below.
9. In the Resource Group blade, Select the Resource Group `spektra-winvm-intro-trainee` in which you deployed your Virtual Network. Then Navigate to Overview to see the virtual network you created.

**Exercise 3: Create a Network Security Group**

In this exercise, you will create an Network Security Group from Azure Portal.


2. Click on +New in the navigation bar on the left.
3. In the new blade, **Search** for “**Network Security Group**”.

![Image of Microsoft Azure New blade with Network Security Group search](image)

4. From the new blade that come up **Select** the **Network Security Group** that is listed first.

![Image of Networking blade with Network Security Group selected](image)

5. Now, in the new blade that come up, Select **Resource Manager** as the Deployment Model and **Click** on **Create** button to create a new Network Security Group.

![Image of Select deployment model](image)

6. **Provide** the **following configuration** in the blade that comes up.
   - **Name**: `win-nsg`
   - **Subscription**: Choose your subscription.
   - **Resource Group**: `spektra-winvm-intro-trainee`(Choose **Use existing** and scroll down to see the Resource Group.)
   - **Location**: **Location of your resource group**
10. After the configuration is done, Click on **Create**. A notification will appear at the top right corner informing the initial status of deployment.

11. **Click** the **notification** icon to see the current status of deployment.

12. When the deployment is completed, a notification is raised as below.
13. In the **Resource Group** blade, **Select** the Resource Group **spektra-winvm-intro-trainee** in which you deployed your **Network Security Group**. Then **Navigate** to **Overview** to see **NSG** you created.

14. Click on **win-nsg** Network Security Group. A new blade comes up as shown below. Click on **Inbound Security Rules**.
15. Click on **Add**.

16. In the **Add inbound security rule** blade, configure as follows and Click **OK**.
   - **Name**: allow-RDP
   - **Priority**: 100
   - **Source**: Any
   - **Service**: RDP
   - **Protocol**: Keep default.
   - **Port range**: Keep default.
   - **Action**: Allow
17. A notification will appear at the top right corner informing the status.

18. **Click** the notification icon to see the current status of deployment.

19. When the deployment is completed, a notification is raised as below.
Exercise 4: Create a Public IP Address

In this exercise, you will create the **Public IP** needed to connect to the **Virtual Machine** from internet.

1. **Launch** a browser and **navigate** to [https://portal.azure.com](https://portal.azure.com). **Login** with your Microsoft Azure credentials.

2. **Click** on the **+New** button on the top left corner of the portal and type “IP”. From the drop down list, select **Public IP address**.

3. From the new blade that come up **Select** the **Public IP address** that is listed first.
4. Click **Create** in the upcoming blade.
5. In the **Create public IP address** blade, configure as follows:
   - **Name:** `win-vm-ip`
   - **IP address assignment:** `Static`
   - **Idle timeout:** 4
   - **DNS name label:** `windemovm`

   **Note:**
   This name should be unique across Azure. Follow Instructor Guidelines for details

   - **Subscription:** *Choose your subscription*
   - **Resource group:** `spektra-winvm-intro-trainee` *(Choose **Use existing** and scroll down to see the Resource Group.)*
   - **Location:** *Location of your resource group*
6. After the configuration is done, Click on **Create**. A notification will appear at the top right corner informing the initial status of deployment.

7. **Click** the **notification** icon to see the current status of deployment.

8. When the deployment is completed, a notification is raised as below.
9. In the **Resource Group** blade, **Select** the Resource Group **spektra-winvm-intro-trainee** in which you deployed your **Public IP address**. Then **Navigate** to **Overview** to see the **Public IP address** you created.

---

**Exercise 5: Create the Virtual Machine**

In this exercise, you will use **Windows Server 2012 R2 Datacenter** an image available in the Azure gallery to create the virtual machine.

1. **Launch** a browser and **navigate** to [https://portal.azure.com](https://portal.azure.com). **Login** with your Microsoft Azure credentials.
2. **Click** on the **+New** button on the top left corner of the portal and type “**Windows Server**”. From the drop down list, select the **version** (**Windows Server 2012 R2 Datacenter**).
3. In the next blade that appears, **Select** the option **Windows Server 2012 R2 Datacenter**.

4. In the upcoming blade, select **Resource Manager** as the deployment model. **Click on the Create button.**
5. On the Basics blade that appears provide the following details.
   - **Name**: win-demo-vm
   - **VM disk type**: HDD
   - **User name**: demouser
   - **Password**: Password@123
   - **Subscription**: Choose the default subscription
   - **Resource Group**: spektra-winvm-intro-trainee (Choose **Use existing** and scroll down to see the Resource Group.)
   - **Location**: Location of your resource group

   Click **OK**.
Create virtual machine

1. Basics
   Configure basic settings
   - Name: win-demo-vm
   - VM disk type: HDD
   - User name: demouser
   - Password: ********
   - Confirm password: ********
   - Subscription: [blank]
   - Resource group:
     - Use existing: spektra-winvm-intro-trainee
     - Location: East US

2. Size
   Choose virtual machine size

3. Settings
   Configure optional features

4. Summary
   Windows Server 2012 R2 Datacenter

OK
6. In the **Size** blade, Click on **View all**.

![Image of Choose a size](image)

- **D1_V2** Standard
  - 1 Core
  - 3.5 GB
  - 2 Data disks
  - 2x500 Max IOPS
  - 50 GB Local SSD
  - Load balancing
  - **54.31 USD/MONTH (ESTIMATED)**

- **D1** Standard
  - 1 Core
  - 3.5 GB
  - 2 Data disks
  - 2x500 Max IOPS
  - 50 GB Local SSD
  - Load balancing
  - **57.29 USD/MONTH (ESTIMATED)**

- **A1** Standard
  - 1 Core
  - 1.75 GB
  - 2 Data disks
  - 2x500 Max IOPS
  - Load balancing
  - **44.64 USD/MONTH (ESTIMATED)**

7. From the list of VM sizes, select **Standard A1** and click **Select**.

![Image of Standard A1](image)

8. In the **Settings** blade, configure as follows:
- **Use managed disks**: NO
- **Storage account**: `winvmstorage` (created in ex 1)
- **Virtual network**: `win-vnet` (Created in exercise 2)
- **Subnet**: `win-vm-subnet` (Created in exercise 2)
- **Network security group (firewall)**: `win-nsg` (Created in exercise 3)
- **Public IP address**: `win-vm-ip` (Created in exercise 4)
- **Availability set**: None
- **Boot diagnostics**: Enabled
- **Guest OS diagnostics**: Enabled
- **Diagnostics storage account**: `winvmdiagstorage` (Choose from the list)

Click on OK after providing details.
In the **Summary** blade, verify everything is correct, and click **OK**.
10. Deployment will start automatically. You can see the notification on the notification icon.
Once the deployment is finished, you can view the status from the notification tab at the top.

Exercise 6: Verify the deployed resources
In this exercise, you will verify the resources that were deployed during the virtual machine creation.

1. **Launch** a browser and **Navigate** to [https://portal.azure.com]. **Login** with your Microsoft Azure credentials.
2. Click on **Microsoft Azure** at the top left corner of the screen, to view the Dashboard.

3. To toggle **show/hide** the Portal menu options with icon, Click on the **Show Menu** button.

4. Click on the **Resource groups** button in the **Menu navigation** bar to view the **Resource groups** blade.
5. You will see a Resource Group which you have access to, click on it.

![Resource Groups Menu](image)

Note:
The Resource Group shown here is for demo purpose only. Actual name of the Resource Group that you see may differ.

6. The upcoming Resource Group blade lists all the resources in the Resource Group under Overview.

![Resource Group Details](image)
7. In the resources blade, **win-demo-vm** is the Virtual Machine that was created and **win-vnet** is the virtual network it is connected to. Along with those, two storage accounts, Network Security Group, Network Interface, and a Public IP address should be visible.

**Lab 3: Connect to the Virtual Machine**

**Lab Overview**

In this lab, you will connect to the **Windows Server 2012 R2 Datacenter** Virtual Machine.

**Prerequisites**

- Windows or a Mac machine with HTML5 supported browser such as Microsoft Edge, Internet Explorer, Chrome or Firefox
- Lab 2 must be completed

**Time Estimate**

15 minutes

**Exercise 1: Connect to Windows Server VM**

If you are using a Windows machine, **Launch** a browser and **Navigate** to [https://portal.azure.com](https://portal.azure.com). **Login** with your Microsoft Azure credentials.

1. **Click** on **Microsoft Azure** at the top left corner of the screen, to view the Dashboard.
2. To toggle **show/hide** the Portal menu options with icon, **Click** on the **Show Menu** button.

3. **Click** on the **Resource groups** button in the **Menu navigation** bar to view the **Resource groups** blade.
4. You will see a Resource Group which you have access to, **click** on it.

Note:
The Resource Group shown here is for demo purpose only. Actual name of the Resource Group that you see may be different.

5. The upcoming Resource Group blade lists all the resources in the Resource Group under Overview.
6. **Click** on `win-demo-vm` VM and from the **Overview** blade, click on connect.

7. The **Remote desktop connection** will pop up. **Click** on connect.
8. **Enter** your **username** and **password** for the **win-demo-vm**. Select **Use Other Account** if your computer’s local account is selected by default.

![Windows Security](image)

9. After entering the username and password you can start accessing the **win-demo-vm**.

![Remote Desktop Connection](image)
Exercise 2: Power Operations on Virtual Machine

In this exercise, you will stop & start Virtual Machine from Azure Portal.

1. **Click** on **Stop** in the vm’s blade at the top.

2. A notification will appear at the top right corner informing the status.

3. **Click** the **notification** icon to see the current status of deployment.
4. When the stop action is completed, a notification is raised as below.

5. **Click** on **Start** in the navigation bar at the top.

6. A notification will appear at the top right corner informing the status.

7. **Click** the notification icon to see the current status of deployment.

8. When the start action is completed, a notification is raised as below
Lab 4: Managing Virtual Machines

Exercise 1: Resize Virtual Machine

In this exercise, you will resize the Virtual Machine from Azure Portal.

1. **Click** on win-demo-vm VM and from the **Overview** blade, click on **size**.

2. In the **Size** blade, **Click on View all**.
3. A notification will appear at the top right corner informing the status.

4. Click the **notification** icon to see the current status of deployment.

5. When the resize action is completed, a notification is raised as below.
Exercise 2: Monitoring & Boot Diagnostics of Virtual Machine

In this exercise, you will monitor and boot diagnostics of Virtual Machine from Azure Portal.

1. Click on win-demo-vm, Navigate to the Monitoring tab.

2. Navigate to the Monitoring tab, and then select the Metrics option underneath it.
3. View the available metrics list. Then select the metric you are interested in and plot it. Here we select the 4-different metrics to plot:
   - Host Disk **Read** and **Write** Bytes.
• Host Network **In** and **Out**.

![](image1.png)

• Host percentage **CPU**.

![](image2.png)

• Host memory.

![](image3.png)

4. Navigate to the **Monitoring** tab, and then and select the **Alert rules** option underneath it. Click on Add metric alert.
5. In the **Add metric alert** blade, configure as follows:
   - *Name*: CPU80-alert
   - *Description*: This is alert demo for CPU Utilization
   - *Source*: Metrics
   - *Subscription*: Choose your subscription.
   - *Resource Group*: spektra-winvm-intro-trainee
   - *Resource*: win-demo-vm
   - *Condition*: Greater than
   - *Threshold*: 50
   - *Period*: **Over the last 5 minutes**

After configuration is done, Click **OK**
6. When the alert creation is completed, a notification is raised as below.

![Notifications](image)

7. You will see the add metric alert. This alert rules can check if a metric has crossed a certain threshold. They can then notify you via email or fire a webhook.

![Alert Rules](image)

8. For checking the metric is working, we are going to perform a load test. For this first we need to connect to our virtual machine.

![Connect](image)

9. Here you need to download “Cpustress” Application to generate load. Now after you can set the load value greater than provided in metric to test it. Login to the machine and download this application.

10. Here on the image as you can see the cpu threshold generated is greater than 50 i.e. required to trigger the metric.

11. Here metric is triggered and the mail is send to the email address previously provided at the metric alert rule.

12. Now click on Boot Diagnostics under **Support + Troubleshooting**
13. In this blade, you will see console view of Windows Virtual Machine which show that VM is up and running.

Exercise 3: Backup Virtual Machine

In this exercise, you will create a **Backup** for your **Virtual Machine**
1. Click on **win-demo-vm**, navigate to the **Setting** tab, and then and select the **Backup** option underneath it.

![Backup option](image)

2. In the Backup blade, configure as follows:

- **Name**: *win-vm-backup*
- **Backup Policy**: *DailyPolicy*
- **Policy name**: *winvmPolicy*
- **Backup frequency**: *Daily*
Click on OK.

2. Click on Enable Backup.

3. A notification will appear at the top right corner informing the initial status of deployment.
4. Click the **notification** icon to see the current status of deployment.

5. When the deployment is completed, a notification is raised as below.

6. In the **Resource Group** blade, Select the Resource Group **spektra-winvm-intro-trainee** in which you deployed your **Backup vault**. Then Navigate to **Overview** to see the **winvm backup** you created.

7. Click On the winvm backup, click the number under **Backup Items**, or click the **Backup Items** tile.
8. The **Backup Items** blade opens. select backup item.
9. The **Backup Items** list opens.

10. On the **Backup Items** list, click the ellipses ... to open the Context menu.
11. The Context menu appears.

```
Pin to dashboard
Backup now
Restore VM
File Recovery (Preview)
Stop backup
Delete backup data
```

12. On the Context menu, click **Backup now**.

```
Pin to dashboard
Backup now
Restore VM
File Recovery (Preview)
Stop backup
Delete backup data
```

13. The **Backup Now** blade opens, Click on **Backup button**.
14. To view or track the status of the initial backup, on the vault dashboard, on the **Backup Jobs** tile click **in progress**.

15. The Backup Jobs blade opens.
16. In the **Backup jobs** blade, you can see the status of all jobs. Check if the backup job for your VM is still in progress, or if it has finished. When a backup job is finished, the status is **Completed**.