

Azure Compute – Virtual Machines

Objectives

In this hands-on lab, you will learn how to:

- Provision a Windows Server virtual machine in Azure
- Use a Desired State Configuration extension script to add WebDeploy and configure IIS
- Define a network security group rule to allow incoming HTTP and WebDeploy traffic
- Stop the virtual machine to suspend further usage charges

Prerequisites

The following are required to complete this hands-on lab:

- An active Microsoft Azure subscription
- Visual Studio 2017 Community or greater (Professional or Enterprise)

Exercises

This hands-on lab includes the following exercises:

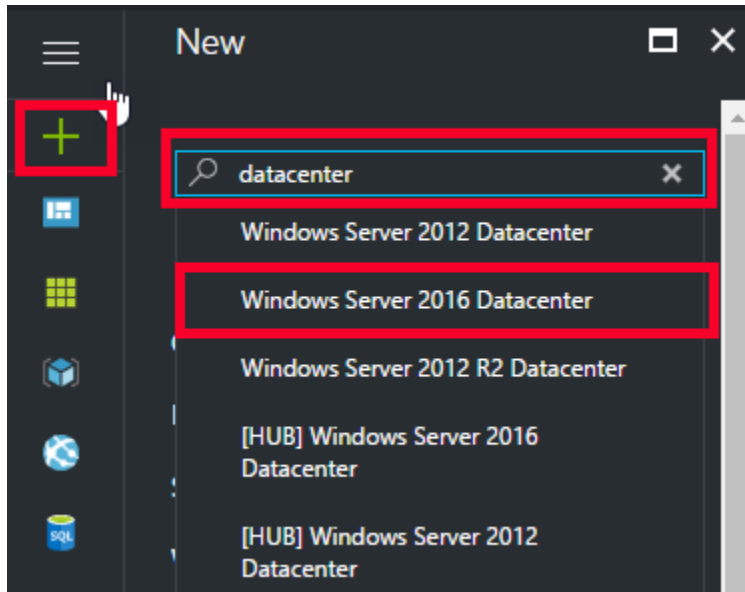
- Exercise 1: Provision a virtual machine
- Exercise 2: Add a desired state configuration extension
- Exercise 3: Connect to the VM using RDP
- Exercise 4: Configure access for HTTP and WebDeploy ports
- Exercise 5: Create and deploy sample web application
- Exercise 6: Suspend the virtual machine

Estimated time to complete this lab: xx minutes

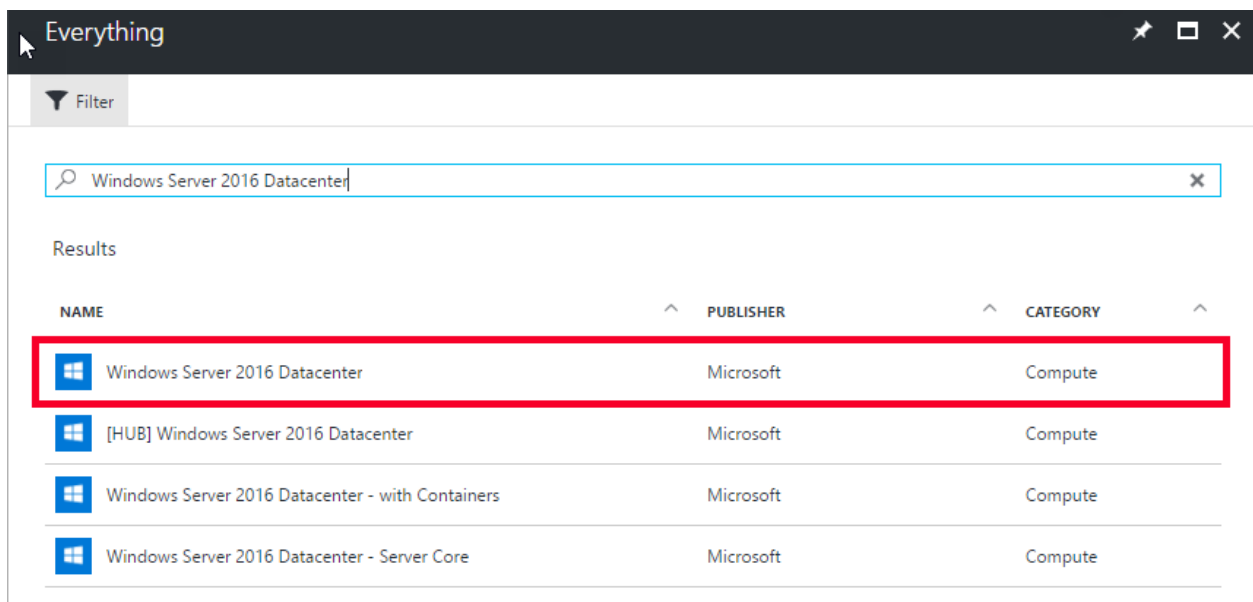
Exercise 1: Provision a virtual machine

In this exercise, you will use the Azure Portal to create a virtual machine with Windows Server 2016 Datacenter.

1. Go the Azure Portal <https://portal.azure.com> and sign into your Azure account
2. Click the + New (or use the keyboard shortcut N) to open the **New blade**, then type **datacenter** into the search box and choose **Windows Server 2016 Datacenter**

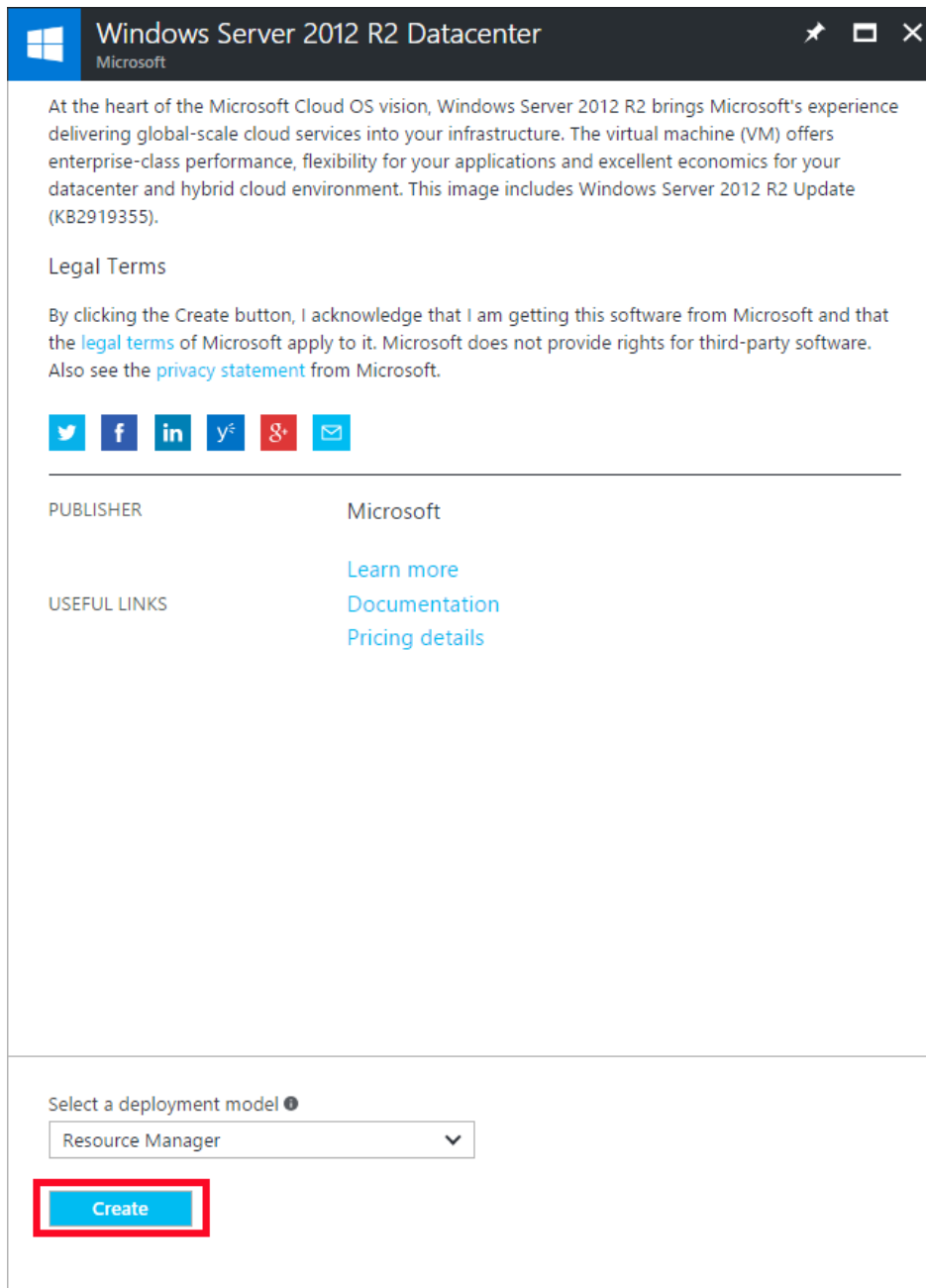


This will open the search results blade.



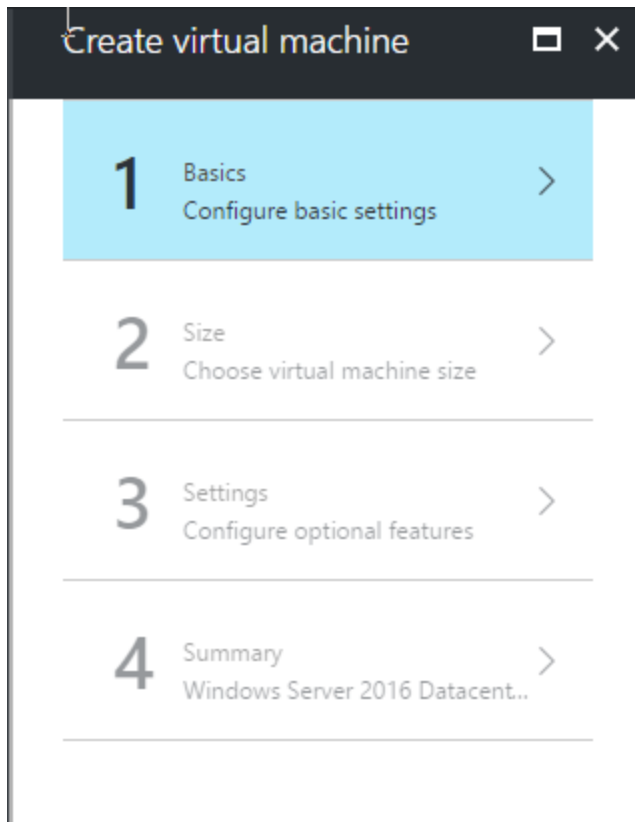
3. Select **Windows Server 2016 Datacenter**

This will show the information about the operating system and legal terms



4. Leave the deployment model as the default of **Resource Manager** and **click the Create button**

This will open the Create Virtual Machine blade with the first step open to Basics.



5. On the Basics blade, fill out the following selections:
- **Name:** GABVMLab<your first name>
 - **VM disk type:** SSD
 - **User name:** <your first name>
 - **Password:** <a strong password minimum of 12 characters>
 - **Confirm Password:** retype your password
 - **Subscription:** choose your subscription
 - **Resource Group:** Create new
 - Enter name of: GABVMLab
 - **Location:** East US

Basics

*

Name

GABVMLabJason

✓

VM disk type ⓘ

SSD

*

User name

jason

✓

*

Password

.....

✓

*

Confirm password

.....

✓

Subscription

Visual Studio Enterprise - MVP License

*

Resource group ⓘ

●

Create new

○

Use existing

GABVMLab

Location

East US

Save money

Save up to 40% with a license you already own.

*

Already have a Windows Server license? ⓘ

Yes

No

OK

6. **Click the OK** button. This will open the next step
7. On the Choose a size blade, select **DS1_V2 Standard** and **click the Select** button

Choose a size

Browse the available sizes and their features

Prices presented are estimates in your local currency that include only Azure infrastructure costs and any discounts for the subscription and location. The prices don't include any applicable software costs. Recommended sizes are determined by the publisher of the selected image based on hardware and software requirements.

Supported disk type

SSD

Minimum memory (GiB)

0

Minimum cores

1

★ Recommended | [View all](#)

DS1_V2 Standard ★	DS2_V2 Standard ★	DS11_V2 Standard ★
1 Core	2 Cores	2 Cores
3.5 GB	7 GB	14 GB
2 Data disks	4 Data disks	4 Data disks
3200 Max IOPS	6400 Max IOPS	6400 Max IOPS
7 GB Local SSD	14 GB Local SSD	28 GB Local SSD
Load balancing	Load balancing	Load balancing
Premium disk support	Premium disk support	Premium disk support
54.31 USD/MONTH (ESTIMATED)	108.62 USD/MONTH (ESTIMATED)	137.64 USD/MONTH (ESTIMATED)

Select

8. On the Settings blade, you can **leave all the default values** and **click the OK** button

6 | Page

Settings

Storage

Use managed disks ⓘ

No

Yes

* Storage account ⓘ

(new) gabvmlabdisks846

>

Network

* Virtual network ⓘ

(new) GABVMLab-vnet

>

* Subnet ⓘ

default (10.0.0.0/24)

>

* Public IP address ⓘ

(new) GABVMLabJason-ip

>

* Network security group (firewall) ⓘ

(new) GABVMLabJason-nsg

>

Extensions

Extensions ⓘ

No extensions

>

High availability

* Availability set ⓘ

None

>

OK

The **Summary** blade will now be showing all the selections you have made to create a virtual machine.

Summary

Validation passed

Basics

Subscription

Visual Studio Enterprise - MVP License

Resource group

(new) GABVMLab

Location

East US

Settings

Computer name

GABVMLabJason

Disk type

SSD

User name

jason

Size

Standard DS1 v2

Storage account

(new) gabvmlabdisks846

Managed

No

Virtual network

(new) GABVMLab-vnet

Subnet

(new) default (10.0.0.0/24)

Public IP address

(new) GABVMLabJason-ip

Network security group (firewall)

(new) GABVMLabJason-nsg

Availability set

None

Guest OS diagnostics

Disabled

Boot diagnostics

Enabled

Diagnostics storage account

(new) gabvmlabdiag480

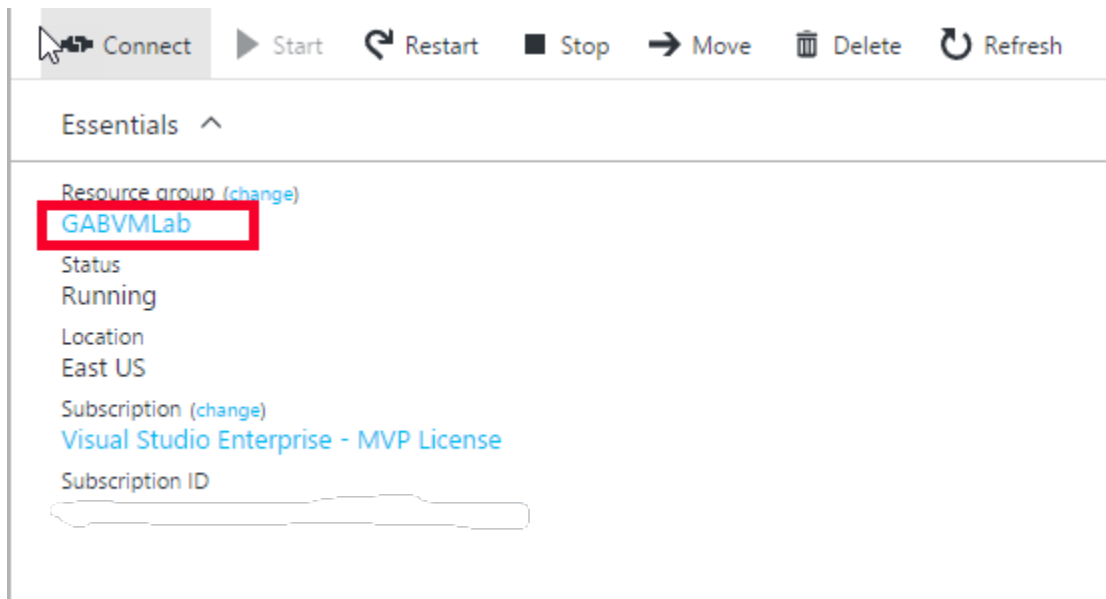
OK

Download template and parameters

9. Click the **OK** button to start the provisioning of the new virtual machine

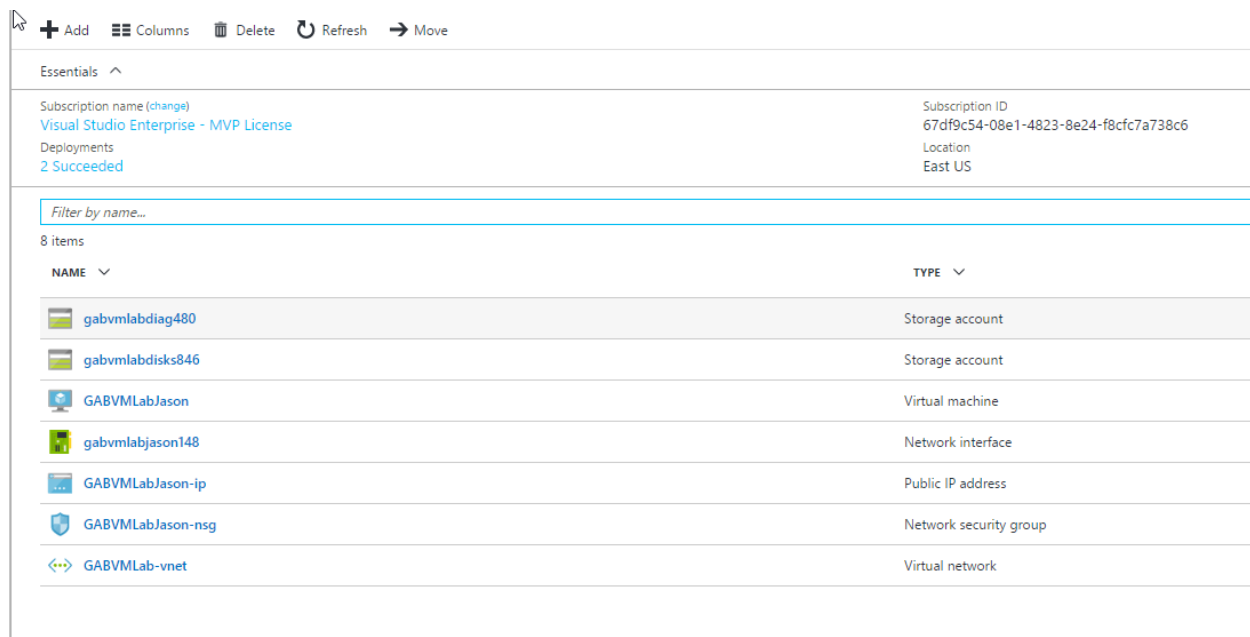
The provisioning should take 3 – 5 minutes to complete.

10. When the virtual machine is provisioned, the Overview blade for the VM should open. Click on the **GABVMLab** Resource Group link in the Essentials panel.



This will open the list of all the resources that were provisioned along with the creation of the virtual machine. These resources include 7 items:

- 2 storage accounts
- 1 virtual machine
- 1 network interface
- 1 public IP Address
- 1 network security group
- 1 virtual network

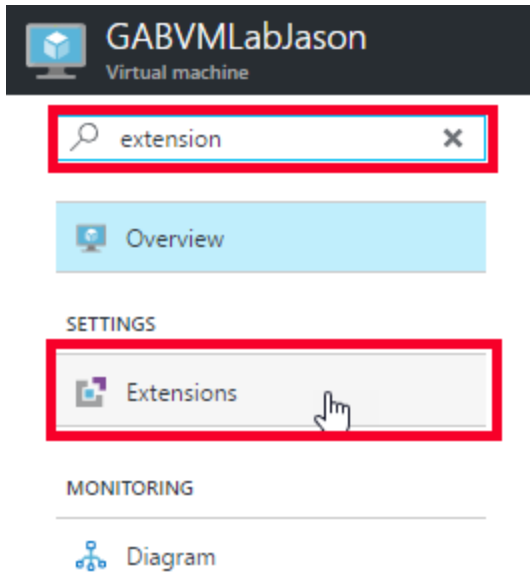


The VM is now running. The next step is to add IIS and WebDeploy – which can be done by adding an extension to the VM.

Exercise 2: Add a desired state configuration extension

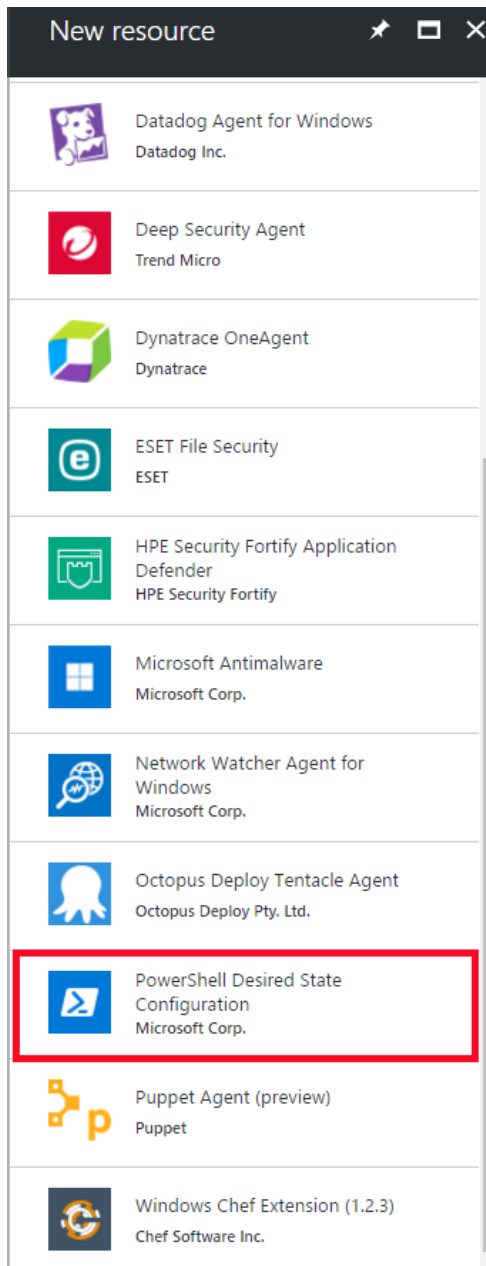
In this exercise you will add IIS and WebDeploy to the VM by using a virtual machine extension.

1. Open the VM blade you create in Exercise 1 and type **extension** into the search

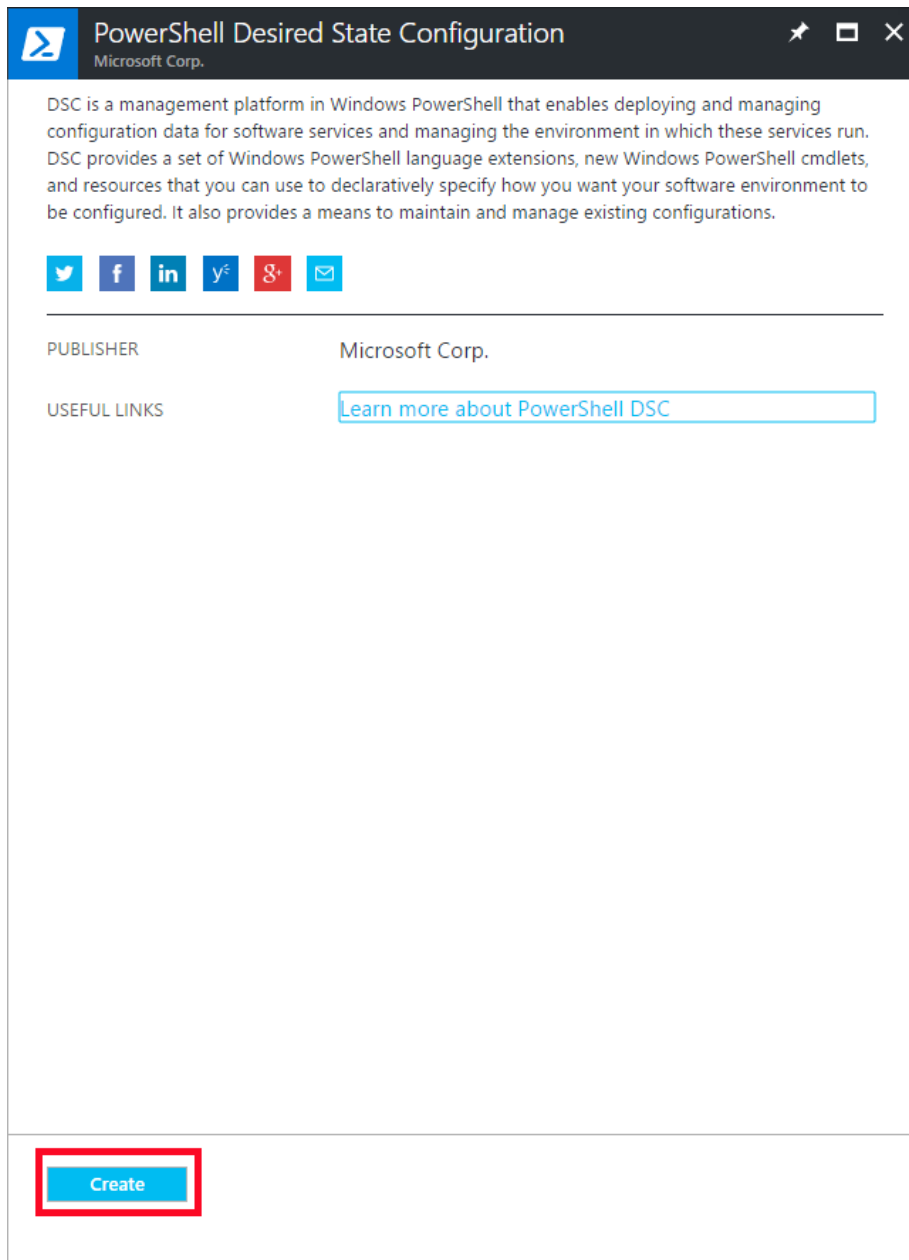


This will open the extensions blade.

2. Click the **+ Add** button, to get the **New resource** listing



3. Find the **PowerShell Desired State Configuration** item and **click on it**



This opens the information blade.

4. Click the **Create** button, to get to the Install extension blade.
5. On the Install extension blade, fill out the following:


NOTE: You will need the ConfigureWebServer.ps1.zip file from :

- **Configuration Modules or Script:** Select the ConfigureWebServer.ps1.zip file
- **Module-qualified Name of Configuration:** ConfigureWebServer.ps1\Main
- **Configuration Arguments:** nodeName=<name of your vm>
- **Configuration Data PSD1 File:** leave blank
- **WMF Version:** latest

- **Data Collection:** Enable
- **Version:** 2.24
- **Auto Upgrade Minor Version:** Yes

Install extension

* Configuration Modules or Script ⓘ

ConfigureWebServer.ps1.zip ✓ 

ConfigureWebServer.ps1.zip

✕ ⓘ


* Module-qualified Name of Configuration ⓘ

ConfigureWebServer.ps1\Main ✓

Configuration Arguments ⓘ

nodeName=GABVMLabJason ✓

Configuration Data PSD1 File ⓘ

Select a file 

WMF Version ⓘ

latest ▼

Data Collection ⓘ

Enable ▼

* Version ⓘ

2.24 ✓

Auto Upgrade Minor Version ⓘ

Yes

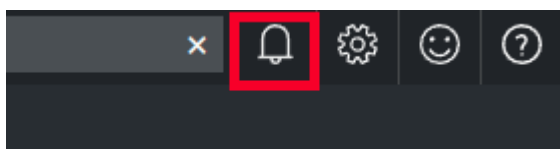
No

OK

6. Click the **OK** button to start the deployment of the extension

The deployment may take 5-10 minutes to complete.

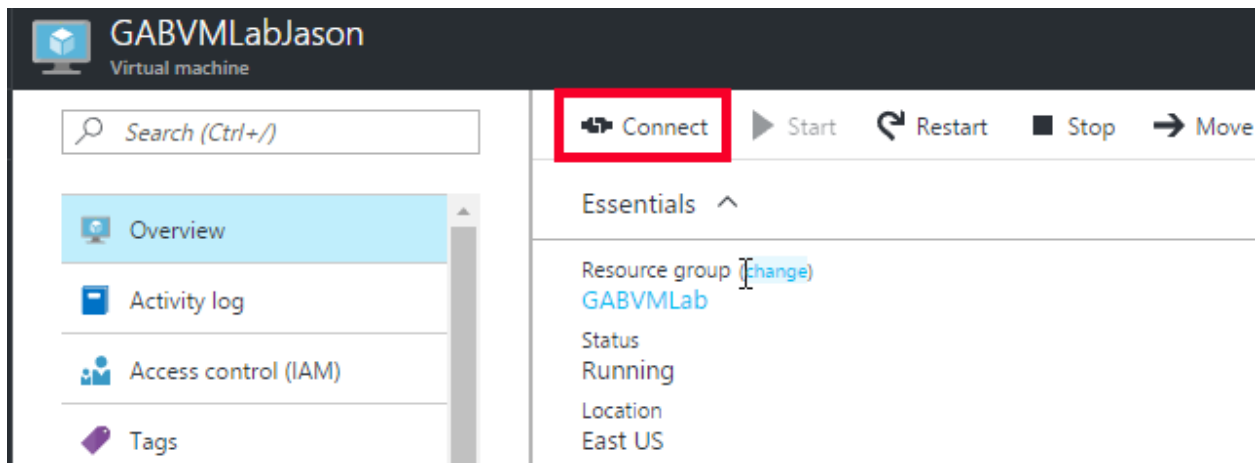
You can keep track of the status by going to the notifications blade (click on the bell icon in the upper right corner of the portal)



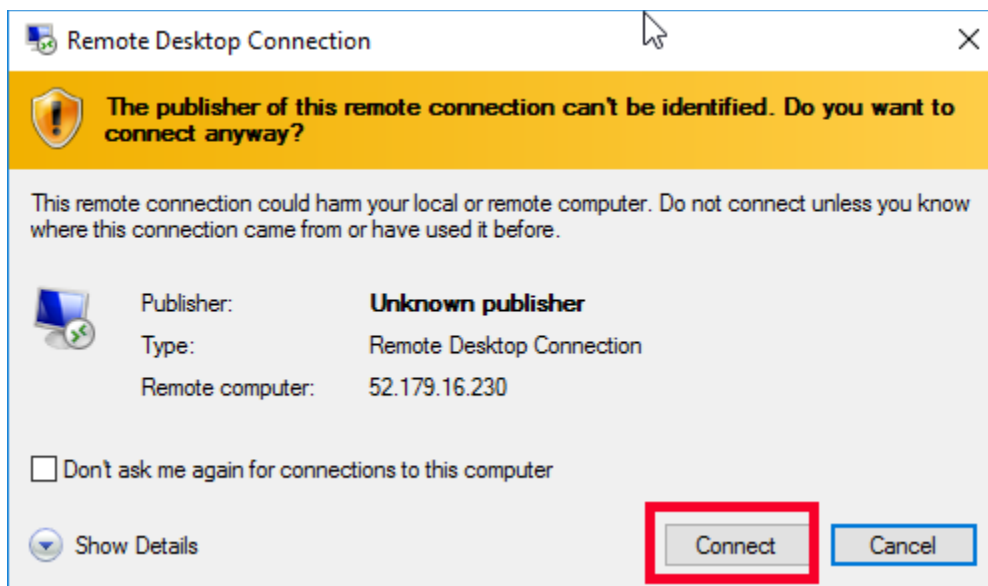
Exercise 3: Connect to the VM using RDP

In this exercise, you will verify the IIS and WebDeploy extension by remotely connecting to the virtual machine.

1. Open the VM blade you create in Exercise 1 and click on the **Connect** button



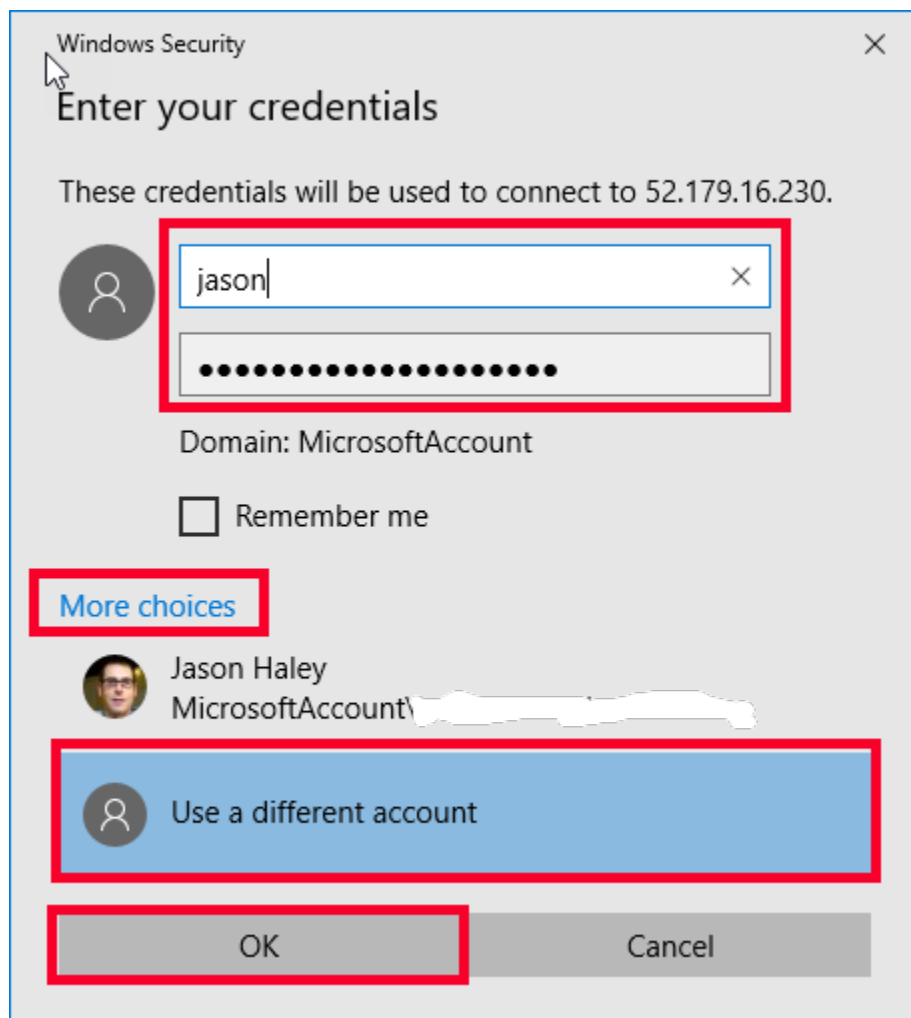
This will download the .rdp file and show the Remote Desktop Connection dialog



2. Click the **Connect** button

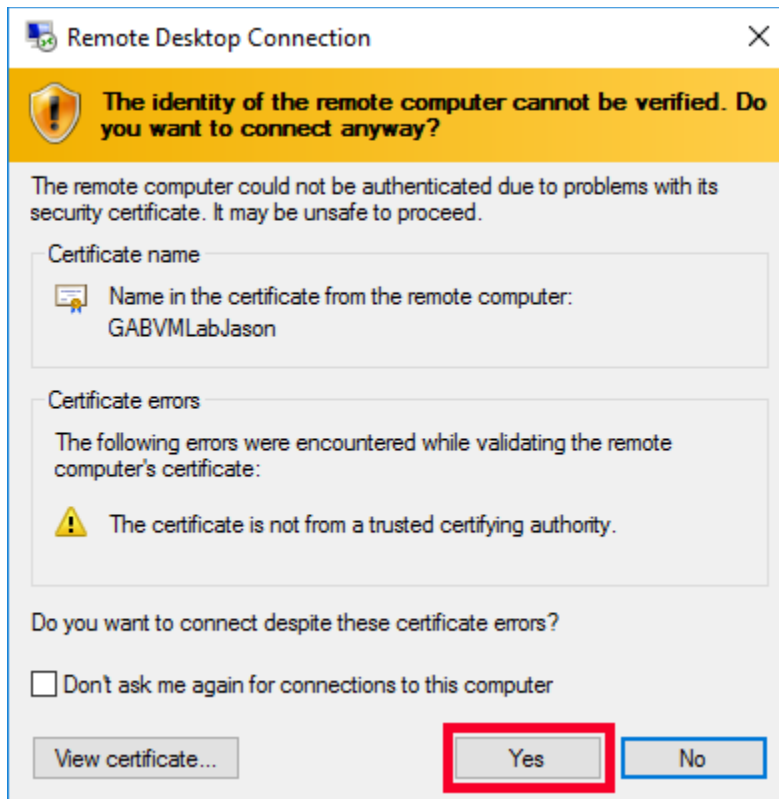
This will show the Windows Security dialog

3. If you have Windows 10, you will need to select the **More Choices** link and then select the **Use a different account** option
4. Enter the username and password you used when setting up the VM in exercise 1, step 5



5. Click Ok

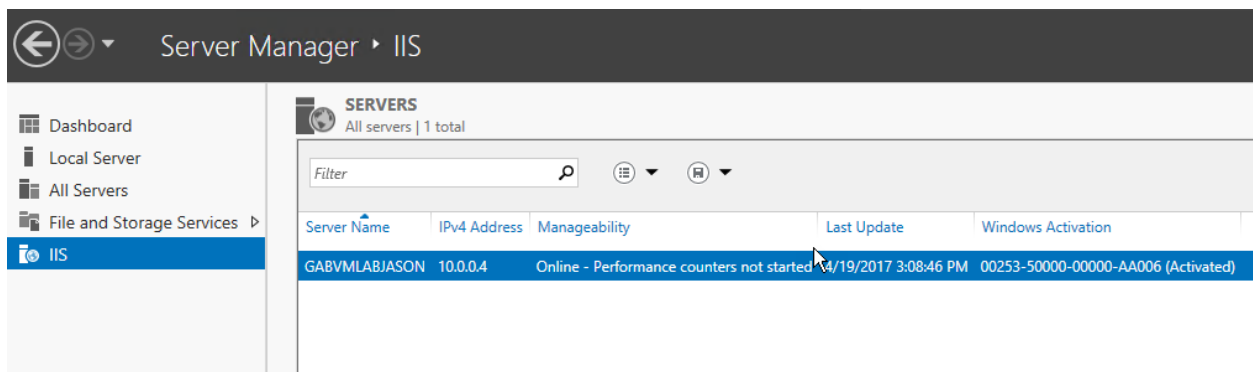
This will show the Remote Desktop Connection dialog



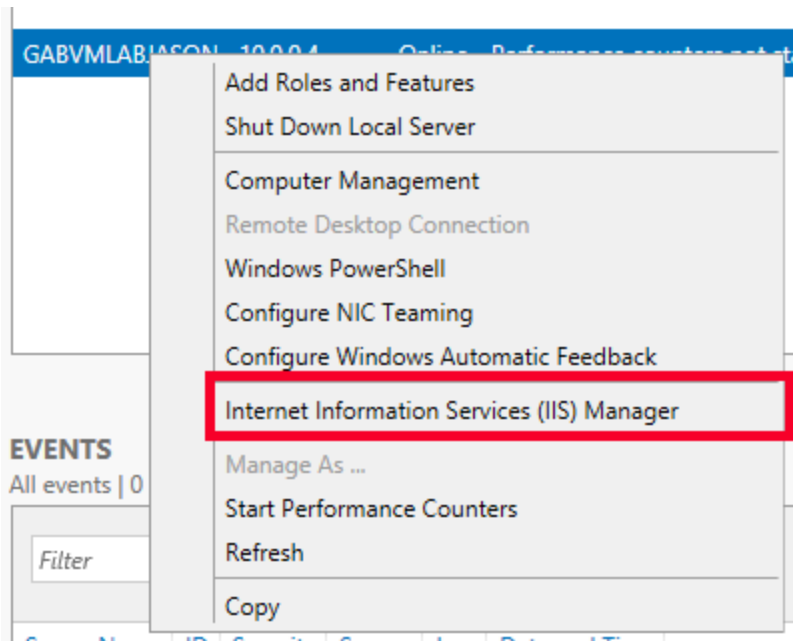
6. Click Yes to login to the machine

Once the desktop for the VM has come up, the Server Manager -> Dashboard should be showing

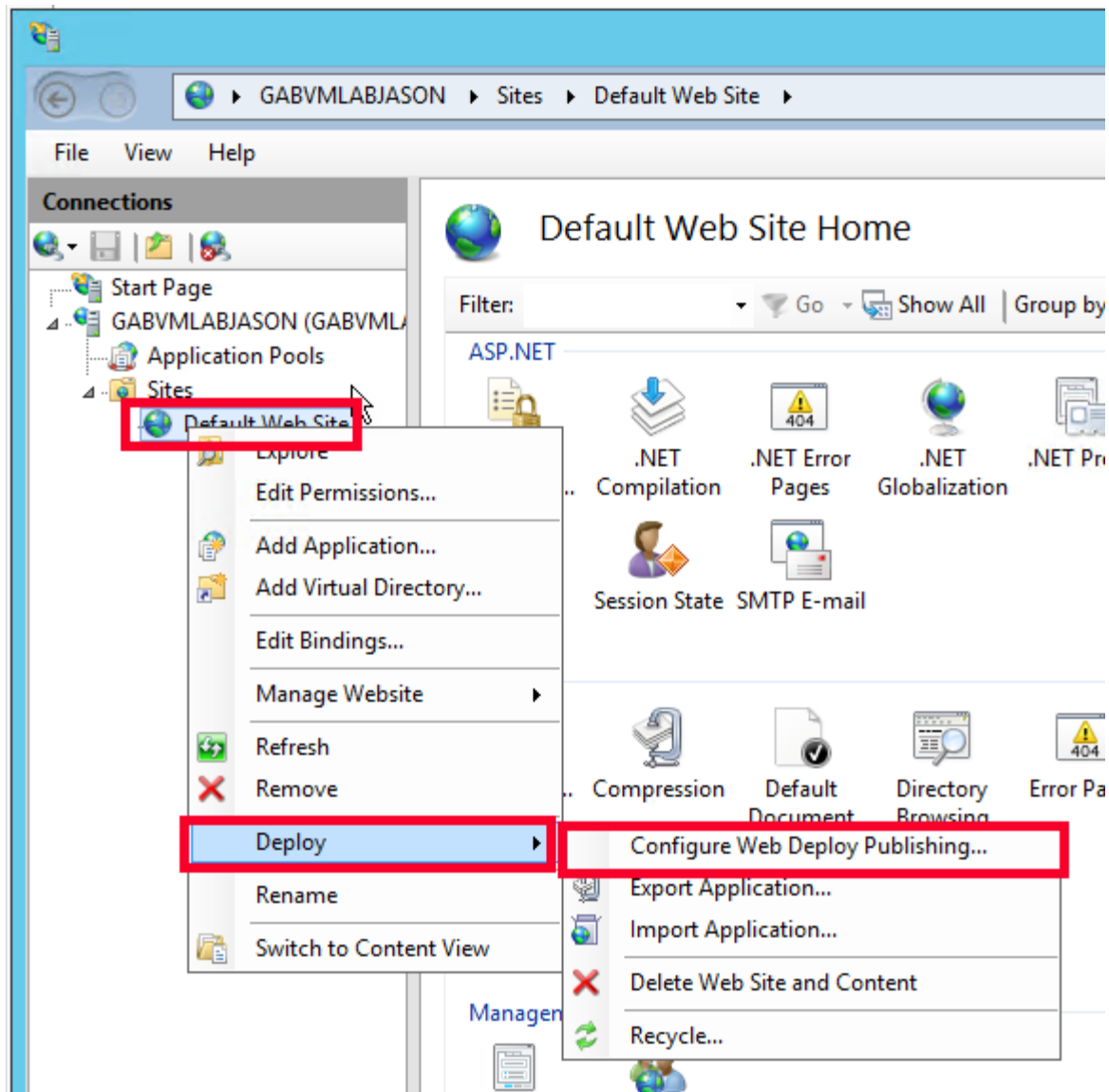
7. In the left pane of the Server Manager Dashboard, click on IIS



8. Right click on the server name in the listing and select Internet Information Services (IIS) Manager



9. Once the IIS Manager is loaded, in the left pane – **expand the Machine node and the Sites node.**
10. Right click on **Default Web Site -> Deploy -> Configure Web Deploy Publishing...**



This will open the Configure Web Deploy Publishing dialog.

Configure Web Deploy Publishing

Select a user to give publishing permissions

GABVMLABJASON\jason

Enter SQL Server connection string to be used for publishing

Enter MySQL connection string to be used for publishing

Specify the URL for the publishing server connection

https://GABVMLABJASON:8172/msdeploy.axd

Specify a location to save the publish settings file

C:\Users\jason\Desktop\GABVMLABJASON_jason_Default Web S

Results

Setup Close

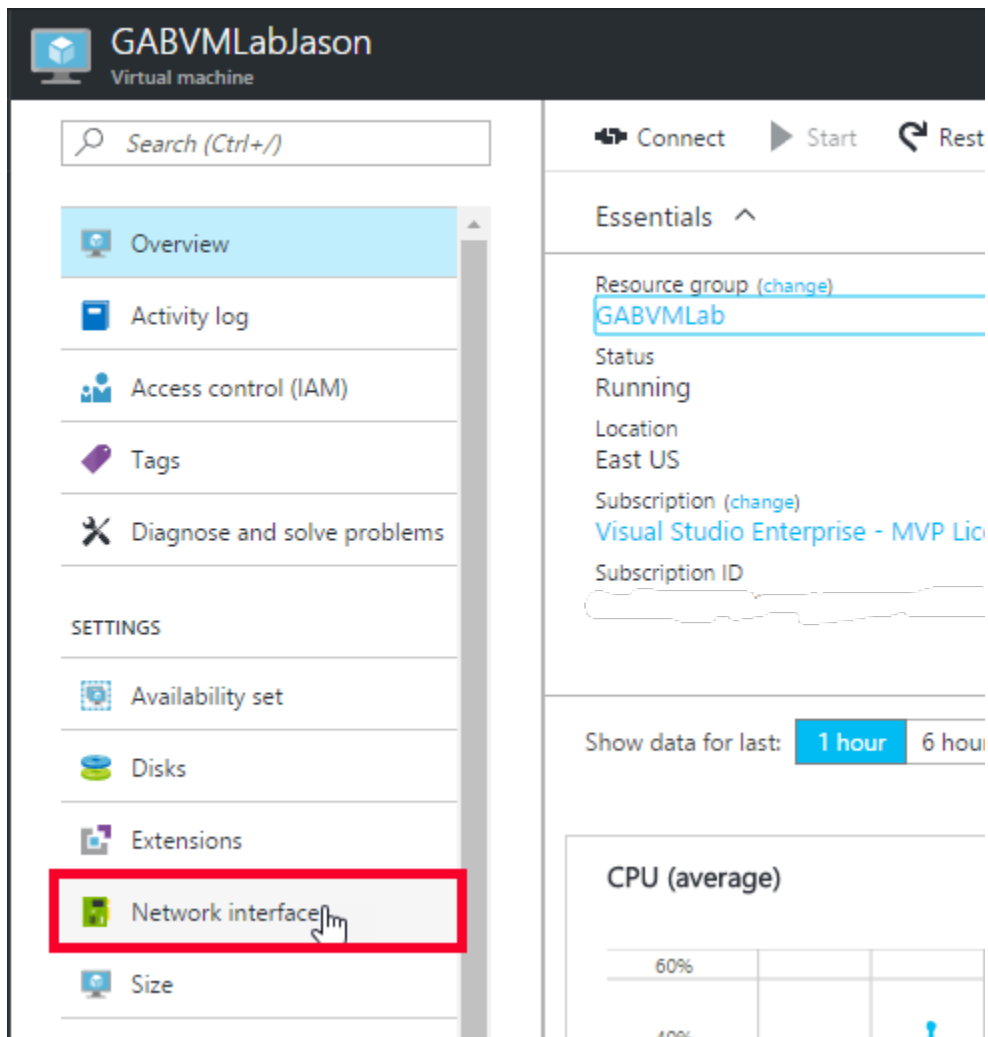
In this dialog, you will need to know the user and the port/path for the publishing.

The next step is to add NSG rules to allow HTTP and WebDeploy traffic to the VM.

Exercise 4: Configure access for HTTP and WebDeploy ports

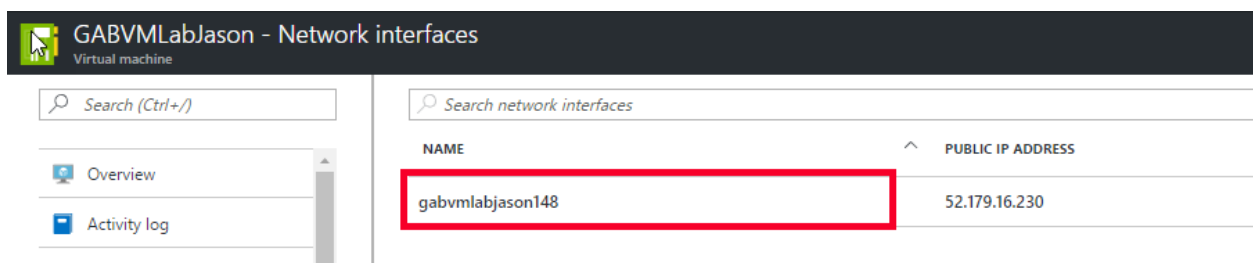
In this exercise, you will configure the network security group (NSG) to allow incoming traffic to ports 80 (HTTP) and 8172 (WebDeploy). The DSC script set up the VM but does not add NSG rules – those are outside of the virtual machine.

1. In the Azure Portal, on the virtual machine blade, click on **Network interfaces**.



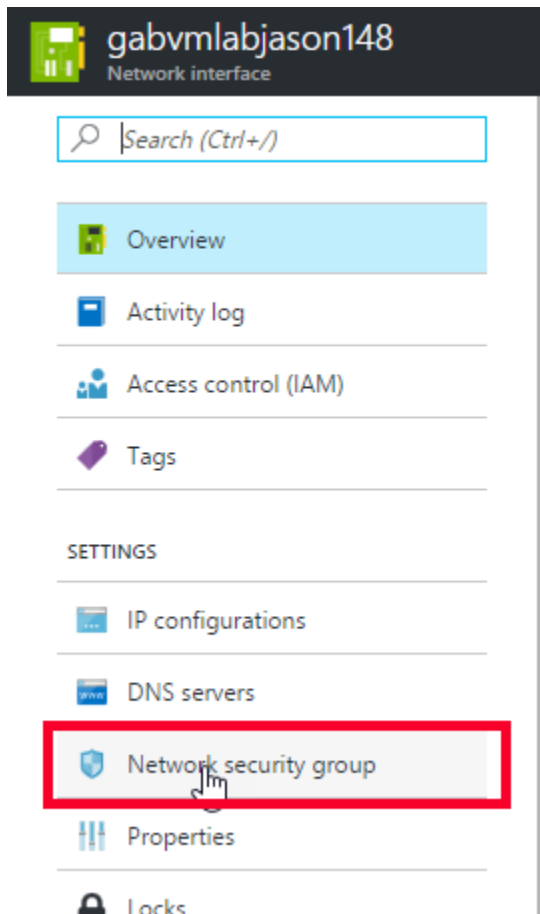
This will open the Network interfaces blade.

2. Click on the name of the network interface

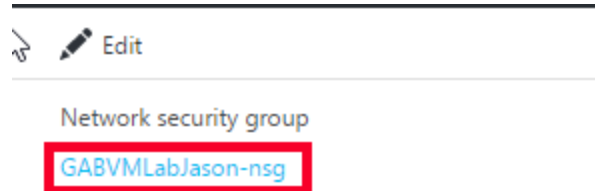


This will open the overview blade.

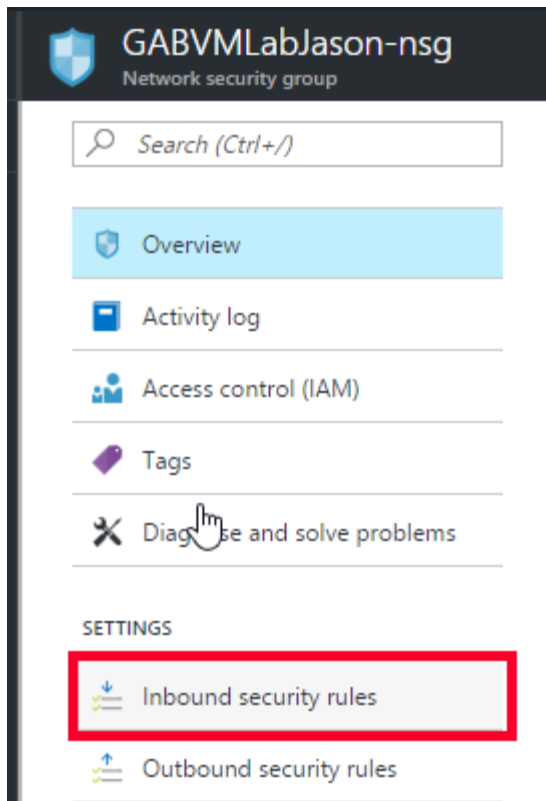
3. In the listing, find the **Network security group** and click on it



This will show a link to the NSG resource



4. Click on the link, to get to the Network Security Group blade
5. In the feature listing, find **Inbound security rules** and click on it



6. Click the + **Add** button to open the Add inbound security rule blade
7. Fill in the following information to enable HTTP traffic:
 - **Name:** Allow_HTTP
 - **Priority:** 1010
 - **Source:** Any
 - **Service:** HTTP
 - **Action:** Allow

Add inbound security rule

GABVMLabJason-nsg

Advanced

Name

Allow_HTTP

Priority

1010

Source

Any

CIDR block

Tag

Service

HTTP

Protocol

Any

TCP

UDP

Port range

80

Action

Deny

Allow

OK

8. Click OK and repeat for the WebDeploy rule:

- **Name:** Allow_WebDeploy
- **Priority:** 1020
- **Source:** Any
- **Service:** Custom
- **Protocol:** TCP
- **Port range:** 8172
- **Action:** Allow

Add inbound security rule

GABVMLabJason-nsg

✕

Advanced

*

Name

Allow_WebDeploy

✓

*

Priority

1020

*

Source

Any

CIDR block

Tag

Service

Custom

▼

*

Protocol

Any

TCP

UDP

*

Port range

8172

*

Action

Deny

Allow

OK

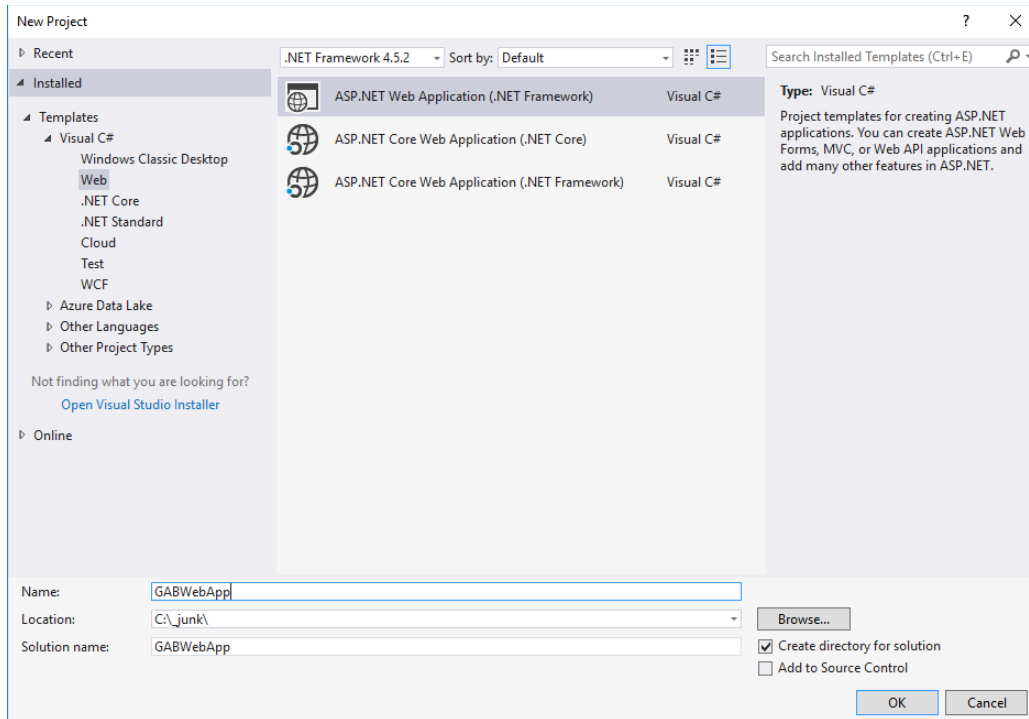
Exercise 5: Create and deploy sample web application

In this exercise, you will create a sample web application to deploy to the Virtual Machine.

1. Open Visual Studio 2017 Community edition (or greater)
2. File -> New Project

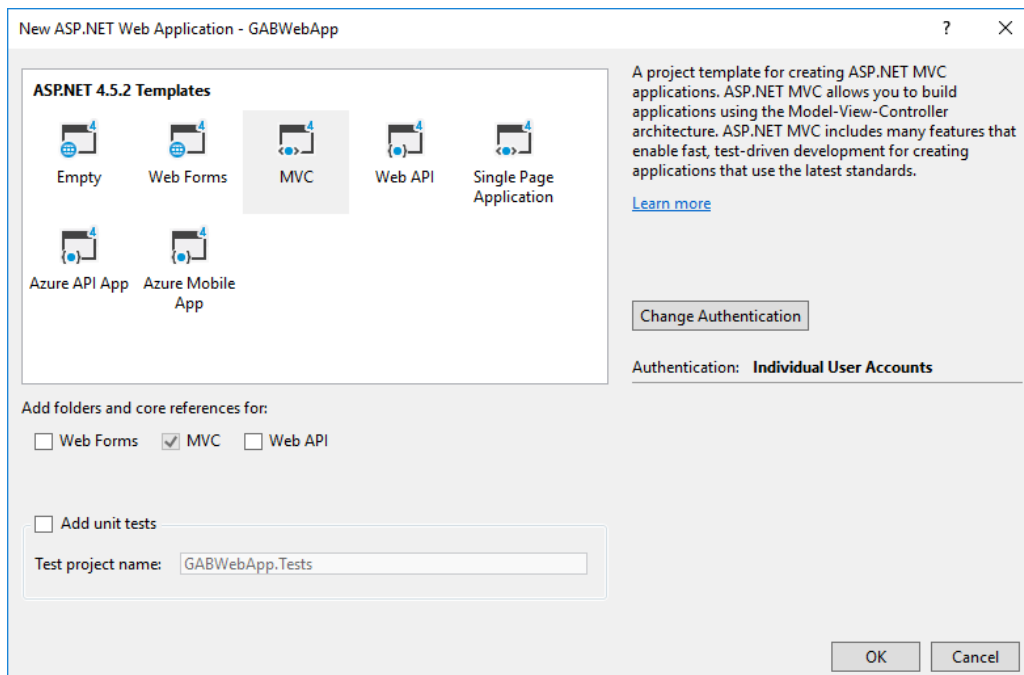
This will show the New Project dialog

24 | Page



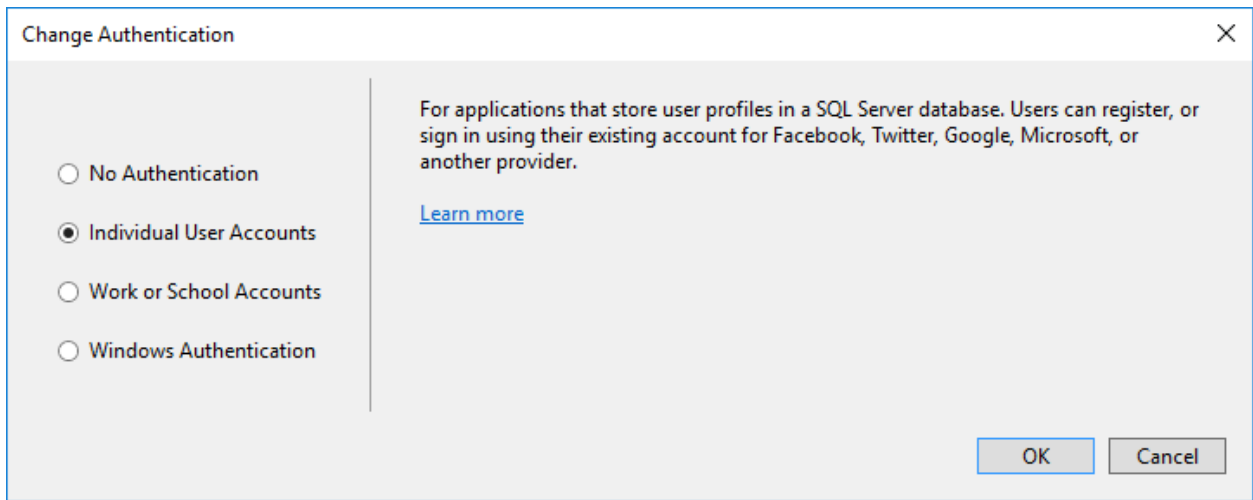
3. Select **Web** from the templates and select **ASP.NET Web Application (.NET Framework)**
4. Give the project a name of **GABWebApp** and select a folder to save the project to
5. Click **OK**

This will show the New ASP.NET Application dialog



6. Select **MVC** from the template listing and click the **Change Authentication** button

This will show the Change Authentication dialog

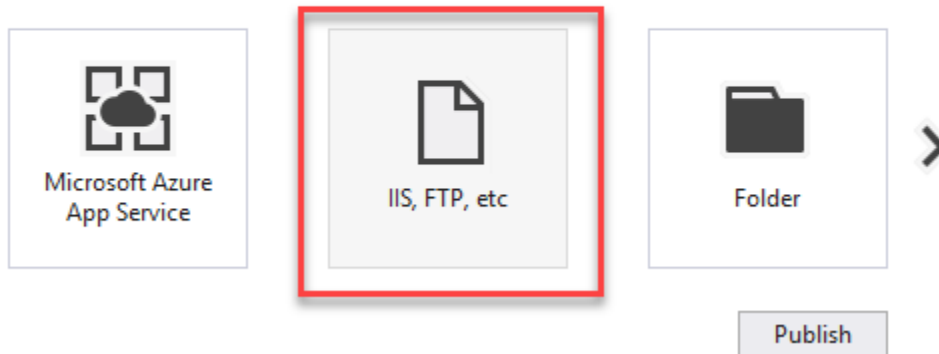


7. Select **Individual User Accounts** (we will connect the signin to a database in a later hands on lab)
8. Click **OK**
9. Click **OK** to create the project
10. Once the project is created, **right click the web project** in the Solution Explorer and select **Publish...**

This will show the new publish interface.

Publish

Publish your app to Azure or another host. [Learn more](#)



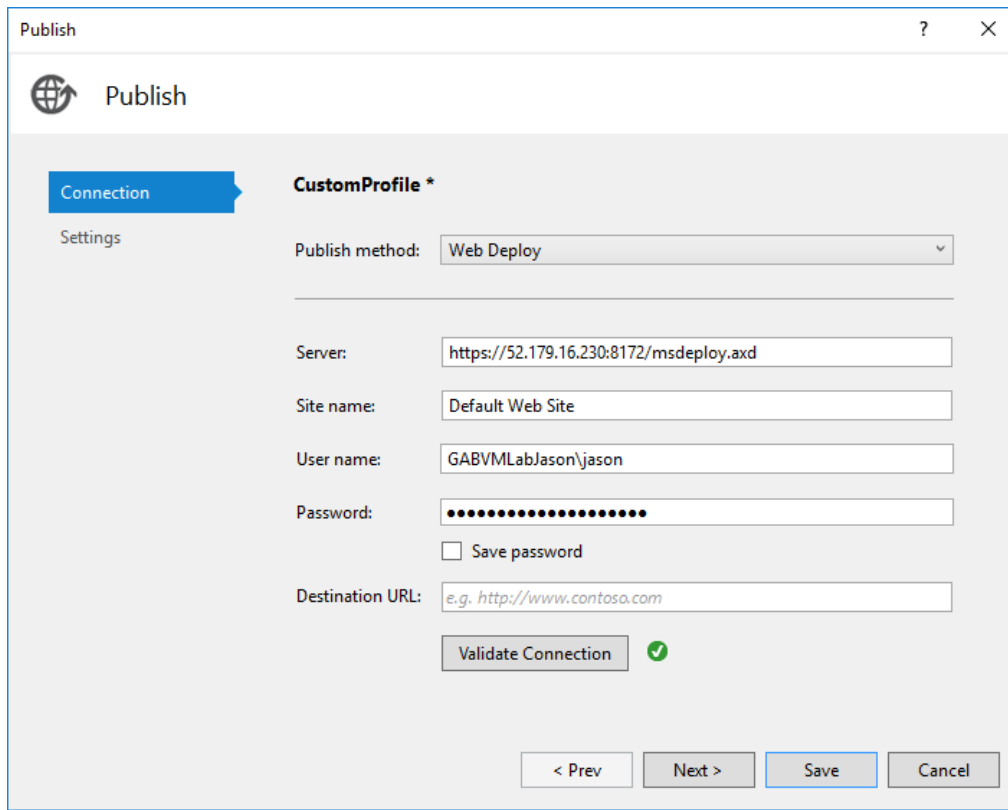
11. Select the **IIS, FTP, etc** button

This will show the Publish wizard

12. Fill in the following information to configure web deploy for the project:

- **Publish Method:** Web Deploy
- **Server:** [https://<your vm public ip address>:8172/msdeploy.axd](#)
- **Server name:** Default Web Site
- **User name:** <your vm name>\<your vm user name>

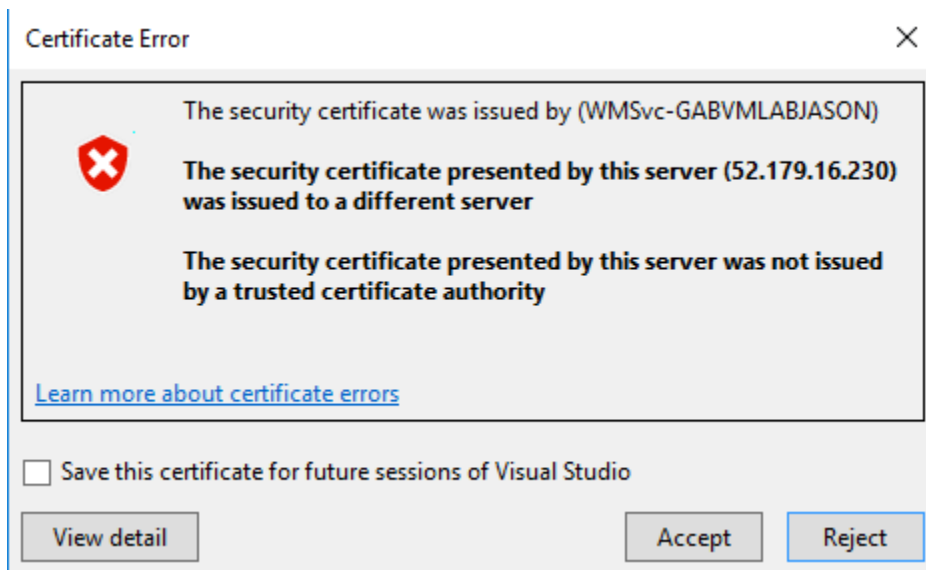
- **Password:** <your vm password>



The screenshot shows the 'Publish' dialog box in Visual Studio, specifically the 'CustomProfile *' tab. The 'Connection' sub-tab is selected. The 'Publish method' is set to 'Web Deploy'. The 'Server' field contains 'https://52.179.16.230:8172/msdeploy.axd'. The 'Site name' is 'Default Web Site'. The 'User name' is 'GABVMLabJason\jason'. The 'Password' field is masked with dots. There is an unchecked checkbox for 'Save password'. The 'Destination URL' field contains 'e.g. http://www.contoso.com'. A 'Validate Connection' button is present with a green checkmark icon. At the bottom, there are buttons for '< Prev', 'Next >', 'Save', and 'Cancel'.

13. Click the **Validate Connection** button to verify the communication to the server is good

This should show the Certificate Error dialog



The screenshot shows a 'Certificate Error' dialog box. It features a red shield icon with a white 'X'. The text inside reads: 'The security certificate was issued by (WMSvc-GABVMLABJASON)', 'The security certificate presented by this server (52.179.16.230) was issued to a different server', and 'The security certificate presented by this server was not issued by a trusted certificate authority'. There is a link that says 'Learn more about certificate errors'. At the bottom, there is an unchecked checkbox for 'Save this certificate for future sessions of Visual Studio' and three buttons: 'View detail', 'Accept', and 'Reject'.

14. Click **Accept**

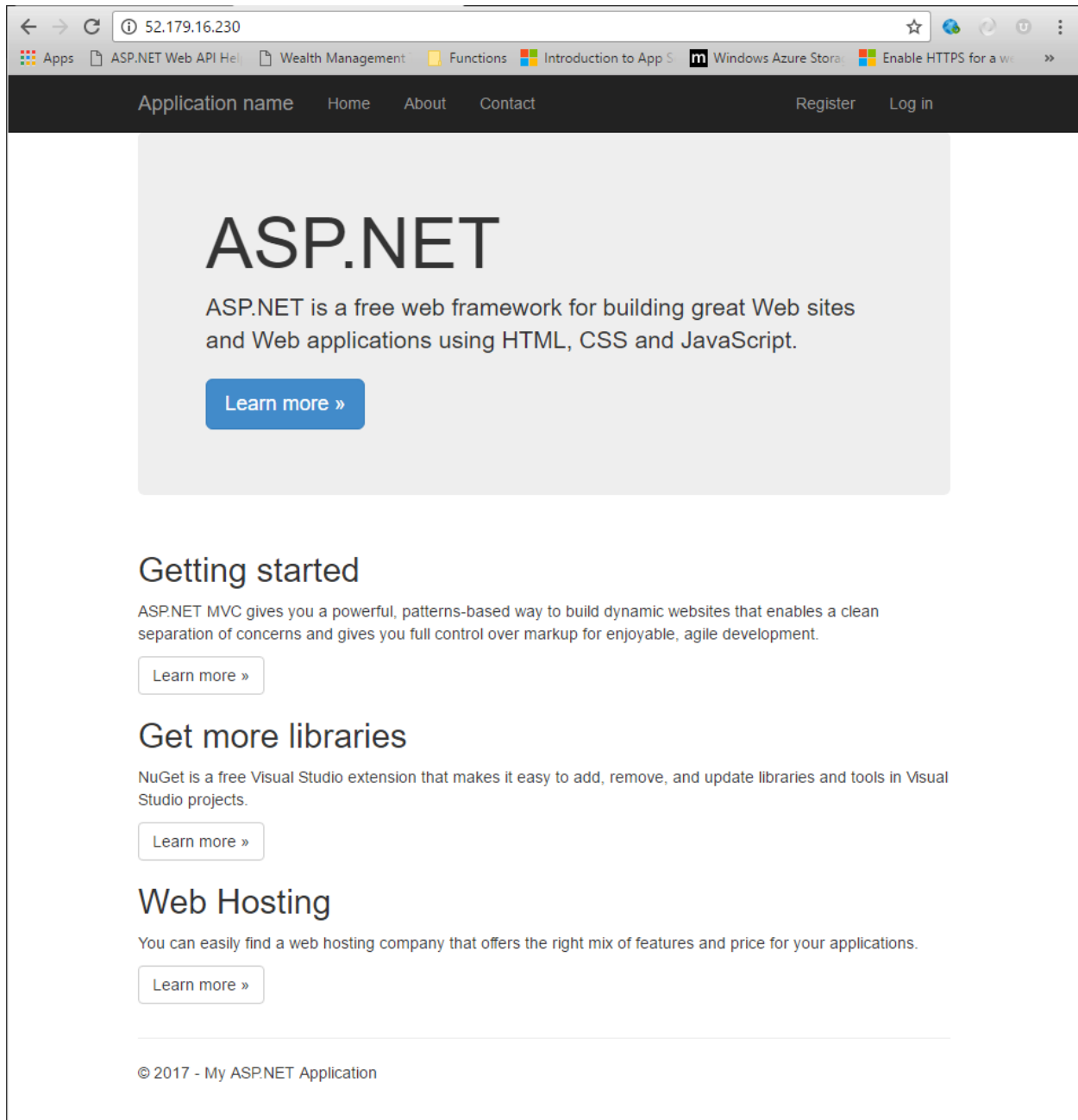
15. Click **Save**

16. Click **Publish**

This will show the Web Deploy Client dialog

17. Enter your <vm password>
18. Click **OK**

Watch the Output window for the status of the publish. Once you see the publish succeed, open a browser and navigate to the public ip address of your vm and you should see the sample application.

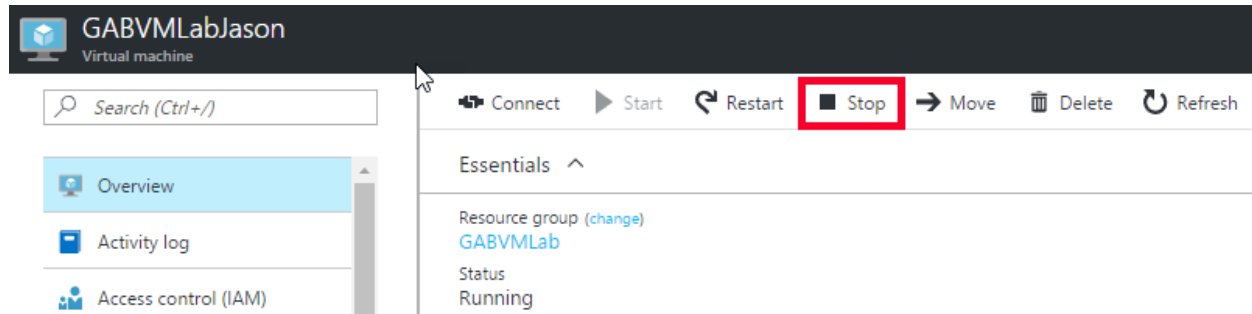


You should now have a web application successfully deployed to your virtual machine using web deploy.

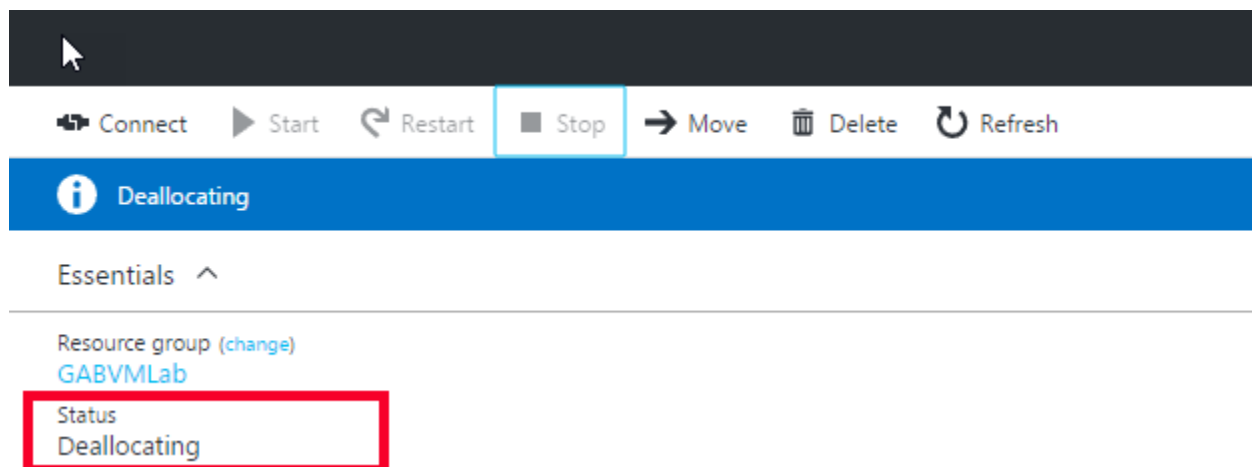
Exercise 6: Suspend the virtual machine

In this exercise, you will learn how to stop your virtual machine from being charged. You will still be charged for the storage space – but not the compute charges.

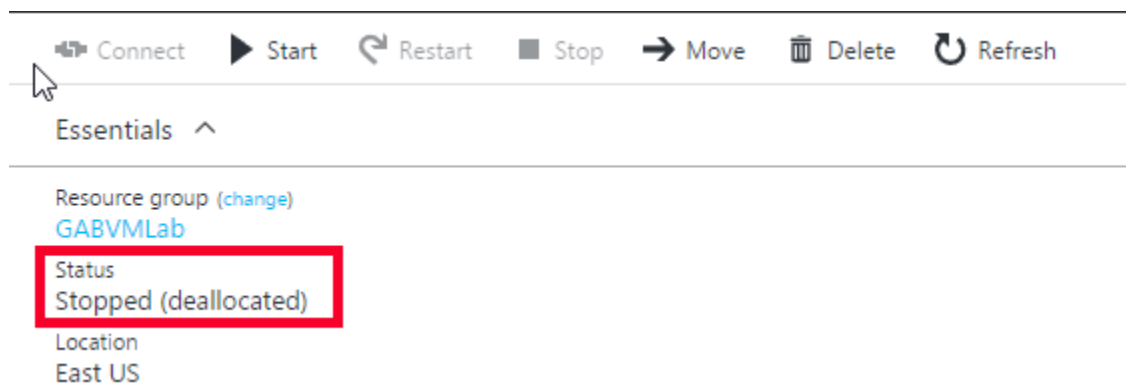
1. In the Azure Portal, open the vm blade
2. Click the **Stop** button



The status of the machine should change from **Running** to **Deallocating**



The status s will eventually change to **Stopped (deallocated)**



The machine is now just configuration in storage, you will need to click the start button again to be able to access the machine as a Virtual Machine again.