Microsoft

DAT243x

Securing SQL Server

Lab 00 | Getting Started

Estimated time to complete this lab is 60 minutes

Overview

In this lab, you will provision a Microsoft Azure Virtual Machine (VM) that will be used by all labs in this course. Once the VM is provisioned, you will complete the setup required to support the labs.

The labs in this course are accumulative. You cannot complete the following labs if this lab has not been successfully completed.

What You'll Need

To complete this lab, you will need the following:

- High-speed and reliable internet connectivity (for remote connections to the VM)
- A second monitor is recommended (for the Remote Desktop connection)
- A Microsoft account (such as one used for outlook.com, Hotmail, or other Microsoft services)
- A Microsoft Azure subscription
- The lab files for this course (available for download from GitHub, as described in this lab)

Creating a Free Trial Azure Subscription

If you already have an Azure subscription, you can skip this section. Otherwise, follow these steps to create a free trial subscription. You will need to provide a valid credit card number for verification, but you will not be charged for Azure services—for more information, refer to https://aka.ms/edx-dat243x-az1 . Note that the free trial is not available in all regions.

If you already have a Microsoft account that has <u>not</u> already been used to sign up for a free Microsoft Azure trial subscription, you're ready to get started. If not, don't worry—just create a new Microsoft account at https://signup.live.com.

After you've created a Microsoft account, browse to https://aka.ms/edx-dat243x-az1 and then click the **Start Free** link. Then follow the instructions to sign up for a free trial subscription to Microsoft Azure. You'll need to sign in with your Microsoft account if you're not already signed in. Then you'll need to:

- Enter your cellphone number and have Microsoft send you a text message to verify your identity
- Enter the verification code sent to you
- Provide valid payment details—don't worry, your credit card won't be charged for any services you use during the trial period, and the account is automatically deactivated at the end of the trial period, unless you expressly decide to keep it active.

# Exercise 1: Provisioning an Azure VM

In this exercise, having signed in to the Azure Portal by using your Azure subscription, you will provision an Azure VM to support all labs for this course.

The Azure VM should be stopped when you have completed a lab so that your subscription is not charged (for free trial subscriptions, this will ensure you will have sufficient credits left to complete the labs over the duration of the course).
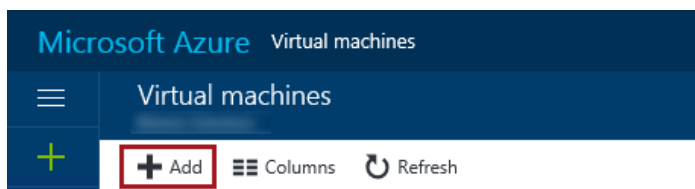
Provisioning an Azure VM

In this task, you will sign in to the Azure Portal, and then provision an Azure VM.

1. Sign in to the **Azure Portal** by using your subscription.

2. In the left pane, select **Virtual Machines**—<u>do not</u> select **Virtual Machines (Classic)**.
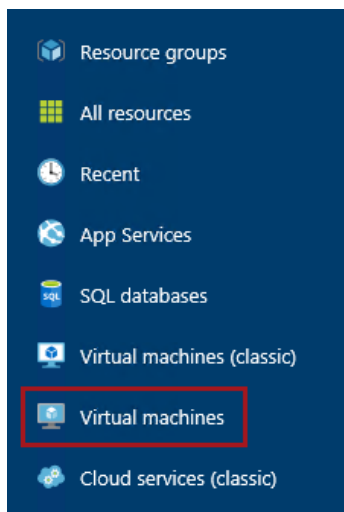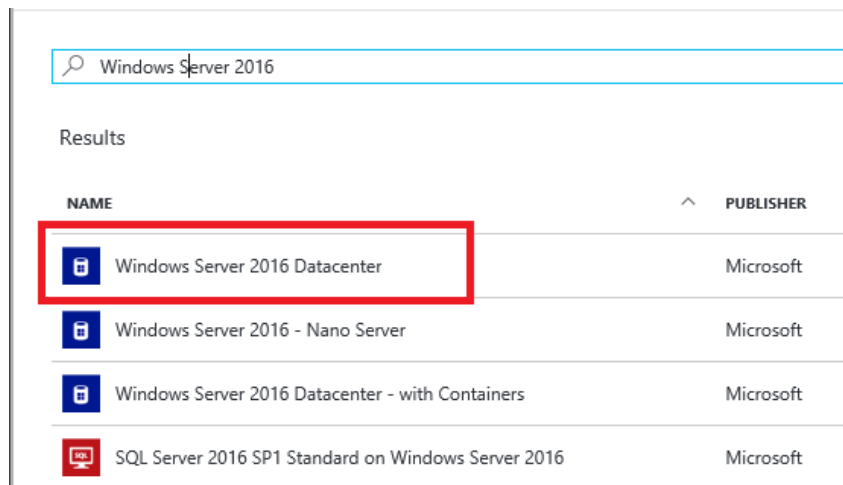

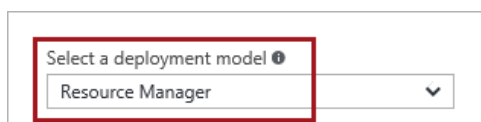3. In the **Virtual Machines** blade, click **Add**.

4. In the **Virtual Machines** blade, in the search box, enter **Windows Server 2016**, and then press **Enter**.

5. Select the **Windows Server 2016 Datacenter** image.

6. In the image blade, review the text that describes the virtual machine setup.

7. In the lower section of the blade, in the **Select a Deployment Model** dropdown list, ensure that **Resource Manager** is selected.

8. To provision the virtual machine, click **Create**.

9. Notice that the **Create Virtual Machine** blade opens, and that also the **Basics** blade (step 1) opens.

10. In the **Name** box, enter a name for the virtual machine (this will become the name of the machine).

11. In the **VM Disk Type** dropdown list, select **HDD**.

12. In the **User Name** box and **Password** boxes, enter appropriate values (this will become the machine administrator account).

The password must be at least 12 characters in length, and must have three of the following: one lower case character, one upper case character, one number, or one special character.

Be sure to securely record these credentials, as you will be required to use them to sign in every time you will connect to the VM.

13. In the **Resource Group** box, enter **Lab**.

14. In the **Location** box, select a data center that is near you.
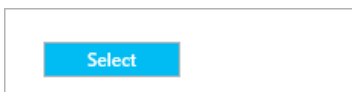
15. Click **OK**.

> OK

16. In the **Choose a Size** blade, scroll down to locate and select the **DS1_V2** size.

The labs in this course will not require excessive storage, memory or processing. Also, you will be prompted to deallocate your VM between labs, and so the monthly cost will only apply when the VM is running.

D1_V2	Standard	★
1	Core	
3.5	GB	
	2 Data disks	
	2x500 Max IOPS	
	50 GB Local SSD	
	Load balancing	

17. Click **Select**.

> Select

18. In the **Settings** blade, to accept the default settings, click **OK**.

19. In the **Summary** blade, click **OK**.

20. On the **Azure Portal** dashboard, notice the tile displaying the status of the deployment process.

Deploying Windows Server 2016 Datacenter

The deployment usually takes 15-20 minutes to complete, and this time depends largely on the VM size selected. The VM blade will open when the deployment completes.
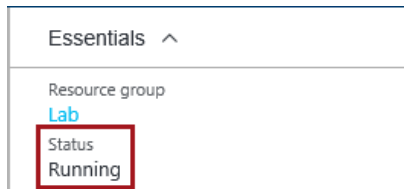
You cannot proceed to the next task until the deployment completes.

21. Leave the **Azure Portal** dashboard page open.

Connecting to the VM

In this task, once the VM has successfully deployed, you will connect to the VM.

1. In the VM blade, notice that the VM blade automatically opens, and that the VM status is **Running**.

    Essentials ∧

    Resource group
    Lab
    Status
    Running

    *You are charged when the VM status is **Running**, but you are not charged—except for a relatively smaller storage cost—when the VM status is **Stopped (Deallocated)**.*

    Each lab will include steps to remind you to stop and optionally deallocate the VM between labs. You should consider doing this if you choose to commence the next lab at a later time.

2. To connect to the VM, click **Connect** and click **Save**.
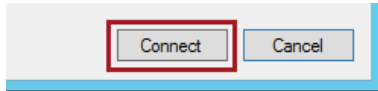
    Connect   Start   Restart   Stop   Capture   Delete

    A Remote Desktop File (.rdp) file is downloaded to the desktop.

    This file can be used to reconnect to the remote desktop session, but note that if you deallocate the VM and later re-start the VM, it will be likely that a different IP address will be assigned.
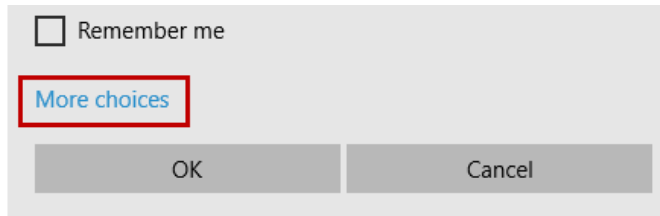
3. When prompted by the web browser to open the Remote Desktop File, click **Open**.
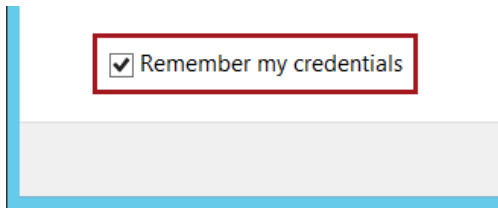
    Open   Save   ▼   Cancel   ×

4. If prompted to connect to the unknown publisher, click **Connect**.
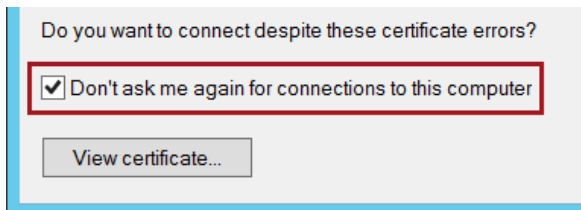

*To enter your credentials, you may need to select **More Choices**, and then select **Use a Different Account**.*

5. In the **Windows Security** window, enter the credentials you created for your VM.

6. Check the **Remember Me** or the **Remember My Credentials** checkbox.

7. Click **OK**.

8. In the **Remote Desktop Connection** window, check the **Don't Ask Me Again for Connections to This Computer** checkbox.

9. Click **Yes**.

10. If you have a second monitor, maximize the Remote Desktop window inside a single monitor.

Exercise 2: Setting Up the Azure VM

In this exercise, you will complete several VM setup tasks.

Configuring the Server

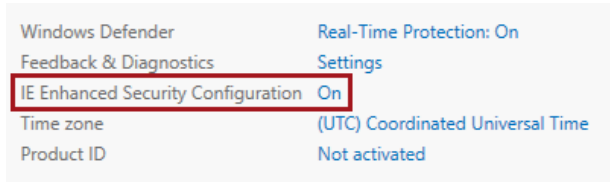In this task, you will configure the server to support the lab experience.

1. In the Remote Desktop window, when the **Networks** panel opens at the right, to ensure that the machine is not discoverable by other machines, click **No**.
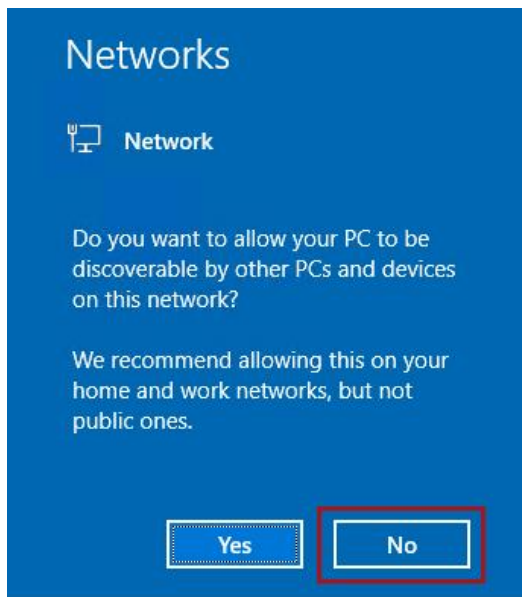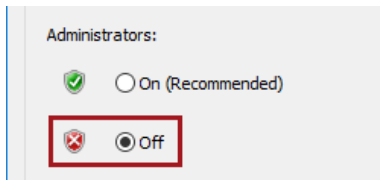

2. Wait until **Server Manager** opens (it is set to open automatically).

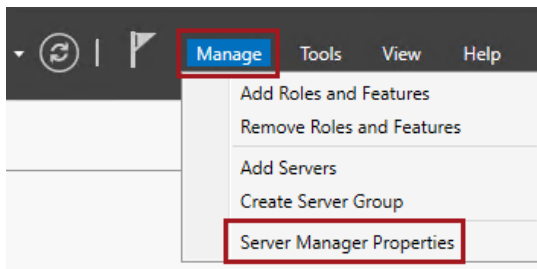3. In **Server Manager**, in the left pane, select **Local Server**.
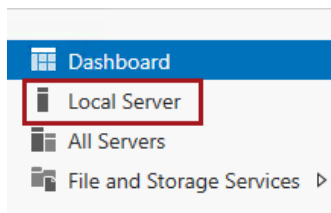
4. In the **Properties** pane, notice that **IE Enhanced Security Configuration** is set to **On**.

Windows Defender	Real-Time Protection: On
Feedback & Diagnostics	Settings
IE Enhanced Security Configuration	On
Time zone	(UTC) Coordinated Universal Time
Product ID	Not activated

5. Click the **On** link.

6. In the window, for **Administrators**, select the **Off** option.

Administrators:

    ⦾ On (Recommended)

    ⦿ Off

7. Click **OK**.

8. Located at the top-right corner, select **Manage**, and then select
   Server Manager Properties.

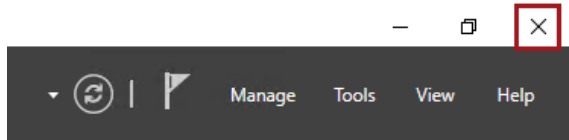| Manage	Tools	View	Help
Add Roles and Features
Remove Roles and Features

Add Servers
Create Server Group

Server Manager Properties

9. In the window, check the **Do Not Start Server Manager Automatically at Logon**.

☑ Do not start Server Manager automatically at logon
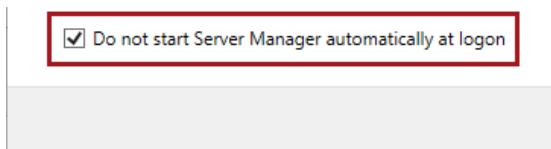
10. Click **OK**.

11. To close Server Manager, located at the top-right corner, click **X**.

Install SQL Server Operations Studio

In this task, you will install SQL Server Operations Studio on your client computer. The following steps should be performed on your local client computer, not in Azure.
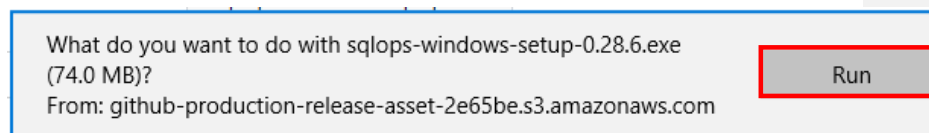
1. Start Microsoft Edge browser.
2. In the URL bar, type https://aka.ms/edx-dat243x-sql3 and press Enter.
3. Click **SQL Operations Studio (preview) installer for Windows**
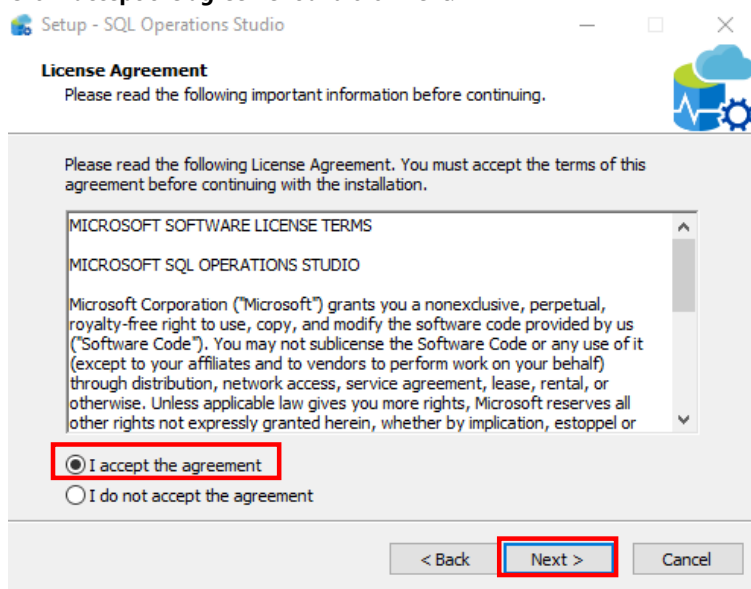

4. Click **Run**.

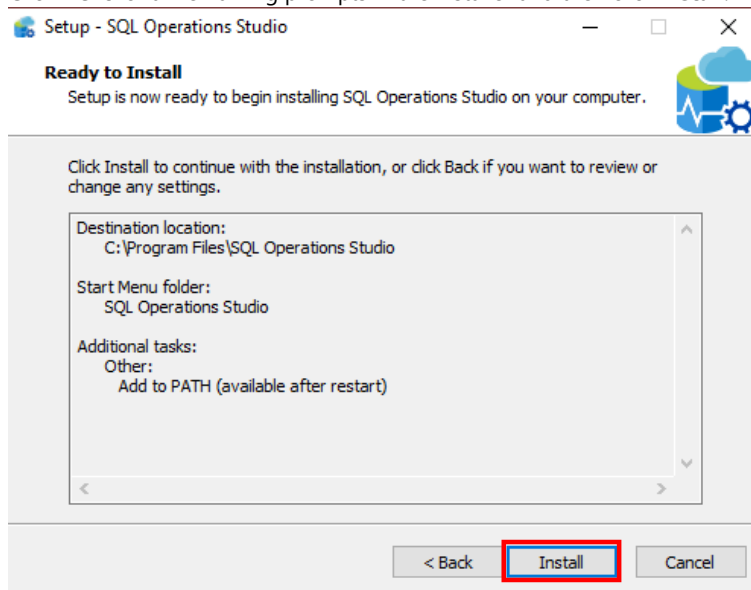5. When asked whether you want to allow this app to make changes to your device, click **Yes**.
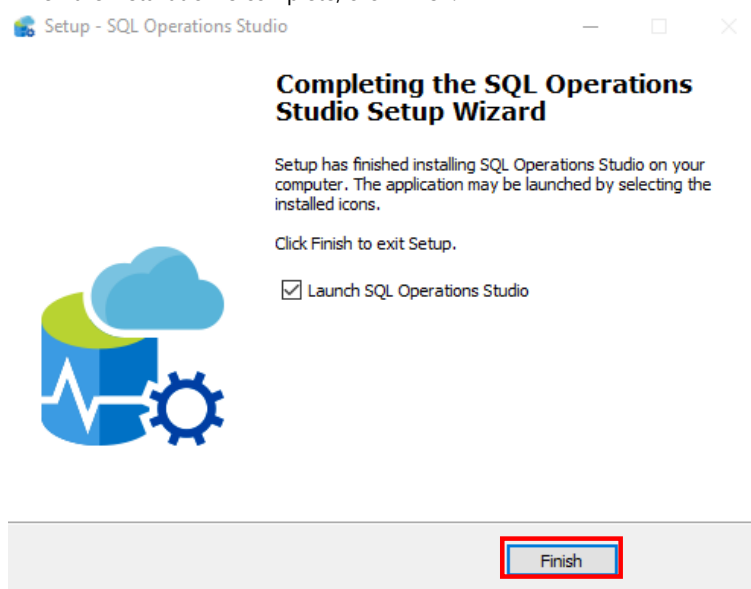
6. Click **Next**.
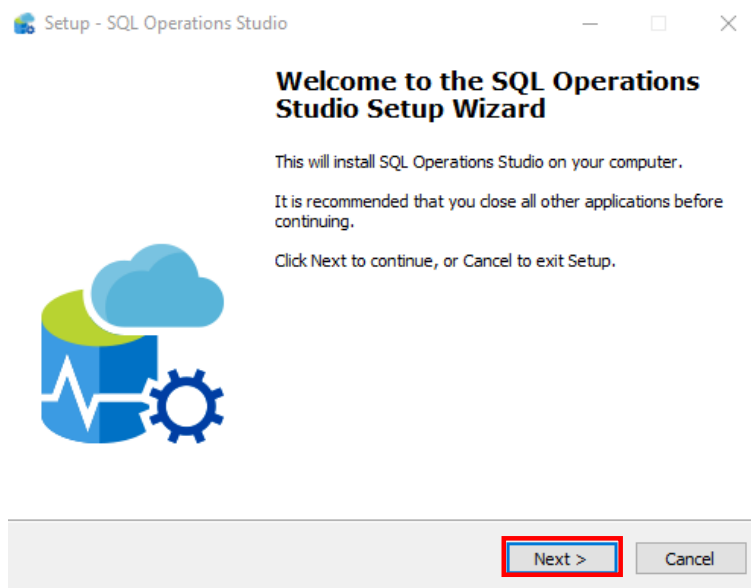
7. Click **I accept the agreement** and click **Next**.

8.   Click **Next** for all remaining prompts in the installer and then click **Install**.

9.   When the installation is complete, click Finish.

Install SQL Server Management Tools

In this task, you will install SQL Server management tools.

1. In the **SQL Server Installation Center** window, on the **Installation** page, click **Install SQL Server Management Tools**.
2. Click **Download SQL Server Management Studio**.

Download SQL Server Management Studio (16.5.3)

3. Click **Run**.
4. When setup is complete, click **Close** and close Internet Explorer.

5. To add a shortcut to the taskbar, at the bottom-left corner, click the **Windows** icon, and then commence typing **SQL Server**.
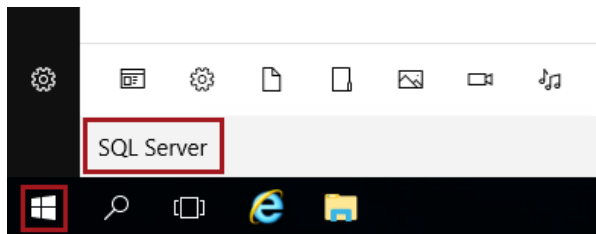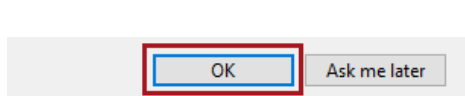
Installing the Lab Resources

In this task, you will download and extract the lab resources that support the labs.

1. To open Internet Explorer, on the taskbar, click the **Internet Explorer** shortcut.

2. In the **Internet Explorer 11** window, to accept the recommended settings, click **OK**.
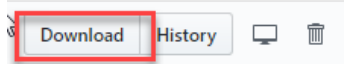
3. Maximize the Internet Explorer window.

4. In the Internet Explorer **URL** box, enter
https://github.com/MicrosoftLearning/dat243-Securing-Data

5.   Click on the file **DAT219x-Provisioning.zip**

6.   To download the lab resources, click **Download**.
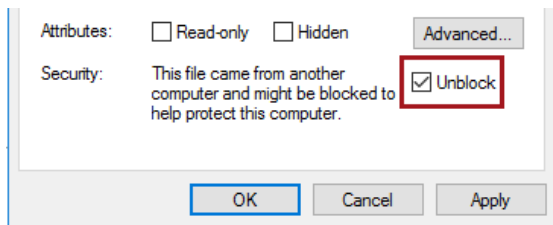

7.   Download the file (**Save As**) to **C:**.

8. When downloaded, open File Explorer.

9. Navigate to **C:**.

10. Right-click the **DAT219x-Provisioning.zip** file, and then select **Properties**.

11. In the window, check **Unblock**.

12. Click **OK**.

13. To extract the file content, right-click the **DAT219x-Provisioning.zip** file, and then select **Extract All**.

14. In the window, replace the folder path with **C:**.

    Be sure to extract the files to C:\, otherwise later steps in this lab will fail.
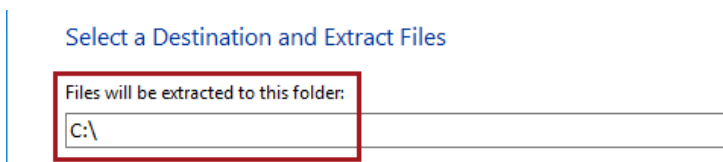
15. Click **Extract**.

16. Optionally, delete the **DAT219x-Provisioning.zip** file.

17. Verify that you have the **C:\Labs** folder.

18. In Internet Explorer, navigate to https://aka.ms/edx-dat243x-sql4.

    Tip: You can copy-and-paste the URL into the Remote Desktop window.

19. Click **Sign In**.

20. Type your Microsoft account name and click **Next**.

21. Type your password and click **Sign in**.

22. If prompted to complete any additional security steps, follow the instructions.

23. Click **Register to continue**.

Registration is required for this evaluation.

Register to continue

24. Fill in all the required fields and click **Continue**.

25. Click **SQL Server 2016 with SP1**.

Your evaluation may be accessed here:

SQL Server 2016 with SP1

26. Click the drop-down arrow adjacent to the **Save** button.

Save ▼

27. Click **Save as**.

28. Navigate to **Local Disk (C:)**.

29. Click **New folder**.

New folder

30. Type **Labs** and press **Enter**.

31. Click **Open**.

32. Click **Save**.

33. Close **Internet Explorer**.

Install the SQL Server Database Engine on Windows

In this task, you will install the SQL Server database engine in a Windows virtual machine.

1. Press the Windows button ⊞ .
2. Type **SQL Server Installation Center**.
3. Click **SQL Server Installation Center**.
4. In the **User Account Control** dialog box, click **Yes**.
5. In the **SQL Server Installation Center** window, on the **Installation** page, click **New SQL Server stand-alone installation or add features to an existing installation** and wait for SQL Server setup to start.
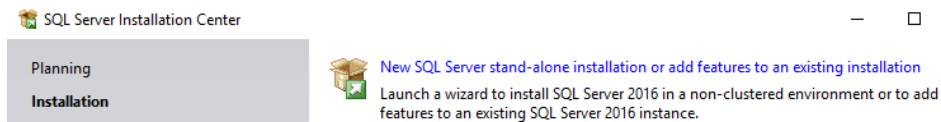
6. On the **Product Key** page, in the **Specify a free edition** box, select **Evaluation**, and then click **Next**.
7. On the **License Terms** page, note the Microsoft Software License Terms, select **I accept the license terms**, and then click **Next**.
8. On the **Microsoft Update** page ensure that **Use Microsoft Update to check for updates** is not selected and click **Next**. Note that this is to save time in the lab and, in a normal installation, you should select the checkbox.
9. On the **Install Rules** page note that there is a warning that you will need to configure your firewall and click **Next**.
10. On the **Feature Selection** page, under **Instance Features**, select **Database Engine Services**, and then click **Next**.
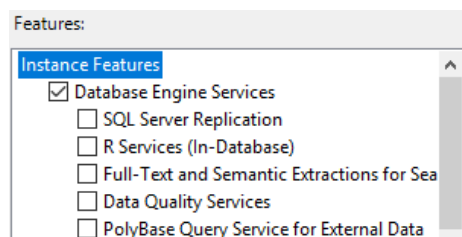
11. On the Instance Configuration page, ensure that **Default instance** is selected and click **Next**.

12. On the **Server Configuration** page click **Next**.

13. On the **Database Engine Configuration** page, on the **Server Configuration** tab, in the **Authentication Mode** section, select **Mixed Mode (SQL Server authentication and Windows authentication)**. Then enter and confirm the password, **Pa$$w0rd**.

14. Click **Add Current User**; this will add the user that you set up for the virtual machine.

15. On the **FILESTREAM** tab, ensure that **Enable FILESTREAM for Transact-SQL access** is not selected, and then click **Next**.

16. On the **Ready to Install** page, review the summary, then click **Install** and wait for the installation to complete.

17. On the **Complete** page, click **Close**.

18. Close the **SQL Server Installation Center** window and any other open windows.

Attach a SQL Server Database

In this task, you will attach a sample database.

1. Open Microsoft Edge, navigate to https://github.com/Microsoft/sql-server-samples/releases/tag/adventureworks and click **AdventureWorks2017.bak**.

   > **Commented [GA1]:** Does this need a link?

2. Click **Save as**.

3. Navigate to **C:\Labs** and click **Save**. Wait for the download to complete.

4. Start SQL Operations Studio.

5. Click **New Connection**.

6. In **Server**, type **localhost**, ensure that you are using Windows Authentication and click **Connect**.
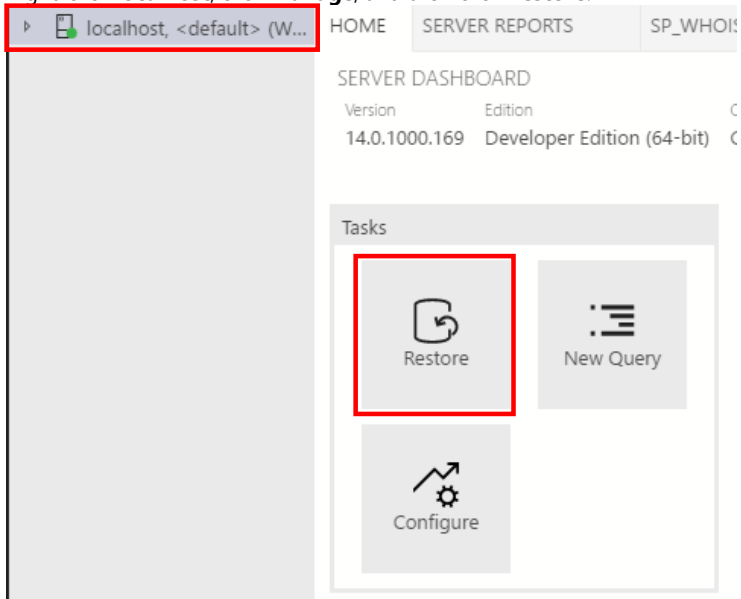
Connection type	Microsoft SQL Server ▾
Server	localhost
Authentication type	Windows Authentication ▾
User name	
Password	
	☐ Remember password
Database	\<Default\> ▾
Server group	\<Default\> ▾
	Advanced...

Connect   Cancel

7. Right-click **localhost**, click **Manage**, and then click **Restore**.

8. In **Restore from**, select **Backup file**, in **Backup file path**, type **C:\Labs\AdventureWorks 2016.bak**, and click **Restore**.
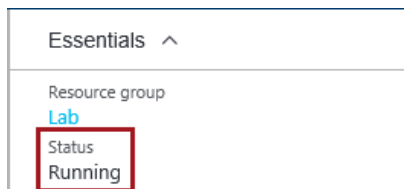

You have now completed the lab.

*If you are not immediately continuing with the next lab, you should complete the **Finishing Up** exercise to shut down and stop the VM.*

Connecting to the VM for subsequent Labs

Use this task to connect to the VM for subsequent lab exercises in this course.

1. In the VM blade, notice that the VM blade automatically opens, and that the VM status is **Running**.

*You are charged when the VM status is **Running**, but you are not charged—except for a relatively smaller storage cost—when the VM status is **Stopped (Deallocated)**.*

Each lab will include steps to remind you to stop and optionally deallocate the VM between labs. You should consider doing this if you choose to commence the next lab at a later time.
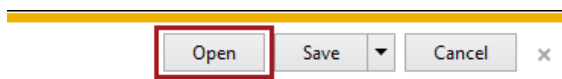
2. To connect to the VM, click **Connect** and click **Save**.

A Remote Desktop File (.rdp) file is downloaded to the desktop.

This file can be used to reconnect to the remote desktop session, but note that if you deallocate the VM and later re-start the VM, it will be likely that a different IP address will be assigned.
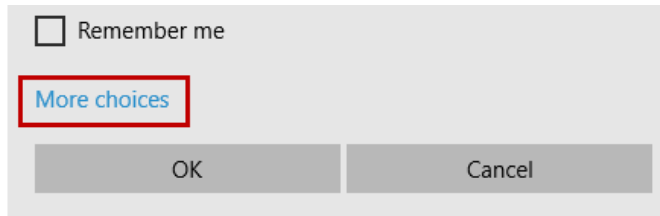
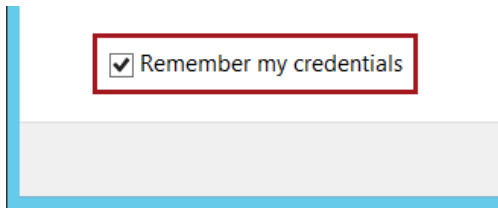3. When prompted by the web browser to open the Remote Desktop File, click **Open**.

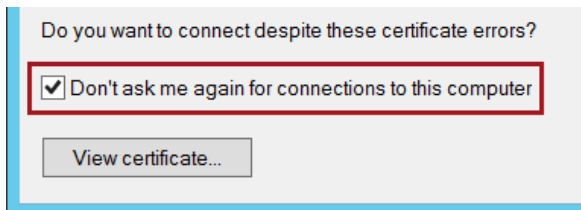4. If prompted to connect to the unknown publisher, click **Connect**.
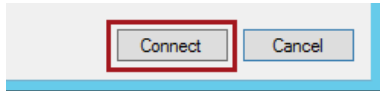
*To enter your credentials, you may need to select **More Choices**, and then select **Use a Different Account**.*

5. In the **Windows Security** window, enter the credentials you created for your VM.

6. Check the **Remember Me** or the **Remember My Credentials** checkbox.

7. Click **OK**.

8. In the **Remote Desktop Connection** window, check the
   **Don't Ask Me Again for Connections to This Computer** checkbox.

9. Click **Yes**.

10. If you have a second monitor, maximize the Remote Desktop window inside a single monitor.
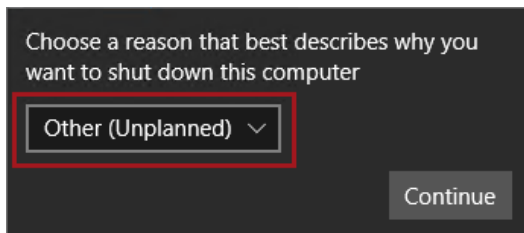
Finishing Up

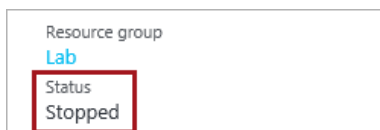In this exercise, you will shut down and stop the VM.

1. Close all open applications.

2. Press the **Windows** key, and then in the **Start** page, located at the bottom-left, click the **Power** button, and then select **Shut Down**.
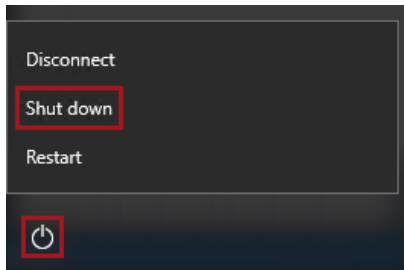
3. When prompted to choose a reason, to accept the default.

4. Click **Continue**.

5. In the **Azure Portal** Web browser page, wait until the status of the VM updates to **Stopped**.

    In this state, however, the VM is still billable.

6. Optionally, to deallocate the VM, click **Stop**.

    Deallocation will take some minutes to complete, and also extends the time required to restart the VM. Consider deallocating the VM if you want to reduce costs, or if you choose to complete the next lab after an extended period.
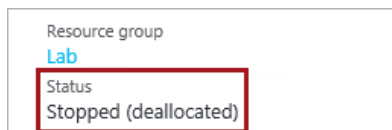

7. When prompted to stop the VM, click **Yes**.

    The deallocation can take several minutes to complete.

8. Verify that the VM status updates to **Stopped (Deallocated)**.

    In this state, the VM is now not billable—except for a relatively smaller storage cost.

    Note that a deallocated VM will likely acquire a different IP address the next time it is started.

9. Sign out of the **Azure Portal**.