DAT243x

Securing SQL Server

Lab 04 | Using Encryption

Estimated time to complete this lab is 30 minutes

Overview

In this lab, you are securing data in SQL Server for the IT department in Adventure Works Cycles.

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
- To have completed the previous labs in this course.

Exercise 1: Encrypt a Column with Transparent Data Encryption

In this exercise, you will encrypt a database, so that if the database files are stolen, they will not be accessible.

Start the virtual machine

In this task, you will start the virtual machine for the lab.

1. If the virtual machine that you created in Lab 00 is not already running, open the Azure Portal, sign in, select the virtual machine, and click **Start**.

Enable Transparent Data Encryption

In this task, you will create a user with Transact-SQL.

1. On your client machine. in SQL Operations Studio, right-click your server and click **New Query**.
2. In the query window, type the following Transact-SQL statement:

```
USE master;
GO
CREATE MASTER KEY ENCRYPTION BY PASSWORD = 'Pa55w.rd';
GO
CREATE CERTIFICATE LabServerCert WITH SUBJECT = 'Lab Key
Certificate';
GO
USE AdventureWorks2016;
GO
CREATE DATABASE ENCRYPTION KEY
WITH ALGORITHM = AES_256
ENCRYPTION BY SERVER CERTIFICATE LabServerCert;
GO
ALTER DATABASE AdventureWorks2016
SET ENCRYPTION ON;
```

3. To encrypt connections on Linux, you should also use Transport Layer Security (TLS). Implementing TLS is not required in this lab. See: https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-encrypted-connections?view=sql-server-linux-2017

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.*

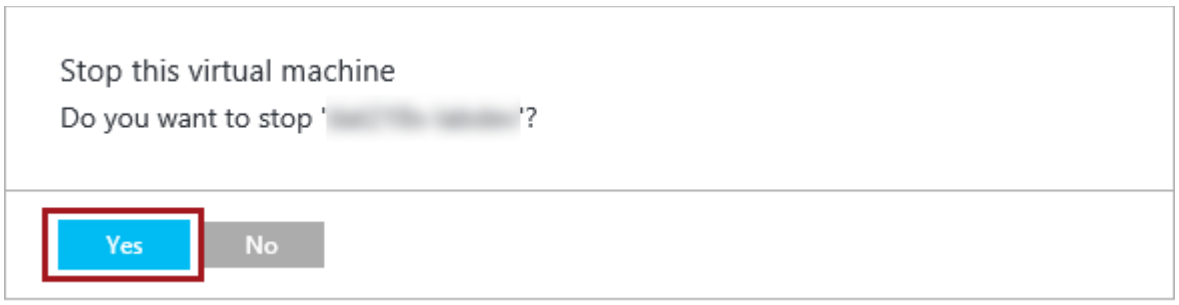
Finishing Up

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

1. Deallocate the Linux VM by clicking **Stop**.

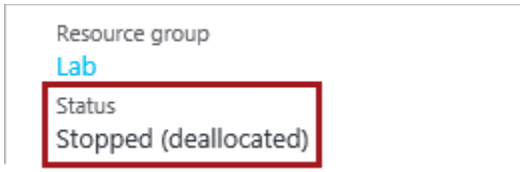
   Deallocation will take some minutes to complete, and also extends the time required to restart the VM. Consider deallocating the VM if you want to reduce costs, or if you choose to complete the next lab after an extended period.

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



   The deallocation can take several minutes to complete.

3. 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.

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