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Azure Developer Series

Migrating a dotnetcore 2-tier application to Azure,
using different architectures and DevOps best practices

Hands-On-Labs step-by-step guides

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Contents

Migrating a dotnetcore 2-tiered application to Azure using different architectures and DevOps best practices - Hands-On-Labs step-by-step

You are part of an organization that is running a dotnetcore e-commerce platform application, using Windows Server infrastructure on-premises today, comprising a WebVM running Windows Server 2012 R2 with Internet Information Server (IIS) and a 2nd SQLVM running Windows Server 2012 R2 and SQL Server 2014.

The business has approved a migration of this business-critical workload to Azure, and you are nominated as the cloud solution architect for this project. No decision has been made yet on what the final architecture should or will look like. Your first task is building a Proof-of-Concept in your Azure environment, to test out the different architectures possible:

- Infrastructure as a Service (IAAS)
- Platform as a Service (PAAS)
- Containers as a Service (CaaS)

At the same time, your CIO wants to make use of this project to switch from a more traditional mode of operations, with barriers between IT sysadmin teams and Developer teams, to a DevOps way of working. Therefore, you are tasked to explore Azure DevOps and determine where CI/CD Pipelines can assist in optimizing the deployment and running operations of this e-commerce platform, especially when deploying updates to the application.

As you are new to the continuous changes in Azure, you want to make sure this process goes as smooth as possible, starting from the assessment to migration to day-to-day operations.

Abstract and Learning Objectives

This workshop enables anyone to learn, understand and build a Proof of Concept, in performing a multi-tiered .Net Core web application using Microsoft SQL Server database, platform migration to Azure public cloud, leveraging on different Azure Infrastructure as a Service, Azure Platform as a Service (PaaS) and Azure Container offerings like Azure Container Instance (ACI) and Azure Kubernetes Services (AKS).

After an introductory module on cloud app migration strategies and patterns, students get introduced to the basics of automating Azure resources deployments using Visual Studio and Azure Resource Manager (ARM) templates. Next, attendees learn about the importance of performing proper assessments, and what tools Microsoft offers to help in this migration preparation phase. Once the application has been deployed on Azure Virtual Machines, students learn about Microsoft SQL database migration to SQL Azure PaaS, as well as deploying and migrating web applications to Azure Web Apps.

After these foundational platform components, the workshop will totally focus on the core concepts and advantages of using containers for running business workloads, based on Docker, Azure Container Registry (ACR), Azure Container Instance (ACI) and WebApps for Containers, as well as how to enable container orchestration and cloud-scale using Azure Kubernetes Service (AKS).

In the last part of the workshop, students get introduced to Azure DevOps, the new Microsoft Application Lifecycle environment, helping in building a CI/CD Pipeline to publish workloads using the DevOps principals and concepts, showing the integration with the rest of the already touched on Azure services like Azure Web Apps and Azure Kubernetes Services (AKS), closing the workshop with a module on overall Azure monitoring and operations and what tools Azure has available to assist your IT teams in this challenge.

The focus of the workshop is having a Hands-On-Labs experience, by going through the following exercises and tasks:

- Deploying a 2-tier Azure Virtual Machine (Webserver and SQL database Server) using ARM-template automation with Visual Studio 2019;
- Publishing a .NET Core e-commerce application to an Azure Web Virtual Machine and SQL DB Virtual Machine;
- Performing a proper assessment of the as-is Web and SQL infrastructure using Microsoft Assessment Tools;
- Migrating a SQL 2014 database to Azure SQL PaaS (Lift & Shift);
- Migrating a .NET Core web application to Azure Web Apps (Lift & Shift);
- Containerizing a .NET Core web application using Docker, and pushing to Azure Container Registry (ACR);
- Running Azure Container Instance (ACI) and WebApp for Containers;
- Deploy and run Azure Azure Kubernetes Services (AKS);

- Deploying Azure DevOps and building a CI/CD Pipeline for the subject e-commerce application;
- Managing and Monitoring Azure Kubernetes Services (AKS);

Requirements

Naming Conventions:

IMPORTANT: Most Azure resources require unique names. Throughout these steps you will see the word **"[SUFFIX]"** as part of resource names. You should replace this with your initials, guaranteeing those resources get uniquely named.

Azure Subscription:

Participants need a "pay-as-you-go", MSDN or other paid Azure subscription

a) In one of the Azure Container Services tasks, you are required to create an Azure AD Service Principal, wich typically requires an Azure subscription owner to log in to create this object. If you don't have the owner right in your Azure subscription, you could ask another person to execute this step for you.
b) The Azure subscription must allow you to run enough cores, used by the baseline Virtual Machines, but also later on in the tasks when deploying the Azure Container Services, where ACS agent and master machines are getting set up. If you follow the instructions as written out in the lab guide, you need 12 cores.
c) If you run this lab setup in your personal or corporate Azure payable subscription, using the configuration as described in the lab guide, the estimated Azure consumption costs for running the setups during the 2 days of the workshop is $20.

Other requirements:

Participants need a local client machine, running a recent Operating System, allowing them to:

- browse to https://portal.azure.com from a most-recent browser;
- establish a secured Remote Desktop (RDP) session to a lab-jumpVM running Windows Server 2016;

Alternative Approach:

Where the lab scenario assumes all exercises will be performed from within the lab-jumpVM, (since several tools will be installed on the lab-jumpVM or are already installed by default), participants could also execute (most, if not all…) steps from their local client machine.

The following tools are being used throughout the lab exercises:

- Visual Studio 2017 community edition (updated to latest version); this could also be Visual Studio 2019 community edition - latest version
- Docker for Windows (updated to latest version)
- Azure CLI 2.0 (updated to latest version)
- Kubernetes CLI (updated to latest version)
- SimplCommerce Open Source e-commerce platform example (http://www.simplcommerce.com)

Make sure you have these tools installed prior to the workshop, if you are not using the lab-jumpVM. You should also have full administrator rights on your machine to execute certain steps within using these tools.

Final Remarks:

VERY IMPORTANT: You should be typing all of the commands as they appear in the guide, except where explicitly stated in this document. Do not try to copy and paste from Word to your command windows or other documents where you are instructed to enter information shown in this document. There can be issues with Copy and Paste from Word or PDF that result in errors, execution of instructions, or creation of file content.

IMPORTANT: Most Azure resources require unique names. Throughout these steps you will see the word “[SUFFIX]” as part of resource names. You should replace this with your initials, guaranteeing those resources get uniquely named.

Lab 3: Deploying an Azure SQL database and migrating from SQL VM

What you will learn

In this lab, you perform a migration from a SQL 2014 database running on the SQLVM, to SQL Azure PaaS, using SQL Server Management Studio (SSMS):

- Deploy a new SQL Azure server instance;
- Authenticate to SSMS on the SQLVM Virtual Machine;
- Run the database migration wizard from within SSMS;
- Verify the successful migration of the SQL database from the VM to Azure;
- Update the connection strings on the WebVM web application to point to the SQL Azure database instead of the on-premises one on SQLVM;
- Optional: migrate the database using Azure Database Migration Assistant

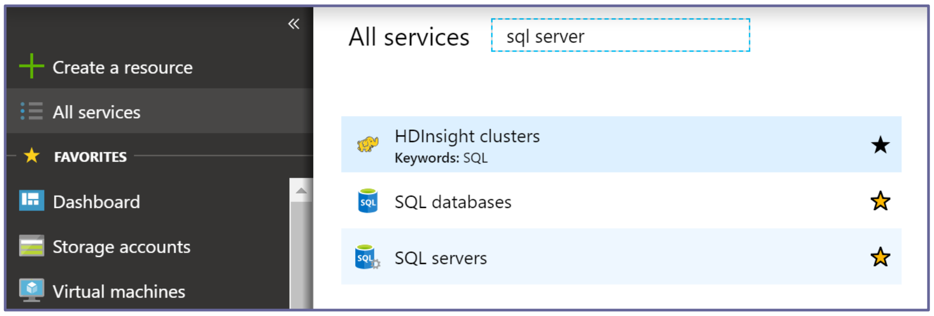
Time estimate

This lab is estimated to take **60min**, assuming your Azure subscription is already available.

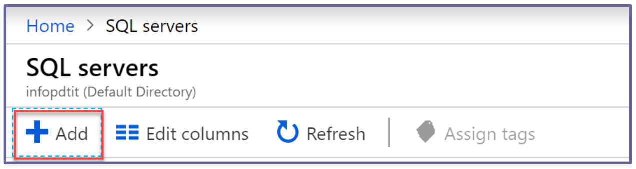
Task 1: Deploying a new SQL Azure Server instance

In this task, you start from deploying a new SQL Azure Server instance from within the Azure Portal, allowing you to migrate a database to it in the next task.

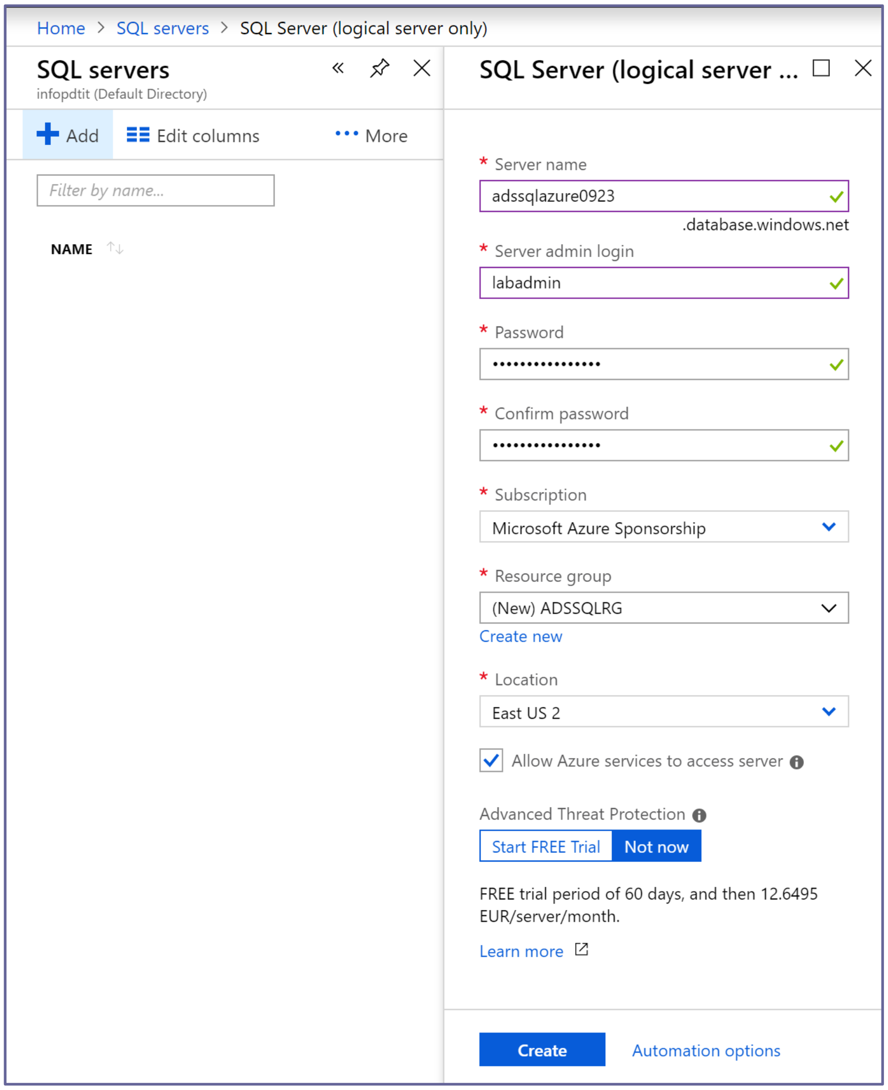
1. From within the **Azure Portal**, Go to "**All Services**", and enter "**SQL Server**" in the search field. From the list of results, select **SQL Servers**.



2. **Click** "Create a new SQL Server", or **Click** the "**+Add**" button in the top menu. This launches the SQL Server (logical server) deployment blade.



3. Complete the different deployment settings as follows:
   - Server Name: [suffix]sqlazure[date] e.g. adssqlazure0923 (capitals are not allowed)
   - Server admin login: labadmin
   - Password: L@BadminPa55w.rd / confirm password: L@BadminPa55w.rd
   - Subscription: your Azure subscription
   - Resource Group: Create New / [suffix]SQLRG
   - Location: Azure location close to you
   - Allow Azure Services to access server: checked
   - Advanced Threat Protection: Not Now



* Server name: adssqlazure0923 .database.windows.net

* Server admin login: labadmin

* Password: ••••••••••••••••

* Confirm password: ••••••••••••••••

* Subscription: Microsoft Azure Sponsorship

* Resource group: (New) ADSSQLRG

* Location: East US 2

[✓] Allow Azure services to access server

Advanced Threat Protection: Start FREE Trial [✓ Not now]

FREE trial period of 60 days, and then 12.6495 EUR/server/month.

4. Confirm the creation of the SQL Azure Server by pressing the Create button.

5. Wait for the deployment to complete.

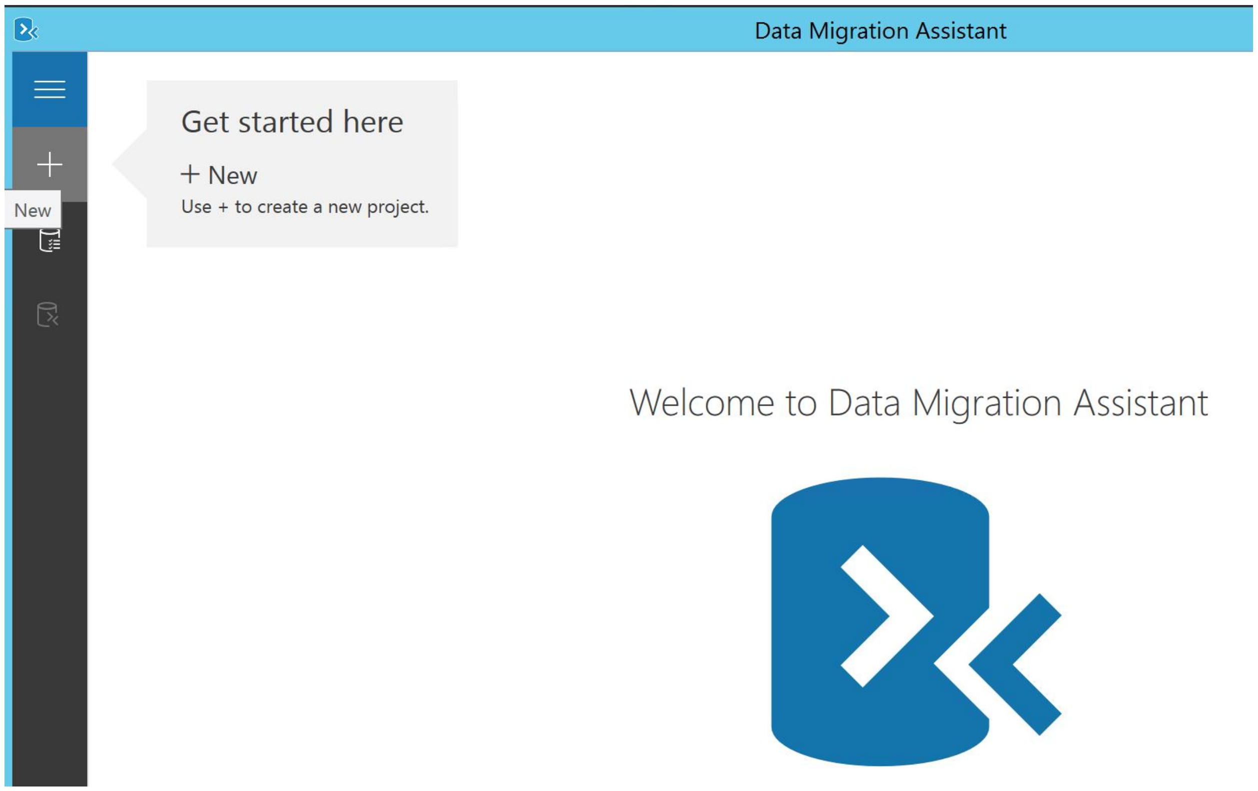
6. Once the SQL Azure server has been deployed successfully, continue to Task 2.

Task 2: Performing a SQL database migration from a SQL Virtual Machine to SQL Azure, using SQL Data Migration Assistant.

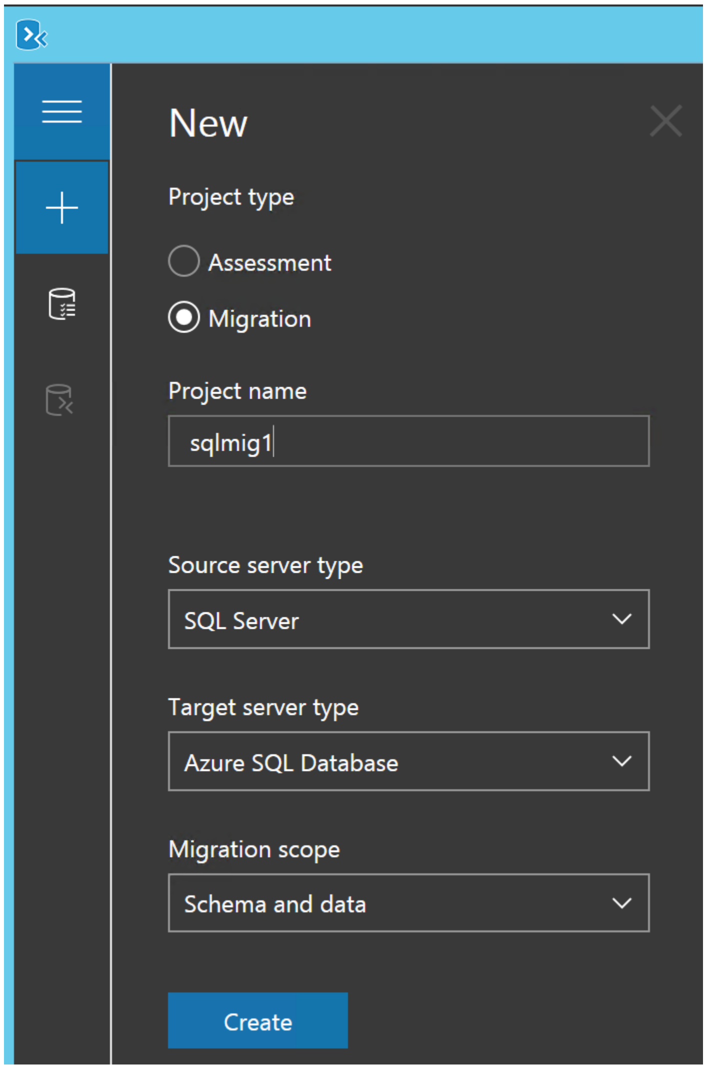
In this task, you perform a SQL database migration from within a SQL Virtual Machine to SQL Azure. This approach is known as a lift & shift database migration, since no structure or data will be changed during the actual migration. Continuing on the path of the Azure migration tools available, you will use the Azure Data Migration Assistant you used earlier in the assessment phase, to perform the actual migration.

1. Open an RDP session to the WebVM Virtual Machine (using the same steps as described in the previous lab).

2. Once you are logged on to the WebVM RDP session, launch Database Migration Assistant (from a shortcut on the desktop or Start Menu).


Data Migration Assistant
Get started here
+ New
Use + to create a new project.
New
Welcome to Data Migration Assistant

3. Click on "+", to create a new project.


New

Project type

( ) Assessment
(●) Migration

Project name

sqlmig1

Source server type

SQL Server

Target server type

Azure SQL Database

Migration scope

Schema and data

4. Provide the following parameters:

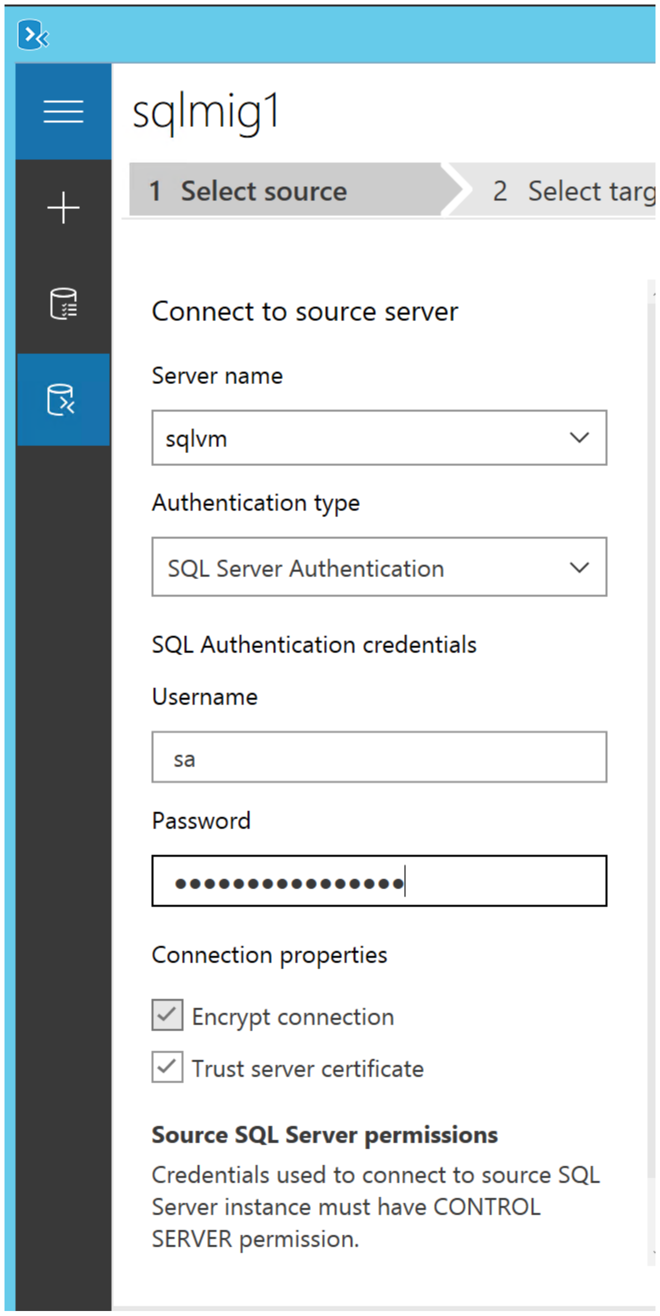
- Project Type	Migration
- Project Name	SQLMig1
- Source Server	SQL Server
- Target Server	Azure SQL Database
- Migration Scope	Schema and Data

5. Press the Create button to start this project.

6. This opens the SQL Migration dashboard; in Step 1, complete the following parameters to connect to the source server:

- Server Name	sqlvm

- Authentication type	SQL Server Authentication
- username	sa
- Password	L@BadminPa55w.rd
- Encrypt Connection	yes
- trust certificate	yes


sqlmig1

Connect to source server

Server name: sqlvm

Authentication type: SQL Server Authentication

SQL Authentication credentials

Username: sa

Password: ••••••••••••••••

Connection properties

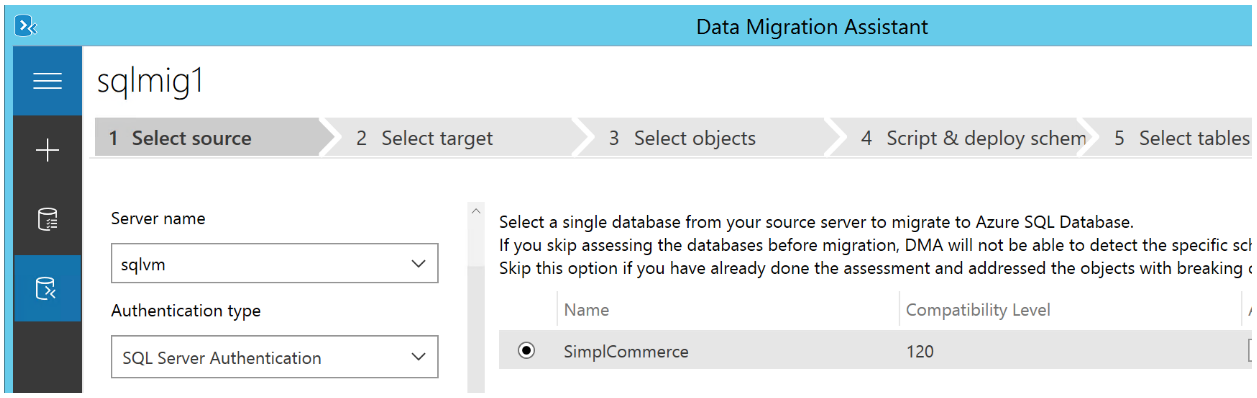
☑ Encrypt connection

☑ Trust server certificate

Source SQL Server permissions

Credentials used to connect to source SQL Server instance must have CONTROL SERVER permission.

7. This will detect the SimplCommerce SQL database running on the SQL VM. Select it and press Next.



Server name: sqlvm

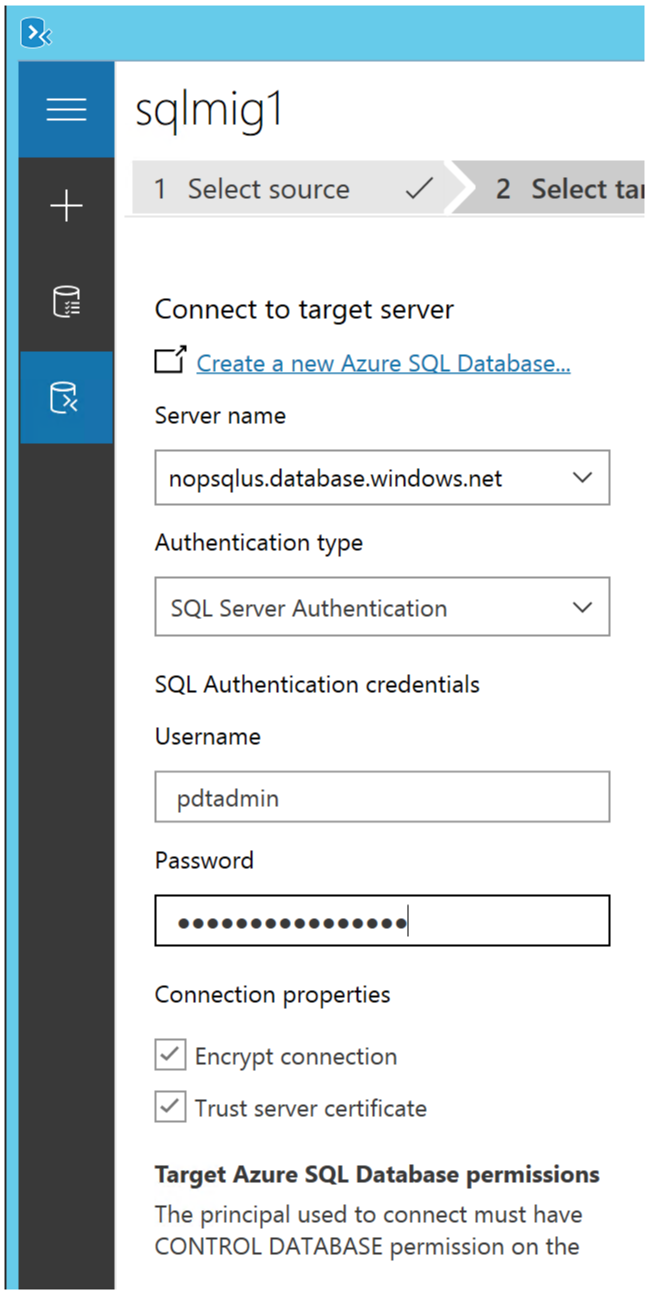
Authentication type: SQL Server Authentication

Select a single database from your source server to migrate to Azure SQL Database.
If you skip assessing the databases before migration, DMA will not be able to detect the specific sch
Skip this option if you have already done the assessment and addressed the objects with breaking

	Name	Compatibility Level
●	SimplCommerce	120

8. In the "Select Target" step, complete the following parameters:

- Server Name	servername of the SQL Azure server [suffix]db.database.windows.net
- Authentication	SQL Server Authentication
- Username	labadmin
- Password	L@BadminPa55w.rd
- Encrypt connection	yes
- Trust certificate	yes


sqlmig1

1 Select source ✓ 2 Select tar

Connect to target server

Create a new Azure SQL Database...

Server name

nopsqlus.database.windows.net

Authentication type

SQL Server Authentication

SQL Authentication credentials

Username

pdtadmin

Password

●●●●●●●●●●●●●●●●

Connection properties

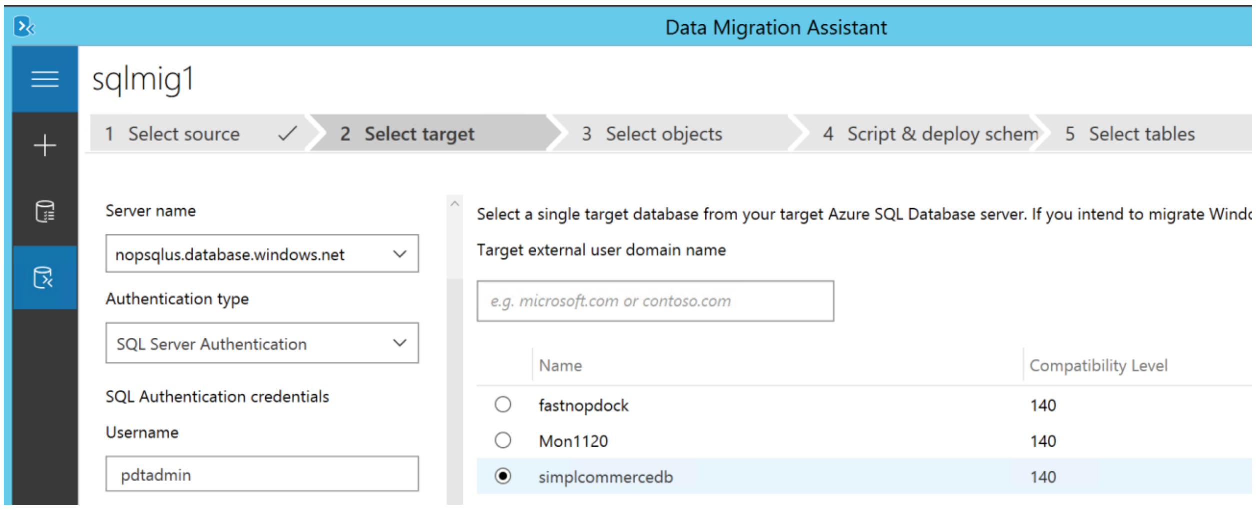
✓ Encrypt connection

✓ Trust server certificate

Target Azure SQL Database permissions

The principal used to connect must have CONTROL DATABASE permission on the

9. This detects the SQL Azure Database instance you created earlier.


Data Migration Assistant

sqlmig1

1 Select source ✓ | 2 Select target | 3 Select objects | 4 Script & deploy schem | 5 Select tables

Server name: nopsqlus.database.windows.net

Authentication type: SQL Server Authentication

SQL Authentication credentials

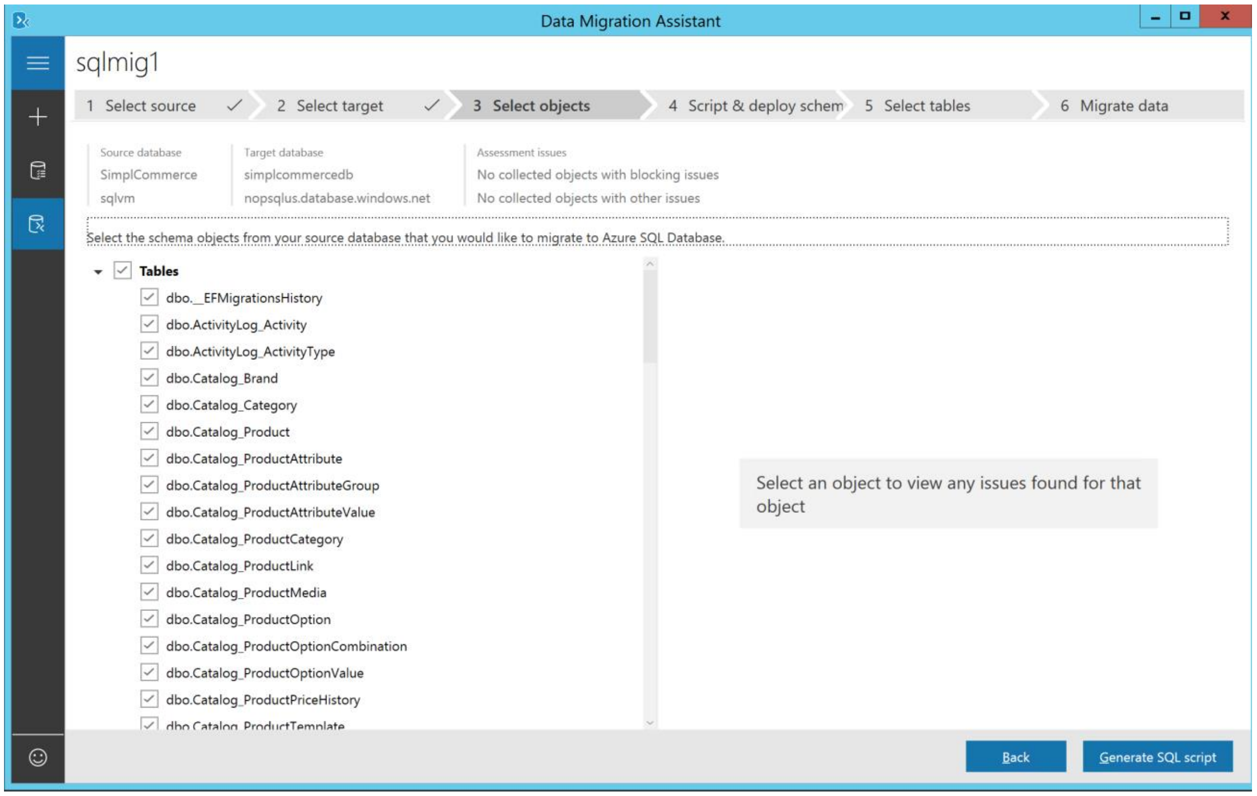
Username: pdtadmin

Select a single target database from your target Azure SQL Database server. If you intend to migrate Windo

Target external user domain name: e.g. microsoft.com or contoso.com

	Name	Compatibility Level
○	fastnopdock	140
○	Mon1120	140
●	simplcommercedb	140

10. This moves you to the "**Select Objects**" step. By default, all tables are selected, which is Ok for our scenario.


Data Migration Assistant

sqlmig1

1 Select source ✓ | 2 Select target ✓ | 3 Select objects | 4 Script & deploy schem | 5 Select tables | 6 Migrate data

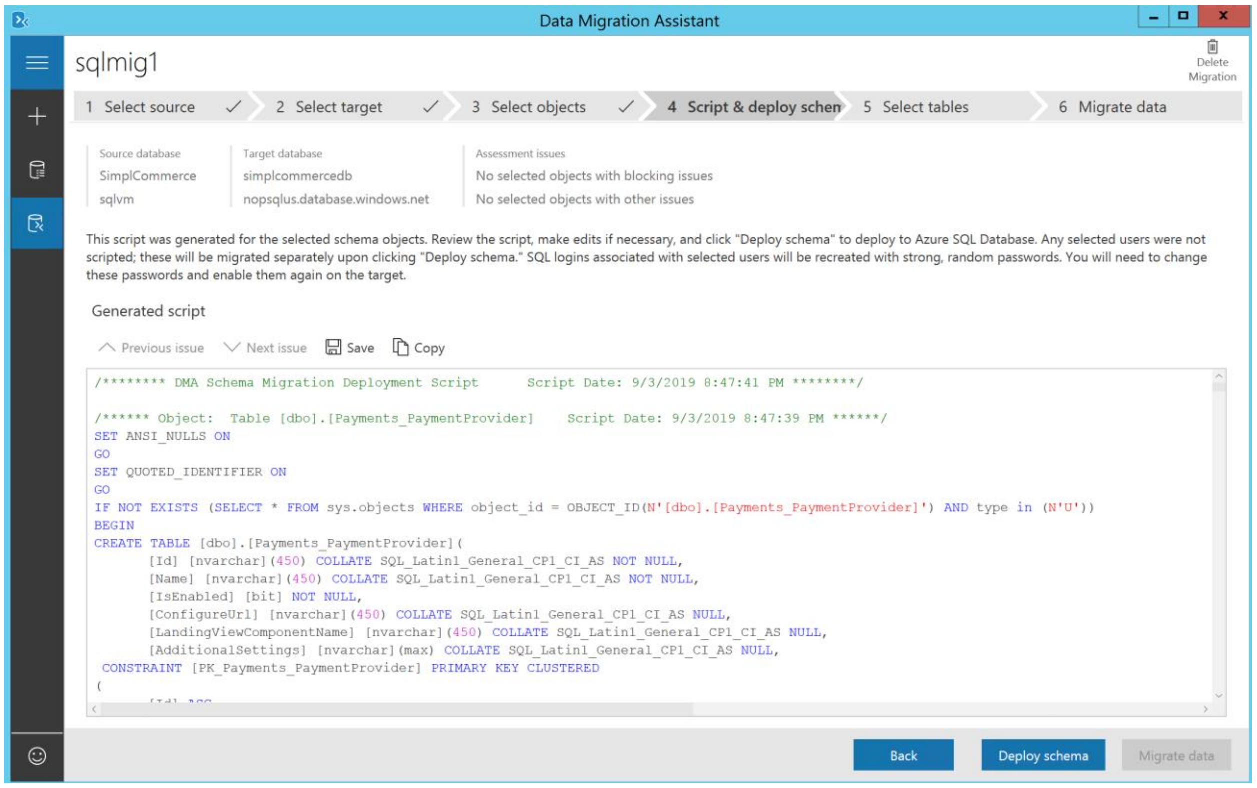
Source database	Target database	Assessment issues
SimplCommerce	simplcommercedb	No collected objects with blocking issues
sqlvm	nopsqlus.database.windows.net	No collected objects with other issues

Select the schema objects from your source database that you would like to migrate to Azure SQL Database.

- ✓ Tables
  - ✓ dbo.__EFMigrationsHistory
  - ✓ dbo.ActivityLog_Activity
  - ✓ dbo.ActivityLog_ActivityType
  - ✓ dbo.Catalog_Brand
  - ✓ dbo.Catalog_Category
  - ✓ dbo.Catalog_Product
  - ✓ dbo.Catalog_ProductAttribute
  - ✓ dbo.Catalog_ProductAttributeGroup
  - ✓ dbo.Catalog_ProductAttributeValue
  - ✓ dbo.Catalog_ProductCategory
  - ✓ dbo.Catalog_ProductLink
  - ✓ dbo.Catalog_ProductMedia
  - ✓ dbo.Catalog_ProductOption
  - ✓ dbo.Catalog_ProductOptionCombination
  - ✓ dbo.Catalog_ProductOptionValue
  - ✓ dbo.Catalog_ProductPriceHistory
  - ✓ dbo.Catalog_ProductTemplate

Select an object to view any issues found for that object

11. **Press "Generate SQL Script"** button



Source database
SimplCommerce
sqlvm

Target database
simplcommercedb
nopsqlus.database.windows.net

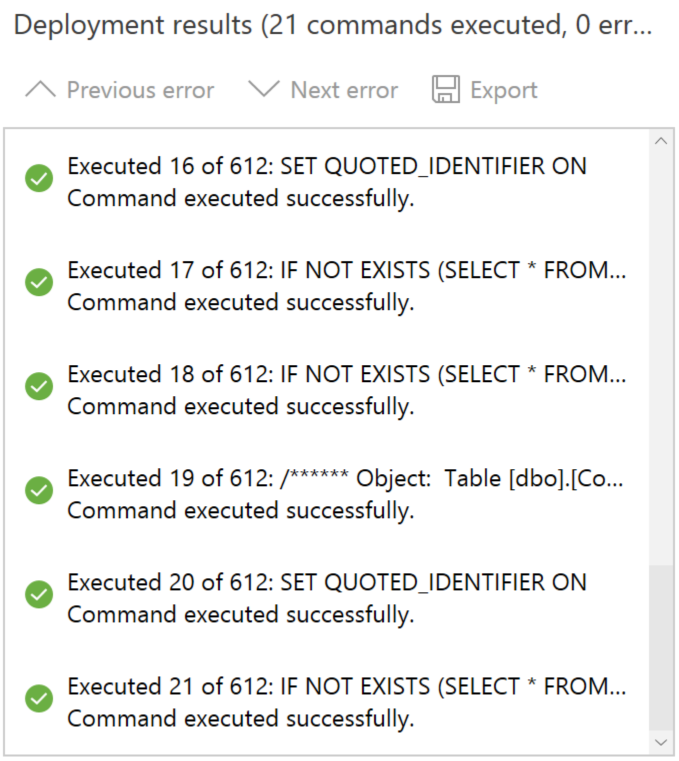
Assessment issues
No selected objects with blocking issues
No selected objects with other issues

This script was generated for the selected schema objects. Review the script, make edits if necessary, and click "Deploy schema" to deploy to Azure SQL Database. Any selected users were not scripted; these will be migrated separately upon clicking "Deploy schema." SQL logins associated with selected users will be recreated with strong, random passwords. You will need to change these passwords and enable them again on the target.

Generated script

```
/******** DMA Schema Migration Deployment Script      Script Date: 9/3/2019 8:47:41 PM ********/

/****** Object:  Table [dbo].[Payments_PaymentProvider]    Script Date: 9/3/2019 8:47:39 PM ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
IF NOT EXISTS (SELECT * FROM sys.objects WHERE object_id = OBJECT_ID(N'[dbo].[Payments_PaymentProvider]') AND type in (N'U'))
BEGIN
CREATE TABLE [dbo].[Payments_PaymentProvider](
	[Id] [nvarchar](450) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
	[Name] [nvarchar](450) COLLATE SQL_Latin1_General_CP1_CI_AS NOT NULL,
	[IsEnabled] [bit] NOT NULL,
	[ConfigureUrl] [nvarchar](450) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
	[LandingViewComponentName] [nvarchar](450) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
	[AdditionalSettings] [nvarchar](max) COLLATE SQL_Latin1_General_CP1_CI_AS NULL,
 CONSTRAINT [PK_Payments_PaymentProvider] PRIMARY KEY CLUSTERED
(
```

12. To run the actual migration, starting with the database schema, press “Deploy Schema”.

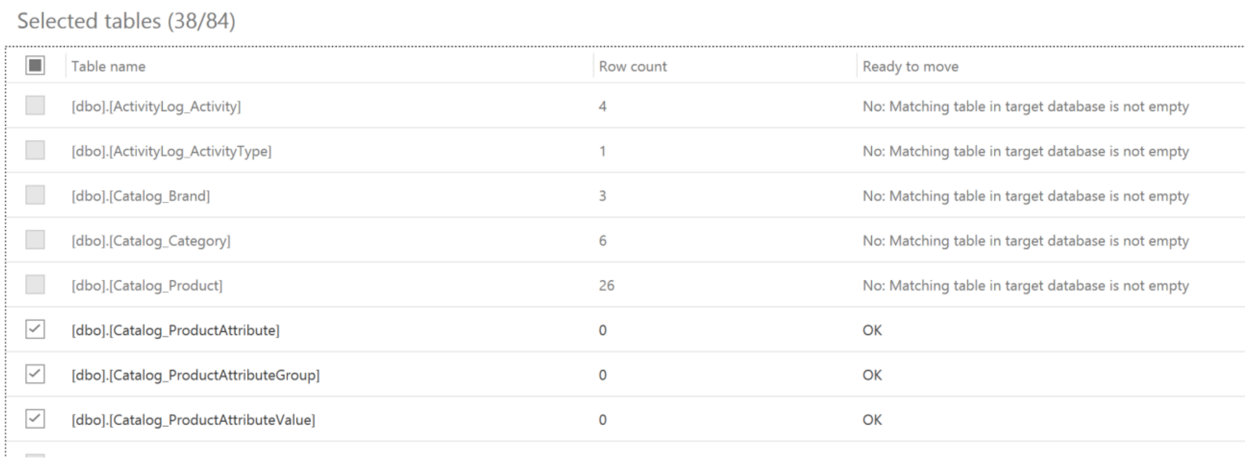


Deployment results (21 commands executed, 0 err...

```
Executed 16 of 612: SET QUOTED_IDENTIFIER ON
Command executed successfully.

Executed 17 of 612: IF NOT EXISTS (SELECT * FROM...
Command executed successfully.

Executed 18 of 612: IF NOT EXISTS (SELECT * FROM...
Command executed successfully.

Executed 19 of 612: /****** Object:  Table [dbo].[Co...
Command executed successfully.

Executed 20 of 612: SET QUOTED_IDENTIFIER ON
Command executed successfully.

Executed 21 of 612: IF NOT EXISTS (SELECT * FROM...
Command executed successfully.
```

13. Wait for this step to complete successfully. This should take only a few minutes.

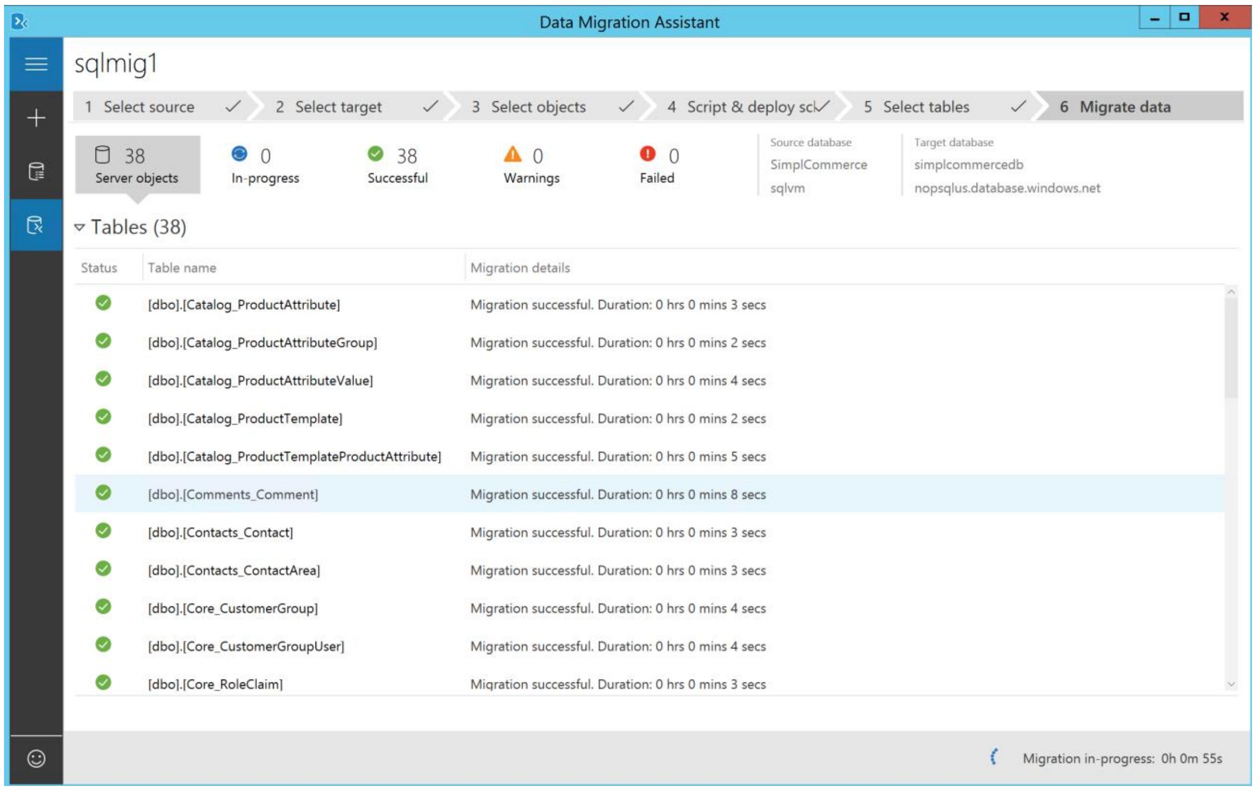
14. **Lastly**, press the **"Migrate Data"** button to start the actual database content migration. This will first show a list of tables; make sure all tables are selected here to not miss any data.



Selected tables (38/84)

	Table name	Row count	Ready to move
	[dbo].[ActivityLog_Activity]	4	No: Matching table in target database is not empty
	[dbo].[ActivityLog_ActivityType]	1	No: Matching table in target database is not empty
	[dbo].[Catalog_Brand]	3	No: Matching table in target database is not empty
	[dbo].[Catalog_Category]	6	No: Matching table in target database is not empty
	[dbo].[Catalog_Product]	26	No: Matching table in target database is not empty
✓	[dbo].[Catalog_ProductAttribute]	0	OK
✓	[dbo].[Catalog_ProductAttributeGroup]	0	OK
✓	[dbo].[Catalog_ProductAttributeValue]	0	OK

15. **And confirm**, by pressing the **Start Data Migration** button.



Data Migration Assistant

sqlmig1

1 Select source ✓ | 2 Select target ✓ | 3 Select objects ✓ | 4 Script & deploy sc✓ | 5 Select tables ✓ | 6 Migrate data

38 Server objects | 0 In-progress | 38 Successful | 0 Warnings | 0 Failed

Source database: SimplCommerce, sqlvm

Target database: simplcommercedb, nopsqlus.database.windows.net

Tables (38)

Status	Table name	Migration details
✓	[dbo].[Catalog_ProductAttribute]	Migration successful. Duration: 0 hrs 0 mins 3 secs
✓	[dbo].[Catalog_ProductAttributeGroup]	Migration successful. Duration: 0 hrs 0 mins 2 secs
✓	[dbo].[Catalog_ProductAttributeValue]	Migration successful. Duration: 0 hrs 0 mins 4 secs
✓	[dbo].[Catalog_ProductTemplate]	Migration successful. Duration: 0 hrs 0 mins 2 secs
✓	[dbo].[Catalog_ProductTemplateProductAttribute]	Migration successful. Duration: 0 hrs 0 mins 5 secs
✓	[dbo].[Comments_Comment]	Migration successful. Duration: 0 hrs 0 mins 8 secs
✓	[dbo].[Contacts_Contact]	Migration successful. Duration: 0 hrs 0 mins 3 secs
✓	[dbo].[Contacts_ContactArea]	Migration successful. Duration: 0 hrs 0 mins 3 secs
✓	[dbo].[Core_CustomerGroup]	Migration successful. Duration: 0 hrs 0 mins 4 secs
✓	[dbo].[Core_CustomerGroupUser]	Migration successful. Duration: 0 hrs 0 mins 4 secs
✓	[dbo].[Core_RoleClaim]	Migration successful. Duration: 0 hrs 0 mins 3 secs

Migration in-progress: 0h 0m 55s

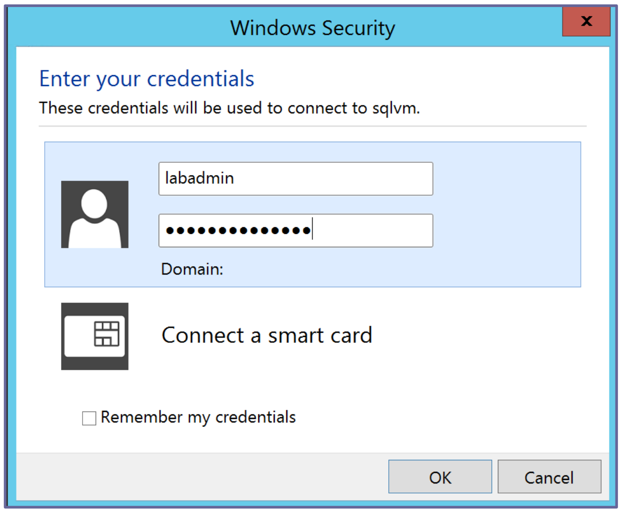
16. Wait for this process to complete successfully; this should take about 10 minutes on average.

Task 3 (Optional): Using SQL Management Studio to migrate from SQL VM to SQL Azure Instance

1. If your DBA team is familiar with SQL Server Management Studio, know they can keep using this tool to perform the actual SQL database migration as well. To use this method, open an **RDP Session** to the **WebVM** (labadmin / L@BadminPa55w.rd).

2. Next, from within the RDP session of the WebVM, open a 2nd RDP session to the SQLVM machine (remember, the SQL VM has no public IP address, not making it reachable from the outside).

3. As server name, type "**SQLVM**". (Since both Virtual Machines are in the same Azure Virtual Network and subnet, the netbios name resolution works, relying on Azure DNS). **Press connect.**



Windows Security

Enter your credentials

These credentials will be used to connect to sqlvm.

labadmin

••••••••••••••

Domain:

Connect a smart card

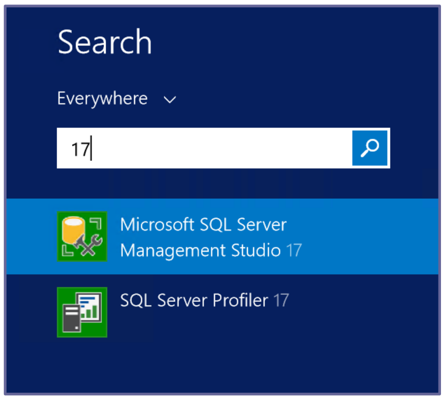
Remember my credentials

4. Provide the local admin credentials of the SQLVM Virtual Machine:
   - labadmin
   - L@BadminPa55w.rd

   and confirm with **OK**.

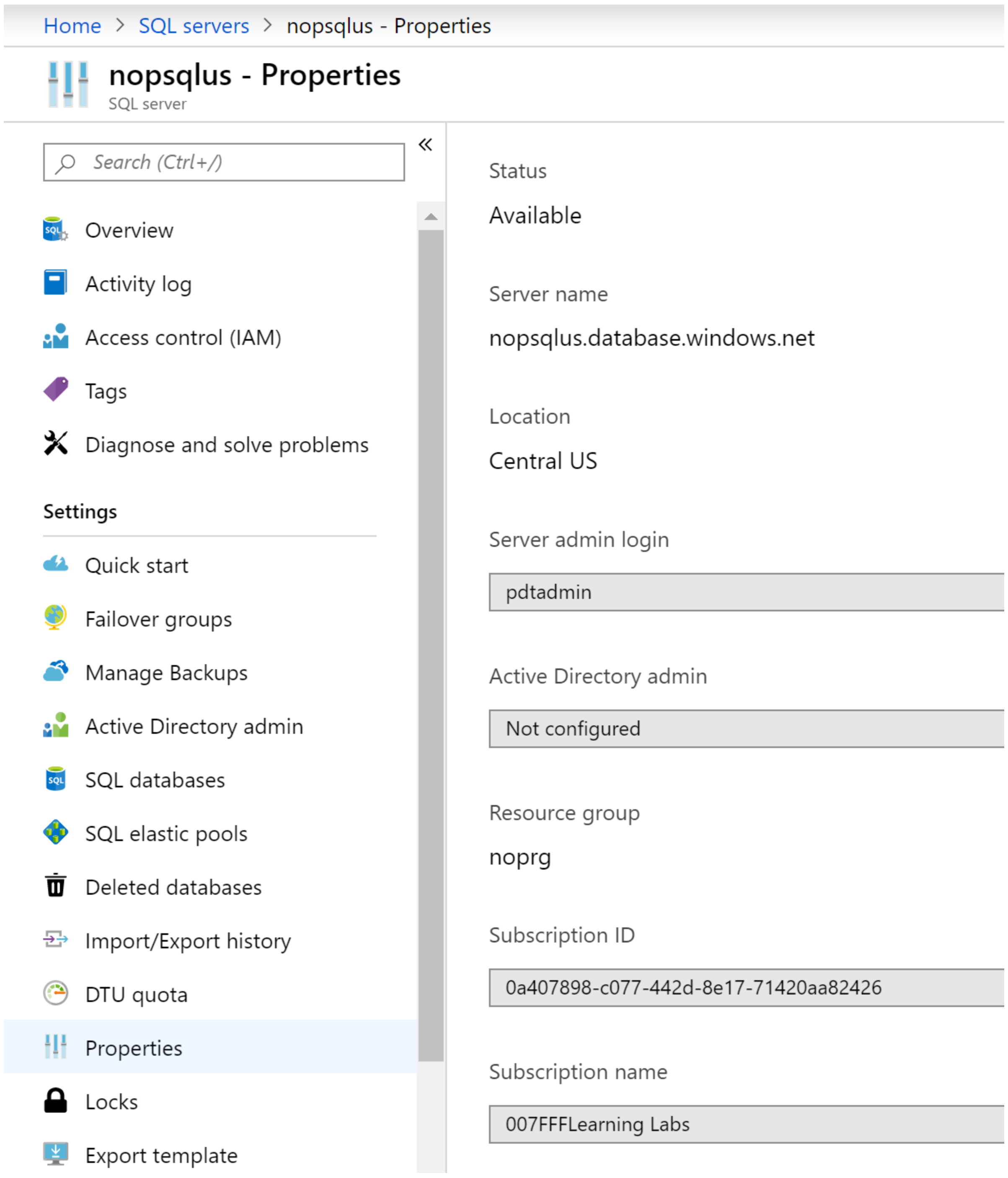
5. Once you **are logged on** to the **SQL Server Virtual Machine** (notice the SQL Getting Started shortcut on the desktop), press the **Start button**. **Start typing "17**"; this will resolve several

management tools available on the server. Notice Microsoft SQL Server Management Studio 17.



6. Select it to start the SQL Server Management Studio 17 console.

7. Once opened, you are asked for server connection information. This is where you provide the SQL Azure name. You can find this in the Azure Portal, by browsing to your SQL Azure instance, and selecting its properties


Home > SQL servers > nopsqlus - Properties

nopsqlus - Properties

SQL server

Status
Available

Server name
nopsqlus.database.windows.net

Location
Central US

Server admin login
pdtadmin

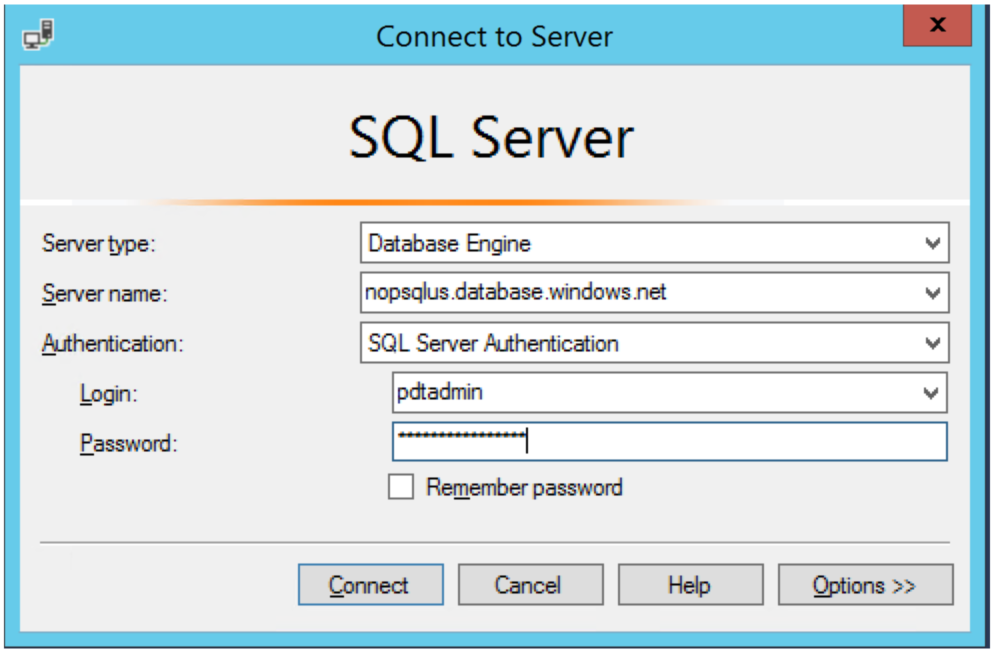
Active Directory admin
Not configured

Resource group
noprg

Subscription ID
0a407898-c077-442d-8e17-71420aa82426

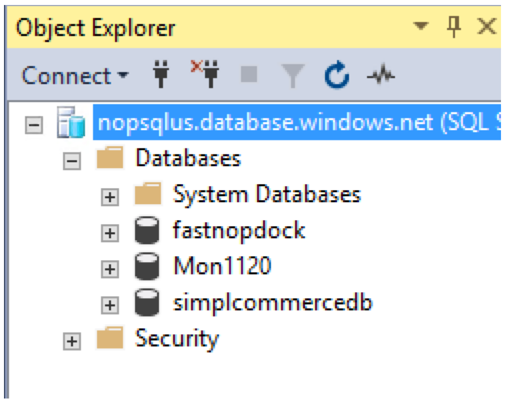
Subscription name
007FFFLearning Labs

8. Copy the SERVER NAME into the Server Name field of the SQL connection popup; in the Authentication field, change to SQL Server Authentication. Provide the Login and Password of the SQL Azure instance account you provided during the deployment of this resource. (labadmin / L@BadminPa55w.rd would be the instructed ones)

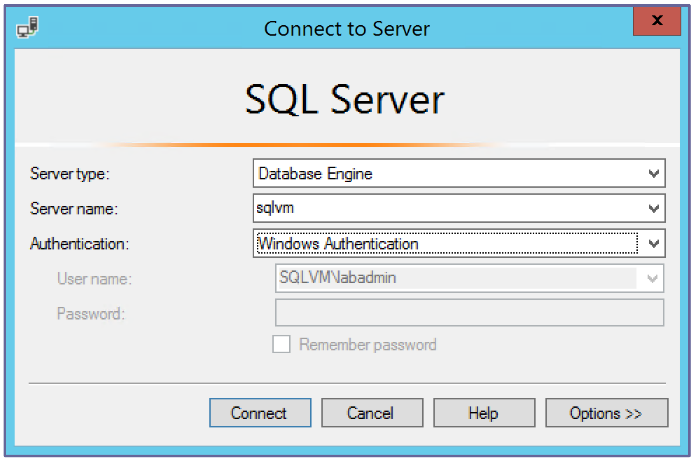


Server type: Database Engine
Server name: nopsqlus.database.windows.net
Authentication: SQL Server Authentication
Login: pdtadmin
Password: ****************
Remember password

9. Press Connect to log on to this SQL Server instance.



10. In order to have a connection to the SQL VM database instance, we need to add another connection. From the SQL Management Studio console, click File / Connect Object Explorer. In the Connect to server popup that appears, this time provide the server credentials from the SQLVM:
server name: sqlvm
authentication: Windows Authentication


Connect to Server

SQL Server

Server type: Database Engine

Server name: sqlvm

Authentication: Windows Authentication

User name: SQLVM\labadmin

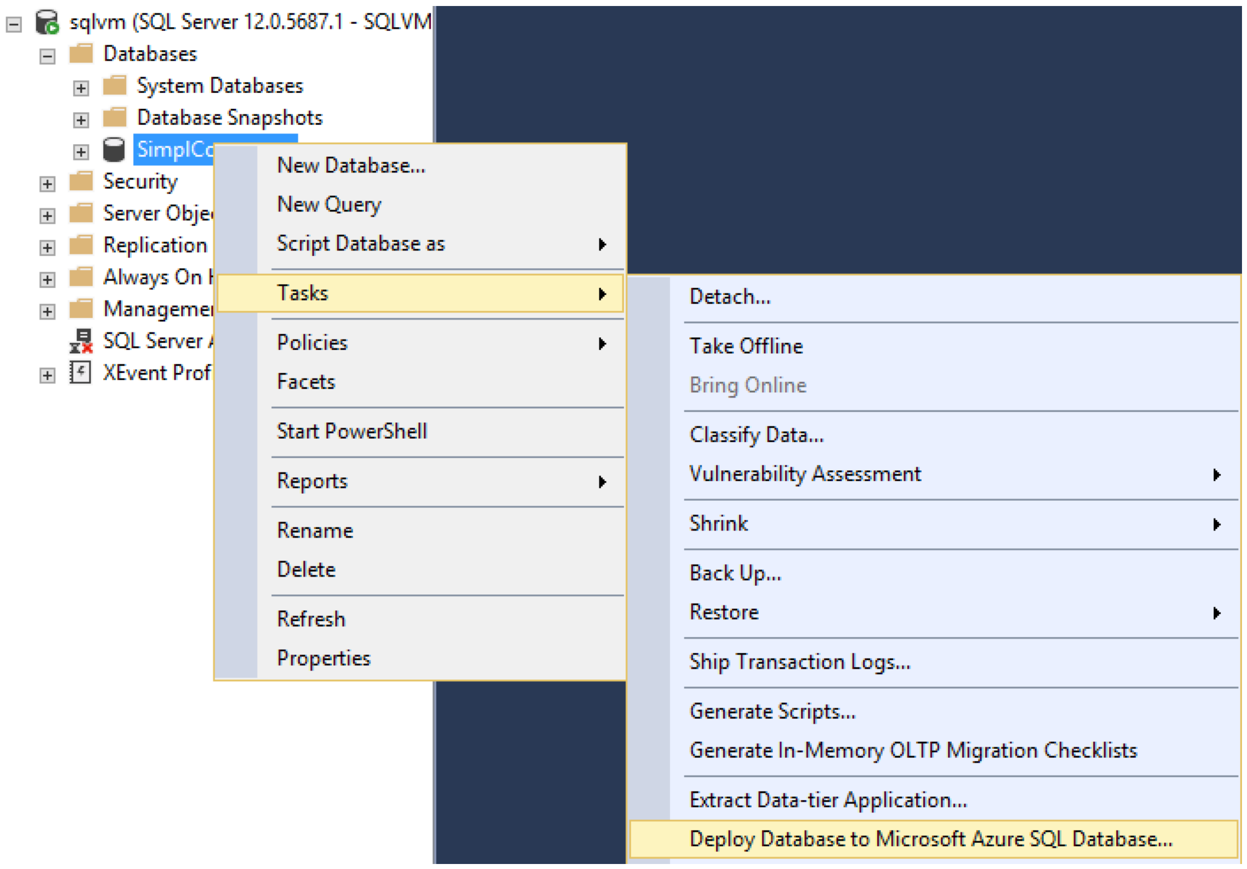
Password:

Remember password

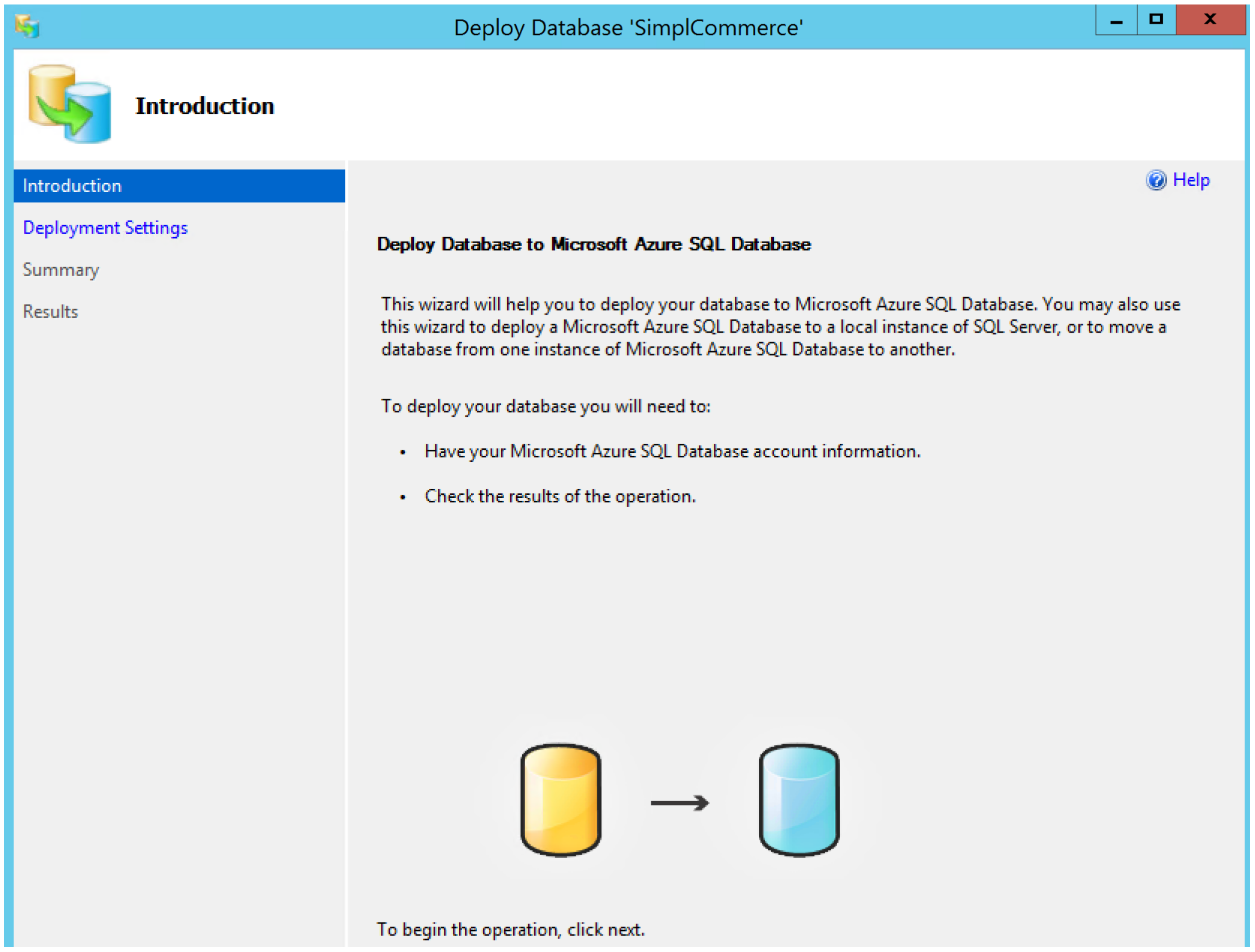
11. Press the Connect button.

12. The Object explorer shows a successful connection to both databases now. If you open the Databases level, you should see the SimplCommerce database.

13. The next step is running the actual migration of the database. Therefore, select the AdventureWorks database on the local sqlvm, right-click it, select Tasks, and next, select Deploy Database to Micrsoft SQL Azure Database.



14. Press the Next button when you see the Introduction step showing up.



Deploy Database 'SimplCommerce'

Introduction

- Introduction
- Deployment Settings
- Summary
- Results

Help

Deploy Database to Microsoft Azure SQL Database

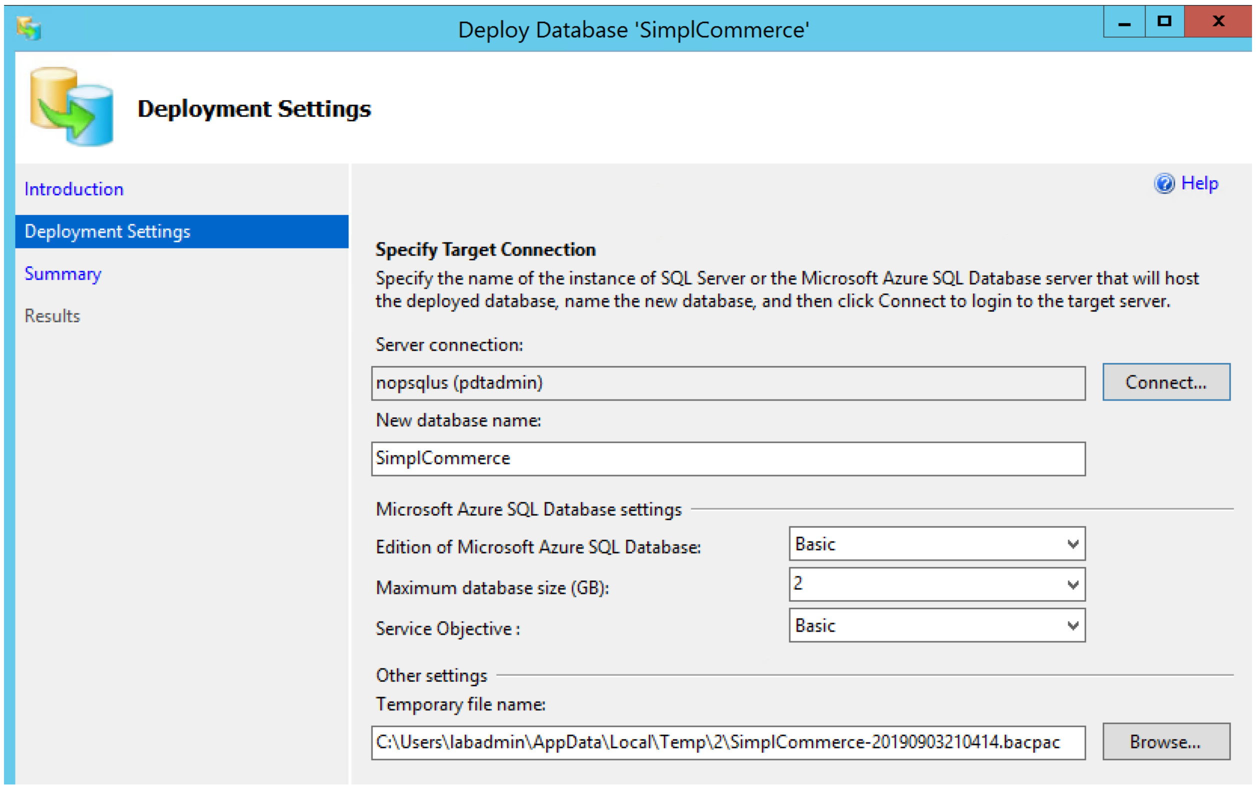
This wizard will help you to deploy your database to Microsoft Azure SQL Database. You may also use this wizard to deploy a Microsoft Azure SQL Database to a local instance of SQL Server, or to move a database from one instance of Microsoft Azure SQL Database to another.

To deploy your database you will need to:

- Have your Microsoft Azure SQL Database account information.
- Check the results of the operation.

To begin the operation, click next.

15. In the Deployment Settings, provide the Server Connection by pressing the Connect button. Provide the following details here:
    - Server Connection: <your sql server in Azure>
    - New Database name: SimplCommerce
    - Edition of Microsoft SQL Database: Basic
    - Max DB size: 2GB
    - Service Objective: Basic



Deployment Settings

Specify Target Connection

Specify the name of the instance of SQL Server or the Microsoft Azure SQL Database server that will host the deployed database, name the new database, and then click Connect to login to the target server.

Server connection: nopsqlus (pdtadmin)

New database name: SimplCommerce

Microsoft Azure SQL Database settings

Edition of Microsoft Azure SQL Database: Basic

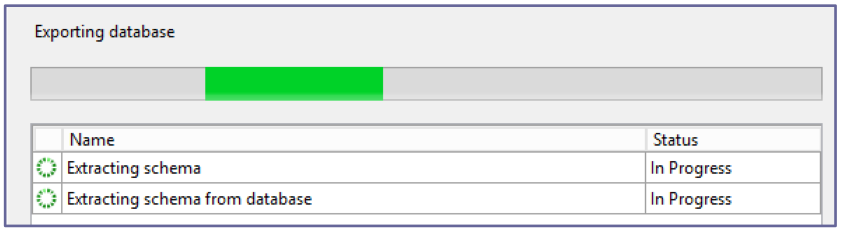
Maximum database size (GB): 2

Service Objective : Basic

Other settings

Temporary file name: C:\Users\labadmin\AppData\Local\Temp\2\SimplCommerce-20190903210414.bacpac

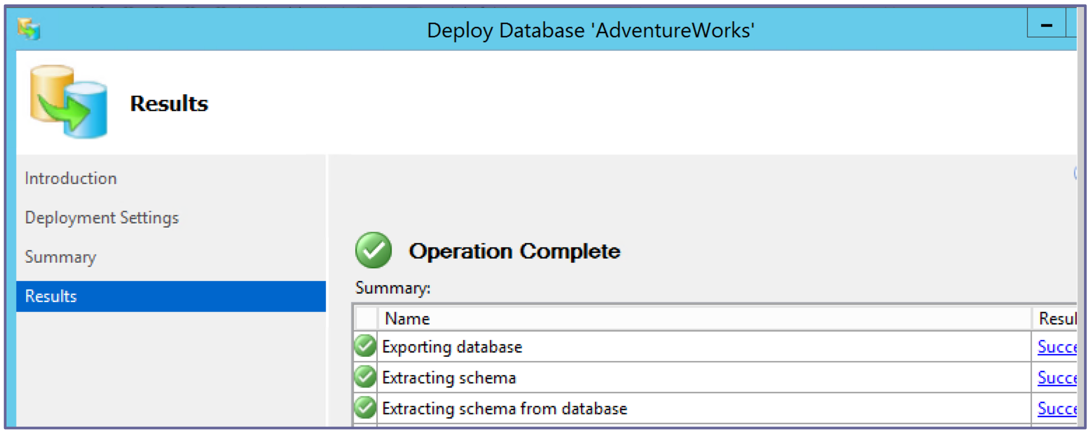
16. Read through the settings in the summary step. Press the Finish button to start the actual move process.



Exporting database

Name	Status
Extracting schema	In Progress
Extracting schema from database	In Progress

17. Wait for this process to complete – this could take about 10minutes.


Deploy Database 'AdventureWorks'

Results

Introduction
Deployment Settings
Summary
Results

Operation Complete

Summary:

	Name	Resul
✓	Exporting database	Succe
✓	Extracting schema	Succe
✓	Extracting schema from database	Succe

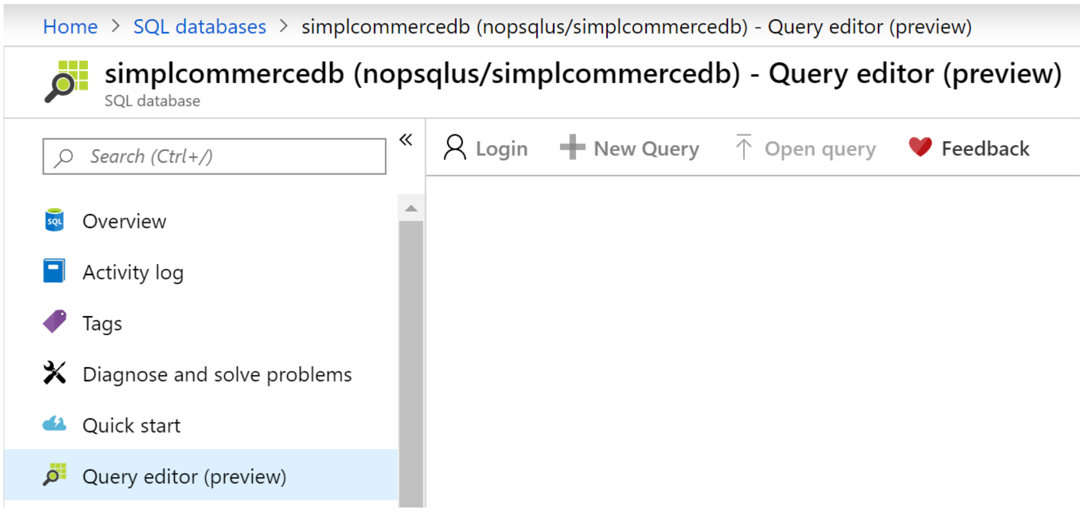
18. Once completed, close the migration window.

Task 4: Validate SQL Azure Database Migration using Azure Portal Query Editor

1. To validate the database is actually migrated successfully, one can go back to the Azure Portal, and use the Query editor, which is currently in preview, to check on the contents of the database and tables. From the Azure Portal, navigate to all services and select SQL databases.

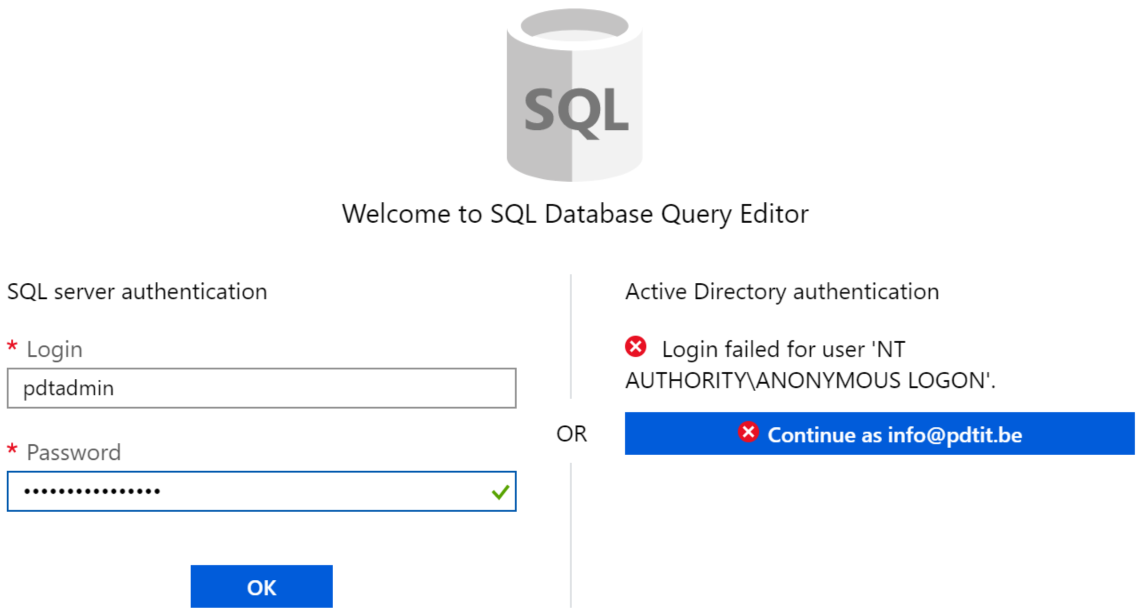
2. From the list of databases, select SimplCommerceDB (migrated with Azure Data Migration Assistant), or SimplCOmmerceDB (migrated using SQL Mgmt Studio).

3. From the SimplCommerceDB detailed blade, select Query editor (preview)


Home > SQL databases > simplcommercedb (nopsqlus/simplcommercedb) - Query editor (preview)

simplcommercedb (nopsqlus/simplcommercedb) - Query editor (preview)
SQL database

4. Notice you are prompted to provide your SQL database credentials, where your Azure admin credentials are not giving you access to the database content.



Welcome to SQL Database Query Editor

SQL server authentication

* Login

pdtadmin

* Password

••••••••••••••••

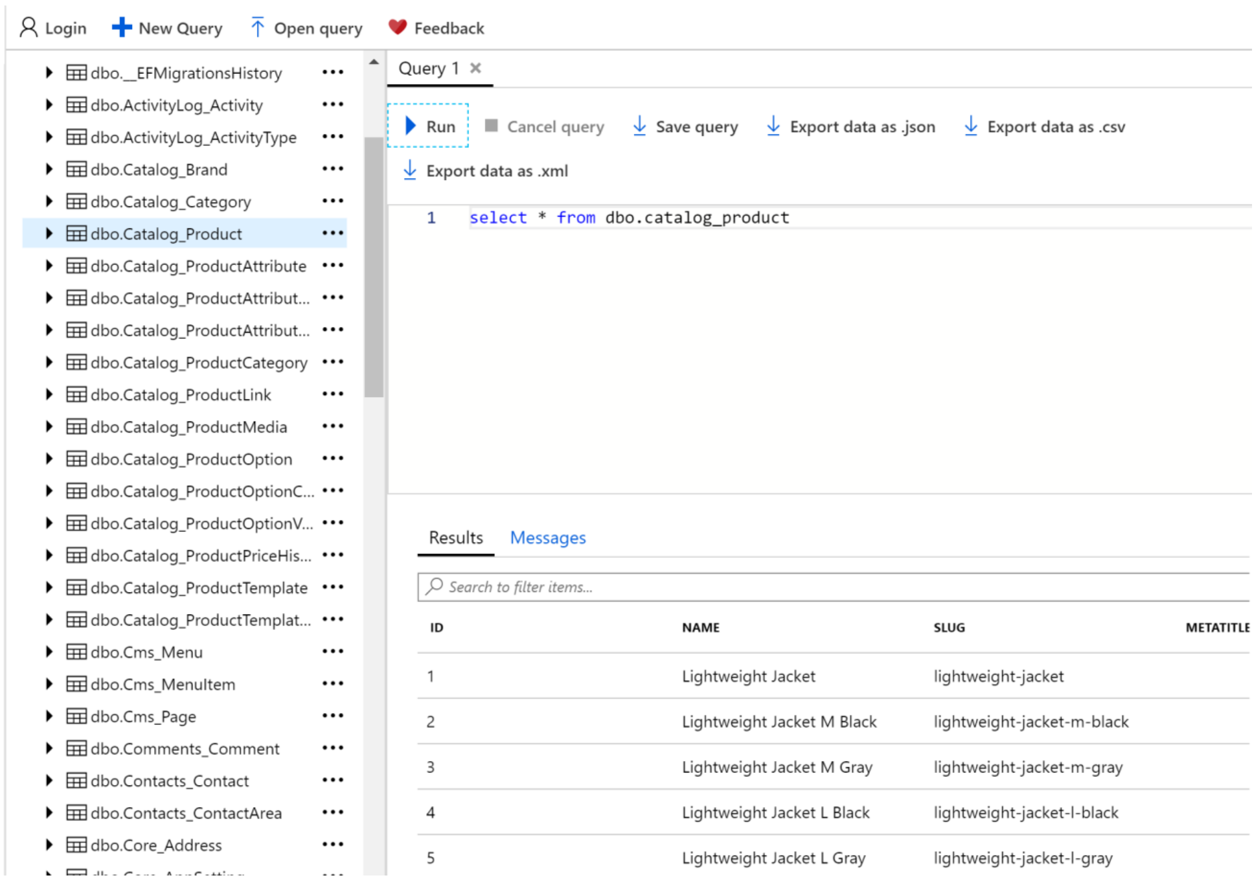
Active Directory authentication

Login failed for user 'NT AUTHORITY\ANONYMOUS LOGON'.

5. Provide the labadmin / L@BadminPa55w.rd credentials, and press OK. This opens the query editor window. In the Query editor to the right, enter the following SQL query:

   ```
   select * from dbo.Catalog_Product
   ```

   and press Run. This will show you the full list of all Products we have in the database. Which confirms our migration from SQL Management Studio ran successful.

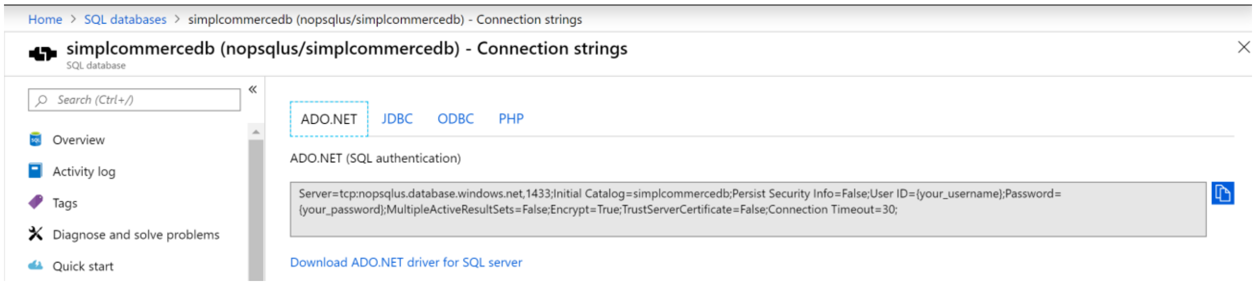


```
select * from dbo.catalog_product
```

ID	NAME	SLUG	METATITLE
1	Lightweight Jacket	lightweight-jacket	
2	Lightweight Jacket M Black	lightweight-jacket-m-black	
3	Lightweight Jacket M Gray	lightweight-jacket-m-gray	
4	Lightweight Jacket L Black	lightweight-jacket-l-black	
5	Lightweight Jacket L Gray	lightweight-jacket-l-gray	

Task 5: Defining a hybrid connection from a Web VM to an Azure SQL database

1. To complete our hybrid cloud migration, we will now update the connection string settings in the appsettings.json file of our Web VM web site application. This information can be retrieved from the SQL database settings in the Azure Portal. From within the SQL database detailed blade, browse to Connection String under the settings section.


Home > SQL databases > simplcommercedb (nopsqlus/simplcommercedb) - Connection strings
simplcommercedb (nopsqlus/simplcommercedb) - Connection strings
SQL database
Search (Ctrl+/)
Overview
Activity log
Tags
Diagnose and solve problems
Quick start
ADO.NET
JDBC
ODBC
PHP
Download ADO.NET driver for SQL server

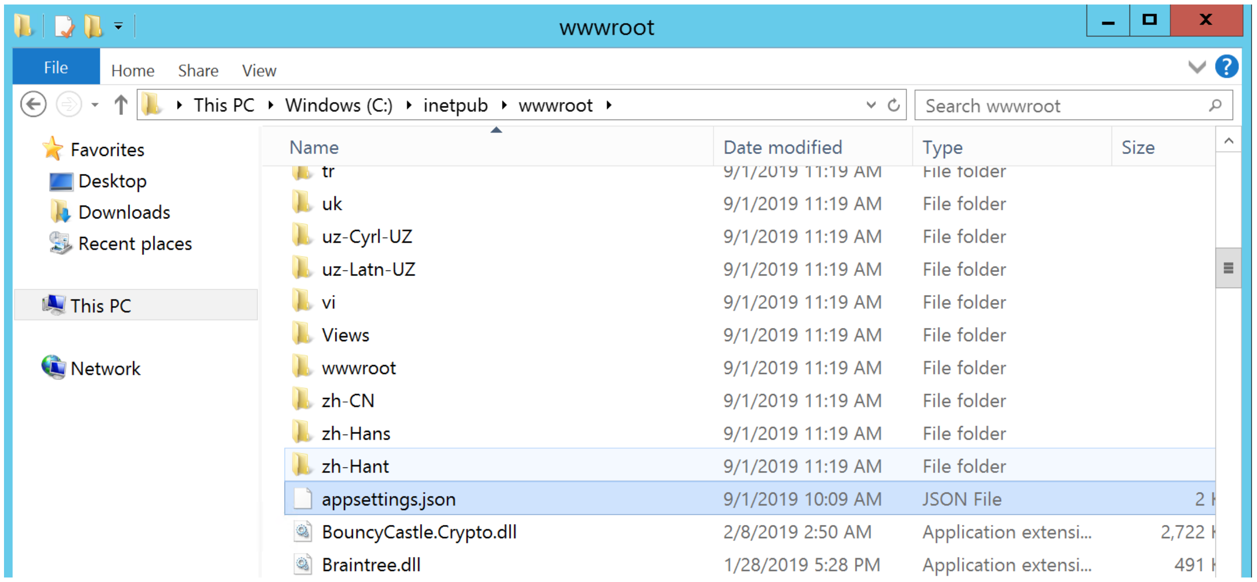
ADO.NET (SQL authentication)

```
Server=tcp:nopsqlus.database.windows.net,1433;Initial Catalog=simplcommercedb;Persist Security Info=False;User ID={your_username};Password=
{your_password};MultipleActiveResultSets=False;Encrypt=True;TrustServerCertificate=False;Connection Timeout=30;
```

2. Leave this information on screen, as you will need to copy parts of the ADO.NET connection string information into the Web server's web.config file.

3. Go back to the WebVM Virtual Machine Remote Desktop session (or open it again when you already closed the WebVM RDP session)

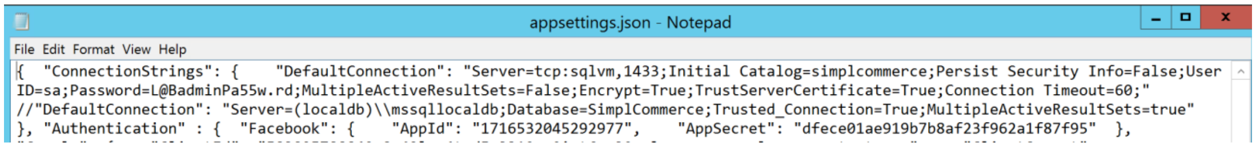
4. Browse to the IIS web server folder that has the web application content: c:\inetpub\wwwroot\ and open the file **appsettings.json** with Notepad.



This PC ▸ Windows (C:) ▸ inetpub ▸ wwwroot ▸

Name	Date modified	Type	Size
tr	9/1/2019 11:19 AM	File folder	
uk	9/1/2019 11:19 AM	File folder	
uz-Cyrl-UZ	9/1/2019 11:19 AM	File folder	
uz-Latn-UZ	9/1/2019 11:19 AM	File folder	
vi	9/1/2019 11:19 AM	File folder	
Views	9/1/2019 11:19 AM	File folder	
wwwroot	9/1/2019 11:19 AM	File folder	
zh-CN	9/1/2019 11:19 AM	File folder	
zh-Hans	9/1/2019 11:19 AM	File folder	
zh-Hant	9/1/2019 11:19 AM	File folder	
appsettings.json	9/1/2019 10:09 AM	JSON File	2
BouncyCastle.Crypto.dll	2/8/2019 2:50 AM	Application extensi...	2,722
Braintree.dll	1/28/2019 5:28 PM	Application extensi...	491

5. Go to the section that starts with "**connectionStrings**".



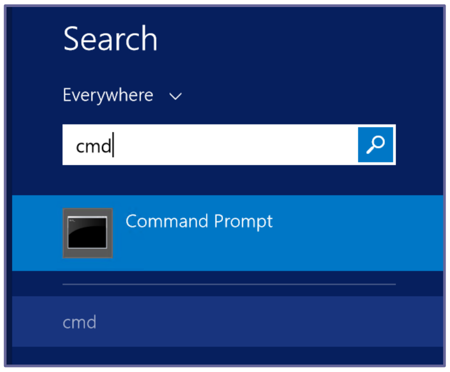
```
{   "ConnectionStrings": {     "DefaultConnection": "Server=tcp:sqlvm,1433;Initial Catalog=simplcommerce;Persist Security Info=False;User
ID=sa;Password=L@BadminPa55w.rd;MultipleActiveResultSets=False;Encrypt=True;TrustServerCertificate=True;Connection Timeout=60;"
//"DefaultConnection": "Server=(localdb)\\mssqllocaldb;Database=SimplCommerce;Trusted_Connection=True;MultipleActiveResultSets=true"
}, "Authentication" : {  "Facebook": {    "AppId": "1716532045292977",    "AppSecret": "dfece01ae919b7b8af23f962a1f87f95"  },
```

6. **Replace the** following settings with the parameters from the Connection String information in the Azure Portal:
   - Server=tcp:sqlvm=> change the sqlvm to <Azure SQL server name> e.g. nopsqlus.database.windows.net in our example

- **Uid=sa => change** the sa account to **labadmin**

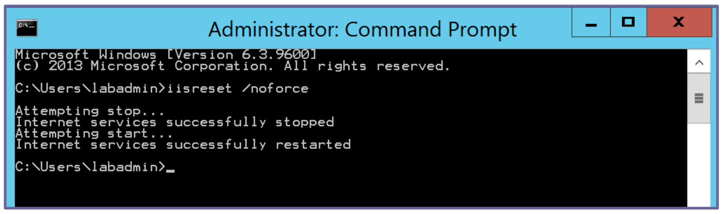
   Save the changes to the **appsettings.json** file.

7. **From the Start Screen** on the WebVM, **open a command prompt, by typing** "CMD".



8. In the command prompt, run the following command, to restart the IIS Web Server service.

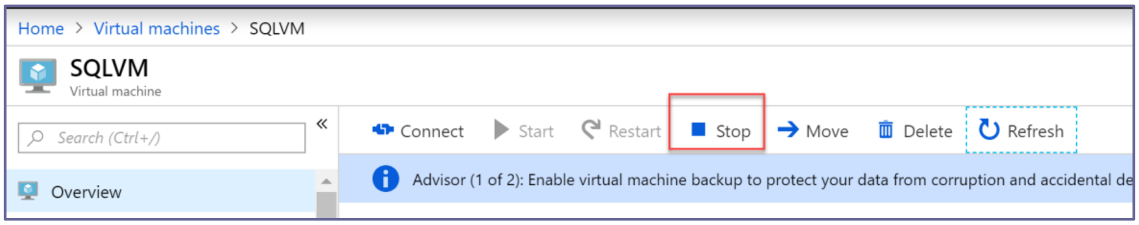
```
iisreset /noforce
```



```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\labadmin>iisreset /noforce

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted

C:\Users\labadmin>_
```

9. To proof that the web application is now connecting to the Azure SQL database, let's shutdown the SQLVM. From the Azure Portal, navigate to Virtual Machines, and click on the SQLVM Virtual Machine.

10. From the SQLVM detailed blade, press the STOP button in the top menu. Wait for the notification message, telling you the VM has shutdown.



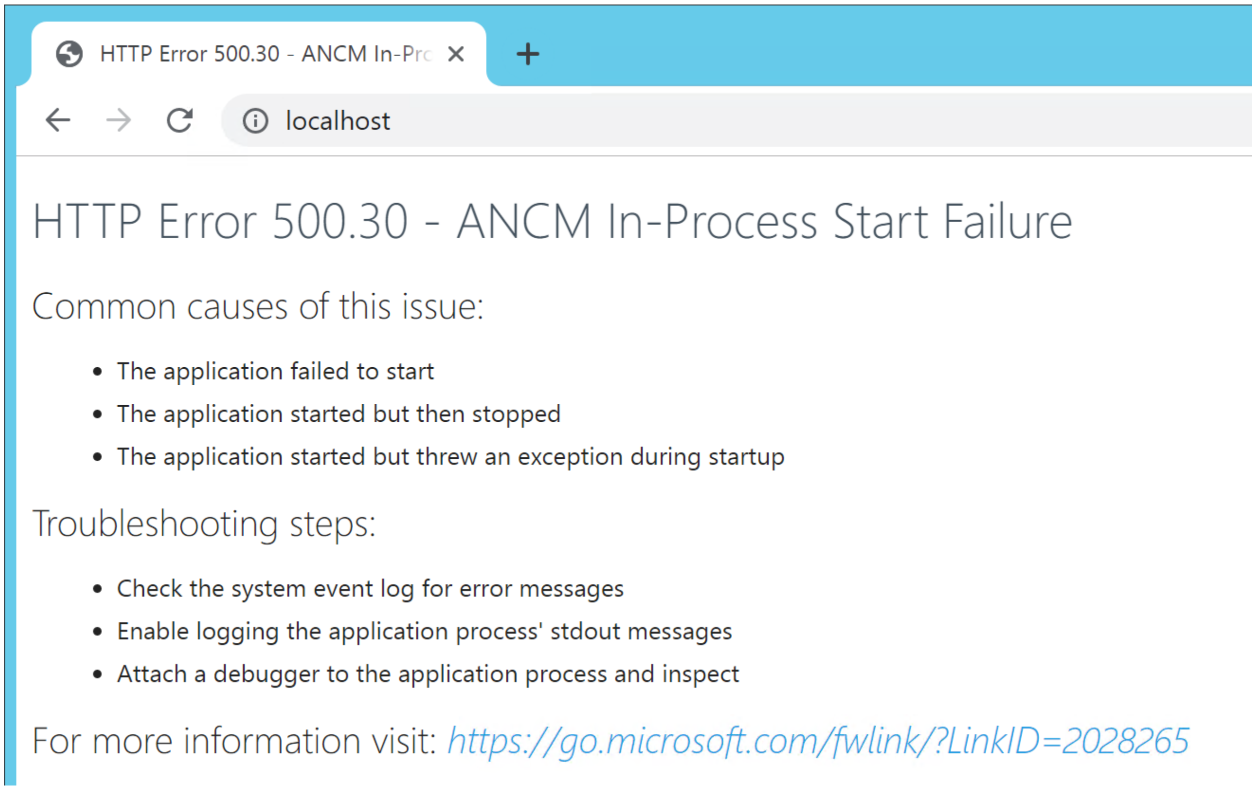
Advisor (1 of 2): Enable virtual machine backup to protect your data from corruption and accidental de

11. To test if the web application is now connecting to the Azure SQL database, browse to the web site from within the WebVM's browser, connecting to localhost.

12. The website should load successfully and showing you the product catalog list.

13. If you receive an error message in the browser, similar to below screenshot, it means there is something wrong with the SQL database connection. Verify your settings again the

appsettings.json file, and run IISreset again from the command prompt..



HTTP Error 500.30 - ANCM In-Process Start Failure

Common causes of this issue:

- The application failed to start
- The application started but then stopped
- The application started but threw an exception during startup

Troubleshooting steps:

- Check the system event log for error messages
- Enable logging the application process' stdout messages
- Attach a debugger to the application process and inspect

For more information visit: *https://go.microsoft.com/fwlink/?LinkID=2028265*

14. This completes this lab.

Summary

In this lab, you learned how to deploy a SQL Azure server resource, as well as how to migrate a SQL database using Azure SQL Data Migration Assistant, and/or the SQL Server Management Studio 17. You updated the IIS web server appsettings.json file and validated the web application is now running in a hybrid setup.