Azure SQL Database

Objectives

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

- Create an Azure SQL Database Server
- Create a SQL Database
- Configure the firewall
- Add a user to the SQL Server and Database
- Modify your sample web application to enable user registration and login

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:

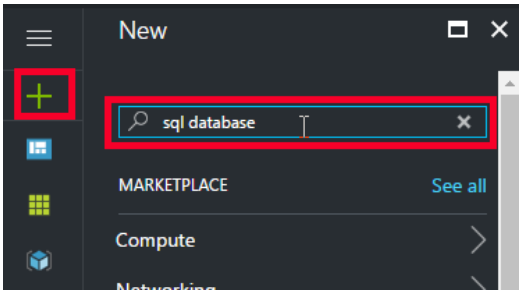
- Exercise 1: Create an Azure SQL database
- Exercise 2: Configure the firewall
- Exercise 3: Add a user to the database
- Exercise 4: Configure Web Application to the use Azure SQL database

Estimated time to complete this lab: 15 - 25 minutes

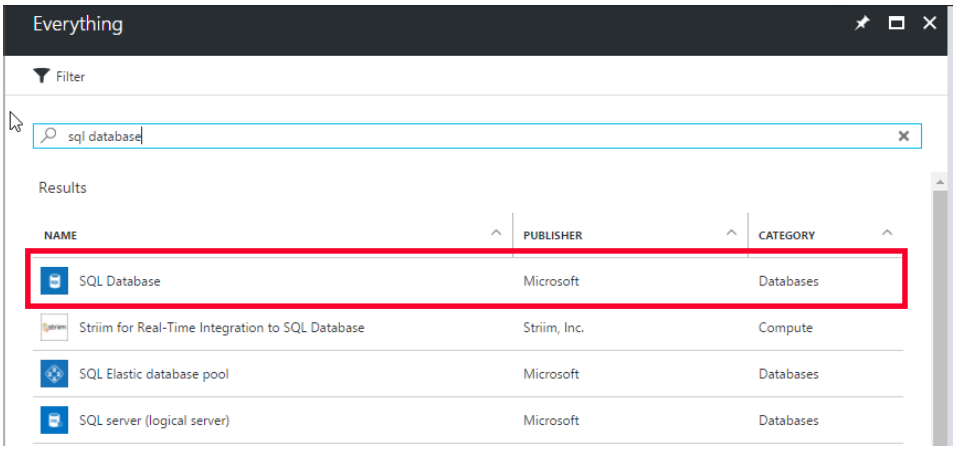
Exercise 1: Create an Azure SQL Database

In this exercise, you will create an Azure SQL server and database to use later with the sample web application.

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 **sql database** and hit **enter**

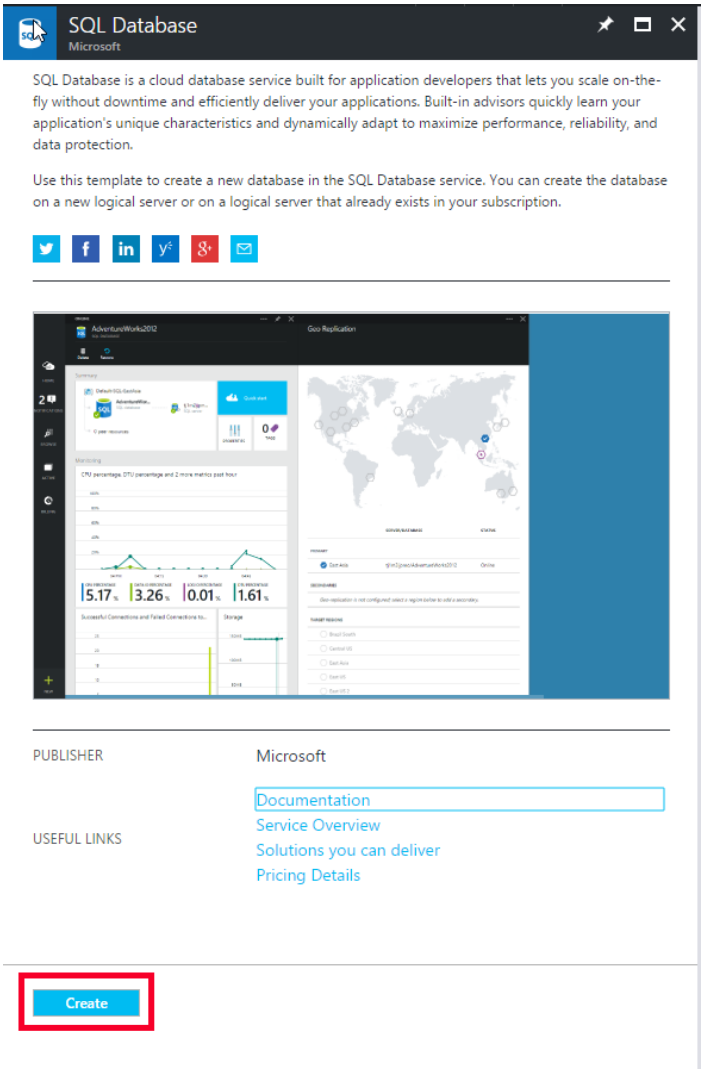


This will open the search results blade.



3. Select **SQL Database**

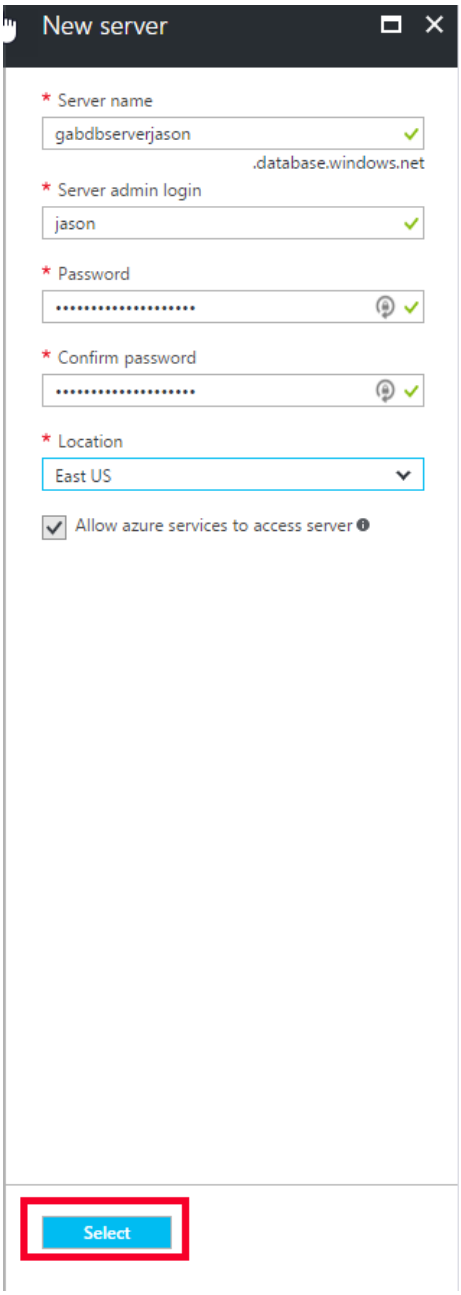
This will show the information about the SQL database product.



4. Click **Create**

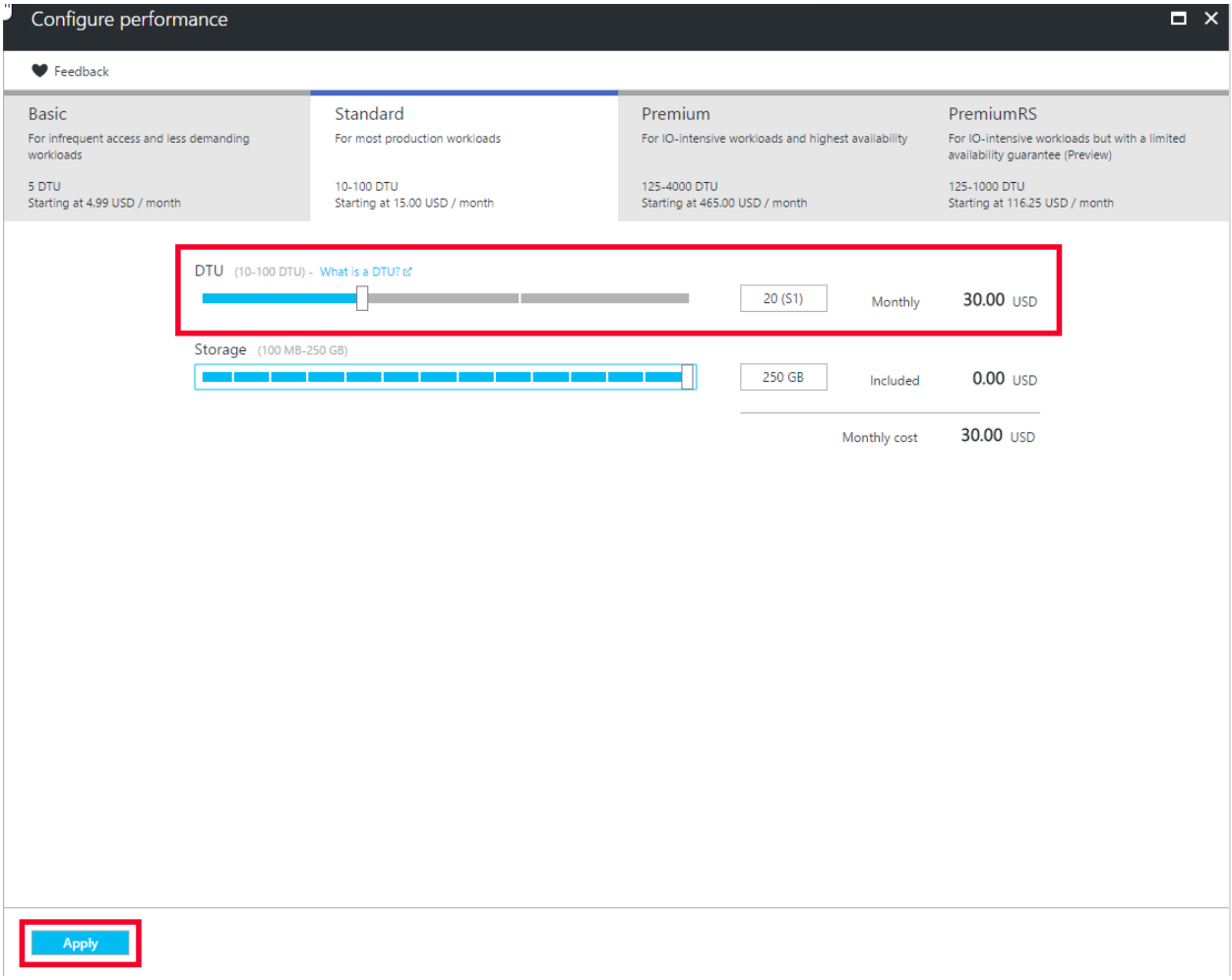
This will open the SQL Database blade.

5. On the SQL Database blade, fill out the following selections:
    - **Database name:** GABDB<first name>
    - **Subscription:** choose your subscription
    - **Resource Group:** Create new
        - Enter name of: GABDataLab
    - **Select source:** Blank database
6. Click on the **Server** item, to create a new server
7. In the New Server blade, enter the following information:
    - **Server name:** gabdbserver<first name>
    - **Server admin login**: <your first name>
    - **Password**: <a strong password minimum of 12 characters>
    - **Confirm Password**: retype your password
    - **Location**: East US
    - **Allow azure services to access server**: leave checked

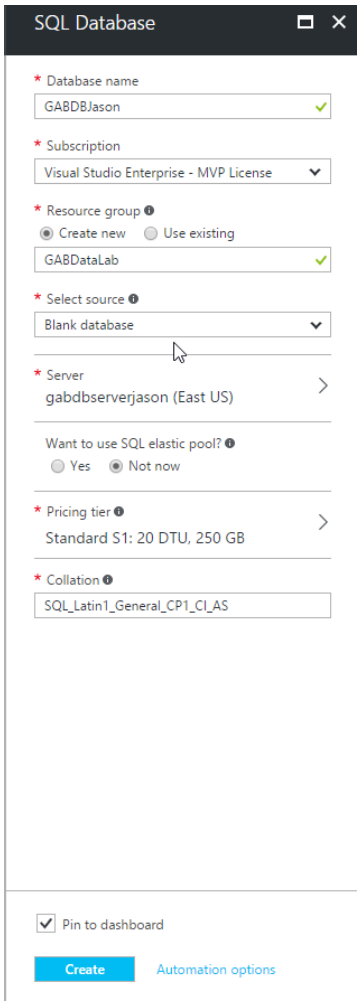


8. Click the **Select** button
9. Back on the SQL Database blade, select the **Pricing tier** item.

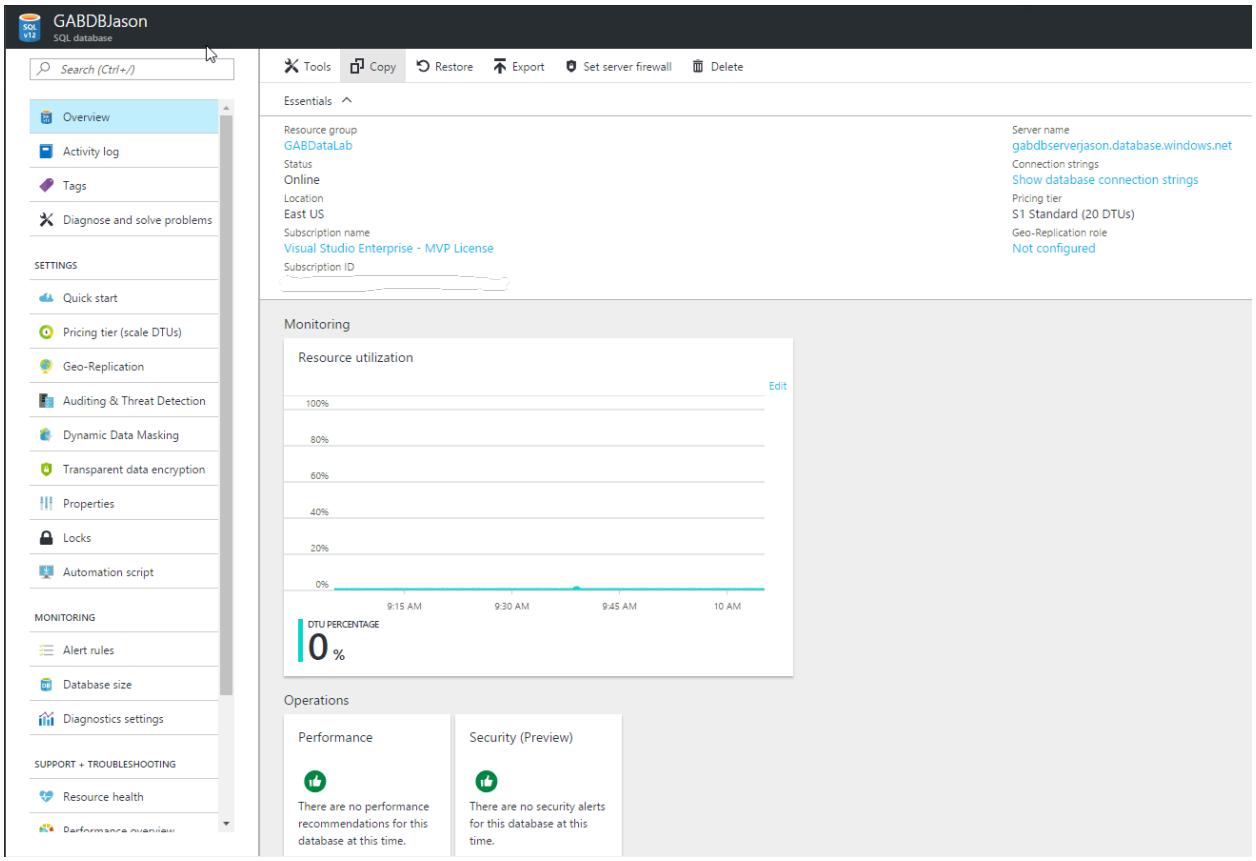
This opens the (somewhat new) Configure performance blade



10. Change the **DTU setting to 20** by dragging the handle to the left
11. Click on the **Apply** button
12. Back on the SQL Database blade, **check the Pin to dashboard** and click the **Create** button to start the creation of the server and blank database.



Once the database gets created (should take 1-3 minutes), the database blade should open to the overview.

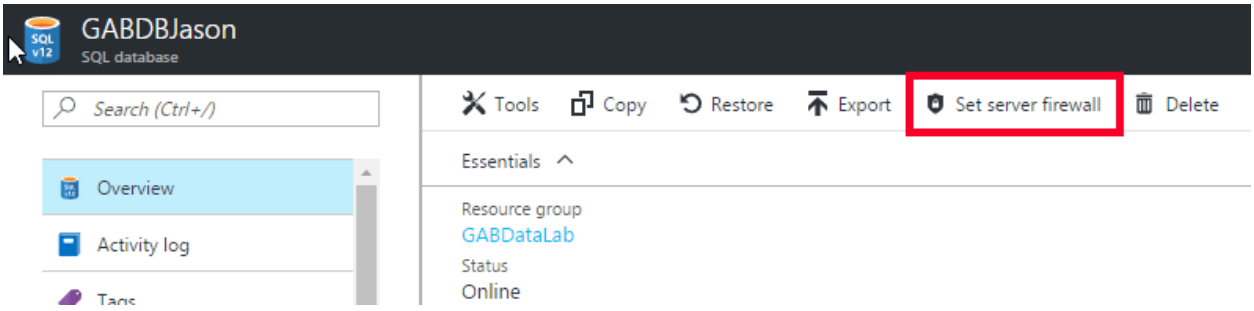


The next step is to configure the firewall so you can access the database from your local computer.

Exercise 2: Configure the firewall

In this exercise, you will configure your Azure SQL firewall to allow access from your local machine.

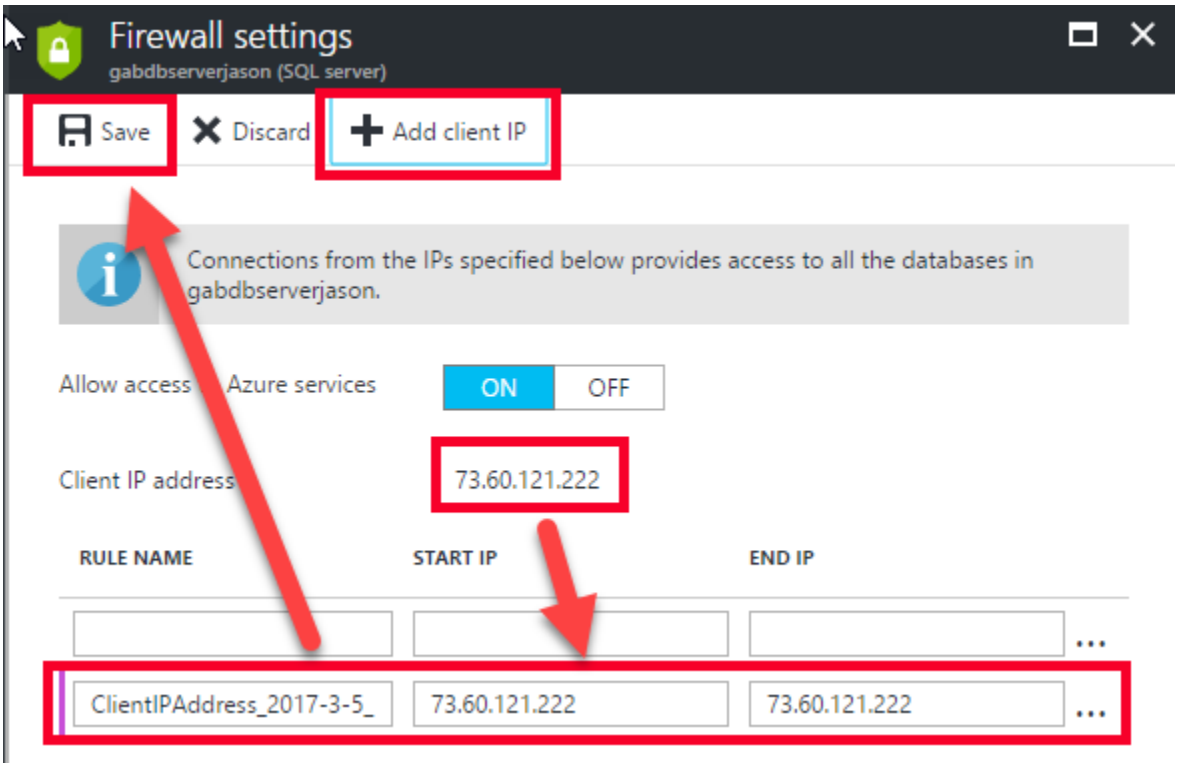
1. In the Azure Portal, go to your SQL Database overview pane (if it isn't already showing)
2. In the middle of the overview tool bar, select the **Set server firewall** button



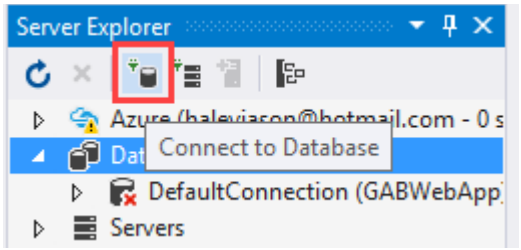
This will show the Firewall settings blade.

3. In the blade's toolbar, click on the **+ Add client IP** button.

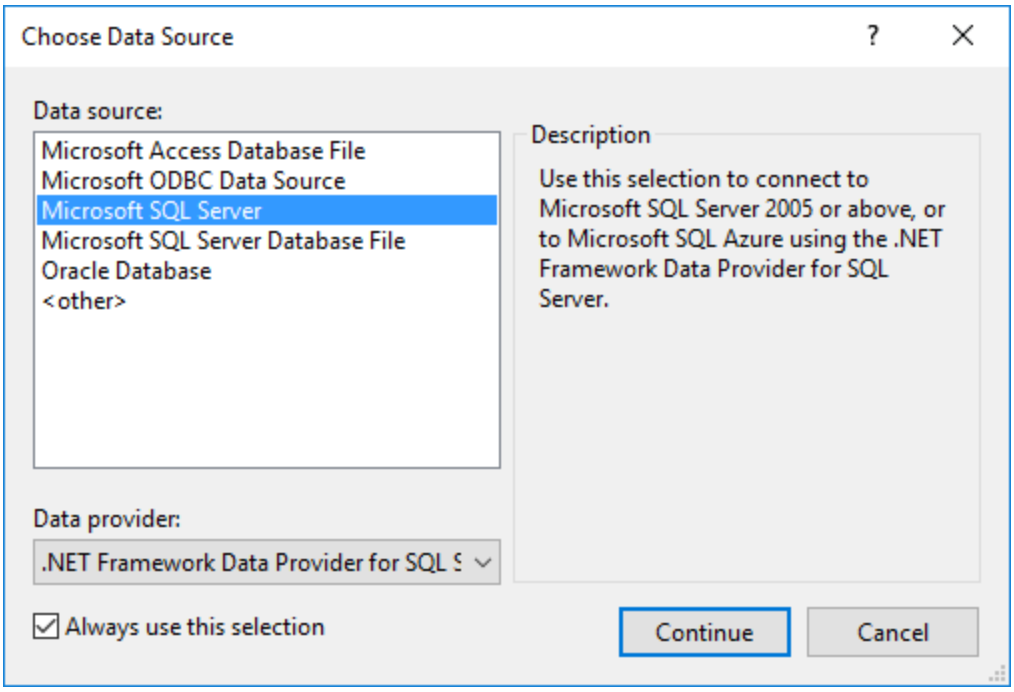
This will take your client IP address and add a rule for you – or you can type the ip address yourself. Like almost all resources in Azure, the firewall rule has a name.



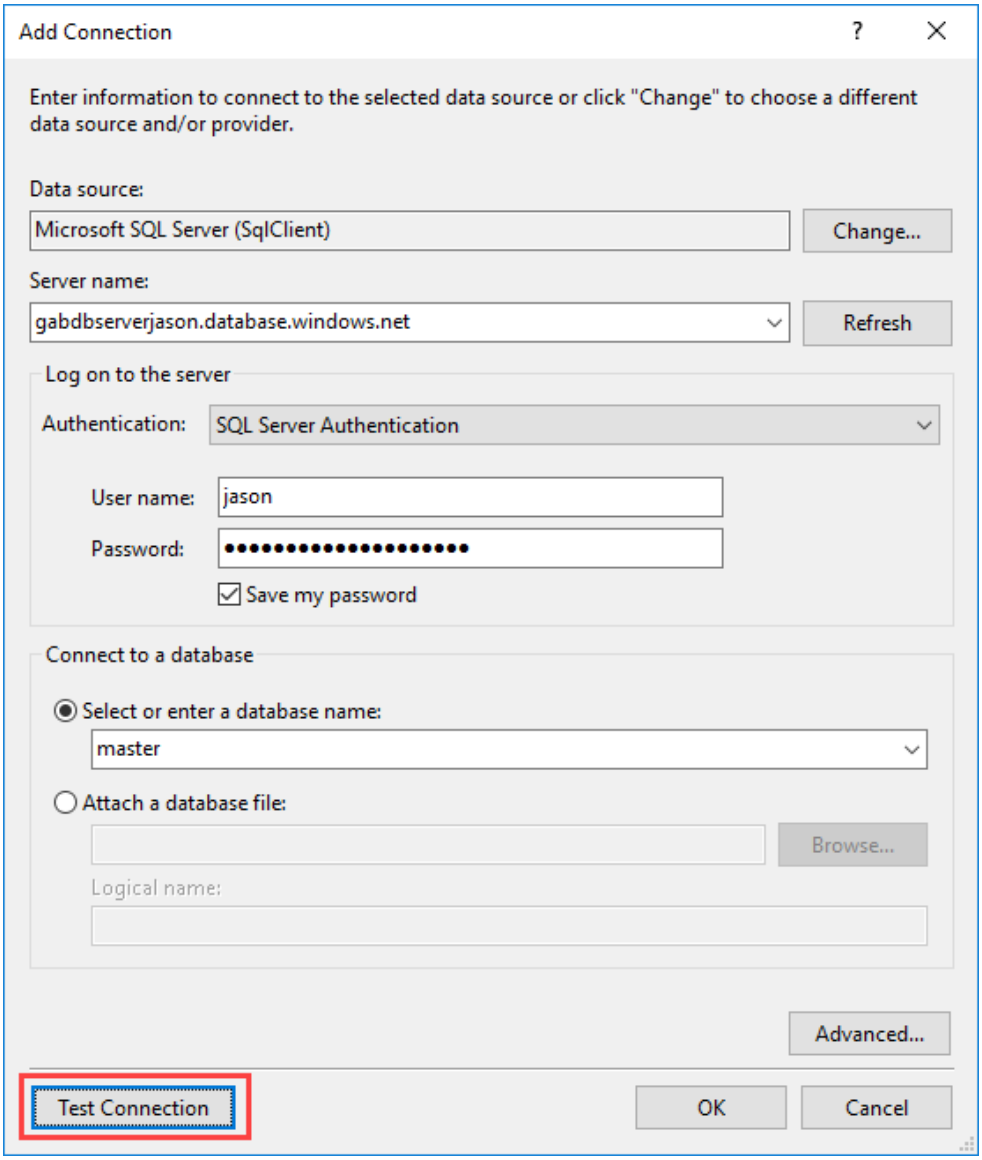
4. Click the **Save** button and you should get a confirmation dialog indicating the rule was added.
5. Close the Firewall settings blade
6. Back in your **Visual Studio 2017**, Open your **Server Explorer** (View -> Server Explorer)
7. In the toolbar, click on the **Connect to Database** button



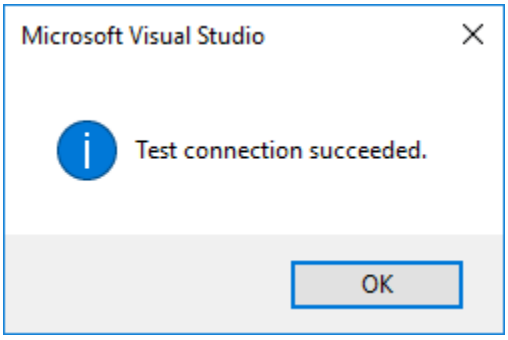
This will show the Choose Data Source dialog box



8. Select **Microsoft SQL Server** and click **Continue**
9. Enter the following information into the **Add Connection** dialog
    - **Server Name:** gabdbserver<firstname>.database.windows.net
    - **Authentication:** SQL Server Authentication
    - **User name:** <sql server admin you configured in Exercise 1, step 7>
    - **Password:** <password for the sql server admin>
    - **Select or enter a database name:** master



10. Click the **Test Connection** button to test if the firewall will allow you to connect



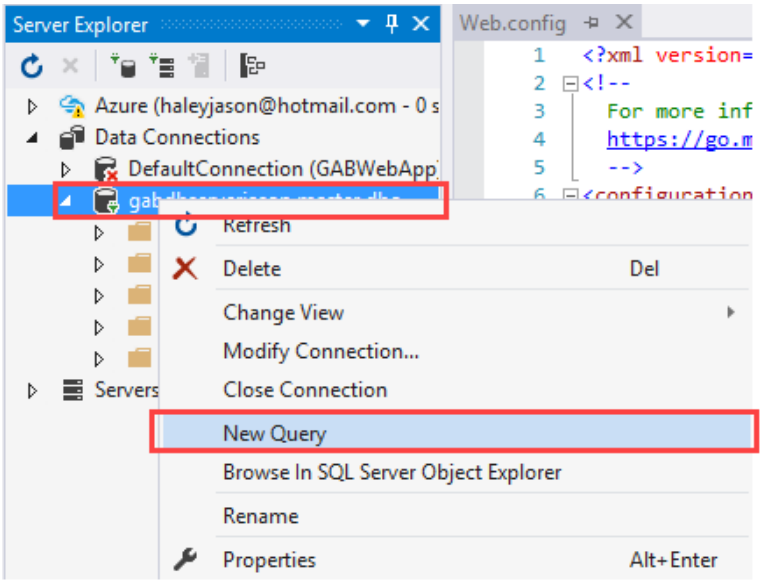
11. Click **OK**

You can now connect to the database. The next step is to add a user to the database

Exercise 3: Add a user to the database

In this exercise, you will add a login to the master database and then add and configure a user in the database you created in exercise 1.

1. In Visual Studio, go to your **Server Explorer** and **right click** on the node for the master db that you added at the end of exercise 2 and select the **New Query** item

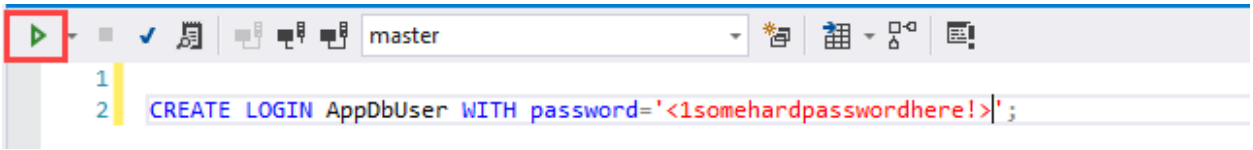


This will open a new query document in Visual Studio.

2. Type the following SQL into that query window:

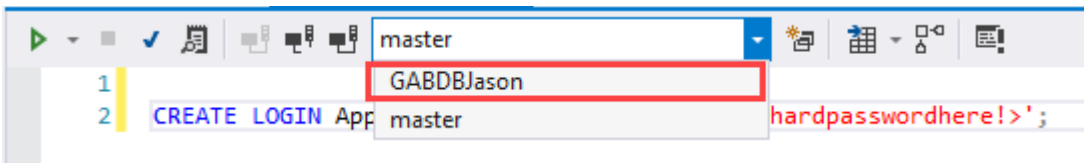
```
CREATE LOGIN AppDbUser WITH password='1somehardpasswordhere!';
```

3. Click the Execute button in the left corner



This will add the login to the master database

4. **Select the database** you created in exercise 1 from the database dropdown list



5. Remove the SQL from the query and type the following SQL in the query document:

```
CREATE USER AppDbUser FROM LOGIN AppDbUser;

EXEC sp_addrolemember 'db_datareader', 'AppDbUser';
```

```
EXEC sp_addrolemember 'db_datawriter', 'AppDbUser';
EXEC sp_addrolemember 'db_ddladmin', 'AppDbUser';
```

This sql will add the user to the database and assign some roles to it.

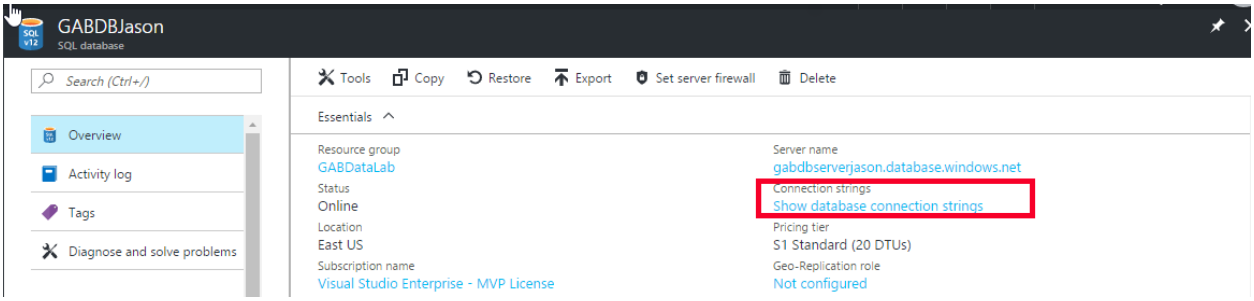
6. Execute the sql you typed above

The next step is to modify the web application to use the SQL Azure database and user you just created.

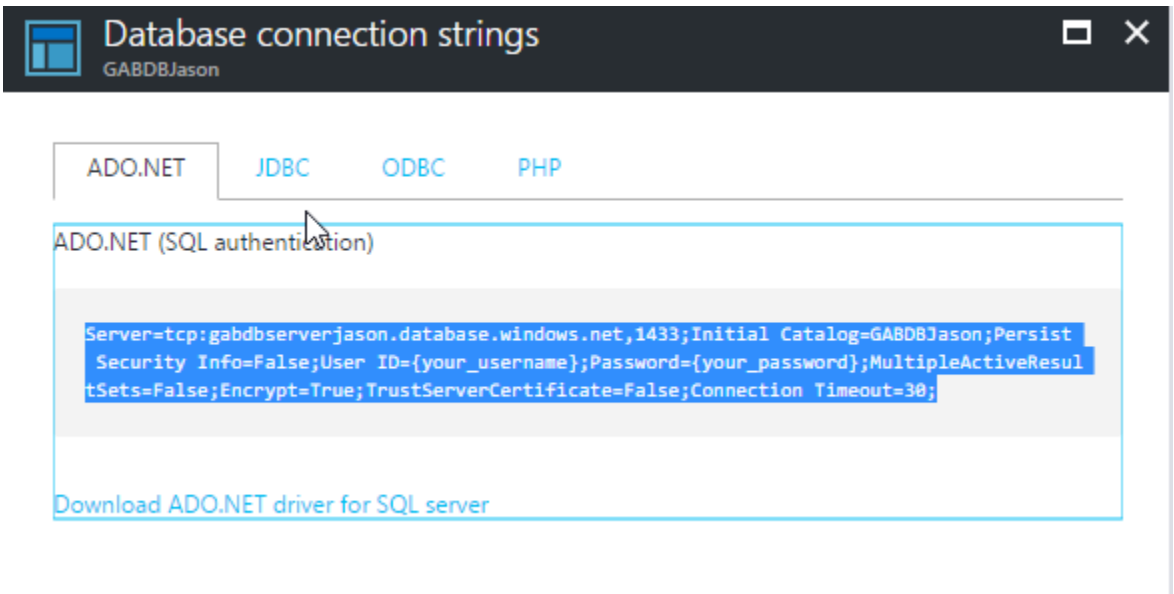
Exercise 4: Configure Web Application to the use Azure SQL database

In this exercise, you will modify the connection string for the sample web application to use the Azure SQL database and user you created in this lab and verify it works.

1. In the Azure Portal, go to your SQL Database overview pane (if it isn't already showing)
2. On the right side of the overview pane, click on the **Show database connection strings** link



This will show the Database connection strings blade.



3. Highlight the content of the ADO.NET connection string and copy it to you clipboard
4. In Visual Studio, open the **Solution Explorer**, find the **web.config** file and open it.
5. Find the <connectionStrings> element and replace the connectionString content with the contents of your clipboard.

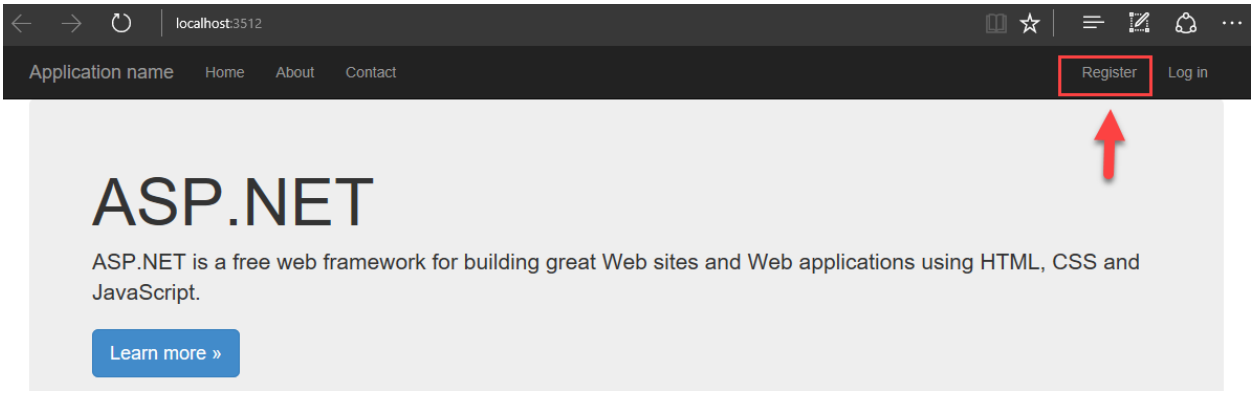
```
<?xml version="1.0" encoding="utf-8"?>
<!--
  For more information on how to configure your ASP.NET application, please visit
  https://go.microsoft.com/fwlink/?LinkId=301880
  -->
<configuration>
  <configSections>
    <!-- For more information on Entity Framework configuration, visit http://go.microsoft.com/fwlink/?LinkID=237468 -->
    <section name="entityFramework" type="System.Data.Entity.Internal.ConfigFile.EntityFrameworkSection, EntityFramework, Version=6.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" requirePermis
  </configSections>
  <connectionStrings>
    <add name="DefaultConnection" connectionString="Server=tcp:gabdbserverjason.database.windows.net,1433;Initial Catalog=GABDBJason;Persist Security Info=False;User ID={your_username};Password={your_pa
      providerName="System.Data.SqlClient" />
  </connectionStrings>
```

6. In the contents of the pasted connection string, locate the **User ID** and **Password** and replace them with AppDbUser and the password you used when setting that user up

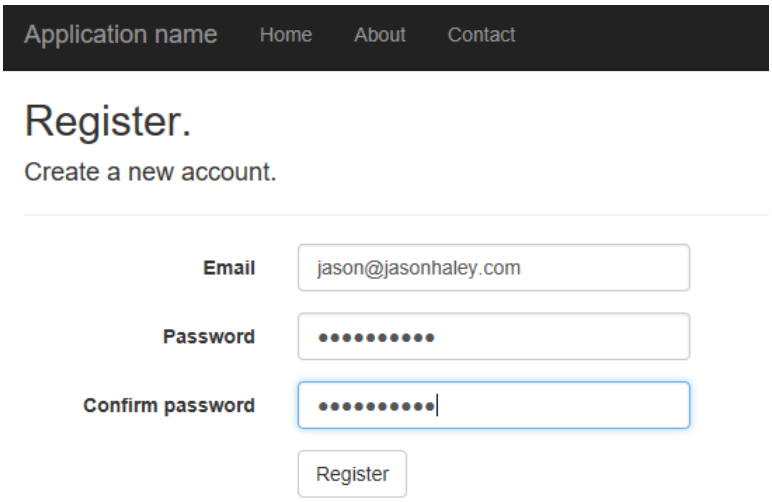
```
User ID=AppDbUser;Password=1somehardpasswordhere!;
```

Now we can test the database connection and register a user with the web application.

7. In Visual Studio, start debugging the application (F5)
8. When the browser opens and the home page loads, click on the Register link in the upper right corner

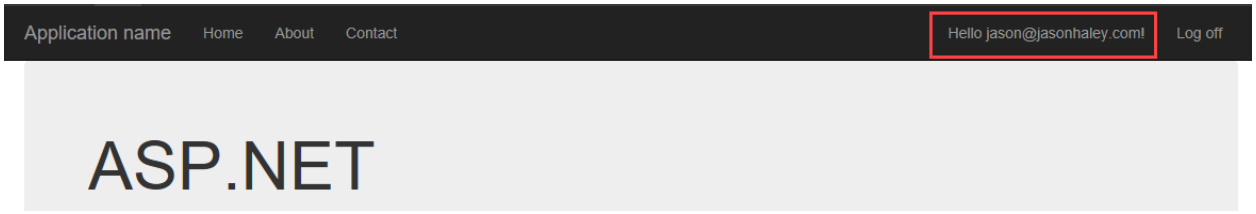


9. Enter a email, password and confirm password



10. Click **Register** to add the user

Once the initialization of the user tables is complete and the user is added you should be redirected to the home page showing the email address of the user in the upper right corner.

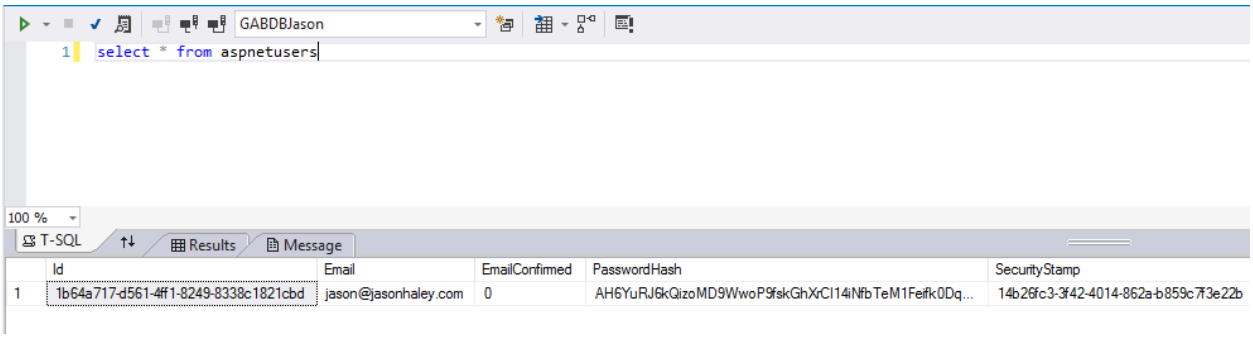


Now let's take a look at the users table.

11. In Visual Studio, find the the Sql document you used to create the users. If it is not open, then go to your Server Explorer, find the Azure database, right click and choose New Query to get another query document open.
12. Make sure your database is selected and not the master database
13. Type the following SQL into the query document and execute it:

```
select * from aspnetusers
```

This should now show a listing of the AspNetUsers table with the user you just registered.



The sample web application is now using the Azure SQL database. You could now redeploy the web app to Azure if you wanted to see it working out there, but that is an exercise for you.