Lab 02 - Azure SQL DW in a Day Lab - Introduction

**Overview**

In this workshop, you will work on a series of lab modules that teach you best practices for getting the most out of your Azure SQL Data Warehouse. These modules cover the entire lifecycle of data in your Azure SQL Data Warehouse from loading, to securing, querying, and optimizing the data.   
  
The dataset you’ll be working with is weather data from the National Oceanic and Atmospheric Organization (NOAA)

**Pre-requisites:**

Azure resources

These were provisioned in the **Lab 01 SQL DW in a Day** SetUp.

* Azure SQL Logical Server
* Azure SQL Database
* Azure SQL Data Warehouse
* Azure Storage Account - Azure Data Lake Storage (Gen2)

Student Machine (Laptop)

* Azure PowerShell
* SQL Server Management Studio (SSMS)
* Azure Storage Explorer
* Azure Data Studio

**Lab initialization:**

**Lab 02 – Part 1 - Lab initialization - Settings**

This hands-on demo will detail the steps required to create the objects required for the labs. Not all steps will have a screen shot.

| **Part 1 – Lab initialization - Settings** | | | |
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| **#** | **Commentary / Notes** | **Click Steps** | **Screenshots** |
|  | These initial steps will be the same for each section. Once you have created one resource, the general process will be the same. | * Sign into your Azure Pass Subscription <https://portal.azure.com> * Open your internet browser in safety mode (InPrivate) and navigate to portal.azure.com and enter the login credentials. * Click on the link below to create your Azure lab environment with all the necessary services. Please note that the environment is limited to $100 or $50 credit the time you sign up for it. You will be presented with the login credentials to Azure portal and other relevant details. Record these details in a safe location. * Sign-up link : <<To Be Provided>> * Activation Code : <<To Be Provided by proctor>> |  |
|  | Start your SQL DW Instance | * Click on ‘All resources’ and select the Resource Group you created in Lab 01 |  |
|  |  | * This should be how your resource group appears after your Lab 01 is complete. Some of the instance and object names may be different from this print out. |  |
|  |  | * select your SQL Data Warehouse (AdventureWorksDW).   Note that the instances and database name may be different from your Lab01. |  |
|  |  | * Click on ‘Resume’ to start your SQL DW instance |  |
|  |  | * Click on YES to start.   Remember to stop this database when not in use as you are charged by the hour for these.  Delete the Resource Group once you are finished at the end of the day, especially if you are using your own subscription. |  |
|  |  | * You should see a popup notification when the instance has resumed. The length of time depends on how large you database is. * Checking the Notification, on the top tool bar, will show you any notification you may have missed. |  |
|  | Configure SQL Server Firewall Settings | * Click on the SQL Server name   This brings you to the **Server Overview** Panel |  |
|  | This will add your client IP address to the firewall so you can use client tools on your laptop to access your Azure SQL Server. | * Click on ‘Show Firewall Settings’   Note: You can also go to this screen in the Left-Hand Menu**, Firewalls and Virtual Networks** which is under **Security** |  |
|  |  | * This screen shows you the IP Address that you are currently connected from.   Also, you can go to the website, <https://www.whatismyip.com/>    (Not an endorsement, just a suggestion) |  |
|  |  | * Add in your IP address and hit Save. * Provide a name, as you will need to clear out unused IP addresses once in a while. * When you connect with SQL Server Management Server, you may get a request to add your IP which will enter your IP at this location. * You will also see the setting for access from Azure Services. This should be set to ON for the labs. More information is available, <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-firewall-configure> |  |
|  |  | * You will get a notification of success, and will see your IP address listed in the allowed listing. |  |
|  | Get your Key for your Azure Storage Account | * Click on ‘All resources’ and select the Resource Group you created in Lab 01 |  |
|  |  | * This should be how your resource group appears after your Lab 01 is complete. Some of the instance and object names may be different from this print out. |  |
|  |  | * Select the storage account from the list |  |
|  | Get the Access Keys | * Note the Tools at the bottom, we will install the storage explorer in a later step, but first get the Access Keys |  |
|  |  | * There are a number of items on this screen  1. Select the Access Keys screen 2. The circular icon allows you to regenerate the key. This will cause any access using the current key to fail. 3. Copy this key to the clipboard. 4. Paste in notepad and save it to your desktop.   Reference: <https://docs.microsoft.com/en-us/azure/storage/common/storage-account-manage> |  |
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**Lab 02 – Part 2 – Connect to Azure SQL DW with SQL Server Management Studio**

This hands-on demo will detail the steps required to create the objects required for the labs. Not all steps will have a screen shot. We will also connect to the SQL DW and add in users for loading.

| **Part 2 – Connect to Azure SQL DW with SQL Server Management Studio** | | | |
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| **#** | **Commentary / Notes** | **Click Steps** | **Screenshots** |
|  | Install SQL Server Management Studio if you have not installed it already.  If you have 17.x you can use this also. Some students might have older versions that may not work. | * Go the the following link which will take you to the download page. <https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-2017> * Select the Download link which will start the download   Note that other language are available by scrolling down the screen.  The SSMS 18.x installation doesn't upgrade or replace SSMS versions 17.x or earlier. SSMS 18.x installs side by side with previous versions so both versions are available for use. |  |
|  |  | * Once the download is competed, select the file that was downloaded. * Follow the Steps |  |
|  | Once Installed, connect to your SQL Server and DW | * Open SQL Server Management Studio * You will see the popup asking for the Server Name and the User ID. |  |
|  |  | * Server name is from the SQL Server Admin Overview Screen * The Server Admin is the account your entered when you created the SQL DW. Use that ID and Password. |  |
|  |  | * Enter in your values into the SQL Server Connect dialogue * You can remember the Password for these labs. |  |
|  |  | * This computer I am connecting from is different then the one I used earlier in the labs when I created the IP Address Firewall changes. * If you have this popup, click Sign in and follow the steps to sign in using the same Azure AD account you used to log into the Azure Portal. |  |
|  |  | * Once signed in, you can just hit OK to add your client IP address.   Note, your Azure Administrator may have a range of IP addresses you should have in a larger rule. Ask your team for guidance.  Going back to your SQL Server Firewall settings, you would see the addition of your IP address. |  |
|  | The commands are included in the Scripts folder from the Gitgub download.  Lab 02\_CreateUsers.sql | * You should now see the following * As you are logged into the server as the admin, you will see the **Master** database. * Select **New Query** and Enter the following into the query window.   ***Create Login usgsloader with PASSWORD = 'Password!1234'***   * Hit **Execute** |  |
|  |  | * You should see the following once you are successful. |  |
|  | The commands are included in the Scripts folder from the Gitgub download.  Lab 02\_CreateUsers.sql | * From the drop down, select the Adventure Works database. * Open a new Query Window * Paste the following into the Query Window.   ***Create user usgsloader from login usgsloader***  ***EXEC sp\_addrolemember 'staticrc60', 'usgsloader'***  ***EXEC sp\_addrolemember 'db\_ddladmin', 'usgsloader'***  ***EXEC sp\_addrolemember 'db\_datawriter', 'usgsloader'***  ***EXEC sp\_addrolemember 'db\_datareader', 'usgsloader'*** |  |
|  |  | * You should see the following success message |  |
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**Lab 02 – Part 3 – 7. Configure Azure Data Warehouse Diagnostics Logs**

This hands-on demo will detail the steps required to create the objects required for the labs. Not all steps will have a screen shot. This lab will allow us to setup the 7. Configure Azure Data Warehouse Diagnostics Logs

| **Part 2 – Connect to Azure SQL DW with SQL Server Management Studio** | | | |
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| **#** | **Commentary / Notes** | **Click Steps** | **Screenshots** |
|  | These initial steps will be the same for each section. Once you have created one resource, the general process will be the same. | * Sign into your Azure Pass Subscription <https://portal.azure.com> * Open your internet browser in safety mode (InPrivate) and navigate to portal.azure.com and enter the login credentials. |  |
|  | Select your SQL DW Instance | * Click on ‘All resources’ and select the Resource Group you created in Lab 01 |  |
|  |  | * This should be how your resource group appears after your Lab 01 is complete. Some of the instance and object names may be different from this print out. |  |
|  |  | * Click Add a Resource |  |
|  |  | * In the search bar, type in **Log Analytics** * Select **Log Analytics** |  |
|  |  | * Select Create |  |
|  |  | * Fill in the required items * Make sure you select the **same Resource Group** as your Lab is using. This should default to this resource group as we selected ADD from this resource group. * The **Location** should be the same as your SQL DBs for this lab to cut down costs. This way all the communication stays within the data center. * Select **OK** at the bottom of the screen to create. |  |
|  |  | * You will get a successful notification when complete. |  |
|  |  | * Go back to your resource group listing. * select your SQL Data Warehouse (AdventureWorksDW). * Note that the instances and database name may be different from your Lab01. |  |
|  |  | * Click on **Diagnostic Settings** from the side menu under **Monitoring** |  |
|  |  | * You should see the following screen. Select **Add Diagnostic Settings** in the blade. |  |
|  |  | * Provide a name for your diagnostics * Check Send to Log Analytics * Select all options under LOG   Make sure that the Subscription and Log Analytics Workspace are what you have created. If you have multiple of the service, you may need to use the drop down to select the correct values.   * Hit **SAVE** at the top of the blade to create |  |
|  |  | * You should see this when complete. |  |

**Congratulations! You are ready to dive into labs now 😊**