

# SQL Analytics 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 SQL Analytics Pool (formerly Azure SQL Datawarehouse). These modules cover the entire lifecycle of data in your SQL Analytics Pool 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 (Will be provisioned for you after following the lab initialization steps below)**

- SQL Analytics Pool
- Azure Data Lake Storage (Gen2)

**Student Machine (latest versions of the tools below)**

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

## Lab initialization:

1. Create your Azure lab environment

Click on the link below to create your Azure lab environment with all the necessary services. Please note that the environment is available for 10 hours since the time you sign up for it. Once the environment has been created, 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 : <http://bit.ly/2GfLr6V>

Activation Code : ACTIVATE5507

2. Log into Portal

Open your internet browser in safety mode (InPrivate) and navigate to portal.azure.com and enter the login credentials.

- Start your SQL Analytics Pool
  - Click on 'All resources' and select your SQL Analytics Pool (AdventureWorksDW).
  - Make sure your DW is turned on. If not, click on 'Resume' to start your SQL Analytics Pool
- 3. Configure SQL Server Firewall Settings
  - Click on the SQL Server name
  - Click on 'Firewalls and virtual networks'
  - Click on 'Add Client IP' and click 'Save'

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.

- 4. Access Key
  - Click on 'All resources' and select the gen1 storage account from the list (it starts with the name 'labsql')
  - Click on 'Access Keys' and note down the storage account name and access key details
- 5. Connect to SQL Analytics Pool
  - Open SQL Server Management Studio on your laptop and connect to your SQLDW instance using the credentials provided during the sign-up (SQL ADMIN USERNAME and SQL ADMIN PASSWORD)
    - Note: If a new Firewall Rule message pops up during login, Take the subnet IP address range provided in the message and create a new Firewall Rule as in step 4.
  - Open a new query window connected to 'Master' database (right-click on Master and click 'New Query') and execute the following command:

```
Create Login usgsLoader with PASSWORD = 'Password!1234'
```

- Open another query window connected to 'AdventureWorksDW' and execute the following commands:

```
Create user usgsLoader from Login usgsLoader  
GRANT CONTROL to usgsLoader  
EXEC sp_addrolemember 'staticrc60', 'usgsLoader'  
EXEC sp_addrolemember 'db_ddladmin', 'usgsLoader'  
EXEC sp_addrolemember 'db_datawriter', 'usgsLoader'
```

[EXEC sp\\_addrolemember 'db\\_datareader', 'usgsloader'](#)

- Configure SQL Analytics Pool Diagnostics Logs
  - Logon to Azure Portal (portal.azure.com) using your credentials
  - Navigate to your Azure Data Warehouse
  - Click on Diagnostic Settings from the side menu

The screenshot shows the Azure Portal interface for configuring diagnostic settings. At the top, there's a 'Refresh' button. Below it, filters for Subscription, Resource group, Resource type, and Resource are shown. The breadcrumb path is 'DS-SQLDW\_CustomerDemos\_johnmac\_COGS\_60843 > cakarst > loading\_gen2'. The main section is titled 'Diagnostics settings' and contains a table with columns: NAME, STORAGE ACCOUNT, EVENT HUB, LOG ANALYTIC, and EDIT. The table is currently empty, showing 'No diagnostic settings defined'. Below the table is a '+ Add diagnostic setting' link. A note states: 'Click 'Add Diagnostic setting' above to configure the collection of the following data:'. A list of data types follows: SQLSecurityAuditEvents, DmsWorkers, ExecRequests, RequestSteps, SqlRequests, Waits, and Basic.

Refresh

\* Subscription ⓘ Resource group ⓘ Resource type ⓘ Resource

DS-SQLDW\_CustomerDemos\_johnmac\_COGS\_60843 cakarst SQL databases loading\_

DS-SQLDW\_CustomerDemos\_johnmac\_COGS\_60843 > cakarst > loading\_gen2

Diagnostics settings

NAME	STORAGE ACCOUNT	EVENT HUB	LOG ANALYTIC	EDIT
No diagnostic settings defined				

[+ Add diagnostic setting](#)

Click 'Add Diagnostic setting' above to configure the collection of the following data:

- SQLSecurityAuditEvents
- DmsWorkers
- ExecRequests
- RequestSteps
- SqlRequests
- Waits
- Basic

- Click on the "Add diagnostic setting" in the blade

Provide a name for your diagnostics

- Check Send to Log Analytics
- Select all options under LOG

Home > SQL databases > AdventureWorksDW (sqldwsvr-73828/AdventureWorksDW) - Diagnostic settings > Diagnostics settings

## Diagnostics settings

Save
 Discard
 Delete

\* Name

☐ Archive to a storage account  
☐ Stream to an event hub  
☒ Send to Log Analytics

Subscription

Log Analytics Workspace

LOG

☒ DmsWorkers  
☒ ExecRequests  
☒ RequestSteps  
☒ SqlRequests  
☒ Waits

METRIC

☐ Basic

Click Save on Diagnostics settings blade

Click refresh on Diagnostic settings blade to see your new diagnostics

Refresh

\* Subscription SQL-DS-DW\_SUB6\_R&D\_60843  
 Resource group trichterPreReadyLabs  
 Resource type 0 selected  
 Resource Type to start filtering ...

SQL-DS-DW\_SUB6\_R&D\_60843 > trichterPreReadyLabs > trichterusgsdatawarehouse

NAME	STORAGE ACCOUNT	EVENT HUB	LOG ANALYTIC	EDIT SETTING
trichterusgsdatawarehouse diagnostics	-	-	trichterloganalytics	<a href="#">Edit setting</a>

[+ Add diagnostic setting](#)

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

## Lab modules:

### Lab 1: Data Loading Scenarios and Best Practices

- Impact of File Format on Loading
- Impact of Single File Compression
- Impact of Table Distribution
- DMVs to review Load Speeds
- Impact of CTAS vs INSERT INTO SELECT
- COPY Command (out soon)

### Lab 2: Performance Tuning Best Practices

- Replicated Table Behavior
- Performance Tuning
- Resource Class Usage
- Result Set Caching

### Lab 3: Monitoring, Maintenance and Security

- Resource Monitoring in Azure Monitor
- Azure Data Studio SQLDW Dashboard (Azure SQL Data Warehouse Insights)
- Azure SQL Data Warehouse Table and Statistics Queries
- Create User-defined Restore Points
- Maintenance Window Scheduling, Service Health, Service Health Alerts
- Querying ADW Diagnostic Logs using Azure Monitor