Project “Carbon” Private Preview (30 May 2017)

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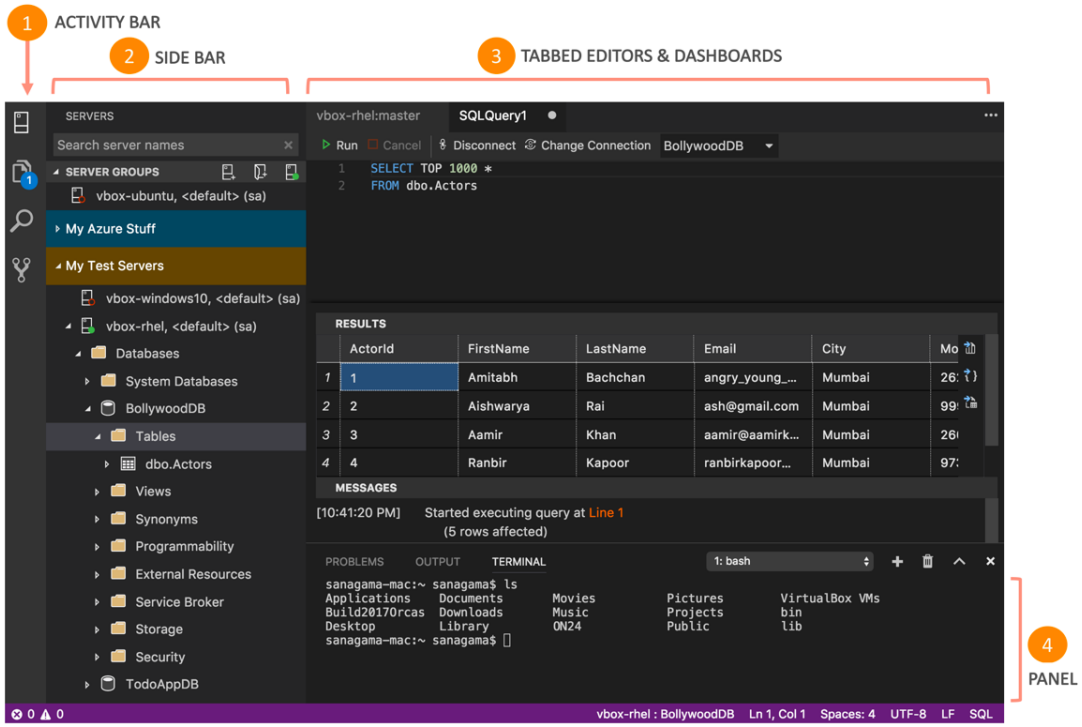
Overview

This document describes how to Download, Install and Use the private preview of project “Carbon” which is a lightweight open source multi-platform and multi-RDBMS tool designed from the ground-up for DBAs and developers.

Project “Carbon” provides DBAs & developers a modern & intuitive database management experience on their platform of choice (Linux, macOS, Windows) and simplifies Configuration, Management, Monitoring and Troubleshooting of databases everywhere. Project “Carbon” is fully extensible through open source by the OSS community and 3rd party tool vendors.

At this time, the private preview of project “Carbon” is only available to Microsoft employees, and customers, partners and MVPs who have a current NDA with Microsoft. Please contact sanagama@microsoft.com before blogging, tweeting or disclosing details publicly.

User Interface



1. ACTIVITY BAR
Provides quick access to Server Groups, File Explorer, Search and Source Control views. The buttons control what is shown in the Side Bar.

2. SIDE BAR
Displays different views like Server Groups, Files, Search and Source Control while working with your database.

3. TABBED EDITORS
The main area to edit files, execute queries & see results.

DASHBOARDS
Provides context-specific task launch points and shows general server health status.

4. PANEL
Messages, errors & warnings, and an integrated terminal to run shell commands and CLI tools.

Private preview details

The version number of the private preview release of project “Carbon” is: **0.1.0**

Supported SQL offerings

The private preview of project “Carbon” works with all supported versions of SQL Server (SQL Server 2008 - SQL Server 2017) and with Azure SQL Database and Azure SQL Data Warehouse. There is no explicit block for SQL Server 2000 or SQL Server 2005, but some features may not work properly.

You can install and use project “Carbon” side-by-side with other tools you already use such as SQL Server Management Studio (SSMS), SQL Server Data Tools (SSDT), Visual Studio on Windows, Visual Studio Code and Visual Studio for Mac.

You do not need super user or administrator privileges to install and use project “Carbon”. Installing project “Carbon” is a simple xcopy and unzip experience and no system reboots are required after installation. Simply delete the unzipped files & folders to uninstall project “Carbon”.

Supported Operating Systems

Windows	Windows 10, Windows 8, Windows 7, Windows Server 2016, Windows Server 2012 (64-bit), Windows Server 2012 R2 (64-bit)
Mac	macOS 10.10 or higher
Linux	Ubuntu 16.04 or higher, CentOS 7, Red Hat Enterprise Linux (RHEL) 7.3

Reporting Issues

Please send an e-mail to sanagama@microsoft.com to report issues and submit feature ideas & suggestions.

- When you report an issue, please attach a screenshot if possible and provide clear steps to help us reproduce.
- When you submit a feature idea or suggestion, please tell us about your scenario to help us prioritize.

Installation

Windows

1. Open your browser and navigate to the private Yammer group: https://www.yammer.com/microsoftcommunityinfluencers/#/groups/6047103/files
2. In the list of files, locate and download the file `2017-May-30-private-preview-carbon-windows.zip` to your computer
3. Unzip the zip file to a folder of your choice. *Tip*: use the open source 7zip utility to unzip files faster.
4. Double-click `carbon.exe` in the unzipped folder to launch the application

macOS

1. Open your browser and navigate to the private Yammer group: https://www.yammer.com/microsoftcommunityinfluencers/#/groups/6047103/files

2. In the list of files, locate and download the file `2017-May-30-private-preview-carbon-macOS.zip` to your computer
3. Double-click the downloaded zip file to expand it
4. Double-click `carbon.app` to launch the application
5. Click **Open** if macOS prompts you with the dialog: `This application was downloaded from the Internet. Are you sure you want to open it?`
6. Optionally, drag `carbon.app` into the `Applications` folder to make it available in `Launchpad`

Linux - Ubuntu

1. Open your browser and navigate to the private Yammer group: https://www.yammer.com/microsoftcommunityinfluencers/#/groups/6047103/files
2. In the list of files, locate and download the file `2017-May-30-private-preview-carbon-ubuntu.tar.gz` and save it in the `HOME` directory on your computer
3. Open a new `Terminal` window
4. In the `Terminal` window, type the following commands to extract the file and launch Carbon:

```
cd ~
tar xvf ./2017-May-30-private-preview-carbon-ubuntu.tar.gz
~/carbon-linux-x64/carbon
```

Linux - CentOS and Red Hat Enterprise Linux

1. Open your browser and navigate to the private Yammer group: https://www.yammer.com/microsoftcommunityinfluencers/#/groups/6047103/files
2. In the list of files, locate and download the file `2017-May-30-private-preview-carbon-rhel.tar.gz` and save it in the `HOME` directory on your computer
3. Open a new `Terminal` window
4. In the `Terminal` window, type the following commands to extract the file and launch Carbon:

```
cd ~
tar xvf ./2017-May-30-private-preview-carbon-rhel.tar.gz
~/carbon-linux-x64/carbon
```

Additional components

Project “Carbon” has built-in support for source code control using Git but requires Git to be installed separately. Please download and install Git for your platform as described here: https://git-scm.com/download

Getting Started

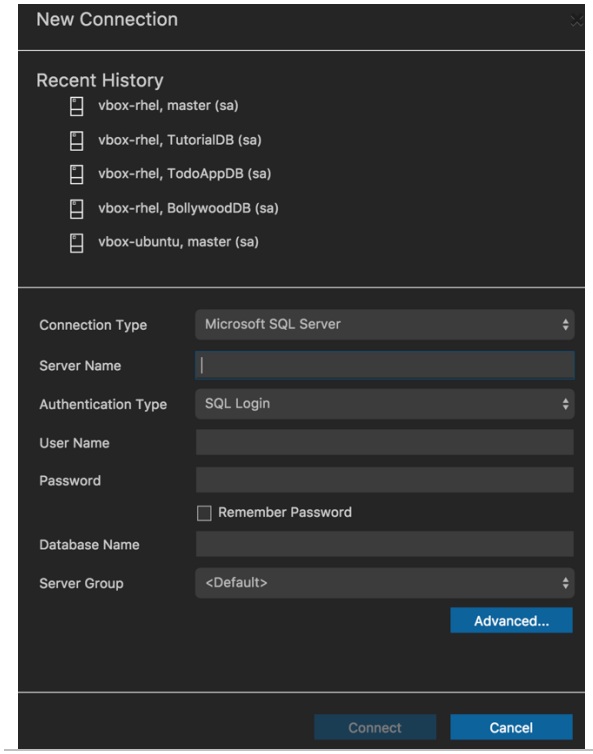
This short tutorial helps you get started with project “Carbon”.

We recommend installing SQL Server 2017 CTP 2.1 on locally Windows, Linux or macOS (Docker) for the best experience with project “Carbon”. See the SQL Server documentation https://docs.microsoft.com/en-us/sql to install SQL Server on your platform.

Connect to SQL Server

On first launch, project “Carbon” displays the New Connection fly out on the right which you can use to connect to your recently used servers or create a new connection. You can also use the Add Server button in the SERVER side bar to connect to a server.

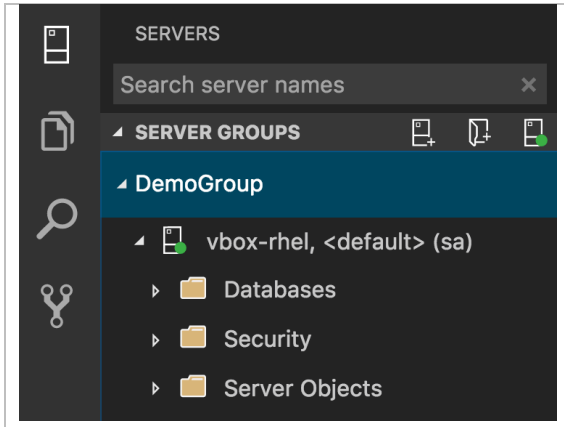
Assuming you have installed SQL Server locally on your computer and enabled SQL Server Authentication, enter the values below in the New Connection fly out:



Connection Type	Select “Microsoft SQL Server”
Server Name	Enter **localhost**
Authentication Type	Select **SQL Login**
User Name	Enter the user name with access to a database on the server (e.g. **SA**).
Password	Enter the password for the specified user.
Remember Password	Leave unchecked to be prompted for the password each time you use this connection.
Database Name	Leave empty to connect to **master** by default.
Server Group	Click the dropdown and choose Add New Group... Follow the prompts to create a new server group called DemoGroup

Click **Connect** to connect to the server and add the connection to the DemoGroup server group in the SERVERS side bar

The SERVERS side bar should look similar to the picture below. The server you connected to should be visible under the DemoGroup server group. The table below has a brief description of the various nodes and commands available:



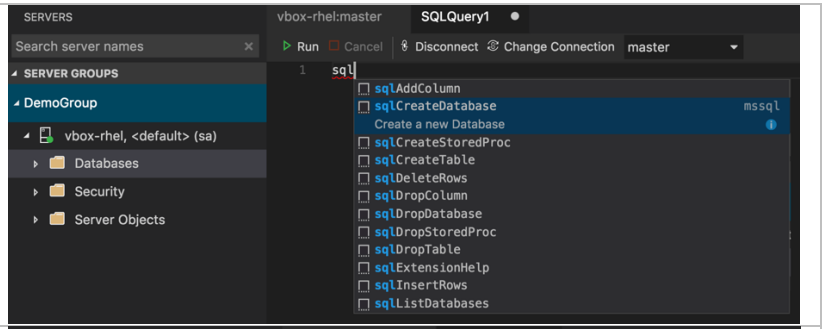
Search	Quickly lets you search for servers in groups.
SERVER GROUPS	Shows connections that you added to a group when you created the connection. Connections in the <Default> group are shown first followed by any custom groups you create. The SERVER GROUPS node has the following buttons: **New Connection:** launches the connection fly out to add a new connection **Add Server Group:** launches the server group fly out to add a new group **Show Active Connections:** filters nodes to show active (connected) servers.
Group Node (e.g. DemoGroup)	Shows the group name and the connections in the group in a tree view Right-click the group node to use the following commands: **Rename Group:** rename the group inline **Delete Group:** delete the group including the connections within the group
Server Nodes (e.g. vbox-rhel, localhost, etc.)	Shows the servers you are connected to along with the default database and the login user name. A green icon next to the server name indicates an active connection. A red icon next to the server name indicates a disconnected connection. Right-click the server node to use the following commands: **Connect/Disconnect:** connect or disconnect **New Query:** open a new query editor window **Delete Connection:** disconnect and delete this connection **Refresh:** refresh metadata for this connection
Databases Node	Expand the server node to see databases and other objects in a tree view. Right-click the database node to use the following commands: **New Query:** open a new query editor window connected to this server **Refresh:** refresh metadata for this connection

Create a Database

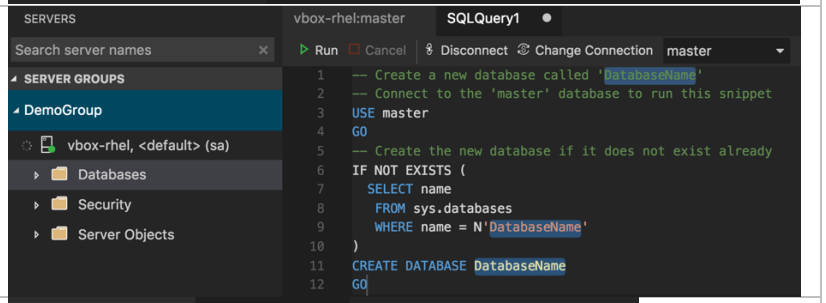
Right-click the **Databases** node under your server and choose **New Query** to open a new query editor window and type the commands below to create the **TutorialDB** database.

1. Type the word **sql** in the editor window to display a list of T-SQL snippets to help you get started.

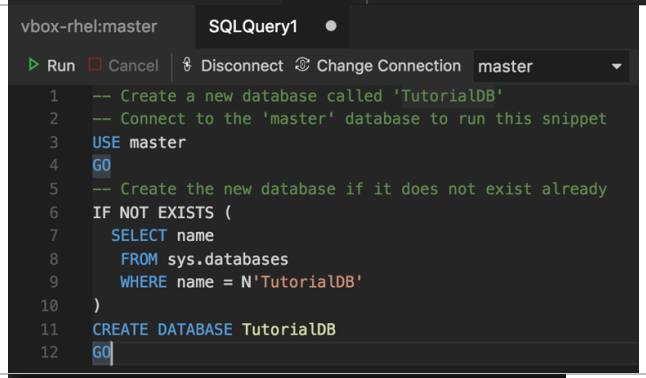
2. Click on the **sqlCreateDatabase** snippet to insert the T-SQL snippet into the editor window.



3. Type **TutorialDB** to change all 3 occurrences of the text **DatabaseName** to **TutorialDB** at once.

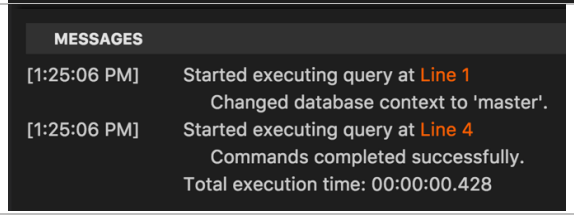


4. Your T-SQL statement should look like this.



5. Click the **Run** button or press **F5** to execute the T-SQL statement and create the database.

6. You should see a message similar to the one on the right.



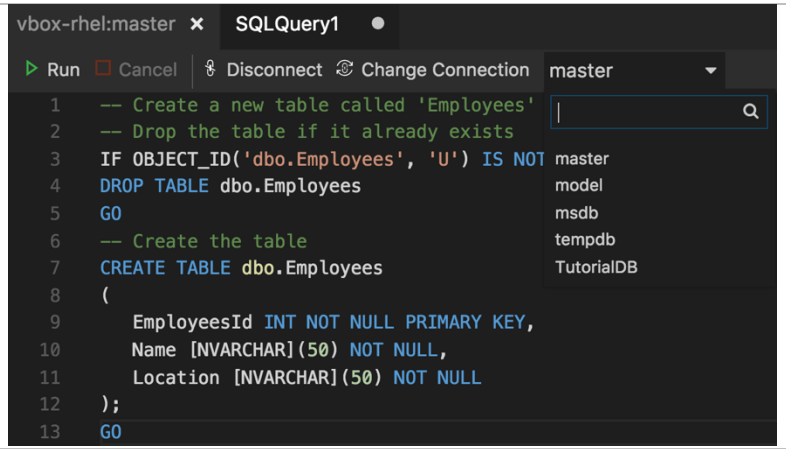
Create a Table

1. Delete all the T-SQL text in the editor window.

2. Copy and paste the T-SQL snippet shown on the right into the query editor window to create the **Employees** table.

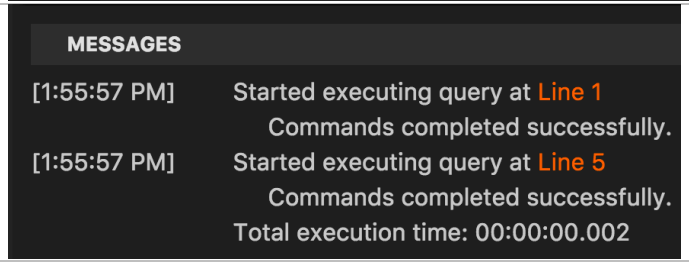
```
-- Create a new table called 'Employees'
-- Drop the table if it already exists
IF OBJECT_ID('dbo.Employees', 'U') IS NOT NULL
DROP TABLE dbo.Employees
GO
-- Create the table
CREATE TABLE dbo.Employees
(
   EmployeesId INT NOT NULL PRIMARY KEY,
   Name [NVARCHAR](50) NOT NULL,
   Location [NVARCHAR](50) NOT NULL
);
GO
```

3. Change the current database from **master** to **TutorialDB**. Click the database dropdown and select **TutorialDB**.



4. Click the **Run** button or press **F5** to execute the T-SQL statement and create the table.

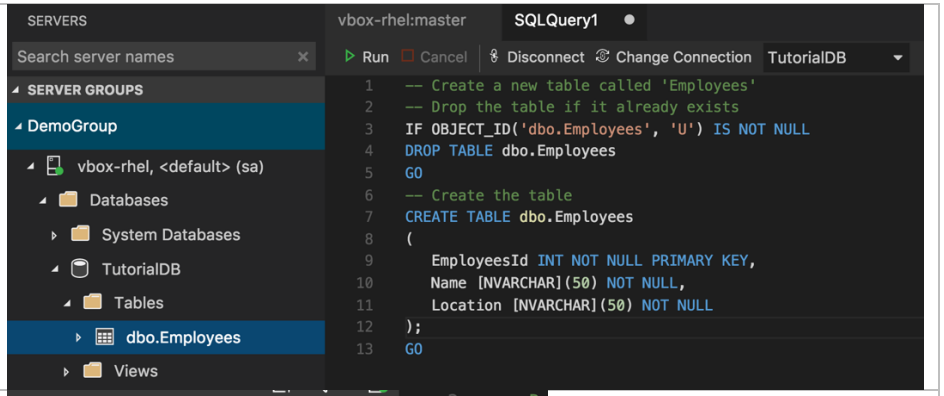
5. You should see a message similar to the one on the right.



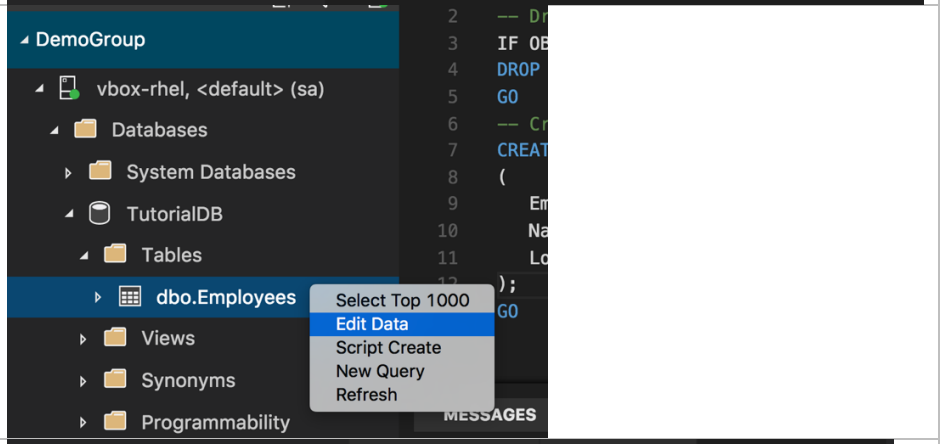
Insert data into a Table

1. Under **Server Groups**, expand **TurorialDB** database node.

2. Under the **TutorialDB** node, expand the **Tables** node to see the **dbo.Employees** table.



3. Right-click the **dbo.Employees** table and choose **Edit Data** from the context menu to display the **Data Editor**.

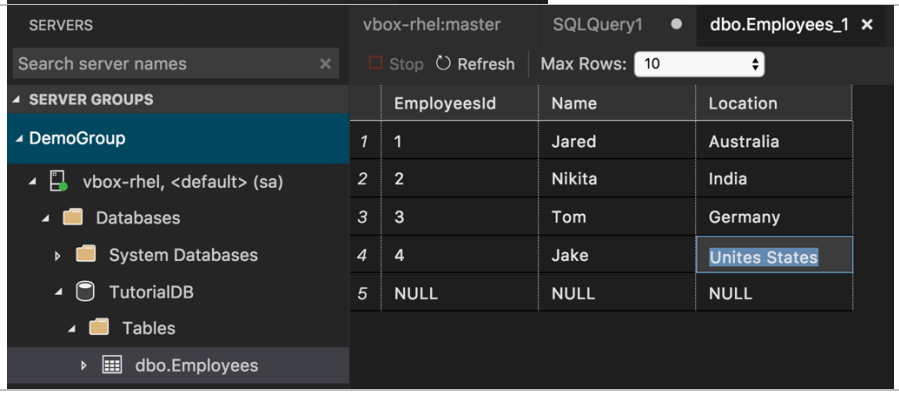


4. Enter the values shown on the right in **Data Editor**.

5. Enter a value in a column and press the **TAB** key to move to the next column.

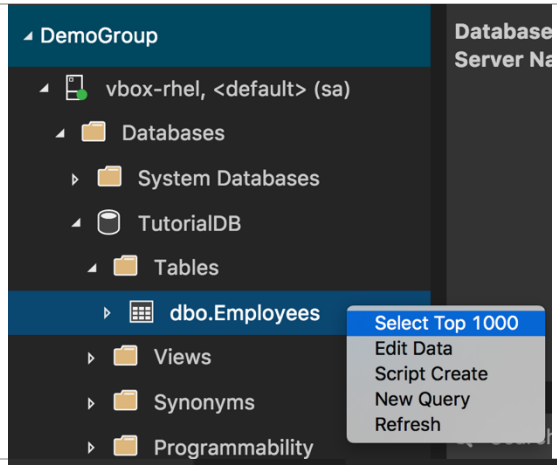
6. Press the **TAB** key in the last column (Location) to insert a new row.

7. The values you enter are validated against the table schema before they are saved to the database.

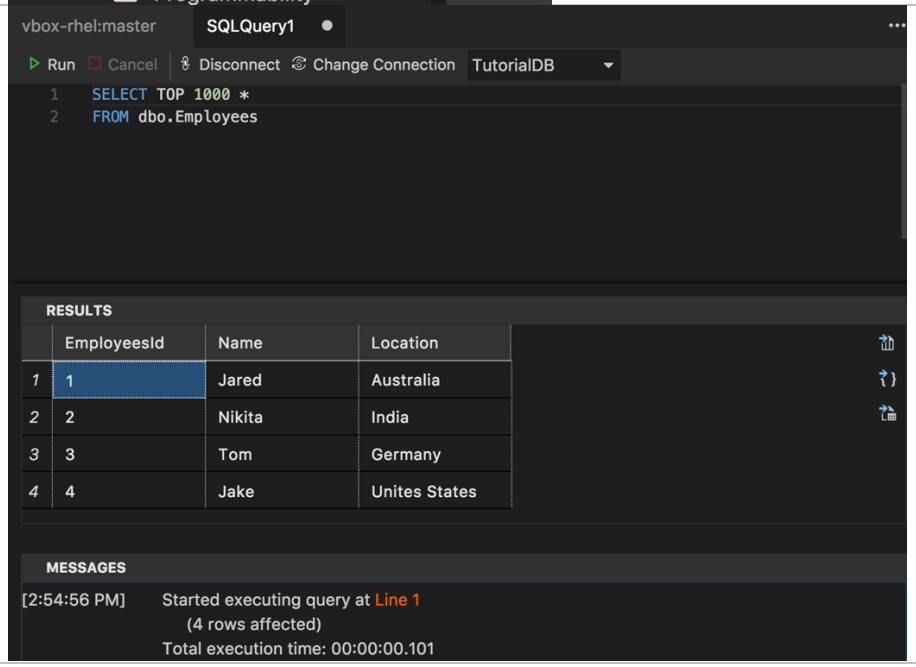


View data in a Table

1. Right-click the **dbo.Employees** table and choose **Select Top 1000** to display data.

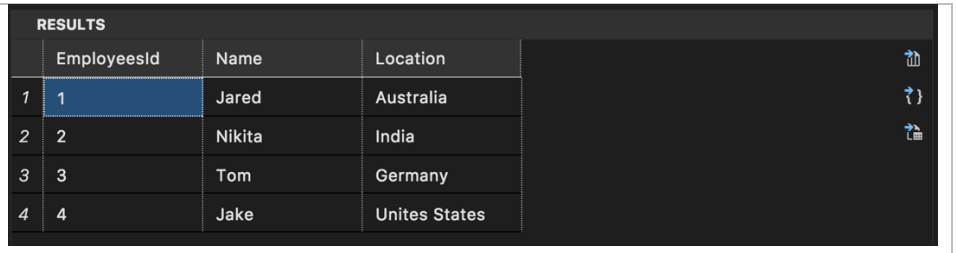


2. Use the mouse or keyboard to navigate the results



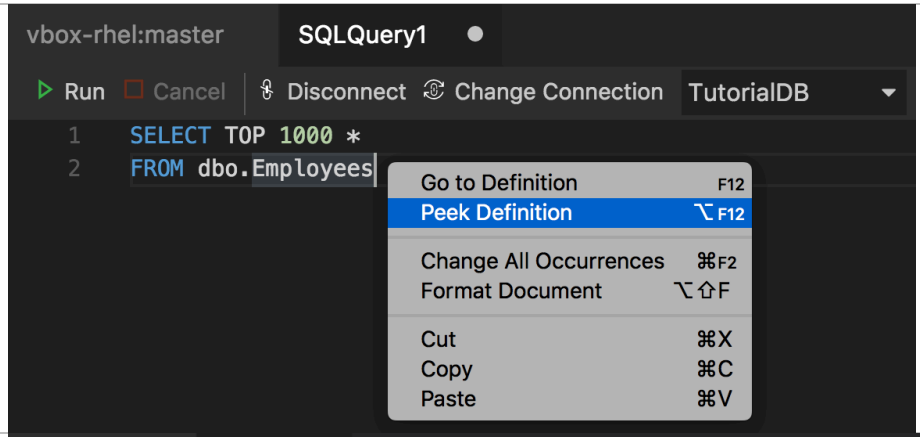
Save results as JSON, CSV or Excel

1. Click the  icon and follow the prompts to save results as JSON and open the file.
2. Click the  icon and follow the prompts to save results as CSV and open the file.
3. Click the  icon and follow the prompts to save results as Excel and open the file.

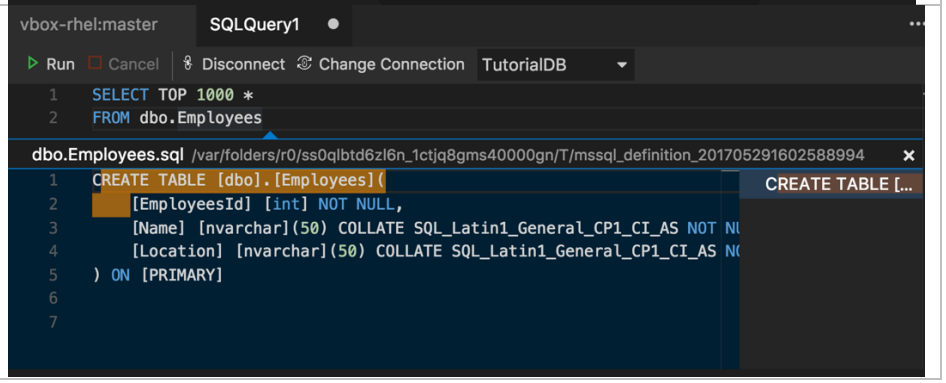


Quickly inspect table schema

1. In the editor window, right-click **dbo.Employees** and choose **Peek Definition** from the context menu.



2. See the definition of the **dbo.Employees** table inline in the editor window.
3. Optionally, click **CREATE TABLE** to generate a T-SQL script to create the **dbo.Employees** in a new editor window.



Additional Features

Working with existing .sql files

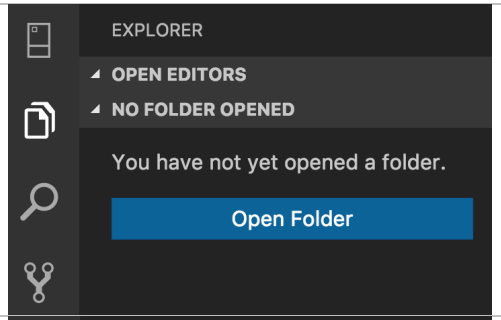
You can use project “Carbon” to work with your existing .sql files. Most customers organize files in a folder structure. You can open a folder in project “Carbon” to easily access all the files and sub-directories within it.

After you open a folder in project “Carbon”, you can also use additional features such as search in files and source control integration.

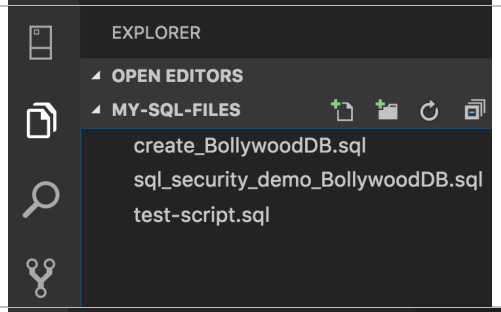
1. Click the  icon in the **Activity Bar** to show the **Explorer** in the side bar.

2. Project “Carbon” displays the **Open Folder** button if you do not have a folder open.

3. Click **Open Folder** to browse to a folder on your computer and open it in project “Carbon”



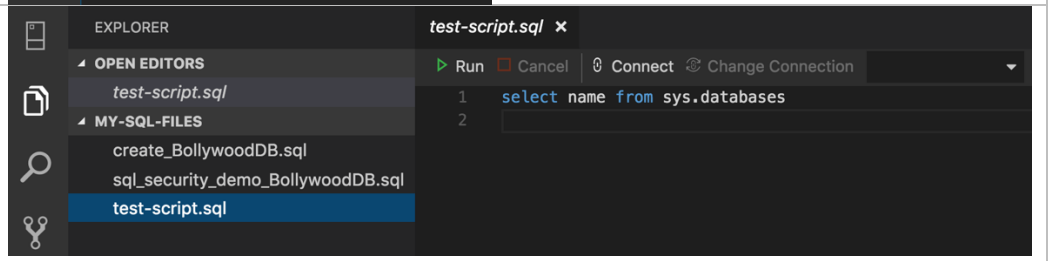
4. In this example, we have opened the folder **MY-SQL-FILES** which has 3 .sql files in it.



5. Click on a file in the **Explorer** to open it in a query editor window. In this example, we have opened the file **test-script.sql**

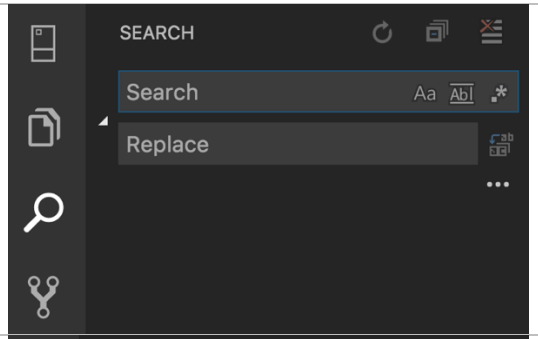
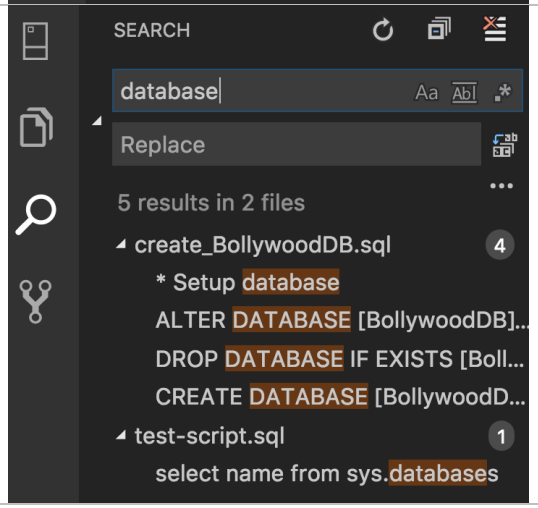
6. Click the **Connect** button in the query editor window to show the connection fly out and connect to a server.

7. Click the **Run** button or press **F5** to execute the T-SQL statements in the file.



Use Search with your files

After you open a folder in project “Carbon”, you can perform global search and replace across your open folder

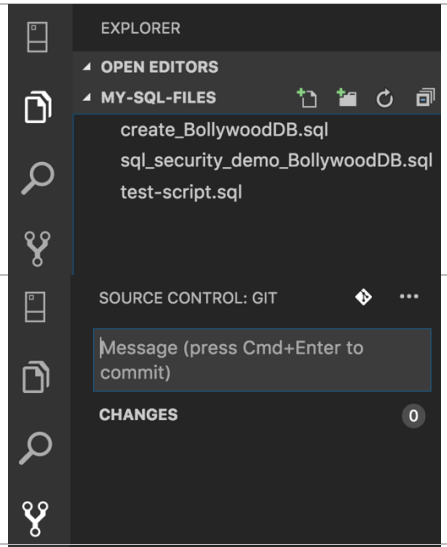
1. Click the  icon in the **Activity Bar** to show **Search** in the side bar.	
2. In this example, we searched for the text **database** in all files in the folder **MY-SQL-FILES**. 3. The **Search** experience in the side bar shows all occurrences of the text **database** in all files in the folder **MY-SQL-FILES**. 4. From here, you can open the file with the matching text or easily replace all occurrences in all files with other text.	

Use Source Control (Git)

Project “Carbon” has built-in support for source code control using Git but requires Git to be installed separately. Please download and install Git for your platform as described here: https://git-scm.com/download

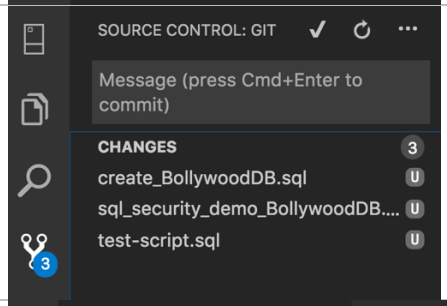
After you open a folder in project “Carbon”, you can use the built-in source control integration with Git.

1. In this example, we have opened the folder **MY-SQL-FILES** which has 3 .sql files in it
2. This folder is currently not under source control.

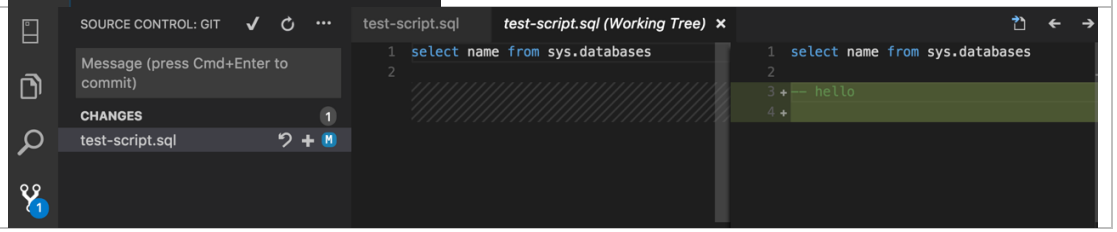


3. Click the icon in the **Activity Bar** to show **Source Control** in the side bar.
4. Currently, project “Carbon” only supports “Git” and we plan to add other SCM providers in future releases.

5. Click the icon to initialize the local Git repository.
6. Enter a message and click the icon to commit to the local repo.

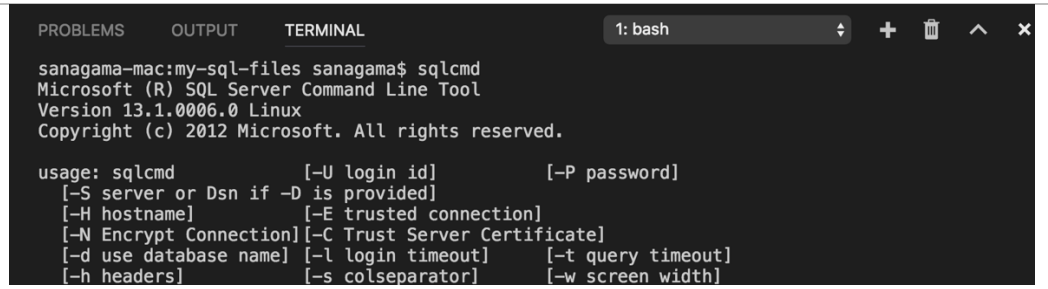


7. From here, when you change a file in your folder, you can use Git to see diffs, merge and check-in



Use the Interactive Terminal

In project “Carbon”, you can open an integrated terminal, initially starting at the root of your folder. This can be very convenient as you don't have to switch windows or alter the state of an existing terminal to perform quick command line tasks.

1. From the **View** menu, click **Integrated Terminal** to show the terminal. 2. From here, you can run any command line tool or shell script for your platform. 3. This example shows the **sqlcmd** command line utility running in the **Integrated Terminal** in project “Carbon” on macOS.	
4. This example shows the Invoke-Sqlcmd PowerShell cmdlet running in the Integrated Terminal in project “Carbon: on Windows.	

Use the Command Palette

Every command in project “Carbon” has a customizable keyboard shortcut and is accessible through the **Command Palette**. The **Command Palette** provides an easy way to access and execute editor commands, open files, search, execute queries, perform SCC operations, etc.

Press the **F1** key to display the Command Palette and type **?** into the input field to get a list of available commands you can execute.

Feature backlog

The primary purpose of this private preview is to offer customers under NDA a sneak peek of project “Carbon” and seek feedback. We have a sizable backlog of features planned for upcoming releases. In no particular order, here’s a high-level list of items we’re working on next:

Generate T-SQL scripts Backup & Restore View query plans	Configure, Manage, Monitor and Troubleshoot Always On availability groups Support for Registered Servers and Central Management Servers	Support for PostgreSQL

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