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OHDSI In-a-box

Quick Start – Installation Guide

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Overview

IQVIA has created an OHDSI In-a-box quick start installation guide to deploy the OHDSI Atlas Website, WebAPI and Synpuf data repositories. The purpose of this installation guide is to provide a quick and easy way to deploy all of the required software, services and databases to run the Atlas Web Application.

For the purposes of this quick start installation guide, this documentataion for the OHDSI In-a-box only for PostgreSQL database installation. If you would like to install a different version, please refer to the OHDSI In-a-box documentation history for other installation options. Also, for further information on how to reconfigure the system for various databases please refer to the OHDSI community website for those specific configurations and installation instructions.

Important Note:
This installation guide is not meant to replace any of the instruction on the OHDSI community website nor replace the installation instructions for any of the applications. The OHDSI In-a-box quick start installation guide has streamlined much of the manual setup steps that would be required and has targeted a very specific implementation. For more information on the OHDSI installation instructions please refer to the links below.

Atlas Installation

https://github.com/OHDSI/Atlas

WebAPI Installation

https://github.com/OHDSI/WebAPI

Software Location

To aide in the installation process all required software and compiled source code has been packaged and stored in an AWS S3 bucket.

S3 Bucket Location:

s3://ohdsi-installation-preperation

Within this S3 bucket are the following folders:

/backups

The backups folder contains all of the database backups specific to PostgreSQL with a predefined set of credentials.

Note:
The backup location also contains SQL Server backup, but they are for version 2.3.1 only.

/software

All software required to complete the OHDSI In-a-box installation. A few items included in the software folder are as follows:

- Tomcat
- PostgreSQL
- PgAdmin
- Nodejs
- Chrome
- Java Development Kit
- Atlas
- WebAPI

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Note:
If you wish to use a different version of the software please refer to the installation instructions for each of the components you wish to installation manually.

Installation Preparation

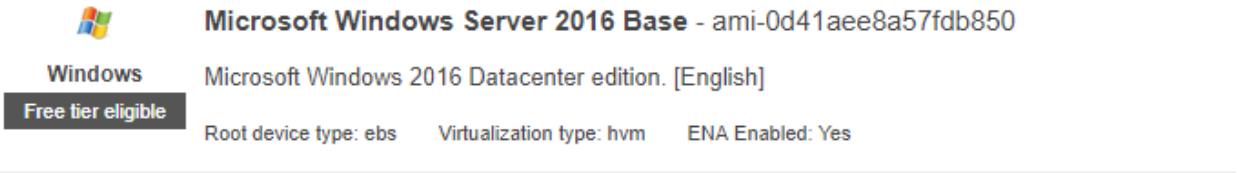
For these installation instructions it is required that you have access to AWS S3 buckets and preferred that you have an AWS cloud account. The installation will not focus on the installation of the operating system because an AWS template is going to be selected from AWS's quick start option.

Installation Quick Start Steps

AWS Instance Deployment

To begin the installation login to your AWS account and navigate to EC2 management. From this location click on the Launch Instance Option.

Once on the Instance Options page select **Windows Server 2016 Base** as shown below.



Once selected, please navigate through the wizard selecting the recommended options below.

Instance Size: t2.2xlarge

Instance Diskspace: 1TB

You can select a smaller instance; however, the performance of the server will greatly be impacted. At a minimum it is recommended that you select a t2.medium. The software has not been tested on any lesser configuration and may not run correctly.

Security Rules:

Please be sure to allow port 3389 from your IP address so you can Remote Desktop into the computer once the server is up and running. If you do not enable this port you will not be able to connect. Please be very careful setting the security rules to prevent any unauthorized access to the server.

Key Pair Generation

For added security, generate a key pair that will be used to login to the server. For more information on how to generate a keypair refer to the following AWS link below.

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-key-pairs.html

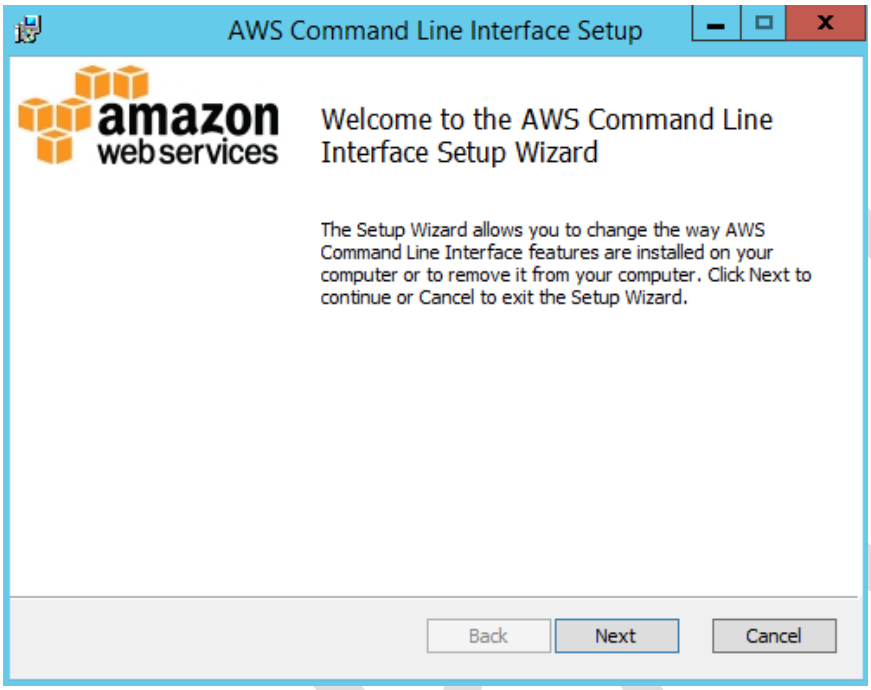
AWS CLI (Command Line Interface) Installation

Once the instance or server is ready and accessible, login to the server and copy over the AWS CLI (Command Line Interface) installation. The installation for the AWS client can be downloaded from the aforementioned S3 bucket or from AWS's website.

AWS CLI S3 Link:
s3://ohdsi-installation-preperation/software/aws/AWSCLI64.msi

AWS CLI Direct Download Link
https://s3.amazonaws.com/aws-cli/AWSCLI64.msi

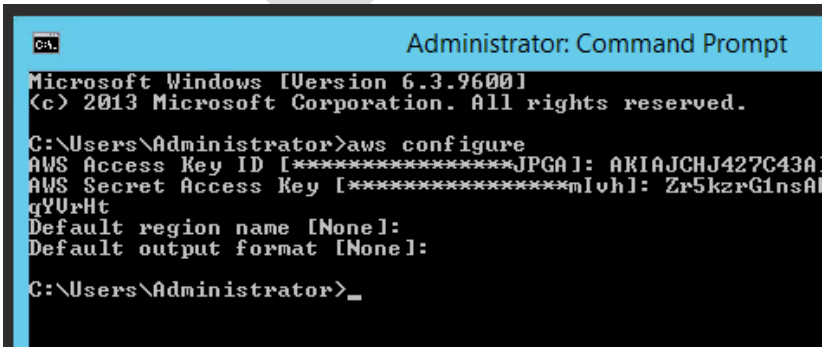
Once you have downloaded the appropriate software follow the prompts and install the AWS CLI software.



AWS Installation Software Download

Prior to downloading and synchronizing all of the software from the S3 bucket you must configure the AWS CLI application. To configure the CLI follow the instructions below:

1) Launch the command line prompt as administrator
2) Run the "**aws configure**" command
3) Enter in the **AWS KEYID**: AKIAJCHJ427C43AIKWRQ
4) Enter the **AWS Public Key**: Zr5kzrG1nsAN/c1GlH7NiJiyxCvIh+PaFeqYVrHt
5) Leave all other defaults



6) Create a folder to store the downloaded files from the S3 bucket

a. Preferably the c:\ohdsi\install

7) Run the synchronization command:

aws s3 sync s3://ohdsi-installation-preperation/software/ C:\ohdsi\install\software

8) Run the synchronization command to synchronize all the database files:

aws s3 sync s3://ohdsi-installation-preperation/postgresqlbackups/ C:\ohdsi\install\postgresqlbackups

Note:
Due to the size of the data (over 250GB), please be patient while this process completes. It may take a while.

JDK Installation

The Java Development Kit is required for Tomcat. To install the JDK, please run the following installation in the \software folder.

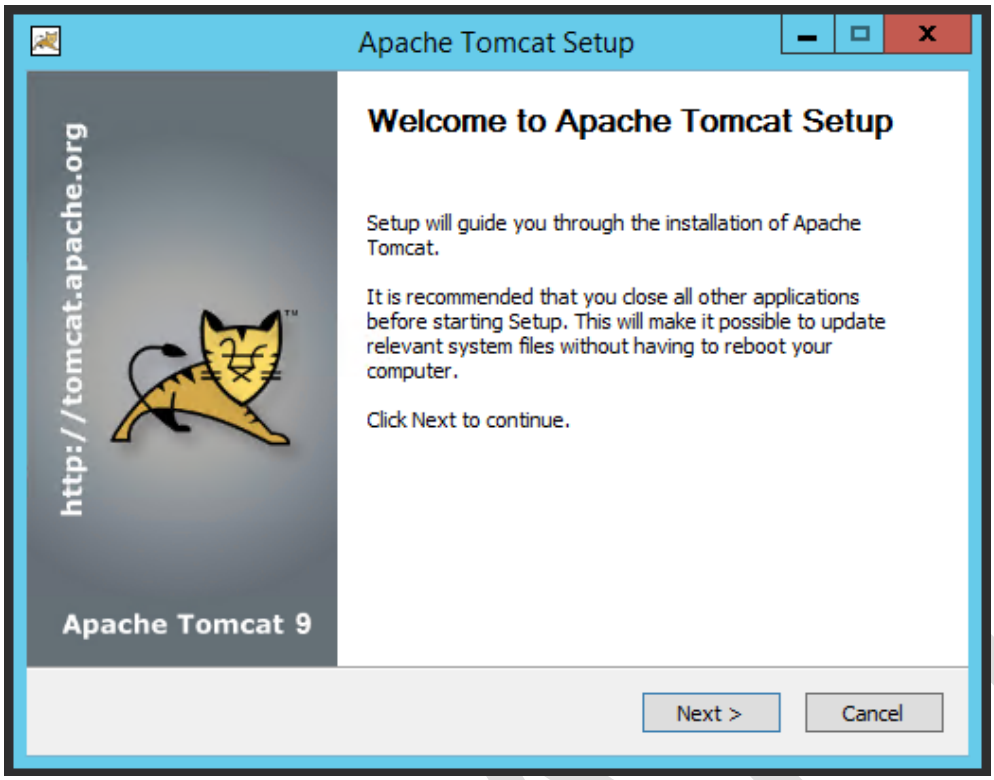
jdk-8u161-windows-x64.exe

Tomcat Installation

To run Atlas and the WebAPI services Tomcat must be installed. To install Tomcat, navigate to the \software\tomcat folder and run the following installation.

apache-tomcat-9.0.4

Note:
Please be sure to select **Host Manager** when the options are shown during the installation and set a user and password.



Tomcat Installation Defaults:

Please be sure to set a user and password for the Host Manager of Tomcat. This will allow you to administrate Web Applications within Tomcat and login to the management part of the services.

IIS Installation Server Feature

To begin the installation of IIS, click on the windows icons and then click on Server Manager.

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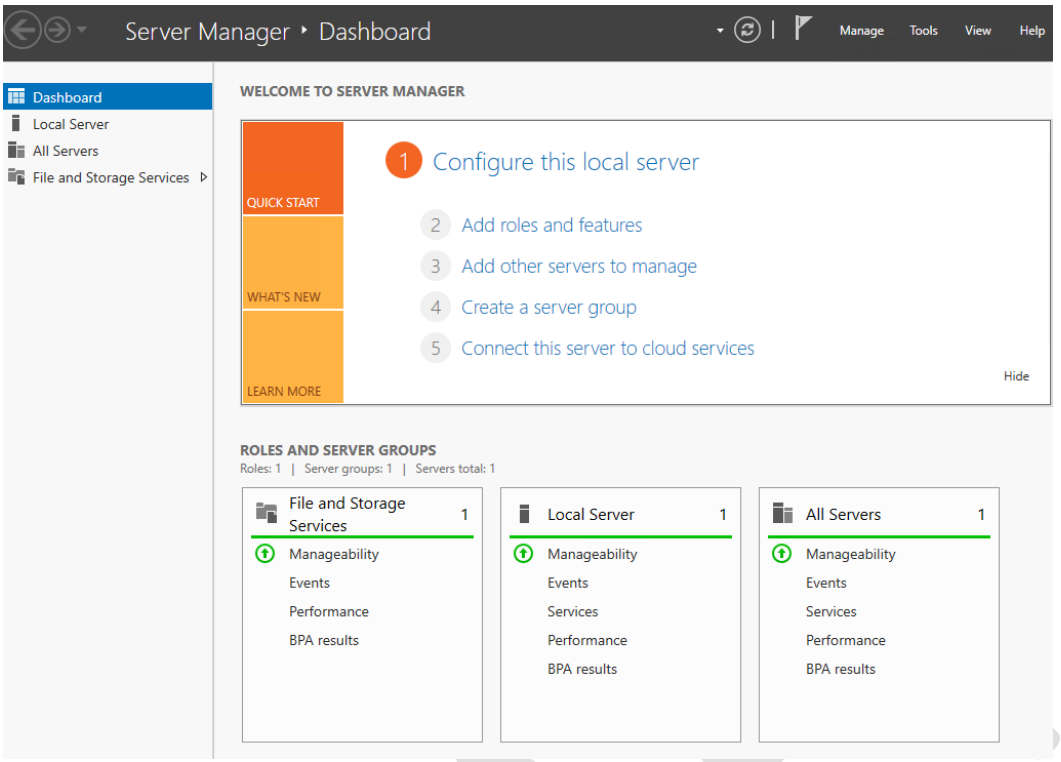
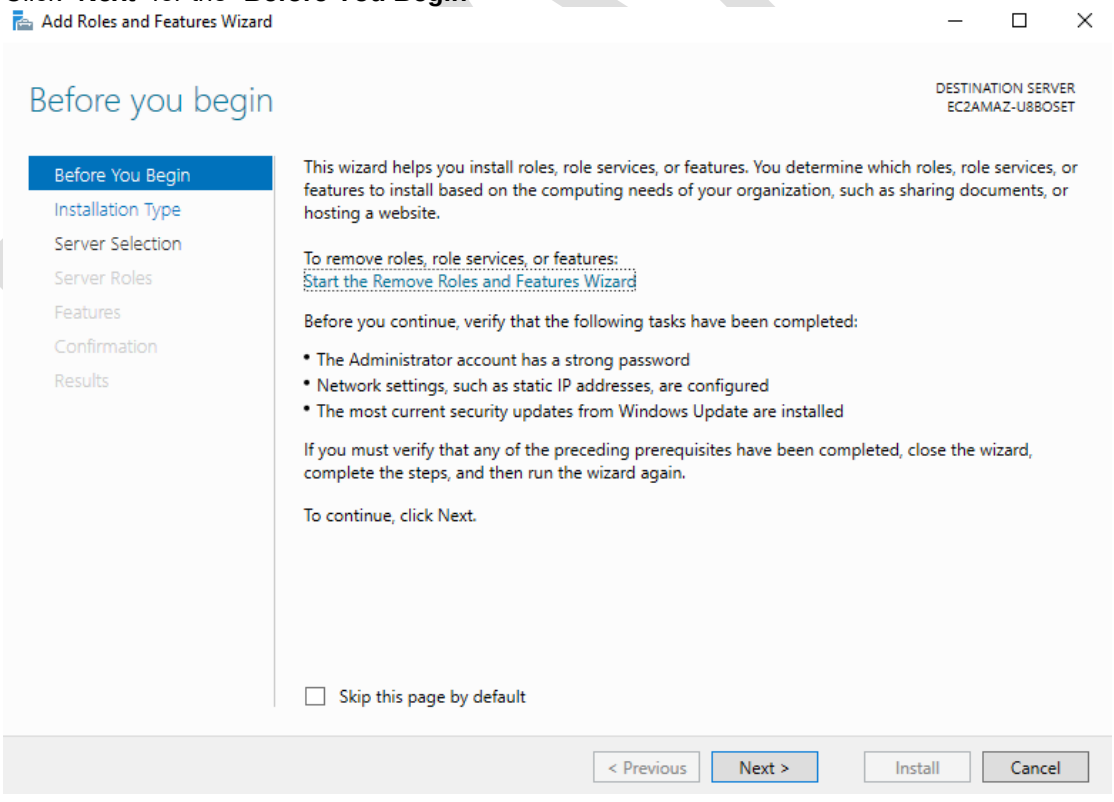
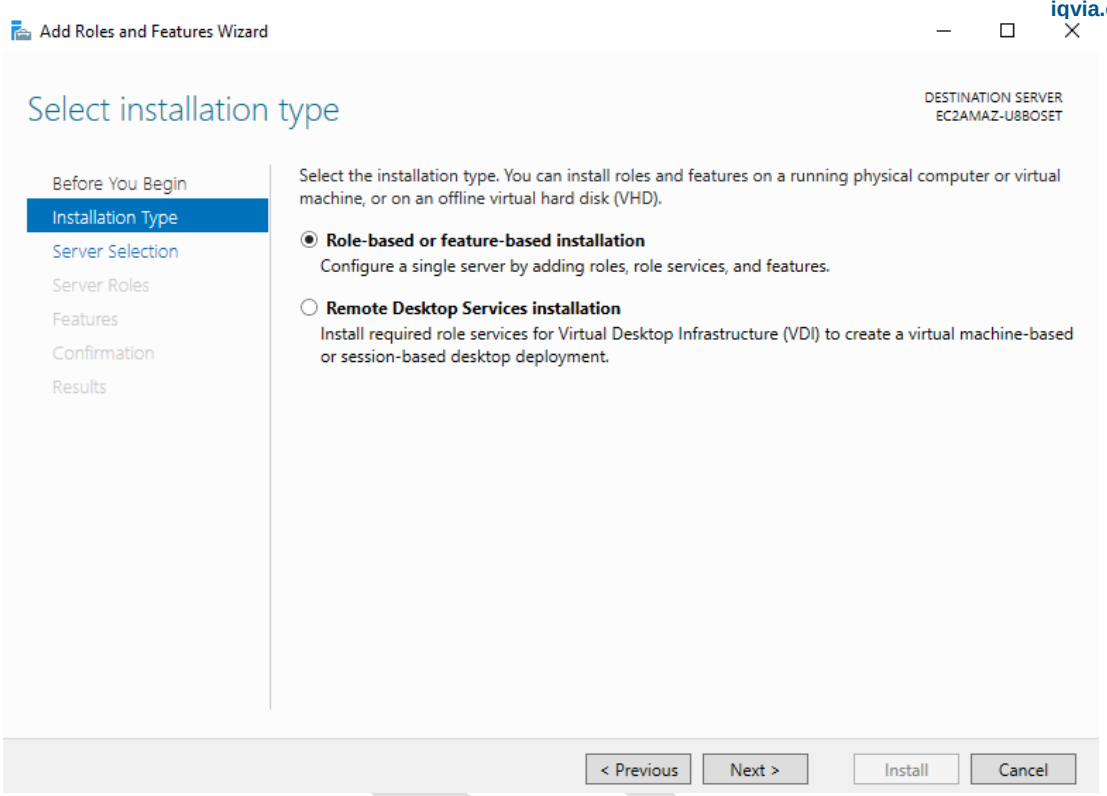


From the Server Manager Dashboard click on "**Add roles and features**"

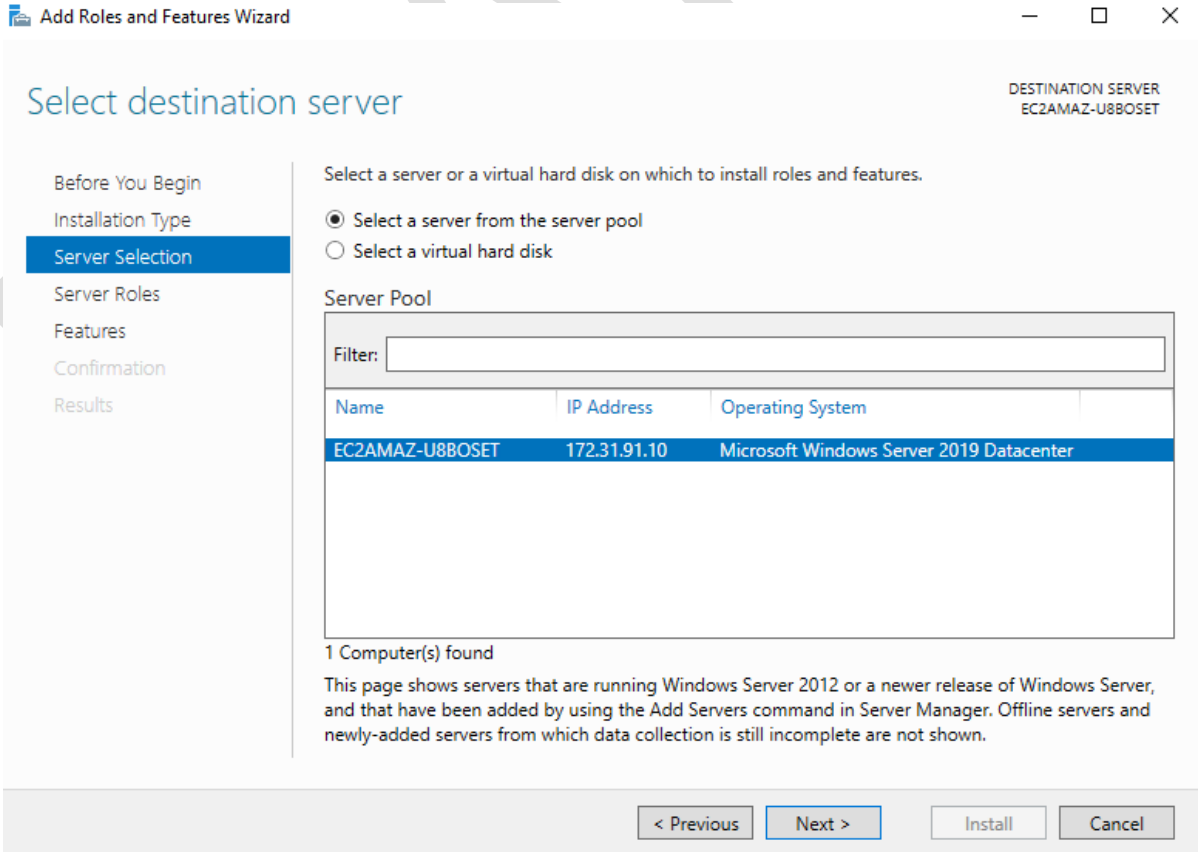
1) Click "**Next**" for the "**Before You Begin**"



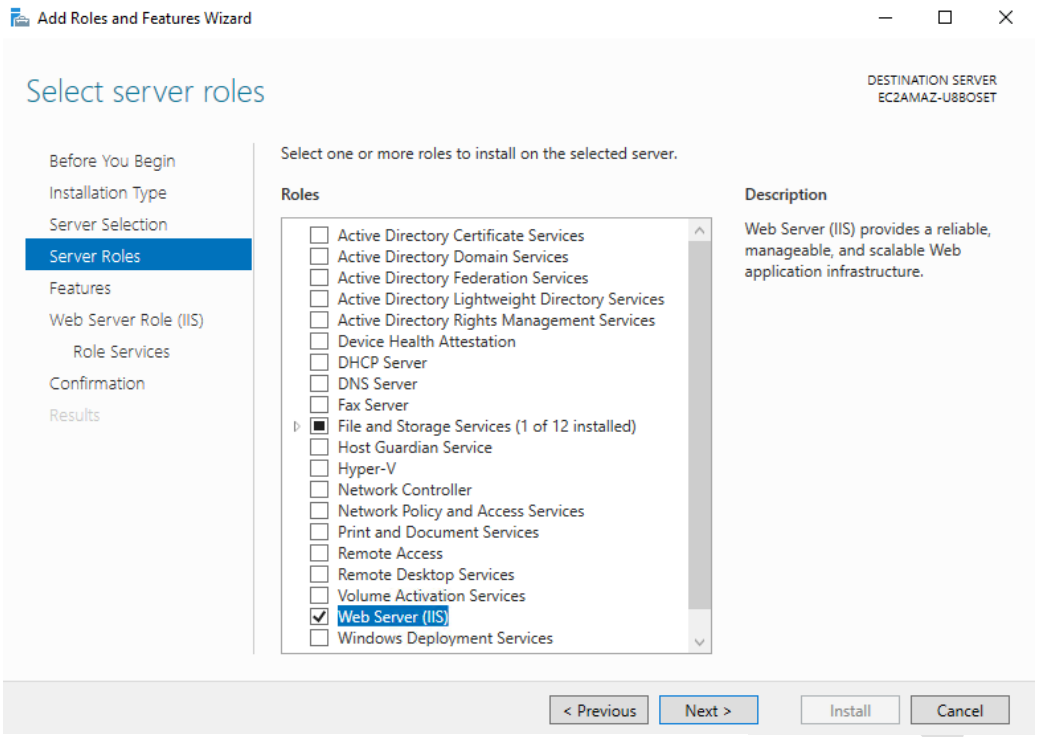
2) Click "**Next**" on the "**Installation Type**" and leave the default as "**Role-based or feature based installation**"

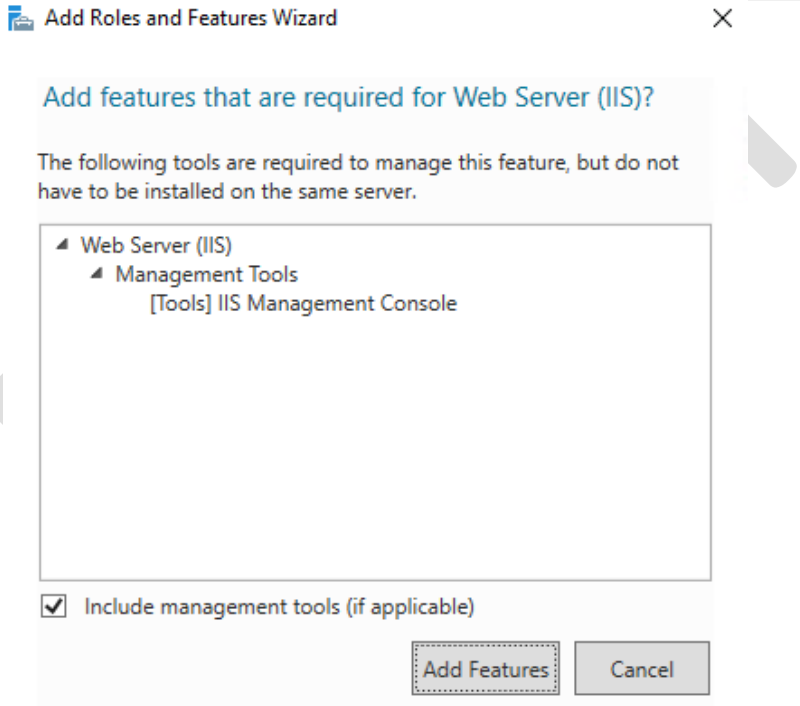


3) Click "**Next**" on the "**Server Selection**" and leave the default as selected.



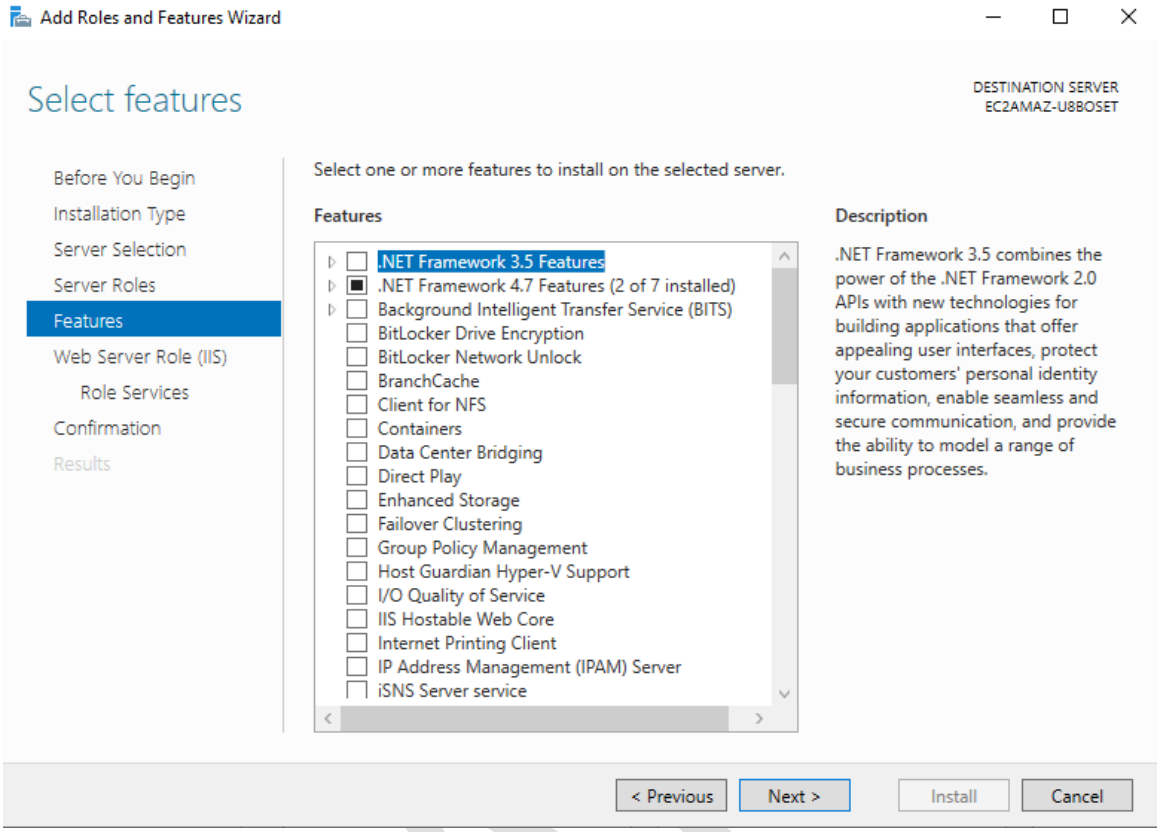
4) On the Server Roles screen select "**Web Server (IIS)**" from the roles and leave all defaults and select "**Add Features**".





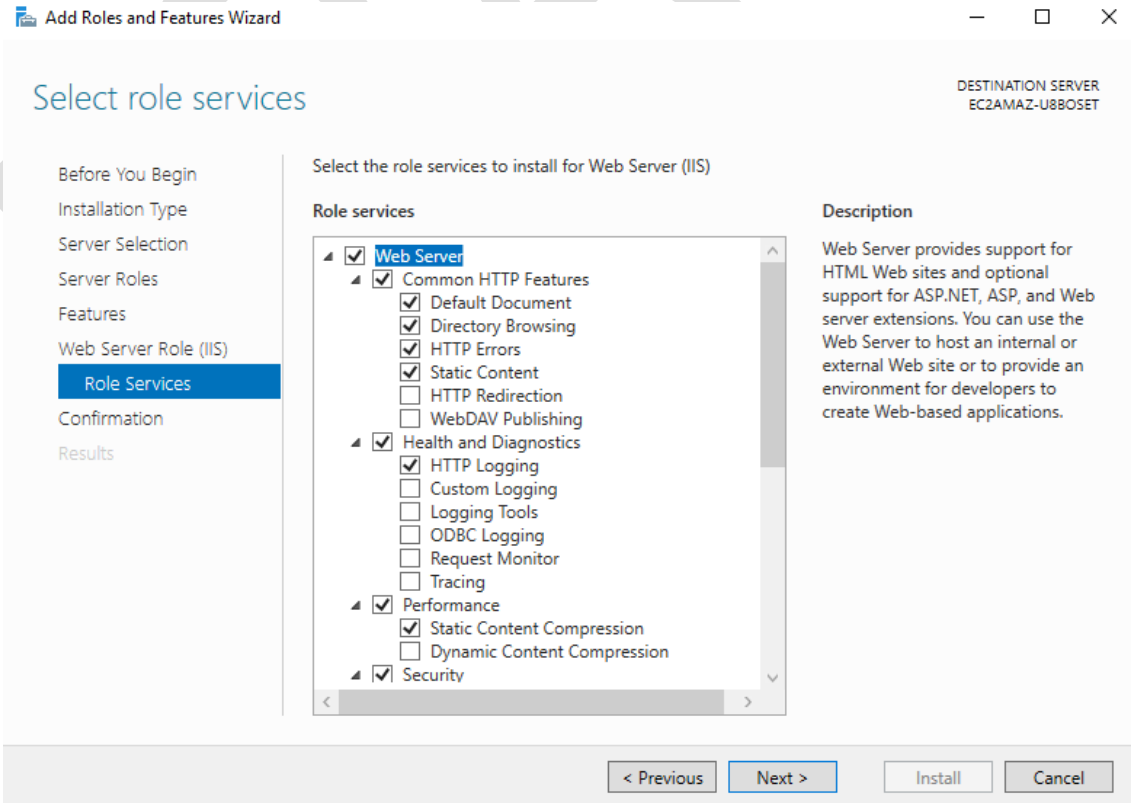
Then click "**Next**".

5) Leave all the defaults for the "**Features**" and click "**Next**"

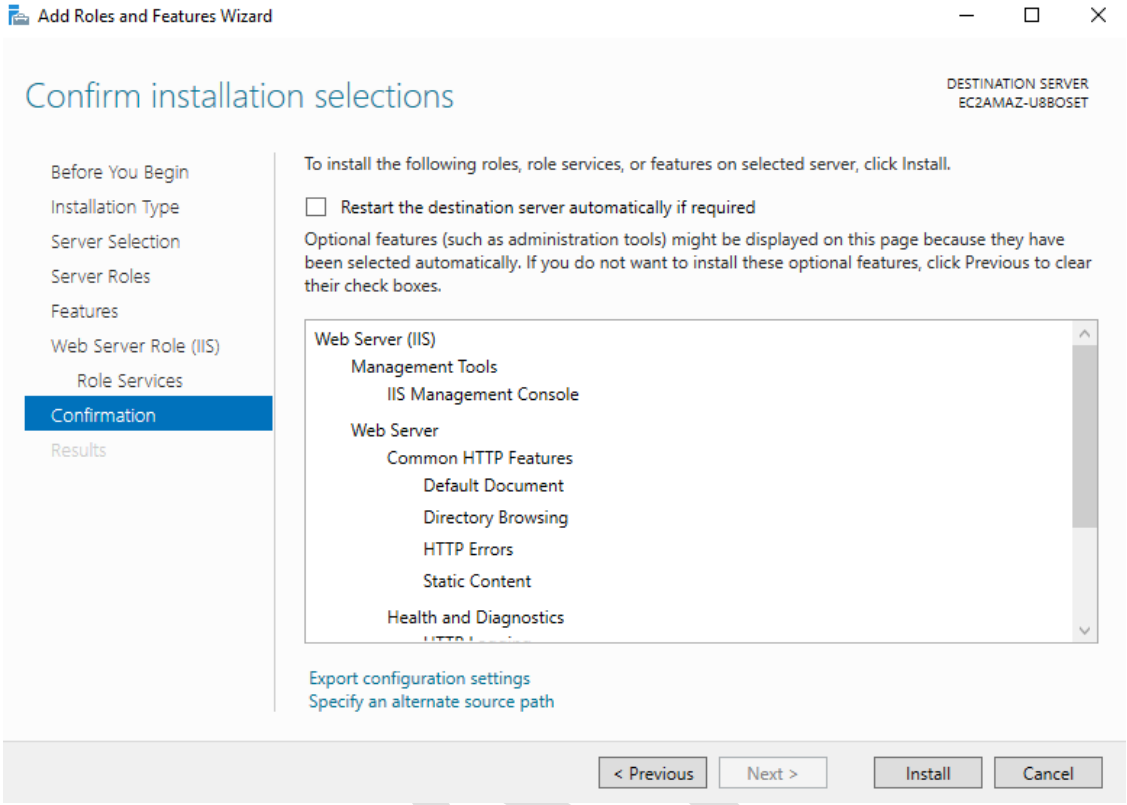


6) Leave all the defaults for the "**Web Server Role**" and click "**Next**"

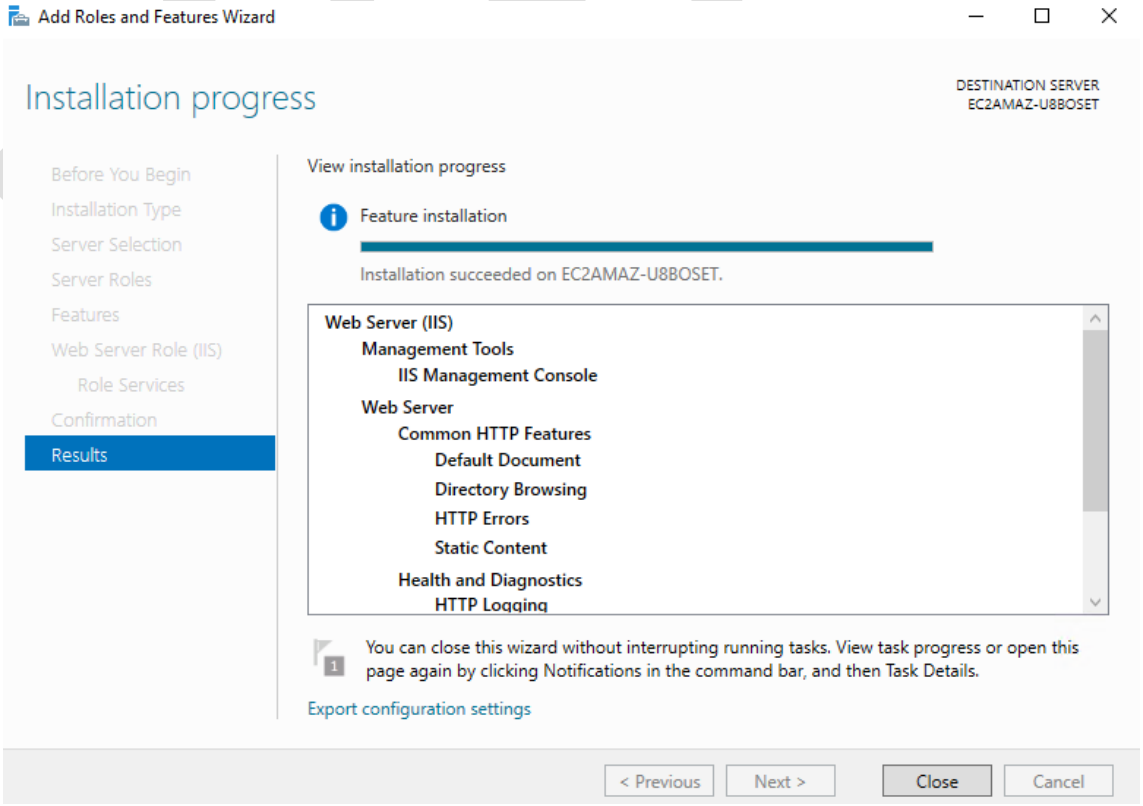
7) Leave all the defaults for the "**Role Services**" and click "**Next**"



8) Finally, on the "**Confirmation**" screen click "**Next/Install**" to add the new features.



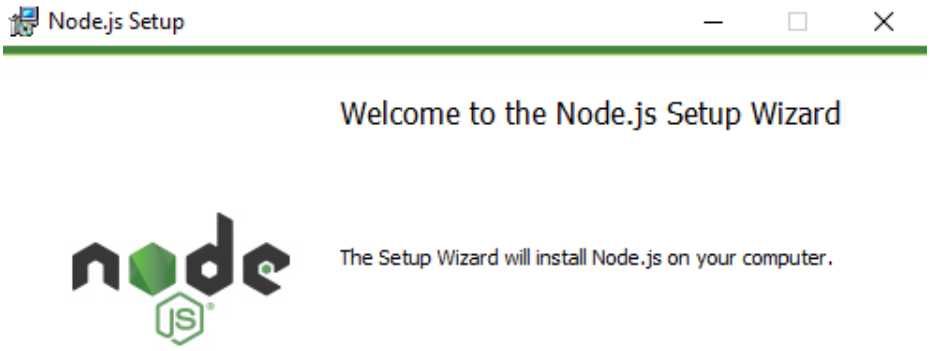
9) The installation should complete after all features have been installed at which point feel free to close the dialog shown below.

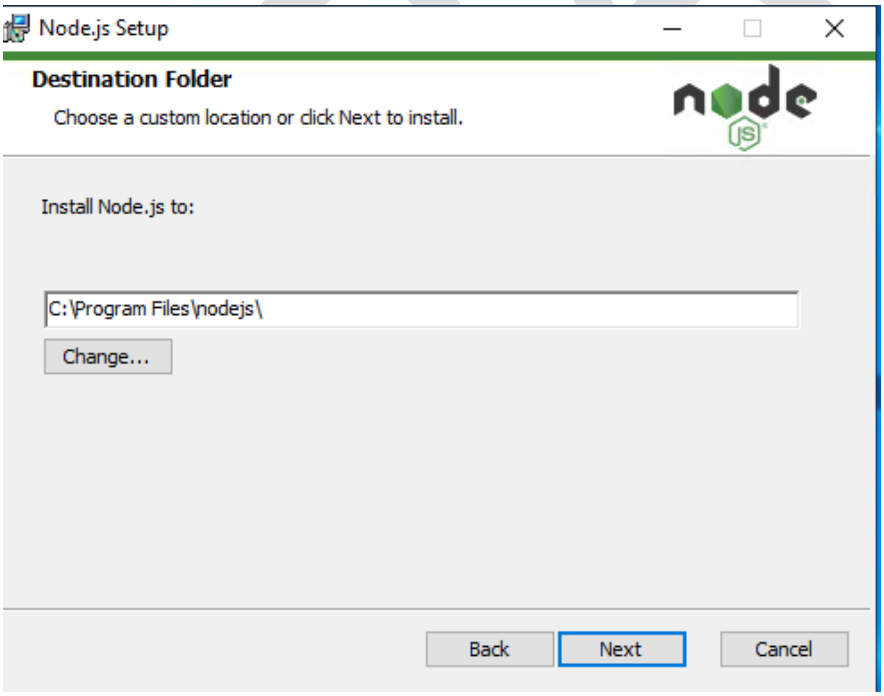


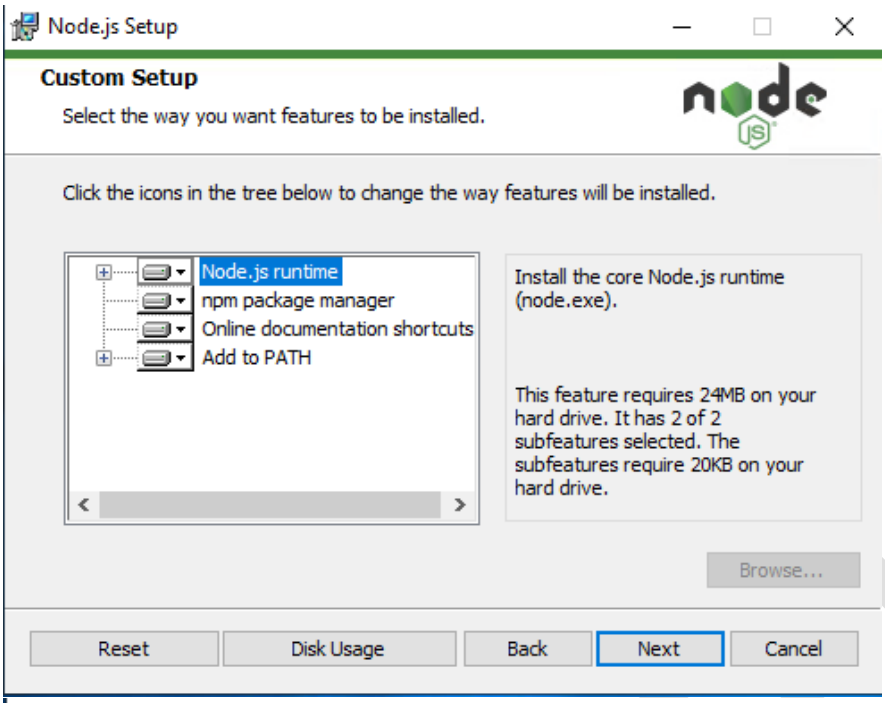
Nodejs installation

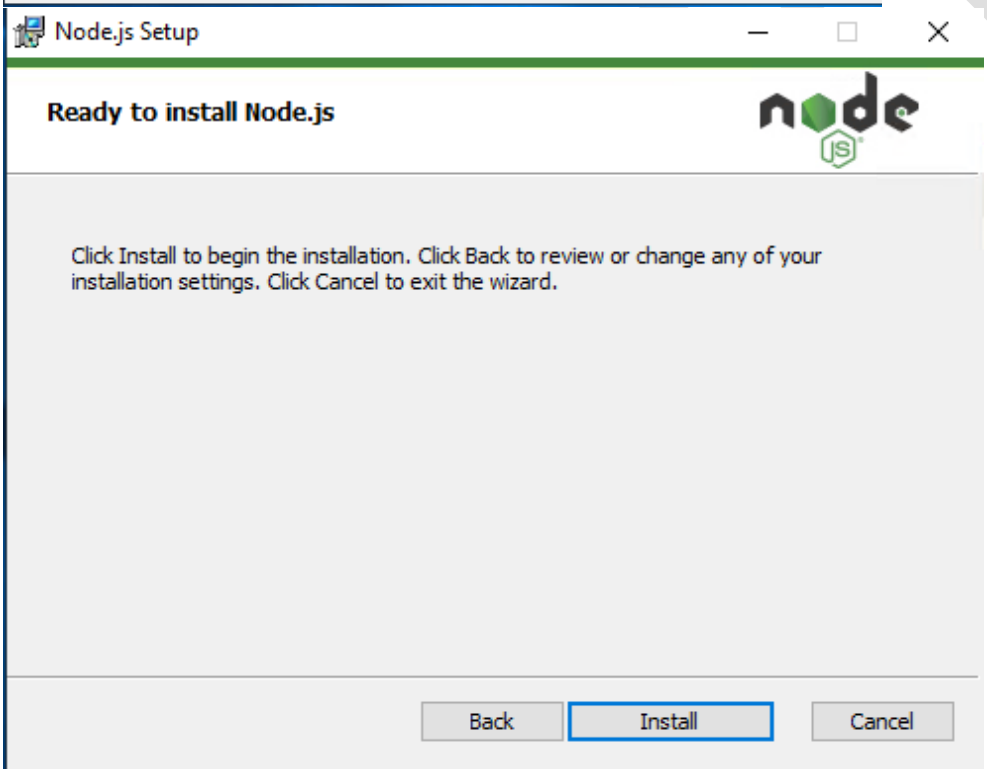
To begin the installation of Nodejs. Please run the installation located in the following folder: software\nodejs and leave all defaults.

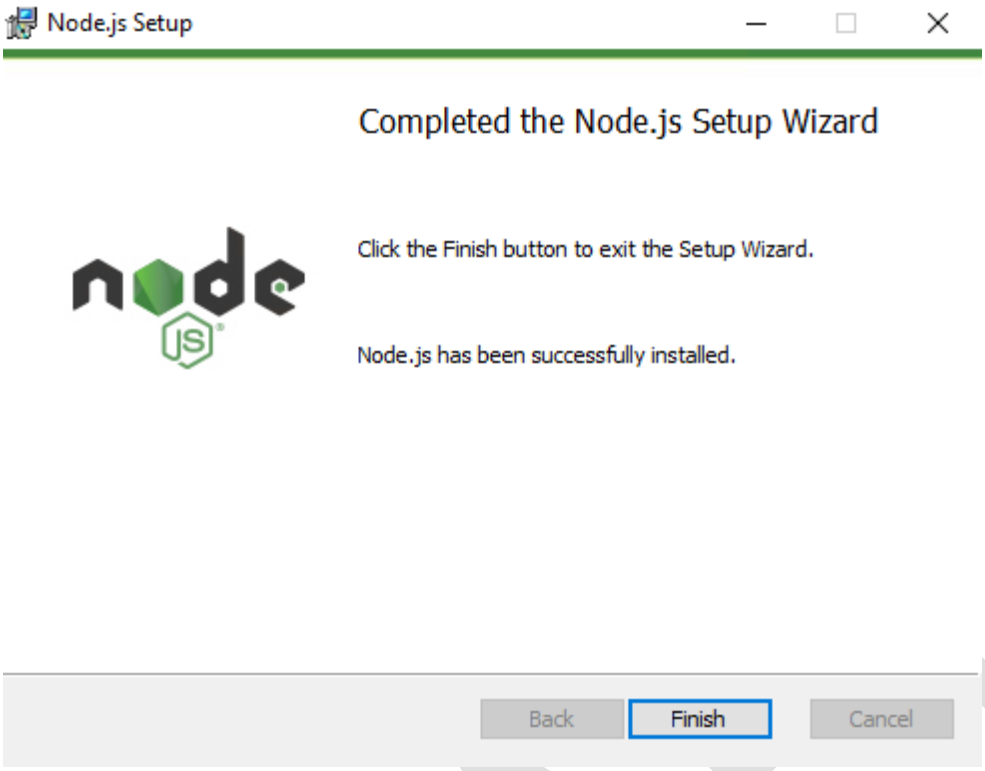
node-v10.16.0-x64.exe






Node.js Setup
Custom Setup
Select the way you want features to be installed.
Click the icons in the tree below to change the way features will be installed.
Node.js runtime
npm package manager
Online documentation shortcuts
Add to PATH
Install the core Node.js runtime (node.exe).
This feature requires 24MB on your hard drive. It has 2 of 2 subfeatures selected. The subfeatures require 20KB on your hard drive.
Browse...
Reset
Disk Usage
Back
Next
Cancel


Node.js Setup
Ready to install Node.js
Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.
Back
Install
Cancel



PostgreSQL Installation

To begin the installation of PostgreSQL. Please run the installation located in the following folder: software\postgresql

postgresql-11.3-4-windows-x64.exe

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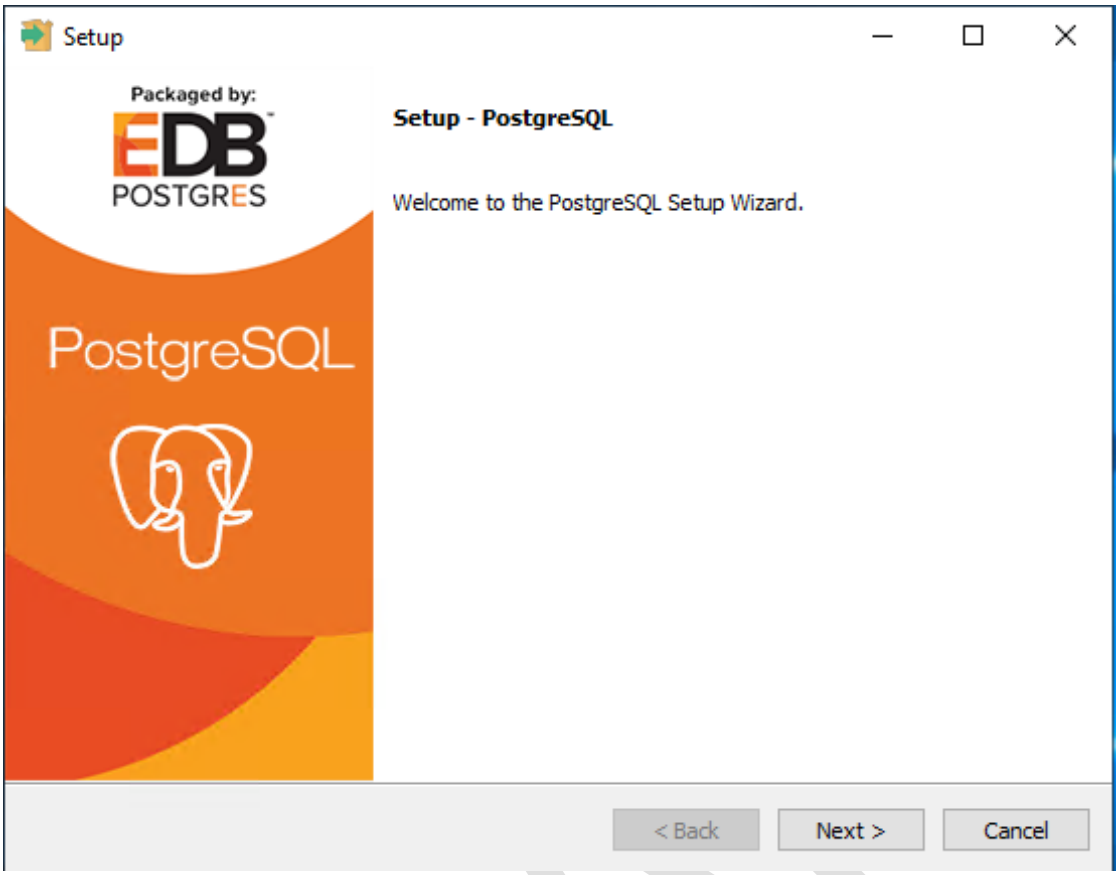
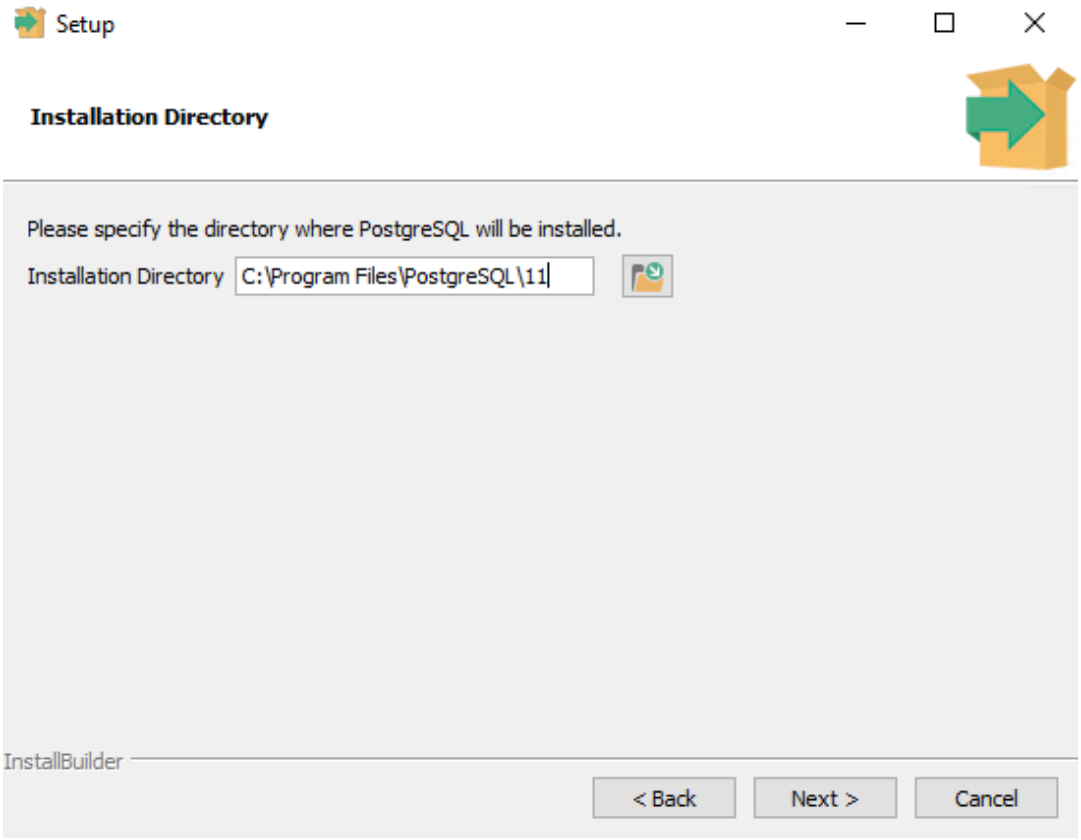
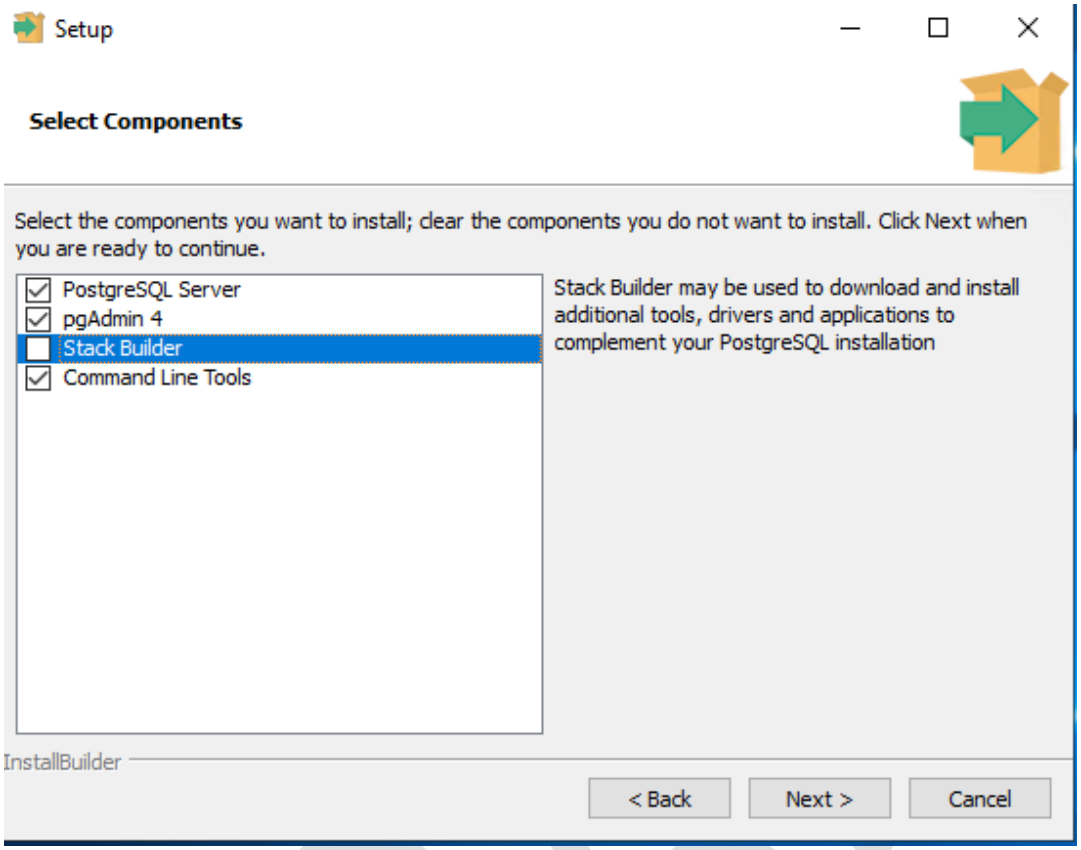
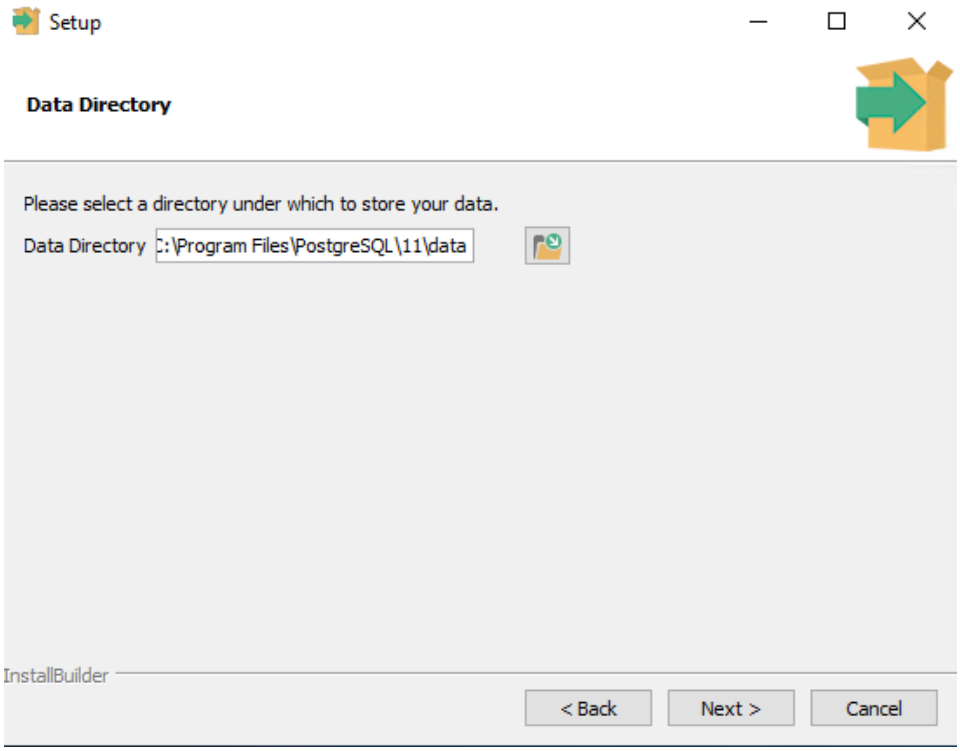

Setup
Packaged by:
EDB
POSTGRES
Setup - PostgreSQL
Welcome to the PostgreSQL Setup Wizard.
PostgreSQL
< Back
Next >
Cancel


Setup
Installation Directory
Please specify the directory where PostgreSQL will be installed.
Installation Directory
C:\Program Files\PostgreSQL\11
InstallBuilder
< Back
Next >
Cancel

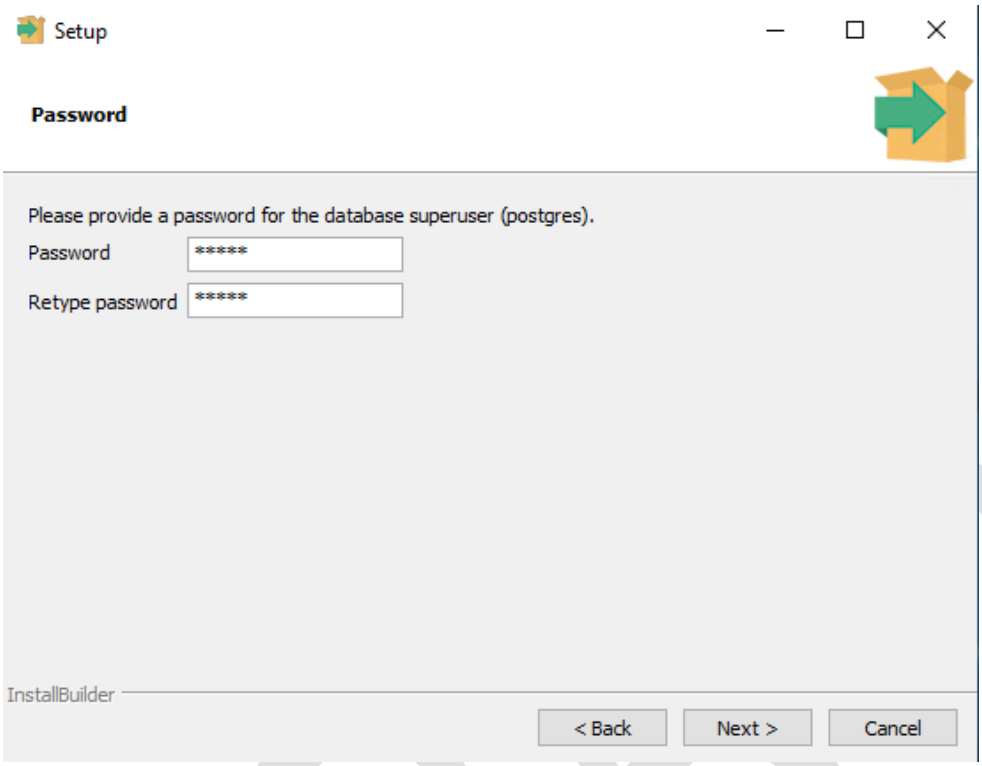
On the components tab “**Deselect**” the “**Stack Builder**” Option as that is not needed but leave all other defaults.





PostgreSQL Password

Note:
Please be sure to set the password to “ohdsi”. The backups and other settings have been preconfigured to run using this default password. Changing this password may require the other software to be reconfigured.



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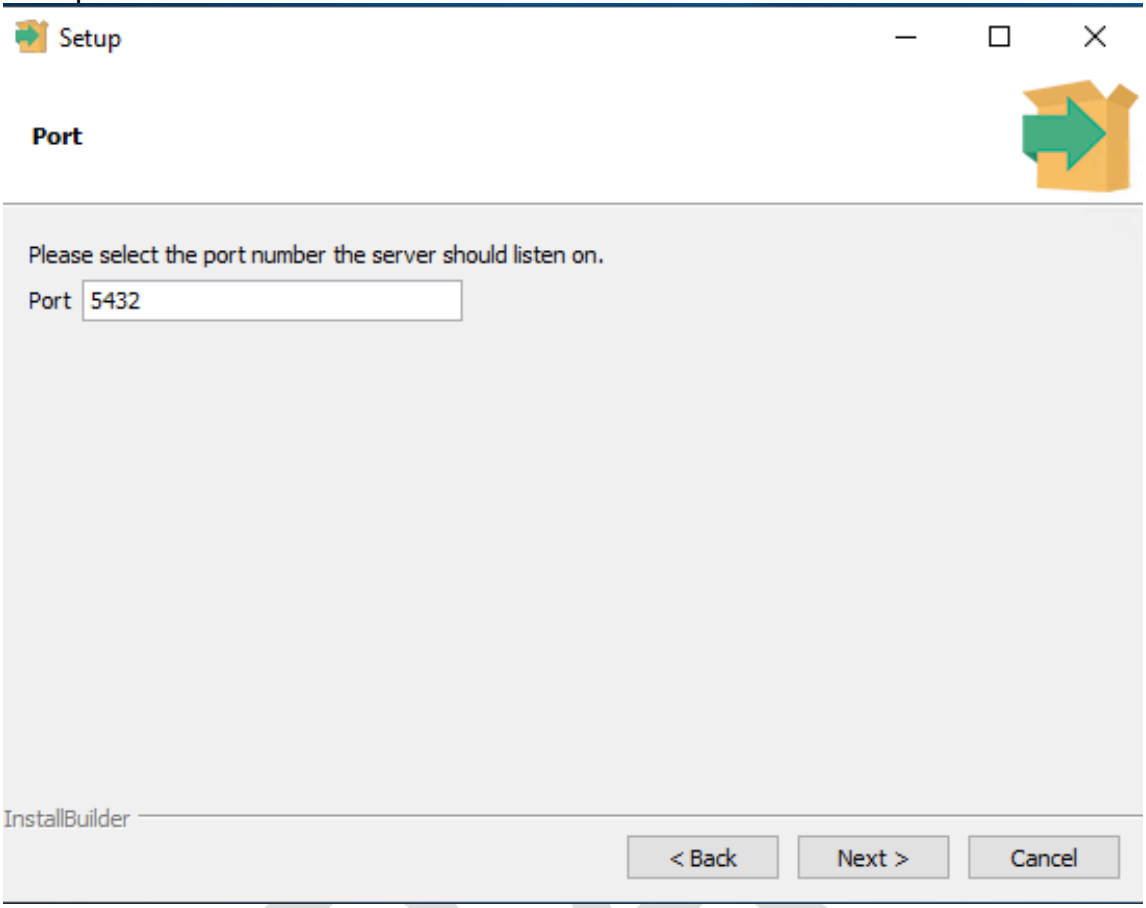
Accept Default Port of 5432



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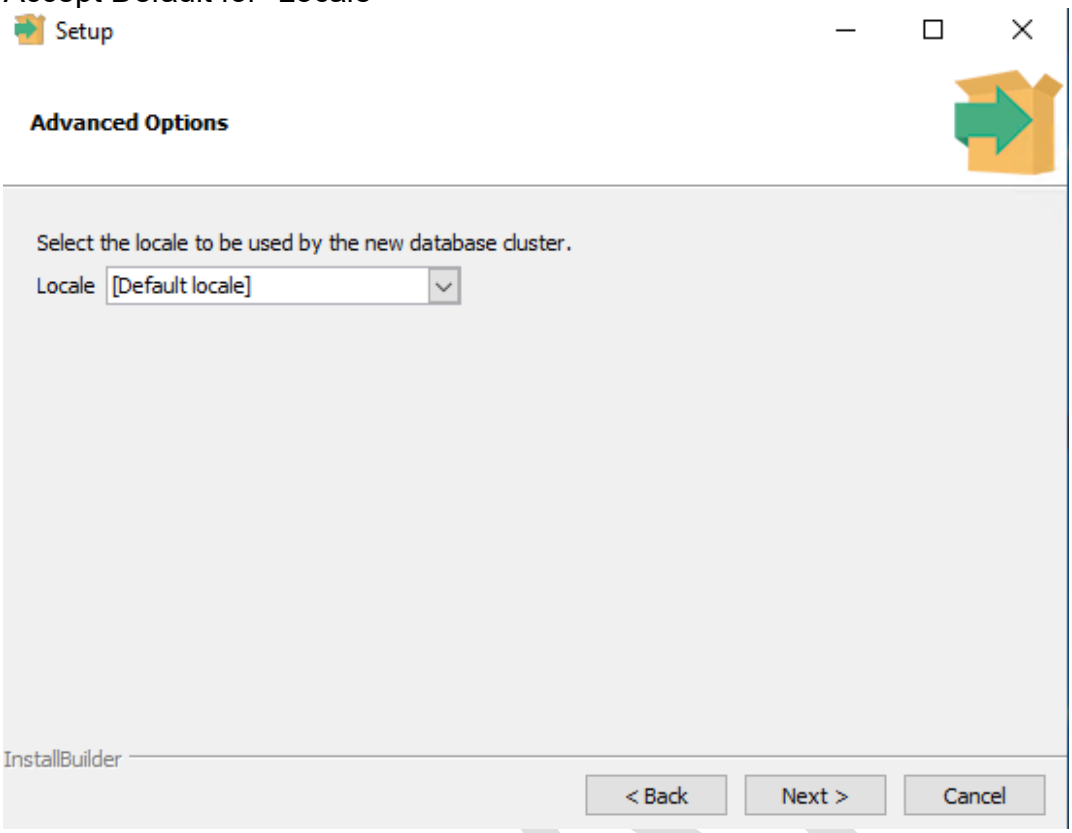
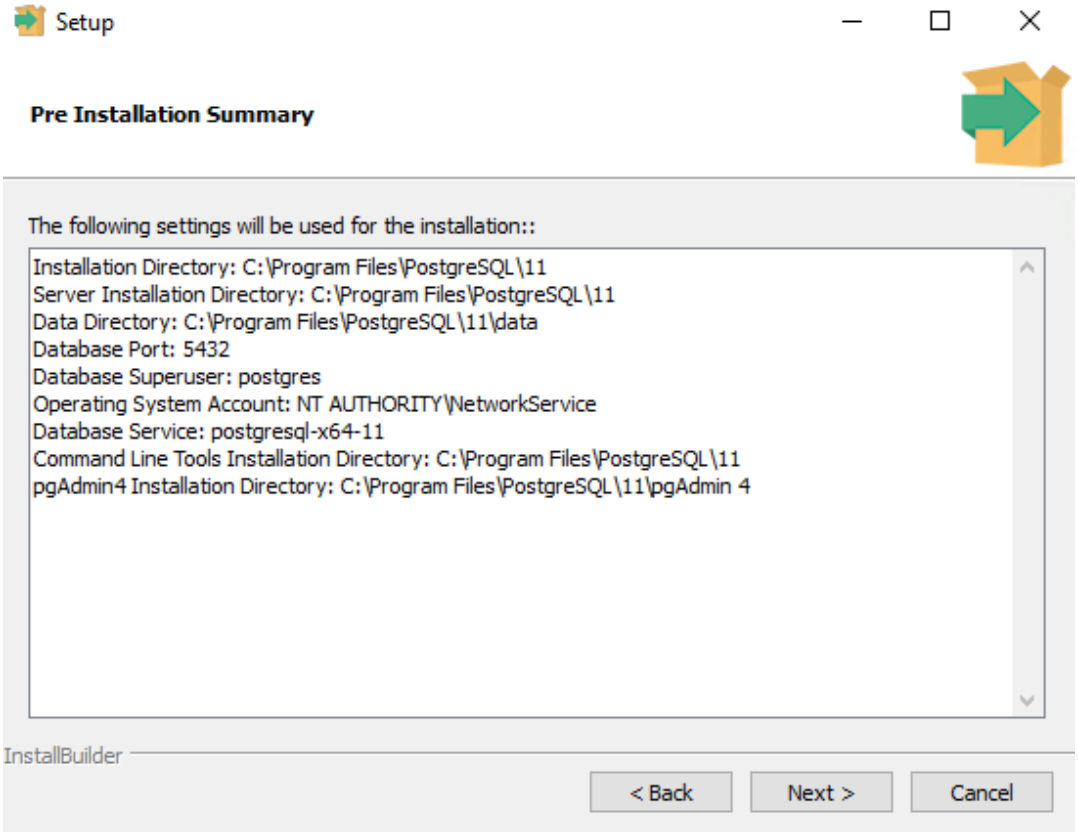
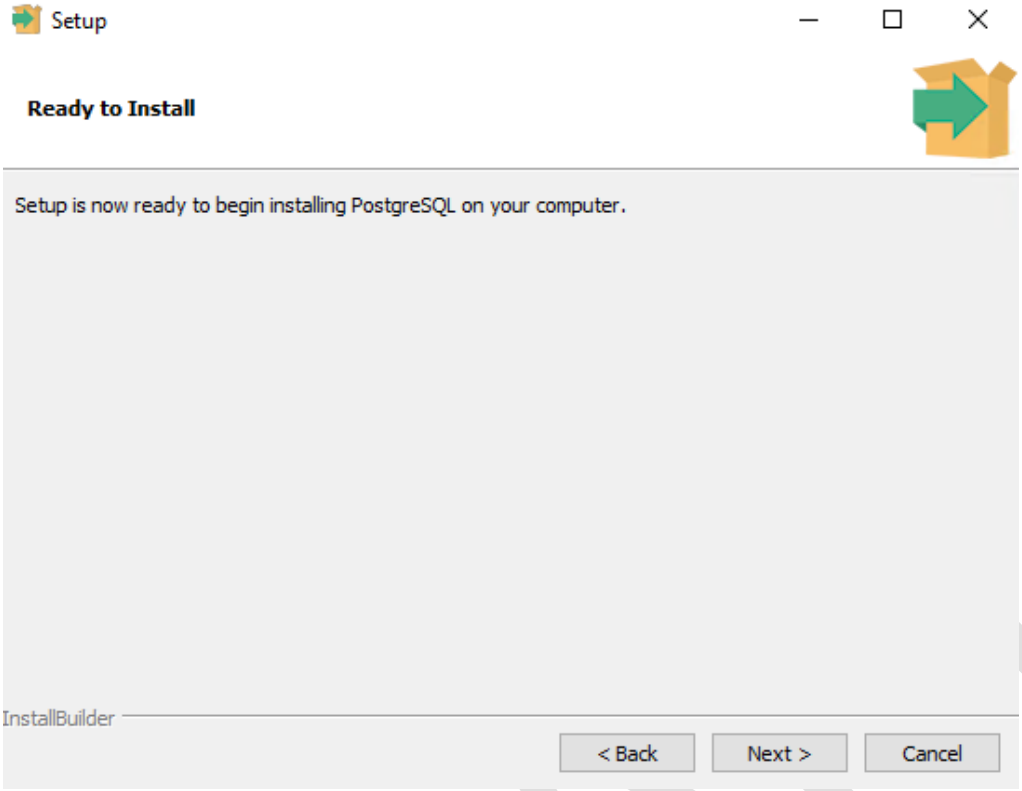
Accept Default for “Locale”



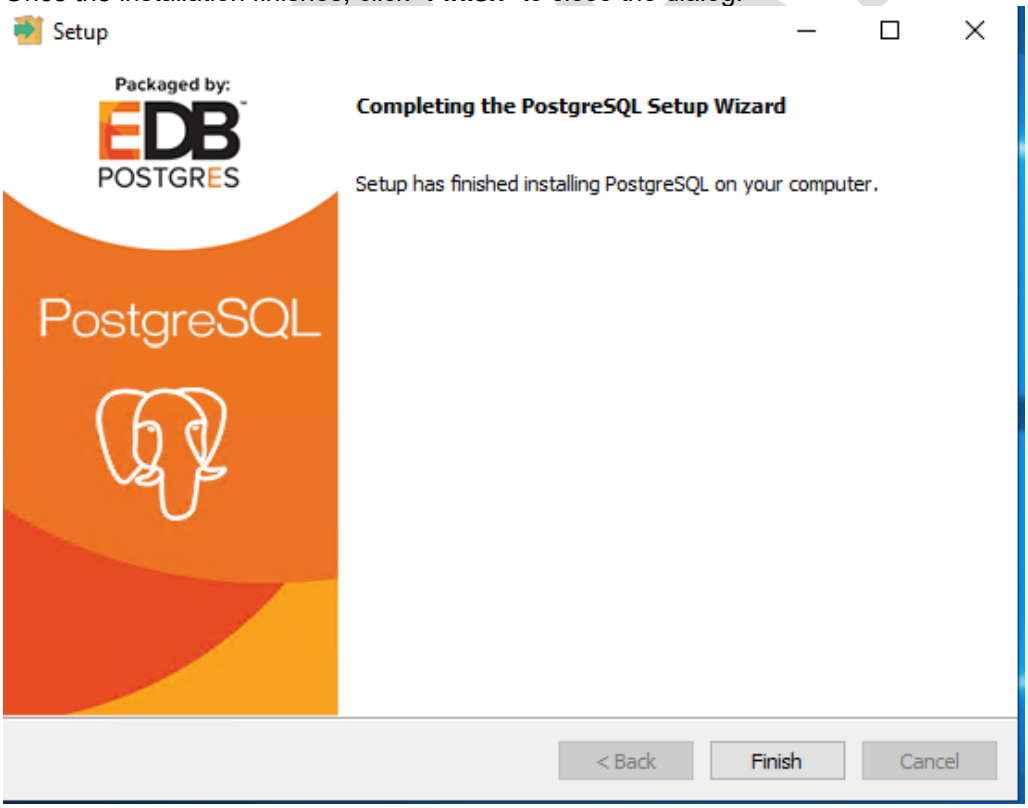
Click “**Next**” on the “Pre Installation Summary” to complete the installation**.**



Click “**Next**” to complete the installation



Once the installation finishes, click “**Finish**” to close the dialog.



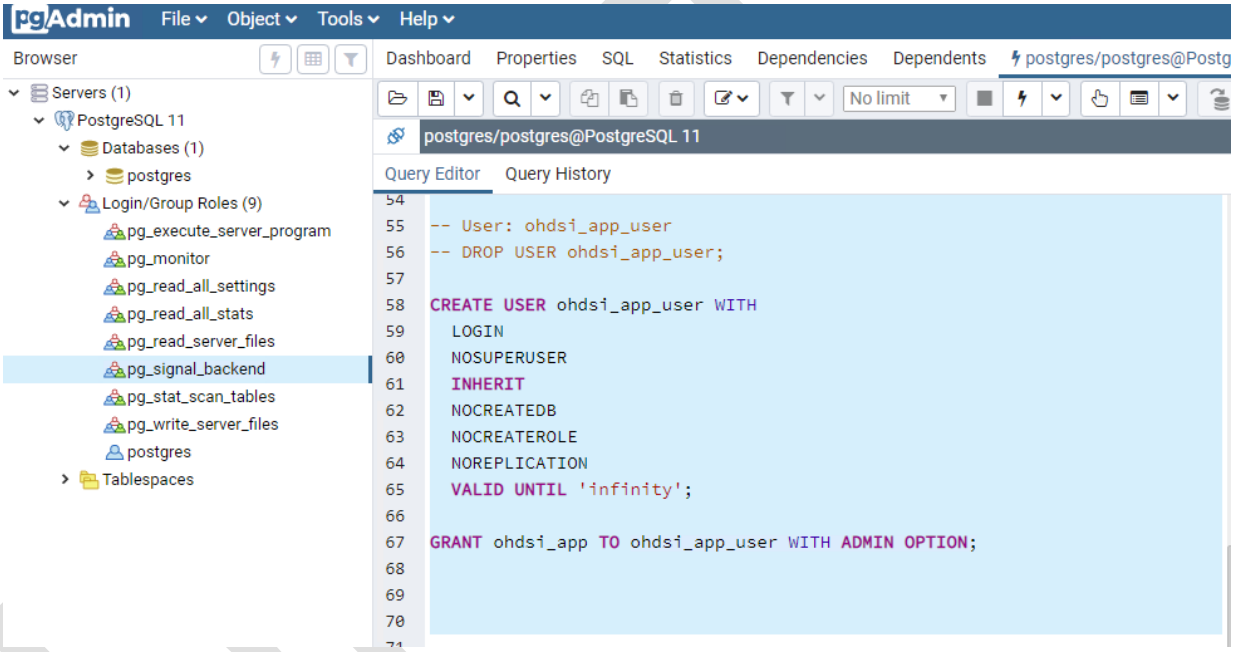
Note:
For this Quick Installation Guide the databases have been prepared specifically for PostgreSQL. The backups located in the postgresql backups folders are only for PostgreSQL.

Note:

- **Very important to use the password and defaults specified or the backups and other connections will have to be changed.**
- **Changing these values will likely cause problems due to how this installation and database backups were created.**

Database Restoration Logins and Preparation

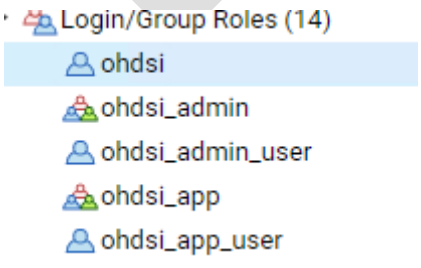
1) Launch "**pgAdmin**" and connect to the database server
2) Click on the postgre database and select "**Tools\Query Tool**"
3) Next navigate to the "**install\backups\postgresql**" directory and drag the file named "**loginsandroles-v1.1.sql**" into the query window in pgAdmin.



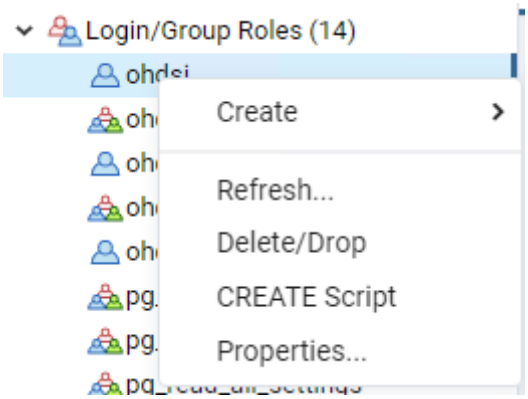
4) Next execute the script to add the necessary users and roles to the database server.

```
Query returned successfully in 114 msec.
```

5) Once complete we now need to set the password of all the new users created.
   a. Right click on the following users and set their passwords to "**admin1**"



6) Right click on each user and select properties

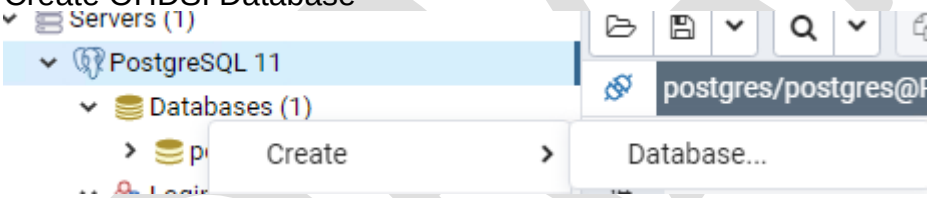


7) Then select "**Definition**" and set the password to "**admin1**" and click "Save".
8) Repeat steps 6 and 7 for the following users:
    a. ohdsi
    b. ohdsi_admin
    c. ohdsi_admin_user
    d. ohdsi_app
    e. ohdsi_app_user

Create Blank Databases for Restore Process

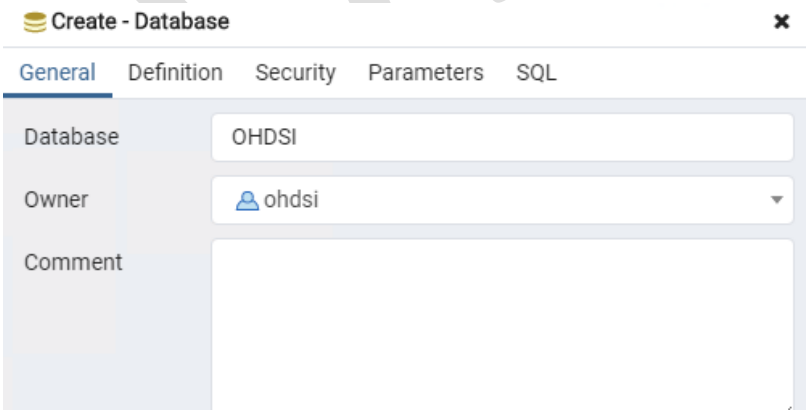
To prepare the Database Server for database restoration we need to create a few empty databases. To create a database right click on the Databases Tree menu from pgAdmin and select "**Create\Database**"

Create OHDSI Database

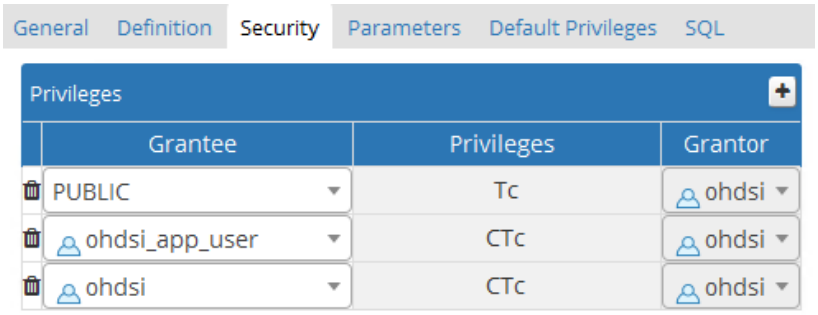


1) Please create a database named "**OHDSI**" with the following settings:

Set the "**Owner**" as: ohdsi

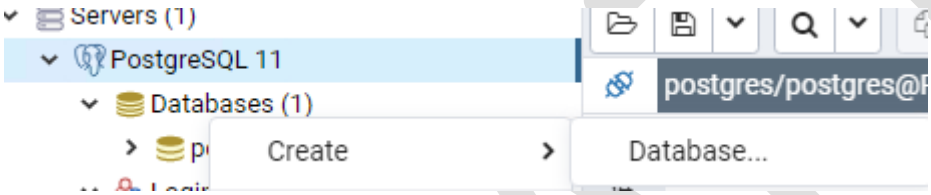


Add the following "**Security Privileges**" as shown below:

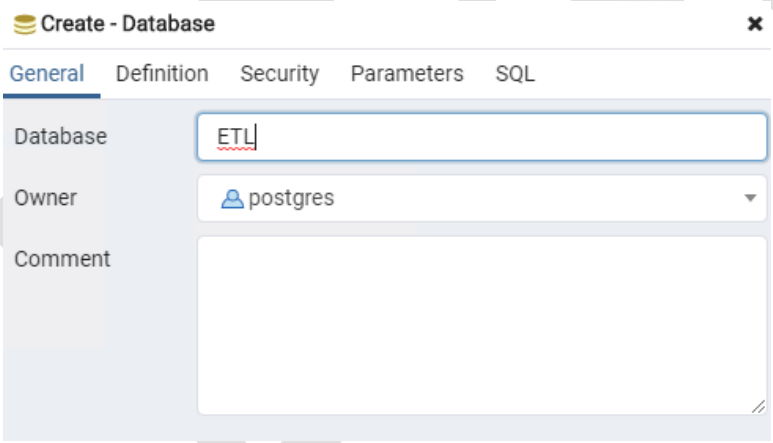


2) Next, we will need to delete the public schema that was created to avoid any conflicts when restoring the database from our backup.
3) To delete the schema, right click on the schemas tree menu item and select "**Delete**".

Create ETL Database



1) Please create a database named "**ETL**" with all defaults.



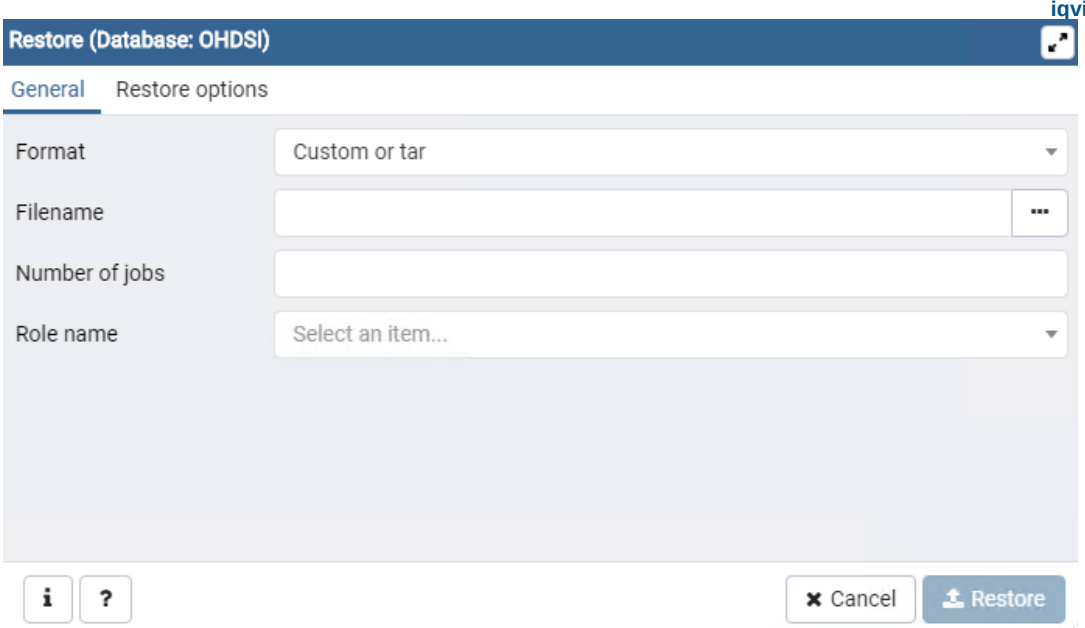
2) Next, we will need to delete the public schema that was created to avoid any conflicts when restoring the database from our backup.
3) To delete the schema, right click on the schemas tree menu item and select "**Delete**".

Database Restoration Process

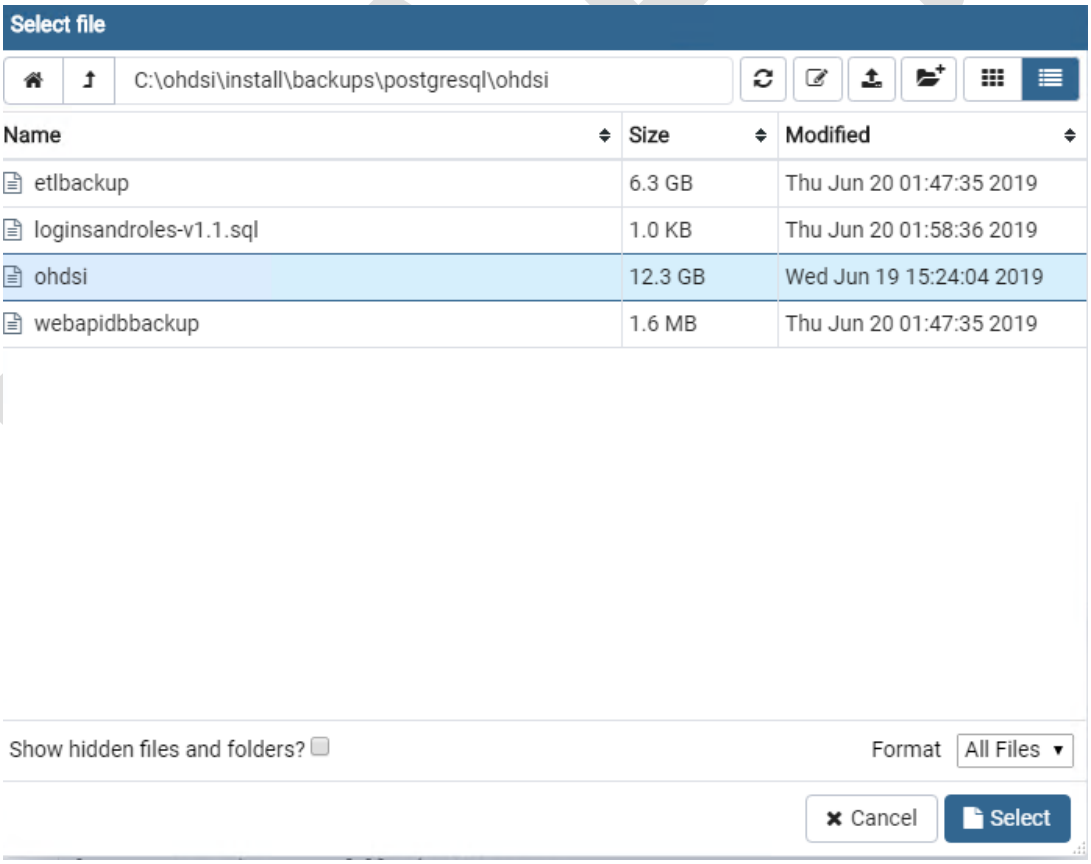
Now that we have all services installed, users and roles created our next steps are to restore the required databases. To restore the databases, complete the following steps below:

OHDSI Database Restore

1) Expand the database section and "**Right Click**" on the OHDSI database and click "**Restore**"



2) Browse to the backup folder "**install\\postgresqlbackups**" and select the backup file titled "**ohdsi**". You may need to select "**all files**" for this to show.



3) Click on the "**Restore**" button.

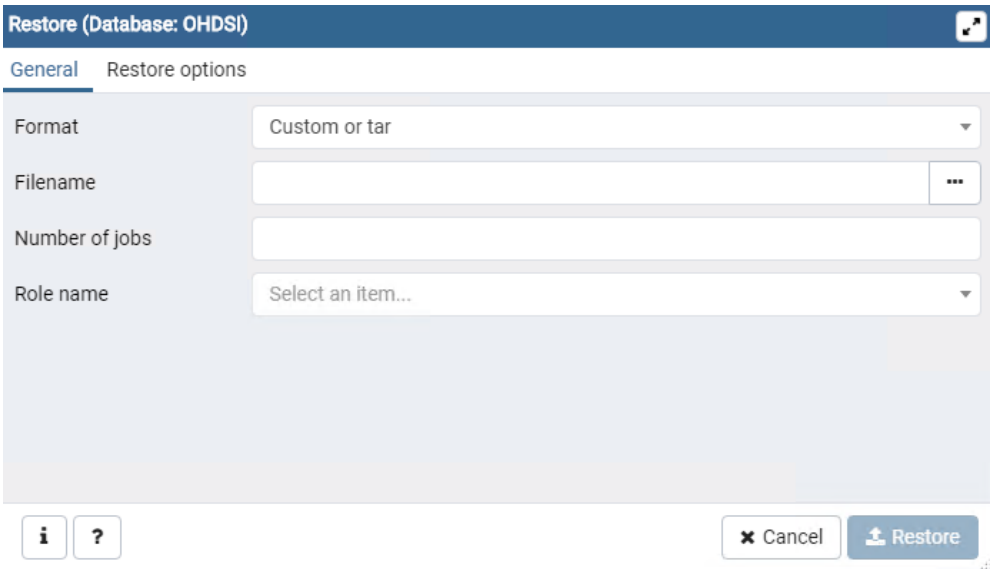
Note:
The process to restore this database may take a few hours to complete.

OHDSI WebAPI Schema Restore

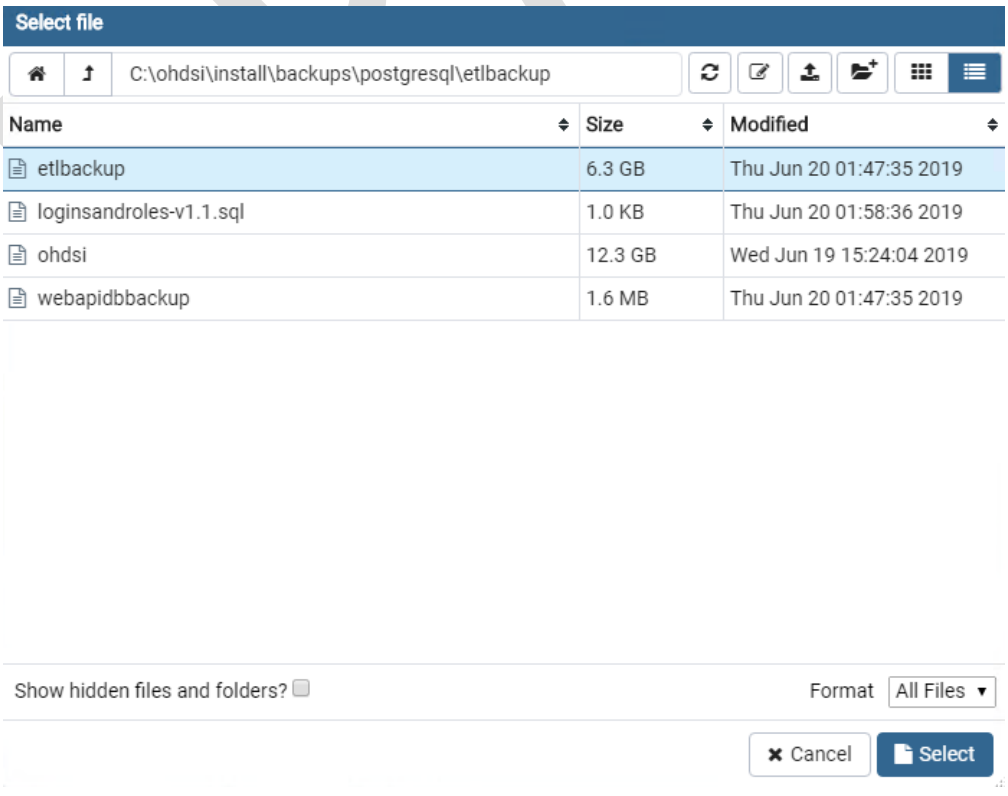
1) Once the OHDSI database has been restored the next step will be to restore the webapi schema into the database. To compete this step, repeat the steps to restore the database, but this time select the "**webapidbbackup**" file and restore this schema into the OHDSI database.

ETL Database Restore

1) Expand the database section and "**Right Click**" on the OHDSI database and click "**Restore**"



2) Browse to the backup folder "**install\backups\postgresql**" and select the backup file titled "**etlbackup**". You may need to select "all files" for this to show.



4) Click on the "**Restore**" button.

Note:
The process to restore this database may take a few hours to complete.

Atlas Website Deployment

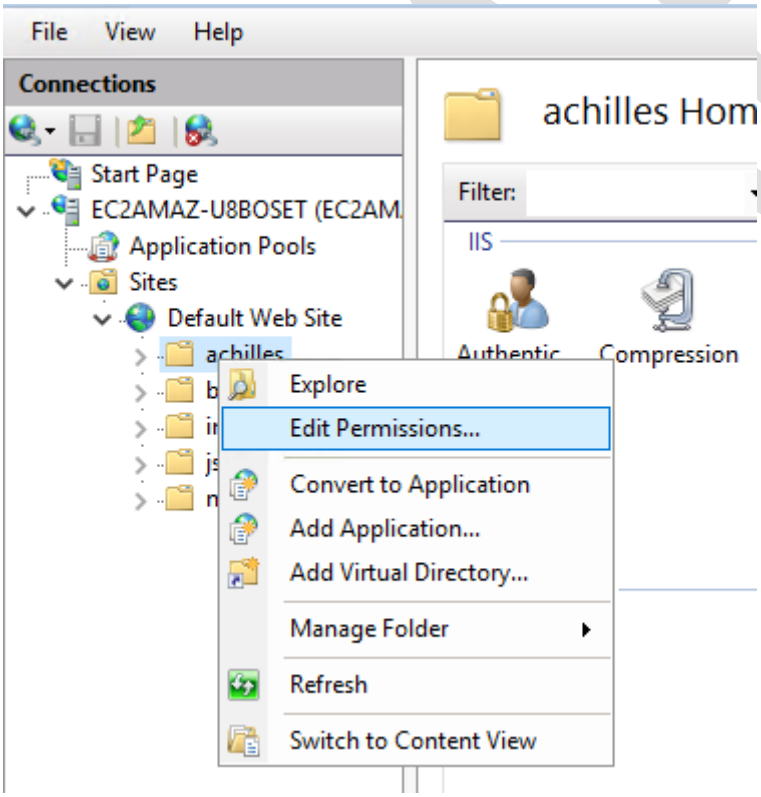
Our next steps will be to setup and configure the Atlas Website. Navigate to the "**\software\atlas\[version]**" folder and complete the following actions:

1) Unzip the Atlas**-[version]**.zip file
2) Copy the contents in the wwwroot folder to C:\inetpub\wwwroot or the location of your IIS installation Default website

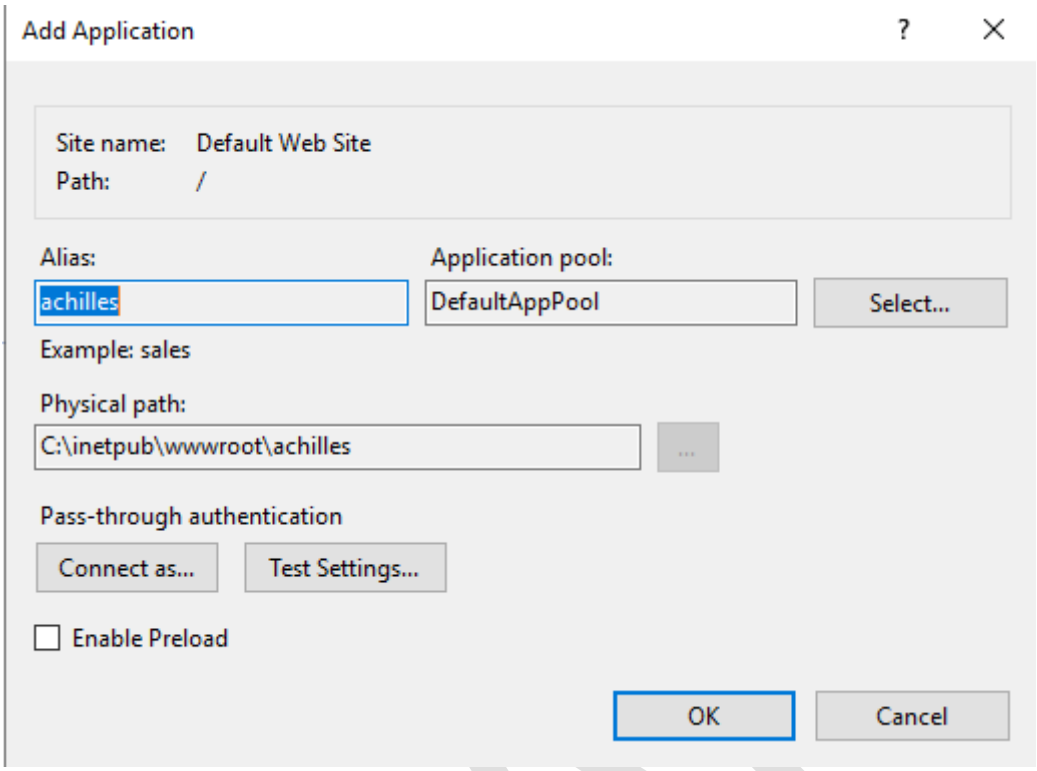
Note:
If you are using Window Server 2016 please delete or not select the the web.config file located in the default directory. This file is only needed for earlier versions of Windows Server.

Convert Achilles to Application

1) Launch IIS
2) Open the Default Website
3) Right Click on achilles
4) select Convert to Application



5) Leave all defaults

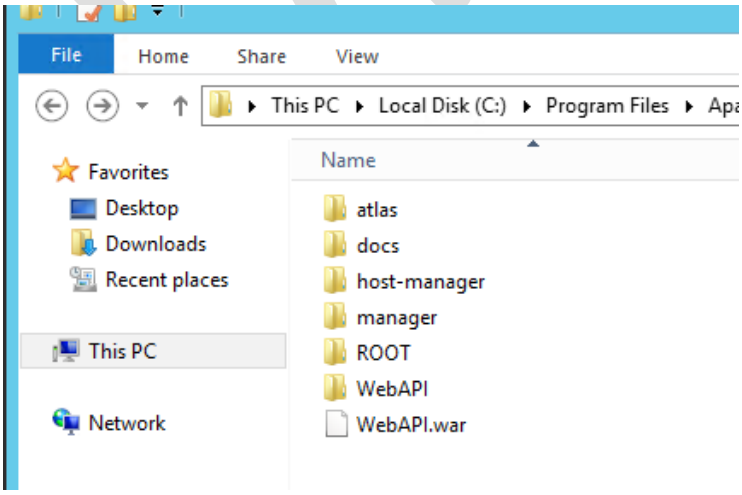


WebAPI Service Deployment

Very similar to the Atlas setup we need to deploy the WebAPI as well. To get started, navigate to the "**\software\webapi\[version]**" folder and complete the following actions:

1) Rename the WebAPI-**[version]**.war file to WebAPI.war file.
2) Copy the file WebAPI.war to C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps or the location of your Tomcat installation webapps folder

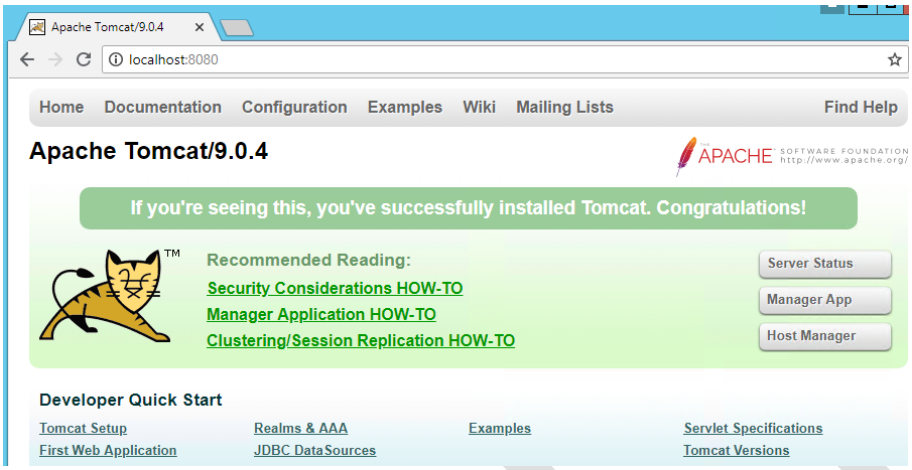
Once the file has been processed by Tomcat you should see a folder has been created that is titled WebAPI as shown below.



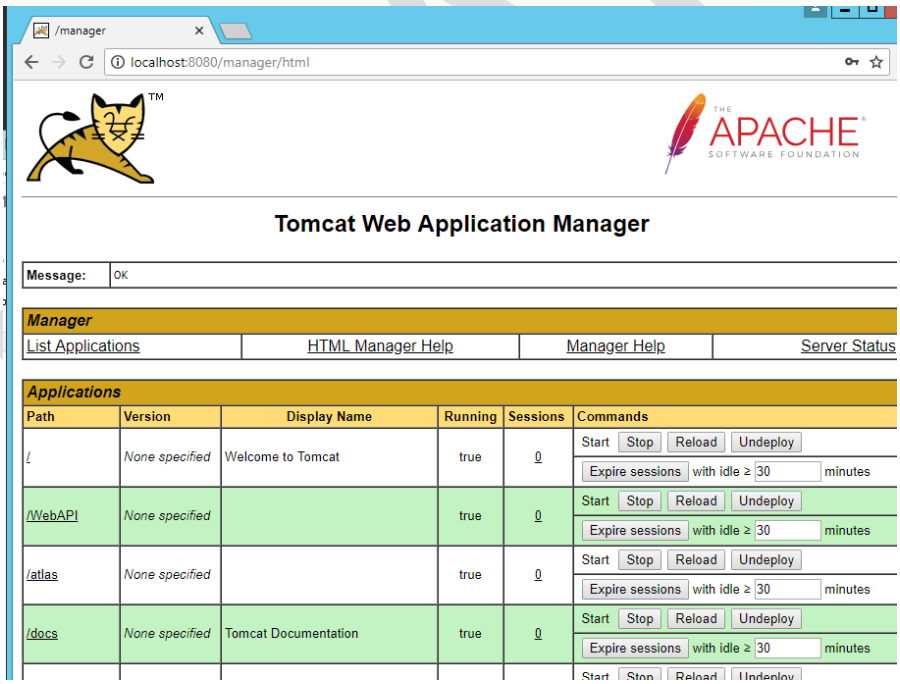
WebAPI Initialization

The final step is to start the WebAPI in order for the Atlas site and services to run properly. To start the services, complete the following actions:

1) Navigate to the local host manager http://localhost:8080



2) Click on the **Manager App** Button
3) Enter in the Credentials you created during the Tomcat installation
4) Click on the Start Button for the WebAPI service



Chrome Browser Installation

For optimal performance it is recommended that Chrome is installed. It is not required, but some of the HTML being used in Atlas performs better on Chrome then on Internet Explorer. Atlas also does not load properly when using IE.

To install Chrome, navigate to the \software\chrome folder and run the following installation:

ChromeSetup.exe

Installation Verification and Validation

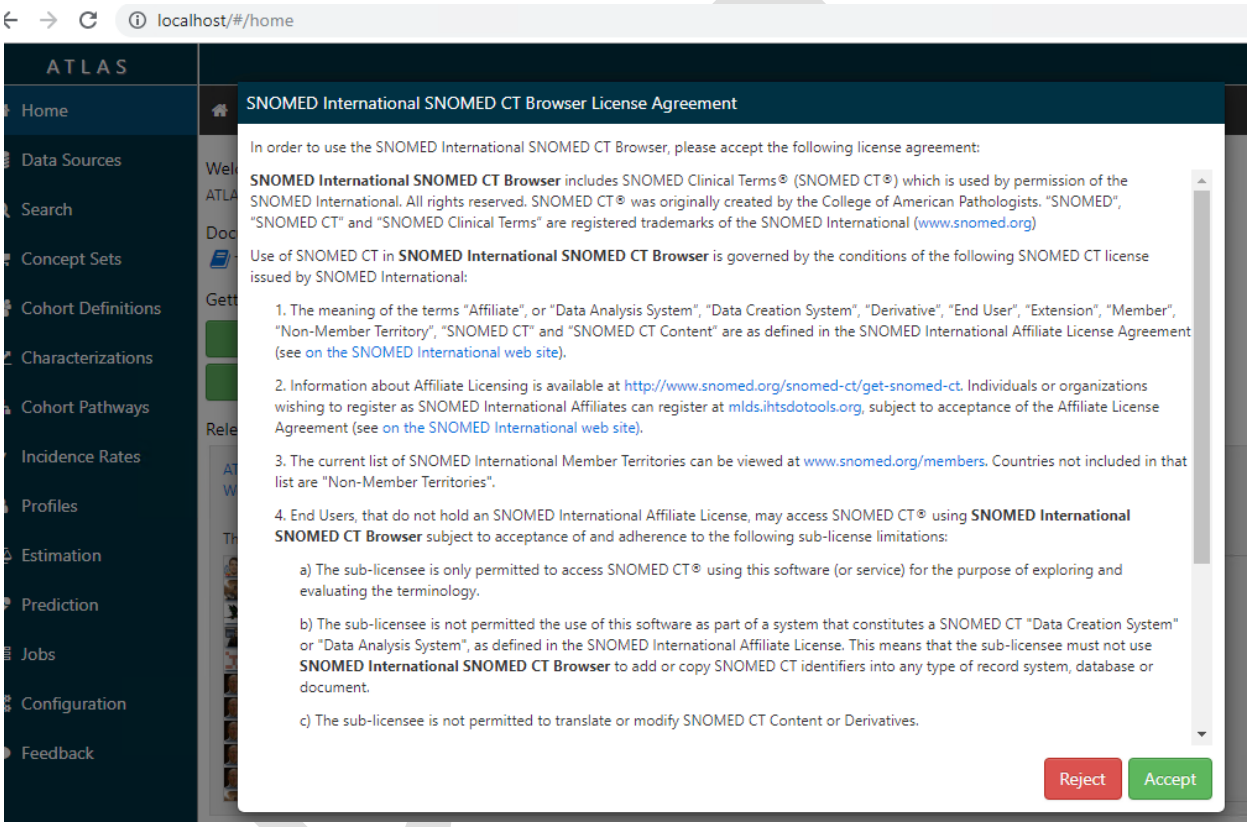
Now that you have completed all the installation steps you are now ready to verify and validate that all sites and services are working properly.

Website Deployment Validation

To verify that Atlas and the WebAPI are working properly open Chrome and navigate to the following URL:

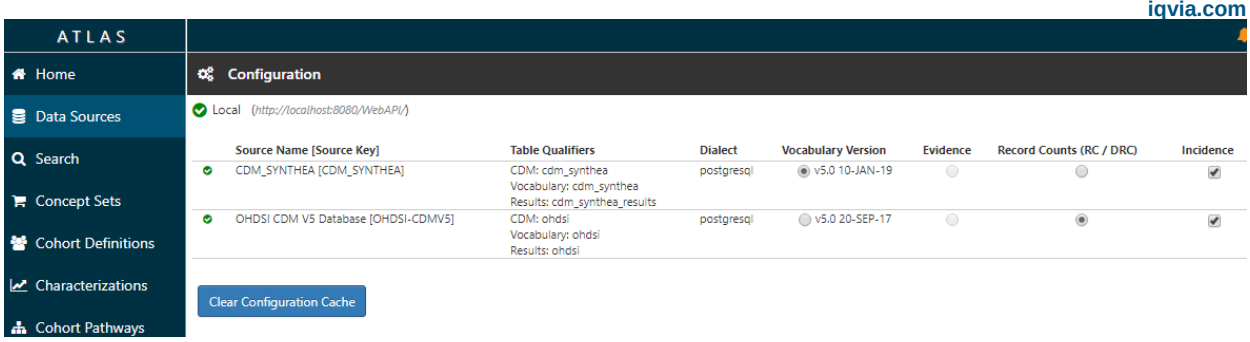
http://localhost

If the site loads the sites have been setup properly.



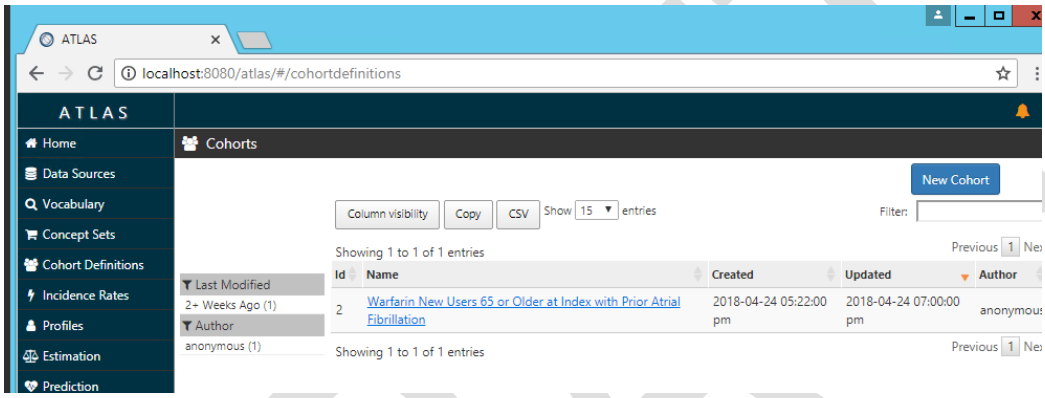
Data Source Configuration Validation

Our next steps will be to confirm and validate that the data sources have been setup properly. To view this, click on the Configuration link on the left side navigation. Once clicked you should see two data sources that have been preconfigured as shown below.



Sample Cohort Validation

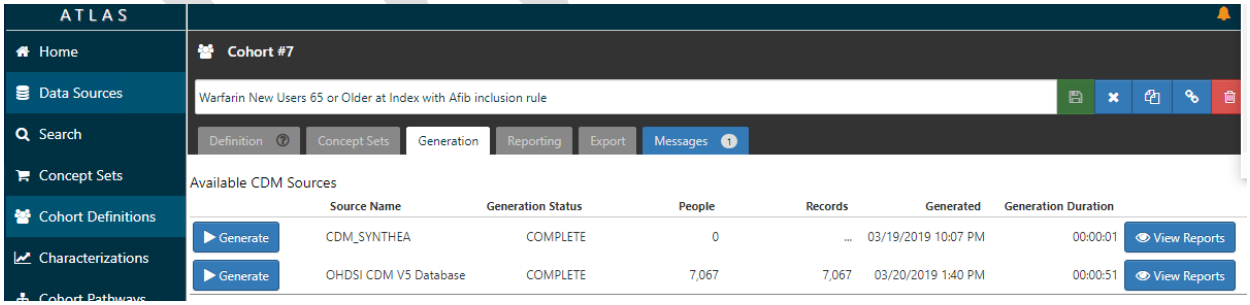
To get started a sample Cohort is included with the databases that you restored. To locate and verify that a Cohort is available and loaded, click on the Cohort Definitions link on the left side navigation. You should see the following Cohort Definition as shown below:



Cohort Generation Validation

As a final step to ensure that the system is working as intended is to generate cohorts. To generate cohorts, complete the following actions:

1) Click on the Cohort Definition Link on the left side navigation
2) Click on the Cohort Link
3) Click on the Generate Tab



4) Next click on each of the Generate buttons for each of the data sources.

Note:
To be on the safe side do not try to run both at the same time.

Example Queries

Included with the downloaded software files are example queries as well. The queries are in the following folder:

/software/queries

Two files are included:

- CDM_ETL_TUTORIAL_EXAMPLES_EXTRA.sql
- OMOP CDM Vocabulary Training.sql

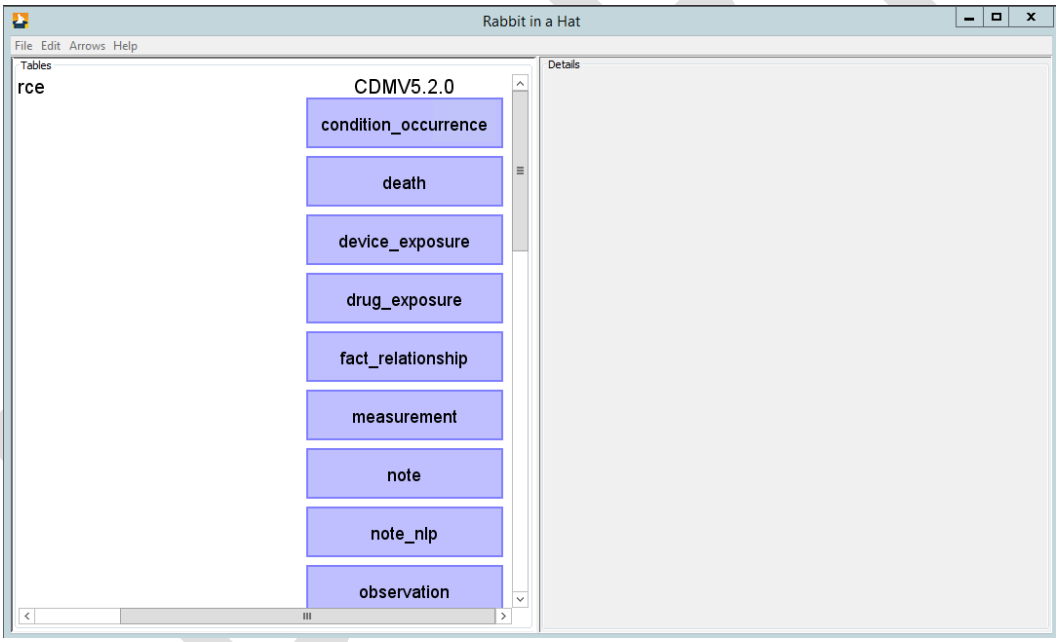
White Rabbit

To leverage White Rabbit, navigate to the following folder:

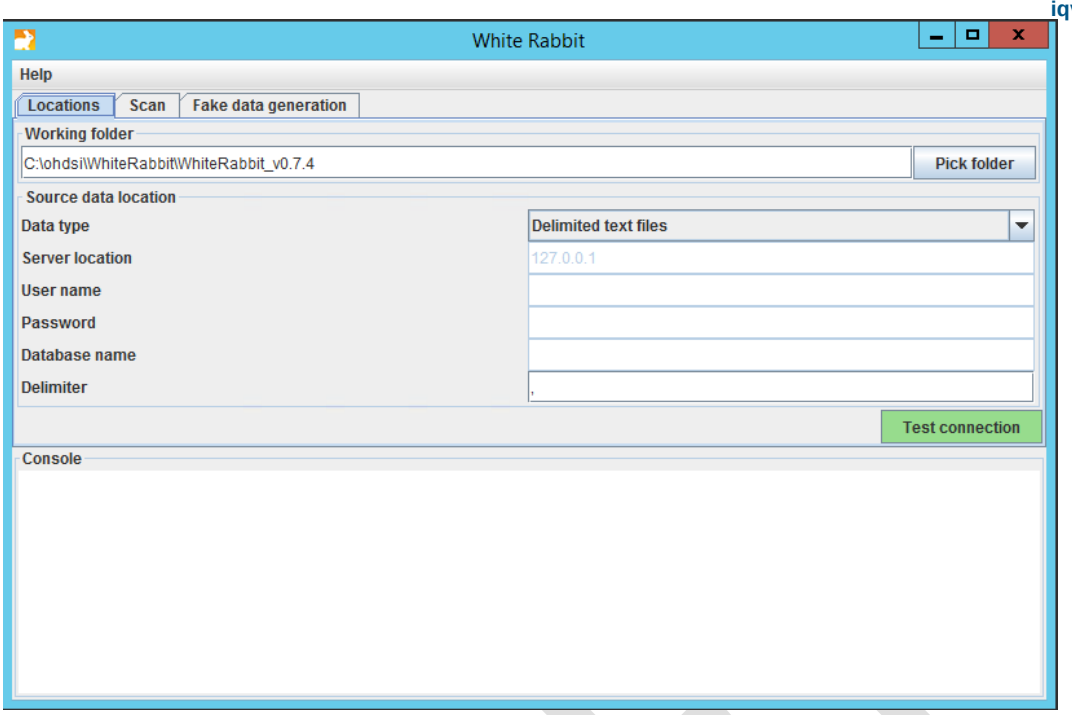
/software/whiterabbit

Included is this folder is a zip file that contains all of the files required to run Rabbit In a Hat and White Rabbit. To run White Rabbit please complete the following steps:

1. Unzip the whiterabbit.zip file
2. Run RabbitInAHat.jar



3. Run WhiteRabbit.jar



Shortcuts

As a last step and to simply use of the multiple systems, shortcuts may be created for the following items:

- Chrome
  - "C:\Program Files (x86)\Google\Chrome\Application\chrome.exe"
- CDM_ETL_TUTORIAL_EXAMPLES_EXTRA.sql
  - C:\ohdsi\install\software\queries\CDM_ETL_TUTORIAL_EXAMPLES_EXTRA.sql
- OMOP CDM Vocabulary Training.sql
  - "C:\ohdsi\install\software\queries\OMOP CDM Vocabulary Training.sql"
- RabbitInAHat.jar
  - C:\ohdsi\install\software\whiterabbit\WhiteRabbit\WhiteRabbit\WhiteRabbit_v0.7.4\RabbitInAHat.jar
- WhiteRabbit.jar
  - C:\ohdsi\install\software\whiterabbit\WhiteRabbit\WhiteRabbit\WhiteRabbit_v0.7.4\WhiteRabbit.jar

Please feel free to create and add these shortcuts to the desktop for a better user experience.

DRAFT