



# Orchestration Hub 2023

## Getting Started



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# Introduction

Proficy Orchestration Hub enables manufacturing customers to stay in synch with constant updates to product manufacturing information. This solution provides out-of-the-box tools to unify product manufacturing information from disparate data systems like ERP and PLM, transforms and organizes this raw business-oriented information into production-ready formats like recipes and specifications, and orchestrates the information across the customer's factory floor systems at a single site or multiple facilities.

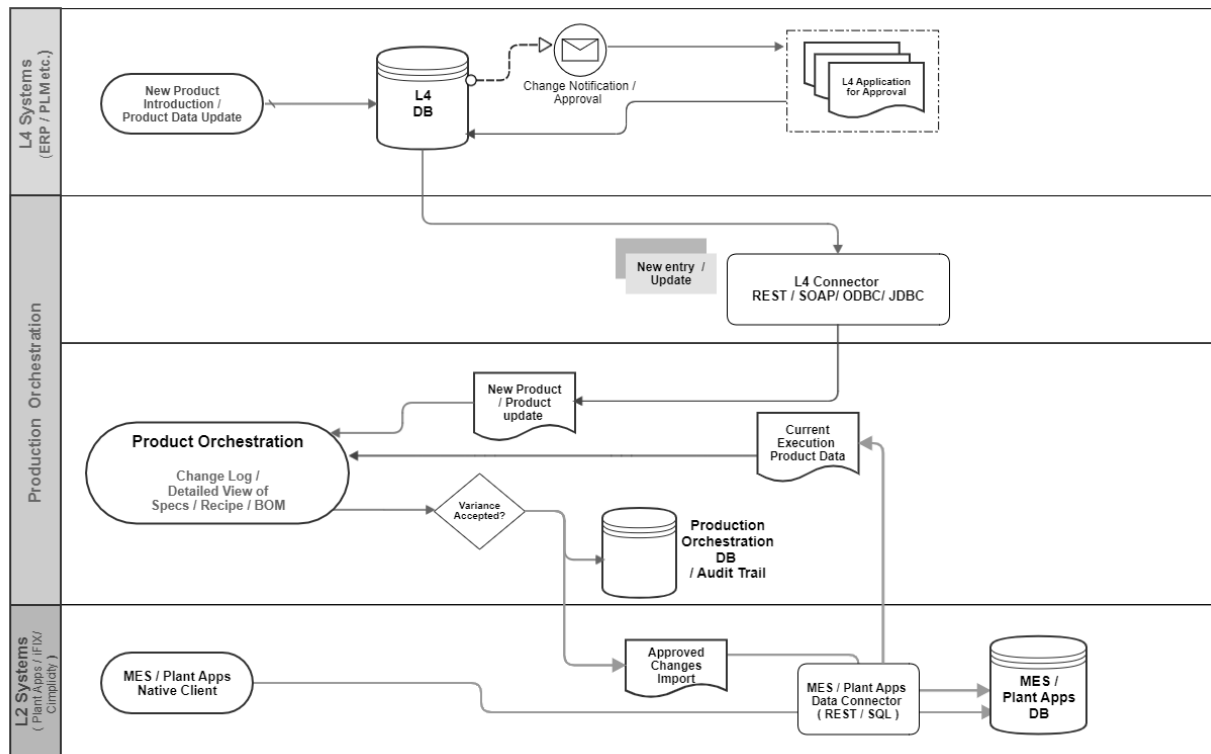
Proficy Orchestration Hub 2023 focuses on the first foundational theme of Manufacturing Product Data Management (mPDM). The 2023 release of Orchestration Hub focuses on the following issues: production delays, errors, and rework due to lack of up-to-date product data in production systems; quality variability due to ad-hoc modifications and lack of visibility into the cause of modifications; and inability to reduce non-productive time due to manual efforts trying to execute standard production work.

## Conceptual Overview

The primary functional objective of Orchestration Hub software is to have a platform that allows you to integrate Level4 systems like ERP, PLM, SAP, ORACLE etc., with Level2 systems like Plant Applications, iFIX, CIMPLICITY and Batch, so that they can synchronize the latest / updated manufacturing data, classified as master data, available in the L4 systems with that in the L2 systems. One of the primary success criteria for Orchestration Hub software is to be independently installable and configurable and to be able to connect with any kind of L4 and L2 systems supporting multiple protocols for connection (SOAP/REST/ODATA/Native SQL, etc.), without major development work.

# Architecture Overview

## Process Flow in Production Orchestration



## Installation

### System Requirements

This topic provides the requirements for hardware components, browsers, and operating systems.

### Minimum Hardware Requirements

You can install Orchestration Hub on a processor with 4-core configuration and a RAM of 16 GB.

### Supported Operating Systems

You can install Orchestration Hub on any of the following desktop operating systems:

- Microsoft® Windows Server 2016
- Microsoft® Windows Server 2019
- Microsoft® Windows Server 2022

## Supported SQL Versions

You can use Orchestration Hub with external data sources from the following relational databases:

- Microsoft® SQL Server 2016
- Microsoft® SQL Server 2017
- Microsoft® SQL Server 2019

## Supported Browsers

You can access Orchestration Hub using any of the following web browsers:

- Google Chrome (recommended)
- Mozilla Firefox
- Chromium Edge

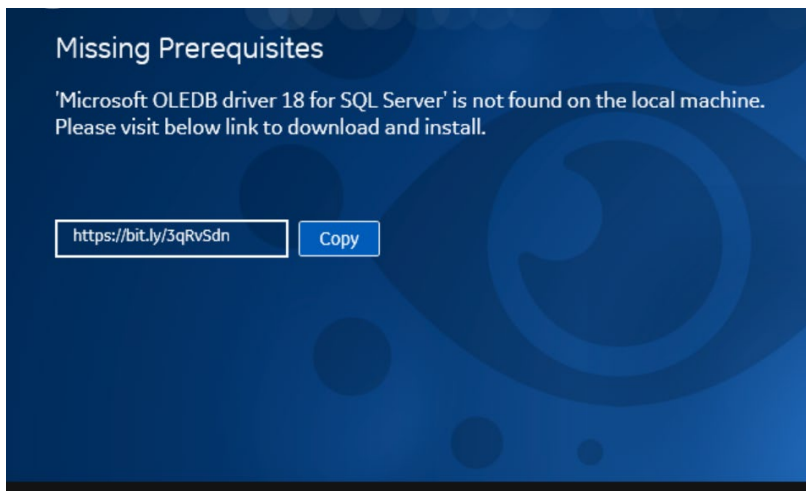
We recommend using a resolution of 1920x 1080 for the browser. Preferred display resolution zoom size for all application should be 100%. In addition, use a relatively modern device so that the browser has enough resources to render the visualizations and respond to user interactions with adequate performance.

## Prerequisites

- Should have Operations Hub 2.1 or higher installed on any machine (To be installed with Fully Qualified Domain Name). To avoid any connectivity issues, it is recommended to install with the Fully Qualified Domain Name only.
- Should have Plant Applications 6.3 or higher installed on any machine (version of Plant Apps supported should also be supported by the version of Operations Hub you use)
- Install Microsoft® SQL Server Driver version 18.6.x ( URL : <https://docs.microsoft.com/en-us/sql/connect/oledb/release-notes-for-oledb-driver-for-sql-server?view=sql-server-ver15#previous-releases> )
- Denodo should be downloaded and installed with license file. (Refer to [Denodo Installation](#) section for help on setting up Denodo ).
- Remember the credentials used during Denodo installation and provide the same credentials when prompted during Orchestration Hub installation.
- If missing OLEDB, the following installer screen appears, which enables you to copy the URL for downloading the necessary connection.

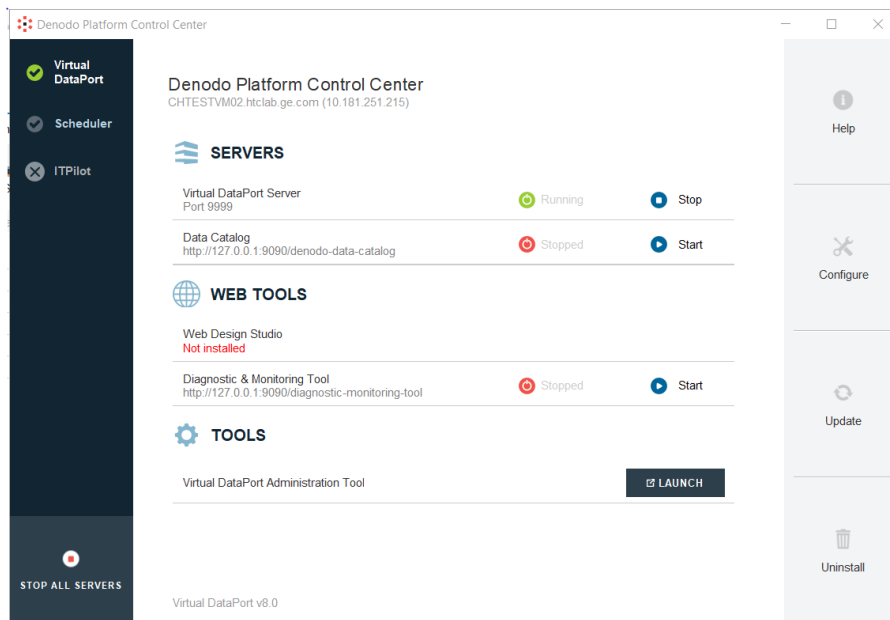
## Licensing

Orchestration Hub is a licensed application.



With the short url mentioned, download the OLEDB driver. Post installation of the driver, restart the installation process.

- The Denodo Virtual DataPort service should be up and running before you begin. Denodo Virtual DataPort can be started from Denodo Platform Control Center by clicking on Launch Button. as shown in the following screen.



**Note:** If there is a reboot/restart of the system, you need to perform the previous steps to get Denodo up and running again.

## Denodo Installation

After you download the Denodo .ISO, mount the .ISO file and open the 'GEOrchestrationHub.exe' file.

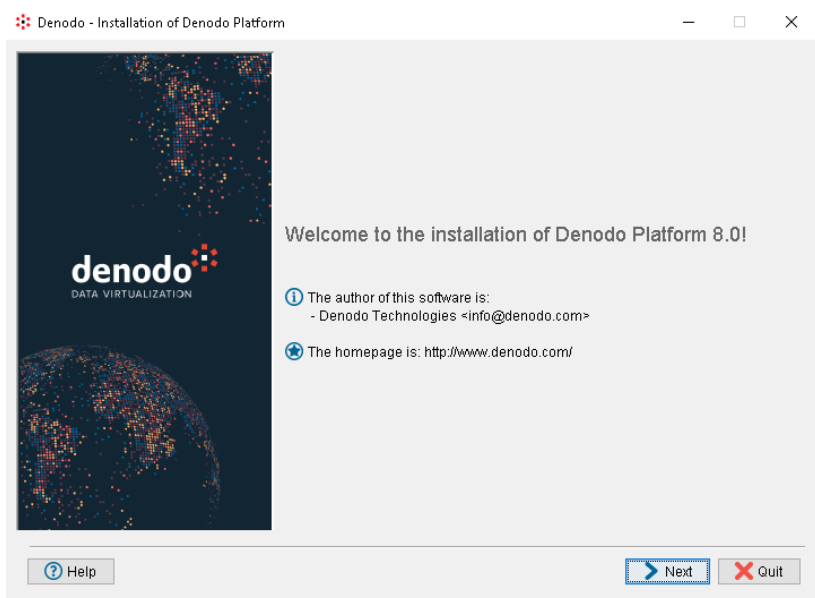


If Denodo is not already installed, then click the 'Denodo 8.0' link in installer screen as shown in the following figure.



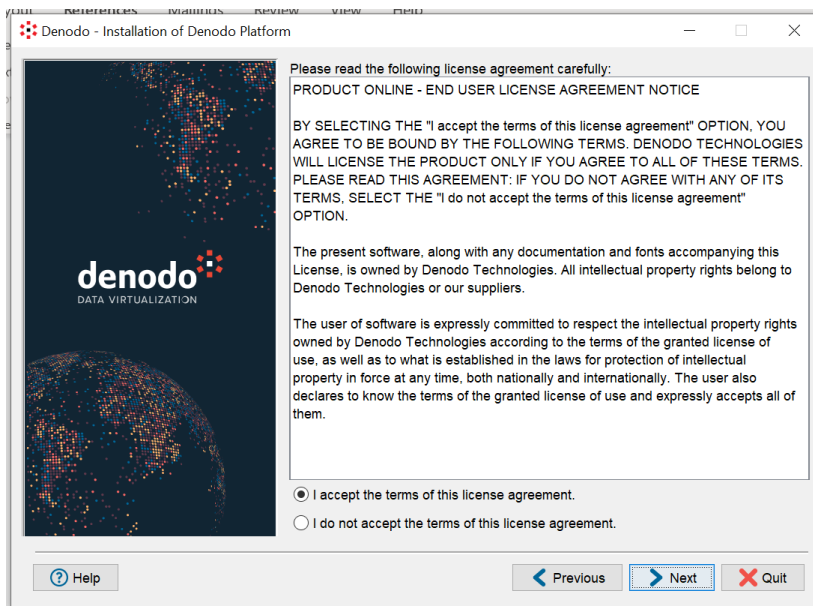
## Step 1

For installation of Denodo, click Next to proceed.



If Windows User Account Control is enabled, a dialog box displays in which you have to enter the credentials of an administrator user. Enter these credentials and continue.

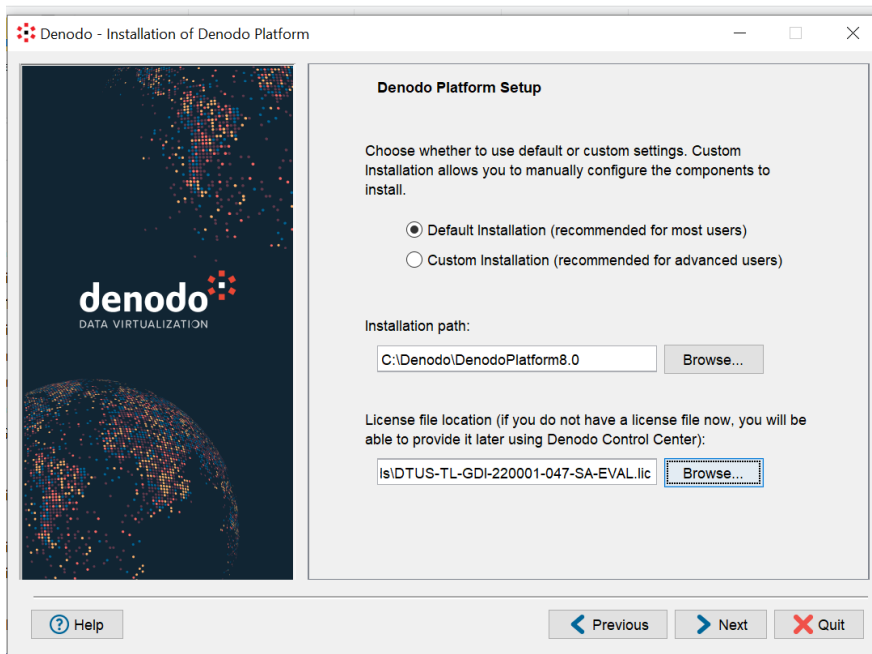
Next, the install displays the product licensing conditions. Read them and accept; select **I accept the terms of this license** and click **Next**.



## Step 2

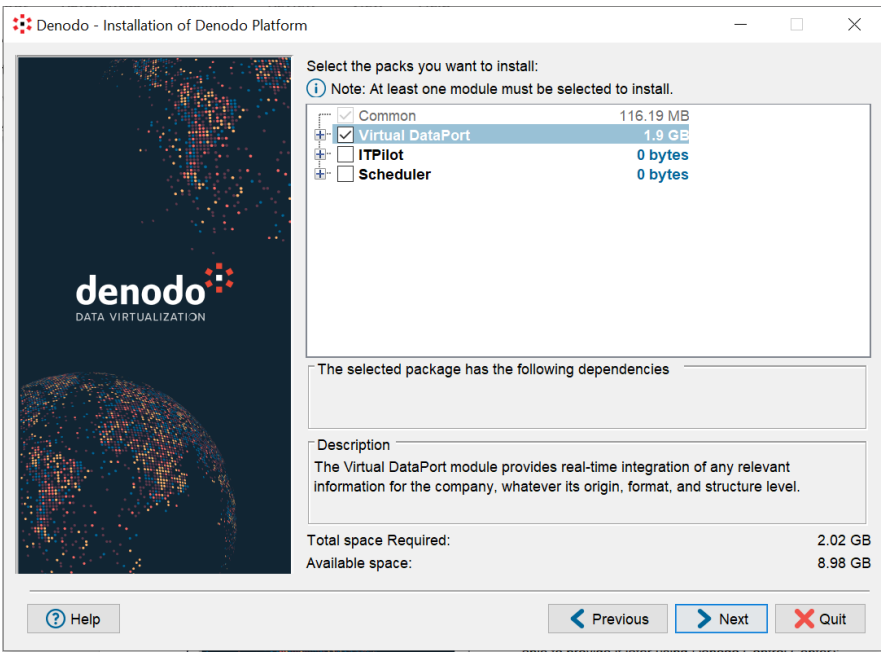
**Default Installation:** recommended for most users. You can select the modules you want to install and they will be installed with their default configuration values.

**Select the license file** from the directories – For example: if the .ISO file is mounted as E: then go to location - “E:\denodo-install-8.0\denodo-license” and select the license file.



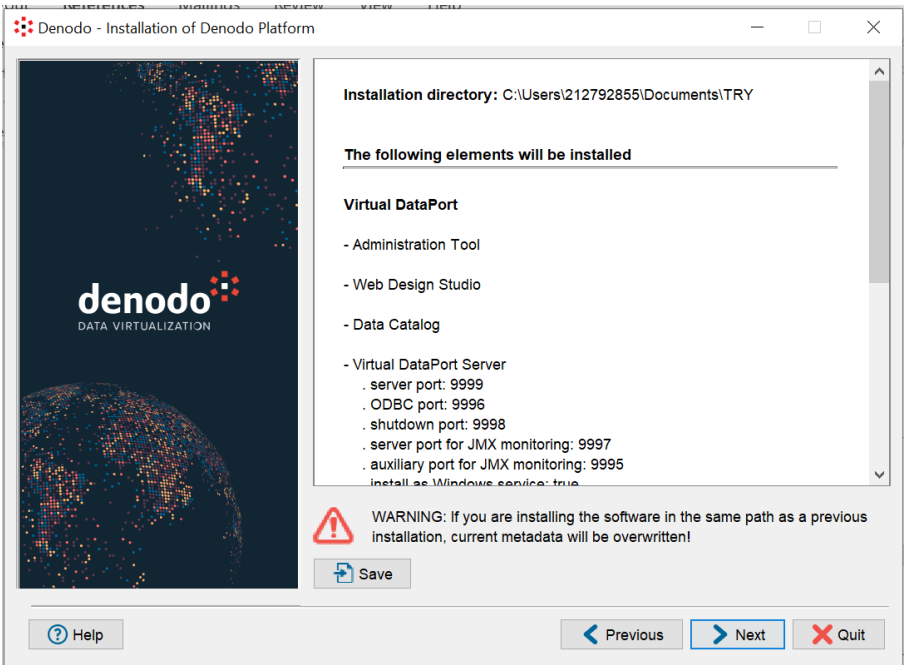
# Step 3

Select Virtual DataPort and click Next.

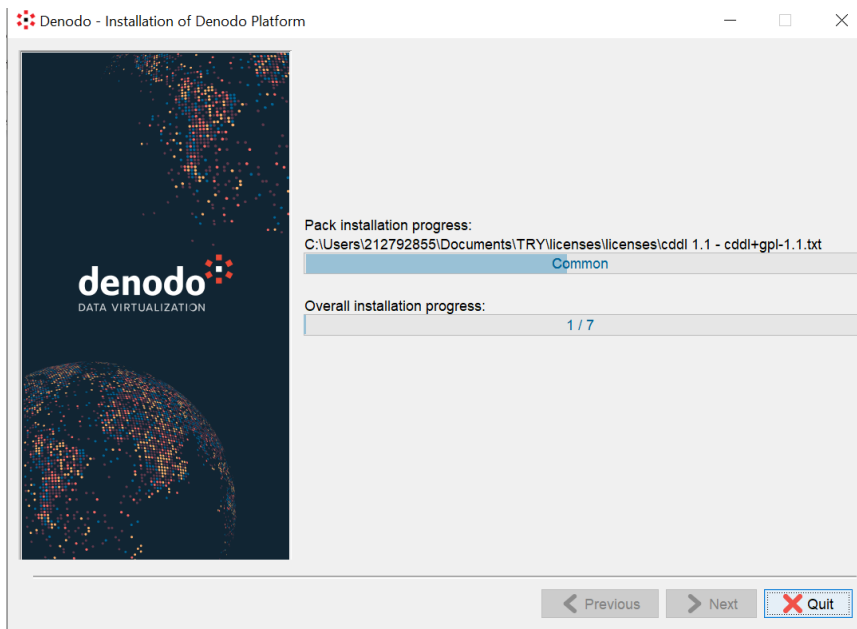


# Step 4

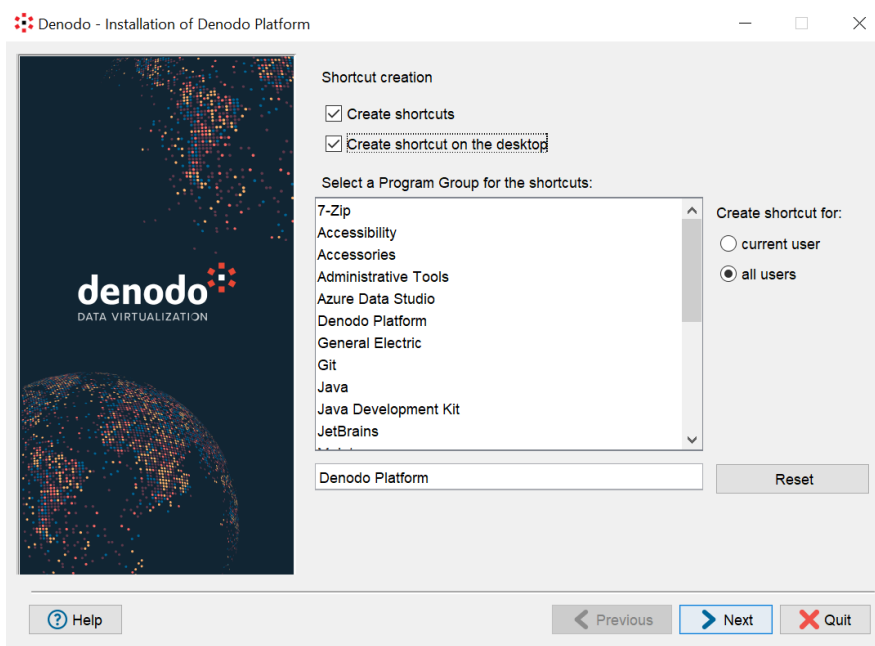
Details of the server ports appears as shown in the following figure.



Click the **Next** button and the installation begins.

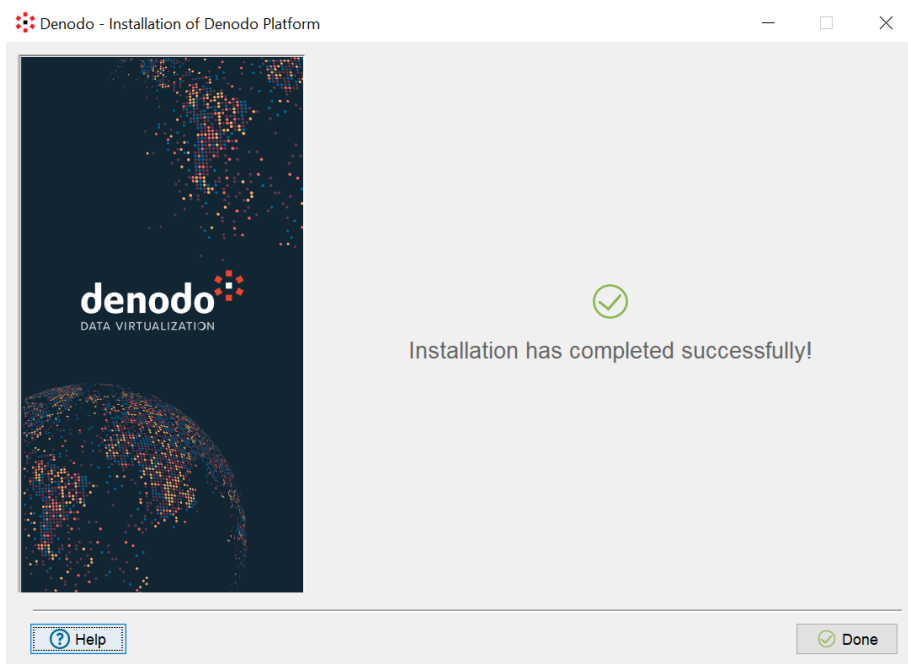


Click **Next** button



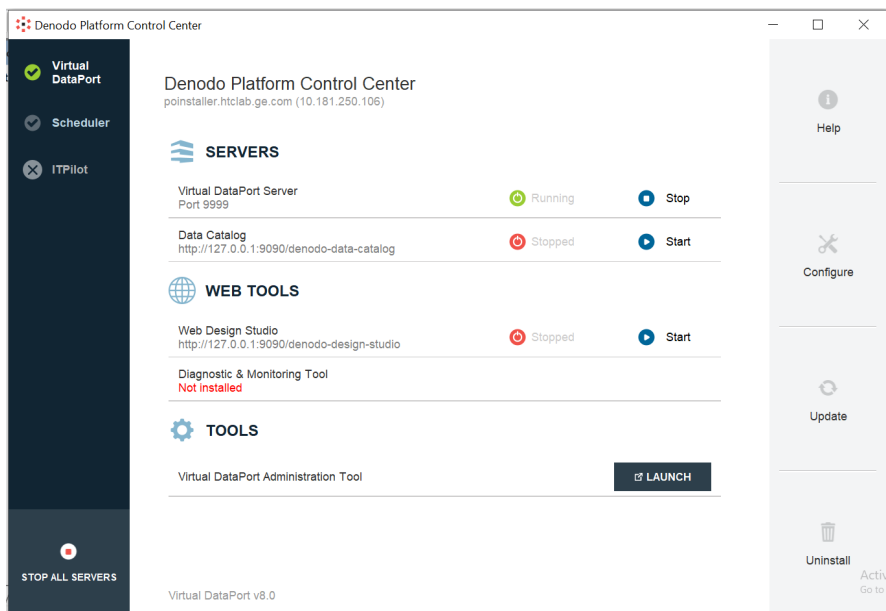
Select the checkboxes to create shortcuts

Click **Next** button

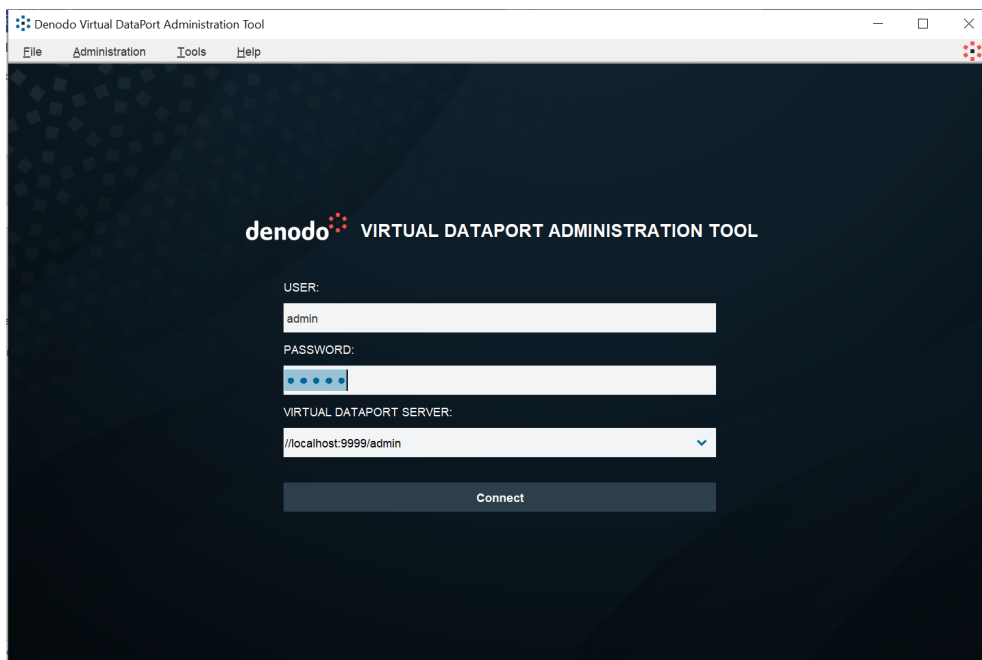


## Step 5

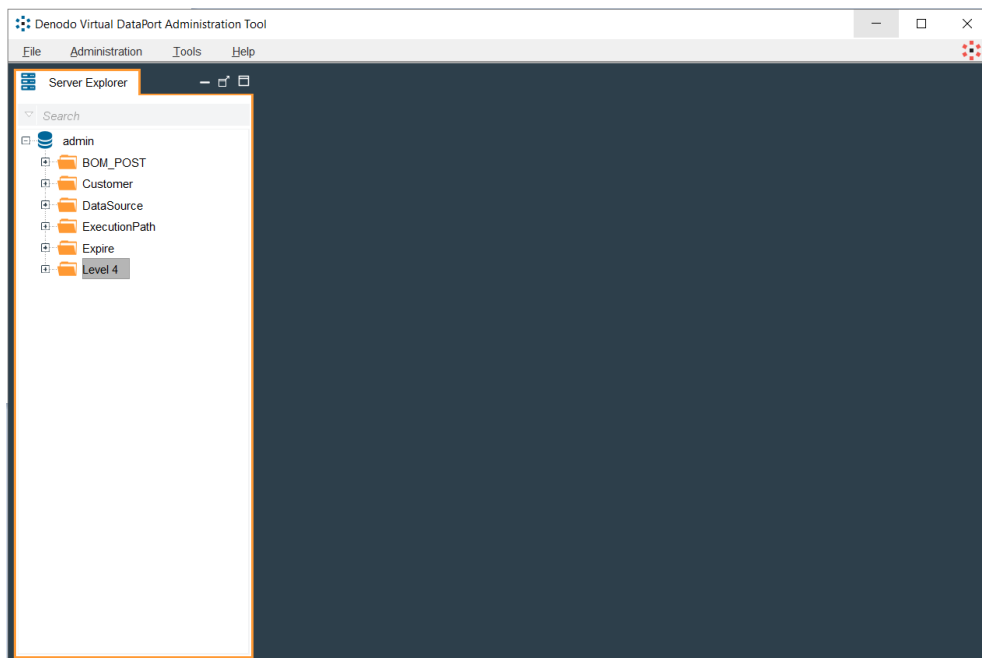
Double-click the Denodo shortcut created on the desktop.  
The following screen appears. You can start and stop VDP using this UI.



Launch the Virtual Data Port Administration tool. Credentials by default are as follows: admin/<<Custom Set Password>> . The default password is “admin”.



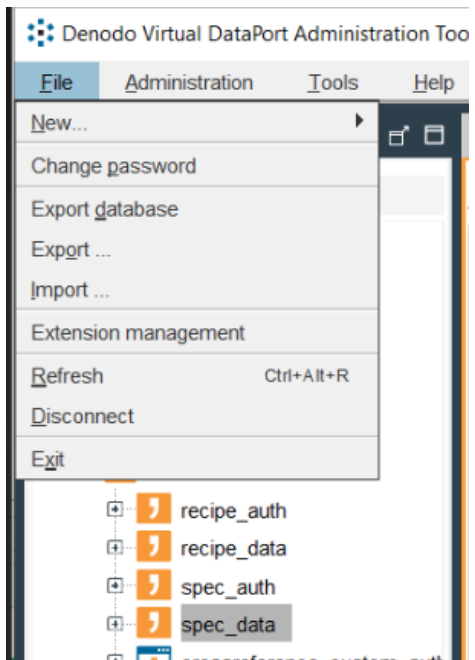
After a successful login, the Virtual Data Port screen appears as shown in the following figure.



## Step 6 – To change password

To change the password, use the following steps in the Virtual Data Port tool.

## File -> Change Password



A screen like the following appears where you can provide the new password details.

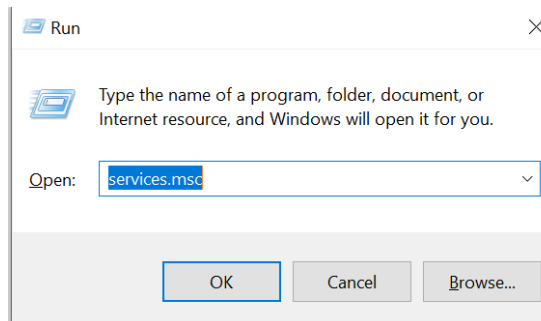
Log out and Log in again to make the new password is effective.

A screenshot of the 'Edit User' dialog box in the Denodo Virtual DataPort Administration Tool. The dialog has a title bar with the Denodo logo and the text 'Edit User'. It contains the following fields: 'Login:' with the value 'admin', 'Description:' with the value 'admin user', 'Password:', and 'Retype password:'. At the bottom right, there are 'Ok' and 'Cancel' buttons. A blue information icon is located in the top right corner of the dialog area.

**IMPORTANT:** The Denodo Virtual Data Port client should be started and running before starting the Orchestration Hub installation process

## Steps to Make Denodo Automatically Start as a Service

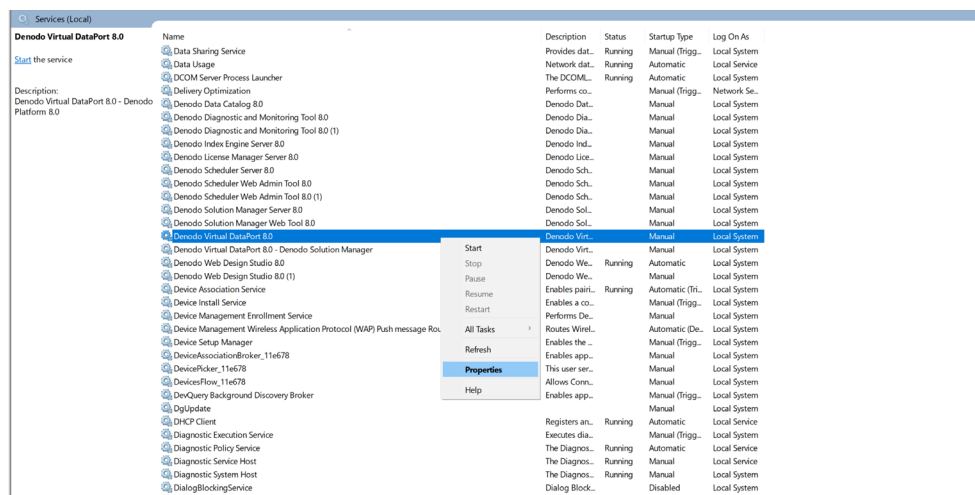
Run the **services.msc** command.



The screenshot shows the Windows 'Run' dialog box. The text 'services.msc' is entered into the 'Open:' field. Below the field are 'OK', 'Cancel', and 'Browse...' buttons.

Name	Description	Status	Startup Type	Log On As
Dell Command   Power Manager Notify			Manual	Local System
Dell.CommandPowerManager.Service			Manual	Local System
Denodo Browser Pool Ser...	Denodo Browser Pool Ser...		Manual	Local System
Denodo Data Catalog - D...	Denodo Data Catalog - D...		Manual	Local System
Denodo Diagnostic and Monitoring Tool 8.0	Denodo Diagnostic and ...		Manual	Local System
Denodo Index Engine Server 8.0	Denodo Index Engine Ser...		Manual	Local System
Denodo ITPilot Web Admin Tool 8.0	Denodo ITPilot Web Admi...		Manual	Local System
Denodo PDF Conversion Server 8.0			Manual	Local System
Denodo Scheduler Server 8.0	Denodo Scheduler Server ...		Manual	Local System
Denodo Scheduler Web Admin Tool 8.0	Denodo Scheduler Web A...		Manual	Local System
Denodo Verification Server 8.0	Denodo Verification Serve...		Manual	Local System
<b>Denodo Virtual DataPort 8.0</b>	<b>Denodo Virtual DataPort ...</b>		<b>Manual</b>	<b>Local System</b>
Denodo Web Design Studio 8.0	Denodo Web Design Stu...		Manual	Local System
Device Association Service	Enables pairing between L...	Running	Automatic (Trig...	Local System
Device Install Service	Enables a computer to rec...		Manual (Trigg...	Local System
Device Management Enrollment Service	Performs Device Enrollme...		Manual	Local System
Device Management Wireless Application Protocol (...	Routes Wireless Applicati...		Automatic (De...	Local System
Device Setup Manager	Enables the detection, do...		Manual (Trigg...	Local System
DeviceAssociationBroker_13b29c	Enables apps to pair devi...		Manual	Local System
DevicePicker_13b29c	This user service is used f...		Manual	Local System
DevicesFlow_13b29c	Allows ConnectIX and PC...		Manual	Local System

Right-click the **Denodo Virtual DataPort 8.0** service and select **Properties**.



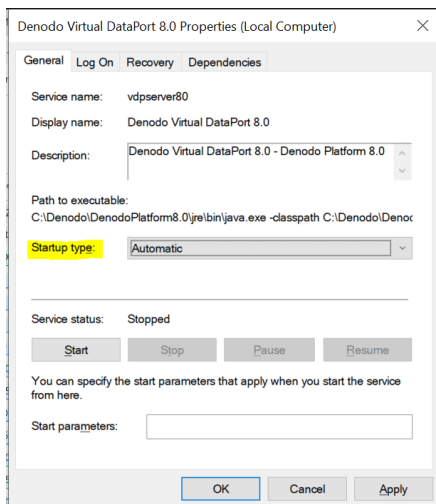
The screenshot shows the Windows Services console. The 'Denodo Virtual DataPort 8.0' service is selected. A right-click context menu is open, showing options like 'Start', 'Stop', 'Pause', 'Resume', 'Restart', 'All Tasks', 'Refresh', 'Properties', and 'Help'. The 'Properties' option is highlighted.

Name	Description	Status	Startup Type	Log On As
Data Sharing Service	Provides dat...	Running	Manual (Trigg...	Local System
Data Usage	Network dat...	Running	Automatic	Local Service
DCOM Server Process Launcher	The DCOM...	Running	Automatic	Local System
Delivery Optimization	Performs co...		Manual (Trigg...	Network Se...
Denodo Data Catalog 8.0	Denodo Dat...		Manual	Local System
Denodo Diagnostic and Monitoring Tool 8.0	Denodo Dia...		Manual	Local System
Denodo Diagnostic and Monitoring Tool 8.0 (1)	Denodo Dia...		Manual	Local System
Denodo Index Engine Server 8.0	Denodo Ind...		Manual	Local System
Denodo License Manager Server 8.0	Denodo Lic...		Manual	Local System
Denodo Scheduler Server 8.0	Denodo Sch...		Manual	Local System
Denodo Scheduler Web Admin Tool 8.0	Denodo Sch...		Manual	Local System
Denodo Scheduler Web Admin Tool 8.0 (1)	Denodo Sch...		Manual	Local System
Denodo Solution Manager Server 8.0	Denodo Sol...		Manual	Local System
Denodo Solution Manager Web Tool 8.0	Denodo Sol...		Manual	Local System
<b>Denodo Virtual DataPort 8.0</b>	<b>Denodo Virt...</b>		<b>Manual</b>	<b>Local System</b>
Denodo Virtual DataPort 8.0 - Denodo Solution Manager	Denodo Virt...		Manual	Local System
Denodo Web Design Studio 8.0	Denodo We...	Running	Automatic	Local System
Denodo Web Design Studio 8.0 (1)	Denodo We...		Manual	Local System
Device Association Service	Enables pair...	Running	Automatic (Trig...	Local System
Device Install Service	Enables a co...		Manual (Trigg...	Local System
Device Management Enrollment Service	Performs De...		Manual	Local System
Device Management Wireless Application Protocol (WAP) Push message Ro...	Routes Wirel...		Automatic (De...	Local System
Device Setup Manager	Enables the ...		Manual (Trigg...	Local System
DeviceAssociationBroker_11e678	Enables app...		Manual	Local System
DevicePicker_11e678	This user ser...		Manual	Local System
DevicesFlow_11e678	Allows Com...		Manual	Local System
DeQuery Background Discovery Broker	Enables app...		Manual (Trigg...	Local System
DgUpdate			Manual	Local System
DHCP Client	Registers an...	Running	Automatic	Local Service
Diagnostic Execution Service	Executes dia...		Manual (Trigg...	Local System
Diagnostic Policy Service	The Diagnos...	Running	Automatic	Local Service
Diagnostic Service Host	The Diagnos...	Running	Manual	Local Service
Diagnostic System Host	The Diagnos...	Running	Manual	Local System
DialogBlockingService	Dialog Block...		Disabled	Local System

Change the Start type from **Manual** to **Automatic**.

Click **Apply** to save the changes.





The previous change will enable the Denodo service to start automatically in the case of a reboot of the system.

## Denodo License Configuration

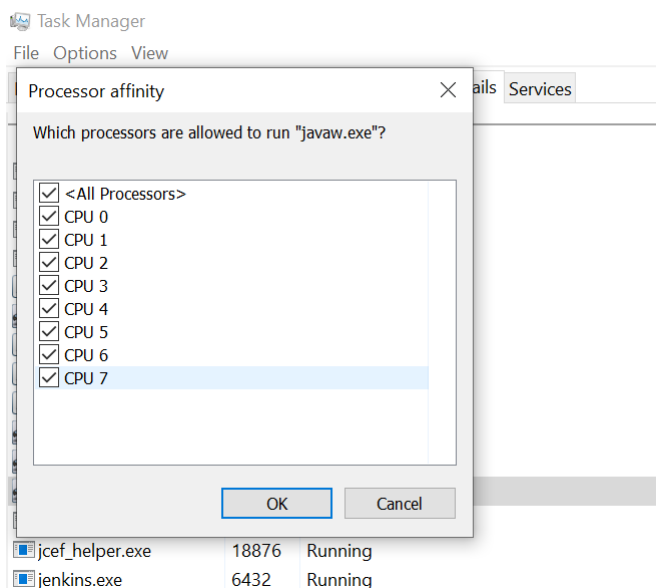
The Denodo license is configured to have a maximum of 4 processors. If your system has number of processors more than 4, the Denodo Virtual Data Port will fail to start.

Base speed:	1.90 GHz
Sockets:	1
Cores:	4
Logical processors:	8
Virtualization:	Enabled
L1 cache:	256 KB
L2 cache:	1.0 MB
L3 cache:	6.0 MB

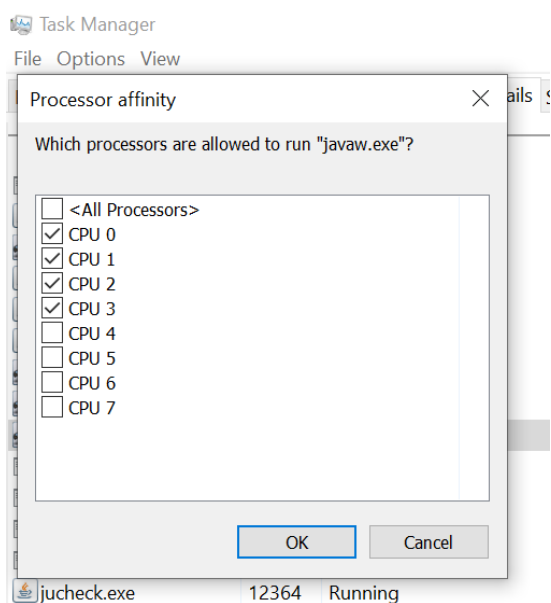
In such cases, changes must be made to the Virtual Data Port service from the Task Manager.

Select the Denodo Virtual Data Port (OpenJDK Platform binary) from the Task Manager. Select **Go to details** of the Denodo.





Limit the number of processors to a maximum number of 4.

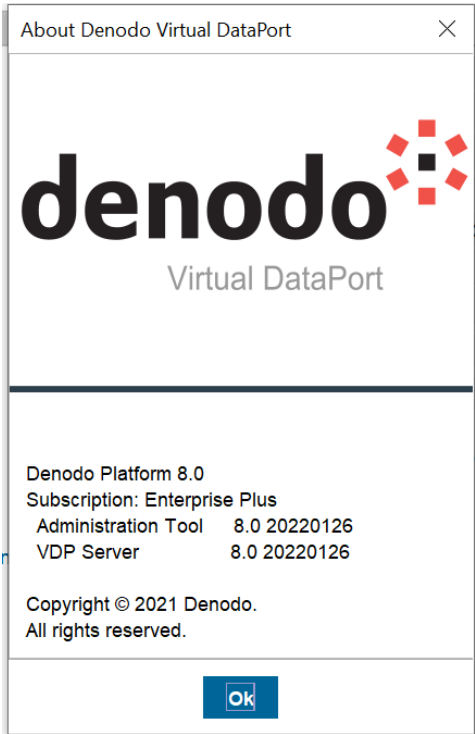


After the above changes are made, the Virtual Data Port can be started.

**Note:** Please note that the affinity can get reverted in case of a system restart or any other events. Make sure that the affinity is set to the required numbers in case the Virtual Data Port fails to start.

### Step 7 – Patch update

Check the version of the Denodo Virtual Data Port: **Help : About Virtual DataPort**



If the version is not same as listed above, the latest patch update must be added.

The update is also provided in the .ISO file. Navigate to installed location - 'E:\denodo-install-8.0\denodo-v80-update-20220126' folder for updates.


File Explorer path: This PC > DVD Drive (E:) GE Orchestration Hub - 2022 > denodo-install-8.0 > denodo-v80-update-20220126

Name	Date modified	Type	Size
denodo-v80-update-202201262200.jar	26-01-2022 21:29	JAR File	10,31,515 KB
RELEASENOTES_COMMON_V80_UPDATE...	26-01-2022 21:19	File	11 KB
RELEASENOTES_ITPILOT_V80_UPDATE_20...	26-01-2022 21:20	File	2 KB
RELEASENOTES_SCHEDULER_V80_UPDAT...	26-01-2022 21:20	File	20 KB
RELEASENOTES_VDP_V80_UPDATE_20220...	26-01-2022 21:21	File	135 KB

Open the Denodo platform and click **Update**.

## SERVERS

Virtual DataPort Server  
Port 9999

 Running

 Stop

Data Catalog  
<http://kubernetes.docker.internal:9090/denodo-data-c...>

 Stopped

 Start

## WEB TOOLS

Web Design Studio  
<http://kubernetes.docker.internal:9090/denodo-desig...>

 Stopped

 Start

Dagnostic & Monitoring Tool  
<http://kubernetes.docker.internal:9090/diagnostic-mo...>

 Stopped

 Start

## TOOLS

Virtual DataPort Administration Tool

 LAUNCH

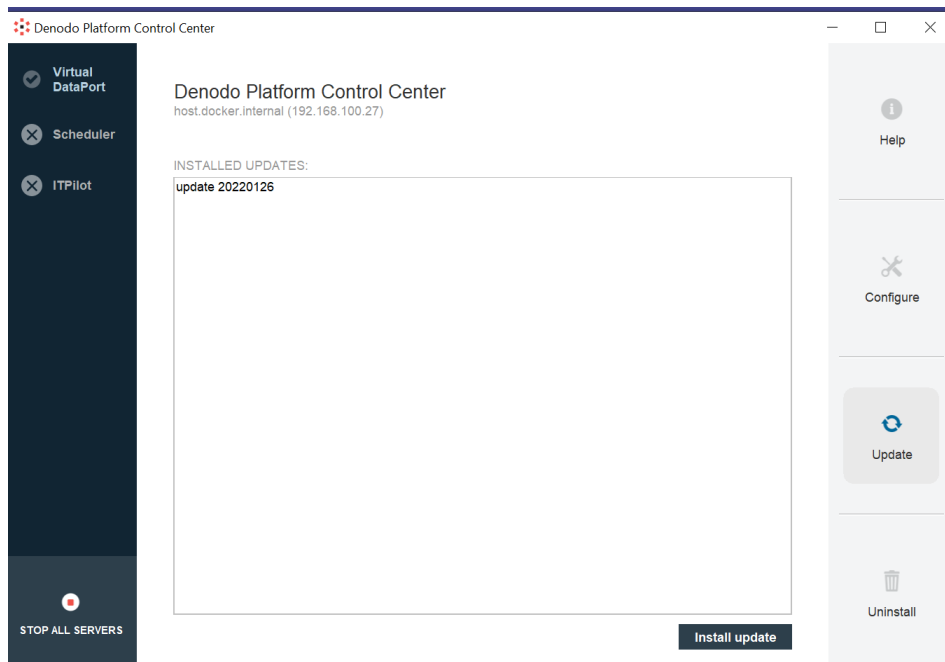
Help

  
Configure

  
Update

  
Uninstall

Click the Install update link.



Select the denodo-v80 jar file and install it.

This PC > DVD Drive (E:) GE Orchestration Hub - 2022 > denodo-install-8.0 > denodo-v80-update-20220126				
Name	Date modified	Type	Size	
denodo-v80-update-202201262200.jar	26-01-2022 21:29	JAR File	10,31,515 KB	
RELEASENOTES_COMMON_V80_UPDATE...	26-01-2022 21:19	File	11 KB	
RELEASENOTES_ITPILOT_V80_UPDATE_20...	26-01-2022 21:20	File	2 KB	
RELEASENOTES_SCHEDULER_V80_UPDAT...	26-01-2022 21:20	File	20 KB	
RELEASENOTES_VDP_V80_UPDATE_20220...	26-01-2022 21:21	File	135 KB	

Restart the servers after the update.

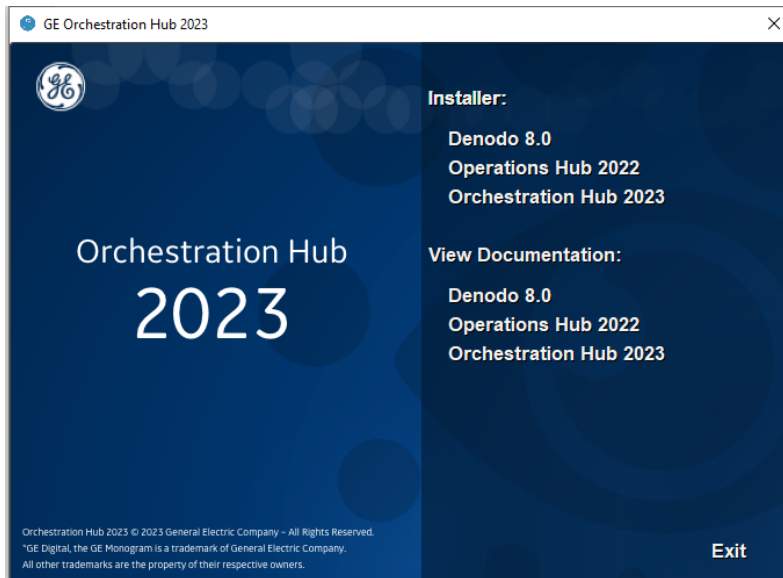
## Orchestration Hub Installation

### Step 1

Right-click the downloaded .ISO file and select the “Mount” option.

This PC > DVD Drive (E:) GE Orchestration Hub - 2022	
Name	Date modified
denodo-install-8.0	04-08-2020 22:03
GE_Operations_Hub_v2022	27-06-2022 21:00
GE_Orchestration_Hub_v2022	27-06-2022 20:39
autorun.inf	27-06-2022 20:35
GEOrchestrationHub.bmp	27-06-2022 20:35
GEOrchestrationHub.exe	27-06-2022 20:35
GEOrchestrationHub.ico	27-06-2022 20:35
installation.ini	27-06-2022 20:35

Double-click “GEOrchestrationHub.exe” which will open the install wizard.

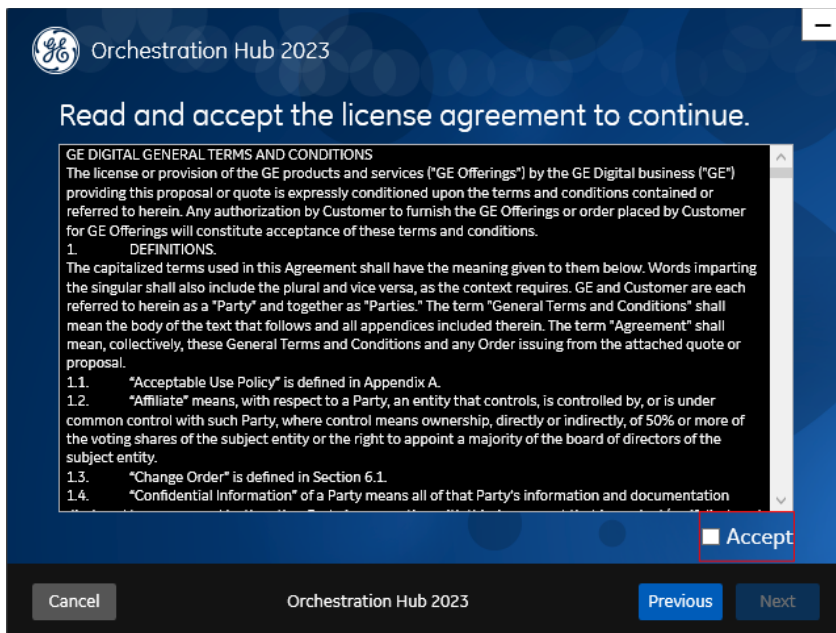


Select the 'Orchestration Hub 2023' installer option and the welcome wizard appears. Select Enterprise for the installation with Denodo, or Standard for only with the Plant Connect (No Denodo Required).



## Step 2

Go through the license agreement and click if you accepts license terms, and then click Next.



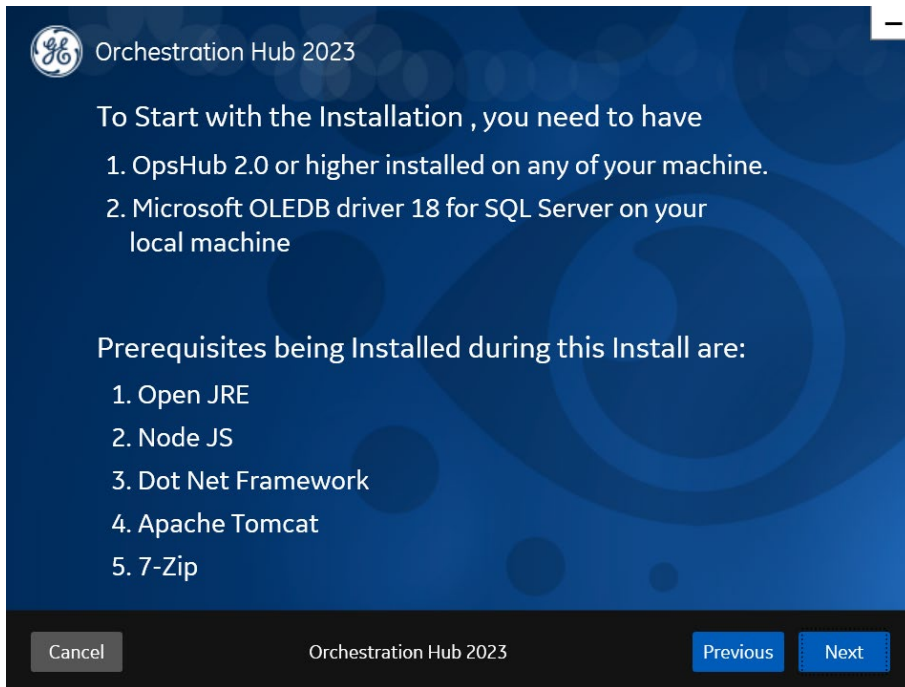
### Step 3

The next page of the wizard checks the pre-requisites, check your system and then click Next.



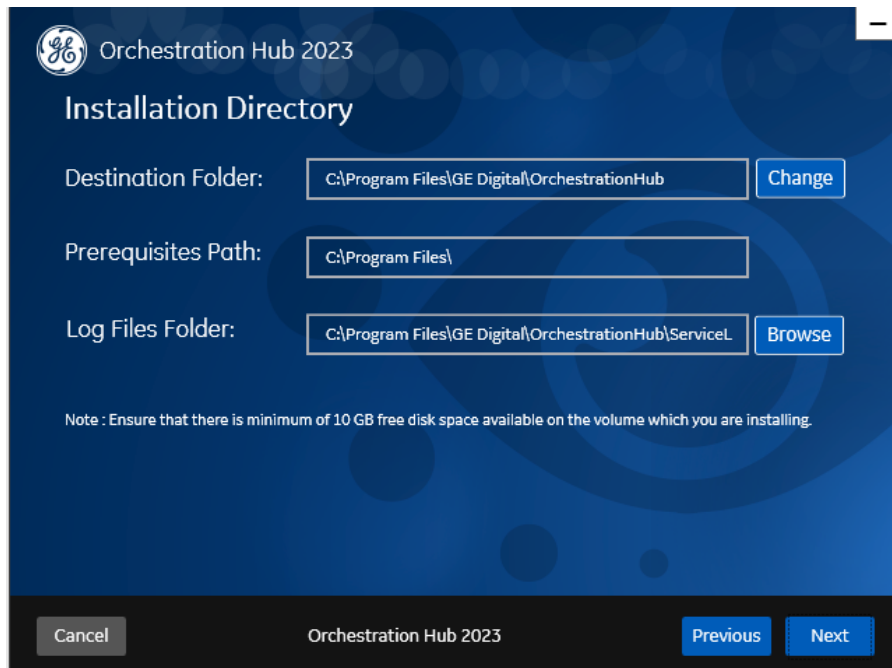
**Note:** “Denodo installation on your local machine” prerequisite will not be present if the installation mode selected is **Standard** (as shown in the following screen).





## Step 4

Next, you are notified regarding the destination folder of where it is getting setup, your pre-req installation path, and the Logging base folder path. You may change this path, according to your convenience.



## Step 5

In the next screen, enter/verify your Operation Hub credentials and port details.

- Host name: Existing Operations Hub server details (Fully Qualified Domain Name)
- Port: 443
- Tenant Username: Existing Operations Hub user name
- Tenant Password: \*\*\*\*\* Existing Operations Hub user password

Enter these details and click Next.

## Step 6

Next, enter Proficy Authentication (UAA) credentials and details needed to enter/verify/validate.

- Proficy Authentication Server: UAA server (Fully Qualified Domain Name)
- Admin Client ID: Existing Proficy Authentication client id
- Admin Client Secret: \*\*\*\*\* (Existing Proficy Authentication admin client secret)
- Port: 443

Once details are entered, click Validate to give you the green checkmark, and then click Next to continue.


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### UAA Credentials

Server Name:

Port:

Admin Client ID:

Admin Client Secret:  

## Step 7

In the next page, enter the Denodo credentials.

- Denodo Install Path - Installed Location of Denodo - C:\Denodo\DenodoPlatform8.0 - (Default location)
- Denodo Server name: hostname/ IP address of machine where Denodo is installed, in fully qualified domain name
- Denodo Database: admin
- Denodo Username: admin
- Denodo Password: Updated password set during installation
- Denodo Port: 9999

Note: After clicking on Validate button, please wait for 30 seconds for the validation process.

Note: The following screen will not be available if the installation mode selected is **Standard**.

GE Orchestration Hub 2023

## Denodo Credentials

Denodo Install Path:

Denodo Server Name:

Denodo Port:

Denodo Database:

Denodo Username:

Denodo Password:  ☒

Orchestration Hub 2023

## Step 8

In the next screen, enter Plant Applications database credentials,

- Database credentials
- server name: Existing Plant Applications database server details (Fully Qualified Domain Name)
- Username: Existing Plant Applications database username
- Password: \*\*\*\*\* (Password of the existing database)
- Database name: Existing Plant Applications database name
- Port :1433
- Site Name:- Friendly name for the L2/MES Plant site

After clicking Validate Connection and it is validated, click Next.

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### PlantApps Database Credentials


PA Server Name: 10.181.250.97

PA Port: 1433

PA Database: SOADB

PA Username: sa

PA Password: ••••••••

PA Site Name: siteone 

[Validate Connection](#)

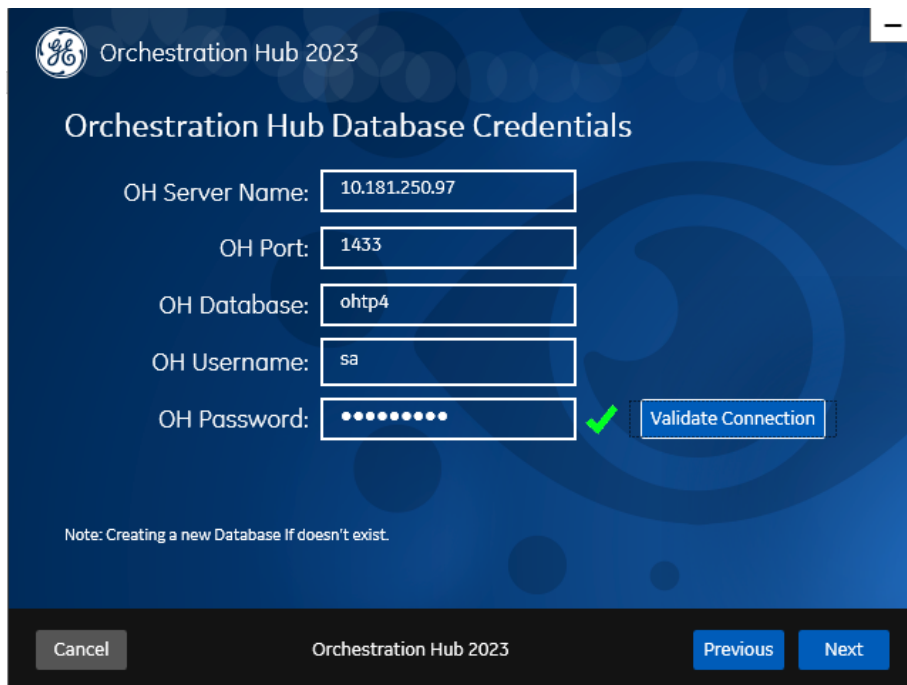
[Cancel](#) Orchestration Hub 2023 [Previous](#) [Next](#)

## Step 9

In the next screen, enter the Orchestration Hub Database credentials.

- Database credentials
- server name: Existing Plant Applications database server details (Fully Qualified Domain Name)
- Username: Existing Plant Applications database username
- Password: \*\*\*\*\* (Password of the existing database)
- Database name: OHDB
- Port: 1433

Click Validate Connection and then click Next.



Orchestration Hub 2023


## Orchestration Hub Database Credentials

OH Server Name:

OH Port:

OH Database:

OH Username:

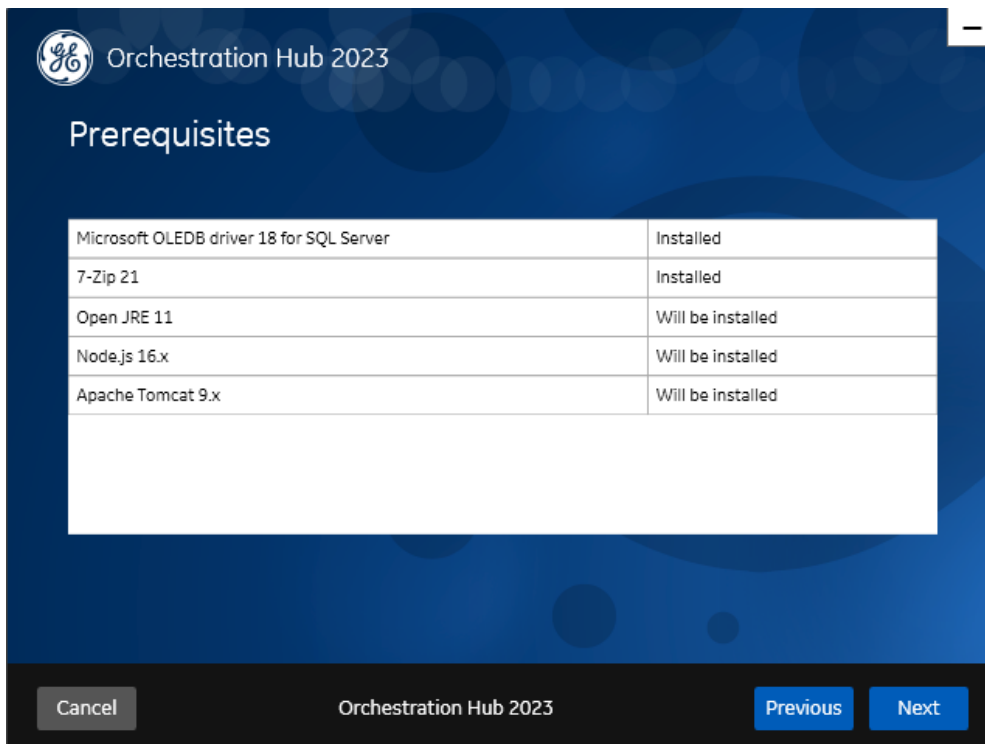
OH Password:  

Note: Creating a new Database if doesn't exist.

Orchestration Hub 2023

## Step 10

The next screen, checks the availability of certain pre-requisites and their status. For instance: - Open JDK, Apache Tomcat, Node.js, and The Microsoft® OLEDB driver 18 for SQL Server. If pre-requisites are met, click Next to continue.



Orchestration Hub 2023

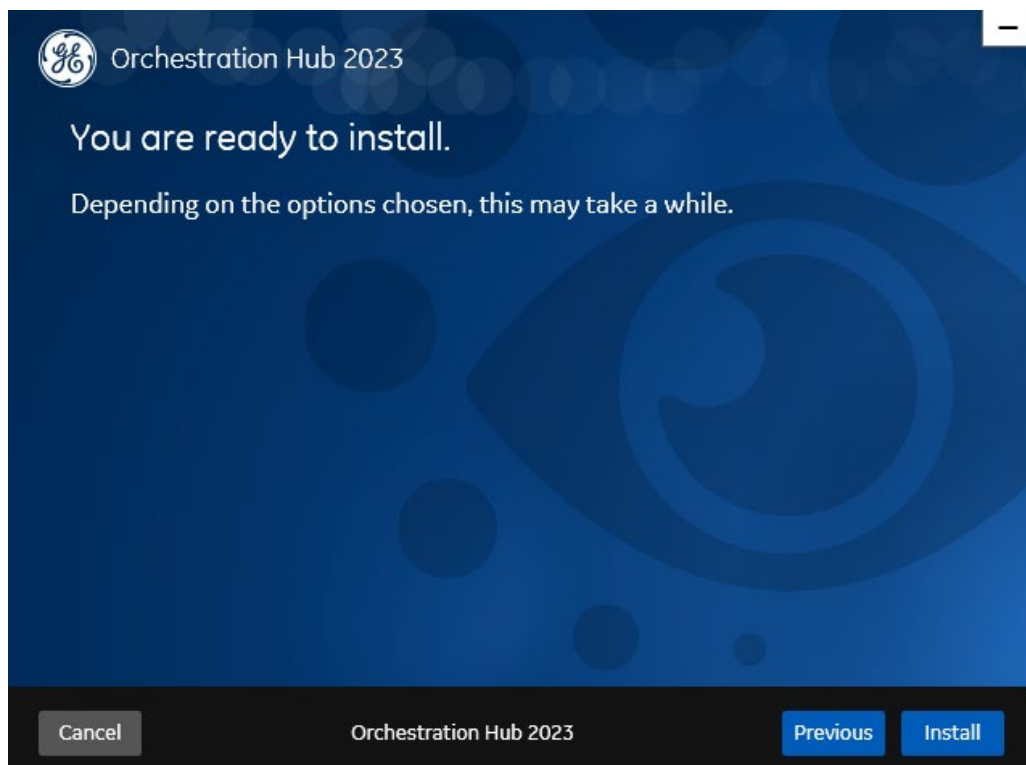
## Prerequisites

Microsoft OLEDB driver 18 for SQL Server	Installed
7-Zip 21	Installed
Open JRE 11	Will be installed
Node.js 16.x	Will be installed
Apache Tomcat 9.x	Will be installed

Orchestration Hub 2023

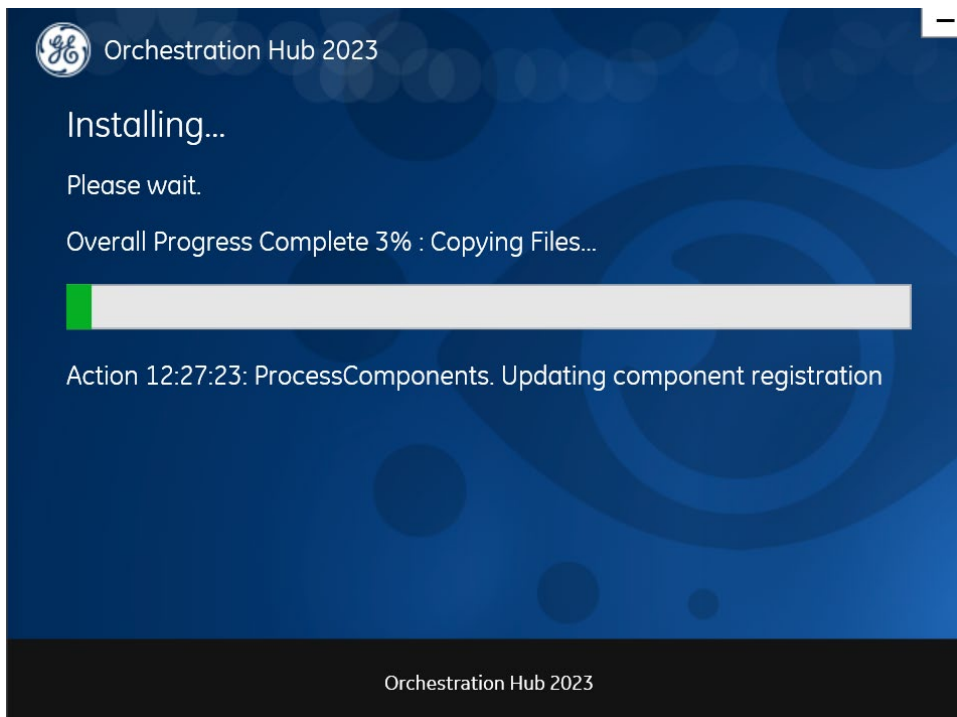
## Step 11

You are now ready for installation. If you are upgrading, all you need to do is click Upgrade/Install Button.



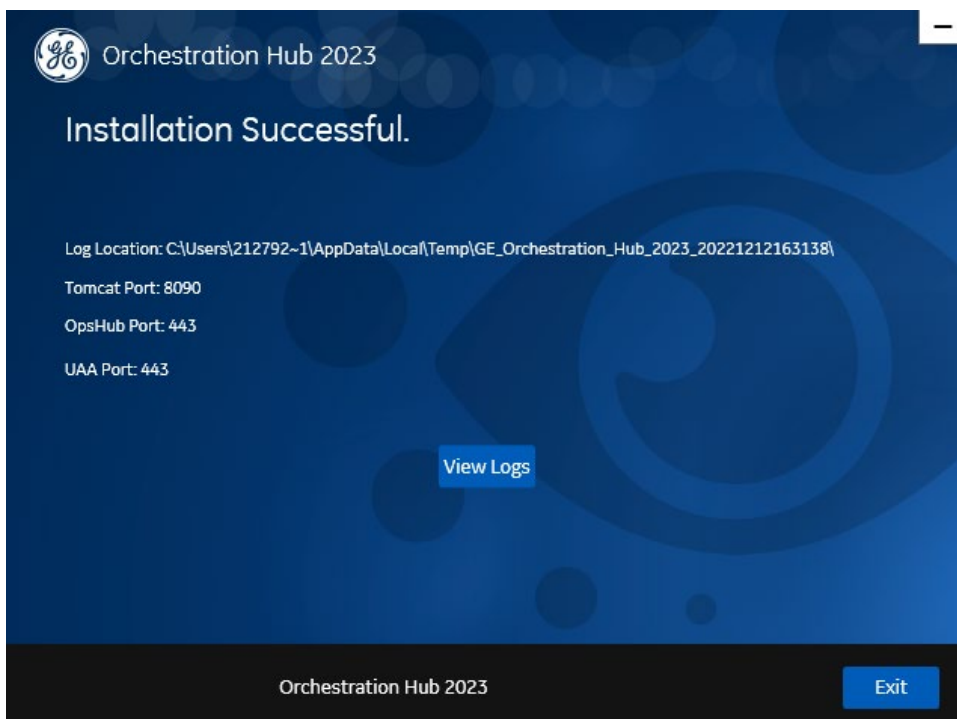
## Step 12

When you click Upgrade/Install, the following screen appears showing the installation progress.

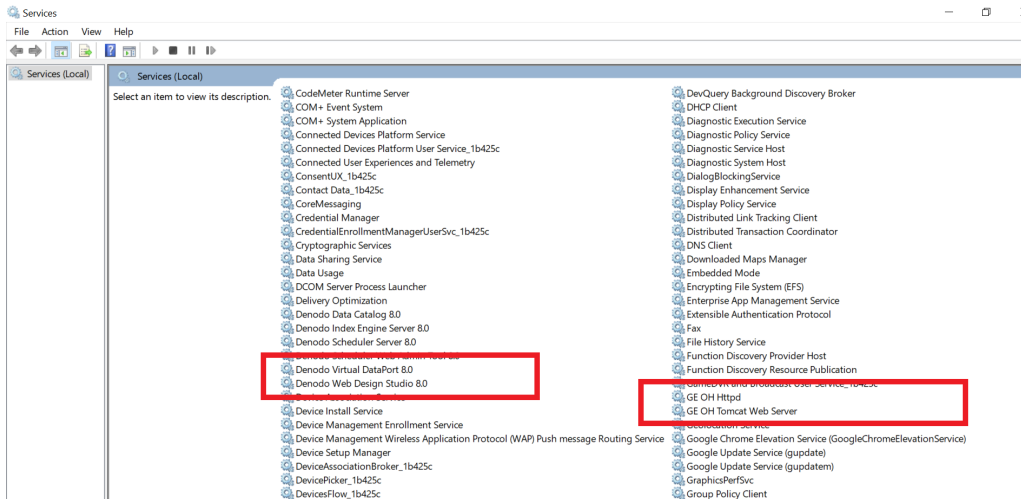


## Step 13

After Installation is successful, a message like the following appears and the Denodo services are established.







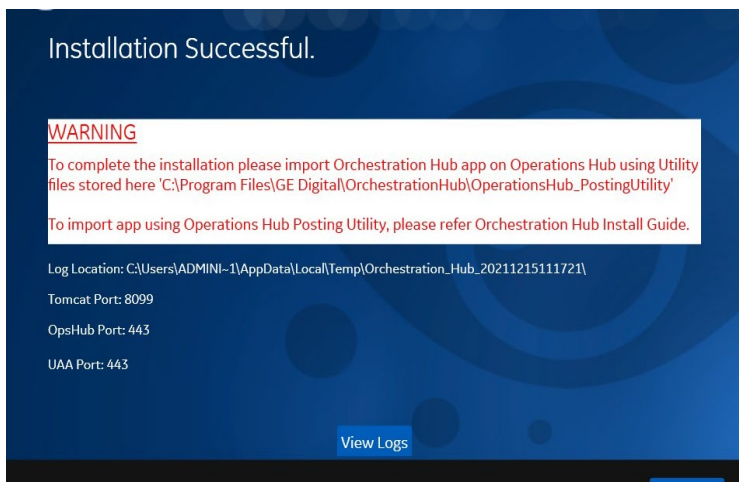
You can now access the Orchestration Hub application using the icon and can use the application in the browser.

## Step 14 (Exception case)

There can be a scenario where the installation was a success, but the app plugin could not be added due to user permissions or any flaw in the prerequisites.

This warning can be seen if any previous version of the application is Locked in the operations Hub. In such cases user has to unlock the application through operations hub and import the application by following the below steps.

In such cases, the installer page displays a warning similar to the following:

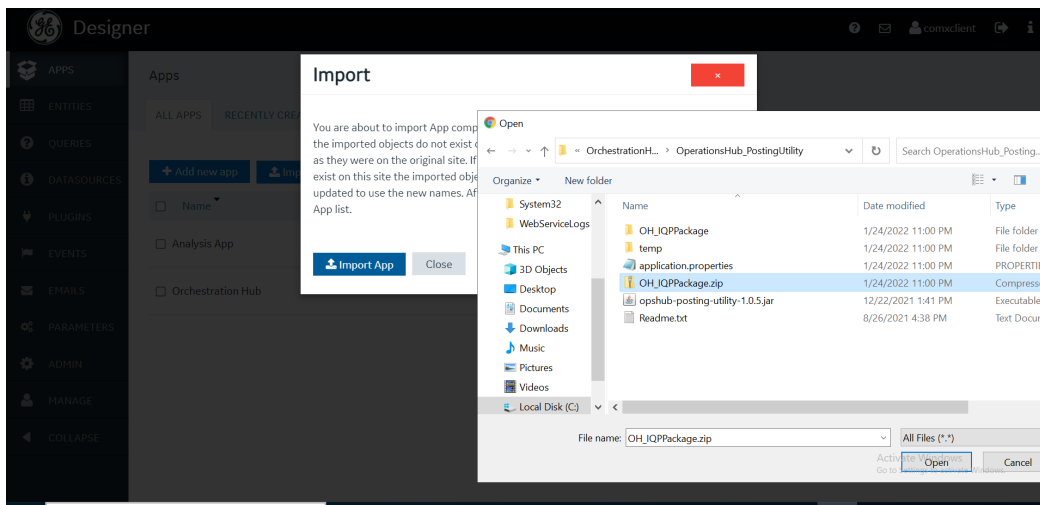
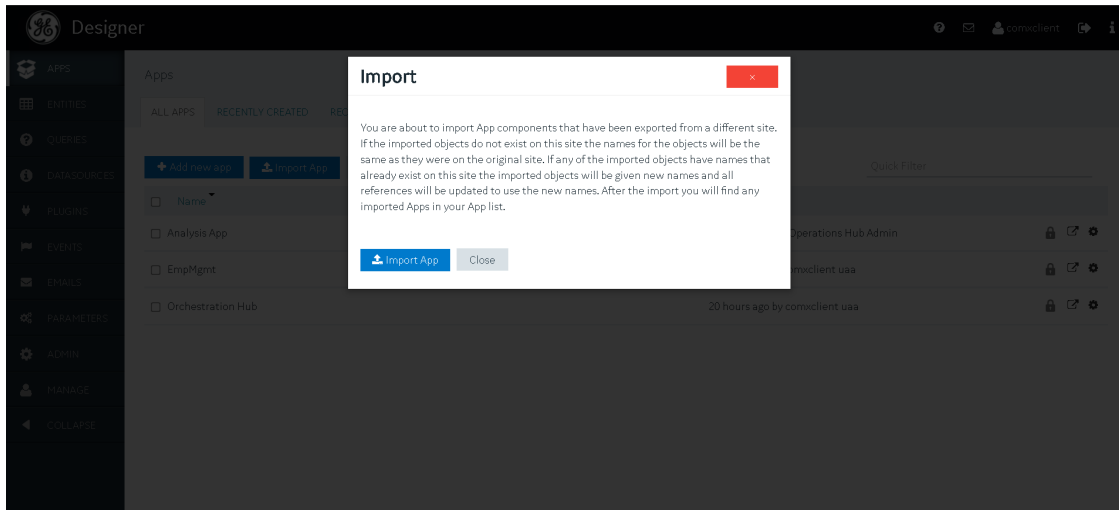


To complete the installation, the Orchestration Hub app plugin has to be imported on Operations Hub.

The plugin can be found in the installer folder at the location:

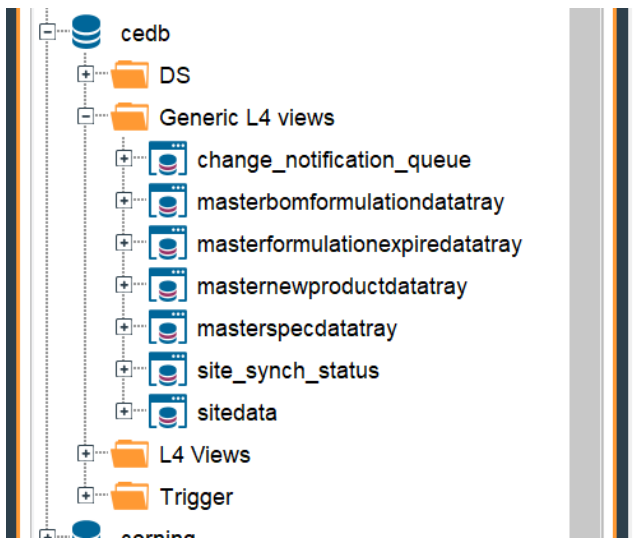
**C:\Program Files\GE Digital\OrchestrationHub\OperationsHub\_PostingUtility**

Import the **OH\_IQPPackage.zip** into Operations Hub.



## Post Install Configuration

After successful installation, check the execution of VQL scripts. From the Denodo Platform Control Center, open the Denodo Virtual Dataport Administration tool. Check each section for successful execution of VQLs.



As part of the install, **OH. change\_notification\_queue, OH. MasterBomFormulationDataTray, OH. MasterFormulationExpireDataTray, OH. MasterNewProductDataTray, OH. MasterSpecDataTray, OH. Site\_Synch\_Status** tables will be created.

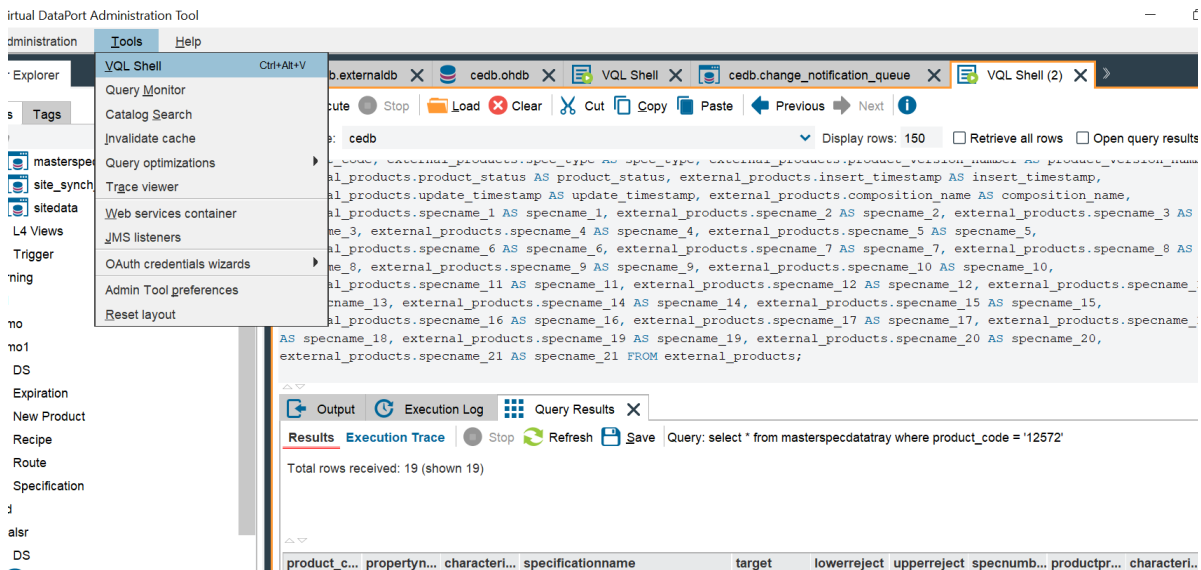
To connect to the system and fetch the data, execute the below given VQL with the server and password details.



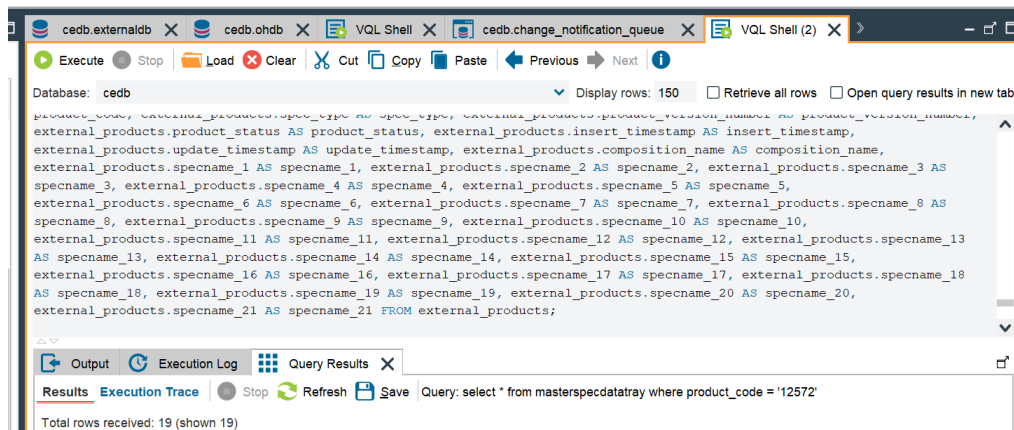
external system.vql

Update the VQL with IP address(<<IP\_ADDRESS>>), port number(<<PORT\_NUMBER>>), database name(<<DB\_NAME>>), password (<<PASSWORD>>) and table name (<<TABLE NAME>>) and set the spec names accordingly.

Select **VQL Shell** from the tool section in the denodo



Paste the External system VQL and execute in the **cedb** Database



This will create a view **p\_external\_system** which will connect to the system provided and the services will fetch and update the above given tables with the changes.

To add sample data to Plant applications and Orchestration Hub database, follow the steps under this section












## Add a L2/MES Plant Site

After successful installation, add a L2/MES Plant Site. Please use the following steps.-

### Step 1

Locate the files in Tomcat inside the oh-connector-service SiteData.json and ConnectionData.json.

For example: - C:\Program Files\Apache Software Foundation\Tomcat 9.0\webapps\oh-connector-service-1.0-devlocal-SNAPSHOT\WEB-INF\classes

	com	11-05-2022 12:37	File folder	
	Database	11-05-2022 12:37	File folder	
	META-INF	11-05-2022 12:37	File folder	
	siteVqls	13-05-2022 18:54	File folder	
	TestDatabase	11-05-2022 12:37	File folder	
	application	11-05-2022 12:39	Properties Source File	5 KB
	connectionData	11-05-2022 12:36	JSON Source File	1 KB
	site	11-05-2022 12:36	VQL File	545 KB
	siteData	13-05-2022 18:54	JSON Source File	1 KB
	vqlimport	13-05-2022 18:54	Windows Batch File	1 KB
	vqlimport.bat	13-05-2022 18:28	BAK File	5 KB

## Step 2

Add the L2/MES/PlantApps details in the json file by copying the exact same json object which is created for the 1<sup>st</sup> L2/MES/PlantApps and change the values described as follows:

SiteData.Json

```
{  
    "connectionUserName"*: "UserName", → Existing PA DB username  
    "siteAlias": "siteAlias",  
    "passwordEncrypted"*: "false",  
    "siteName"*: "SiteOne", → Friendly Site Name (this value should be unique)  
    "connectionId"*: 1, → value connection details entered in connection.json for the same site  
    "id"*: 1, → list it as the Site Number in the json  
    "connectionPassword"*: "*****" → Password of the existing database,  
    "version": "version",  
    "siteType": "siteType"  
}
```

\* Fields are Required for new Site

Note:- Site Name spaces are replaced with the Underscore



```
1  [
2
3      {
4          "connectionUserName": "UserName",
5          "siteAlias": "SiteAlias",
6          "passwordEncrypted": "false",
7          "siteName": "SiteOne",
8          "connectionId": 1,
9          "id": 1,
10         "connectionPassword": "*****",
11         "version": "version",
12         "siteType": "siteType"
13     },
14     {
15         "connectionUserName": "UserName",
16         "siteAlias": "SiteAlias",
17         "passwordEncrypted": "false",
18         "siteName": "SiteTwo",
19         "connectionId": 2,
20         "id": 2,
21         "connectionPassword": "*****",
22         "version": "version",
23         "siteType": "siteType"
24     }
25 ]
```

connectionData.json

```
{
  "id": 1,
  "connectionName": "jdbc",
  "dataBaseAdapter": "HikariDataSource",
  "driverClassPath": "com.microsoft.sqlserver.jdbc.SQLServerDriver",
  "driverClass": "com.microsoft.sqlserver.jdbc.SQLServerDataSource",
  "dataBaseUri": "jdbc:sqlserver://ServerName;databaseName=DatabaseName "
}
```

**Server name:** Existing PA DB server details (Fully Qualified Domain Name).

**Database name:** Existing PA Database name .

```

{} siteData.json {} connectionData.json X
C: > Program Files > Apache Software Foundation > Tomcat 9.0 > webapps > oh-connector-service-1.0-devlocal-SNAPSHOT > WEB-INF > classes > {} connectionData.json
1  [
2  {
3      "id": 1,
4      "connectionName": "jdbc",
5      "dataBaseAdapter": "HikariDataSource",
6      "driverClassPath": "com.microsoft.sqlserver.jdbc.SQLServerDriver",
7      "driverClass": "com.microsoft.sqlserver.jdbc.SQLServerDataSource",
8      "dataBaseUri": "jdbc:sqlserver://ServerName;databaseName=DatabaseName"
9  },
10 {
11     "id": 2,
12     "connectionName": "jdbc",
13     "dataBaseAdapter": "HikariDataSource",
14     "driverClassPath": "com.microsoft.sqlserver.jdbc.SQLServerDriver",
15     "driverClass": "com.microsoft.sqlserver.jdbc.SQLServerDataSource",
16     "dataBaseUri": "jdbc:sqlserver://ServerName;databaseName=DatabaseName"
17 }
18 ]

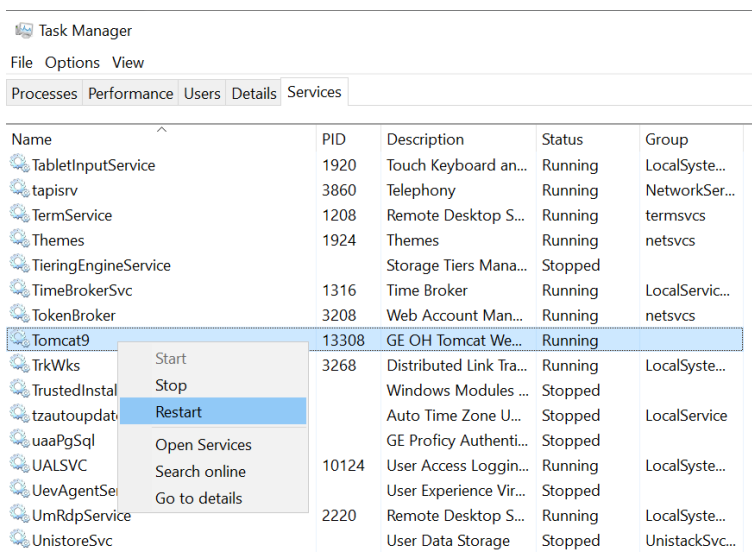
```

### Step 3

After details are entered, restart the oh-connector-service from the Tomcat Server .

- Open Task Manager
- Go to Services
- Look for Tomcat
- Right click and select restart

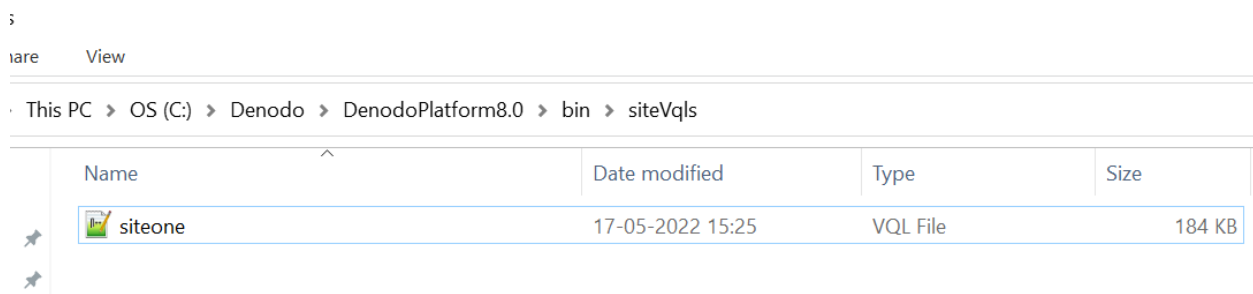
Name	PID	Description	Status	Group
TabletInputService	1920	Touch Keyboard an...	Running	LocalSyste...
tapisrv	3860	Telephony	Running	NetworkSer...
TermService	1208	Remote Desktop S...	Running	termsvcs
Themes	1924	Themes	Running	netsvcs
TieringEngineService		Storage Tiers Mana...	Stopped	
TimeBrokerSvc	1316	Time Broker	Running	LocalServic...
TokenBroker	3208	Web Account Man...	Running	netsvcs
Tomcat9	13308	GE OH Tomcat We...	Running	
TrkWks	3268	Distributed Link Tra...	Running	LocalSyste...
TrustedInstaller		Windows Modules ...	Stopped	
tzautoupdate		Auto Time Zone U...	Stopped	LocalService
uaaPgSql		GE Proficy Authenti...	Stopped	
UALSVC	10124	User Access Loggin...	Running	LocalSyste...
UevAgentService		User Experience Vir...	Stopped	
UmRdpService	2220	Remote Desktop S...	Running	LocalSyste...
UnistoreSvc		User Data Storage	Stopped	UnistackSvc...



## Step 4

Denodo VQLs are generated on restart of the oh-connector-service locate the VQLs inside the siteVqls folder and all the VQLs are generated on the same.

C:\Denodo\DenodoPlatform8.0\bin\siteVqls








## Step 5

After the generation of the VQLs run the bat file once all the VQLs are generated in the Denodo folder inside bin folder.

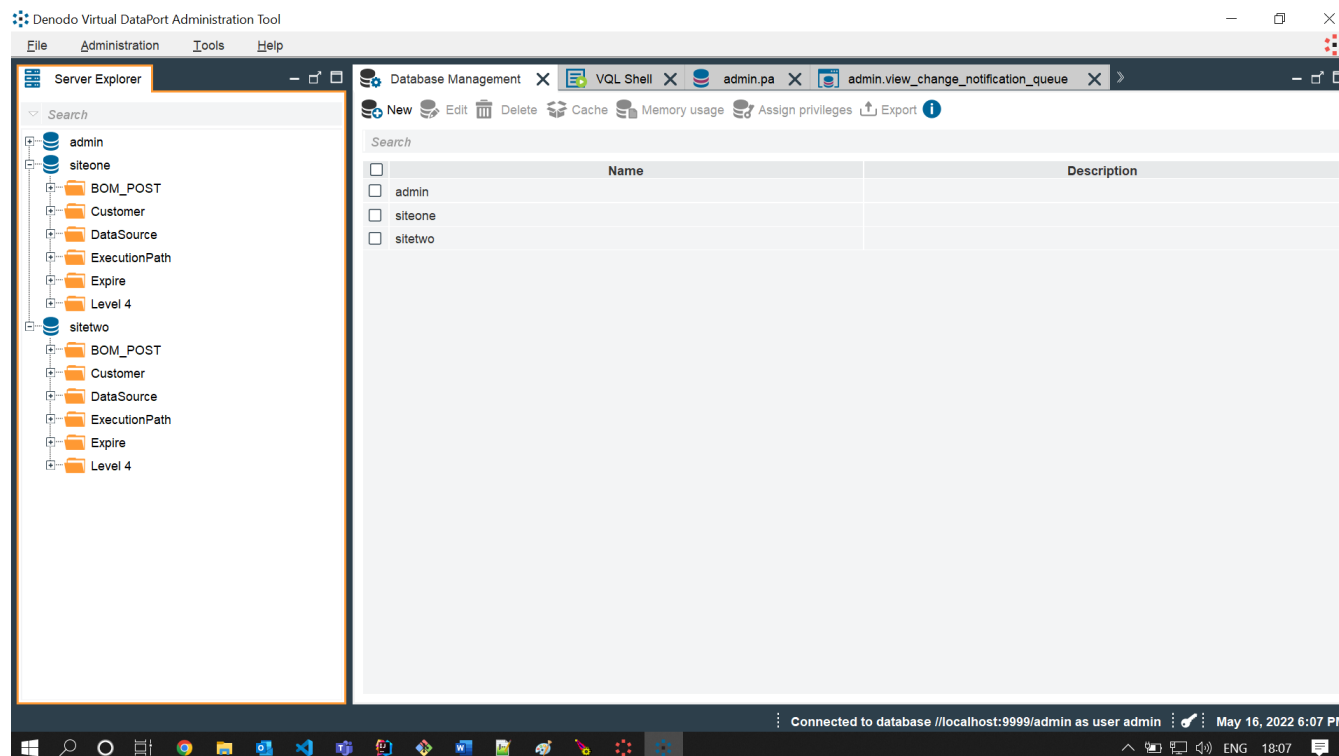
For eg:- C:\Denodo\DenodoPlatform8.0\bin



 regenerateMetadata	08-02-2022 15:39	Windows Batch File	3 KB
 update	05-08-2020 00:45	Application	30 KB
 vdpadmin	08-02-2022 15:39	Windows Batch File	3 KB
 vdp-service	08-02-2022 15:39	Windows Batch File	4 KB
 vqlimport	18-05-2022 17:54	Windows Batch File	1 KB

## Step 6

Denodo will have the new VQLs executed and will be imported in Denodo



## Application Update

Uninstall old Orchestration Hub(/1.1.16.0-custom). Refer below screenshot.

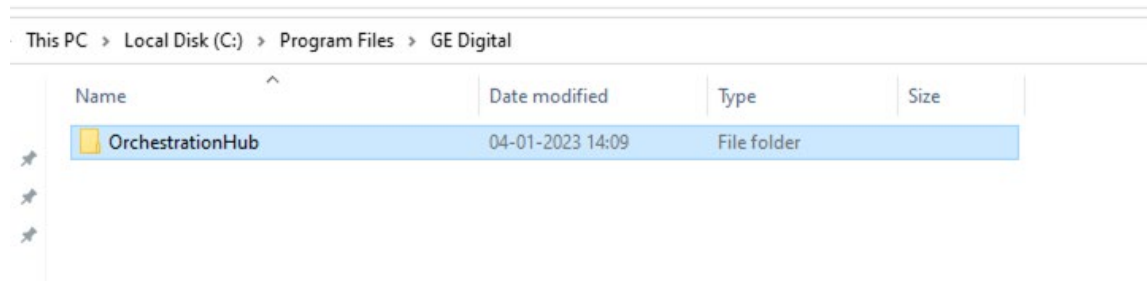
Application Name	Developer	Install Date	Size	Version
Apache Tomcat 9.0 Tomcat9 (remove only)	The Apache Software Foundation	04-01-2023		9.0.63
CodeMeter Runtime Kit Reduced v7.30	WIBU-SYSTEMS AG	27-12-2022	51.0 MB	7.30.4811.500
Common Licensing	GE Digital	03-01-2023		00020.00002.02002.0...
GE Operations Hub 2022.06	GE	03-01-2023	3.67 GB	2.8.2224.0
GE Orchestration Hub 2022	GE Digital	04-01-2023	861 MB	1.0.0.16
Git	The Git Development Community	30-12-2022	293 MB	2.39.0.2
Google Chrome	Google LLC	10-12-2022		108.0.5359.135

If the Apache tomcat is not uninstalled, unintstall Tomcat manually

Uninstall Apache Tomcat 9.0 Tomacat9(remove only). Refer below screenshot

Name	Publisher	Installed On	Size	Version
7-Zip 21.07 (x64 edition)	Igor Pavlov	30-12-2022	5.48 MB	21.07.00.0
Apache Tomcat 9.0 Tomcat9 (remove only)	The Apache Software Foundation	04-01-2023		9.0.63
CodeMeter Runtime Kit Reduced v7.30	WIBU-SYSTEMS AG	27-12-2022	51.0 MB	7.30.4811.500
Common Licensing	GE Digital	03-01-2023		00020.00002.02002.0...

Go to GE Digital folder location and delete OrchestrationHub folder. Refer below screenshot



Install new latest Orchestration Hub (1.1.94.0)

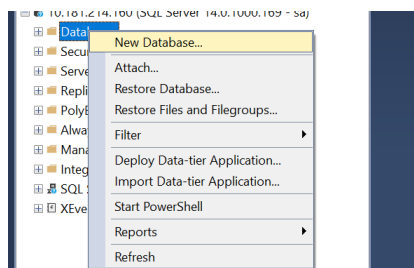
## How to simulate Level2 and Level4 (Test scenario)

Sample data is provided for testing scenarios in case of unavailability of the environment.

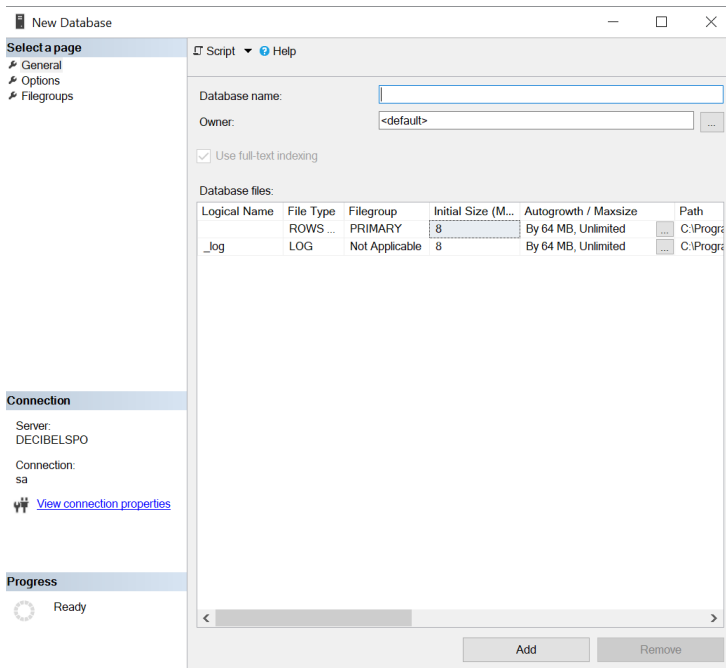
### Level4 mock data

Create a database in the server to mock the L4 system.

On the Databases option, right-click and select option **New Database**.



Give the database name as **EXTERNALDB** and click OK.



After creation of the database, execute the below SQL in the newly created Database using the SQL query execution window to insert data.



insert\_script.sql

Use the below given VQL to for creating external system baseview for testing. Update the VQL with IP address(<<IP\_ADDRESS>>), port number(<<PORT\_NUMBER>>), password (<<PASSWORD>>)



external\_system.vql

To add mock data for Recipe in the Orchestration Hub tables, update the below given sql sequentially with appropriate details and run it in the Orchestration Hub Database. Update <<OH DB Name>> with OH Database name, <<notification id>> with notification id of the newly inserted record, <<sitename>> with sitename.



MockData.sql

## Level2 (PA) mock data

The sample data to mock the Plant Applications details.

Import the following the excel sheets to plant application if it doesn't have any data.



EngineeringUnits.xlsx



Product Family.xlsx



Recipe and  
Properties data.xlsx

# Troubleshooting

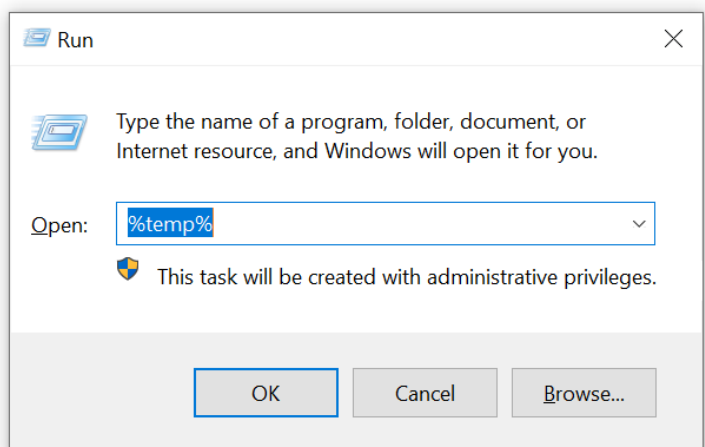
## Logging

### Locations of Log and Configuration Files

The installation log files can be found under the temp folder

Run the **%temp%** command

The location of files: **C:\Users\ADMINI~1\AppData\Local\Temp**



For Successful installations, a folder will be created which contains the log files

This PC > Local Disk (C:) > Users > ADMINI~1 > AppData > Local > Temp				
Name	Date modified	Type	Size	
Orchestration_Hub_20220117113619	1/17/2022 11:46 AM	File folder		
hsperrdata_Administrator	1/17/2022 11:47 AM	File folder		
DEL3A93.tmp	9/16/2019 10:34 PM	TMP File	88 KB	
DEL3C26.tmp	9/16/2019 10:34 PM	TMP File	88 KB	

This PC > Local Disk (C:) > Users > ADMINI~1 > AppData > Local > Temp > Orchestration_Hub_20220117113619				
Name	Date modified	Type	Size	
Orchestration_Hub_20220117113619.log	1/17/2022 11:52 AM	Text Document	21 KB	
Orchestration_Hub_20220117113619_000_WebDisplays.log	1/17/2022 11:46 AM	Text Document	262 KB	

For unsuccessful installations, log file will be generated in the temp folder.

This PC > Local Disk (C:) > Users > ADMINI~1 > AppData > Local > Temp				
Name	Date modified	Type	Size	
Orchestration_Hub_20220113113505_000_WebDisplays.log	1/13/2022 11:41 AM	Text Document	263 KB	
Orchestration_Hub_20220113113505.log	1/13/2022 11:49 AM	Text Document	26 KB	

## Log Files for Microservices

After successful installation, the services log files will be at the location:

**C:\Program Files\GE Digital\OrchestrationHub\WebServiceLogs**

## Logging into Orchestration Hub

### a. Creating user(s) in Proficy Authentication service:

For accessing Orchestration Hub application, you need to have user(s) created in the associated Proficy Authentication service instance. For the details on 'how to create users in Proficy Authentication service, please visit the online [help](#) and search for 'Create Users' and follow the steps listed in the help.

### b. Assigning required permissions to the users

For accessing Orchestration Hub application, you need to have the users, created in the associated Proficy Authentication service instance, have required scopes (meaning added to the required Groups) assigned as well.

Below are the required scopes the users should have (or the Groups the users should have been added to):

## 1. iqp.user

For the details on 'how to assign scopes to users in Proficy Authentication service', please visit the on-line [help](#) and search for 'Add or Remove Members from Groups'.

Site selection is also required for site which user wants to connect to. This can be achieved in similar steps as mentioned above for assigning permission to the users. Sample site names mentioned below: First click Ok and then Save.

iqp.developer  
☐ confighub.access  
☐ confighub.admin  
☐ orch.hub.site.eleven  
☐ orch.hub.site.twelve

OK Cancel

Save ResetPassword

DIRECT - scim.write DIRECT - clients.admin DIRECT - password.write DIRECT - clients.secret DIRECT - uaa.user DIRECT - clients.write DIRECT - webapi.user DIRECT - clients.read DIRECT - roles DIRECT - oauth.approvals DIRECT - iqp.developer  
DIRECT - scim.write DIRECT - zones.write DIRECT - user.attributes DIRECT - webapi.administrator DIRECT - approvals.me DIRECT - scim.userid DIRECT - uaa.offline.token DIRECT - profile INDIRECT - iqp.read  
DIRECT - cloud\_controller.service.permissions.read DIRECT - orch.hub.site.hyderabad DIRECT - cloud\_controller.write DIRECT - cloud\_controller.read DIRECT - openid DIRECT - scim.me DIRECT - iqp.tenantAdmin DIRECT - scim.read DIRECT - iqp.user  
DIRECT - iqp.clouduser

## c. Adding the user to the application

After adding the user, log into the Operation hub application and select **Manage -> Users**

Users

+ Add new user 2 Users Quick Filter

Username	First Name	Last Name	OpHub User	Origin
OphubAdmin	Operations Hub	Admin	true	uaa
comxclient	comx	client	true	uaa

Activate Windows  
Go to Settings to activate Windows.

From the users list, select the newly created user and add the Orchestration Hub application under the **Apps** section and click **Save**.

The screenshot shows a web-based configuration interface for a user. On the left, a dark sidebar contains the text "2 Use". The main content area is white and contains the following sections:

- Last Name:** A text input field containing the value "client".
- Groups:** A section with a checkbox labeled "Only GE groups" which is checked. Below it is a container with five buttons: "iqp.developer", "webhmi.administrator", "iqp.clouduser", "iqp.user", and "webhmi.user".
- Parent Groups:** A section with a container containing three buttons: "webhmi.user", "iqp.nodered", and "webhmi.administrator".
- Apps:** A section with a container containing one button: "Orchestration Hub".
- Group and Parent Group Apps:** A section with an empty container.

At the bottom of the form are three buttons: a red "Delete" button, a grey "Cancel" button, and a blue "Save" button.

#### d. Launching and accessing the application

The Orchestration Hub installer, post successful installation, creates a short cut on the server desktop. Double click the short-cut icon to open the application from the default browser. Though you can open Orchestration Hub application in any popular browser, Google Chrome browser is the recommended browser to use.







## About GE

GE (NYSE: GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.