



Denodo 8.0 Enterprise for Azure BYOL - Quick Start Guide

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1 IMPORTANT NOTICE

Denodo Enterprise (BYOL) for Azure Marketplace has been replaced by [Denodo Platform for Azure BYOL](#) starting in September 2022.

2 OVERVIEW

[Denodo Platform](#), the data virtualization leader for unifying enterprise data and delivering data services for the business, is available on Azure as a bring your own license (BYOL) virtual machine (VM). The VMs contain the latest versions of Denodo Solution Manager and Denodo VDP, optimized for use with the Azure Virtual Machines service.

Thank you for your confidence in Denodo and choosing the [Denodo for Azure](#) as your data virtualization technology!

This quick start guide will give you an overview of Denodo and how to quickly start building data virtualization solutions on Azure.

3 MARKETPLACE OFFERING OVERVIEW

This Denodo for Azure offering is based on a Bring Your Own License (BYOL) model under your Azure subscription.

It is expected that you already have an Azure subscription that you can use to logon to the Azure Marketplace in order to create and launch the Denodo VM BYOL through the Azure Portal. And you are responsible for operating your own Azure subscription.

The Denodo VM BYOL consists of the same engine as the Denodo Platform. Some of the key features include:

- The Denodo Solution Manager (SM), to manage your Denodo deployment.
- The Denodo Virtual DataPort (VDP), the core Denodo Data Virtualization engine, to integrate data from any data source and deliver it to any consumer in any format.
- The Denodo Scheduler, for scheduling data pipelines and cache loads among other tasks.

The VMs available are based on Windows Server:

- A Windows Server Virtual Machine with Denodo Solution Manager.
- A Windows Server Virtual Machine with Denodo VDP and Denodo Scheduler.

In the sections below you can find more information on how to deploy.

4 PREVIOUS STEP: OBTAIN A DENODO LICENSE

This is a BYOL offering and requires you to work with Denodo directly to obtain licenses. If you currently do not hold a license agreement for Denodo Platform, please [contact Denodo directly](#) to get a license to use the software.

A Denodo license can be of one of the following types:

- Denodo Solution Manager license. To be installed in the Denodo SM server. When you have this type of license you don't usually need more Denodo license files as the VDP servers obtain their license from the Denodo License Server in the Denodo Solution Manager.
- Denodo Standalone VDP license. When you have this type of license you don't usually deploy VDP together with a SM.

Depending on the Denodo license file you obtain, you have to follow different steps for your Denodo BYOL deployment.

5 DENODO BYOL DEPLOYMENT OVERVIEW

Depending on the Denodo license you have obtained you have to follow different steps.

If you have obtained a Denodo Solution Manager license then:

- Deploy one Denodo SM 8.0 on Windows Server BYOL virtual machine.
- Deploy one or more Denodo VDP 8.0 on Windows Server BYOL virtual machine connected to the Denodo SM previously deployed.

Or, if you have obtained a Denodo Standalone license then:

- Deploy one Denodo VDP 8.0 on Windows Server BYOL virtual machine.

Jump to the corresponding sections below according to your scenario above.

6 DENODO SM 8.0 DEPLOYMENT STEPS

6.1 OVERVIEW

The high level list of steps needed to provision and configuring your Denodo SM BYOL on Azure is the following:

1. Use your Azure Subscription to get the Denodo SM BYOL VM available on the Azure Marketplace.
2. Deploy the Denodo SM virtual machine through your Azure console.
3. Install Denodo SM License in the Denodo SM VM.
4. Start Denodo Services in the Denodo SM VM.
5. Log in the Solution Manager Administration Web Tool.
6. Create one or more environments.
7. Register one or more Denodo servers.
8. Connect to a VDP Server with Design Studio

All the process can take an approximate time of 30 to 50 minutes.

6.2 SM1 - GET DENODO SM 8.0 ON WINDOWS SERVER BYOL

You are responsible for operating your own Azure subscription.

You can create and launch your Denodo SM for Azure BYOL VM using your Azure subscription.

The Azure offering includes a Windows Server Virtual Machine with Denodo SM 8.0 installed.

Log on to the Azure Marketplace and search for the [Denodo 8.0 for Azure listing](#).

6.3 SM2 - DENODO SM VIRTUAL MACHINE DEPLOYMENT

After selecting the Denodo Solution Manager 8.0 BYOL on Windows Server available through the Azure Marketplace you have to complete some few configuration steps in order to launch the Denodo virtual machine through the Azure console.

NOTE: see [Denodo SM Hardware Requirements](#) before choosing the VM Size.

[Home](#) > [Denodo 8.0](#) > [Choose recommended defaults that match your workload](#) >

Create a virtual machine

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ

Resource group * ⓘ

[Create new](#)

Instance details

Virtual machine name * ⓘ

Region * ⓘ

Availability options ⓘ


Image * ⓘ

[See all images](#)

Azure Spot instance ⓘ

Size * ⓘ

[See all sizes](#)

 D-series is recommended for general purpose workloads.

Administrator account

Username * ⓘ

[Review + create](#) [< Previous](#) [Next : Disks >](#)

6.4 SM3 - INSTALL DENODO SM LICENSE

The Denodo services require a Denodo license to start.

Once the Denodo SM BYOL VM is running you have to log in Windows with your Administrator Account username through a Remote Desktop Connection. Detailed instructions are available on [Connect to a Windows Virtual Machine](#).

Then copy your previously obtained Denodo Solution Manager license file to the Azure VM, rename the file as *denodo.lic*, and save it in the *C:\Denodo\DenodoSolutionManager8.0\conf* directory.

NOTE: If you already have the Denodo Platform Control Center open when you copy the license file in the *conf* folder you can click the License information link to force the licence validation.

6.5 **SM4 - START DENODO SM SERVICES**

Logged in with your Administrator Account user through Remote Desktop Connection and once a Denodo license is installed you can start enjoying Denodo software.

Launch the [Services app to start Denodo Servers](#) in the following order:

1. Start Denodo License Manager Server, wait until getting status *Running*.
2. Start Denodo Solution Manager Server, wait until getting status *Running*.
3. Start Denodo Solution Manager Web Tool, wait until getting status *Running*.
4. Start Denodo Web Design Studio, wait until getting status *Running*.
5. Start Denodo Scheduler Web Admin Tool, wait until getting status *Running*.
6. Start Denodo Diagnostic and Monitoring Tool, wait until getting status *Running*.

6.6 **SM5 - LOG INTO THE DENODO SM ADMINISTRATION TOOL**

The Solution Manager is a component to help you manage Denodo deployments.

Once you logged in, the [Denodo Solution Manager Administration Tool](#) provides a single point of entry to all the web applications of the Denodo deployment.

Check first the list of [Supported Browsers for Solution Manager admin tool](#).

Then use a supported browser to point to the URL to access Denodo Solution Manager Administration Tool with the following pattern:

http://<sm_ip>:19090/solution-manager-web-tool/Login

Where *<sm_ip>* is the IP address or DNS name for the Solution Manager virtual machine in the stack deployed.

NOTE: the application may take some time to start so you may need to wait for a couple of minutes before the link works correctly. You may get a connection error or a '404 Not Found' error if you try to access it before the service has completely started.

The user is *admin* and the password by default is *admin* so the recommendation is to [change the default password first thing](#):

- Go to the Configuration menu.
- Click on *User management*.
- Click the *Edit* icon on the right side for the *admin* user.
- Set the new password.

Then logout and sign in again with *admin* as username and the new password.

6.7 **SM6 - CREATE ONE OR MORE STANDARD MODE ENVIRONMENTS**

A [Denodo Environment](#) is defined as a set of servers, of the same or different type, working together for a common purpose. For example, Production, Development or Staging environments.

For [creating a new Standard Mode Environment](#) from the Denodo Solution Manager Administration Web Tool:

- Click on Environments > New Environment.
 - Choose Standard Mode.
 - Click on Create Environment.
 - Set a Name for this environment.
 - Select the License scenario for this environment.
 - Save this new environment.
- Click over the new environment on the left side > New Cluster.
 - Set a Name for this cluster.
 - Save this new cluster.
 - Click on the left side of the Environment and the new cluster will be displayed underneath

Repeat above steps for all environments and clusters you want to set up.

With the environment and cluster created everything is ready to add Denodo servers like VDP or Scheduler.

6.8 SM7 - REGISTER ONE OR MORE DENODO SERVERS

Last step is registering deployed Denodo servers (like VDP or Schedulers) in created clusters.

Instructions on how to deploy a Denodo VDP Virtual Machine are available in a chapter below in this guide.

For [adding a new Denodo server to a cluster](#) from the Denodo Solution Manager Administration Web Tool:

- Click over the environment
- Click over the cluster > New Server.
 - Set a Name for this server.
 - Select the Type of server. There are different types available: Virtual DataPort, Scheduler, ITPilot Browser Pool, ITPilot Verification or Data Catalog. In this case, add a Virtual DataPort Server.
 - Set the Host, Port, Type, User, Password and Default database.
 - Save this new server.

Repeat above steps for all deployed Denodo servers.

6.9 SM8 - LOG INTO THE DESIGN STUDIO

The Design Studio provides a web interface to the developers to create data sources, base views, derived views, publish web services, etc.

Check first the list of [Supported Browsers for the Design Studio tool](#).

Then use a supported browser to point to the following URL of the Design Studio Web Tool following the pattern:

`http://<sm_ip>:19443/denodo-design-studio/`

Where <sm_ip> is the IP address or DNS name for the Solution Manager virtual machine in the stack deployed.

In the Solution Manager Web Tool homepage you have links to the Design Studio and Scheduler Web Tools: select the Environment and then click on the Open link for going to the homepage of the Design Studio preloaded with the connection data to the cluster in that environment.

Refer to [Main Areas of the Design Studio](#) for more information.

Note that certain administrative tasks like cache configuration, setting-up the authentication, user management, etc can be done by graphical way only by using the Virtual Dataport Administration tool (desktop based).

7 DENODO VDP 8.0 DEPLOYMENT STEPS

7.1 OVERVIEW

The high level list of steps needed to provision and configuring your Denodo VDP BYOL on Azure is the following:

1. Use your Azure Subscription to get the Denodo VDP BYOL VM available on the Azure Marketplace.
2. Deploy the Denodo VDP virtual machine through your Azure console.
3. Configure a Solution Manager
4. Start Denodo Services
5. Log into the Design Studio

All the process can take an approximate time of 15 to 20 minutes.

7.2 VDP1 - GET DENODO VDP 8.0 ON WINDOWS SERVER BYOL

You are responsible for operating your own Azure subscription.

You can create and launch your Denodo VDP for Azure BYOL VM using your Azure subscription.

The Azure offering includes a Windows Server Virtual Machine with Denodo VDP and Scheduler 8.0 installed.

Log on to the Azure Marketplace, search for the [Denodo 8.0 for Azure BYOL](#) listing.

7.3 VDP2 - DENODO VDP VIRTUAL MACHINE DEPLOYMENT

After selecting the Denodo VDP 8.0 BYOL on Windows Server available through the Azure Marketplace you have to complete some few configuration steps in order to launch the Denodo virtual machine through the Azure console.

[Home](#) > [Denodo 8.0](#) > [Choose recommended defaults that match your workload](#) >

Create a virtual machine

[Basics](#) [Disks](#) [Networking](#) [Management](#) [Advanced](#) [Tags](#) [Review + create](#)

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource group * [Create new](#)

Instance details

Virtual machine name *

Region *

Availability options

Image * [See all images](#)

Azure Spot instance

Size * [See all sizes](#)

D-series is recommended for general purpose workloads.

[Review + create](#) [< Previous](#) [Next : Disks >](#)

7.4 VDP3 - CONFIGURE A SOLUTION MANAGER

The Denodo services require a Denodo license to start.

You need a Denodo Solution Manager installed and running, and accessible from the Denodo VDP for Azure virtual machine.

The Denodo servers need to be previously registered in the Denodo Solution Manager in one of the clusters for an environment. You can find more detailed information on the Denodo official documentation on [how to create a server in the Solution Manager](#). Be sure of declaring the correct hostname of the Denodo server. You can register the following Denodo servers in the Denodo Solution Manager: VDP Server; Scheduler Server; Data Catalog Server.

Then, in the Denodo VDP for Azure BYOL VM logged as Administrator Account user:

1. Launch the Denodo Platform 8.0 Control Center double clicking on the icon you can find in the Desktop.
2. Click on the Configure link on the right side.
3. Select Connect to a License Manager.
4. Introduce the Denodo License Manager IP or DNS name. Be sure of using the IP or DNS accessible to the Denodo server.
5. In the [Denodo Security Token](#) Authentication section, introduce the Denodo Solution Manager IP or DNS name. Be sure of using the IP or DNS accessible to the Denodo Server. The Port is the one for the Denodo Solution Manager Container (19090 by default).
6. Click Apply.
7. Click Help on the right side.
8. Click on License information to check that the Denodo VDP for Azure BYOL VM has connected with the Denodo Solution Manager and has got the licenses for VDP Server, Scheduler Server and Data Catalog Server.

7.5 VDP4 - START DENODO SERVICES

Logged in with your Administrator Account user through Remote Desktop Connection and once a Denodo license is installed you can start enjoying Denodo software.

Launch the [Services app to start Denodo Servers](#) in the following order:

1. *Start Denodo Virtual DataPort Server, wait until getting status **Running**.*
2. *Start Denodo Scheduler Server, wait until getting status **Running**.*
3. *Start Denodo Index Engine Server, wait until getting status **Running**.*
4. *Start Denodo Data Catalog, wait until getting status **Running**.*
5. *Start Denodo Diagnostic and Monitoring Tool, wait until getting status **Running**.*

Additionally, if you don't manage the Denodo servers from a Denodo Solution Manager (in a standalone deployment for example), you can start the following management services:

- *Start Denodo Web Design Studio, wait until getting status **Running**.*
- *Start Denodo Scheduler Web Admin Tool, wait until getting status **Running**.*

7.6 VDP5 - LOG INTO THE DESIGN STUDIO

The Design Studio provides a web interface to the developers to create data sources, base views, derived views, publish web services, etc.

Check first the list of [Supported Browsers for the Design Studio tool](#).

Then use a supported browser to point to the following URL of the Design Studio Web Tool following the pattern:

`http://<server_ip>:19443/denodo-design-studio/`

Where <server_ip> is the IP address or DNS name where the Design Studio is available. That could be a Denodo Solution Manager host or a Denodo VDP host (for example, in a standalone deployment).

Refer to [Main Areas of the Design Studio](#) for more information.

Note that certain administrative tasks like cache configuration, setting-up the authentication, user management, etc can be done by graphical way only by using the Virtual Dataport Administration tool (desktop based).

8 SECURITY CONFIGURATION

There are a couple of optional steps that we recommend you to take in order to improve the security of your Azure deployment.

8.1 **CHANGING THE DEFAULT VDP ADMINISTRATION PASSWORD**

As the first step of the configuration of your new Denodo virtual machine [you should change the default administrator password](#). It is extremely important that you change this default password to ensure that you are operating under a secure environment.

8.2 **CONFIGURING THE SECURITY GROUPS**

Please, check first the list of [Denodo Platform default ports](#) to review which ones are needed for operating your environment.

When the Denodo for Azure BYOL virtual machine is deployed it creates by default a new security group. This group contains an inbound port rule for RDP (for server administration). The default values specify that this port can be reached from any IP addresses - our strong recommendation is to modify the group so it can only be accessed from the range of authorized IP addresses that you control instead of being publicly accessible.

To do this, follow the steps in the Azure guide located at: <https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-manage-nsg-arm-portal>

8.3 **VDP CLIENT ACCESS FROM OUTSIDE OF VM**

You have to configure the Virtual DataPort server in order to receive connections from external clients to the VM.

The default ports for Denodo based on the connection protocol are:

- JDBC: TCP 9999 (additionally the TCP 9997 port has to be available).
- ODBC and ADO.NET: TCP 9996.
- Web Container: TCP 9090.

VM must be configured to allow the connections to ports enumerated above according to the connection protocol needed:

1. Update the Azure network Security Group associated to the VM network interface using the Azure Portal.
2. Update the Windows firewall in the Denodo for Azure BYOL VM. You have to set up the appropriate Windows firewall rules. Log in the VM, start Control Panel > System and Security > Windows Firewall (or open PowerShell or

Command Prompt and enter 'firewall.cpl'), clicking the advanced settings button, and create the Inbound Rules needed.

As a side note, take into account that by default an ephemeral external IP address is assigned to the VM instance. If you require a static external IP address, you may promote the address to static. Be sure that the VDP server is set correctly for accepting connections through that IP by [changing the Host Name in the VDP server](#).

8.4 ENABLING SSL

You can find details about how to secure with SSL the connections between the Solution Manager servers, the administration tools and their clients in [Enable SSL in the Solution Manager](#).

Additionally you can find details about how to secure the connections for Denodo VDP servers in [Enable SSL in Denodo](#).

8.5 ENABLING DENODO SECURITY TOKEN

Solution Manager requires privileged connections to manage the Denodo VDP servers. It uses a temporary system token with the necessary permissions to perform administrative tasks and therefore, the Denodo VDP server must be configured with Denodo Security Token authentication in order to validate these tokens.

See [Enable Denodo Security Token](#) for details.

9 FURTHER RECOMMENDED STEPS

Once you are all set to start building your data virtualization solutions on Azure, we recommend that you check out all the available information:

- [Denodo tutorials](#)
- [How-to videos](#)
- [Denodo Test Drives](#)
- [Knowledge base](#)
- [Product documentation](#)
- [Denodo on Cloud Marketplace FAQ](#)