



TopSolid Installation Guide

MASTER YOUR
MANUFACTURING PROCESS

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Introduction

Backup

Before any installation or modification, please be sure that a complete backup has been done. In case of a new installation, don't forget to set a daily backup as explained in the chapter: **server > Automatic backup**.

Content

This document explains how to install and configure **TopSolid** and its main add-ins, in **Local Pdm Server** or in **Pdm client-server** modes.

Migration

If you already have a version of **TopSolid 7** (if you don't, you can proceed to the next section) and you are in the process of migrating to the new version, it should be noted that data from the previous version will be irreversibly modified when starting the new version. You will no longer be able to access the data with the old version.

As a precaution, we recommend making a backup of your data before migrating in case a problem arises that requires you to go back to the old version for the time being.

When you launch the new version for the first time, a dialogue box will ask you to confirm the migration:

- **OK:** You have to check «I want to continue the migration». The previous version's data are converted irreversibly to the new version format. This is the normal migration mode.
- **Cancel:** The previous version's data are not converted. If you want to create a new database and vault and keep the previous version, just change the database name and the vault patch, which is identical to what a first installation of TopSolid without migration would require. This mode may be useful for exploring options in the new version in order to decide when is the best time to migrate in the future. When the decision is made to migrate, simply use the "TopSolid > PDM > Configure Local PDM..." command in the new version, and select the same location for the data as the old version, which will launch a data conversion.

Computers

TopSolid requires a computer with a standard amount of power, so most current machines may be used. Of course, the greater the power, the easier the software is to use.

TopSolid can use several processors simultaneously for certain operations, so a multiprocessor computer works well.

TopSolid must be installed on a 64-bit system.

Officially supported systems are:

- **Windows 10**
- **Windows 11**

A recommended configuration is available on our [website](#).

TopSolid uses Microsoft .NET Framework 4.7.2, if it is not already there, it will be automatically installed.

TopSolid download tool

Like Windows 10, a download tool is provided to download the version and share it in your company.

TopSolid media

Here is a brief description of the delivered **TopSolid media** content after downloading it with the TopSolid download tool:

- All TopSolid 7 (Design, Cam, Viewer, Explorer, ...) applications for 64 bits PCs.
- TopSolid'Viewer, TopSolid'Pdm viewer and TopSolid'Dnc in32-bit version.
- All needed Microsoft tools (Visual and .NET redistributables).
- "\Setup\Help\ReadMe.mht" file which sets out in detail the supported operating systems and all setups and redistributables files delivered on the media. It is useful for administrators who want to automate installations (not explained in this document).
- Sentinel drivers and the License Manager.
- Microsoft SQL Express 2019 and SQL Studio Management. Note : this version is only usable with Windows 10 and since Windows Server 2016. For older versions of Windows server, you have to install SQL 2014 Express available on our site ftp://ftp.topsolid.com/Public/TopSolid/Drivers/SQL/en_sql_server_2014_express_with_tools_with_service_pack_2_x64_9009295.exe. For a migration of TopSolid, if SQL 2014 Express is already installed, you don't need to update it to SQL 2019 Express.
- TopSolid'Pdm Server application (only to install on the server).
- Optional textures libraries are now available from the TopSolid'Store after the TopSolid installation.

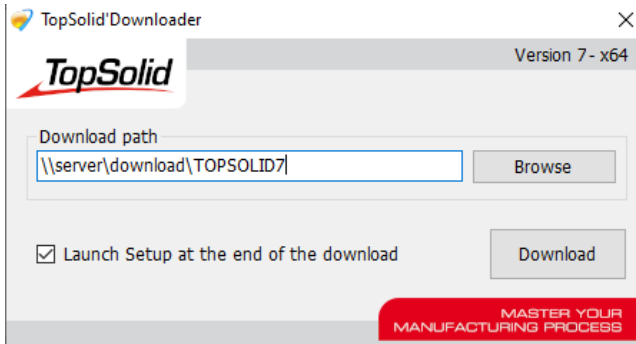
Download tool

Introduction

Like almost actual softwares (dont Windows 10, Office 365,), a download tool is provided to download the TopSolid version and share it in your company.

Download

Double-click on the tool TopSolid.Downloader.exe.



Select a download folder. This folder can be on the network. So the TopSolid media will be available for the installation on different PCs.



- The contents to download is higher than 10 Gb. The downloading time depends on your internet connection.

- If the connection is lost for any reason, just run again the download tool and select the same folder than before the connection lost. A resume button will be proposed.

The «Launch Setup at the end of the download» option allows to start the installation of the actual Pc after the complete download of the TopSolid media. The installation on the other PCs of the company has to be done from the download folder.

Prompt command

The download tool can be used with a prompt command.



The TopSolid.Downloader.exe needs an execution as administrator, so the prompt command has also to be started as administrator.

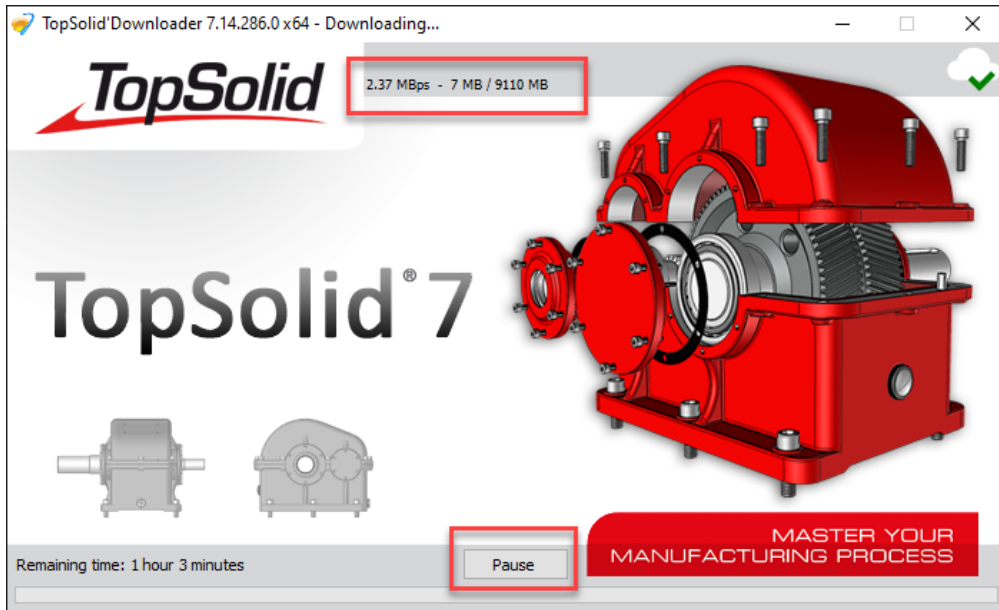
TopSolid.Downloader.exe [-dlp/-download_path DOWNLOAD_PATH] [-dlo/-download_only] [-bl/-bandwidth_limitation BANDWIDTH_IN_MBps] [-v/-verbose]

[-dlp/-download_path DOWNLOAD_PATH] = force the download path.

[-dlo/-download_only] = To add if you only want to download without installing at the end.

[-bl/-bandwidth_limitation BANDWIDTH_IN_MBps] = limit of the bandwidth in Mb/s

[-v/-verbose] = Display more information in the download window. (see red frame below).



Examples :

TopSolid.Downloader.exe -dlp "C:\temp" -v

- > Launch the download of TopSolid 7 in the « C:\temp » folder
- > The download window displays the Pause button and the download statistics
- > The Setup will be executed at the end of the download

TopSolid.Downloader.exe -dlp "C:\temp" -dlo -bl 1

- > Launch the download in the folder « C:\temp »
- > The download speed is limited to 1 Mb/s
- > The download folder will be opened after the downloading

Standalone

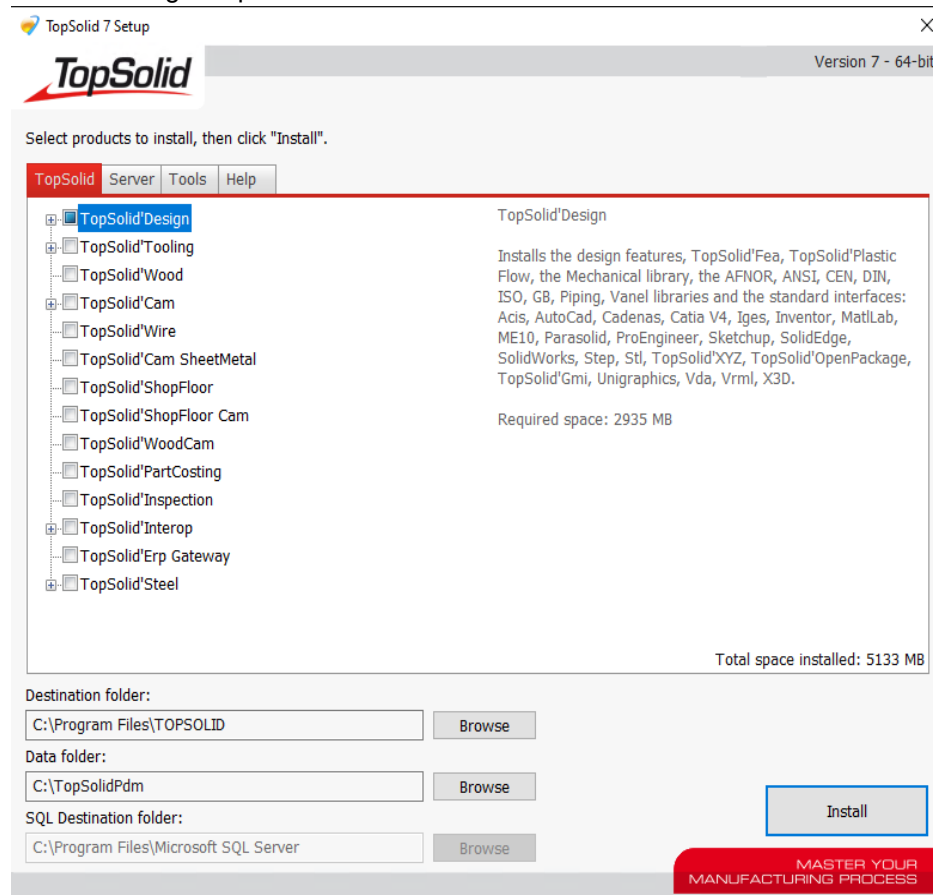
Introduction

This chapter explains how to install and configure a standalone **TopSolid**, allowing a single user to work on his own.

Installation

Installing a standalone TopSolid is very simple, just double-click the setup.exe file of the TopSolid media you have previously downloaded with the TopSolid downloader, then follow the indications:

- Select the different components to be installed depending on your licenses.
- Choose the installation folder, if needed.
- The **Server** tab is not used.
- In the **Tools** tab, check **TopSolid'Update** to automatically update your TopSolid version, and also **Sentinel Protection Installer** to install the protection key drivers. Sentinel Protection Installer is not needed if you use TopSolid in floating licenses mode or with a key which doesn't need a driver (see chapter **Licenses**).
- Click on Install.
- Other components can be installed later by restarting the installation and checking/unchecking components.

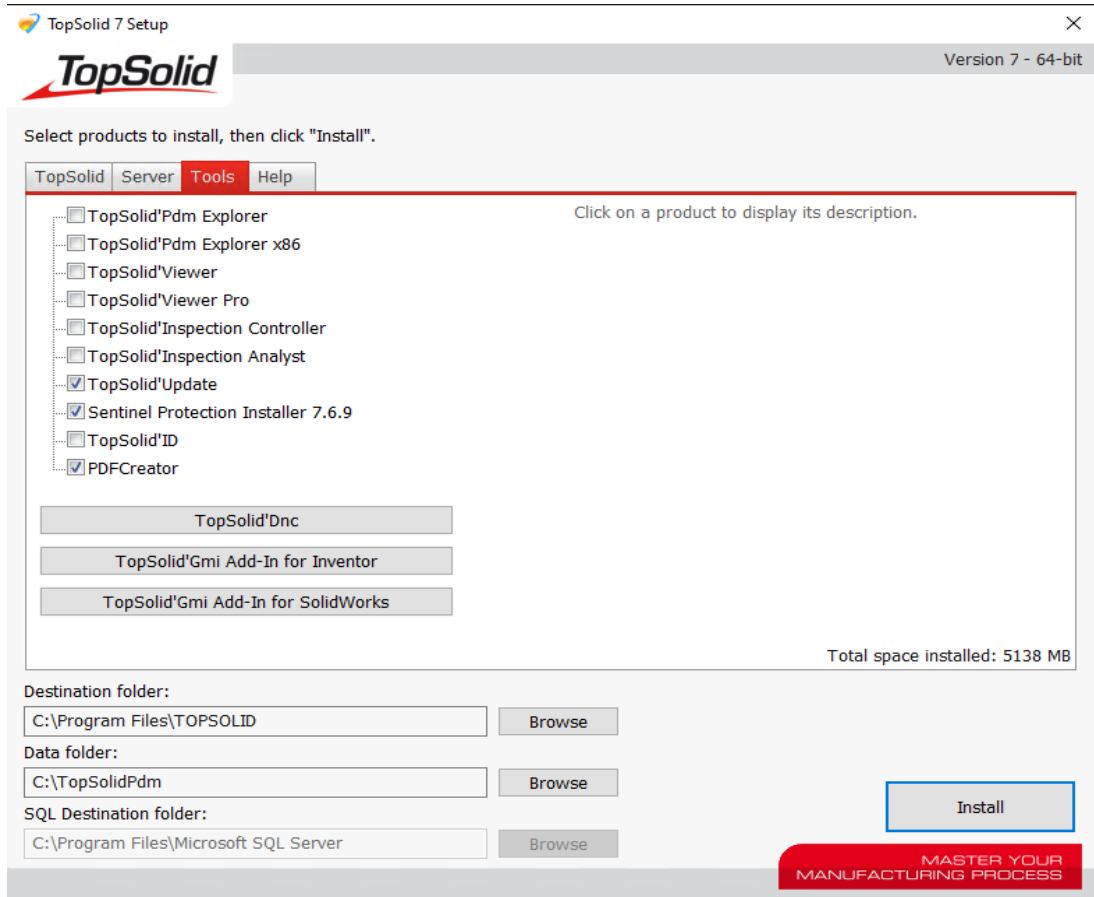


Destination folder: folder where is installed TopSolid and all its add-ins.

Data folder: folder used for the vault. It is recommended to select a local drive with a lot of free space. This folder can be modified later.

SQL installation folder: folder where is installed Microsoft SQL.

For performances reasons, it is recommended to use these default folders.



First start

It is recommended to update TopSolid by running TopSolid'Update before starting TopSolid for the first time.

Back-up

The contents of the local data folder and the database must be backed-up regularly.

One simple method is to have an additional hard drive and to automatically backup the contents of the folder and the database, every night using the TopSolid backup tool. To do this, please refer to the **Automatic backup** chapter.

This way, if there is a serious problem, you can always go back to the previous version, losing no more than a day of work.

It is also good to make a weekly copy on a separate media, which can be useful in the event that the computer disappears (theft, fire, etc.).

Note that TopSolid can be used during the backup.

Licenses

Introduction

There are 3 types of licenses:

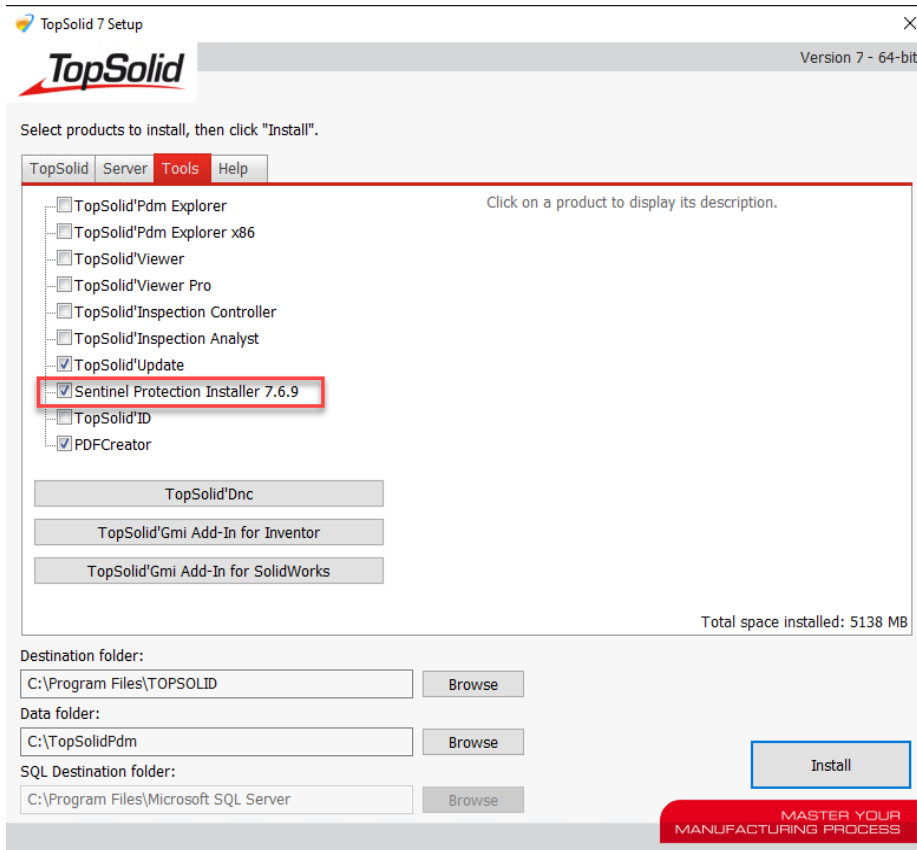
- A fixed license which is locally installed on a TopSolid's client Pc with a protection key (dongle).
- A floating license which is installed on a license server with its protection key. All client computers connect to this license server.
- A license managed via a service hosted by the Cloud and named TopSolid'CLS (Cloud Licensing Service) can be used. It allows for more flexibility since it can be assigned to a user regardless of the computer on which he is connected. A permanent internet connection is required.

Fixed licences

TopSolid products are protected by an USB key (Dongle). This key needs the installation of a Windows driver except for the last generation of key. If you have a yellow key like the image below, you don't need to install any driver for it.



For all other kinds of key, the driver has to be installed. In this case, during the installation of TopSolid, the **Sentinel Protection driver** installation which is located in the **Tools** tab is also checked.



At the end of the installation, plug the protection key (dongle) in an USB port.

The first time you start the software, a **"Licenses"** dialog box appears to allow you to enter your license information (or even multiple licenses, such as for additional modules). If you are connected to the Internet, simply click the **"Download licenses"** button, and then follow the instructions.

Otherwise, if you have a license file (with a "TopLic" extension), just click the **"Add license file"** button and then follow the instructions.

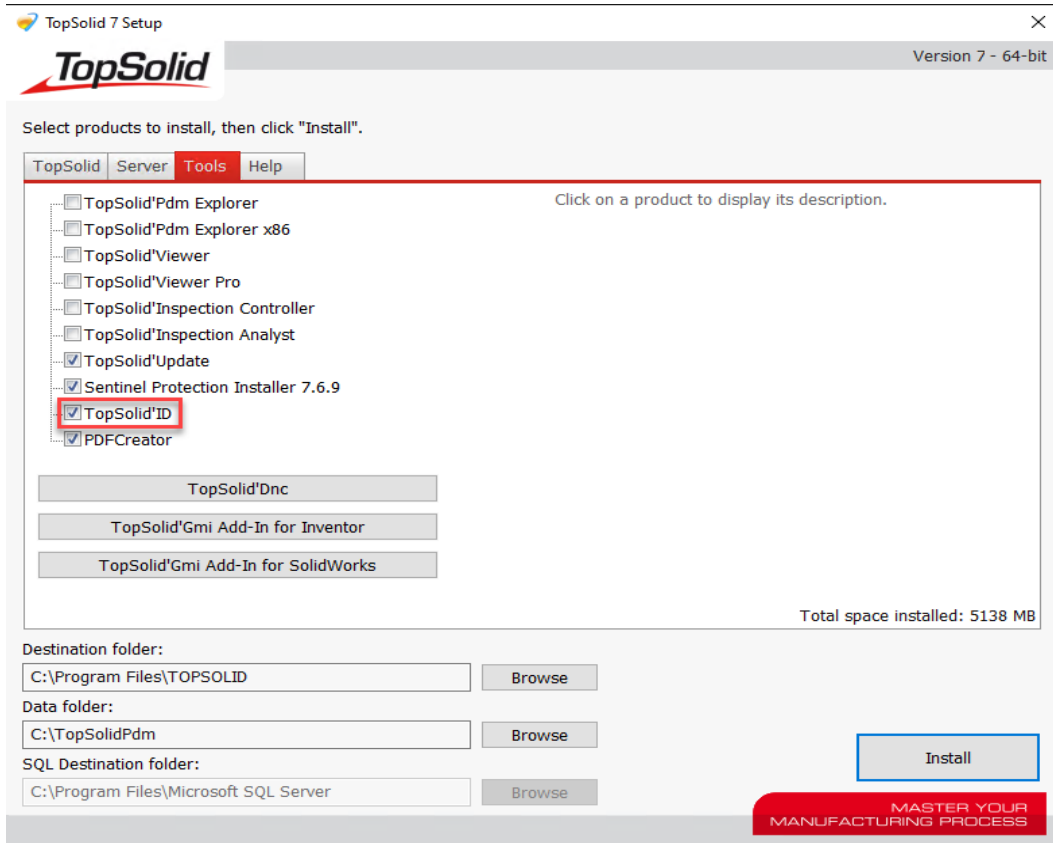
You can then view or modify your licenses using the **"? > Licenses..."** command.

Depending on the licenses purchased, some commands may not be available.

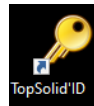
Ask or renewal of standalone licenses

When asking for the licenses of the new version to your local TopSolid reseller, you need some IDs you can find as as follow:

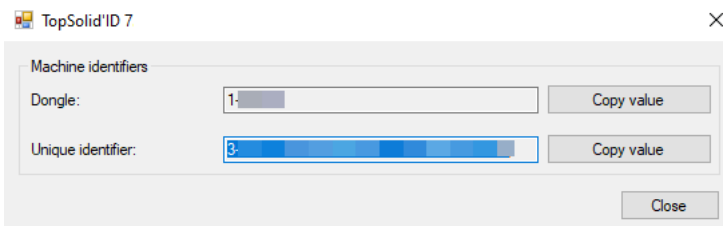
Install TopSolid'Id from the TopSolid media.



Then launch this tool.



If a dongle is plugged, the id is displayed in the «Dongle» field.
If there is no dongle, a temporary license can be generated by using the « Unique identifier» field.



In any case, send the displayed id to your reseller.

Cloud Licenses

After the acquisition of Cloud licenses, an administrator is defined to manage the company's site(s) and the allocation of licenses to different work teams. They can be free and floating, assigned to machines and/or users.

The administrator accesses the management interface by connecting to the TopSolid'CLS site at the address he has received by email with his email address and password.

The site is composed of 4 tabs:

- **Sites:** Allows you to manage the different sites of the company by indicating their names and addresses. Filters (**All**, **Active**, **Archived**, **Locked**) and a search tool to find them quickly.
- **Administrators:** Allows you to manage the administrators. Their first name, last name and email address must be filled in. They can be modified or deleted. Their role is to define the users of the licenses, their work groups and to assign licenses to them.
- **Users:** allows you to create and manage the list of users who have access to CLS licenses. Their first name, last name and email address must be entered as well as their location.



It is also possible to create user groups to allow, for example, to reserve licenses for this group.

home / TOPSOLID SAS (Headquarter)

Company: TOPSOLID SAS (Headquarter) Active Created: 2020-09-28


Sites Administrators Users Supervisors Licences

7 sites All Active Archived Locked search

Status	Site name	Address	Country
Active	TOPSOLID Est	3 allée d'Auteuil, Technopole de Brabois 54500 Vandœuvre-lès-Nancy	France
Active	TOPSOLID Sud-Ouest	254 L'Occitane 31670 Labège	France
Active	TOPSOLID Sud-Est	27 boucle de la Ramée 38070 Saint-Quentin Fallavier	France
Active	TOPSOLID Ouest	275 Boulevard Marcel Paul EXAPOLE Bâtiment I 44800 Saint-Herblain	France
Active	TOPSOLID Centre & Nord	7 rue du Bois Sauvage 91055 Evry	France
Active	TOPSOLID Grenoble	Parc Equation - Bâtiment A - 2 avenue de Vignate 38610 Gieres	France
Active	TOPSOLID SAS (Headquarter)	7 rue du Bois Sauvage 91000 Evry	France



Licenses: allows you to manage, assign, reserve or deactivate licenses.



2 licences	All	In Use (1)	Generated (0)	Available (1)	Expired (0)	Deactivated (0)	All	Fixed (0)	Floating (0)	User (2)	search	Q X
<div> <div></div> <div></div> </div>												
Status	Valid Until	Module / Package	Version	License type	Machine ID							
In Use		1: TopSolid/All	7.16	User	3-C59FAA943B							
Available		1: TopSolid/All	7.17	User								



Each line corresponds to a license. It indicates: the status, the validity, the name, the module, the version and the type of license. It also indicates if it is reserved for a user and/or a machine.

The types of licenses are:

Floating: The license is available and usable by any user. It can be reserved for a user or a group.

Fix: The license is reserved for a machine whose unique identifier must be entered. In this case, only this machine can use this license.

User: The license is assigned to a user regardless of the machine on which he connects.

Linked	Displays whether the license is linked to a user (License type = User) or a machine id (License type = Fixed). If it is linked, the user name or the machine id is displayed. If it is not linked, the symbol is crossed out. If the license is floating and linked to a group, it is displayed.
Nomad	A license can be taken on the road from a TopSolid application. The symbol will be a suitcase.
	Allows you to assign the license : - To a user if it is of the "User" type - To a machine identifier if it is of the "Fixed" type - To a group if it is of type " Floating ".
	Allows you to enter a unique identifier for this license. The license will be reserved for this machine and cannot be taken by another machine. This unique identifier can be found in the "Fixed license" tab or by using the TopSolid>ID tool.
	Allow to activate or deactivate a license.

NOTE :

CLS licenses are temporary licenses with a lease, the following table describes the lease renewal conditions in operation.

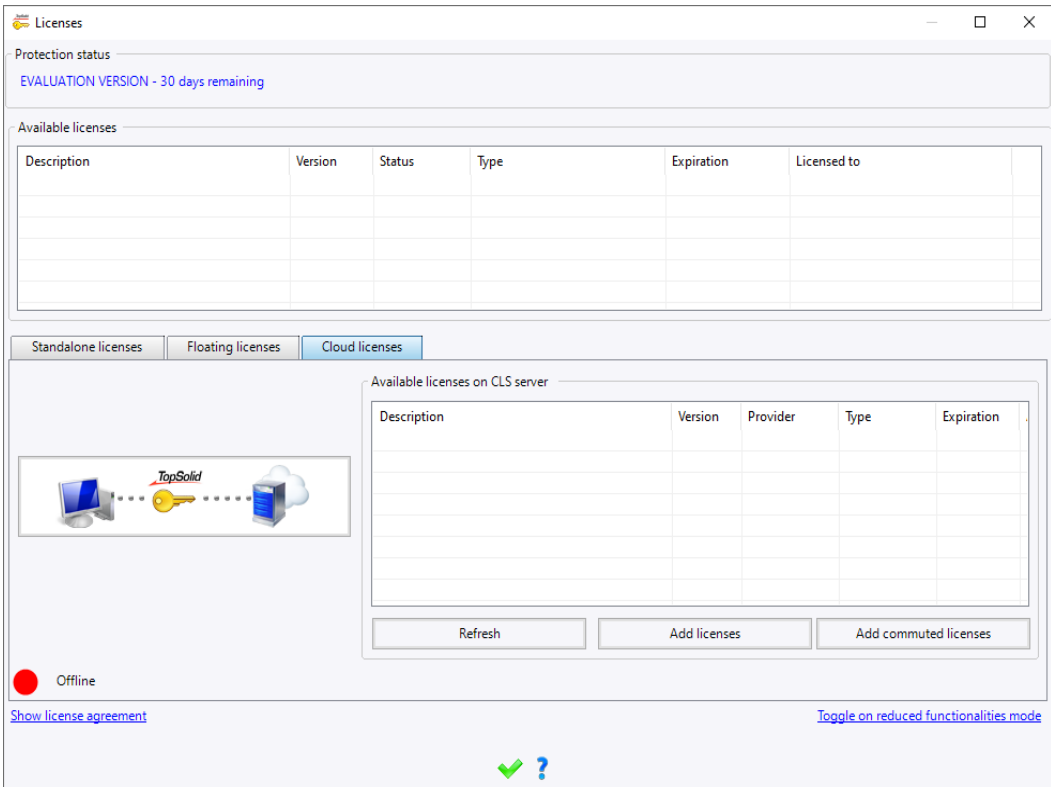
Renewal of the lease	Fixed	Floating	User
	1 month	24h or at each launch of TopSolid	24h or at each launch of TopSolid

Clients:

Attention: The use of a CLS license requires a permanent internet access.

Log in by clicking this button, then enter your e-mail address and the password you have on

your TopSolid'CLS account.



When you log in for the first time, you will be asked for a strong password. Once logged in, choose the licenses assigned to you and click on the "Add licenses" button to add them permanently, or "Add roaming licenses" to choose the number of roaming days.

The added licenses will appear in the top list (Available licenses). The user also has access to the <https://cls.topsolid.com> website. He will be able to view his licenses and modify his profile (Name, First name and avatar).

Floating Licenses

It is also possible to use floating licenses, which allows you to have more workstations than licenses, with the restriction of course that only up to the number of licenses purchased can be used simultaneously.

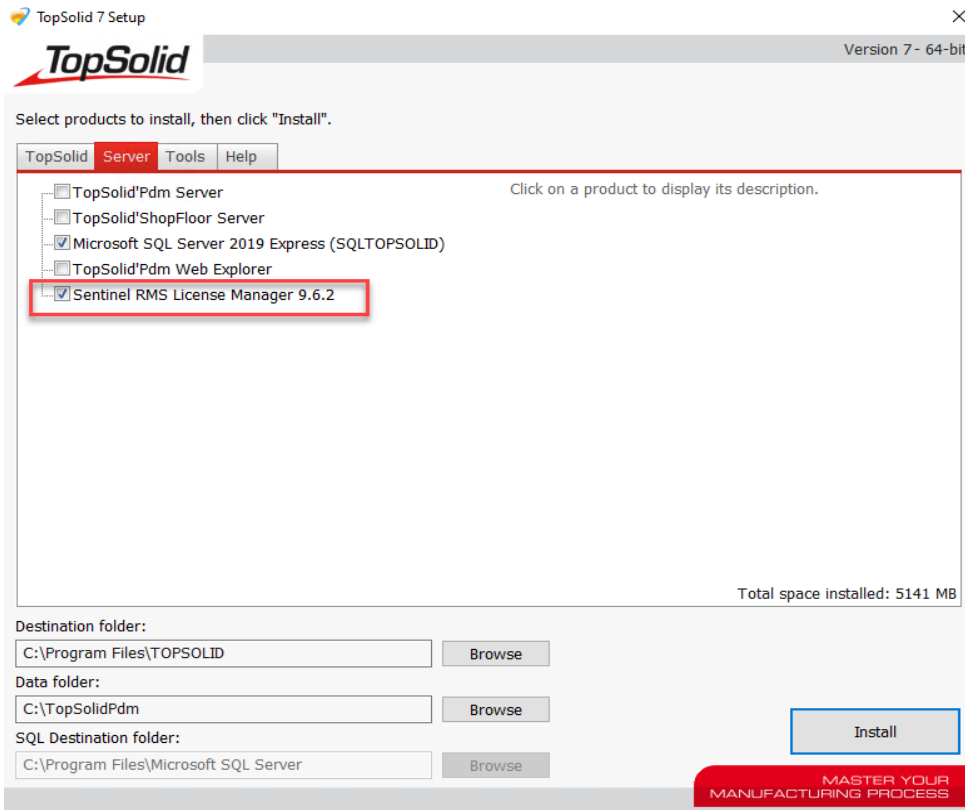
In this case, licenses are centrally managed on a machine on the network called the **license server**.

The license server can be installed on Windows Server since the version 2008 R2, Windows 7/8/10, 32-bit and 64-bit platforms are supported. However, it is recommended to install the server on a Windows Server platform.

The different installation steps are described below, if you do not use floating licenses you may go directly to the next chapter.

Sentinel RMS License Manager

You must first install the "**Sentinel RMS License Manager**", which is located in the **Server** tab of the TopSolid media. This also installs "**Sentinel Protection**" located in the **Tools** tab.



"**Sentinel RMS License Manager**" is the license server; "**Sentinel Protection**" is the driver that manages communication with the protection key. The protection key is required to identify the server machine, and only the licenses generated with the key's identification number can be added to the license server.

The license server operates through a Windows service called "Sentinel RMS License Manager" and a lservnt.exe process. The service automatically starts each time the system boots.

For more information about the "Sentinel RMS License Manager", see the help on the TopSolid media: "SetupRedist\Sentinel RMS License Manager\Help\Default.htm".

Note:

- Check that the licenses server is visible, via the network, by client PCs.
- lservnt.exe manages available licences and their attributions to client PCs.
- It is automatically started when Windows starts.
- The lservnt.exe process must be running in the Window Tasks manager of the license server.
- It must appear in the Windows services list. It must be started with automatic mode.
- The client and server firewall must have the port 5093 opened (inlet and outlet in UDP mode).

- If the Sentinel RMS License Manager is already installed, its version must be at least the 9.4.0.

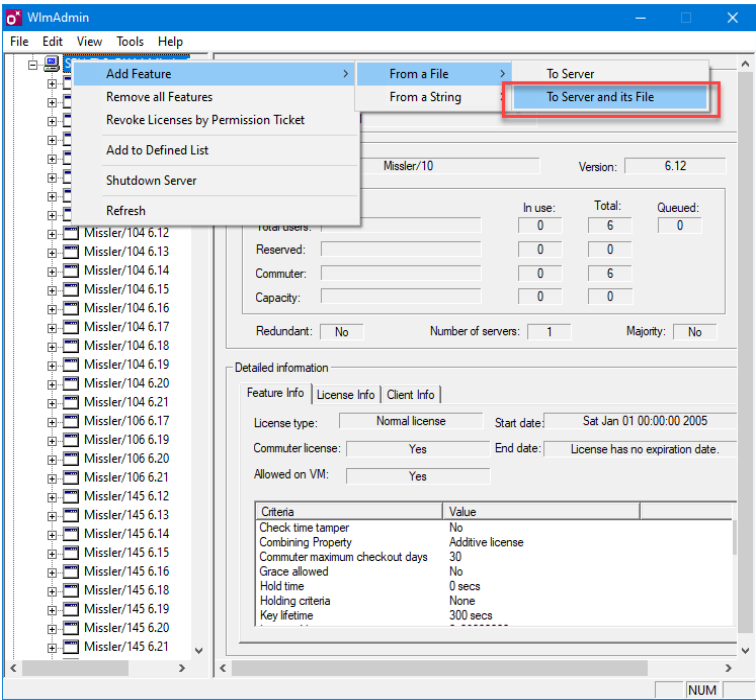
Server Protection Key

Keys for license servers are a specific type of key, different from standard protection keys which are used to protect fixed licenses. It is therefore not possible to verify if the key works by checking whether its identifier is displayed in the license dialog box in TopSolid or TopSolid®Pdm Server. To determine whether the keys are working properly, you must run the following utility from the TopSolid media: "Files\Redist\Sentinel RMS License Manager\Tools\Wechoid.exe". If the "Computer ID" is valid when entered, the key is working properly. this key needs the installation of the **Sentinel protection Installer** driver from the «Tools» tab of the TopSolid media.

For virtual servers, read the «Installation on a virtual server» chapter below.

Server Licenses

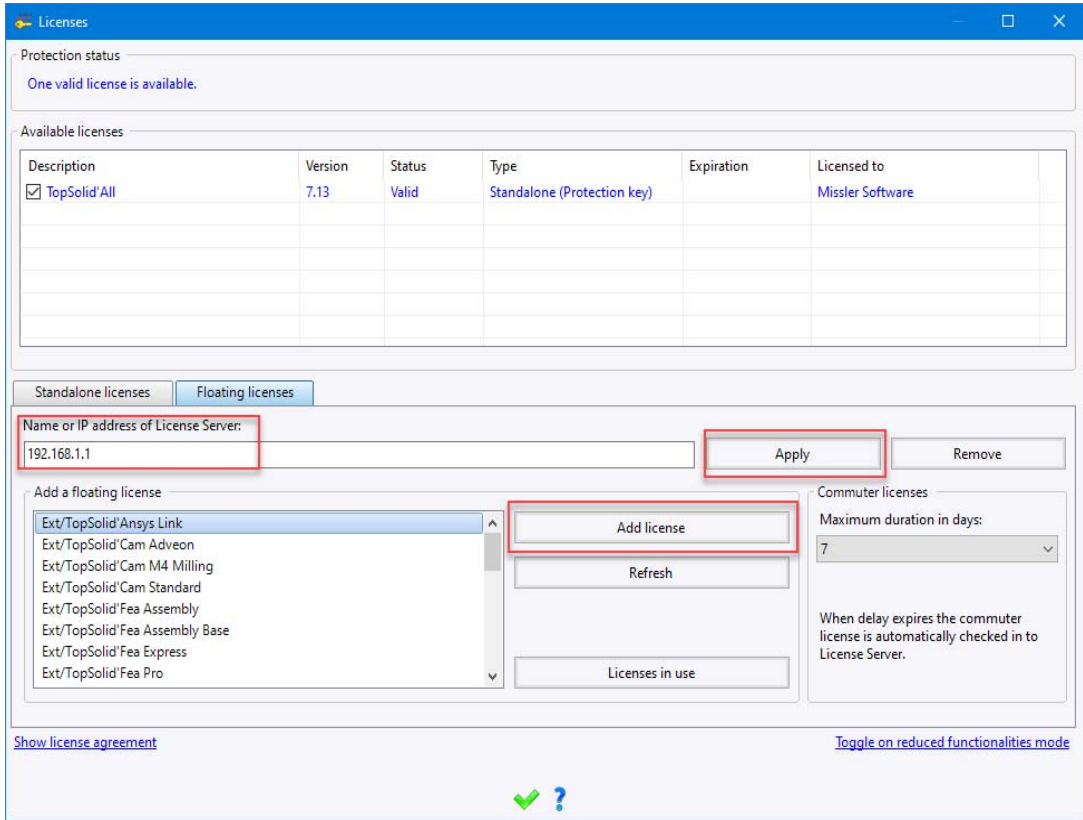
To add a license, run the following utility: "Setup\Redist\Sentinel RMS License Manager\Tools\WlmAdmin.exe" from the TopSolid media. Open the "Subnet Servers" node and right-click on the server name. In the popup menu, open the "Add Feature > From a File" submenus and click **"To Server and its File"**. Enter the path for the ".lic" license file and add it.



Client Workstations

- The following operations must be performed on each client workstation:
- Verify that the client machines are connected to the server through the local area network.
 - Start TopSolid and open the "Help > Licenses" dialog. Select the "Floating Licenses" tab,

then enter the IP address or the name of the license server, and click "Apply". You can now add/remove floating licenses.



- You can run the WlmAdmin.exe utility from the TopSolid media to verify if access to the license server is working properly.

Notes

If TopSolid terminates abnormally, the license server will keep licenses for five minutes. WlmAdmin allows you to check if the licenses have been released. The local area network must work with the TCP/IP protocol, which is the only protocol supported for floating licenses.

Administration tools

Several tools allow to manage floating licenses. For more information about them, see the help on the TopSolid media: "Files\Redist\Sentinel RMS License Manager\Help\index.html".

WlmAdmin

Display the license servers and the licenses states.

Wechoid

Display all IDs of the computer. Computer ID corresponds to the protection key code.

Lsdecode

Check that each license code has a server locking identical to the dongle code.

Current problems resolution

After installing the license server and TopSolid, TopSolid starts in demonstration mode.

- On the server:

- Check TCP/IP (ping, route, ...)
- Check if the lservnt.exe process is running.
- Check that the machine names do not contain «_» or «-».
- Wechoid tool returns the key ID. (warning this code is different than the key serial number). It must be different than 0.
- If the computer ID is null, install Sentinel protection drivers (Tools tab from the TopSolid media) and check if the dongle is plugged.
- With WlmAdmin, check that the required license is declared. The licence version must be the same than TopSolid.

- On the client:

- Check that the client sees the server with WlmAdmin. The servername must be displayed. If the client can't find the server, the «LSFORCEHOST = *servername*» system environment variable can be added.
- Check that the license window of TopSolid (floating licenses tab) is properly set.
- When TopSolid terminates abnormally, it tries to release the license codes owned by the application. But if it fails, the license server will keep these licenses for 5 minutes. You can see with WlmAdmin if the requested licenses are newly available.

Subnets

If the client workstations and servers are located on different subnets or communicate via the Internet, you must:

- Open port 5093 on the router and firewalls. This port is reserved for the Sentinel License Manager.
- Set the value for the LSPORT environment variable on the client machine as "5093" (set LSPORT=5093).
- Set the value for the LSERVOPTS environment variable on the server machine as "-port5093" (LSERVOPTS=-port5093).

License server on virtual machine

It is possible to install **Sentinel RMS License Manager** on virtual servers.

Depending on the virtualization technology the USB connectivity can be supported or not:

- VirtualBox, VMWare Workstation ==> USB supported
- Hyper-V, Citrix, VMWare ESX ==> USB not supported

This generates an issue because **Sentinel RMS License Manager** needs to access an USB dongle to protect their license(s).

Protecting a license with the Network ID (MAC address) is not secure on a virtual server, indeed the administrator can easily set any desired MAC address. Therefore this is not suitable to replace a Dongle ID by a Network ID just because the USB key can't be accessed.

Solution 1

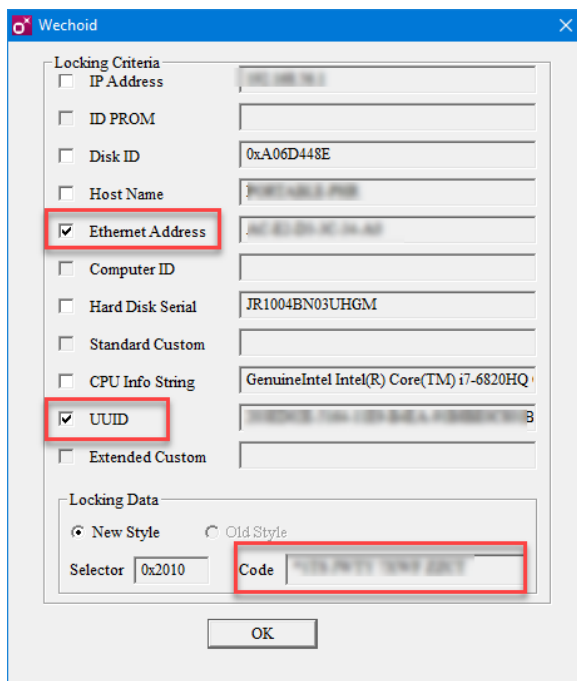
When it comes to protect a license server, an USB hub must be used. This allows the customer to access the USB dongle anywhere on the local network. Two solutions are recommended by TOPSOLID SAS:

- AnywhereUSB (<http://www.digi.com>)
- DongleServers (<http://www.dongle-servers.com>)

These hubs are borne by the customer.

Solution 2

It is also possible to generate a license by using the network card mac address mixed with the UUID. You have to use the Wechold tool and check **Ethernet address** and **UUID**. The indicated code has to be communicated to generate the license. This license will have to be renewed every years.



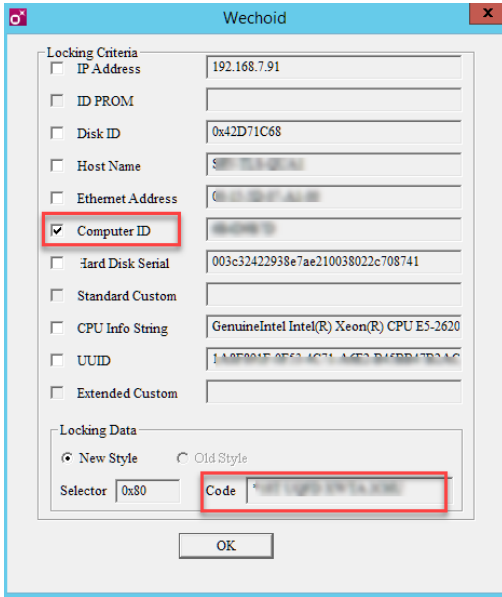
Special case

TopSolid®Pdm Server is often installed on a virtual server. A **Pdm server** standalone license can be generated without any protection key, by using the **virtual machine** field in the standalone licenses tab. This license will have to be renewed every years.

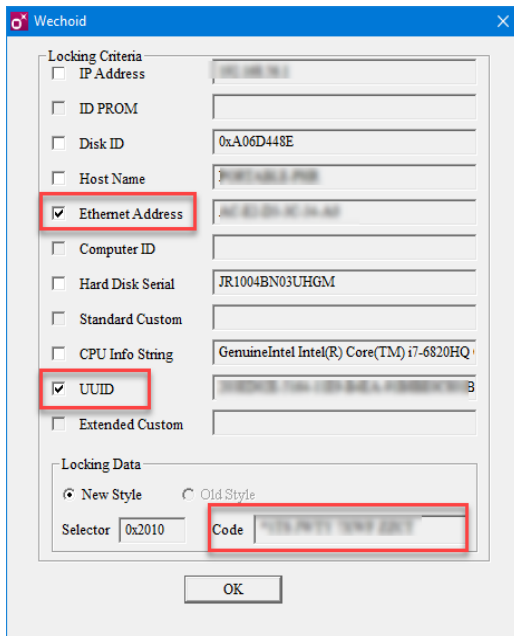
Ask or renewal of floating licenses

When asking for the licenses of the new version to your local TopSolid reseller, you need an ID. It can be found by using the Wechold Sentinel RMS tool:

- If the floating licenses are protected by a dongle, check only «Computer ID».



- If the floating licenses are not protected by a dongle, check only «Ethernet Address» and «UUID».



In any case, send the code displayed in the bottom right field to your TopSolid reseller and a screenshot of your Wechoid window.

Updates

Introduction

Despite all of our efforts, some defects may get by our testing in rare cases and are not corrected before producing and distributing the official version.

In this case, the corrections are made available for download over the Internet.

Individual Updates

You can get these updates through the "? > **Check for Updates...**" command.

It is also available through the Windows start menu > All programs > TopSolid > TopSolid'Update.

Specifically, it is useful to run this command after installation, in case there have been corrections since the installed version was produced.

When installing TopSolid, a utility called TopSolid'Update is also installed to help manage updates.

Each time TopSolid starts, this program automatically runs in the background to detect whether there is an update available that is newer than the one currently installed. If so, it offers to download and install it.

Centralized Updates

If your workstation is not directly connected to the Internet, or if you work in a team and you want to avoid downloading a separate update for each computer, you can set up a centralized update.

First, assign a computer (an Internet connection is required) within the network for this task.

On this computer, a directory needs to be shared, it will contain the files required for updating the other workstations.

Then install TopSolid'Update, either with TopSolid (standard installation) if the computer is also a workstation or by itself ("Tools" tab in installation window).

In order to download updates, simply launch TopSolid'Update, configure it in "server mode" and indicate the shared directory path and the frequency to search for updates.

The updates search can be done at a given time, the installation can be automatically done on the server.

On each TopSolid workstation, you then need to configure TopSolid'Update in "client mode" and indicate the shared directory path.

TopSolid'Update 7 - Options

Update mode: Server Mode This mode downloads the updates and makes them available in a public network folder. It must be used with client machines configured in "Client mode".

☒ Check for updates at TopSolid startup

☒ Check for updates: C:\TopSolid'Update\Downloads Browse

Every Sunday at 05:00

☒ Install updates

Updates to keep in server folder: Last Update

Applications to update

Choose the applications to update: Platforms to update: 64-bit and 32-bit

- ☒ 7.16
- ☒ 7.15
- ☒ 7.14
- ☒ 7.13
- ☒ 7.12
- ☒ 7.11
- ☒ 7.10
- ☒ 7.9
- ☒ 7.8
- ☒ 7.7
- ☒ 7.6
- ☒ 7.5

This choice applies to all update modes : "Check for updates on the Internet", "Client mode" and "Server mode".

Proxy server

[Modify proxy settings](#) [Modify proxy credentials](#)

OK Cancel

Server mode:

TopSolid'Update 7 - Options

Update mode: Client Mode This mode checks for updates in the server folder. It must be used with a network machine configured in "Server mode".

☒ Check for updates at TopSolid startup

☒ Check for updates: \\server\setups Browse

Every Sunday at 05:00

☒ Install updates

Applications to update

Choose the applications to update: Platforms to update: 64-bit and 32-bit

- ☒ 7.16
- ☒ 7.15
- ☒ 7.14
- ☐ 7.13
- ☐ 7.10
- ☒ 6.22
- ☒ 6.21

This choice applies to all update modes : "Check for updates on the Internet", "Client mode" and "Server mode".

Proxy server

[Modify proxy settings](#) [Modify proxy credentials](#)

OK Cancel

Client mode:



TopSolid'Update uses the port 80 (it is the same than the internet navigator). It must be open on the different firewalls.

Uninstallation

The various installed updates are viewable by going to the Windows "Control Panel", and if there is a problem, they can be uninstalled as usual in Windows.

Migration to TopSolid 7.16

Introduction

Every year, new versions of TopSolid and TopSolid'Pdm are sent. Explanations below describe how to migrate TopSolid and TopSolid'Pdm.



Files and database versions will change. The old TopSolid and TopSolid'Pdm versions will no longer work with these data. **It is strongly recommended to completely backup before the migration.**

The backup procedure is explained in the «**Data**» chapter.

In the below examples, the migration is done from the 7.15 version to the 7.16 version. The 7.15 is working, the backup is set and has been done.

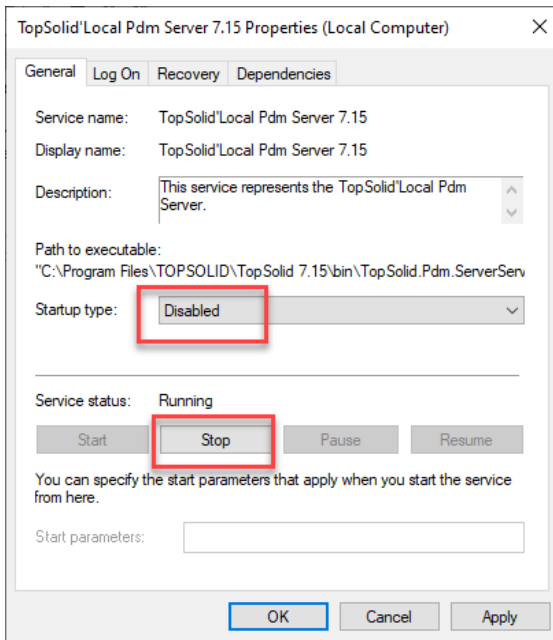
TopSolid migration to a New Version

Caution: The migration of a previous version of TopSolid to the version 7.16 during the transfer on a new PC is only possible if the previous version is at least the 7.14 and is using the Local Pdm Server. If the version to migrate and transfert is a proevius one but already using a local Pdm server, the backup hasn't the needed information for these operations.

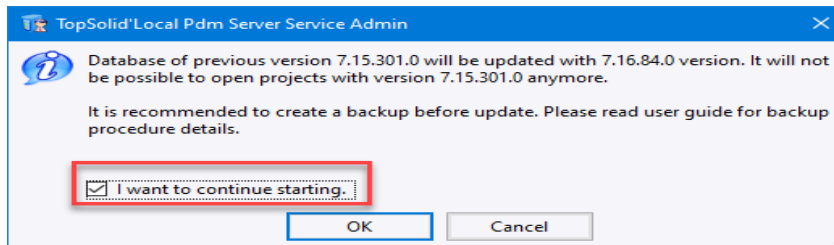
You have to either migrate in 7.16 on the same Pc then transfer or either transfer to the new Pc with the same version and then migrate to 7.16.


If the version to migrate is using the Local Pdm (before 7.11), it is recommended to first migrate to TopSolid 7.12 so the old local pdm will be migrated to a local pdm server. After this, migrate from TopSolid 7.12, to TopSolid 7.16 following the bellow procedure. Due to SQL Compact performance issues, we recommend this procedure. In case of directly migrating from the old version to TopSolid 7.16, a message is displayed to prevent that several hours might be necessary.

- Start the new version installation.
- Select the programs and the add-ins to be installed, and then click on **Install**. It is not necessary to migrate Microsoft SQL Server.
- After installation, before the first start, check with TopSolid'Update if there are updates. If yes, install them.
- Stop and deactivate TopSolid'Pdm Local Server 7.15 service from the Windows Service Manager.



- Start TopSolid 7.16.
- Add the licenses.
- Confirm you want to migrate.



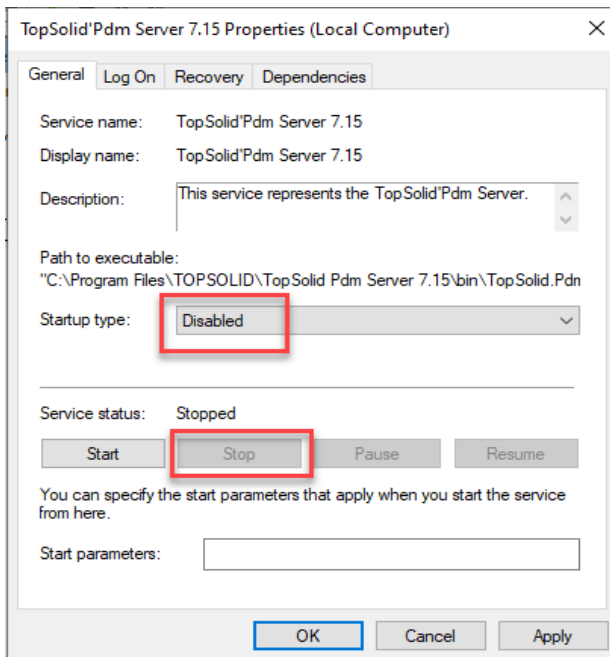
- Check in the new standard libraries and the new document templates with the  icon. This operation can take several minutes.


The previous version can now be uninstalled via the Windows control panel or via the media of this previous version and by clicking «**Uninstall all**» except Microsoft SQL, Pdf Creator and Sentinel.

TopSolid'Pdm Server migration to a New Version

Caution: The migration of a previous version of TopSolid to the version 7.16 during the transfer to a new server is only possible if the previous version is at least the 7.14. With versions before 7.14, the backup hasn't the needed information for these operations. In this case, please read the «**Transfer to another server**» chapter.

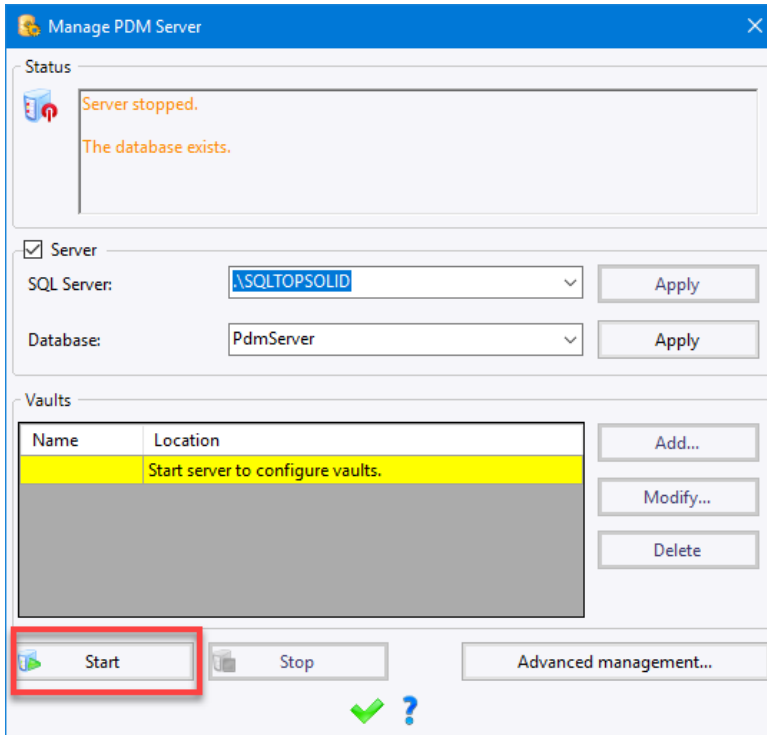
- Start the new version installation.
- Select the programs and the add-ins to be installed, and then click on **Install**. It is not necessary to migrate Microsoft SQL Server.
- After installation, before the first start, check with TopSolid'Update if there are updates. If yes, install them.
- Stop and deactivate TopSolid'Pdm Server 7.15 service from the Windows Service Manager.



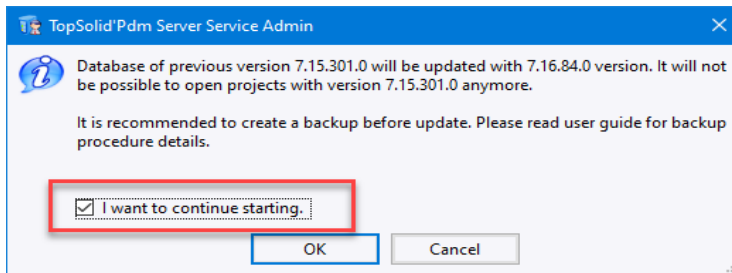
- Double-click the  icon on the desktop to start the administration of the new version.



It will appear in the Windows taskbar .

- Right-click on the TopSolid'Pdm Server icon to add a license.
- Right-click to **Manage** and **Start** the service.



- Confirm the migration.





- The icon changes .
- Start TopSolid.
- Add the licenses.
- Log in as an existing user or as Admin.
- Check in the new standard libraries and the new document templates with the  icon. This operation can take several minutes.

The previous version can now be uninstalled via the Windows control panel or via the media of this previous version and by clicking «**Uninstall all**» except Microsoft SQL, Pdf Creator and Sentinel.

User Conversion

The TopSolid users can be converted to Windows users if you are using a domain with Active Directory:

- Login with the Admin user
- From the TopSolid button, use the **PDM > Convert Users** command.
- Right click on the TopSolid user to be converted, use the command **Associate to an existing user**
- Select the Windows user to be associated and click on the icon 
- When it is no longer possible to convert users, click on the icon 

Users can be converted in several passes. To convert TopSolid users to Windows users, it is necessary to ensure that all Windows users are accessible from the workstations carrying out the conversion.

Local Pdm Server

Introduction

The Local Pdm Server replaces the old Local Pdm. It uses the same mechanism than a Pdm Server by using the Microsoft SQL Express version provided on the TopSolid media. It still some differences between a Local Pdm Server and a Pdm server:

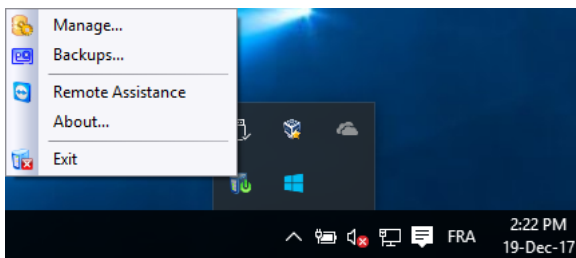
- Only one user can use it. It is possible to connect to several TopSolid sessions on the same workstation, but always by logging in TopSolid with the same user.
- Documents can't be shared between several Local Pdm server. It is a standalone mode as explained in the **Standalone installation** chapter. It is recommended to have all documents on a local disk for performance reasons. The automatic backup has to use an external disk or a network shared folder.

Backup / Restoration

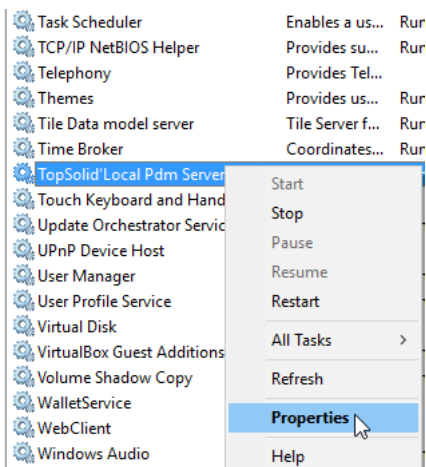
To automatically, or manually backup, or to restore on the same machine, you can use the TopSolid backup tool. It is available from the « **TopSolid button > PDM > backups** ». It can also be ran without starting TopSolid by double-clicking the executable which is in the TopSolid installation folder.

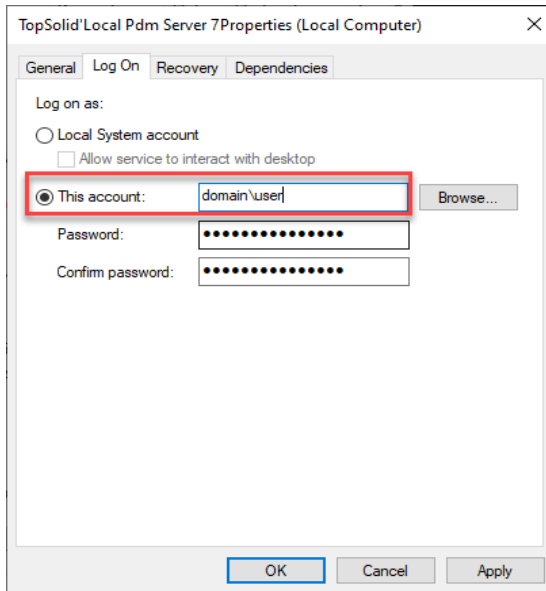
«c:\Program Files\TopSolid\TopSolid 7.16\bin\TopSolidPdmServerServiceAdmin.exe»

This executable displays an icon near the Windows clock. A right click on this icon allows to run this command.



If this backup has to be saved on the network, the user of the TopSolid Local Pdm server service has to be changed to have the writing rights in this destination folder.





Transfer to another Pc.

Before this kind of operation, be sure that a complete backup has been done as explained upper.

When changing machines, you must transfer backed-up data from the previous Pc to the new one. This is somewhat similar to an automatic restoration (explained upper). You must first install TopSolid on the new computer.

Caution: The migration of a previous version of TopSolid to the version 7.14 during the transfer on a new PC is only possible if the previous version is at least the 7.12 and is using the Local Pdm Server. If the version to migrate and transfert is a 7.11 already using a local Pdm server, the backup hasn't the needed information for these operations.

You have to either migrate in 7.14 on the same Pc then transfer or either transfer to the new Pc with the same version and then migrate to 7.14.

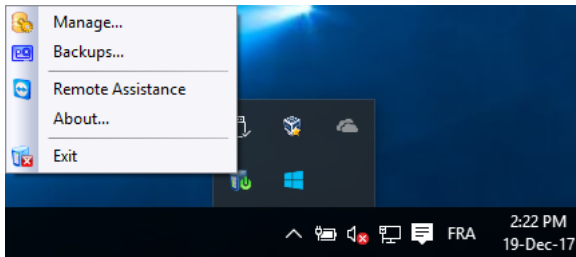
If the version to migrate is using the Local Pdm, it is recommended to first migrate to TopSolid 7.12 so the old local pdm will be migrated to a local pdm server. After this, migrate from TopSolid 7.12, to TopSolid 7.14 following the bellow procedure. Due to SQL Compact performance issues, we recommend this procedure. In case of directly migrating from the old version to TopSolid 7.14, a message is displayed to prevent that several hours might be necessary.

Before starting the TopSolid on the new server, don't forget to run TopSolid'Update to patch.

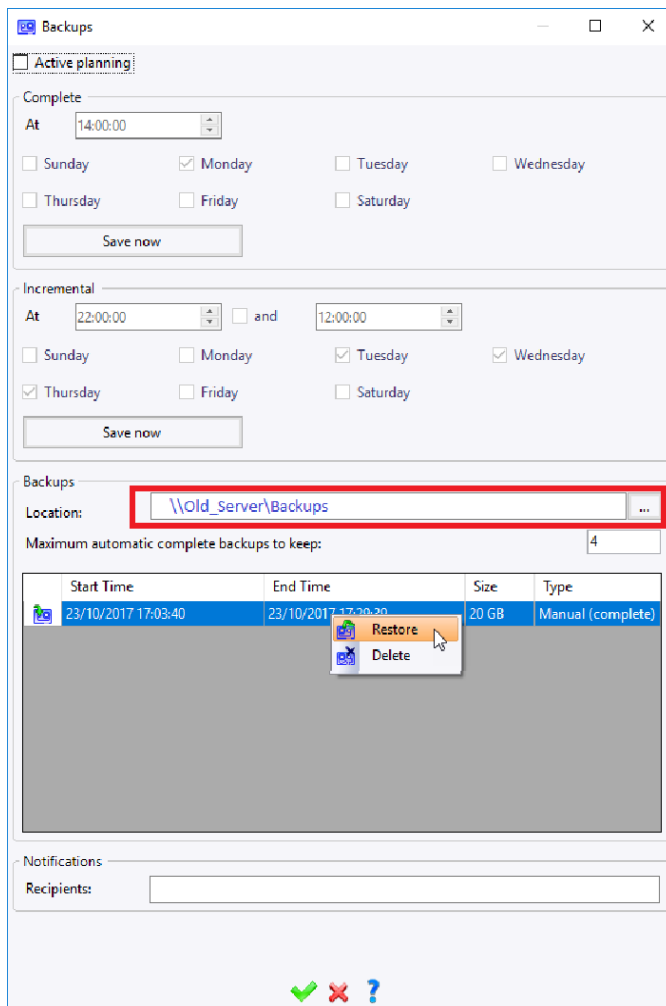
After the backup on the old Pc and the update of TopSolid on the new one, double-click on the executable which is in the TopSolid installation folder

«c:\Program Files\TopSolid\TopSolid 7.16\bin\TopSolidPdmServerServiceAdmin.exe»

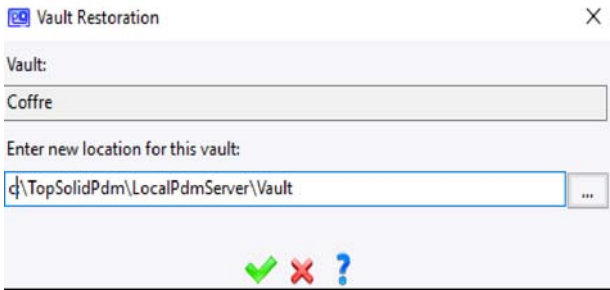
This executable displays an icon near the Windows clock. A right click on this icon allows to run this command.



Change the backups path to have the same folder where are the TopBck files of the old Pc.



Select the backup and use the **Restore** contextual command. During the restoration, the new path of the vault files is asked.



- Start TopSolid.

Server installation

Introduction

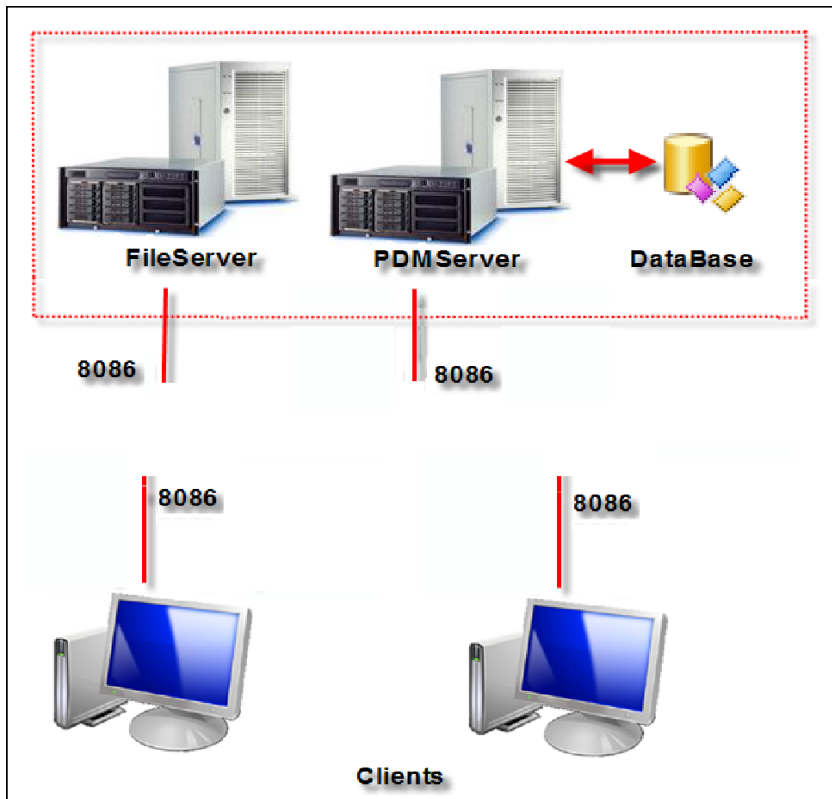
To allow several people to work on the same projects, you have to use the PDM in **client-server** mode.

To do this, you should dedicate a machine on the network to be the **PDM server** and install TopSolid'Pdm Server on it.

It is not advisable to use this machine to work with TopSolid'Design at the same time, because this would slow down the server access for the other users.

The server requirements are available on our [website](#).

Below, an example of a typical installation client/server. By default, the server includes the SQL database, the Pdm server and the Pdm files management. Each of these parts can be on a different server. By default, the listening port is 8086. It has to be opened (inlet and outlet) on the server as well as on the different clients firewalls.



Database

Several database management systems (DBMS) are supported:

- All SQL Server Express Edition, by Microsoft since 2012;
- All SQL Server Standard Edition or higher, by Microsoft since 2012;

SQL server 2016 or higher is highly recommended. SQL 2016 will be the minimum required with TopSolid 7.17.

The SQL Express 2019 version is provided. Migration from an older SQL version to the 2019 version is explained in the **Misc** chapter.

Note : With SQL Express Edition, the size of the database is limited to 10 Gb. This limitation don't exist with Standard Edition.

If one of these DBMS is already installed on the server machine, you can install TopSolid'Pdm Server directly. Unless you are an expert, it is strongly advised to dedicate the DBMS to the exclusive use of TopSolid'Pdm, and not use it also for other applications (ERP, accountancy, etc). This will make backups and updates easier to perform. It is better to install several servers on separate machines on the network, rather than running the risk of damaging critical data.

If there is no previous edition of SQL Server installed, you can install **Microsoft SQL Server 2019 Express Edition** by checking that option during the TopSolid'Pdm Server installation. This version is able to manage approximately ten workstations.



Note : this version is only usable with Windows 10 and since Windows Server 2016. For older Windows server versions, you have to manually install SQL 2014 Express available on our site ftp://ftp.topsolid.com/Public/TopSolid/Drivers/SQL/en_sql_server_2014_express_with_tools_with_service_pack_2_x64_9009295.exe. The procedure is explained in the **Misc** chapter of this guide.

For a migration of TopSolid, if SQL 2014 Express is already installed, you don't need to update it to SQL 2019 Express.

If there is only one client, the server is not needed; TopSolid will work in standalone mode, but anyway, the SQL server will be installed to allow you to convert to the local PDMServer.

If there are more than 10 clients, you must install Microsoft SQL server Workgroup or Standard Edition which is not supplied and will not be installed by TOPSOLID SAS or one of its resellers. You will need as many CALs (Client Access License) and USER CALs as there are TopSolid clients to connect.

For a SQL standard installation, please refer to the **Manual installation of Microsoft SQL** section of the chapter called **Advanced**.

Microsoft SQL server and TopSolid'Pdm server can be installed on 2 different servers. In this case, please read the «**Microsoft SQL Server is on another server than TopSolid'Pdm Server**» section of the chapter called **Advanced**.

PDM server installation

To be able to use a PDM server, TopSolid'Pdm Server, Microsoft SQL and a vault have to be installed.

Only the Microsoft SQL Express installation is documented below.

The vault (containing all your data) will be configured by using the pdm administration tool;



The port 8086 (TCP mode) has to be opened on both the server and the client firewalls. (inlet and outlet).

Installing SQL Express

The Microsoft SQL Express installation is done from the **Server** tab of the media homepage.

- Select this program, and then click the **Install** button.

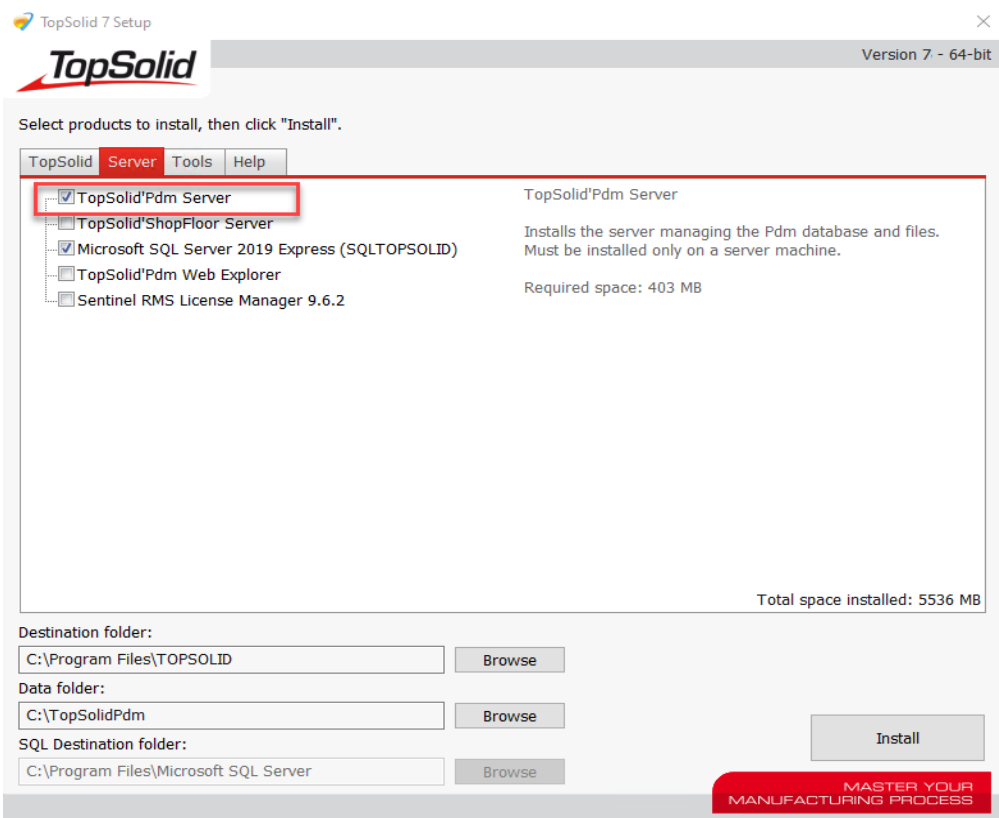
If you check TopSolid'Pdm Server and if Microsoft SQL is not detected, it is automatically checked.

If Microsoft SQL is installed but not accessible for any reason, you have to install it manually as explain in the **Advanced > SQL manual installation** chapter.

Even if TopSolid is installed in standalone mode, SQL server will be installed to allow to use the local PDM server.

Installing TopSolid'Pdm Server

- Check **TopSolid'Pdm Server** from the **Server** tab of the media homepage, and then click on **Install**.

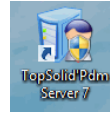


Destination folder: folder where is installed TopSolid'Pdm Server.

Data folder: folder used for the vault. It is recommended to select a local drive with a lot of free space. This folder can be modified later.

SQL installation folder: folder where is installed Microsoft SQL.


For performances reasons, it is recommended to use these default folders.



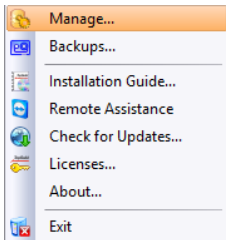
Following the installation, the TopSolid Pdm server icon appears on the desktop. It allows you to start the administration of the Pdm server.

Configuring TopSolid Pdm Server

- Double-click on the **TopSolid Pdm Server** icon.

A red icon  will appear next to the clock in the Windows taskbar.

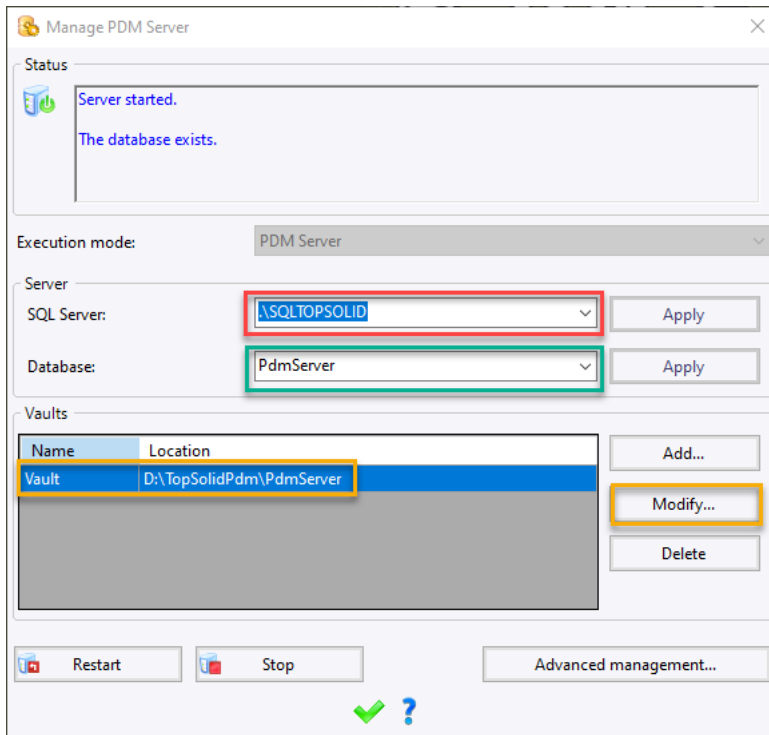
- Bring up the contextual menu (right-click), and then select the **Manage** command.



- Following the first installation, the execution mode is **PDM Server**. Don't change it for a standard usage.
- The SQL Server field indicates **.\SQLTOPSOLID** and the database **PdmServer**.
- If you have installed the Microsoft SQL Server Express from the TopSolid media, do not modify the SQL field (boxed in red below). If you have installed your SQL Server version, enter the server name and its instance name (You can also search them by using the browse command in the field).
- In the **Database** field, the proposed name is **PdmServer** (boxed in green below). You can enter another name. In this case, don't forget to click Apply. The database is automatically created at the first start of the service. It is the only way to create a database. If the database already exists, TopSolid Pdm Server will connect it.
- The vault, which will contain all TopSolid data, is proposed under **c:\TopSolidPdm\PdmServer\Vault**. This path can be **Modified** (boxed in yellow below).



It is strongly recommended to configure the vault in TCP mode by using a NTFS disk preferably a local one for performances reasons. If not, it has to be managed by a Windows system.



- By clicking the **Advanced management** button, the listening port for the Pdm Server can be changed. The name of the server can be used instead of its ip address.
The centralized workspace can be deactivated. Caution in this case, the automatic backup can't be used and the procedure has to be defined again as explained in the **Manual backup** chapter.



To limit network activity and for better performances, it is recommended to set the vault to use a local disk of the PDM Server.

Click **Start** and validate with the  icon.

License

The TopSolid'Pdm Server requires a license which can be local or floating.

- Add the license by bringing up the contextual menu (right-click) on the red icon next to the clock in the Windows taskbar.
- Select the **Licenses** command.


Update


Updates of TopSolid'Pdm Server are automatically proposed when available. It is recommended to update your version at the same time as the TopSolid clients.

Starting PDM Service

The TopSolid'Pdm server is listed in the Windows services.

The database is automatically created when TopSolid'Pdm Server is started for the first time.

- Bring up the contextual menu (right-click) on the  **Pdm Server** icon (in the Windows taskbar next to the clock) and select **Manage**, then click the button **Start**.

You will notice that the icon turns green .

Client installation

Introduction


To work in client-server mode, some settings must be made on the first connected TopSolid client, or on all clients.

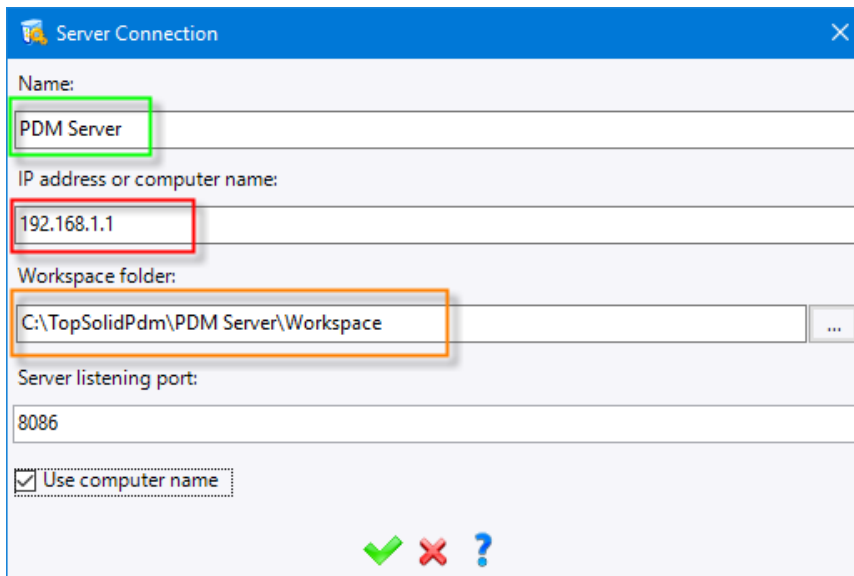
Installation

A standalone installation must be first performed on each client station (see corresponding chapter).

Connection

On each client, you have to set some parameters to indicate which server to connect to.

- Start TopSolid.
- Select the **PDM > Connection > New server connection** command from the TopSolid button.
- Enter the name of the connection (in green below); it will appear in the drop-down list of the possible connections.
- Enter the IP address or the PDM server name (in red below).
- Choose a folder on the local disk for the local workspace (in orange below). The cache has been merged in this folder. For performance reasons, it is strongly recommended to use a local disk.
- Validate the changes with the  icon.



Server Connection




Name:
PDM Server


IP address or computer name:
192.168.1.1

Workspace folder:
C:\TopSolidPdm\PDM Server\Workspace

Server listening port:
8086

☒ Use computer name

- On the first started TopSolid, select the created connection in the drop-down list (1), the TopSolid authentication (2) and then enter the login *Admin* (3). (No password yet).
- Validate the changes with the  icon.



The port 8086 (TCP mode) has to be opened in the firewall (inlet and outlet).

During the first launch, TopSolid will suggest you to check in the standard libraries.

- Click the icon for the moment.

Some needed libraries will be checked-in even if the check-in dialog box is cancelled.

Select a password for the user Admin and click .

Users


For the users creation, please see the Users chapter.

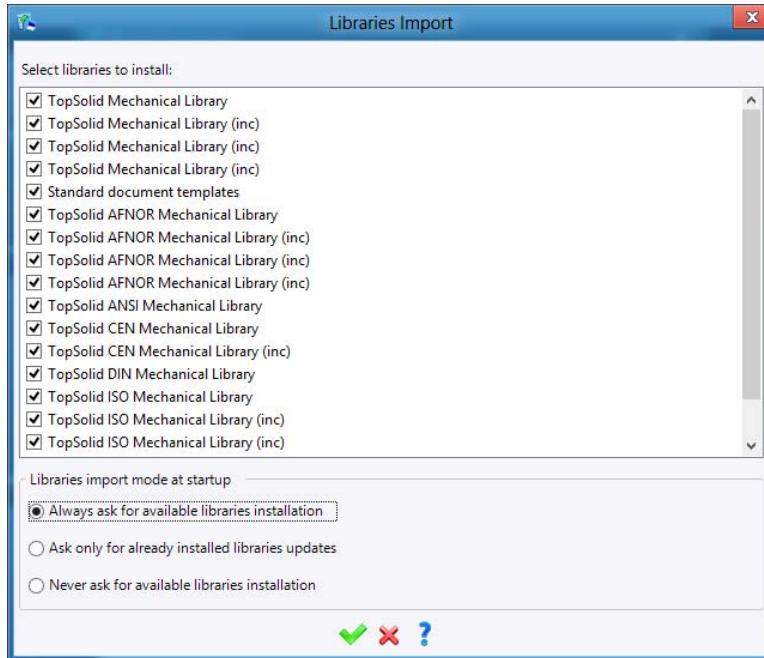
Updates

Updates of TopSolid and its add-ins are automatically proposed when available. it is recommended to update your version at the same time as the PDM server.

Standard libraries

Library updates can be contained in the TopSolid updates. It is recommended to first update TopSolid and TopSolid'Pdm Server before checking in the libraries (see the section above).

- Once the settings above are done, restart TopSolid and log in with one of the created users.
- Check in all standard libraries and templates with the  icon. The operation can take several minutes.



TopSolid is now ready to be used.

Users

Users

You have two options for creating users: Windows Authentication and TopSolid Authentication.

Windows Authentication

If you want your users to be able to directly use their Windows account to sign on to TopSolid, you simply have to select "Windows Authentication" from the dropdown list of the login dialog:

- If you have just created the database, you have first to connect as "Admin" with the TopSolid Authentication, enter a password, activate the security, then give the wanted rights to the different groups and users of your domain. Now the users will be able to use the Windows authentication.
- If TopSolid users already exist following a migration to TopSolid 7.16, they will have to be converted to Windows users. (see User Conversion)

NB: You can still connect to the "Admin" user by selecting the TopSolid authentication mode and entering the *Admin* username with its associated password.

If you wish to work with several distinct Active Directory domains, you will need to install a network of primary and secondary servers in order to be able to access all the domains (see Multisite).



Warning: The PDM administration commands will not be accessible during user conversion. Therefore, remember to organize the conversion between each domain manager so that the conversion period is as short as possible (2 or 3 days maximum).

User Conversion

It is strongly recommended to completely backup before the conversion.

The backup procedure is explained in the «**Data**» chapter.

To convert TopSolid users to Windows :

- Login with the Admin user
- From the TopSolid button, select the **PDM > Convert Users** command.
- Right click on the TopSolid user to be converted, and then select the **Associate to an existing user** command.
- Select the Windows user to be associated and click on the  icon.
- When it is no longer possible to convert users, click on the  icon.


User conversion can be done in several passes. To convert TopSolid users to Windows users, it is necessary to ensure that all Windows users are accessible from the workstations carrying out the conversion.

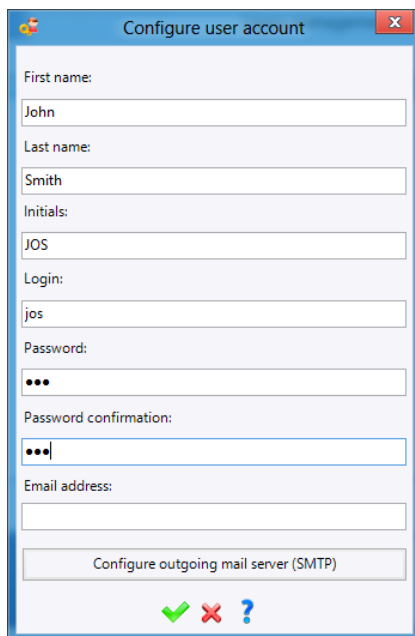
Note: The list of users is done by a request sent to the Active Directory by the PDM service. The list of users displayed in the conversion dialog does not depend on the user who authenticates but on the user with whom the PDM service is running. If there are several domains, this user must exist in each domain. It is recommended to use the domain administrator.

Note2: By default, all users of all domains and subdomains will be listed which can be very time consuming and unnecessary since only one or two domains will be used. In this case, please contact technical support who will provide a registry key to indicate which domains to use.


TopSolid Authentication

If you want your users to certify with users defined by TopSolid, you have to create these users by logging in as Admin.

- From the TopSolid button, select the **PDM > Manage users** command to create new users.
- Click on the **Create** button.
- Fill in the different fields.
- Validate the operation by clicking on the  icon.



To add a password to the Admin account, proceed as follows:

- Select **Admin** from the user list.
- Click on the **Modify** button.
- Enter the password in both fields (for security reasons, the copy/paste function is not allowed).
- Validate the operation by clicking on the  icon.

Data

Introduction

This chapter explains how to manage **TopSolid** data in a Local Pdm server or in a client-server mode.

In particular, it describes how to organize data back-up, that must be carefully set up, otherwise you may lose your job.

Backup Procedure

- The backup must be done on another disk (it is not recommended to save the data on a second partition of the same disk) or better on another server.
- **To be more secure, the backup has to be copied on an external support which should be store in a secure place different from the server place (ftp site,web vault, fireproofed vault, ...).**
- It contains the database and TopSolid's data. The backup must be done every day with a turnover of several days (for example, the 8th day backup overwrites the 1st day backup).
- When a backup is created, it must be tested to check if all is correct.
- If workspaces are centralized (it concerns only the client-server mode), the procedure is automatized by using the **TopSolid'Pdm Server backup tool**. For all other cases, the backup of the database and all data have to be done manually as explained in the chapter: **«Advanced > Manual backup»**.

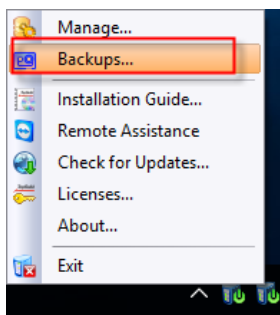


The different folders and the database must be backed up at the same time. Users should not use TopSolid during the backup.

Automatic Backup Procedure

This procedure cannot be used if workspaces are not centralized. In this case, read the **Manual backup** chapter.

The backups tool is available by right clicking on the TopSolid'Pdm Server icon. For the Local Pdm server, this command can be found by using the TopSolid button, then PDM.



It allows to back up the database and datas, to make complete or incremental backups, ponctual or planified backups. A notifcation can be send to recipients

Backups

☒ Active planning

Complete

At

☐ Sunday

☒ Monday

☒ Tuesday

☒ Wednesday

☒ Thursday

☒ Friday

☐ Saturday

Save now

Incremental

At ☐ and

☐ Sunday

☐ Monday

☒ Tuesday

☒ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

Save now

Backups

Location:


Maximum automatic complete backups to keep:

Start Time	End Time	Size	Type
------------	----------	------	------

Notifications

Recipients:



 A network drive can't be used. You have to use a a long name (UNC) with the IP or the name of the server preceded by \\

The incremental backup is a backup of modifications since the previous incremental or complete. If the complete backup doesn't exist, it will be created instead of the incremental one. If a manual backup (description in the chapter: **Advanced**) has been done by script or with Microsoft SQL Studio Management, without the «**Copy-only Backup**» option, the next incremental will not be possible and a complete backup will be done instead.

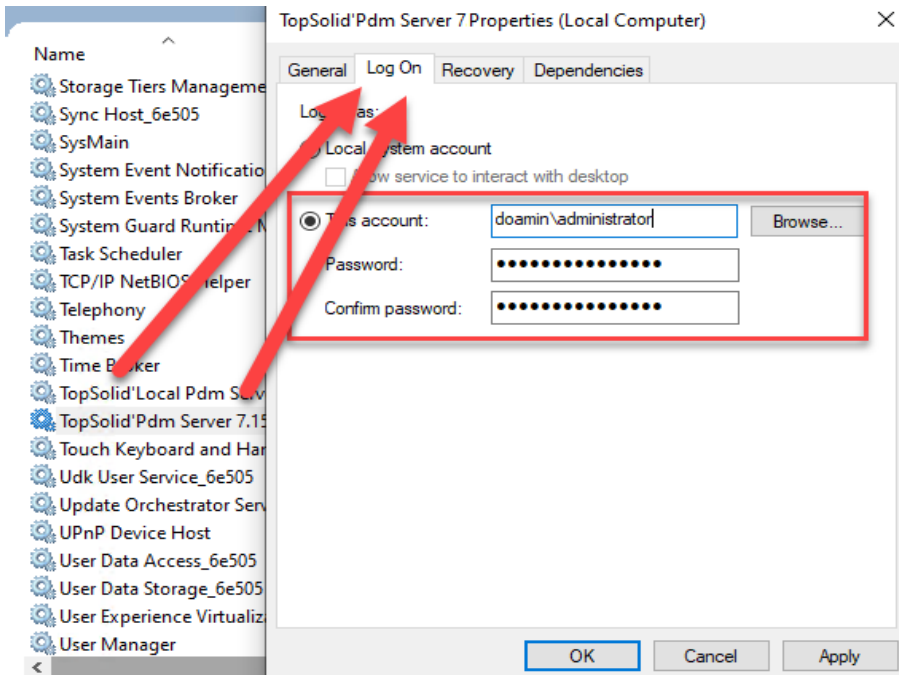
Each backup creates a TopBck and a log files. This log file can be automatically sent to several recipients, if the TopSolid mail server has been configured.

To configure the **mail server**, start TopSolid as Admin. Click the TopSolid button, then use the PDM > Configure Mail Server command. Please read the online help of this command to have more information.



When using the backup tool, the TopSolid'Pdm Server and/or the Local Pdm Server service manages the backup. As it is recommended to save backups on another disk or best on another server, you have to be sure that the service starts with a Windows account who has rights to write on the network folder. By default, it is set to **Local** account, who has no rights through the network. You have to change for another user like the domain administrator by right-clicking the service and select **Properties**. Then you are able to make changes in the **Log on** tab. This user must also have writing rights in the SQL folder, specially if SQL is not installed on the same server than TopSolid'Pdm. (see «Microsoft SQL is installed on another server than TopSolid'Pdm chapter).

Backup tools from TopSolid'Pdm'Server and from TopSolid Local Pdm Server are independant. But it is strongly recommended to not execute them at the same time and to not select the same destination folder.



If SQL Server and TopSolid'Pdm server are not installed on the same server:

- On the SQL server, you have to share the folder where SQL backups databases. By default, this folder is C:\Program Files\Microsoft SQL Server\MSSQL1x.SQLOPSOLID\MSSQL\Backup.
- On the server where TopSolid'Pdm Server is installed, by using the backup tool, click the **Advanced options** button which is proposed in this case. Specify the SQL server shared folder. You have also to manually create this same folder on the TopSolid'Pdm server.

Data Restoration

In some cases, it is necessary to restore backed up data (disk failure, for example).

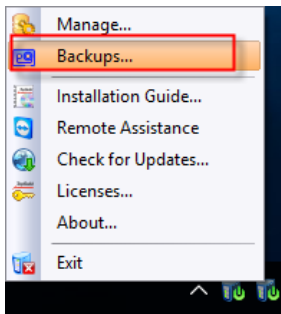
The restoration is never partial; you always need to restore all data (database, vaults) to maintain data consistency regarding the database.

The explanation below is only available for a restoration on the same server.

In case of transfer to another server or migration to a new version, please go directly to the corresponding chapter.

Automatic Data Restoration

If the backup has been done with the TopSolid'Pdm Server backups tool, you just have to start the **Backups** command by right clicking on the TopSolid'Pdm Server icon.



The backups list is available, right click on the wanted one to restore it.

Backups

☐ Active planning

Complete

At: 22:00:00

☐ Sunday
 ☐ Monday
 ☐ Tuesday
 ☐ Wednesday
 ☐ Thursday
 ☐ Friday
 ☐ Saturday

Save now

Incremental

At: 22:00:00 and 12:00:00

☐ Sunday
 ☐ Monday
 ☐ Tuesday
 ☐ Wednesday
 ☐ Thursday
 ☐ Friday
 ☐ Saturday

Save now

Backups

Location: \\Backups_server\TopSolid7

Maximum automatic complete backups to keep: 4

Start Time	End Time	Size	Type
09/12/2014 14:20:56	09/12/2014 14:21:00	48 MB	Manual Complete
08/12/2014 16:17:11	08/12/2014 16:17:11	4 GB	Manual Complete

Restore
Delete

Notifications

Recipients:

✓ ✗ ?

If there are incrementals to restore, the intermediate incrementals and the complete will also be restored.

Remote access

Introduction

The remote access corresponds to a connection between the PDM Server and a remote site. For example, a site localized in Paris hosts a PDM Server, some users localized in London want to work with the server of Paris. This kind of scenario can be managed with 4 solutions:

- **Replication:** Worldwide companies with subsidiaries located in different countries require the ability to work seamlessly with TopSolid'Pdm. They demand a standard solution in order to exchange their data between several sites without losing any data or facing any data merge issues. The PDM data must be highly available, everywhere, and without requiring some manual process to replicate the data between the different sites.

TopSolid'Pdm Server Multisite is an additional feature of TopSolid'Pdm Server. This feature refers to a set of components installed on a primary site and on secondary sites located in different countries/regions around the world:

- 1 **Primary site:** The company declares one site as the primary site. This site hosts the primary PDM Server. This PDM Server contains the reference of all the PDM data existing worldwide in the company. The primary site manages and stores the backups of all the PDM data of the company.
- 2 **Secondary sites:** All the other sites are secondary sites. Each secondary site hosts a secondary PDM Server. This secondary PDM Server acts as a proxy server: it maintains a read-only copy of the primary SQL database and maintains a copy of the TopSolid files. The secondary PDM Server is the TopSolid'Pdm Proxy Server.

TopSolid clients are installed on the local network of the primary server or of the secondary server. They communicate with the PDM of their site.

- **TopSolid connection:** The TopSolid client is set to directly connect on the remote PDM Server. A VPN (Virtual Private Network) connection is required to allow local networks to be connected together via Internet. The PDM Server has to be visible on the VPN to be accessible by the TCP protocol. The http or https connection directly by Internet is not possible, a VPN is required. TopSolid datas sent on the network are not crypted. It is recommended to activate the encryption in the VPN. (see recommendations at the end of the chapter: « VPN Encryption⁽¹⁾ »).
- **Remote desktop:** A virtualization server executes the Windows session of TopSolid on the site hosting the PDM Server. The clients PCs connect via a remote desktop to a virtual session of the site which hosts the PDM server. The virtualization can be done for example with Citrix, Hyper-V or VMware. Citrix 3D has been certified by TOPSOLID SAS, but all virtualization solution which supports properly the Open GL acceleration should be compatible. The virtualization server needs to have enough graphic cards regarding the number of remote desktop connected at the same time. **Caution:** By using the Microsoft remote desktop, the Sentinel protection key is deactivated. You might not have any licenses. You can use VNC, TeamViewer or equivalent to avoid this problem.
- **Replication (manual):** A PDM server is installed on each site. The TopSolid clients PCs connect exclusively to the PDM Server of their site. Projetc and/or Libraries are replicated between the PDM Server of each site by using the export/import of package files (.Top-

Pkg). You must refrain from modifying the same projects on both pdms. This will necessary generates conflicts. It is strongly recommended to define a master server which will be the libraries designer, and will delivered libraries as read only packages. The remote sites of the master will be users of read-only libraries, they will not be able to modify them. If the replication has to be done automatically each night, or week-end, a specific program with the Automation API will have to be developped. There is no standard tool to automatized it.

Which solution to choose?

The Replication is preferable when the latency or the bandwidth are too poor.

Customer issues to solve:

- Latency: Long distances between continents generate high latencies, usually a ping response time between 100 ms and 250 ms. These high latencies can cause poor performances in TopSolid, since some commands need to communicate with the remote PDM Server and will take time to answer when the latency is high.
- Bandwidth: Some country infrastructures may not be able to provide an acceptable bandwidth in every locations. Moreover, buying a reasonable Internet bandwidth may be very expensive or the company may have already reserved the Internet bandwidth for other applications.
- Replication: Replicating manually the projects with package files (.TopPkg) is time consuming and may lead to an unreliable processing when the company works in a production environment.

TopSolid'Pdm Multisite has been thought and developed for these reasons.

Users permanently work with the real primary PDM Server of the company. Consequently, all the PDM features are fully available. It will possible to use these features without any restriction:

- Users and groups: All sites share the same users and groups.
- Security: All sites share a global security depending on the users and groups. The administrator can create a user group for each site, or a more complex security with user groups overlapping over several sites.
- History: The complete history of the modifications is available in every sites.
- Workflow: A workflow can handle projects shared between different sites. A user in one site will be able to approve a request submitted by another site.

Please note that TopSolid'Pdm Multisite is also:

- A workload solution: The administrator can install a PDM Proxy Server to share the workload between several PDM Servers and ensure better performances when a large number of users connect to the PDM Server.

It is the most adequate solution for poor latency or bandwidth. On the other hand, it is also the most expensive (licenses, SQL Standard required).

The « TopSolid connection » and the « Remote desktop » solutions can be chosen if the latency and the internet speed between the 2 sites are correct. When the latency (the answering time of a ping) is too high, the experience becomes unpleasant for the user:

- **TopSolid connection:** With a bad latency, some PDM commands will take time to answer while they make a serie of calls to the remote PDM Server. On the other hand, once datas and files are locally recovered and in the cache, the use of TopSolid will be as smooth as

with a non remote access. The « TopSolid connection » is feasible up to 50 ms of latency. For a daily use without degradation, it is recommended to have a latency lower than 35 ms. The communication between sites must be carried out via a VPN, it is not possible to directly request the PDM server using a https protocol.

TopSolid'Mold is not optimized for remote access use.

- **Remote desktop:** With a bad latency, the users will have a lack of reactivity during their daily work. Mouse actions will have a small delay (mouse click, drag-and-drop...) There will be a small gap feeling during the screen refresh following an action. The « Remote desktop » is feasible up to 50 ms of latency.

Internet breaks are supported by the « TopSolid connection » and the « Remote desktop », they do not cause data lost. But, as for latency, if these breaks are too often, the experience will become unpleasant for the user.

There is a behavior difference regarding the bandwidth between the « TopSolid connection » and the « Remote desktop »:

- **TopSolid connection:** The bandwidth is punctually sought with peaks when a user recovers a file from the PDM server or when he sends a file (check-in). These files are in the cache, they are no more recovered thereafter.
- **Remote desktop:** The bandwidth is continually sought in moderation all day to monitor the render of the « Remote desktop ». The needed average flow can be estimated around 256 kbit/s, 700 MB of download per day of 6h of effective work.

Therefore, the « Remote desktop » is preferable when big files are daily exchanged between sites. If each user recovers each day 500 MB of new files from the server and sends (check-in) 500 MB of new files to the server, it becomes more interesting to use the « Remote desktop » (bandwidth speaking).

If you choose the « TopSolid connection », the 4 followings settings can reduce the volume of exchanged files:

- **Remote file server:** If the files of the remote site have not to be centralized on the PDM Server's site, it is possible to install a PDM Files Server on this remote site. The files will stay on the local network of the remote site while they are majoritairement used by this site, and rarely used by other sites (it is already possible to recover them from another site if needed). It is recommended to centralize the libraries files on the PDM Server site and to not centralize projects of a site on the PDM Files Server of this site.
- **Non centralized workspace:** A consequence of working with a « centralized workspace » is that files are sent to the files server each time a document is saved. If the files server is accessed remotely, it is recommended to deactivate the « centralized workspace » in the « Advanced management » of the PDM Server. Files will then only be sent to the files server when checking-in.
- **Compression:** By default, TopSolid files are saved in a compressed format, it is recommended to activate the « strong » compression in the options of the file (« Options > File »).
- If for performance issues, files are saved without compression, it is recommended to activate the TCP file transfers compression in the « Advanced management » of the PDM Server.

The 4th «Manual réplication by exchanging TopPkg» is needed when the latency or the bandwidth is really too poor (higher than 250 ms).

VPN

This section explains some requirements for the VPN between the Pdm Server on a site and the workstation on another. For a use of TopSolid®Pdm Multisite (replication with multisite), please refer to the Multisite documentation.

The supply, installation and configuration of the VPN are not part of services of TOPSOLID or its resellers. The VPN has to be installed configured and be operational by yourself. It is necessary to have a bidirectional communication between the server and the workstation or between the Primary Pdm Server and each Secondary Pdm Server in the case of multisite.

*(1) **VPN encryption:** All VPN solutions propose a data encryption. The 3 most used solutions are OpenVPN, L2TP/IPsec and PPTP. Here is the list of the VPN solutions sorted from the most secure to the less secure in terms of data encryption vulnerability:*

OpenVPN : Very secure.

SSTP : Very secure.

L2TP/IPsec : Secure.

IKEv2 : Secure.

PPTP : Very unsafe.

Whatever the adopted solution, it is preferable to use a AES encryption of 128 or 256 bits to obtain a good level of protection. The AES 256 is consider as « Top Secret » level by the NSA. If transported data are not classified defense or sensitive to industrial privacy, a « L2TP/IPsec with AES 128 » standard solution is enough.

Multisite

Introduction

Companies with subsidiaries in several countries wish to work transparently with TopSolid'Pdm. The multi-site solution allows data to be exchanged between sites without encountering performance issues or conflicts when merging data. PDM data is available on all sites with the standard client-server connection of TopSolid'Pdm.

Long distances between continents generate high latencies, usually a Ping response time of between 100 ms and 250 ms. The infrastructure in some countries may not be able to provide acceptable bandwidth to communicate with the remote PDM server. TopSolid'Pdm Multisite has been designed and developed to overcome these various problems.

TopSolid'Pdm Multisite is an advanced feature of TopSolid'Pdm Server. It consists of a set of applications installed on a primary site and on secondary sites located in several countries or regions:

- **Primary site:** The company defines a site as being the primary site, it hosts the primary PDM server. This PDM server contains the reference of all PDM data existing globally in the company. The primary site manages backups of all the company's PDM data.
- **Secondary sites:** All other sites are secondary sites, they host a secondary PDM server. A secondary PDM server behaves like a Multisite server: it maintains a read-only copy of the database of the primary site and a copy of the TopSolid files. This secondary PDM server is the TopSolid'Pdm Multisite.

TopSolid clients are installed on the local network of the primary site or on the local network of a secondary site. They communicate with the PDM server on their site.

Advantages of TopSolid'Pdm Multisite

Users are constantly working with the company's central PDM server. This allows you to take full advantage of all the PDM features. These features are available without restriction:

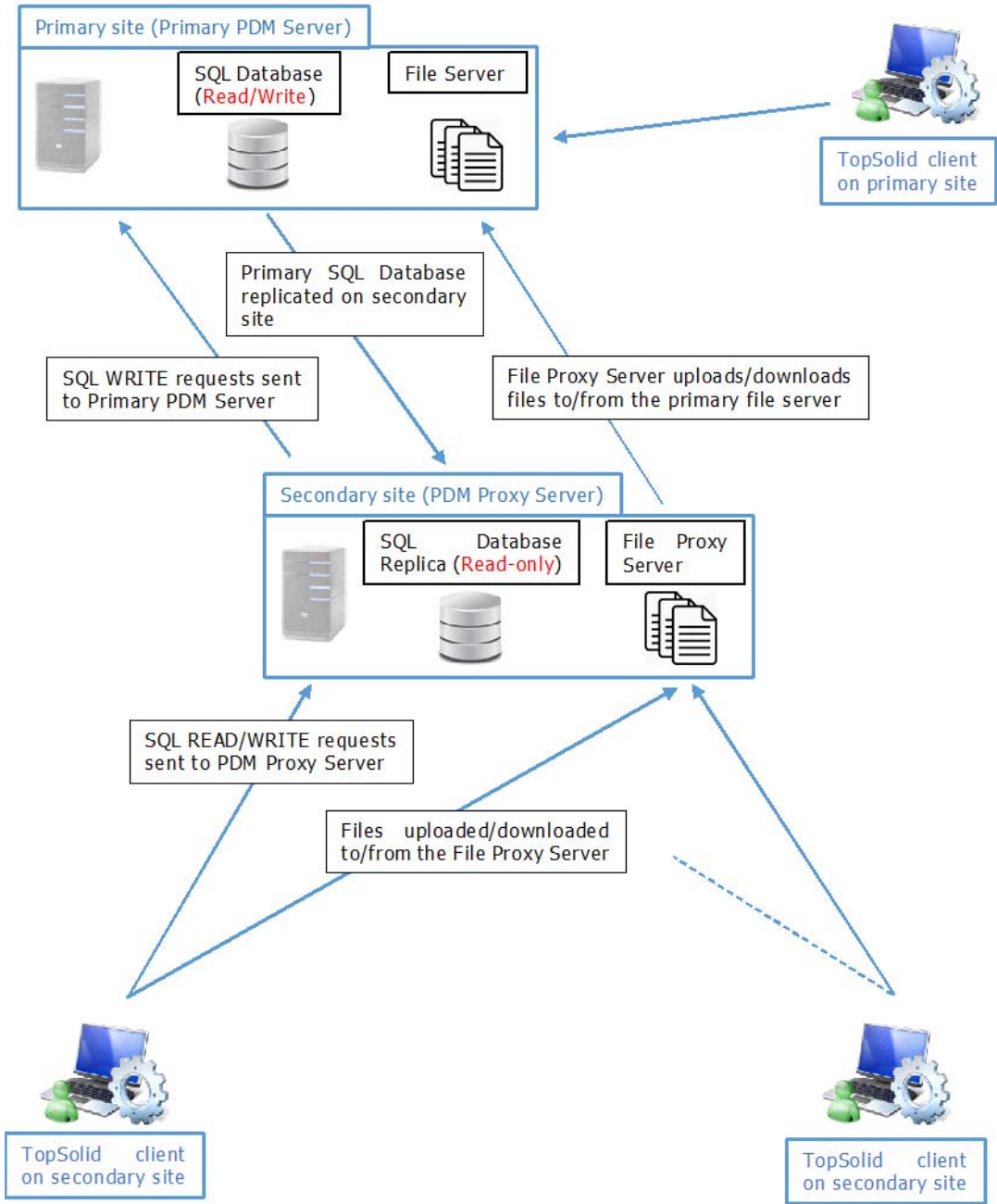
- **Users and groups :** All sites share the same users and user groups.
- **Security:** All sites share the same security based on the definition of users and user groups. The administrator can create security with a user group for each site, or more complex security with groups shared between sites.
- **History:** The complete history of modifications is available on each site.
- **Workflow:** A workflow can manage projects shared between different sites. A user of one site may approve a request for approval from another site.

TopSolid'Pdm Multisite is also :

- **A load balancing solution:** The administrator can install several TopSolid'Pdm Multisite in order to share the workload between several PDM servers and thus ensure better performance when a large number of users work on a PDM server.

TopSolid'Pdm Multisite Architecture

- The architecture of TopSolid'Pdm Multisite is explained below:



How TopSolid'Pdm Multisite works

Primary site: The database operates in read/write mode. TopSolid users connect to the primary PDM server and the primary file server.

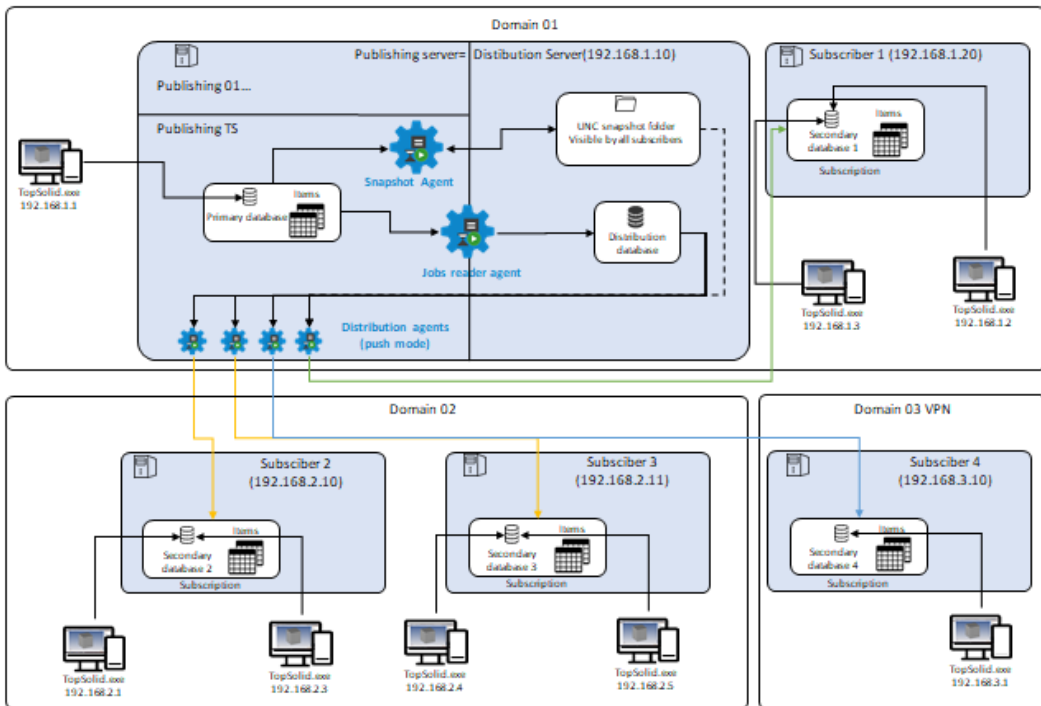
Secondary site: The replicated database operates in read-only mode. TopSolid users connect to the secondary PDM server :

- SQL Write: the secondary PDM server redirects SQL write requests to the primary PDM server.
- SQL readings: The secondary PDM server responds to SQL read requests using the replicated database available in read-only mode.
- Files: The Proxy file server manages the reading/writing of files.

Experience shows that 80% of PDM requests are read requests and 20% of PDM requests are write requests:

- As a result, in most cases the secondary PDM server responds directly to requests and performance is not dependent on the latency or bandwidth of the Internet connection. SQL read requests respond as fast as with a traditional PDM server installed on the local network.
- When saving a file, TopSolid sends the SQL data to the primary PDM server, but saves the files locally (no file upload). The size of the SQL data sent to the primary database is small compared to the size of the files saved on the drive (~2% of the file size). Saving files to the hard drive takes a lot longer than sending SQL data via the Internet. Therefore, the effect of latency and bandwidth when saving a file is negligible.
- By placing the file in the vault, TopSolid sends the SQL data and files to the primary PDM server using the Internet connection.

The replication of the primary database to secondary sites is provided by the "Transactional Replication" feature of SQL Server Standard. The SQL Agent in the primary SQL Server instance continuously streams the SQL data to be replicated to the secondary SQL Server instances. Transactional replication is performed with distribution agents in push mode, therefore the SQL Server instance of the primary site does the data distribution work. Here is a diagram summarizing the principle of transactional replication:



To ensure replication of the primary database to secondary sites, the solution consists of using SQL Server Standard and an SQL Agent that replicates the database.

The Proxy file server included in the secondary PDM server centralizes the files exchanged on the secondary site. Its role is to avoid repeatedly downloading the same files from the primary PDM server. The first TopSolid user downloading a file makes it available to the other users of the secondary site by placing it in the cache of the Proxy file server.

If a secondary site is working on projects that are not or rarely shared with other sites, it is possible to create a local file server and a local vault on this secondary site. Users will create local projects in this secondary vault, this will avoid unnecessary sending the files for these projects to the primary PDM server.

Prerequisite

The different sites must be connected by an Internet connection. The Internet connection can be provided by different technologies: fiber optics, SDSL, VDSL, 5G etc... For optimal operation, it is recommended to respect these limitations:

- Latency less than 250ms.
- Upload/download speed at least higher than 8 Mb/s + 1 Mb/s per user connected to the site.
- Primary and secondary PDM servers cannot be installed on the domain server. Indeed, Microsoft recommends the creation of a local user to use SQL replication, which cannot be created on a domain server.

- It is recommended to install the primary server in English especially if some secondary servers are in foreign countries. Indeed, some messages sent from the primary server might be sent to the secondary servers. In this case, they will be in the language of the primary server.

These limitations should be verified on each secondary site:

- Latency: Response time of a "ping" from the machine hosting the secondary PDM server to the machine hosting the primary PDM server.
- Flow rate:
 - Download: download bandwidth reserved to receive data from the primary PDM server to the secondary PDM server.
 - Upload: upload bandwidth reserved to send data from the secondary PDM server to the primary PDM server.

A VPN tunnel must allow communication from a secondary PDM server to the primary PDM server. The connection between the secondary and primary servers is made exclusively with the TCP/IP protocol. It cannot be done in http or https protocol with outgoing access to the Internet. The VPN tunnel must be encrypted to ensure secure data transfer between sites.

The primary site and the secondary sites can belong to the same domain of the company network, or belong to different domains. In the case of different domains on each site, the domains can be linked together by approval relationships or be completely dissociated without any approval relationship.

All secondary PDM servers must be able to communicate with the primary PDM server. A first "ping" test must be able to be performed from the secondary machines. Likewise, the SQL instance of the primary PDM server must be able to communicate with each SQML instance of the secondary PDM servers.

It is imperative to have at least one SQL Server Standard Edition version 2014 for the primary server. Please note that the Express version is not compatible for replication on the primary server. However, it is possible to have at least one SQL Express 2014 version for secondary servers.

SQL Server installations must be performed with at least version 2014. Any version equal or superior to 2014 is compatible with the transactional replication mechanism: SQL Server 2014, 2016, 2017, 2019 etc... If the versions of SQL Server are different on each site, please refer to the replication compatibility table between the different versions of SQL Server: <https://docs.microsoft.com/en-us/sql/relational-databases/replication/replication-backward-compatibility?view=sql-server-ver15>. A maximum of 2 versions of offsets are allowed by Microsoft.

The primary and secondary PDM server must be installed on a Windows Server operating system. Please refer to the compatible operating system depending on the version of SQL Server chosen.

Licensing requirements:

- Primary site:
 - o TopSolid'Pdm Server: A "TopSolid'Primary Pdm Server" license activates the "Primary PDM Server" execution mode.

- o SQL Server: A "SQL Server Standard" license and a CAL for each TopSolid user connected to the primary site or to a secondary site. (as many CALs as the sum of all users of all sites).
- Secondary sites :
 - o TopSolid Pdm Server: A "TopSolid Secondary Pdm Server" license activates the "Secondary PDM Server" execution mode.
 - o SQL Server: If we remain within the Microsoft requirements (10 users maximum, base size limited to 10 GB), no license is required, an unlicensed installation with "SQL Server Express" is sufficient. The installation of "SQL Server Express" is provided by default with the installation of TopSolid Pdm Server. If base replicated from the primary server is larger than 10 GB or if the number of users connected to the secondary server is larger than 10, a Standard SQL version is required.

Installation

Multisite installation requires determining which site will be the company's primary site and consequently which sites will be the secondary sites. The primary site will host all company data and respond to the requests from the secondary sites. Changing the primary site after the fact is possible, however it requires an effort to reconfigure and transfer data. The choice of the primary site can be made by considering these two aspects:

- Choose to the site with the largest number of TopSolid users. It would be a shame to require 70% of users to work on a secondary PDM server, as the bandwidth will be more stretched to carry out data transfers between the secondary site and the primary site.
- Choose the site with the best Internet speed. The site equipped with a fiber optic connection will be preferable to the site equipped with an SDSL/VDSL connection.

Installing the Primary PDM Server



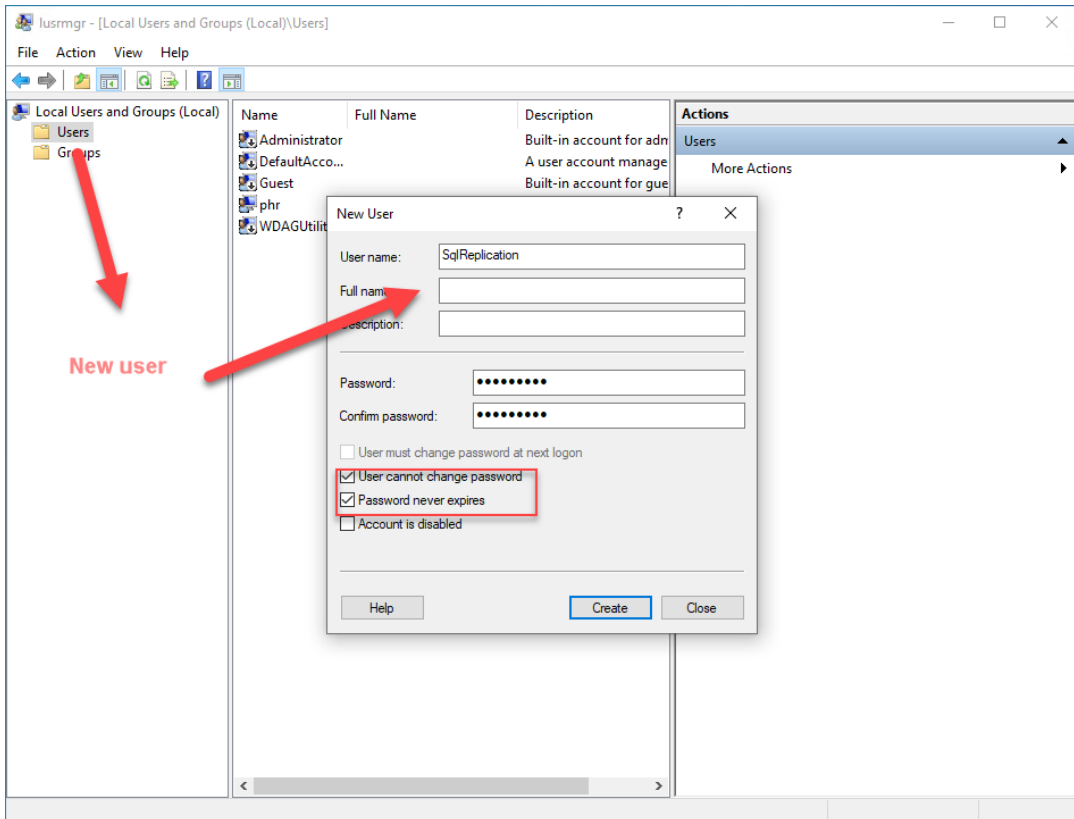
If the primary and secondary pdm sites are on the same domain or on different domains but there is an approval relationship between them, a user known to all these domains can be used for the SQL Agent service. In the opposite case (no approval between the domains), an identical local user (same name and password) must be created on the different primary and secondary sites as shown below:

Enter `lusrmgr.msc` in the Windows Run command.

In the Windows Local Users and Groups console, create a **SqlReplication** user.

The password is **TopSolid7** and must not expire.

This user is to be created on the SQL server (in the case of using the PDM server on another server than SQL).



Now install SQL Server. As indicated in the Operation chapter above, at least one SQL Server Standard 2014 version is required, with one CAL license for each user at the primary and secondary sites. This version of SQL is not provided by TOPSOLID or its resellers. You can refer to the installation guide, section **Advanced > Manual SQL Installation**.

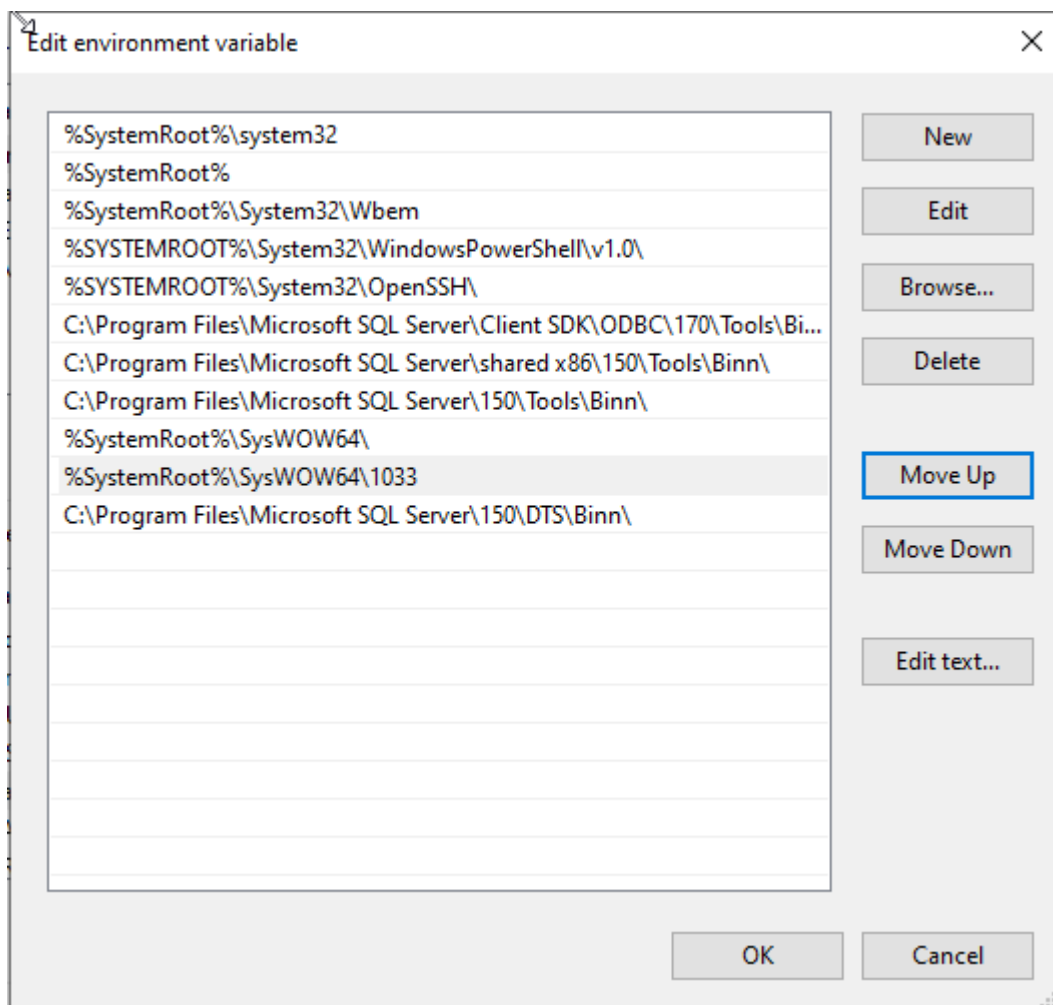
If SQL is already installed, make sure the SQL Replication feature is checked. As the instance will be replicated, it is imperative that it is exclusively dedicated to TopSolid. You can freely choose the name of the instance, by default it can be named SQLTOPSOLID.



If you have installed **SQL Server 2019**, it is necessary to perform these actions so that the database replication with snapshots uses the latest version of the ODBC driver:

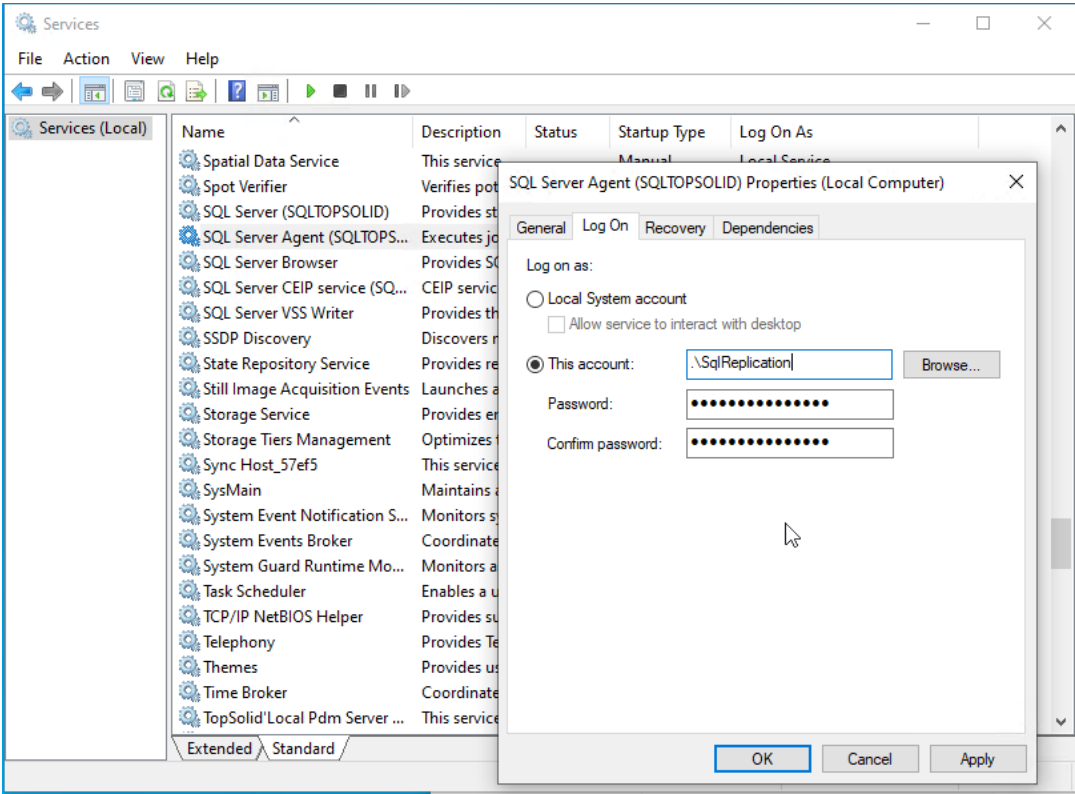
- Install the KB4517790.
- Add these two paths in the %PATH% environment variable:
 - o %SystemRoot%\SysWOW64\
 - o %SystemRoot%\SysWOW64\1033

They must be inserted before the C:\Program Files (x86)\Microsoft SQL Server\Client SDK\ODBC\130\Tools\Binn\ value or a similar line like C:\Program Files (x86)\Microsoft SQL Server\Client SDK\ODBC\170\Tools\Binn\ or other.

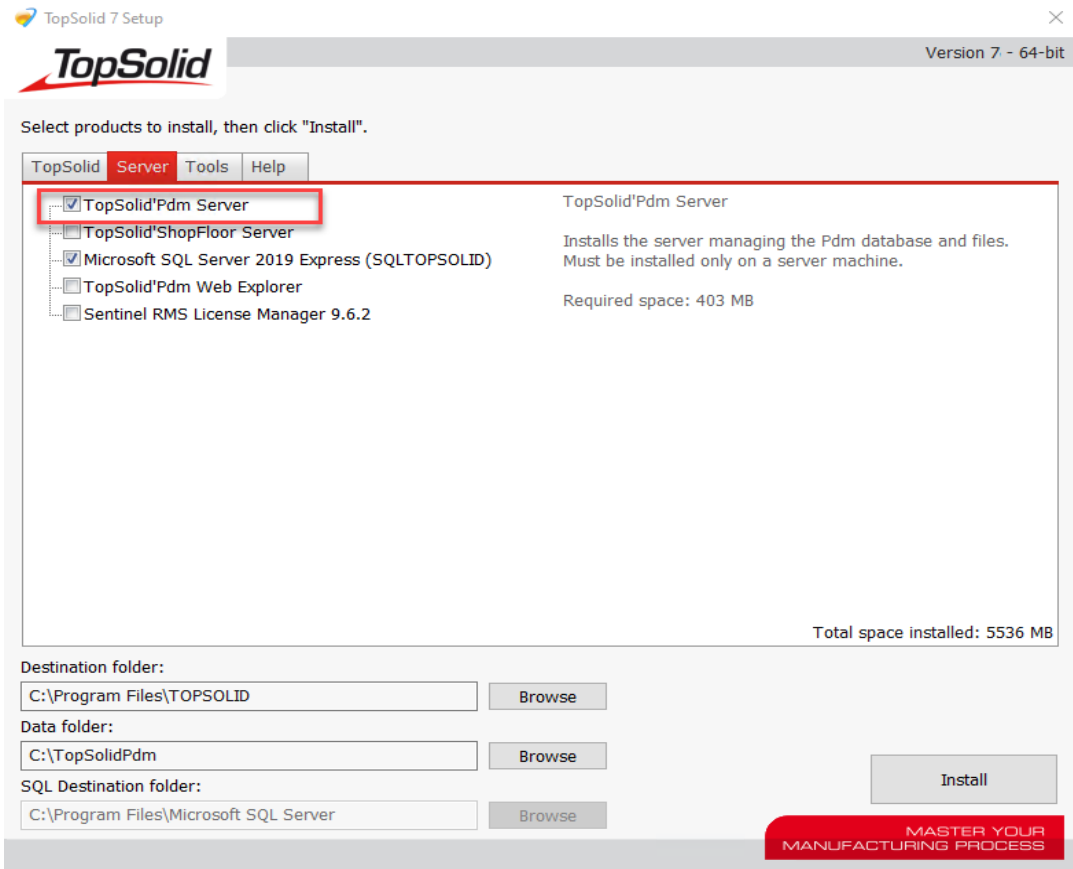


- Restart the Windows server operating system.

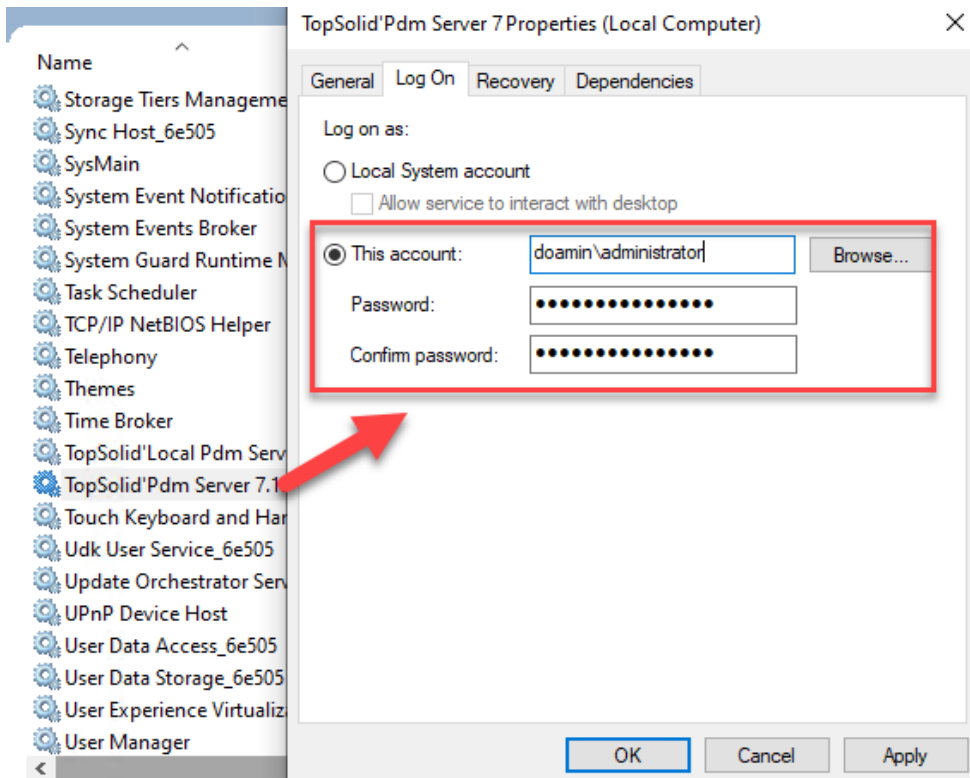
If the SqlReplication user was not entered as the owner of the SQLAgent service during installation, you can specify the local user account "SqlReplication" and its password at the SQL Server agent level, and set the SQL Server agent startup type to automatic. The SQL Server agent is required to perform database replication:



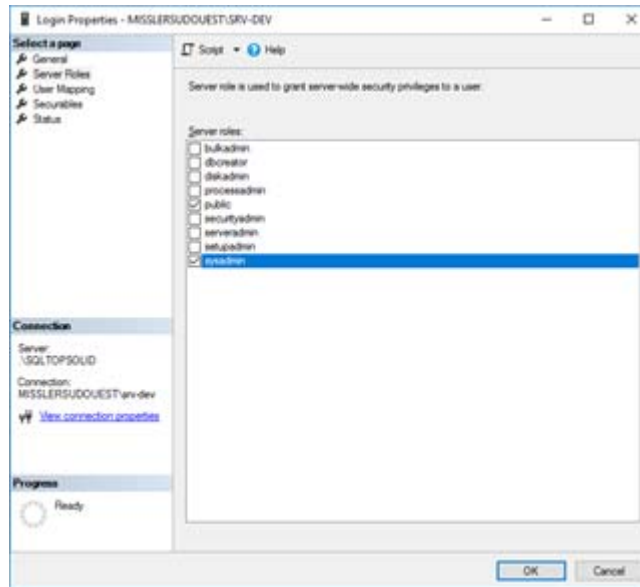
The PDM Server is then installed from the TopSolid media front-end. If the previously installed SQL instance was named "SQLTOPSOLID", do not uncheck "Microsoft SQL Server 2019 Express (SQLTOPSOLID)".



After installing and updating using the TopSolid'Update, change the account defined by default on the "TopSolid'Pdm Server" service. Replace it with the domain account previously defined during the SQL Server installation.



Start "Microsoft SQL Server Management Studio", and give the **sysadmin** role to the account defined on the service. This role is necessary to create a base. It can then be changed to **db_owner** from the database. This Windows account must belong to the local network domain.



For any creation or migration of a base, the service account must have the server role "SysAdmin".

It is then possible to use a db_owner account on the primary server, once the primary server has been started the first time in sysadmin. Note that secondary servers must be started the first time with the primary server in sysadmin, otherwise the subscription cannot be created at replication (a message now clearly explains the problem: *"The user '{0}' must have sysadmin role on primary PDM server to add a new secondary PDM server"*). Subsequently secondary servers can be started/stopped even if the primary server is db_owner.

Switching from "SysAdmin" to "db_owner" does not require a restart of the PDM service.

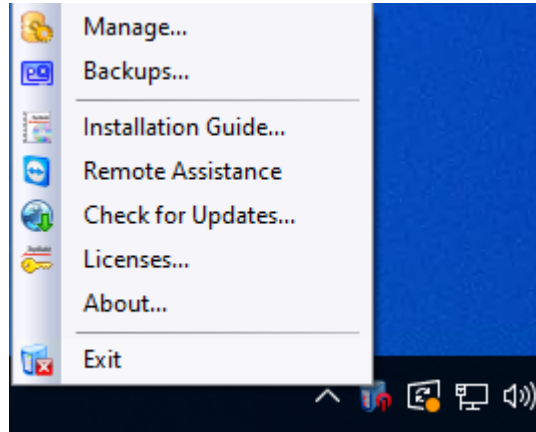
If a secondary Pdm server is installed later, the primary server will have to be switched back to SysAdmin so that this new secondary server can replicate a first time.

Update TopSolid'Primary Pdm Server with TopSolid'Update BEFORE its first start.

Launch TopSolid'Pdm Server from the desktop icon.

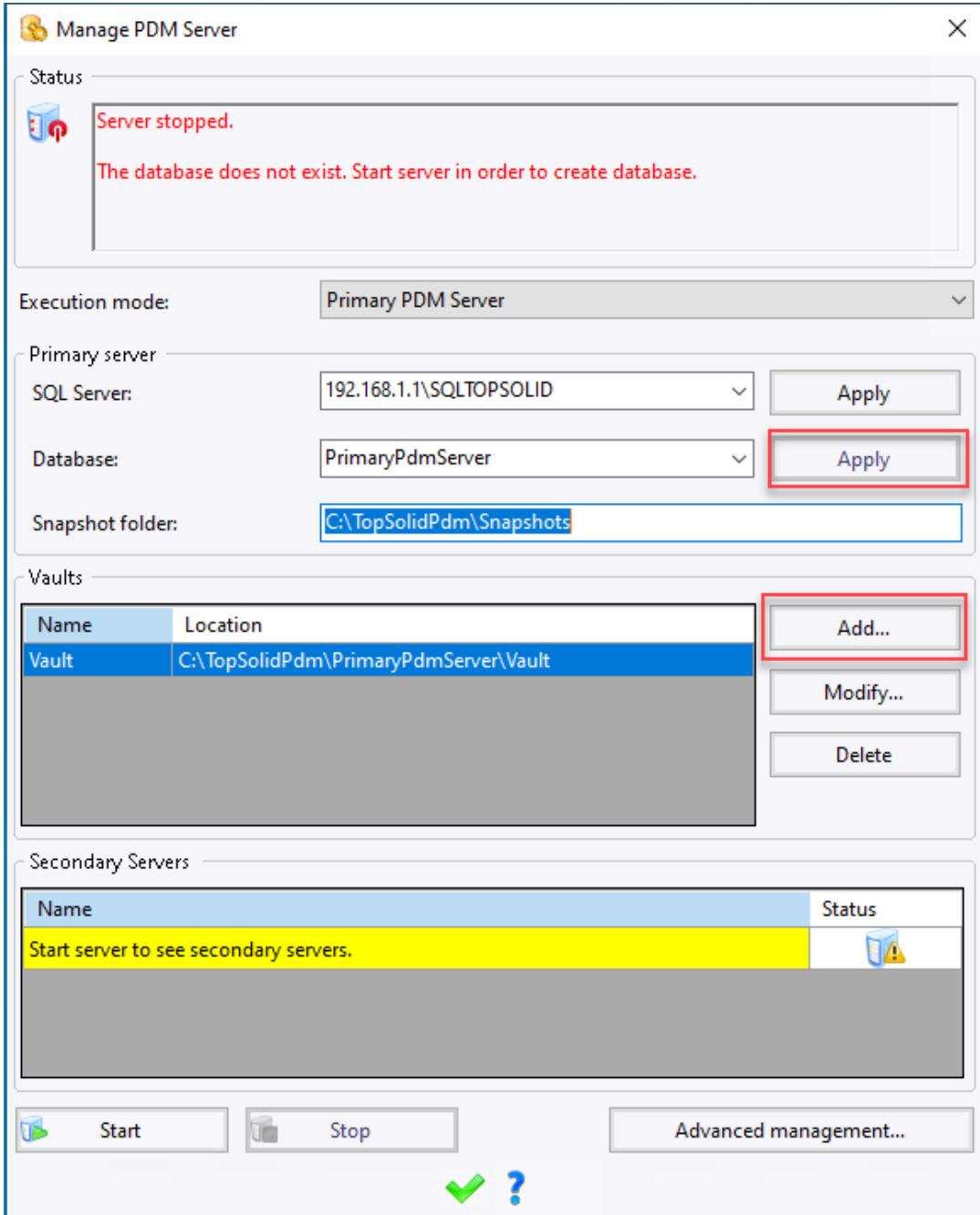
Add the TopSolid'Pdm Server and TopSolid'Primary Pdm Server licenses.

Right click on the icon and select **Manage**.



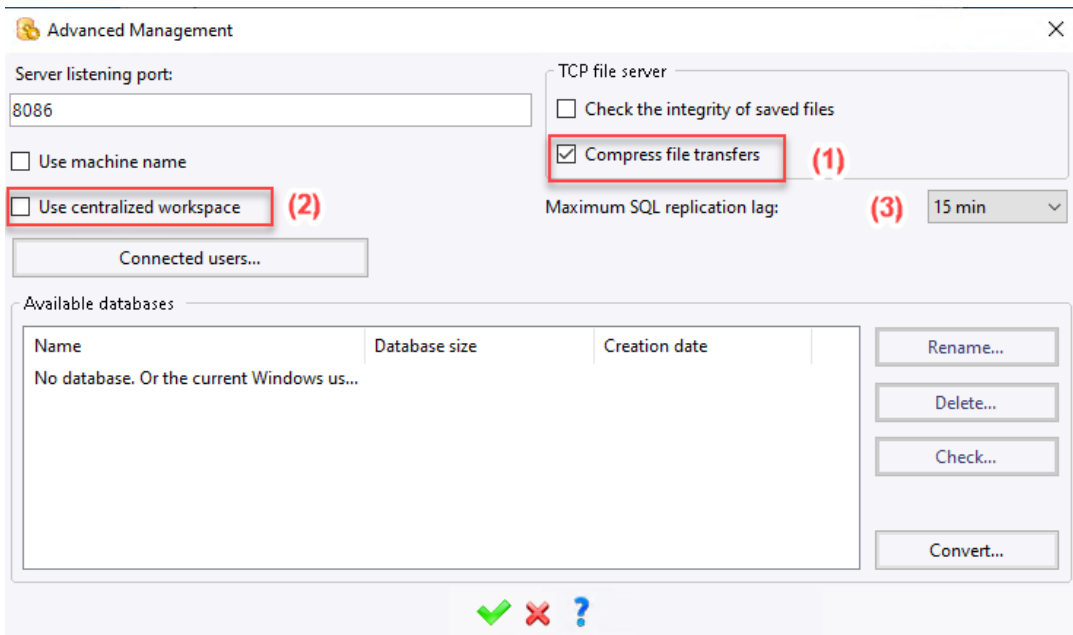
Please select:

- the execution mode: Primary PDM server.
- the SQL instance to be used.
- the name of the database to be created.
- the snapshot folder. This snapshot folder contains temporary files to perform the very first database replication. This folder must have been created manually on a local drive of the SQL server. The previously created SqlReplication account must have read/write rights on this folder.
- add a vault, this vault must absolutely be defined on the internal TCP file server of the PDM server.

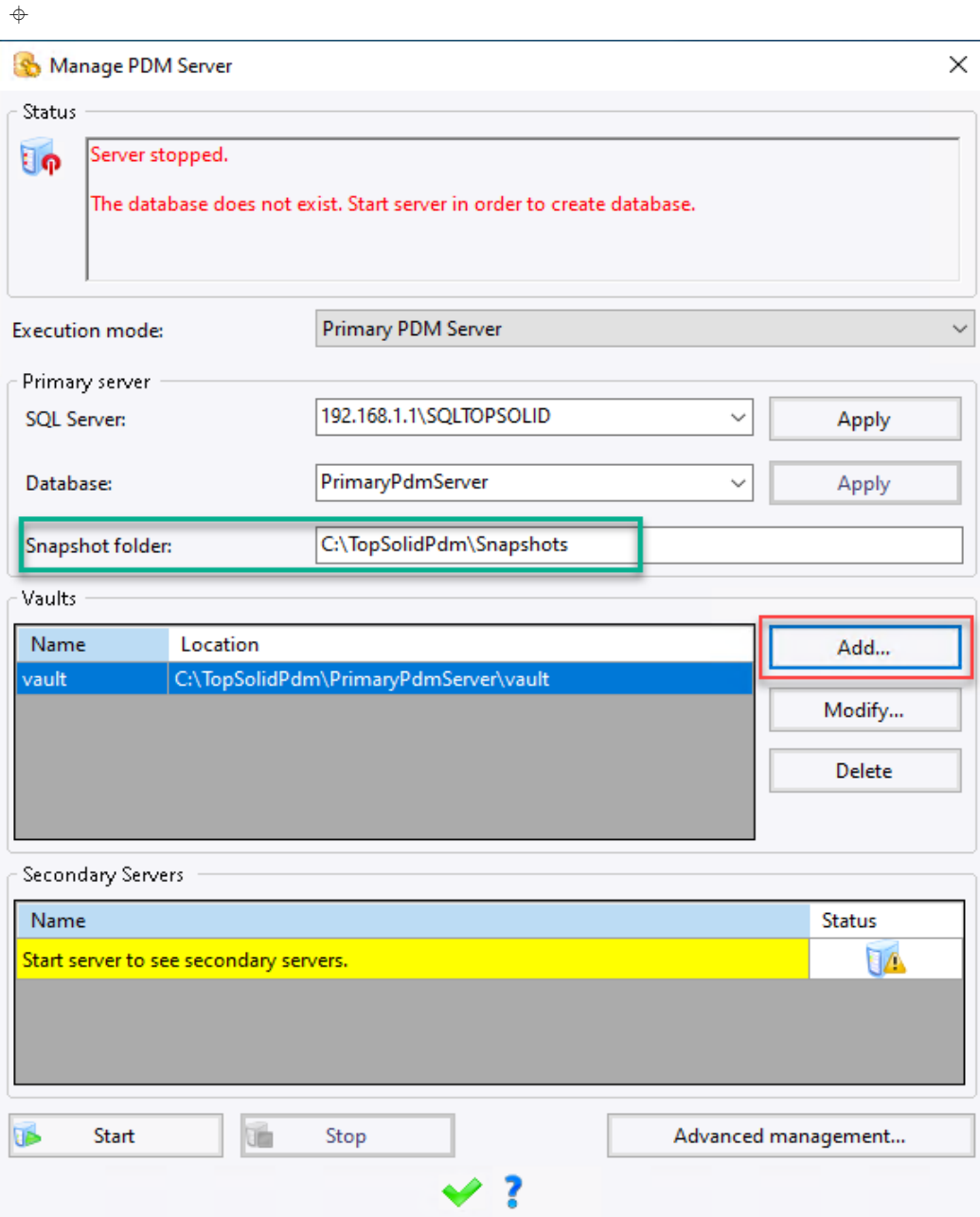


- In **Advanced Management**, check "Compress file transfers"(1), this will add real-time compression (LZ4 compression) of files exchanged over the Internet. Leave the "Use centralized workspace"(2) option unchecked to avoid unnecessary file transfer to the primary PDM server each time a document is saved.
- In some cases, such as when importing a large library dictionary (.TopDicPkg) from a secondary PDM server, database replication may not be able to keep up. This case requires a lot of resources because importing dictionaries is expensive, there is a

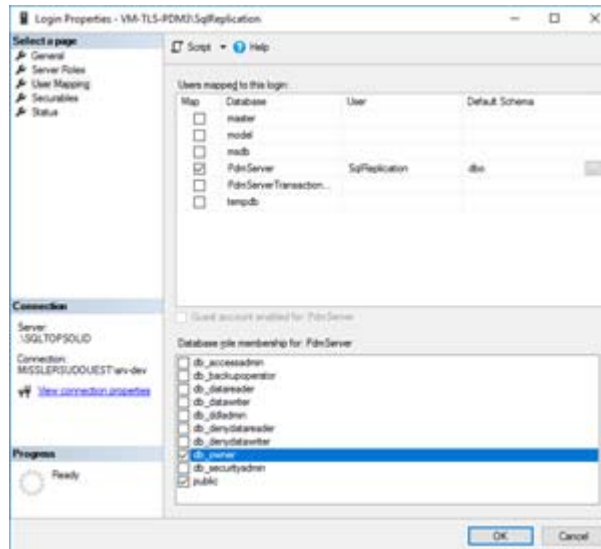
massive insertion of data in the SQL database. It is possible to increase the limit to 15 minutes by setting the "maximum SQL replication delay" (3). The recommendation is still to import the libraries directly on the primary server.



- The primary PDM server must run with a Windows account with the sysadmin role on the SQL Server instance. Administrator rights are required to create the database and then manage the replication mechanisms (distribution, publication, subscription, snapshot jobs, etc).
- Enter a local snapshot folder (in green below): This folder has to be created on a local disk of the server where SQL is running. It is not shared and used only by SQL. The path to enter is the local path, even if SQL is another server.
- Start the PDM Server. Reminder: this is the only way to create a database.
- Select a vault location.



In "SQL Server Management Studio > Security > Logins" check if the local account SqlReplication exists and give it the role of db_owner on the PrimaryPdmServer database. The SQL Server agent uses this account to read the database and replicate it.



Installing a Secondary PDM Server

As with a classic PDM server, you can use the SQL Express version provided with TopSolid if a maximum of 10 users will connect simultaneously to this secondary server. If there are more than 10 users, an SQL Standard version 2014 or higher (not provided by TOPSOLID or its resellers) will be required and must be installed by following the installation guide, section: **Advanced > Manual SQL Installation**. The **SQL Replication** feature is not required.

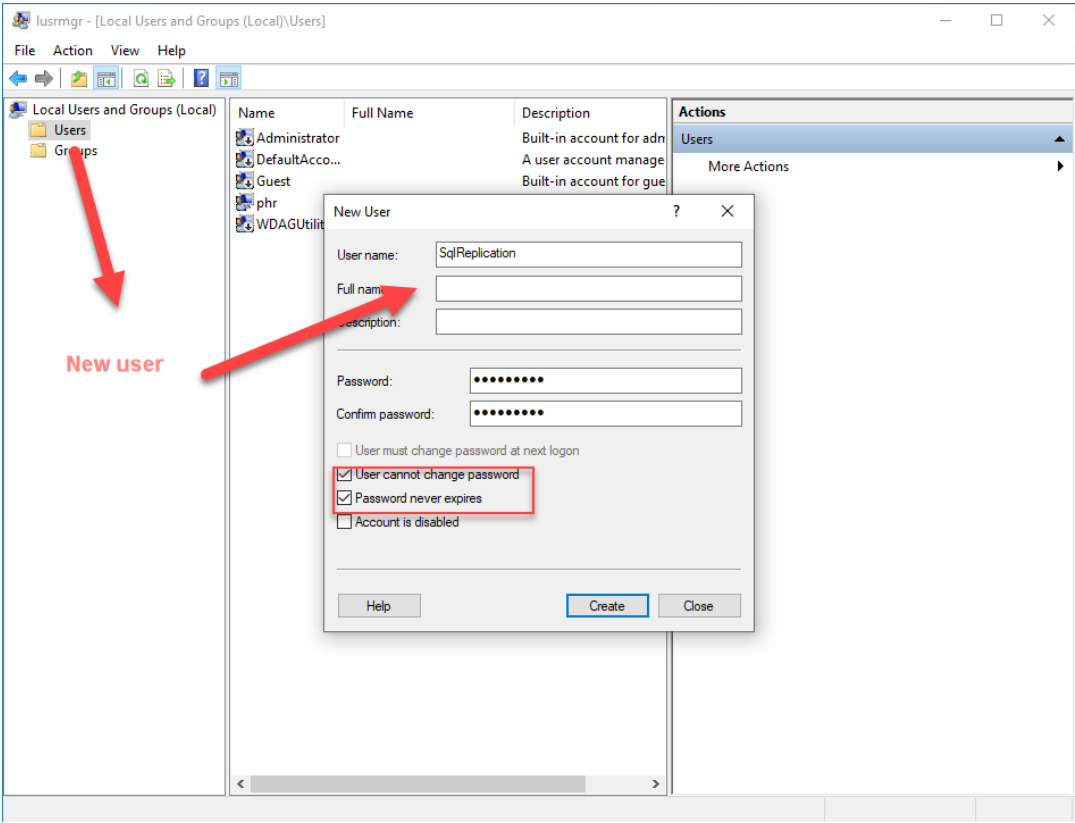


If the primary and secondary pdm sites are on the same domain or on different domains but there is an approval relationship between them, a user known to all these domains can be used for the SQL Agent service. In the opposite case (no approval between the domains), an identical local user (same name and password) must be created on the different primary and secondary sites as shown below:

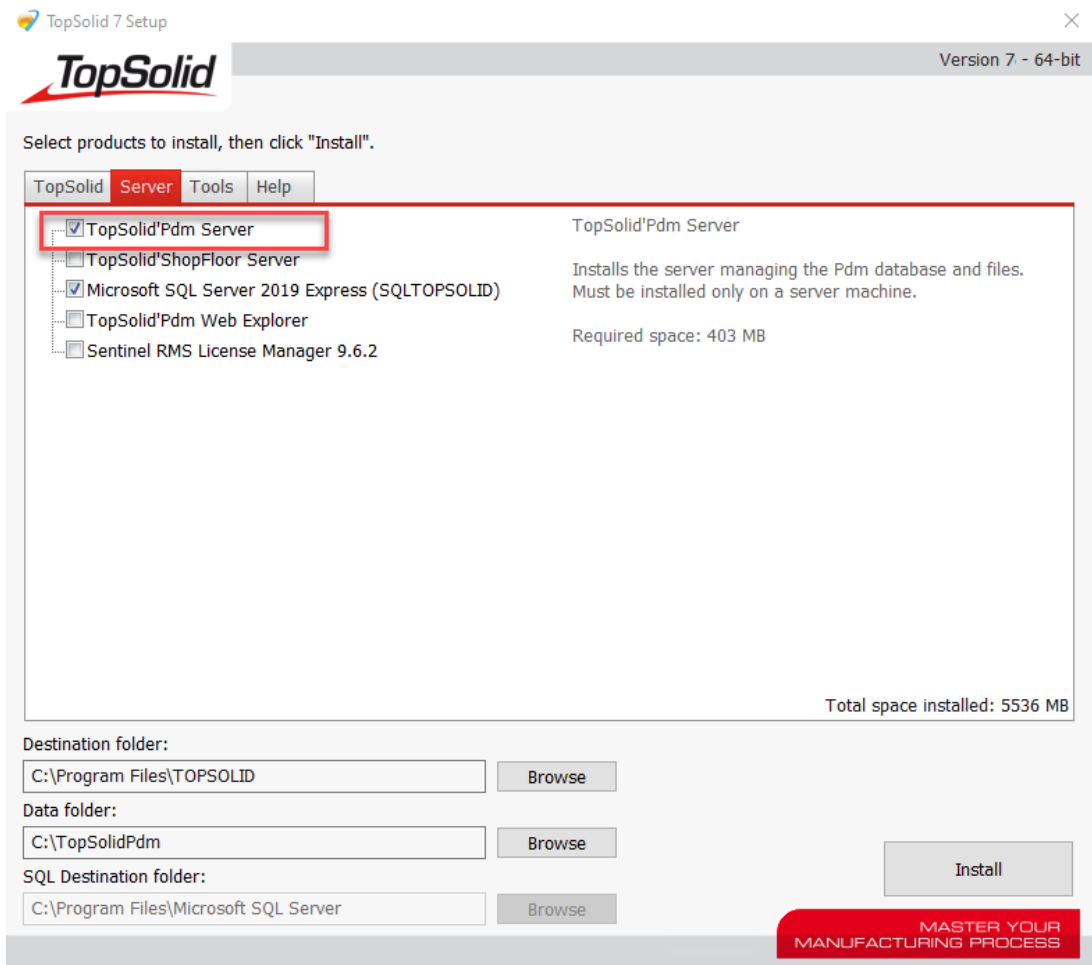
Enter `lusrmgr.msc` in the Windows Run command.

In the Windows Local Users and Groups console create the same user with the same password as the one created on the primary PDM server: **SqlReplication** with the same **TopSolid7** password. This password must not expire.

The equality of name and password is essential to allow remote connection.



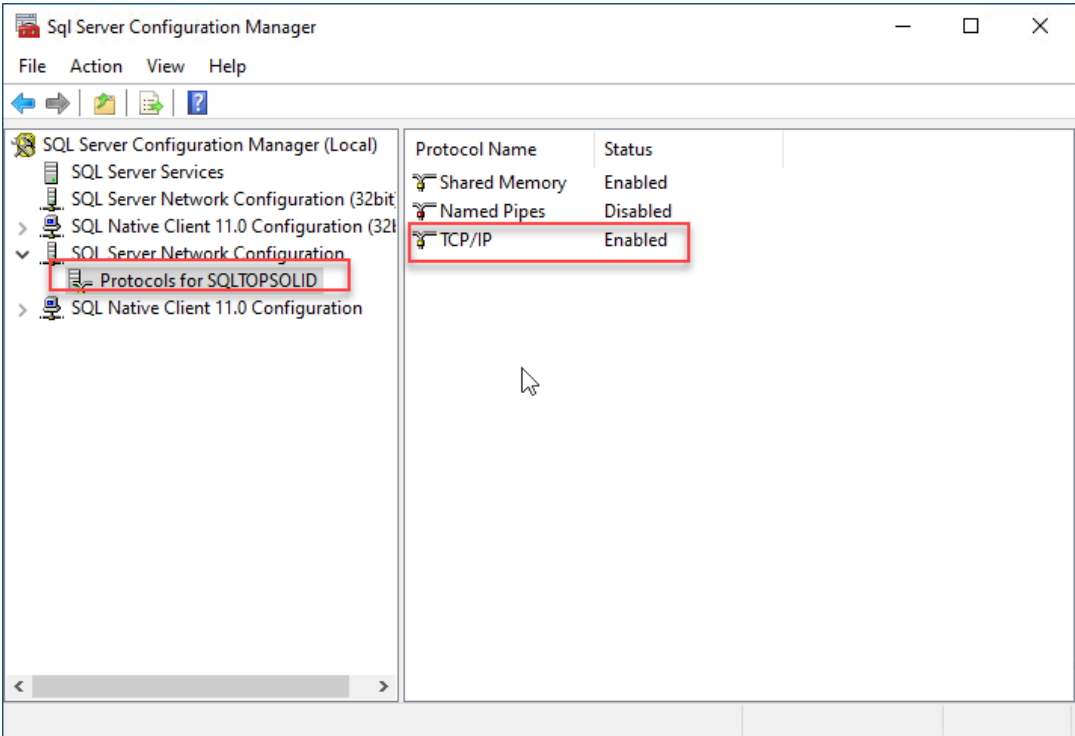
The TopSolid'Pdm Server is then installed from the TopSolid media front-end.



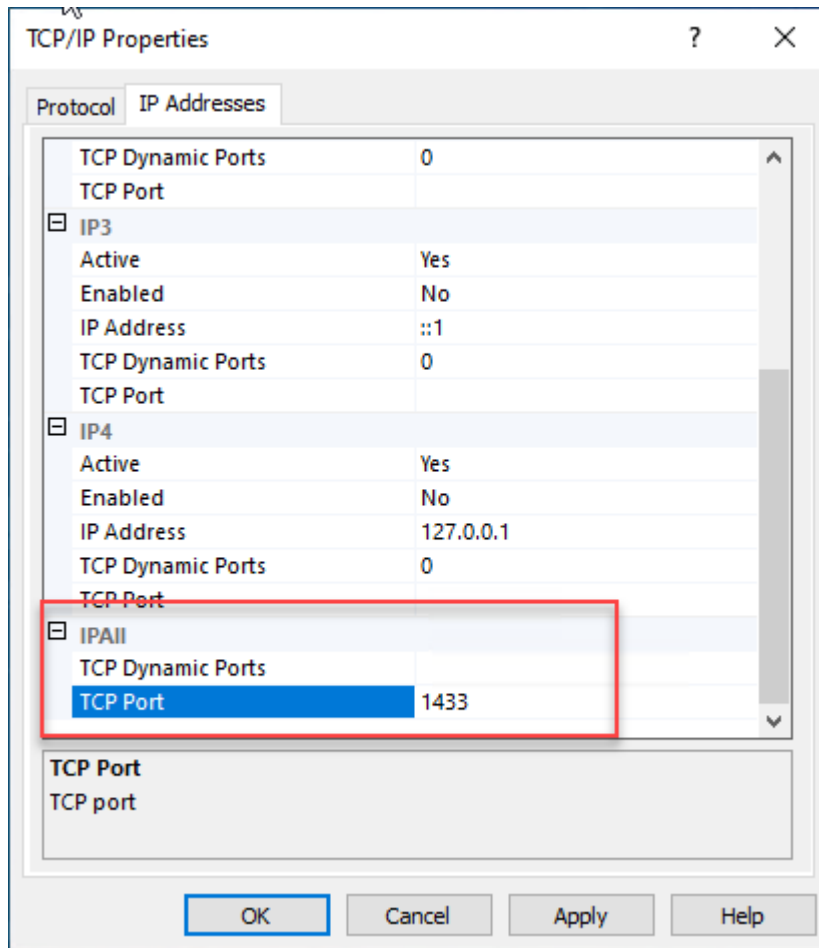
The SQLTOPSOLID instance of the secondary site must be accessible from the SQL instance of the primary site in order to perform database replication.

Use the SQL Configuration Manager console. If it is not found in the Windows "Start" menu, it is located in the C:\Windows\SysWOW64 folder. This is the SQLServerManager12.msc console or higher.

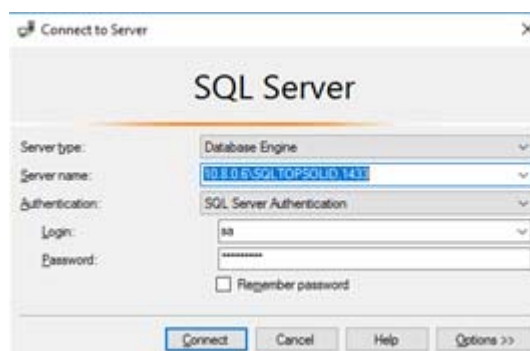
Enable the TCP/IP protocol for your SQL instance.



From the IPAll section in the TCP/IP protocol properties of the SQLTOPSOLID instance, empty the TCP Dynamic ports field and add 1433 in the TCP port.



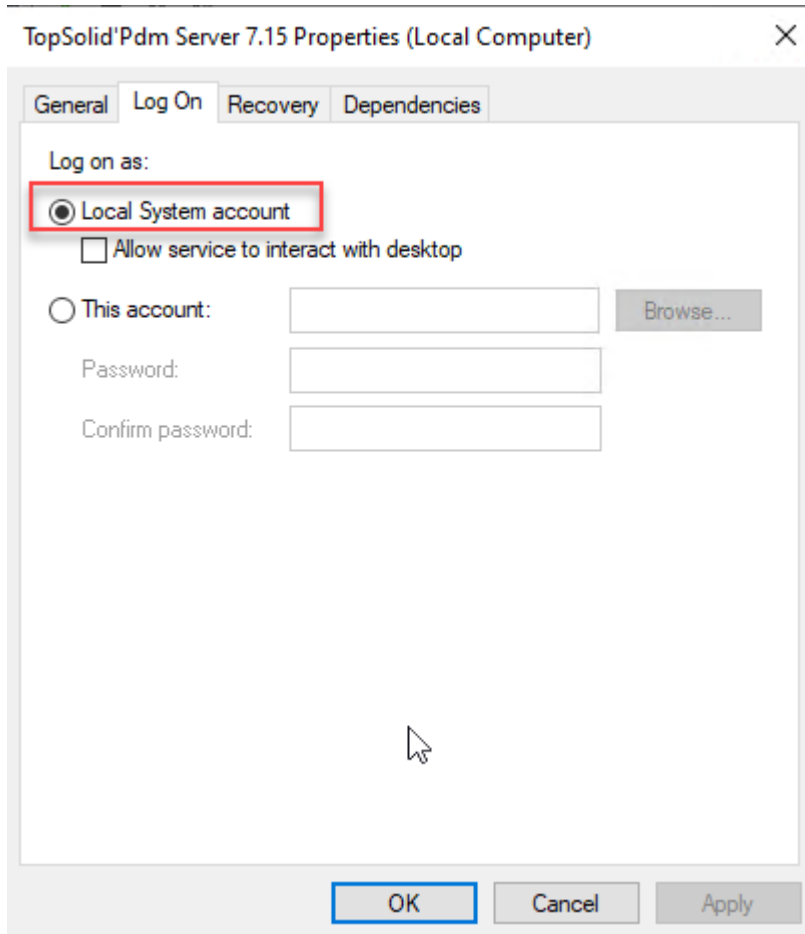
Restart the SQL Server service (SQLTOPSOLID) of this secondary PDM so that the settings are taken into account. Then from the primary site, check with the SQL Server Management Studio to make sure that the connection to the SQLTOPSOLID instance of the secondary site is working. The connection string must contain the address of the secondary site and communication port 1433 (for example 10.8.0.6\SQLTOPSOLID,1433).



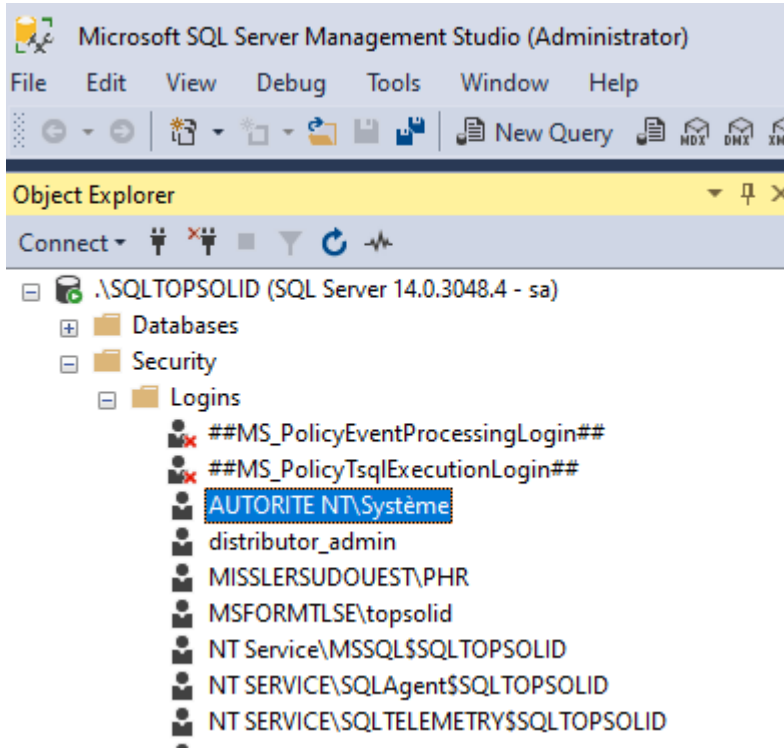
If the connection does not work:

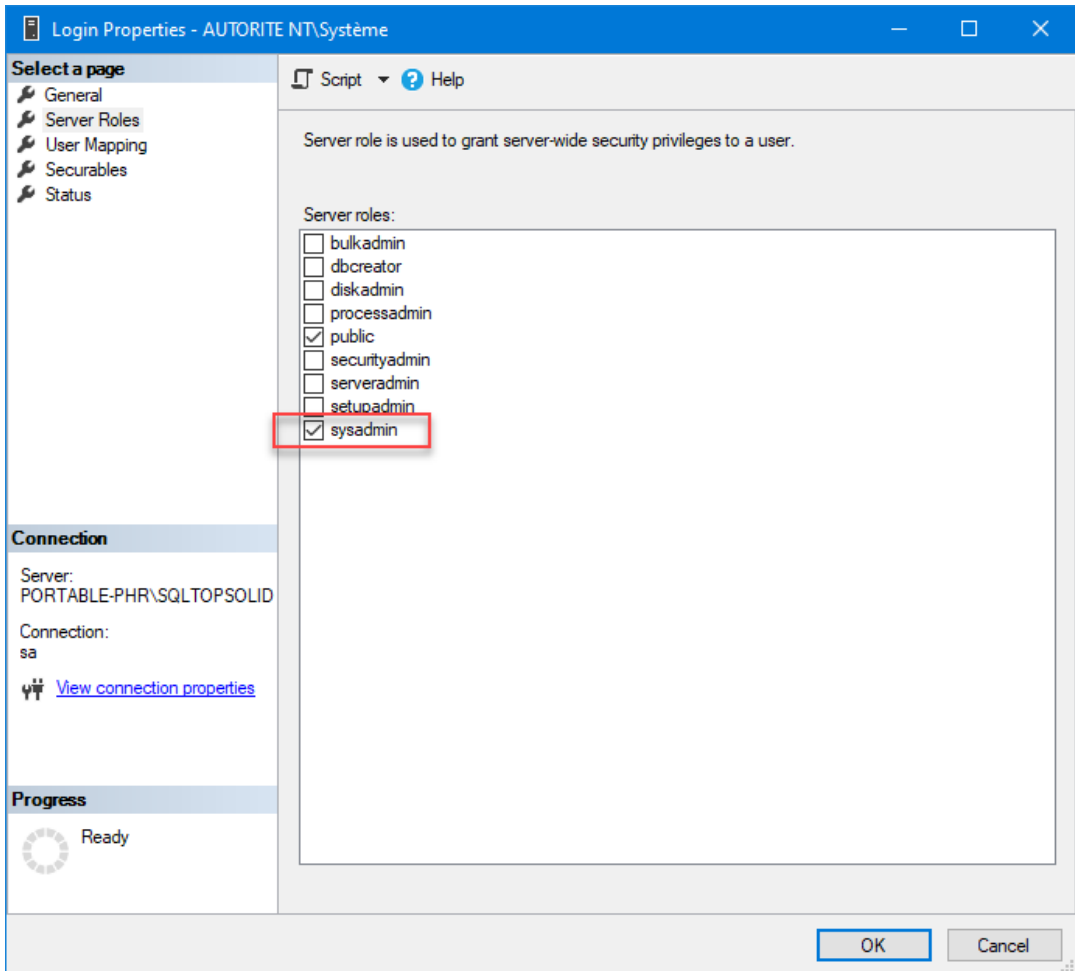
- Check that no firewall is blocking:
 - o TCP/IP communications on port 1433.
 - o ICMPV4 communications to ensure TCP/IP error management.
 - o Private Network type communications that are required for a VPN.
- The VPN tunnel must allow two-way communication between the primary SQL server and the secondary SQL server. With some VPNs such as OpenVPN, if the secondary SQL server is a client of a VPN server installed on a server at the primary site that is different from the primary SQL server, it is likely that the secondary SQL server can ping the primary SQL server, but not the other way around. It is then necessary to install a VPN server directly on the primary SQL server to allow two-way communication between the two servers.
- Communication via port 1433 is from the primary PDM server to the secondary PDM servers. You must therefore open port 1433 (TCP) as the output on the primary server and as the input on the secondary servers.

The first start of the secondary PDM server must be done with an account with the sysadmin role on the SQL Server instance. Administrator rights are required to create the database. The local system account can be left on the TopSolidPdm Server service, it should be given the sysadmin role in SQL Server Management Studio (Authority NT\System).



Launch SQL Studio management, then in the Security > Logins section, edit Authority NT/ System. In server roles, check "Sysadmin".





Warning: If the replication on the secondary PDM server is stuck on "Create snapshot files". Go to SQL Management Studio on the primary server. On the "Replication" folder run "Run Replication Monitor". If the error displayed on the publication is "Cannot execute as the database principal because the principal "dbo" does not exist, this type of principal cannot be impersonated, or you do not have permission.", then you need to run the script below replacing DatabaseName with the name of your database to replicate.

```
USE DatabaseName
```

```
GO
```

```
EXEC sp_changedbowner 'sa'
```

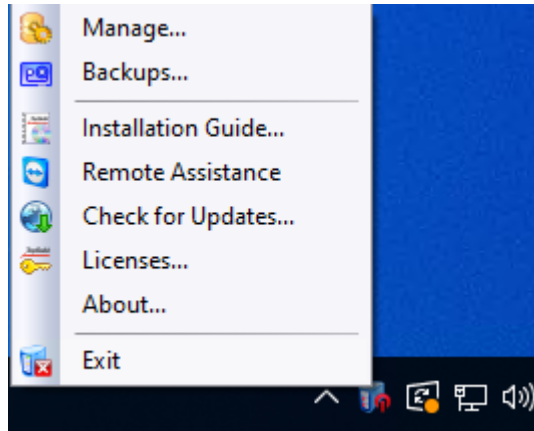
```
GO
```

The "SQL Server Agent" service must be restarted.

Note that the secondary servers must be started the first time with the primary server in sysadmin, otherwise the subscription cannot be created at replication (a message now clearly explains the problem: "The user '{0}' must have sysadmin role on primary PDM server to add a new secondary PDM server.) Subsequently secondary servers can be started/stopped even if the primary server is db_owner.

If a secondary Pdm server is installed later, the primary server will have to be switched back to SysAdmin so that this new secondary server can replicate a first time.

Launch TopSolid'Update to update the installed TopSolid products, start TopSolid'Pdm Server. Add the TopSolid'Pdm Server and TopSolid'Secondary Pdm Server licenses. Right click on the icon and select **Manage**.



Please select:

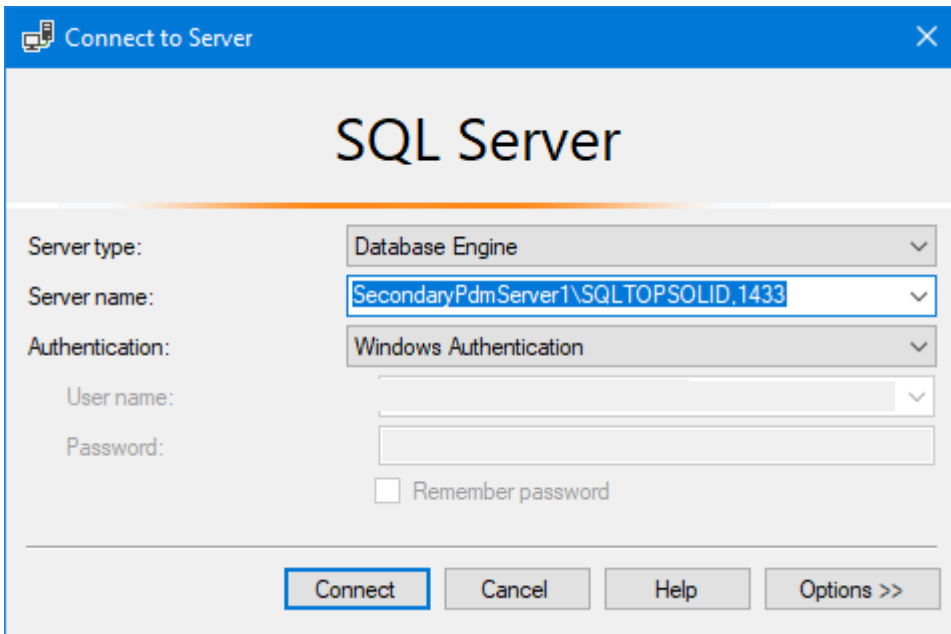
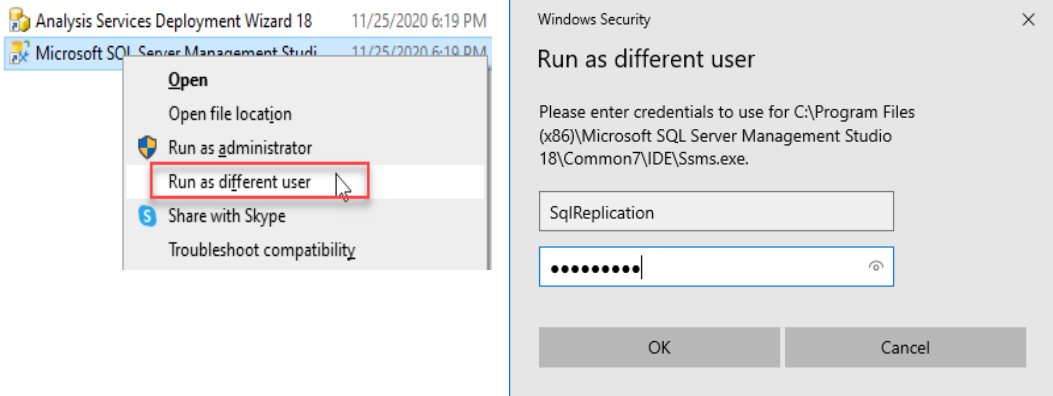
- the execution mode: **Secondary PDM server**
- enter the address of the primary PDM server. (e.g. 192.168.1.1) and its listening port (e.g. 7586) in the red frame below.
- enter the SQL instance to be used for the secondary PDM. (e.g. ServerSecondary\SQLTOPSOLID,1433) in the green frame below. It is necessary to suffix the path with port number 1433. The primary SQL server must be able to access the secondary SQL instance through the network with firewalls. It is necessary to have a static port.

Please note, this connection path has a double use:

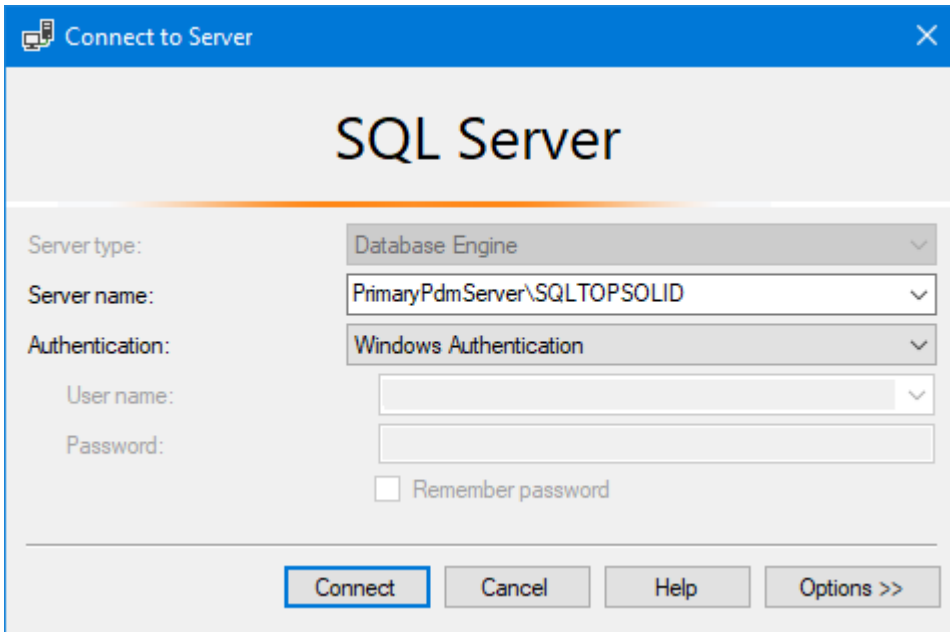
- o The path is used by the primary SQL instance to connect to the secondary SQL instance to perform database replication.
- o The path is also used by the TopSolid'Pdm Server service of the secondary server to read the secondary database.

It is therefore necessary to enter a name or IP address that will be recognized on both the primary and secondary sites. It is advisable to test the response time of the connection path with the SQL Server Management Studio :

- o The best solution to test the communication between the primary and the secondary site is to start the SQL Studio management as a SqlReplication user (Update +Right click on the shortcut -> Run as other user and enter SqlReplication) on the primary, choose "Windows Authentication" and enter the connection information of the secondary instance.

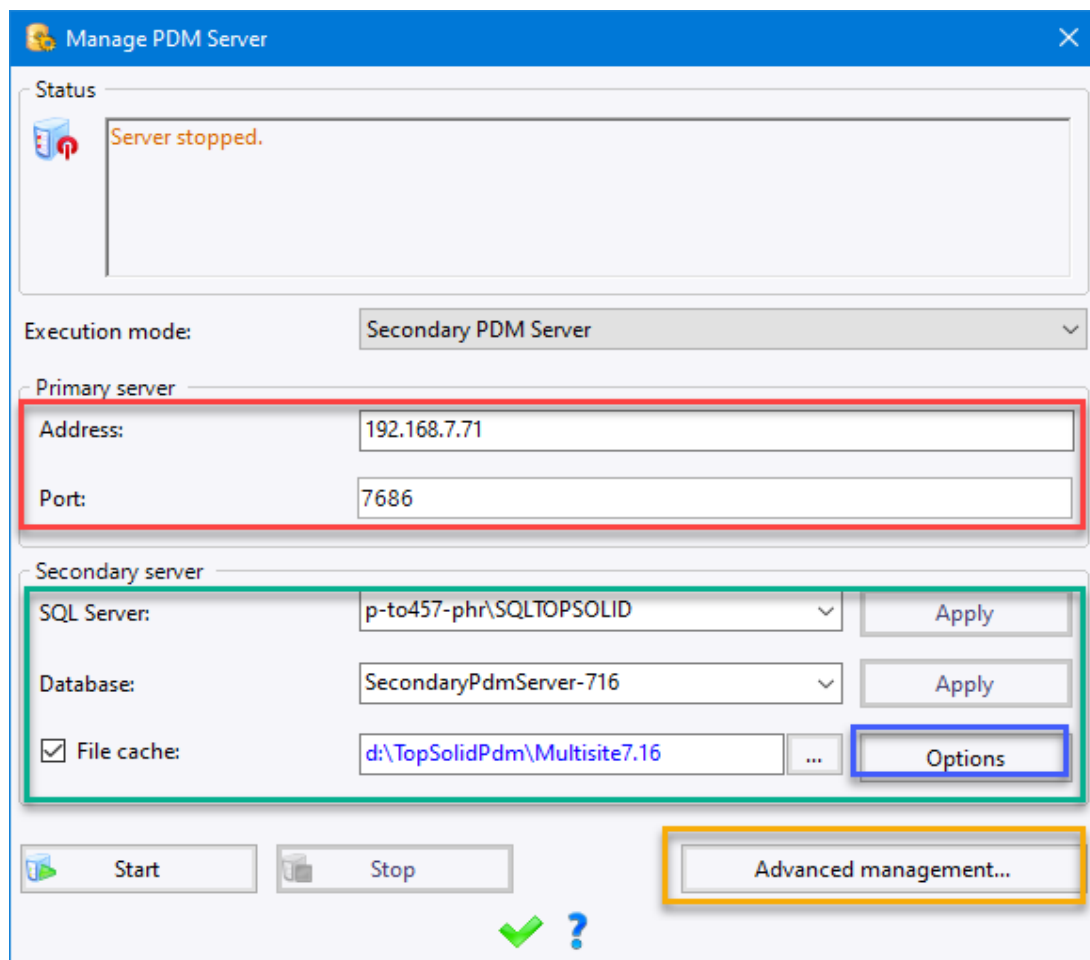


- o From the secondary SQL server, perform the same test with the same Windows account (SqlReplication) by entering the name or IP number of the primary server followed by its SQL instance.

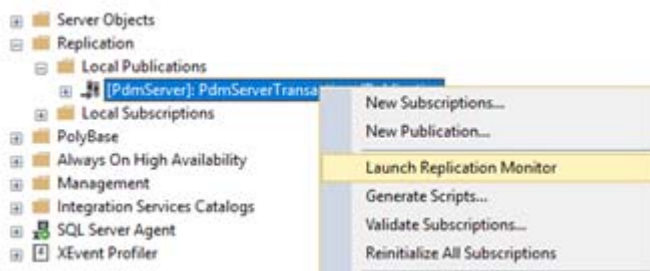


The response time can be long, either because the name resolution is done with a remote DNS server or because the Active Directory takes time to authenticate the Windows account. To improve performance, a solution can be to define a local resolution of the machine name: add its resolution in the hosts file of the primary or secondary server (C:\Windows\System32\drivers\etc\hosts).

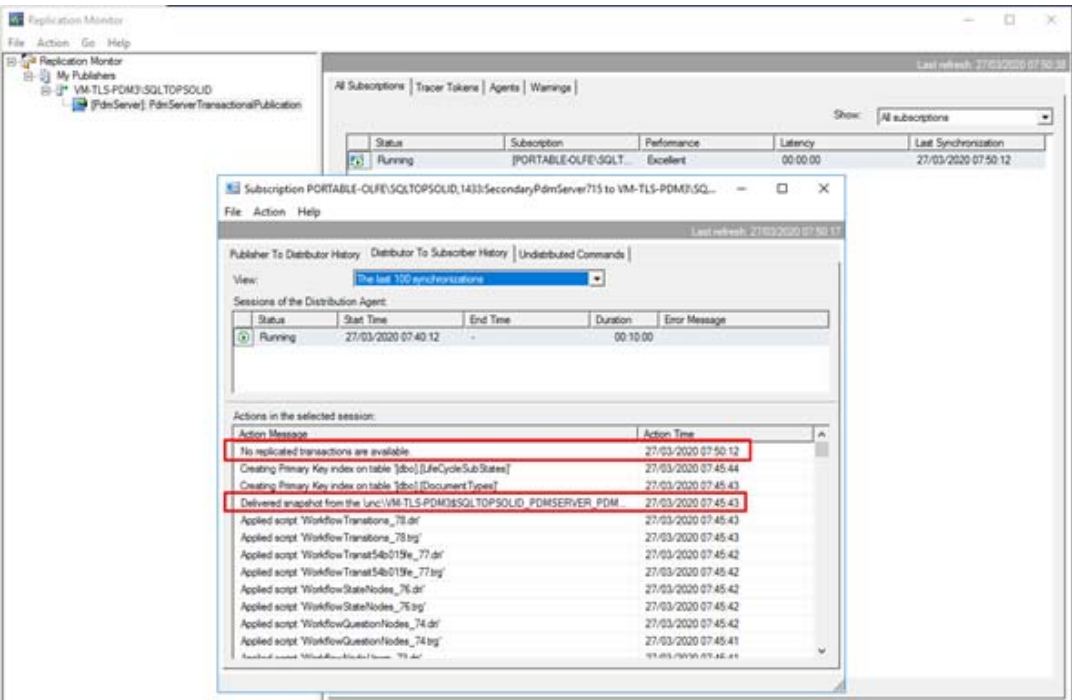
- Enter the name of the secondary database to be created in the green frame below.
- Indicate the folder where the files are stored (in the green frame below). This folder avoids downloading the same files several times from the primary site. Once a TopSolid clients has downloaded a file, the other TopSolid clients retrieve this file locally from this cache. Provide a large storage space for the cache folder, it can eventually contain all the files in the company's vaults.
In the case of a single user on the secondary site (a TopSolid user on the site), please do not check this option. Indeed, if the user works alone on the secondary site, there is no point in storing the files in the cache.
- The «**Options**» button (blue frame below) allows to set up an automatic replication of files from the primary server to the secondary server. Please consult the online help of this option for more information.
- The «**Advanced management**» button (orange frame below) allows to change the secondary server listening port.
- Start to create the replicated secondary database.



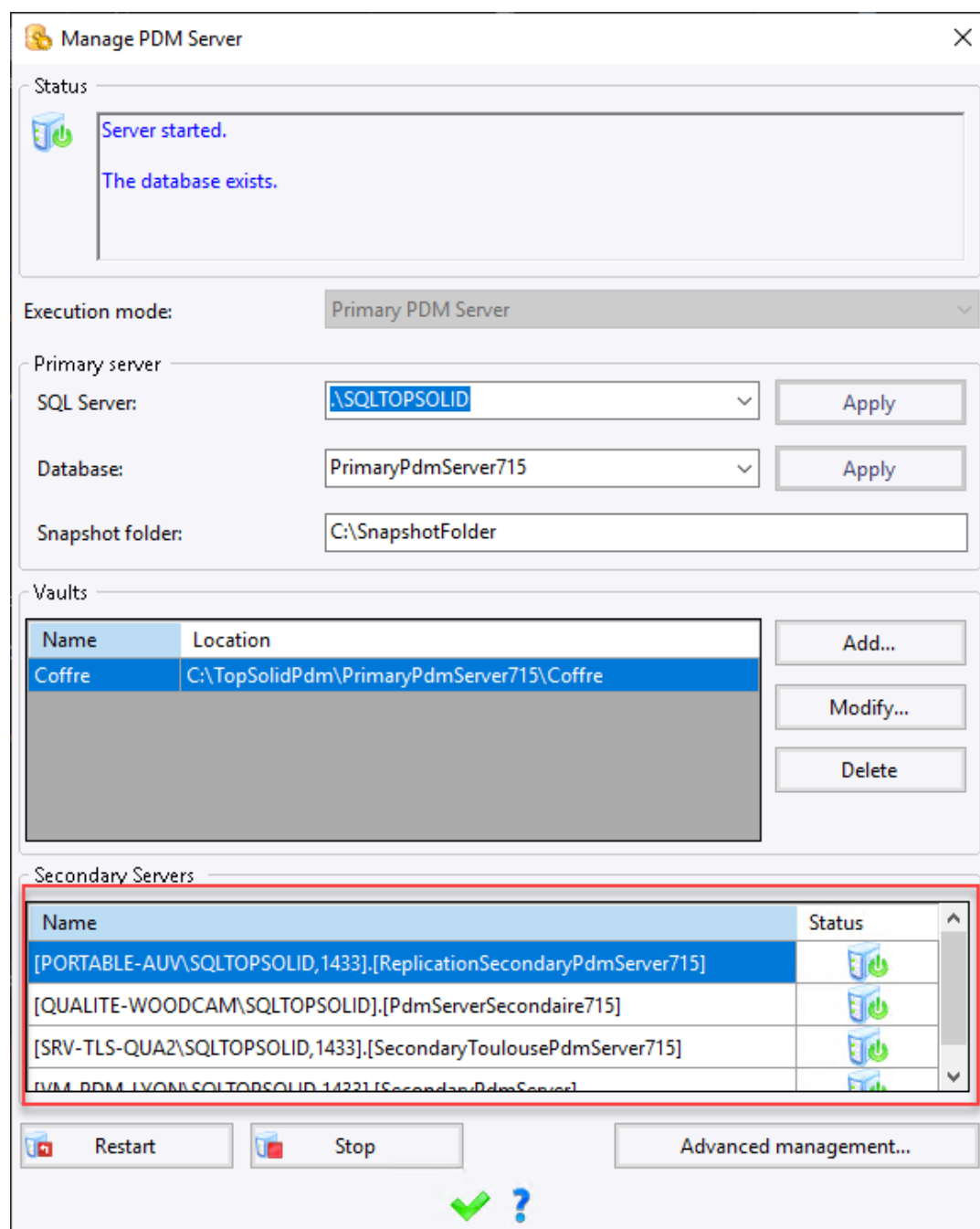
In the primary SQL instance, check the progress of the replication by running a Launch Replication Monitor on the publication:



"Delivered snapshot..." indicates that the snapshot of the primary database was created and replicated on the secondary database to create the initial database. "No replicated transactions available" indicates that there are no more changes to the primary database to be replicated on the secondary database:



From the primary server, the status of the various secondary servers is available in the PDM management tool.



TopSolid Connection

As for connecting to a PDM server, you simply have to fill in the name or IP address of the server to connect to (primary or secondary server depending on the site where you are) as well as the listening port of this server.

Server Connection

Name:
Secondary Pdm server

IP address or computer name:
MySecondaryPdmServerAddress

Workspace folder:
d:\TopSolidPdm\Secondary Pdm server\Workspace ...

Server listening port:
8086

✓ ✗ ?

Users

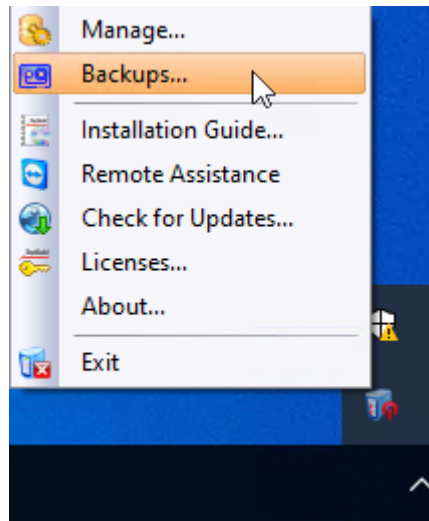
To create users, please see the Users chapter.

Backup procedure

- The backup procedure must be done on another drive (it is strongly advised not to create the backup on another partition of the work drive), or better yet on another computer.
- **For greater security, the backup must be copied to an external medium and should be stored in a safe place which is different from the server (ftp site, web vault, fireproof vault etc.).**
- It includes the database, and the vaults.
- Since the workspace is not centralized, the workspace (which contains all the documents are not in the vault) of each TopSolid client connecting to the primary PDM server or to the secondary servers, must be manually backed up at the same time. This is the same procedure as explained in the "Backing up client workstations" chapter below.
- The backup must be done every day with a rotation over several days (for example, the backup of the 8th day overwrites the backup of the 1st day).
- When the backup is created, it must be tested to make sure that everything is working as it should.
The database and the different directories must be backed up at the same time. It is not advisable to use TopSolid during the backup procedure.

• Primary PDM server:

The backup tool is available by right clicking on the TopSolid'Pdm Server icon.



It allows you to back up the database and the data in the vault, to make full or incremental backups, one-off or scheduled backups. A notification can be sent to the recipients.

Backups

☒ Active planning

Complete

At

☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday
☐ Thursday ☒ Friday ☐ Saturday

Save now

Incremental

At ☐ and

☐ Sunday ☒ Monday ☒ Tuesday ☒ Wednesday
☒ Thursday ☐ Friday ☐ Saturday

Save now

Backups

Location:

Maximum automatic complete backups to keep:

Start Time	End Time	Size	Type
------------	----------	------	------

Notifications

Recipients:

✓ ✗ ?

A network drive cannot be used. You must use a long name (UNC) with the IP or the server name preceded by \\

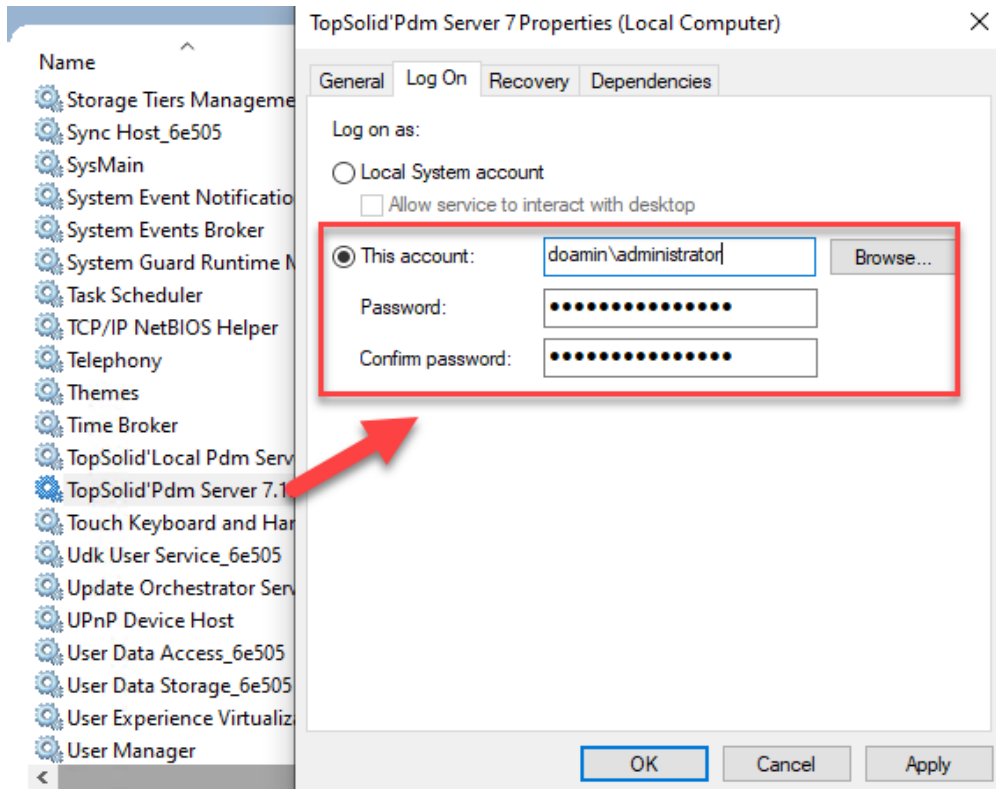
Incremental backup is a backup of changes made since the last incremental or full backup. If the full backup does not exist, it will be created instead of the incremental backup. If a manual backup (explained in the chapter: **Advanced**) was made by script or with Microsoft SQL Studio management, without the "**Copy-only Backup**" option, the next incremental backup could not be done and a full backup would be done instead. Some VM backup tools also reset this information. In this case, the backups are only complete.

Each backup creates a TopBck file as well as a log file. This log file can be sent to recipients, provided that the outgoing mail server had been configured in TopSolid.

To configure the **mail server**, start TopSolid by logging on to Admin. Click on the **TopSolid button**, then **PDM > Configure Mail Server**. Check the online help for this command to get more information.



When using the backup tool, the TopSolid'Pdm Server service manages the backup. As it is recommended to place the backups on another drive or better yet, on another server, make sure that the Windows account that starts the service has write permissions to this shared drive. By default, it is configured as a **Local** account, but this one has no rights on the network. You need to change it to a user with rights, such as the domain administrator. You can do this by right-clicking on the service and selecting **Properties**. Then, changes can be made in the **Log on tab**. This user must also have write permissions in the SQL installation directory, especially if SQL is not installed on the same TopSolid'Pdm server (see chapter Microsoft SQL is on another server than TopSolid'Pdm server).



If the SQL Server and TopSolid'Pdm Server are not installed on the same server :

- On the SQL server, you have to share the path in which SQL saves the databases. This path is by default C:\Program Files\Microsoft SQL Server\MSSQL12.SQLTOP-SOLID\MSSQL\Backup.

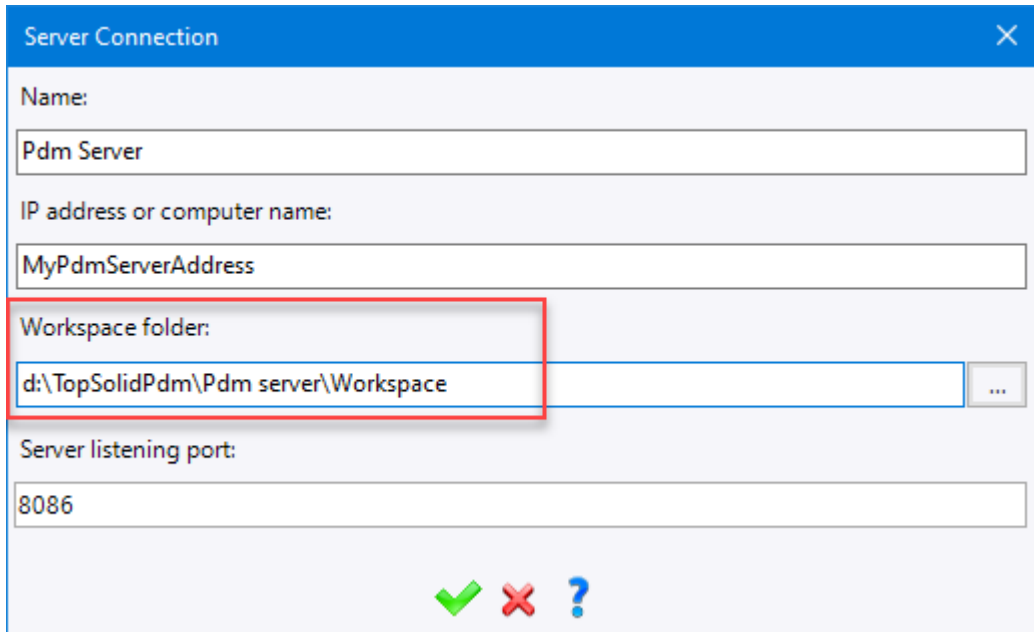
On the TopSolid'Pdm Server, when starting the backup tool, click on the **Advanced Options** button that is offered in this case. Indicate the shared SQL server folder. This same directory must be created manually on this TopSolid'Pdm Server.

If the TopSolid workstations connect to the primary PDM server, their local workspace must also be backed up which contains all the files being edited by the user. The procedure is indicated below.

- Workspace for client workstations and secondary server :

The PDM server backup tool is not available for the secondary PDM server. The secondary database is not very important, in case of a problem, you simply have to delete it and the primary server will replicate it again. On the other hand, the files being modified in the workspace directory of each workstation (primary or secondary site) must be backed up. In addition, since client workstations can be turned off at night, it is advisable to save this folder on a server before shutdown the computer and rename it in order to restore it if necessary. The procedure is the same as that explained in the chapter on page 131.

Data recovery



Server Connection

Name:
Pdm Server

IP address or computer name:
MyPdmServerAddress

Workspace folder:
d:\TopSolidPdm\Pdm server\Workspace

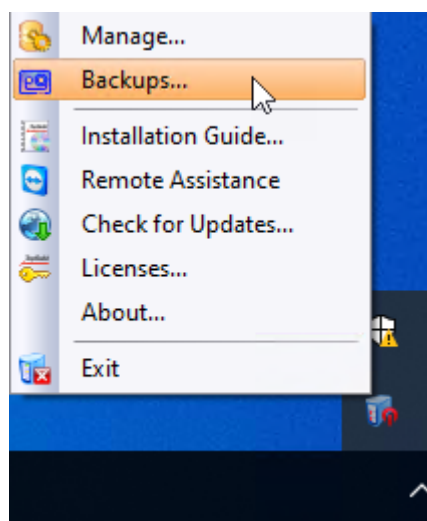
Server listening port:
8086

✓ ✗ ?

In some cases, it is necessary to restore the backed-up data (drive problem, for example). Restoration is never partial; you must always restore all the data (database, vaults and local workspaces of all TopSolid workstations) in order to maintain the consistency of data with respect to the database.

- **Primary PDM server :**

Simply launch the **Backup** command by right clicking on the TopSolid'Pdm Server icon.



The list of backups is available, you simply have to right-click on the one you would like to restore and select the **Restore** command.

Backups

☐ Active planning

Complete

At

☐ Sunday
 ☐ Monday
 ☐ Tuesday
 ☐ Wednesday
 ☐ Thursday
 ☐ Friday
 ☐ Saturday

Save now

Incremental

At ☐ and

☐ Sunday
 ☐ Monday
 ☐ Tuesday
 ☐ Wednesday
 ☐ Thursday
 ☐ Friday
 ☐ Saturday

Save now

Backups

Location:

Maximum automatic complete backups to keep:

	Start Time	End Time	Size	Type
	09/12/2014 14:20:56	09/12/2014 14:31:00	48 MB	Manual Complete
	08/12/2014 16:17:11	08/12/2014 16:17:11	4 GB	Manual Complete

Restore

Delete

Notifications

Recipients:

✓

✗

?

If there are increments to be restored, the intermediate and full increments will also be restored.

Copy the corresponding workspace on each TopSolid workstation.

- **Secondary PDM servers :**

Stop the secondary TopSolidPdm server service.

Copy the corresponding workspace on each TopSolid workstation.

Delete the secondary database from the SQL Studio Management.

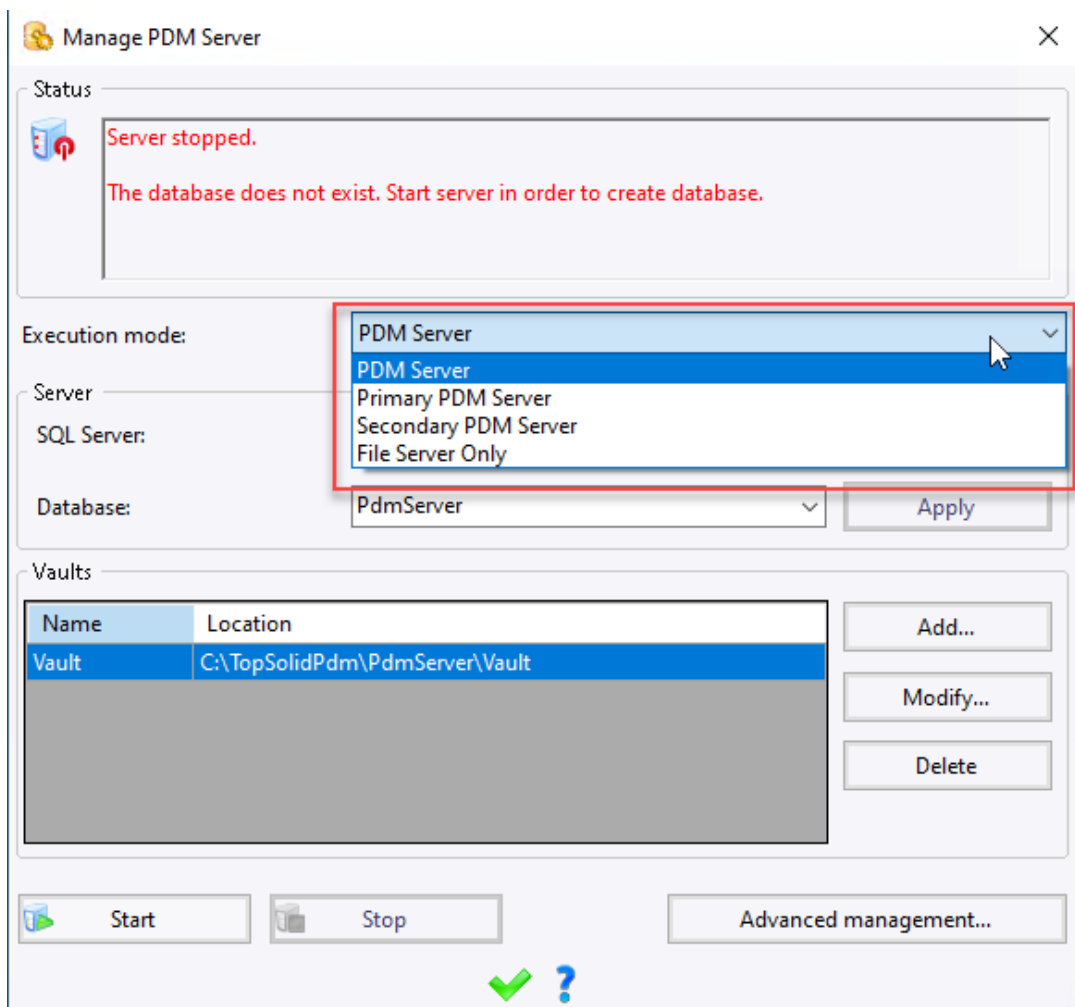
Restart the service.

Conversion between different types of PDM Servers

It is possible to change the execution mode of the current PDM. You simply have to stop the PDM service, choose the execution mode from the list and then restart. It is also possible to return to another mode.

Note 1: It is not possible to convert a secondary base into a primary or PDM server.

Note 2: To convert to a primary PDM server, make sure that the installed SQL version is at least a STANDARD version, that the "Replication" feature is active as described in the "Primary PDM server installation" section above.

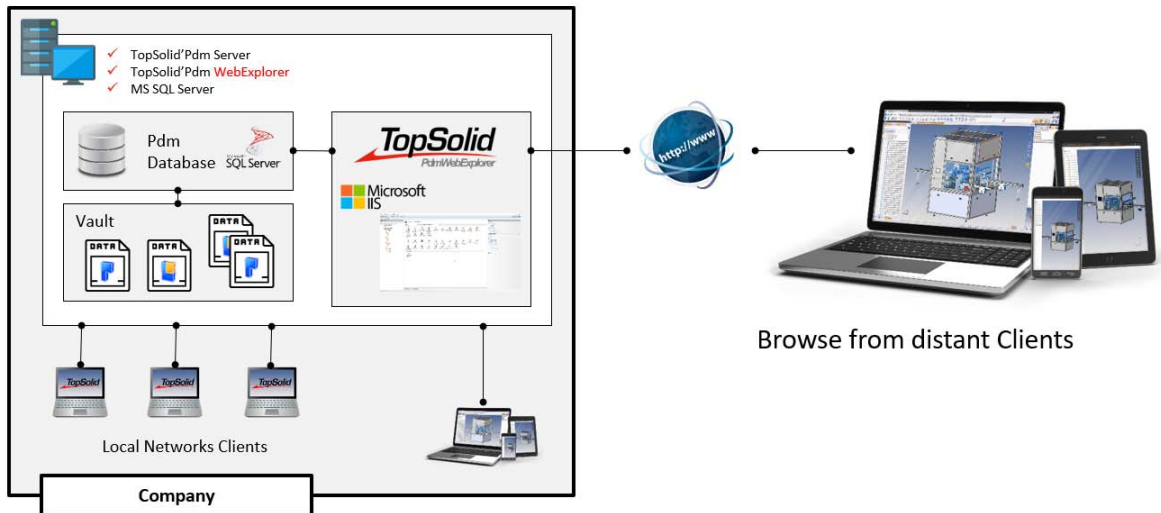


TopSolid'Pdm Web Explorer

Introduction

In order to view TopSolid projects and documents from a simple web browser it is necessary to install and configure TopSolid'Pdm Web Explorer. This application is installed alongside TopSolid'Pdm Server and allows the generation of an IIS web site. This Web site can be consulted on the Intranet or on the Internet depending on the level of visibility required.

Below is an example of a typical TopSolid'Pdm Web Explorer installation:



The only deployment required is on the server side, the client workstations consulting the web site do not require any particular installation.

Prerequisite

- TopSolid'Pdm Server has to be installed and functional with some created users with password.
- A connection (intranet or internet) to the website.
- An up-to-date web browser, depending on the hardware platform used.

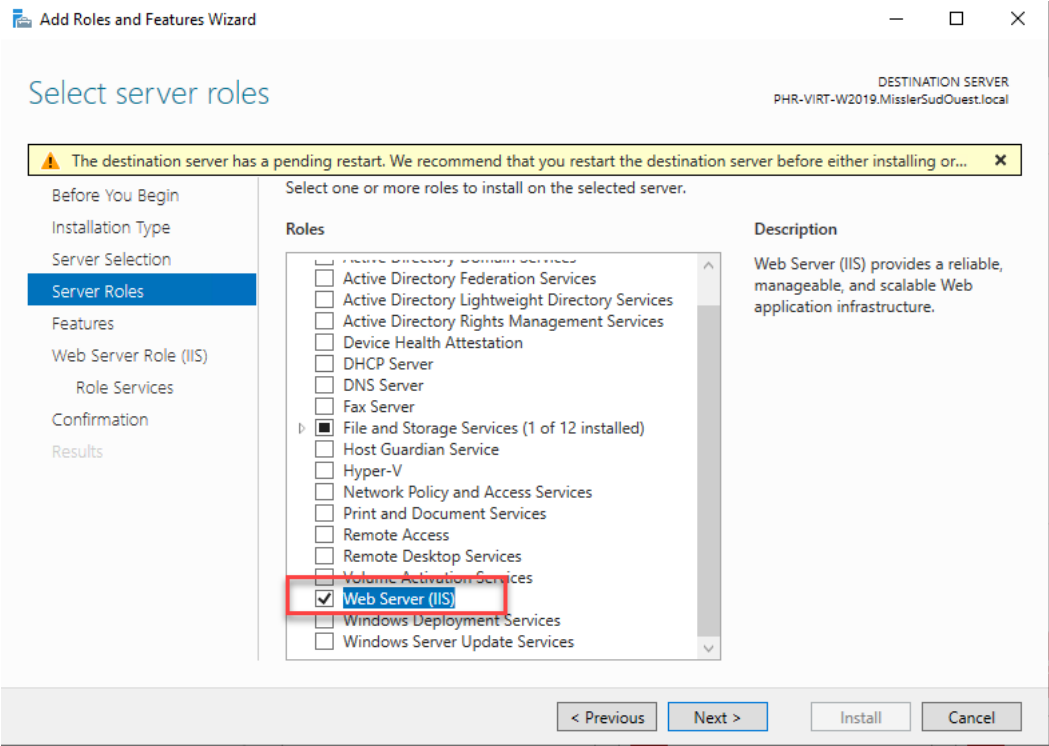
Limitation of the TOPSOLID SAS service

The publication towards the extranet is to be performed by the data-processing department of the company. It is not performed by TOPSOLID SAS nor by one of its resellers.

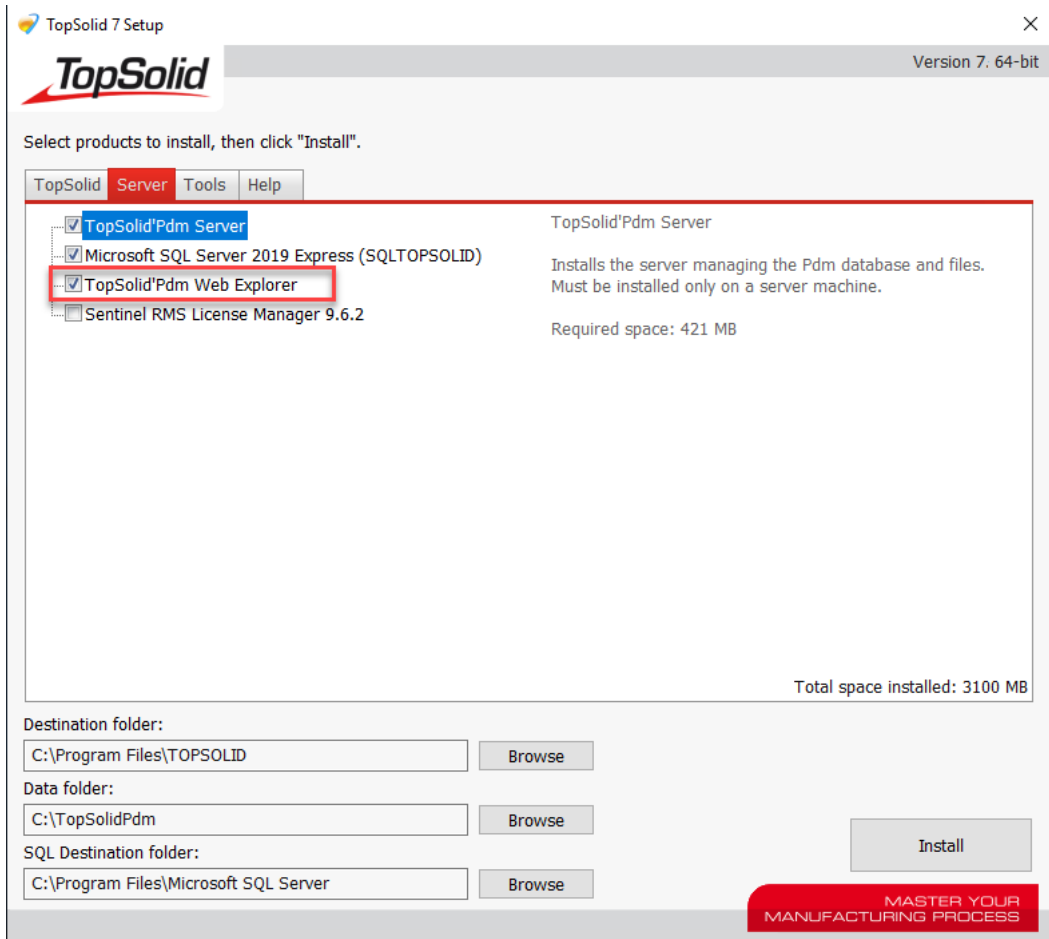
Web Explorer Server installation

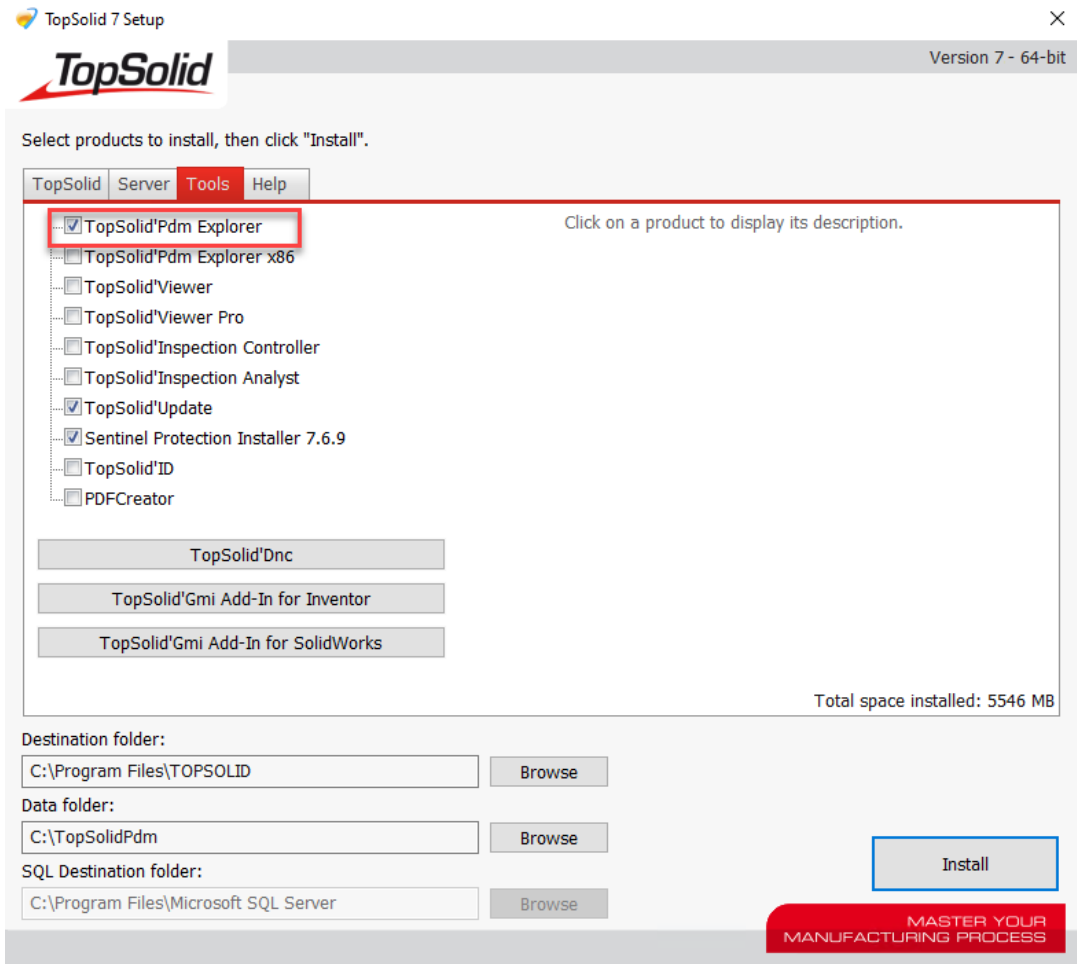
The Microsoft IIS functionality must be activated in order to use the TopSolid'Pdm Web Explorer server.

In the server roles panel, add the role **Web server (IIS)**.



Install TopSolid'Pdm Web Explorer from the setup of TopSolid as well as TopSolid'Pdm Explorer.





Then run TopSolid'Pdm Web Explorer Configuration from the icon of the desktop.

TopSolid'WebExplorer configuration

TopSolid

TopSolid'Pdm Server

Machine name:
MACHINENAME

Server port:
SERVERPORT

☐ Windows authentication

TopSolid'Pdm Explorer

Workspace:
The physical location of the folder that will host the PDM files locally Browse

PdmExplorer location:
##EXEPATH## Browse

TopSolid'Pdm WebExplorer

TopSolid'Pdm WebExplorer URL:

Save Cancel Licenses

Fill in the different fields for a connection to TopSolid'Pdm Server. (PDM server name and listening port). Also enter the 2 directories requested. TopSolid'Pdm Explorer must be installed.

By unchecking "Windows authentication", TopSolid authentication will be used for initialization. This option can be checked or unchecked depending on the PDM settings.

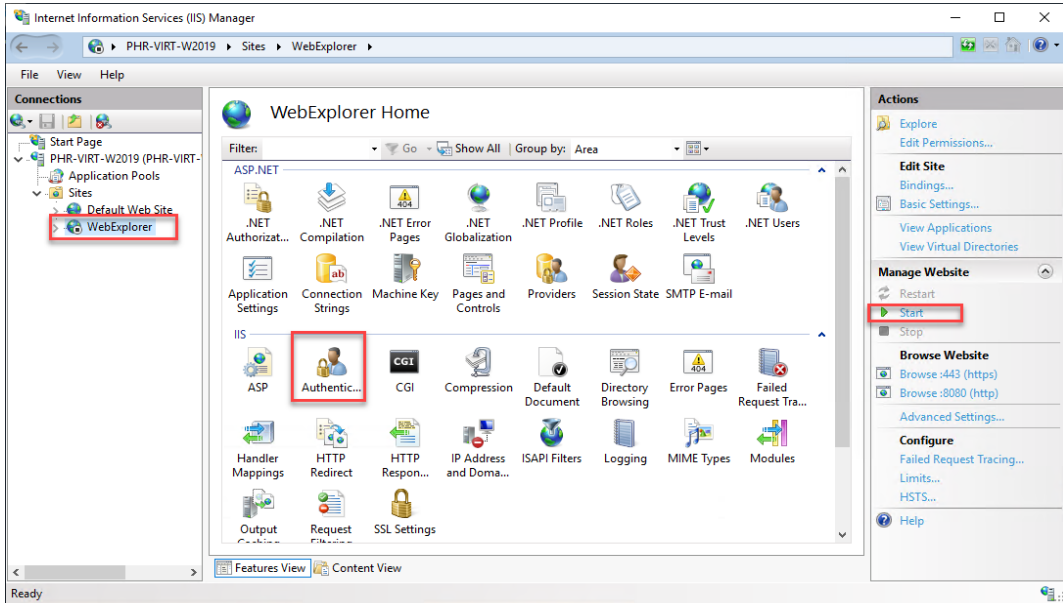
Click on the "Licenses" button to add a license then on the "Save" button.

The field : **Pdm WebExplorer URL** is an optional option that allows to use the "forgotten password" command. For local use, the url is *ip_of_server:8080*

Of course, the outgoing mail server must be configured in TopSolid and each user must have an associated e-mail address.

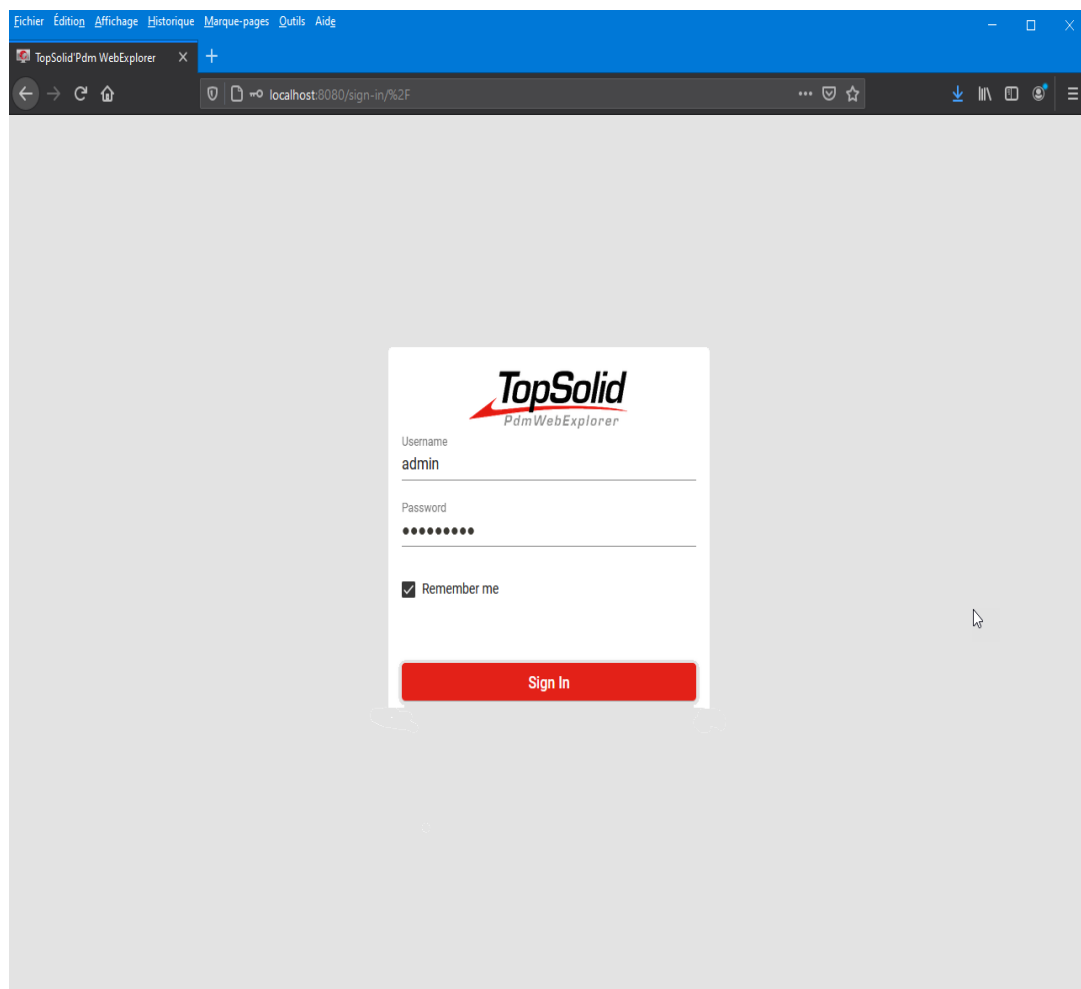
The authentication type can be changed from the Windows IIS Internet Services Manager.

The service must be started.

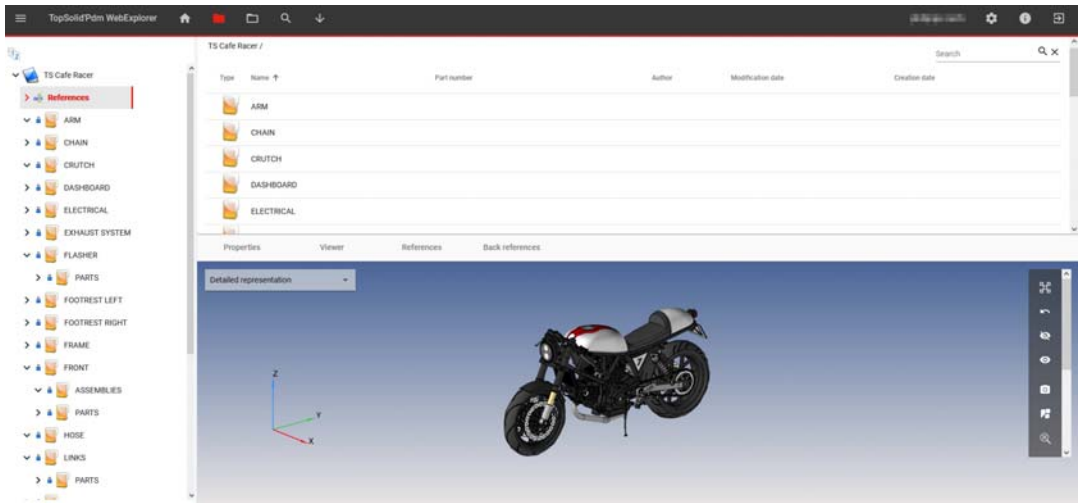


TopSolid'Pdm Web Explorer installation on the client workstation

There is no installation on the client workstations. You just need to use the Internet browser. Enter the address of your TopSolid'Pdm Web Explorer server followed by :8080



Enter your PDM user name and his password and click «**Sign In**».



Advanced

Manual installation of SQL

In some cases Microsoft SQL has been installed on the server by an antivirus or by a commercial software, ... A new SQL instance can be used. This instance will use the same database engine, but will have its own Windows service.

The installation is manually done from the TopSolid media \Setup\redist\SQL Server Express. In the case of the installation of SQL Standard edition (not provided by TOPSOLID or its resellers), the procedure below is the same.

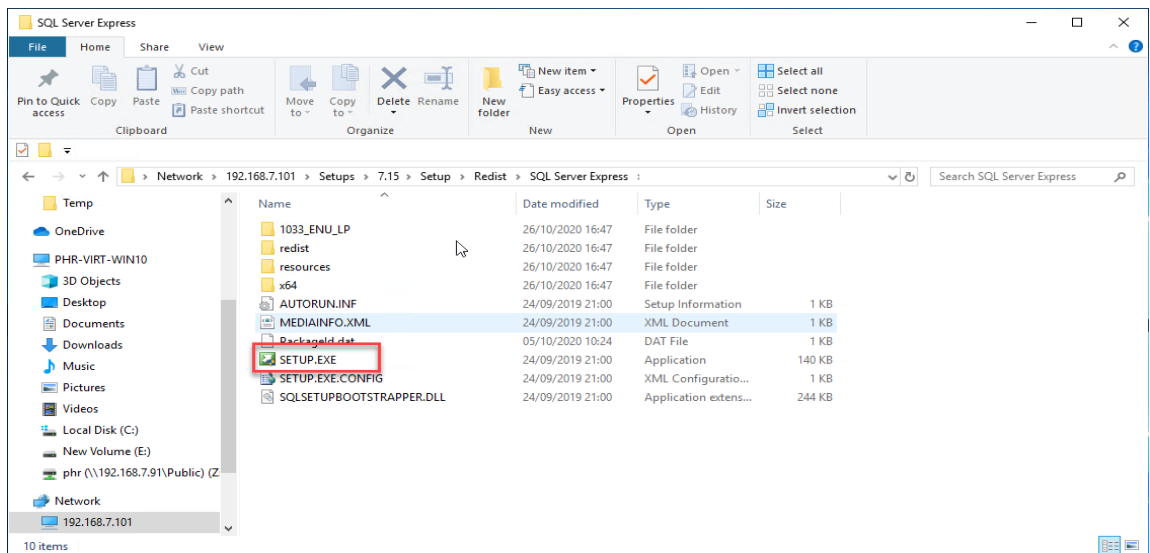
The provided version is SQL 2019 Express.



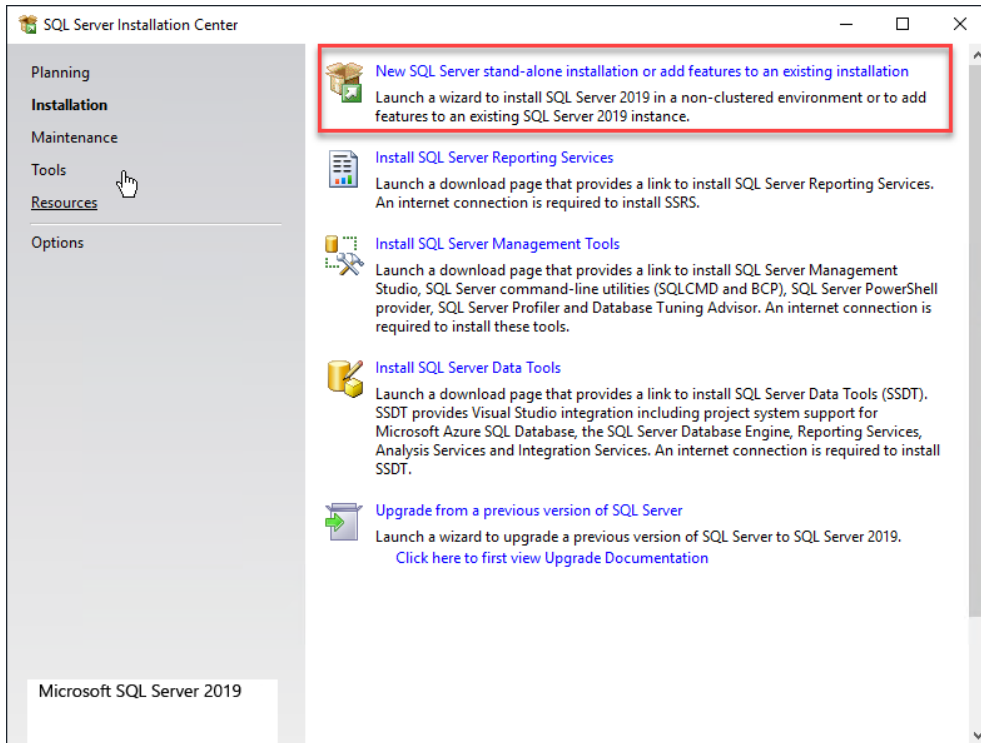
Note : this version is only usable with Windows 10 and since Windows Server 2016. For older versions of Windows server, you have to manually install SQL 2014 Express available on our site ftp://ftp.topsolid.com/Public/TopSolid/Drivers/SQL/en_sql_server_2014_express_with_tools_with_service_pack_2_x64_9009295.exe.

The procedure is explained in this guide, in the chapter «Misc».

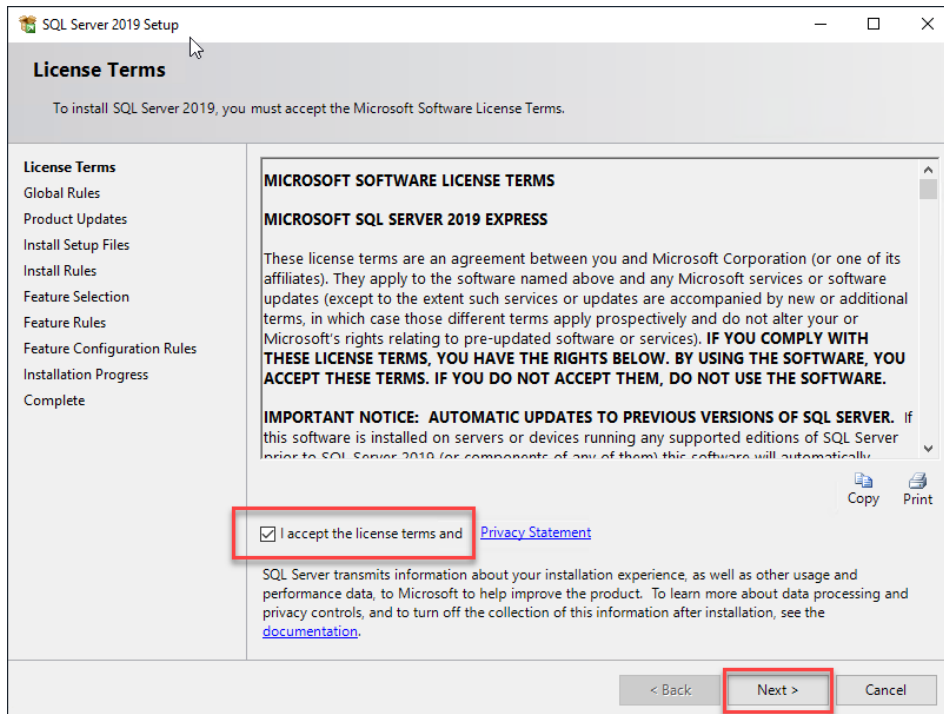
For a migration of TopSolid, if SQL 2014 Express is already installed, you don't need to update it to SQL 2019 Express.



Select **New installation** and click **Next**.

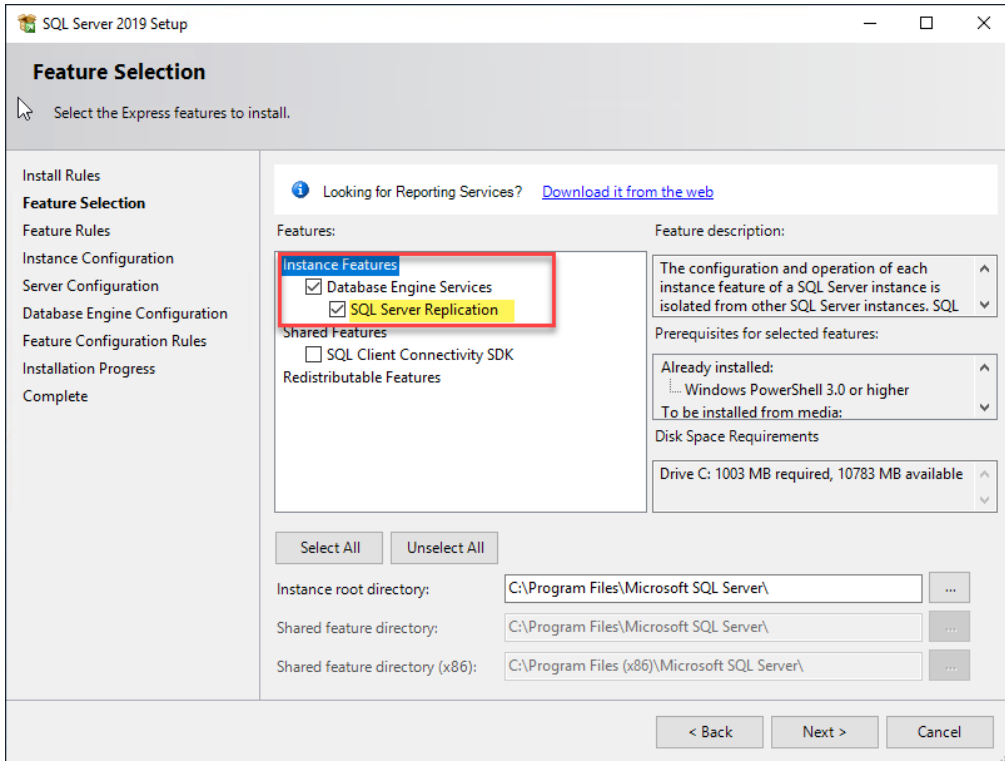


Accept the licence terms and click **Next**.



Check as shown below and click **Next**.

In the case of installing a TopSolid'Pdm Server Multisite (data replication on different sites), the primary server has to be installed with at least a SQL Standard 2014 edition. You also have to check the «SQL Server Replication» feature as highlighted below. (only for the primary one)



Enter an instance name , for example «SQLTOPSOLID» and click **Next**.

If the instance is for a TopSolid usage with a Local Pdm Server, it must be called SQLTOPSOLID.

SQL Server 2019 Setup

Instance Configuration

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

Install Rules
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

☐ Default instance
☒ Named instance:

Instance ID:

SQL Server directory: C:\Program Files\Microsoft SQL Server\MSSQL15.SQLTOPSOLID

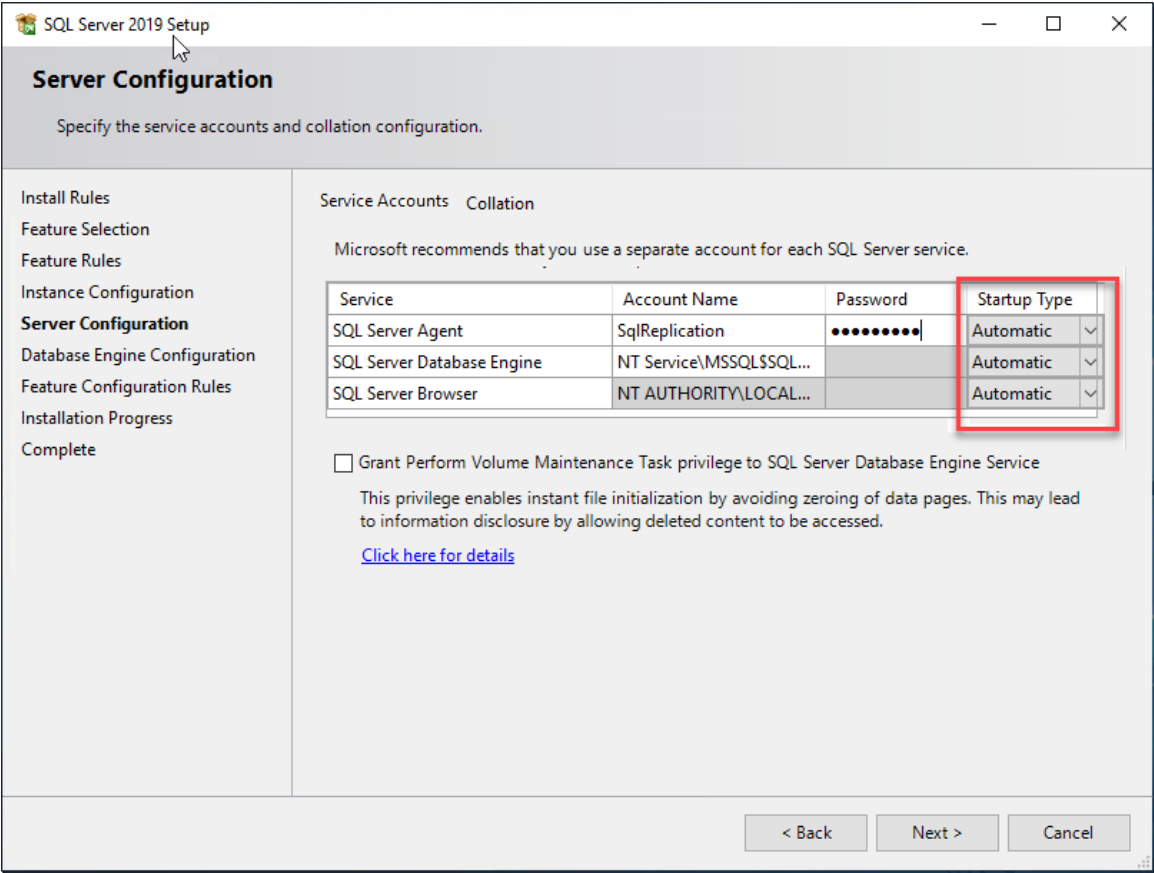
Installed instances:

Instance Name	Instance ID	Features	Edition	Version
---------------	-------------	----------	---------	---------

< Back **Next >** Cancel

The SQL Server Database Engine and SQL Server Browser services must be set as **Automatic**. The SQL Server Agent service does not exist with a SQL Express version. In case of multisite installation (with replication), the SQL Server Agent service has also to be started for the primary server with a local SqlReplication user (see Multi-site chapter for more details).

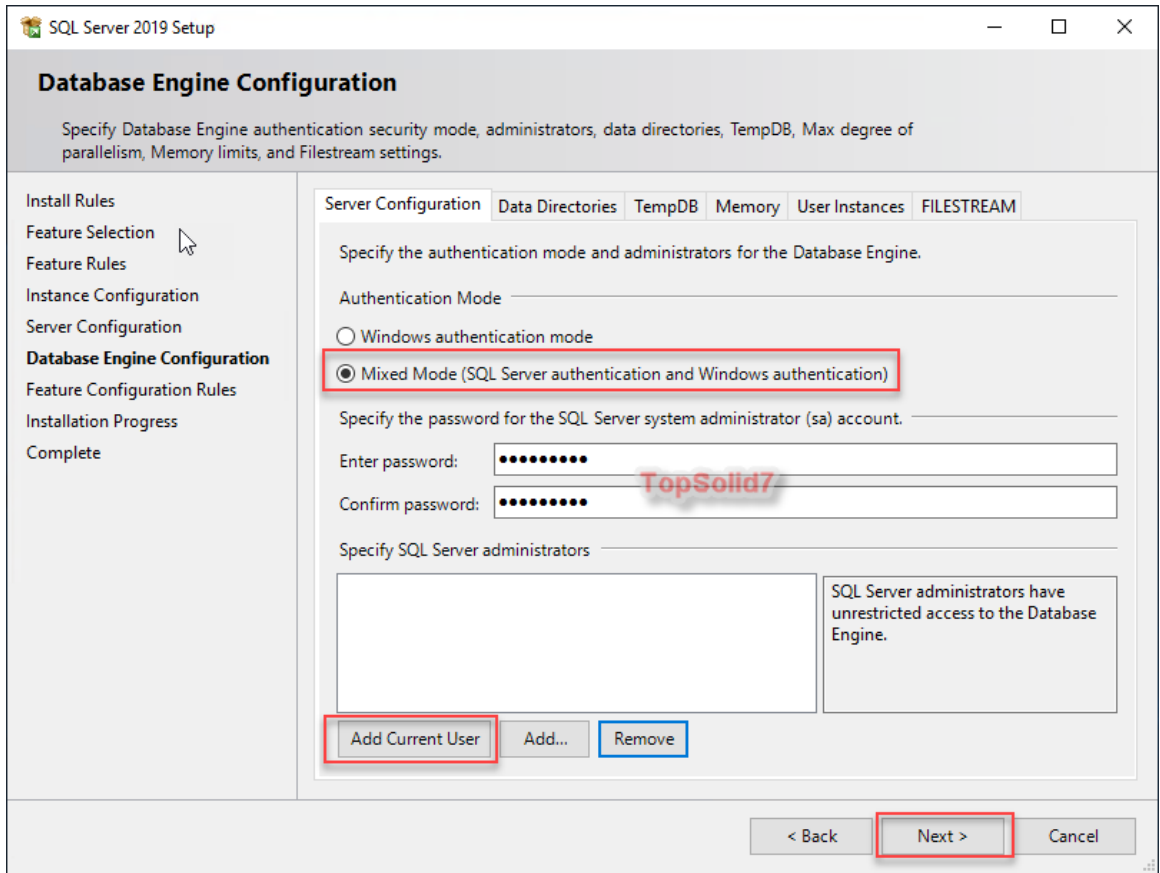
Click **Next**.



Select **Mixed mode**, enter the password **TopSolid7** (it is the password for the TopSolid PDM of the SQL administrator «sa»).

Click **Add current user**. The actual user who installs will be added. This Windows account must be member of a local network domain. He will be used for backups in a shared folder of the network and will allow to avoid creation «jobs» errors if replicating (multisite).

Click **Next**. This user must have rights through the network. He will also be used for the connection of the TopSolid'Pdm service and for the backup through the network.



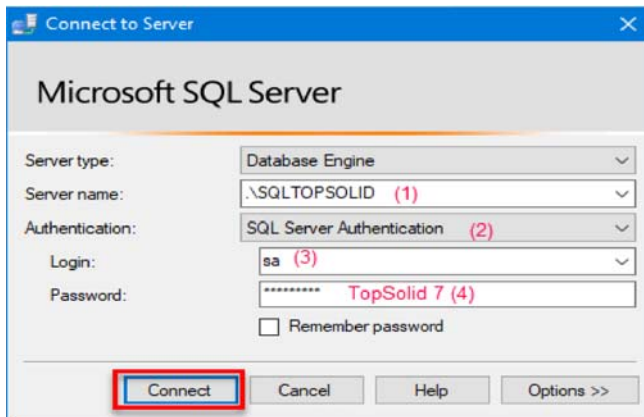
The installation is complete, click **Close**.

SQLSysClrTypes and **SharedManagementObjects** have also to be installed. They are in the **Setup\redist\x64** folder of the media.

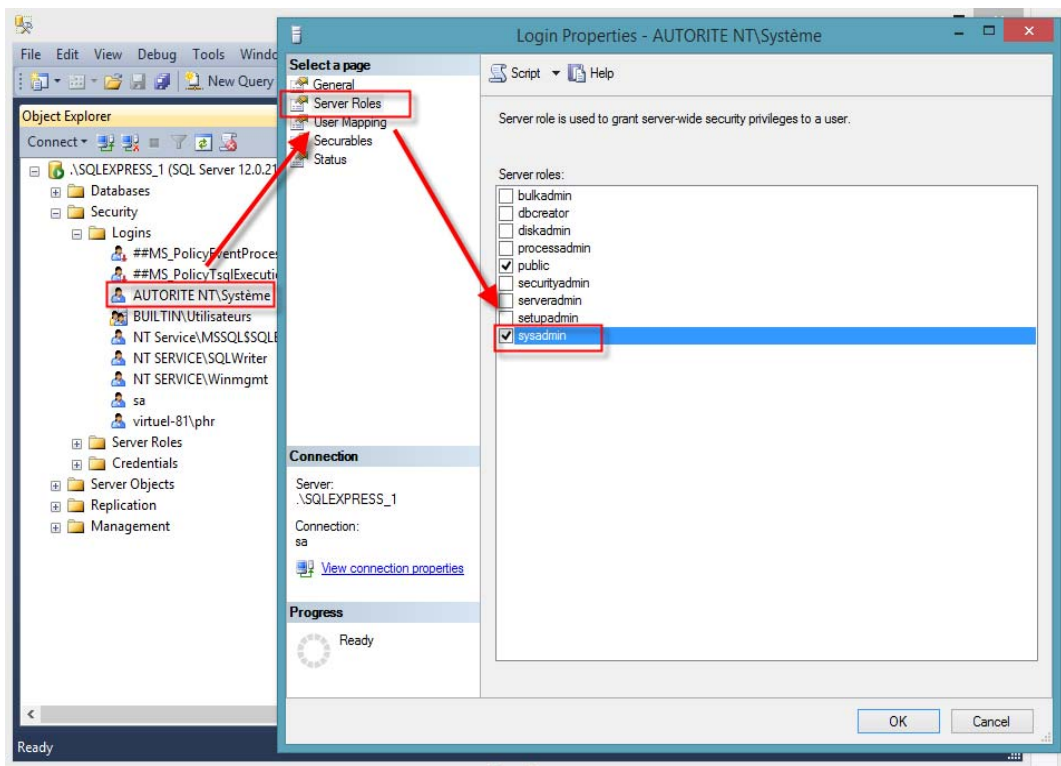
Microsoft SQL Studio Management is needed to be able to access to the SQL properties. To install, double-click on the **SSMS-Setup-ENU.exe** file of the **\Setup\Redist\SQL Server Management Studio** folder of the media.

Now, run Microsoft Studio Management. (Windows Start menu > All programs > Microsoft SQL Server Tools 18).

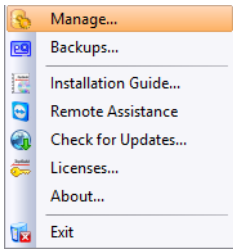
Connect to the server « **.\SQLTOPSOLID** » (1) with SQL server authentication (2), and log in as «sa» (3) with the password : **TopSolid7** (4).



In Security\Logins, double click on NT AUTHORITY\System, then click **Server Roles**, check **Sysadmin** and click **OK**. If he isn't **SysAdmin**, it is not possible de create a new database. This account is used by default by the TopSolid'Pdm Server service. After the first start of the Pdm, the database is created and this role is no longer needed.



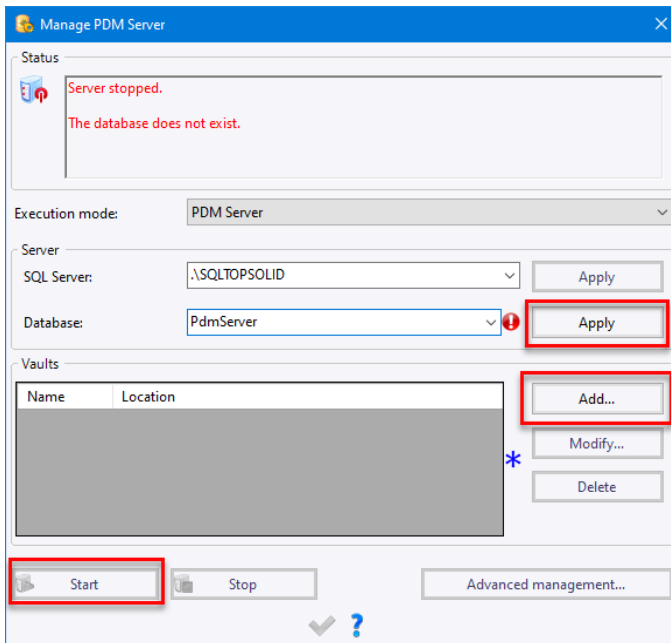
To finish, just configure the TopSolid'Pdm Server (right click on the icon in the task bar).



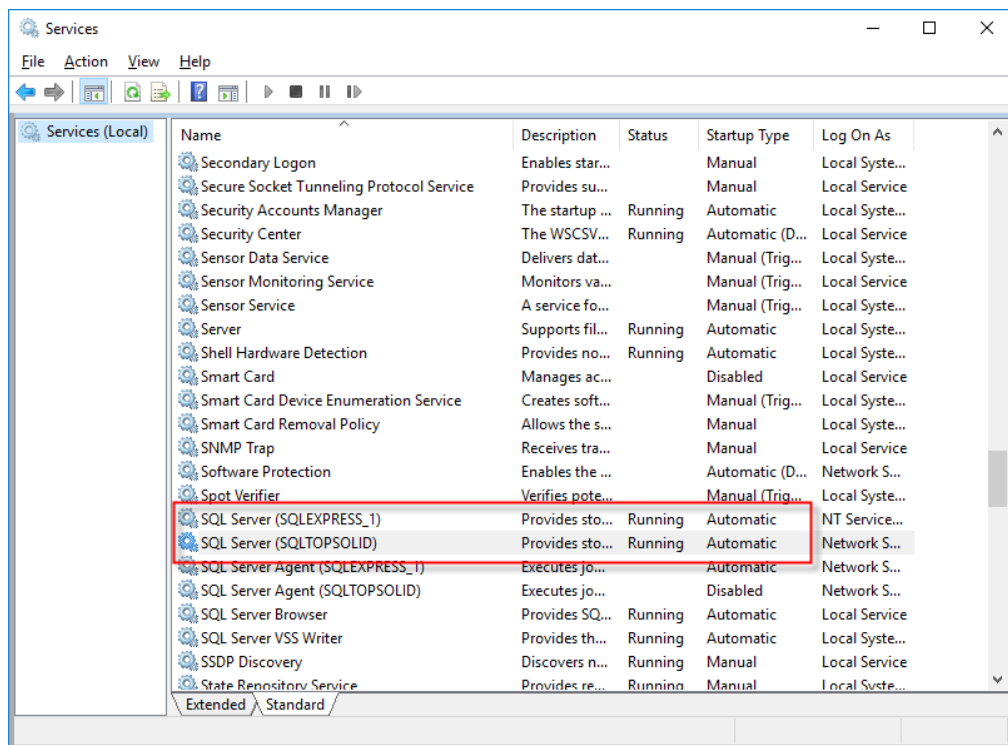
Modify the SQL server field by entering the name of this new instance. You should obtain `.\SQLTOPSOLID`. For your information, the «.» before the «\» means that the SQL server is this server. It can be replaced by its name or its IP address.

The name of the database is PdmServer by default. By clicking the **Apply** button, the database is created when starting for the first time. **It is the only way to create a database.**

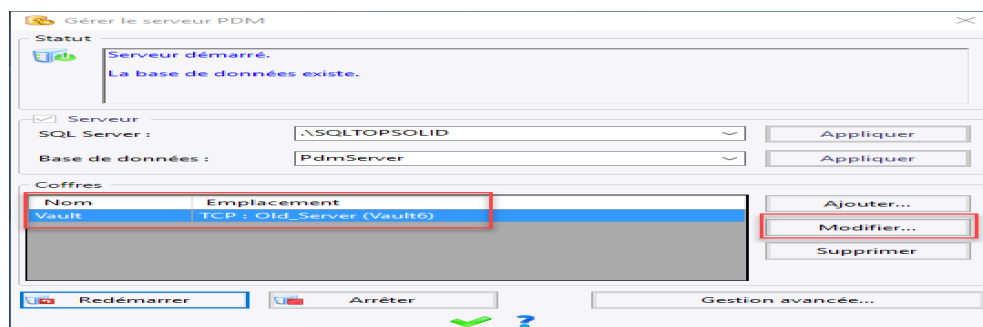
Then **Add** a vault and his path, preferably on a big local disk to avoid performance issues.



There is now a Windows service by SQL instance.



You are now able to connect to one or to the other instance by choosing the server name.



The SQL instance for TopSolidPdm is now ready to be used.

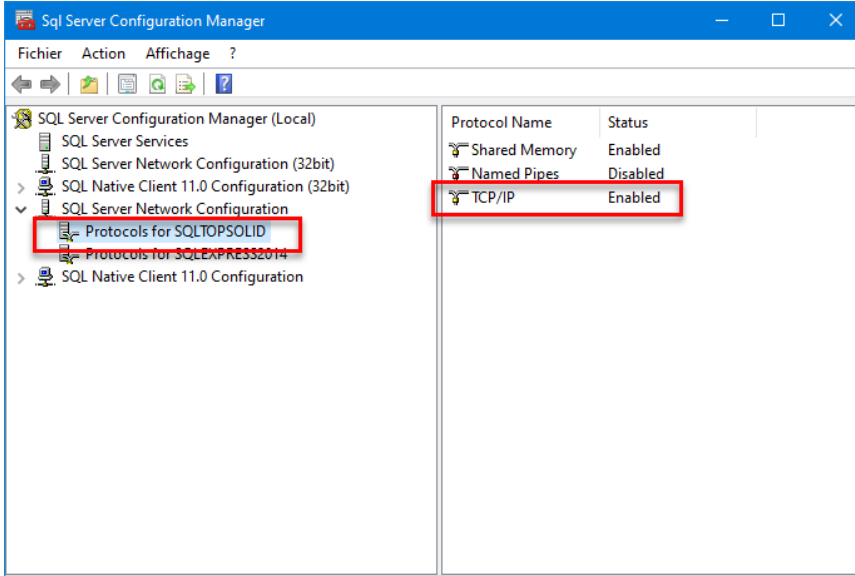
Microsoft SQL Server is on another server than TopSolid'Pdm Server

On some sites, the SQL server can be installed on another server than TopSolid'Pdm Server. In this case, some manipulations have to be done to allow the 2 servers to communicate together. (database creation, connection, ...).

- On the SQL server:

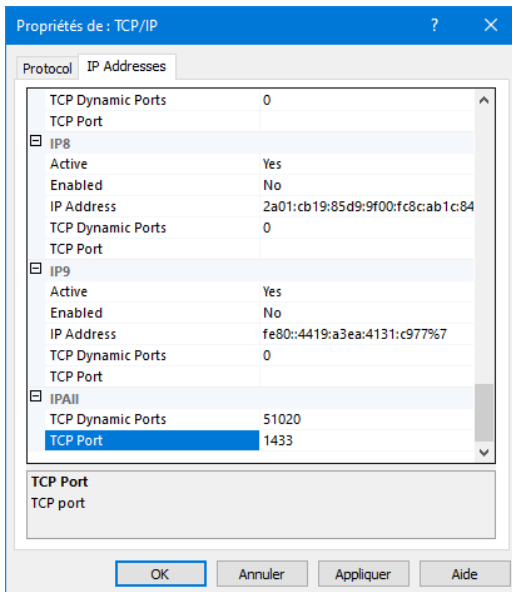
After having installed SQL Server, run the **Start > Microsoft SQL server 2019 > Configuration Tools > SQL Server Configuration Management** command. If it is not found in the Windows start menu, this console is available in the C:\Windows\SysWOW64 folder. It is called SQLServerManager15.msc or higher.

Enable the TCP/IP protocol for SQLTOPSOLID.

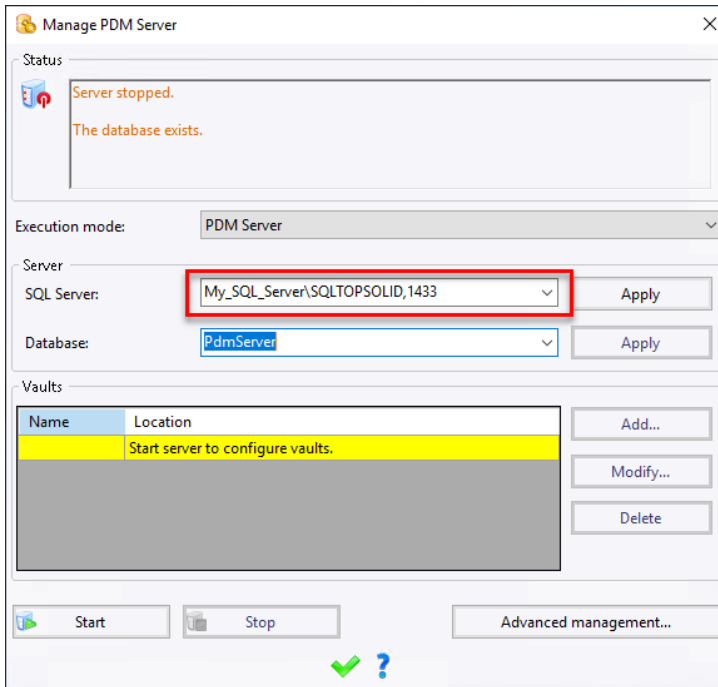


The listening port can be changed (1433 by default).

To modify this port, go into the IPAll field of the properties of the SQLTOPSOLID instance TCP/IP protocol.



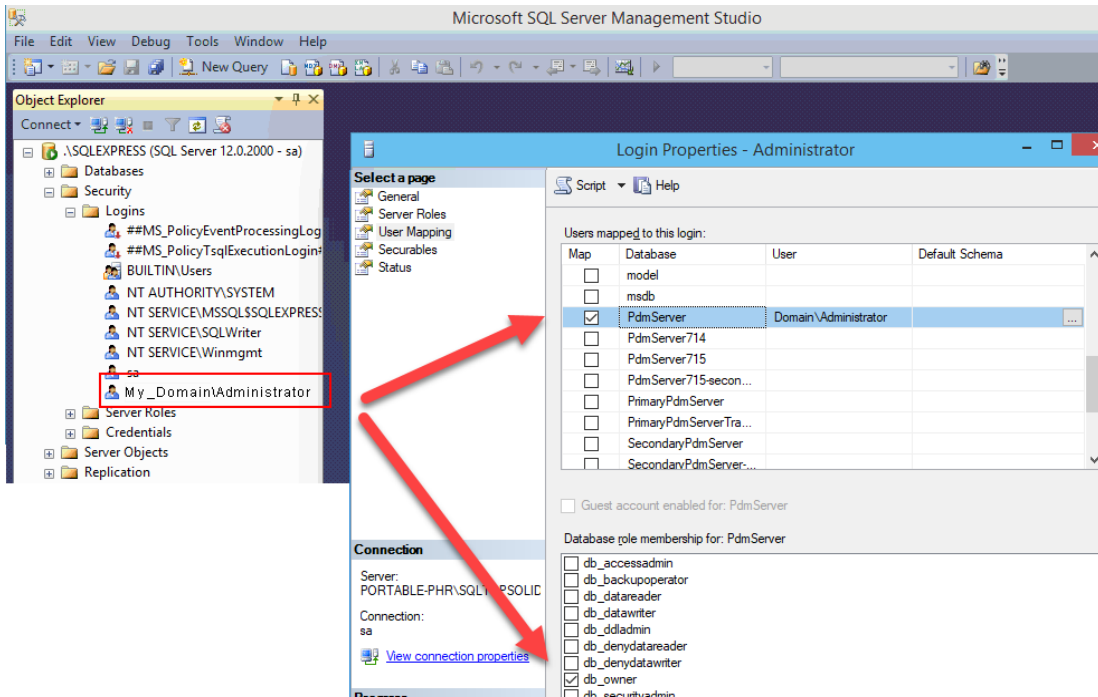
To test, run TopSolid'Pdm Server and connect with the SQL Server instance followed by a comma and the port. For example: My_SQL_Server_instance\SQLTOPSOLID,1433



It is recommended to follow Microsoft's [website](#) to configure the firewall.

Run the **Start > Microsoft SQL Server Tools 2019 > Microsoft SQL server Management Studio** command. In the **Security > Logins** folder, the Windows logged user must be listed. (Generally, it is the domain administrator who has made the installation). During the installation and for the database creation, he has to have the **SysAdmin** server role. After the database creation, this user can be demoted to **bd_owner** of the PdmServer database. If you don't want to use our backups tool, he can have only the **db_datareader + db_datawriter** roles.

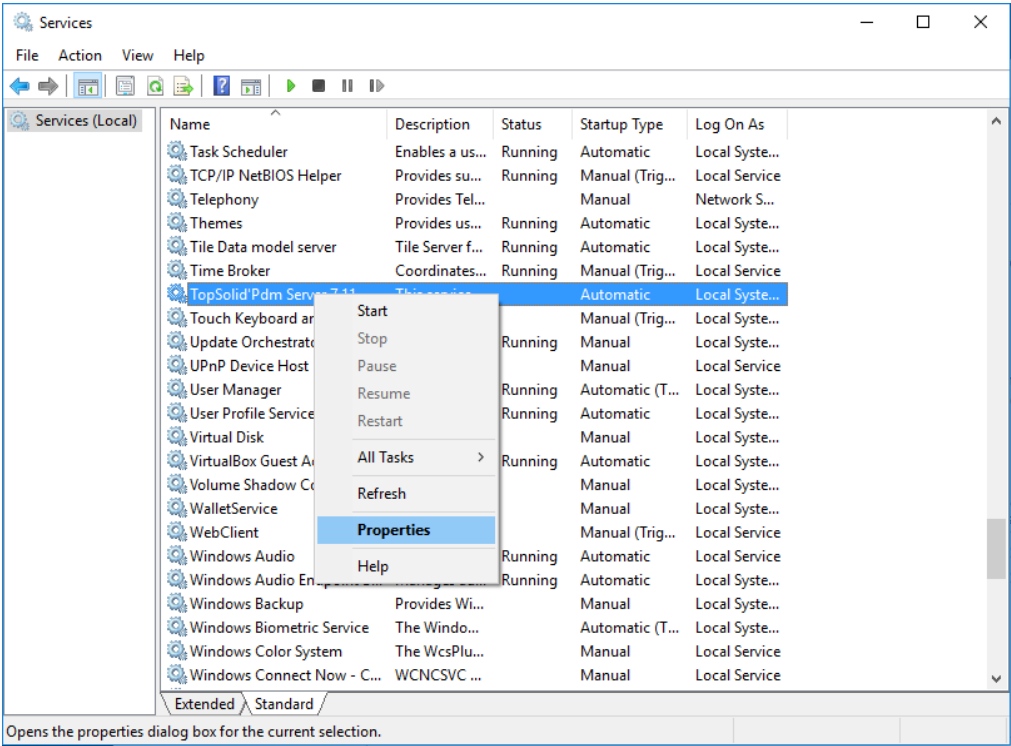
He will also be the TopSolid'Pdm Server service's owner. He must be known in the domain, and have the executing and writing rights in the vault folders.



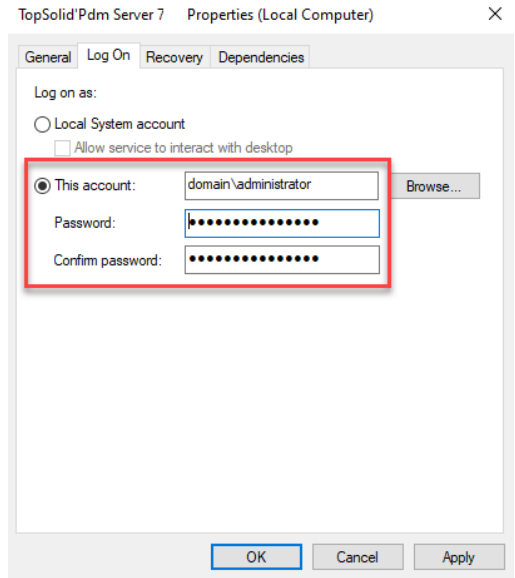
Share the backups folder of SQL. By default it is C:\Program Files\Microsoft SQL Server\MSSQL15.SQLTOPSOLID\MSSQL\DATA\Backup.

- On the TopSolid'Pdm Server :

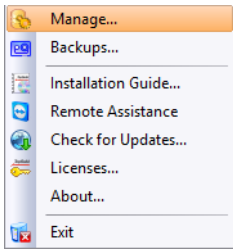
Edit the TopSolid'Pdm Server service, and modify its properties.



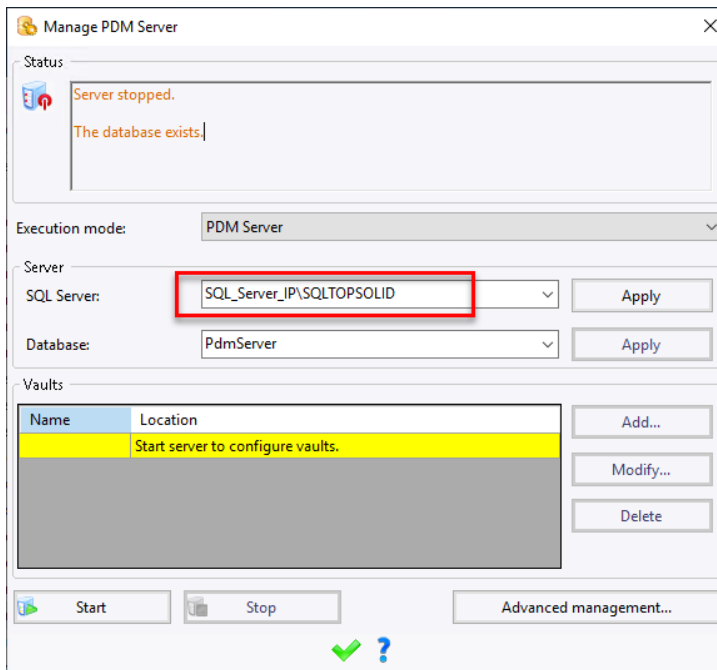
In the **Log on** tab, check «**This Account**» and enter the user of the SQL server as well as his password (Generally, he is the domain administrator).



Right click the icon near the Windows clock and use the **Manage** command.



Enter the SQL server name or its IP as well as the new instance, then click **Apply**. It can also be searched by clicking the SQL Server field --> **Browse...**



Check the database's name and the vault's location. You can now start the TopSolid'Pdm Server service.

To be able to use the TopSolid backup, Start the backup tool and click the **Advanced options** button. Search the folder previously shared on the SQL Server.

Backups

Active planning

Complete

At

22:00:00

☐ Sunday

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☒ Friday

☐ Saturday

Save now

Incremental

At

22:00:00

☐ and

12:00:00

☐ Sunday

☒ Monday

☒ Tuesday

☒ Wednesday

☒ Thursday

☐ Friday

☐ Saturday

Save now

Backups

Location:

C:\backup

Maximum automatic complete backups to keep:

4

Start Time	End Time	Size	Type
------------	----------	------	------

Advanced Options

Notifications

Recipients:

This TopSolid'Pdm Server service owner defined upper must have writing rights on this shared folder.

Transfer to another Server

Before this kind of operation, be sure that a complete backup has been done as explained in the **Server > Automatic backup** chapter.

When changing machines, you must transfer backed-up data from the previous server to the new one. This is somewhat similar to an automatic restoration (explained upper). You must first install the adequate Microsoft SQL Server version and the TopSolid'Pdm Server on the new server.

136

TOPSOLID SAS

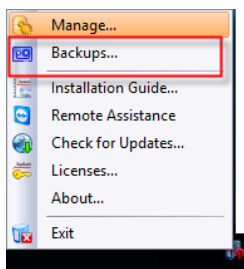
The SQL version of the new server must be at least the same than the SQL version of the old server.

Caution: The migration of a previous version of TopSolid'Pdm Server to the version 7.16 during the transfer is only possible if the previous version is at least the 7.14. With versions before 7.14, the backup hasn't the needed information for these operations.

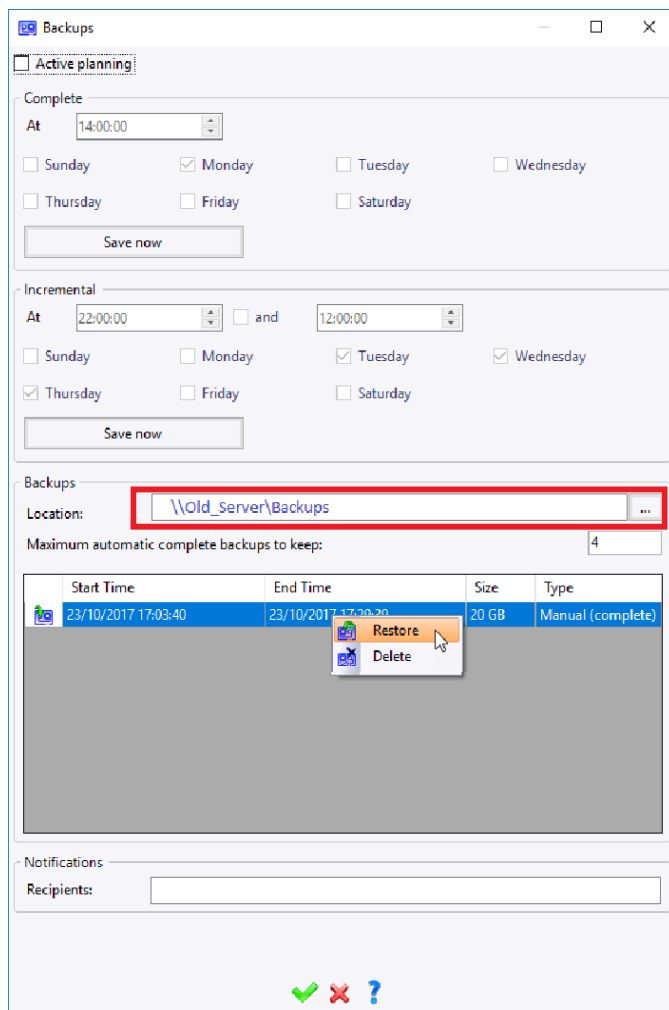
You have to either migrate in 7.15 the old server then transfer or either transfer to the new server with the same version before migrating to 7.16.

Before starting the TopSolid'Pdm Server on the new server, don't forget to run TopSolid'Update to patch.

Double-click the TopSolid'Pdm Server Admin icon to have it near the Windows clock. Use the **Backups** contextual command.

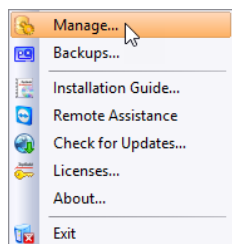


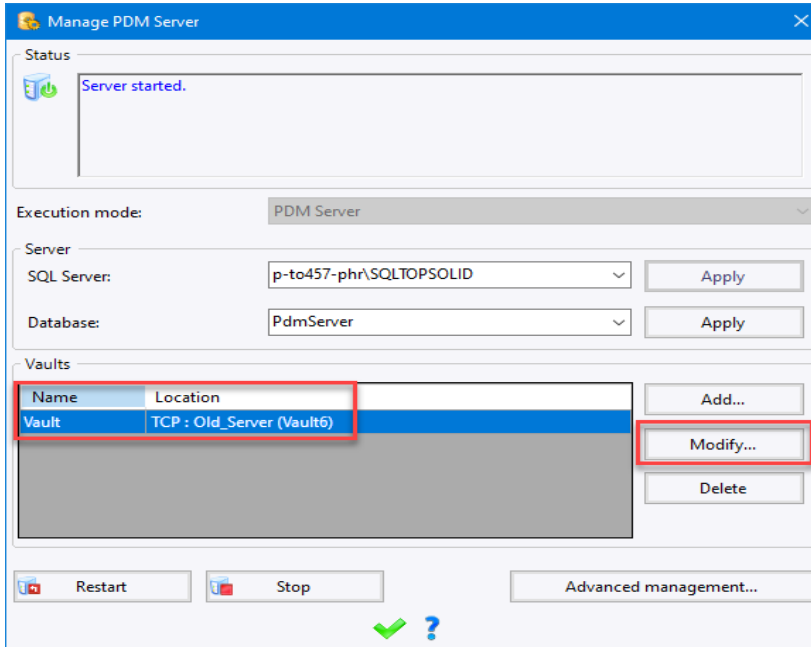
Change the backups path and redirect it to the same folder than the old server where are the TopBck files.



Right click on the backup and **Restore** it.

When the restoration has succeeded, use the **Manage** contextual command and modify if needed the path of the vault.





Start the TopSolid'Pdm Server.

- On all client PCs, start TopSolid, modify the name or the IP address of the server in the connection settings (TopSolid button > Pdm > Connection > Configure server connections and modify the connection).

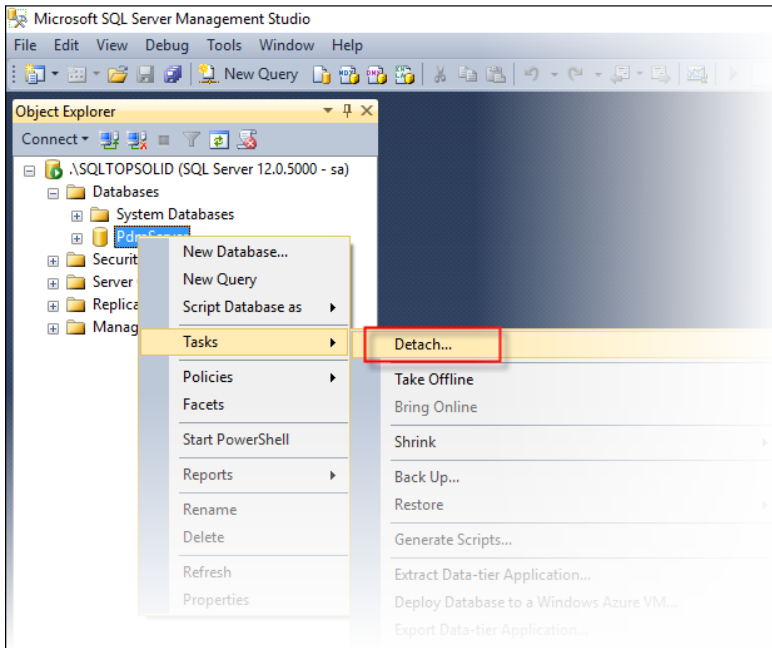
Database Displacement

Before displacement, be sure that a complete backup has been done as explained in the chapter : **Server > Automatic backup.**

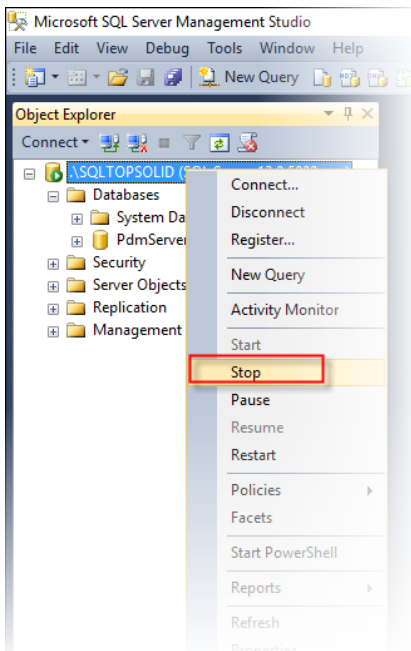
The databases are installed by default in the Microsoft SQL server installation folder which is generally in C:\program Files\ For various reasons (disk space, split of programs and data on separate partitions, ...), it is possible to move the database on another local disk. Before each operation on the database, you have to backup it.

The SQL database is made up of two files named *Database_name.mdf* and *Database_name.ldf*.

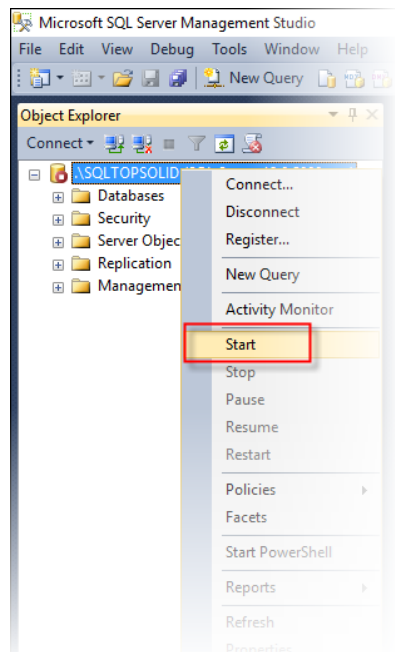
- Stop the TopSolid'Pdm Server service.
- Detach the database and click **OK**.



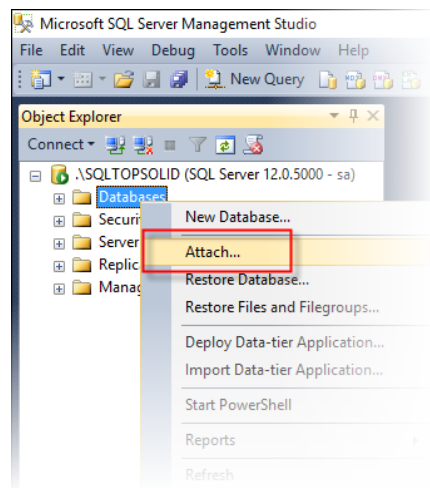
- Stop the SQL instance service.

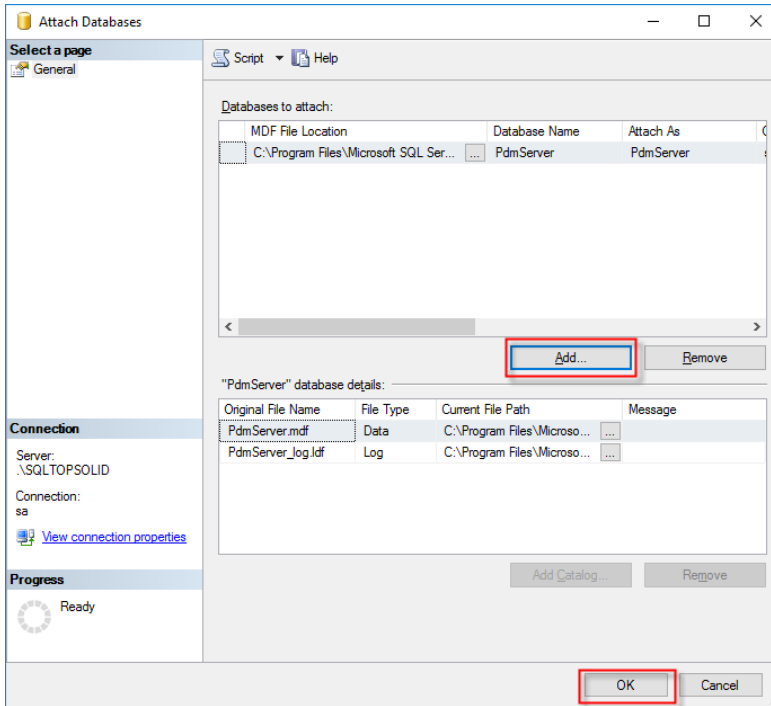


- Move the two PdmServer mdf and ldf files manually from the « C:\Program Files\Microsoft SQL Server \ MSSQL15.SQLTOPSOLID\MSSQL\DATA » folder to the new destination folder.
- Modify securities of the two copied files to give users and authorized users a total control (from Windows Explorer).
- Restart the SQL instance service.



- Attach the database from its new folder.





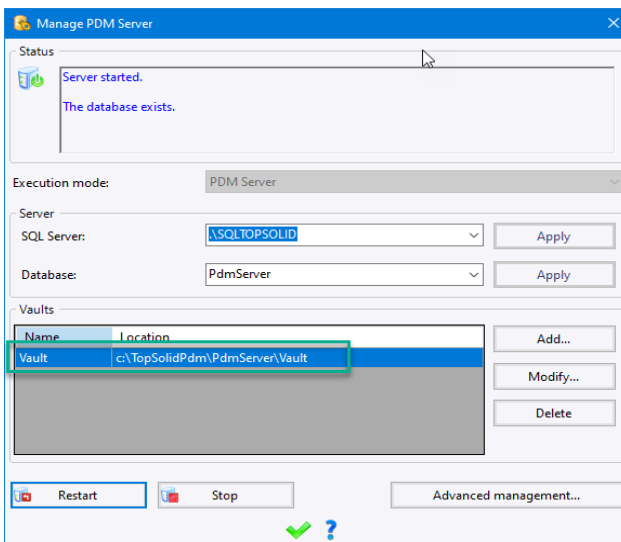
- Restart the TopSolid'Pdm Server service.

Manual Backup Procedure

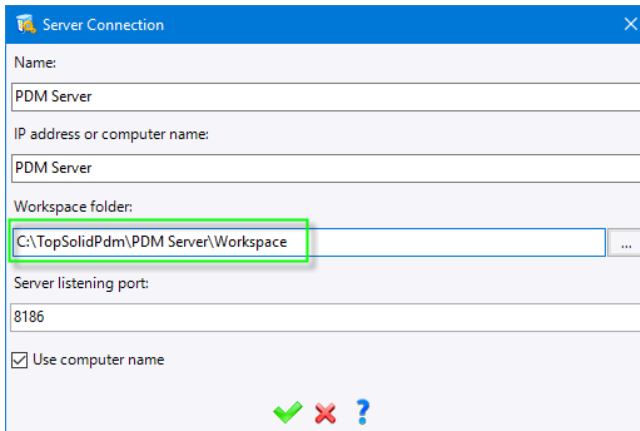
The database and data can be manually backed up specially if workspaces are not centralized. (concerns only the PDM client/server).

The different folders to be backed up are detailed below:

- The **vault**: It is the area defined in the TopSolid Server (in green below) or, if it is not used, the folder defined in the FTP or the NAS server.



- You also have to backup workspaces of each TopSolid client (in green below). Take a special care to properly named folders to be able to easily restore them if needed.



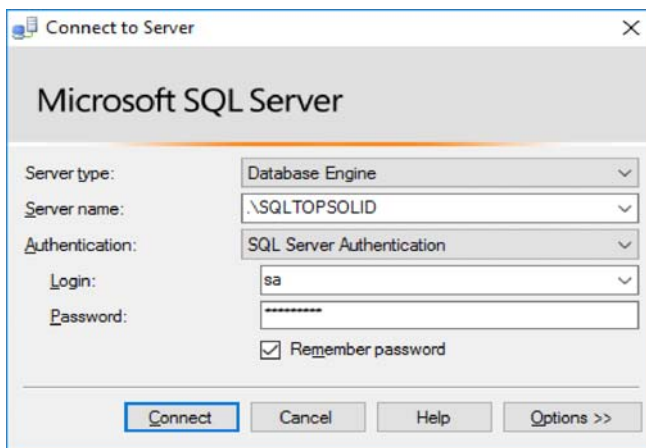
- The **database**: It can be saved in two different ways:

If the Microsoft SQL Express version from the TopSolid media is installed, you can adapt the *SqlExpress Backup Script.bat* example script which can be found in the *Help\Tools of the TopSolid\Pdm* installation folder (see explanations below).

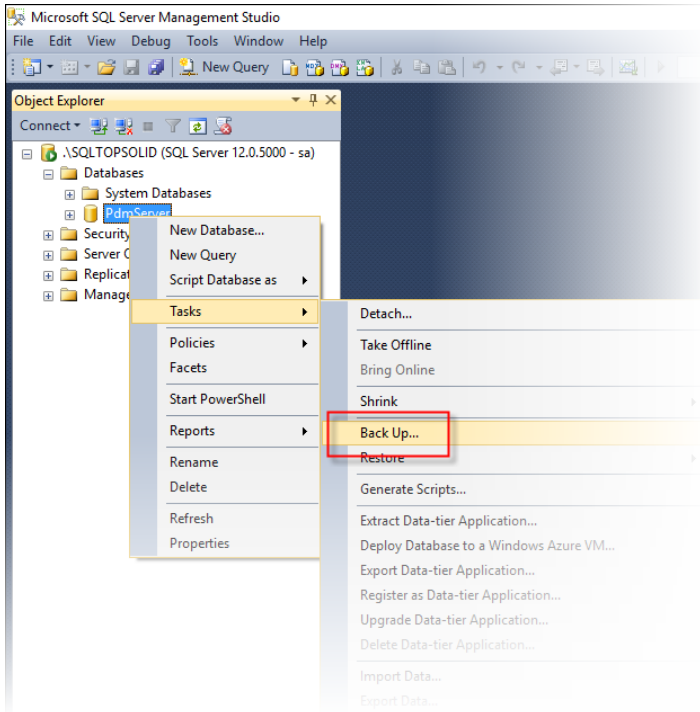
If you have installed an higher version of Microsoft SQL Server (Workgroup, Standard or other), you can use the SQL maintenance plan (not explained below).

To modify the *SqlExpress Backup Script.bat* script, the easiest way to proceed is as follows:

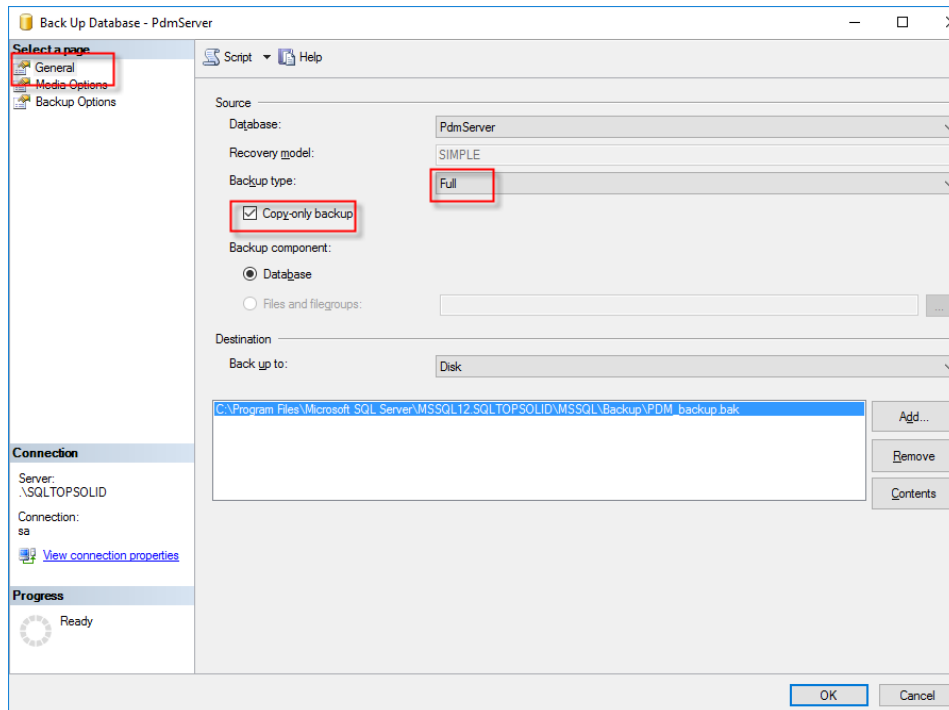
- Use **SQL Studio Management** from the **Start** menu > **All programs** > **Microsoft SQL server Tools 2019**.
- Log in with SQL Server Authentification as "sa". The default password is "TopSolid7".



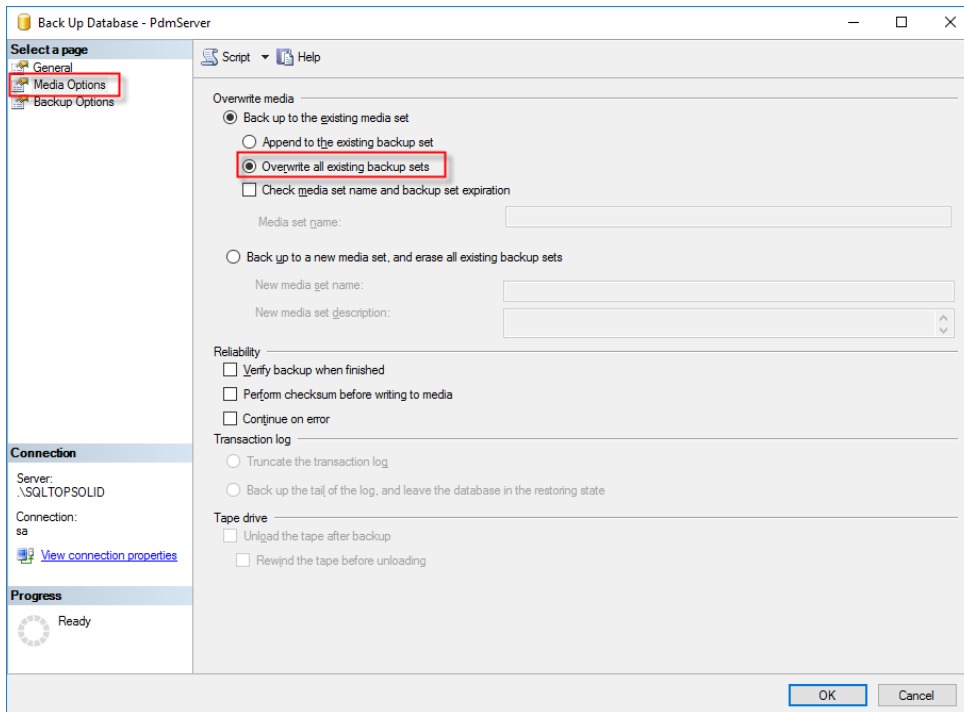
- Unroll the Databases folder and right-click on the database called PdmServer, and then select the **Tasks** > **Back Up** command.



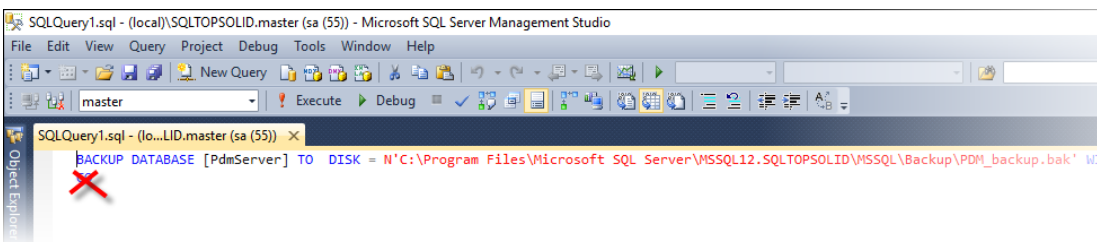
- In the **General** section, select **Full**, check the **Copy-only Backup** option and then delete the proposed folder in the **Destination** field and add yours. Do not forget to add .bak extension to the filename!



- In the **Options** section, check **Overwrite all existing backup sets**.



- Click on **Script** at the top of the window.



- Copy this line(without *GO*) in the delivered backup bat file by putting it into quotes " " after ***sqlcmd -S .\SQLTOPSOLID -U sa -P TopSolid7 -Q "BACKUP DATABASE*** (the line to add is displayed in italic). A file called *SqlExpress Backup Script.bat* with all default settings is available in the folder *Help\Tools*.
- Even if the database backup is done with the script or the Sql maintenance plan, a .bak file is created on a local disk. Now you have to copy it with others folders (vaults, workspaces of each Pc) on another disk. To do this, a *File Copy.bat* script is available in the *Help\Tools* folder and must also be adapted. The two scripts can be merged.

You can then use the Windows scheduler tasks to run these scripts every day. It is recommended to have a turnover of one or two weeks. For example, you can create a **Monday even** task which will copy the data in a **Monday even** folder, and then create other tasks until **Friday odd**.

On the server, 5 scripts have to be done, one for Monday, another for Tuesday and so on.

Example of the script for the Monday, to be execute during the night.

```
REM ----- Folders creation.
MKDIR \\Backup_server\Monday\Database
MKDIR \\Backup_server\MondayVaults
REM ----- Backup of the database by copying the script done with SQL Studio management.
sqlcmd -S .\SQLTOPSOLID -U sa -P TopSolid7 -Q "BACKUP DATABASE [PdmServer] TO
DISK = N'C:\Program Files\Microsoft SQL Server\MSSQL12.SQLTOPSOLID\MSSQL\Backup'
WITH COPY_ONLY, NOFORMAT, INIT, NAME = N'PdmServer-Full Database Backup', SKIP,
NOREWIND, NOUNLOAD, STATS =10"
REM ---- Copy of the vault
XCOPY /E /V /Y /H /I /D "c:\TopSolidPdm\Vault" "\\Backup_server\MondayVaults"
REM ---- Copy of the database on the backup server
XCOPY /E /V /Y /H /I /D "C:\Program Files\Microsoft SQL
Server\MSSQL12.SQLTOPSOLID\MSSQL\Backup" "\\Backup_server\Monday\Database"
```

Create a script per day. Each script will be a Windows task.

Highlighted are paths to modify regarding your settings.

- **Local workspace backup for each TopSolid client.**

When manually saving the database and the vault, the local workspace of each computer has to be saved at the same time.

Following is an example of script to use on each PC.

The goal is to copy the workspace into a generic folder of the server, but this folder must have the name of the computer to be able to easily restore it if needed.

```
REM ---- Found the Pc's name
Set pc=%computername%
REM ---- Preparation of the folder on the server, with the name of the PC, to copy its
workspace.
Set folder=\\server_name_or_IP\Backup\Workspaces%\pc%\workspace
REM ----- Copy of the workspace in this folder of the server.
XCOPY /E /V /Y /H /I /D "c:\ToPSolidPdm\Server\Workspace" %folder%
Of course, the folder \\server_name_or_IP\Backup has to be shared with written rights.
```

On the backup server:

```
REM ---- Copy of the workspaces folder which contains the workspace of each PC. They come
from the script defined upper and executed during each shutdown.
MOVE /Y "c:\Backup\Workspaces" "c:\Backup\Monday\Workspaces"
```

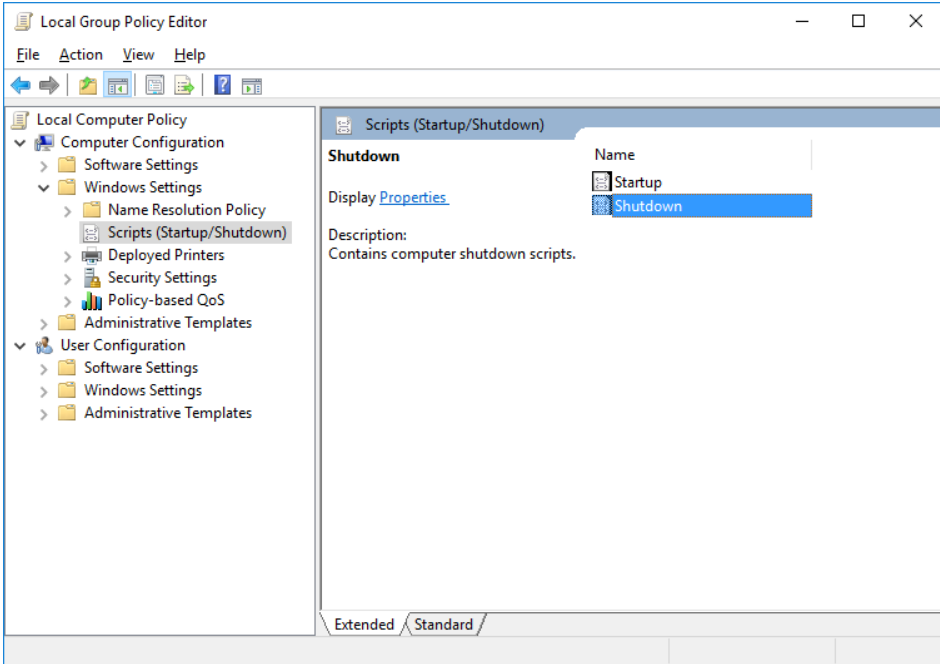
Highlighted are paths to modify regarding your settings.

This script has to be automatically executed when shutting down the PC.

Here the Microsoft procedure to execute a script when shutting down a computer (<https://technet.microsoft.com/en-us/library/cc770300.aspx>)

SearchGPEDIT.msc

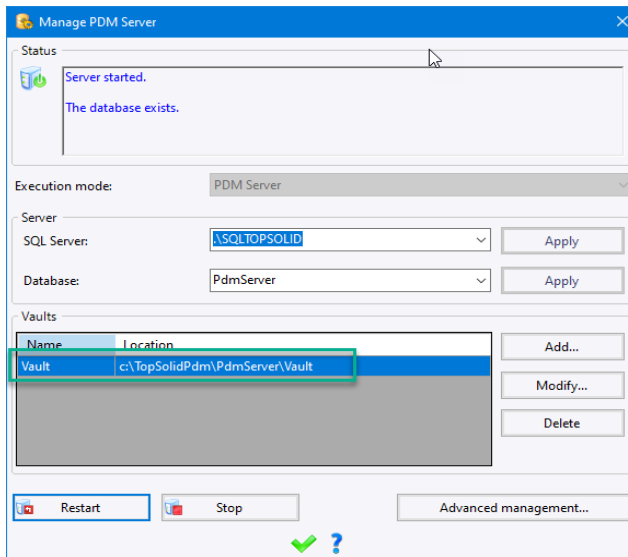
Double-click on « Shutdown » and add your script.



Manual Data Restoration

If the backup has been manually made following the previous procedure.

- Empty vaults and local workspaces.
- Copy the different backed up vaults manually to their original folder.



Also copy the corresponding workspace on each workstation.

Server Connection

Name: PDM Server

IP address or computer name: PDM Server

Workspace folder: C:\TopSolidPdm\PDM Server\Workspace

Server listening port: 8186

☒ Use computer name

✓ ✗ ?

- Restore the database by starting **Microsoft SQL Studio Management** from the **Start** menu > **All programs** > **Microsoft SQL server** and log in with SQL Server Authentication as "sa" (the default password is "TopSolid7").

Connect to Server

Microsoft SQL Server

Server type: Database Engine

Server name: \SQLTOPSOLID

Authentication: SQL Server Authentication

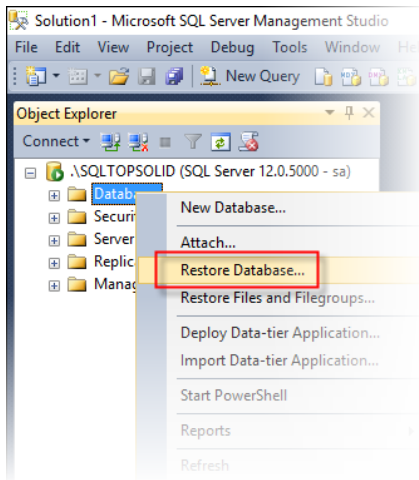
Login: sa

Password: *****

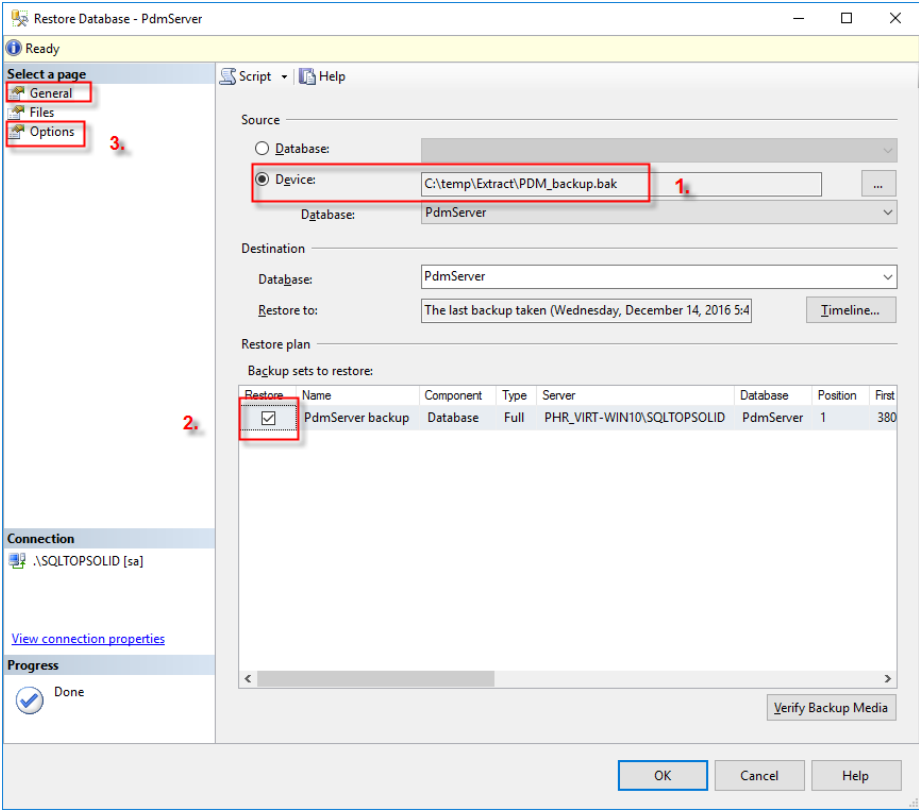
☒ Remember password

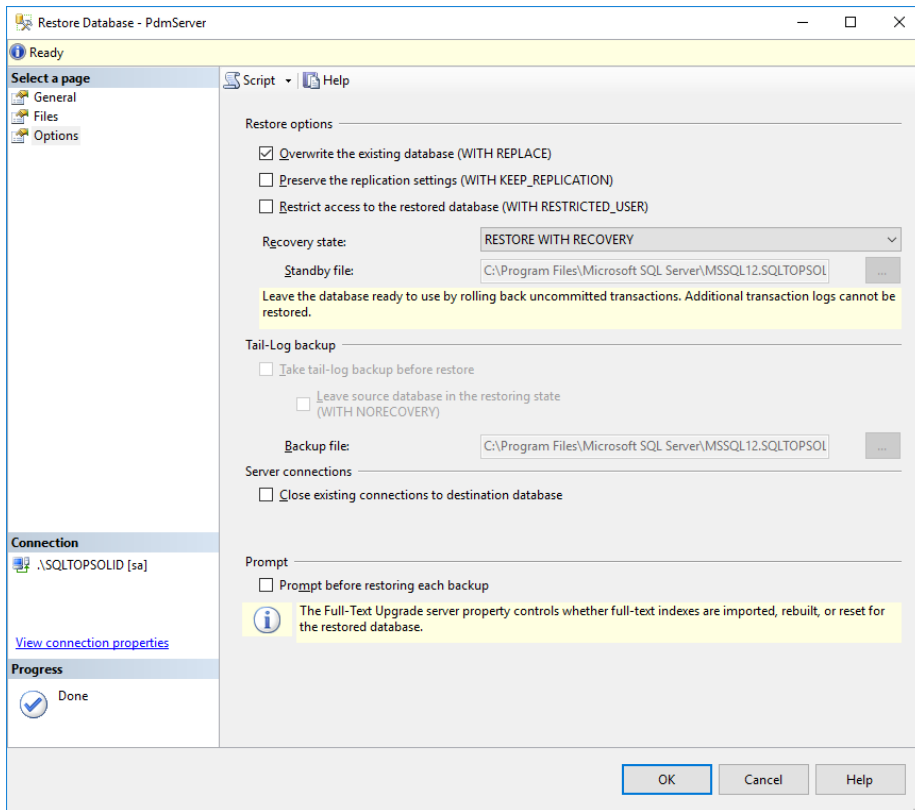
Connect Cancel Help Options >>

- Right-click on the Databases folder, and then select the **Tasks > Restore database** command.



- Select **From device** (1) to search your copied backup bak file on the local disk.
- Check **Restore** (2).
- Click the **Options** command (3).
- Check **Overwrite** (4.)
- For only a complete backup, use the option «**RESTORE WITH RECOVERY**» (5.)
- If they are incrementale backups to restore, you have first to restore the complete backup with the «**RESTORE WITH NORECOVERY**» option, then all incrementales one by one except the newest with the same option. To finish and close the database, restore the latest incrementale with the «**RESTORE WITH RECOVERY**» option.
- Click **OK** (6.)





- Restart TopSolid'Pdm Server service.

File server

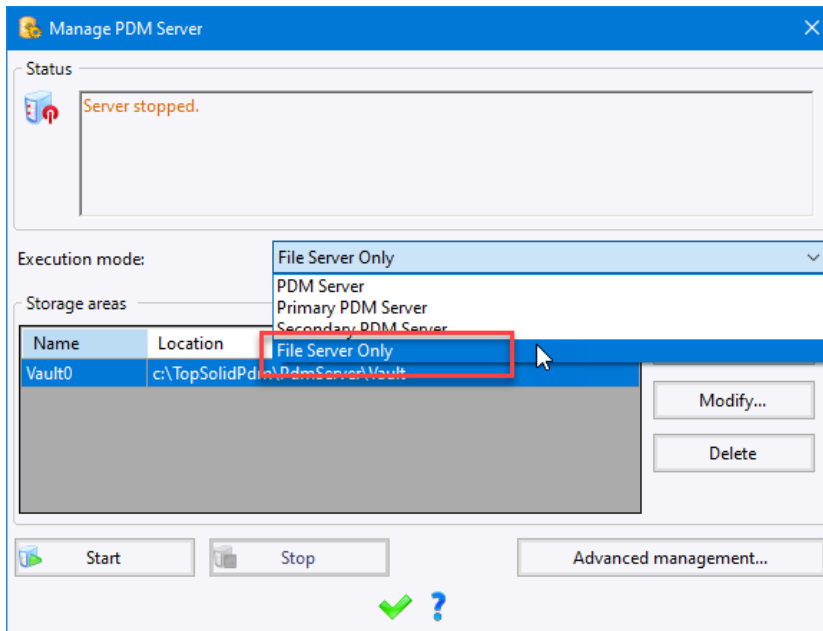
It is possible to use TopSolid'Pdm Server only as a File server. For example, it is the case if TopSolid'Pdm server is installed on the same server than SQL, but vaults must be on another Windows server.

- Install TopSolid'Pdm server on both servers.
- On the server which is used as File server, use the **Manage** dialog of TopSolid'Pdm Server.
- Select «**File Server**» in the drop-down list.
- Add a name and a location for this file server.

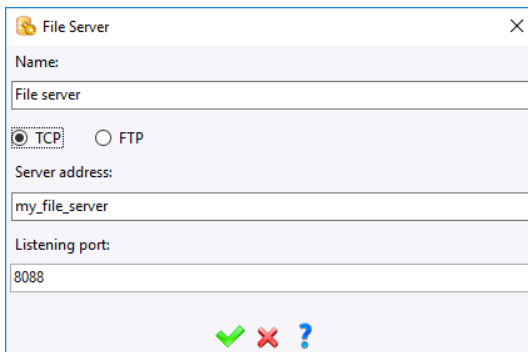


A network drive can't be used. You have to use a long name (UNC) with the IP or the name of the server preceded by \\. For performances reasons, it is strongly recommended to use a local disk.

- If the listening port has to be changed or to use the server name instead of its ip, click **Advanced options**.
- Start the service.



- On the server which manages the database, also use the **Manage** dialog of TopSolid'Pdm Server.
- Add a TCP vault and enter the ip or address of the file server you have configured upper.



- Start the service.

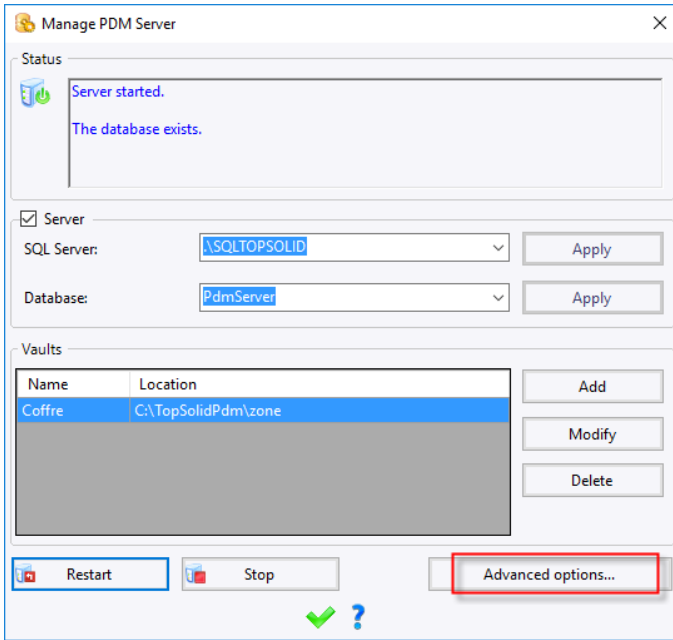
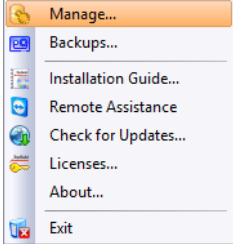
Centralized Workspace

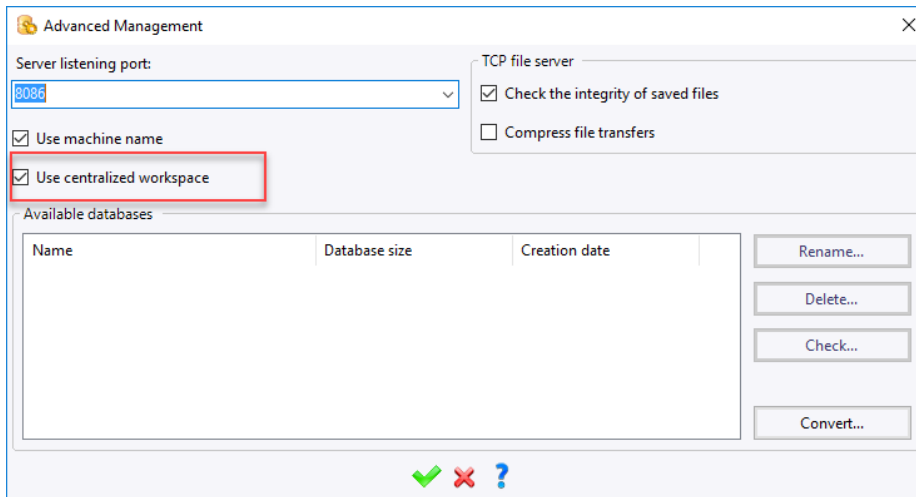
This option is not compatible with a multisite installation.

The workspace is the area in which new saved documents and files under modification are located. By default, this workspace is centralized on the server. In some rare cases, this centralization can be deactivated. The workspace folder is then local for each TopSolid workstation. Unfortunately, in this case, the automatic TopSolid backup tool cannot be used, the backup has to be configured by using scripts as explained in the «**Manual backup**»

chapter. Workstations have to stay turned off during daily backups and a user can only work on the same computer. The centralized workspace allow to avoid these problems.

- On the TopSolid'Pdm Server, use the **Manage** command, then click the **Advanced options** button to access to the **Use centralized workspace** option.





- Validate with the  icon.

ERP

Introduction

If you are using TopSolid'Erp, you may connect it to TopSolid. The following products are supposed to be already installed (see TopSolid'Erp installation guide):

- TopSolid'Erp 5.12 or higher.
- TopSolid'Erp Service 5.12 or higher.

Serveur Add-In

When TopSolid'Erp is used in the company, an add-in is needed on the TopSolid'Pdm server to make the link between TopSolid'Erp and TopSolid'Pdm Server.




The TopSolid'Erp add-in communicates on the port 4126. Do not forget to open this port in the server and TopSolid client firewalls.

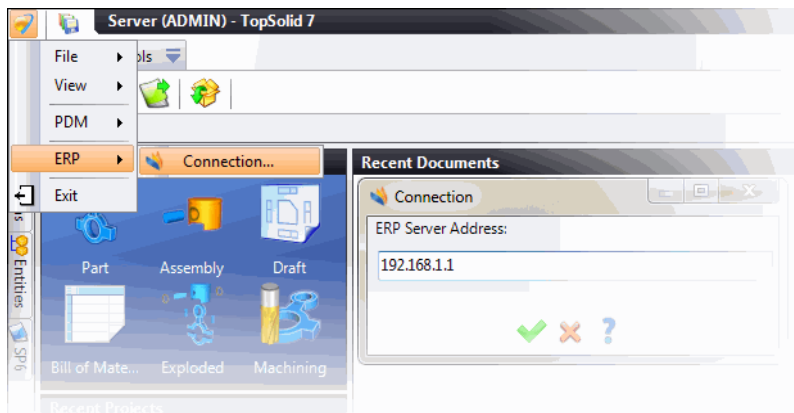
This add-in is automatically installed when installing TopSolid'Pdm Server.

Client Connection

Only available if TopSolid operates in client/server mode.

The connection is configured on each TopSolid client by using the **ERP > Connection** command from the TopSolid button.

- Enter the address of the computer on which **TopSolid'Erp Service** has been installed (see the TopSolid'Erp documentation).
- Validate with the  icon.

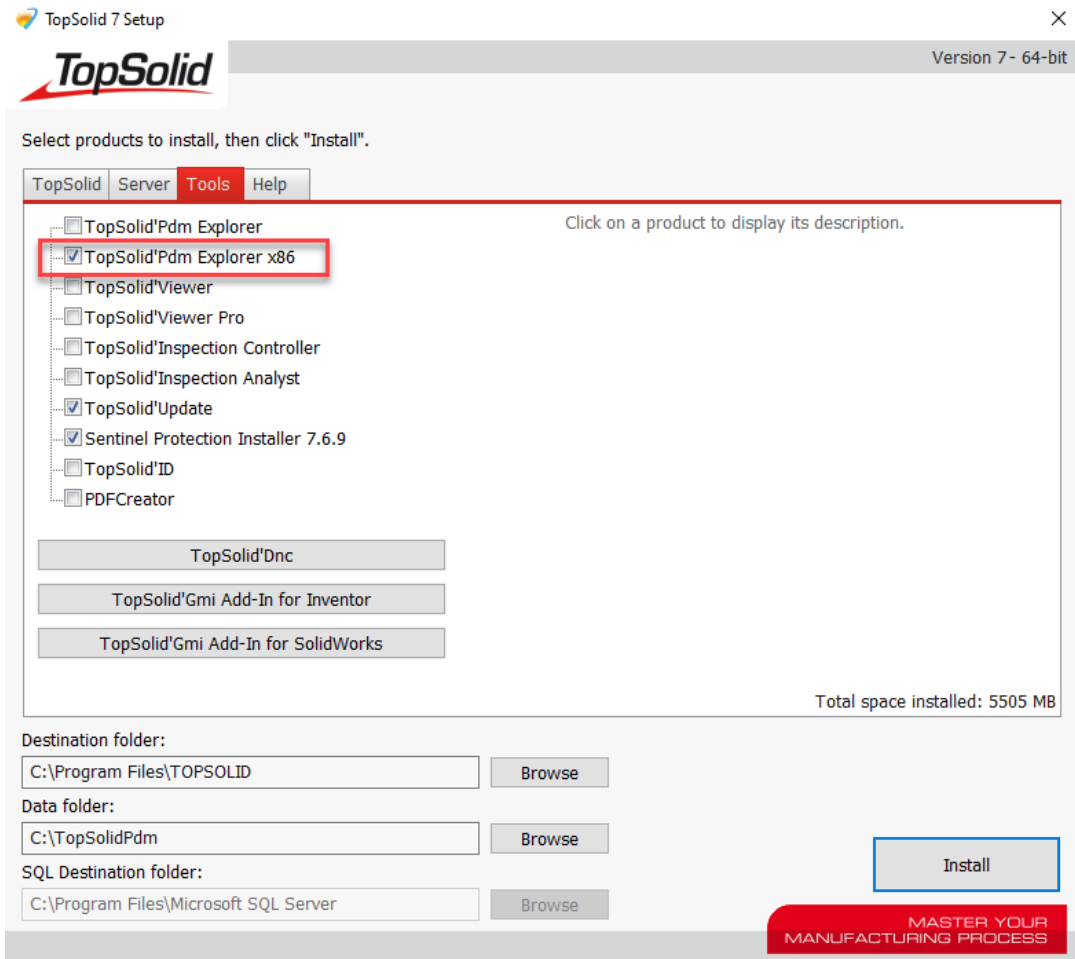


TopSolid'Pdm Explorer

To be able to view TopSolid documents in TopSolid'Erp, you also have to install TopSolid'Pdm Explorer.



If the installed computer is running under Windows 64-bit, the 32-bit version of TopSolid'Pdm Explorer should be installed.



This installation can also be done manually by double-clicking on the file "TopSolid media\Setup\x86\TopSolid'Pdm Explorer.msi". **SQLSysClrTypes** and **SharedManagementObjects** have also to be installed. They are in the **Setup\redist\x64** folder of the media.

A 64-bit client can have both 32-bit and 64-bit versions of TopSolid'Pdm Explorer installed.

The connection to the ERP Server address given above can be checked by entering *http://entered_address:4126* in your favorite Internet browser (for the example above, *http://192.168.1.1:4126*).

Service

This is a Windows® Communication Foundation service.

Metadata publishing for this service is currently disabled.

If you have access to the service, you can enable metadata publishing by completing the following steps to modify your web or application configuration file:

1. Create the following service behavior configuration, or add the <serviceMetadata> element to an existing service behavior configuration:

```
<behaviors>
  <serviceBehaviors>
    <behavior name="MyServiceTypeBehaviors" >
      <serviceMetadata httpGetEnabled="true" />
    </behavior>
  </serviceBehaviors>
</behaviors>
```

2. Add the behavior configuration to the service:

```
<service name="MyNamespace.MyServiceType" behaviorConfiguration="MyServiceTypeBehaviors" >
```

Note: the service name must match the configuration name for the service implementation.

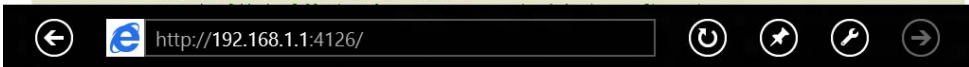
3. Add the following endpoint to your service configuration:

```
<endpoint contract="IMetadataExchange" binding="mexHttpBinding" address="mex" />
```

Note: your service must have an http base address to add this endpoint.

The following is an example service configuration file with metadata publishing enabled:

```
<configuration>
  <system.serviceModel>
    <services>
      <!-- Note: the service name must match the configuration name for the service implementation. -->
      <service name="MyNamespace.MyServiceType" behaviorConfiguration="MyServiceTypeBehaviors" >
        <!-- Add the following endpoint. -->
        <!-- Note: your service must have an http base address to add this endpoint. -->
        <endpoint contract="IMetadataExchange" binding="mexHttpBinding" address="mex" />
      </service>
    </services>
  </system.serviceModel>
  <behaviors>
    <serviceBehaviors>
      <behavior name="MyServiceTypeBehaviors" >
```



Successful test.

This page can't be displayed

- Make sure the web address `http://192.168.1.1:4126` is correct.
- Look for the page with your search engine.
- Refresh the page in a few minutes.

If following these suggestions didn't work, resetting your connection might help.

Reset connection

[Get more help with connection problems](#)



Test failed

Miscellaneous

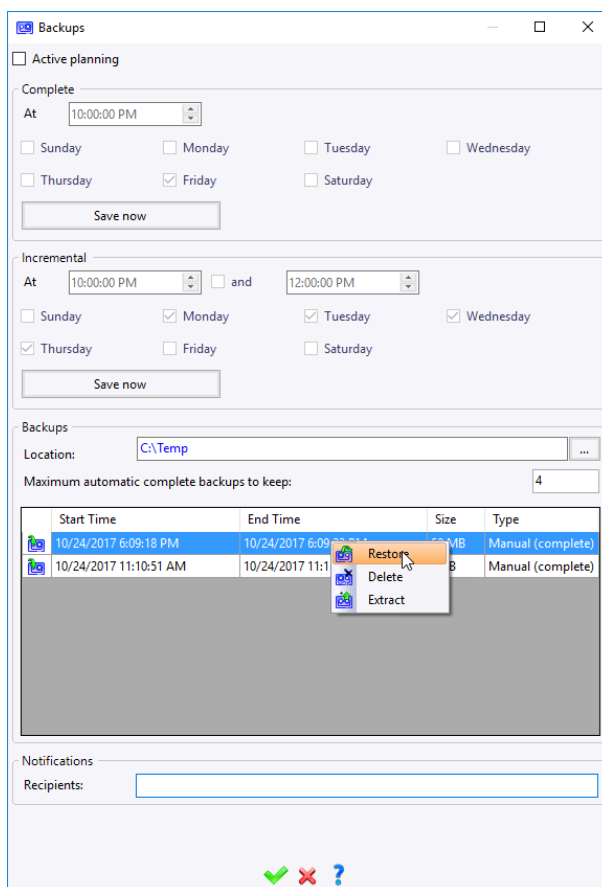
Migration of Local PDM Server to client-server PDM

Local PDM Server datas can be migrated to integrate a client-server Pdm. Several conditions have to be considered:

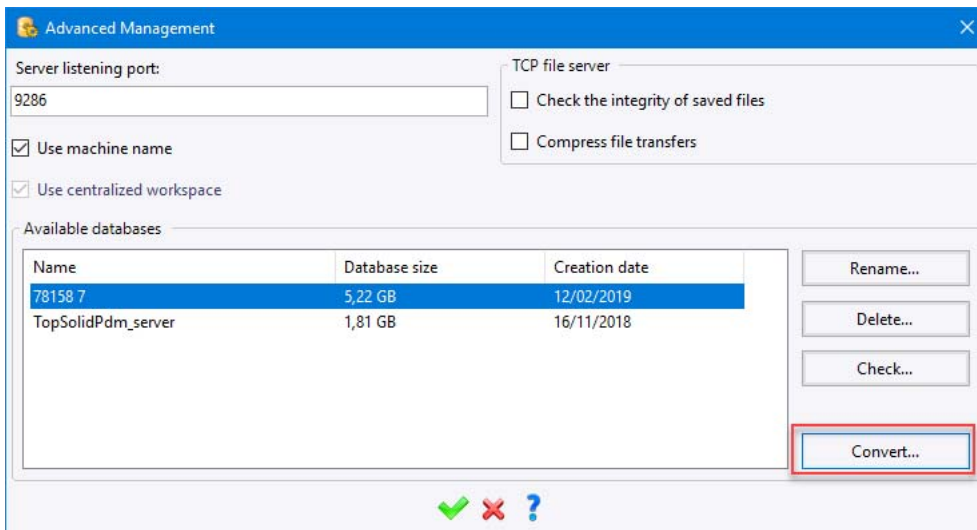
- Only one local PDM Server can be migrated.
- If the client-server PDM contains datas, it will not be possible to migrate the local PDM Server.
- TopSolid'Pdm Server must be installed, configured and working fine with an empty database as explained in the **Server installation** chapter of this guide.

Caution: The migration takes a lot of time (several hours can be needed). It doesn't require any user intervention.

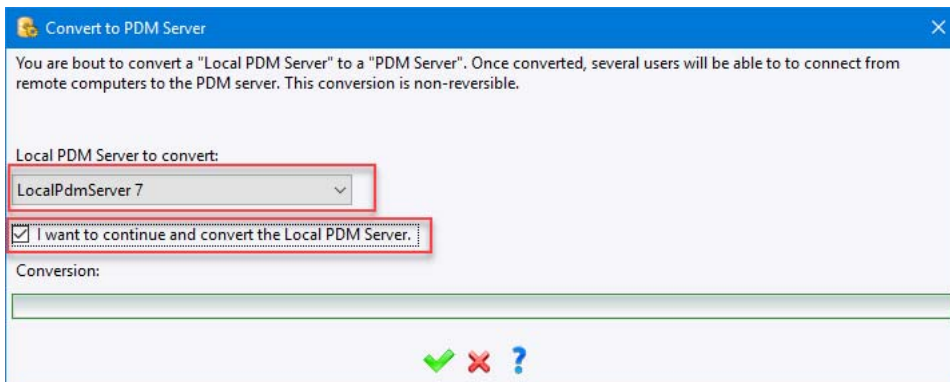
- From TopSolid connected to the Local PDM server, use the PDM > Backups command from the TopSolid button and make a complete backup.
- Copy the generated .TopBack file and paste it in the equivalent folder of the Pdm Server.
- Run the backup tool of the Pdm server, select this backup and use the **Restore** contextual command.



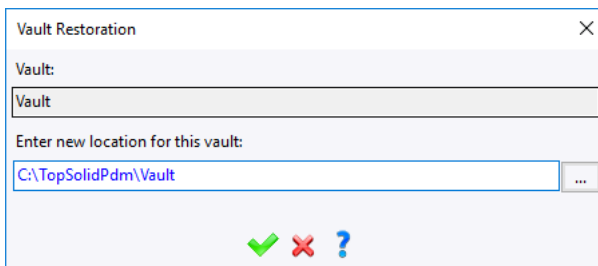
Right click on the Pdm server icon and select «**Manage**».
Now, click the «**Advanced management**» button.



The local pdm server database is not listed, click on the «**Convert**» button.



Select the Pdm local server to convert in the drop-down list.
Check to confirm and validate.



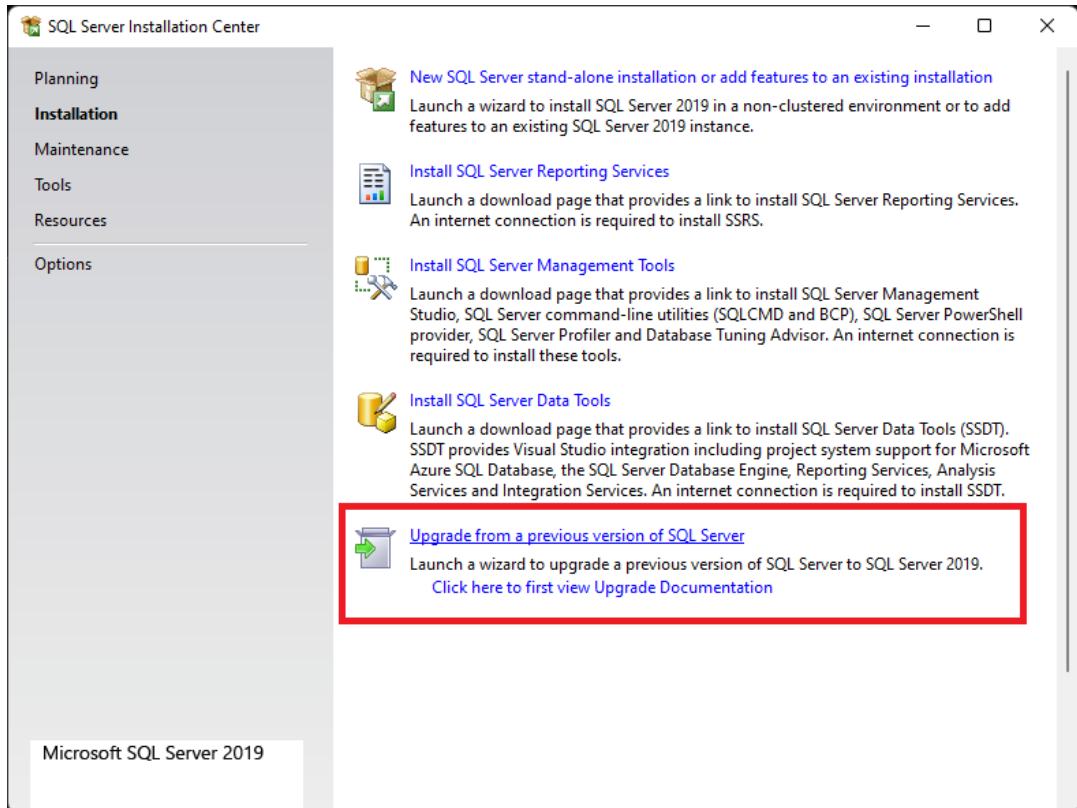
Select a folder for the vault and validate.

The pdm Server is now operational and has the same datas than the Local PDM Server.
These 2 PDM aren't linked. They are completely independant. Each document modification or creation with one of them, will have no effect with the other.

Migration to SQL 2019

Since TopSolid 7.15, the SQL Server Express 2019 version is provided. However, if a previous version of TopSolid has already been installed, the SQL Express 2014 version is installed. For TopSolid 7.16, it is strongly recommended to migrate to the 2016 version minimum. With TopSolid 7.17, this migration will be mandatory.

From the TopSolid media, double click on Setup\Redist\SQL Server Express\SETUP.EXE and click on "Upgrade from a previous version of SQL Server".



If several SQL instances have been installed, choose the one to be migrated.

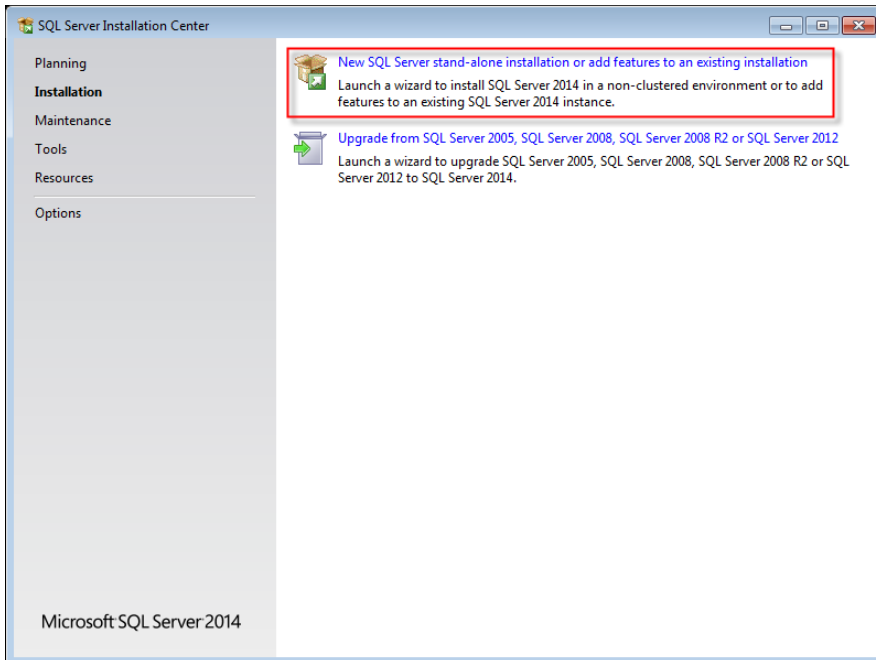
After migration, you must also migrate SQL Studio Management by double-clicking on Setup\Redist\SQL Server Management Studio\SSMS-Setup-ENU.exe on the TopSolid media.

Manual installation of SQL 2014

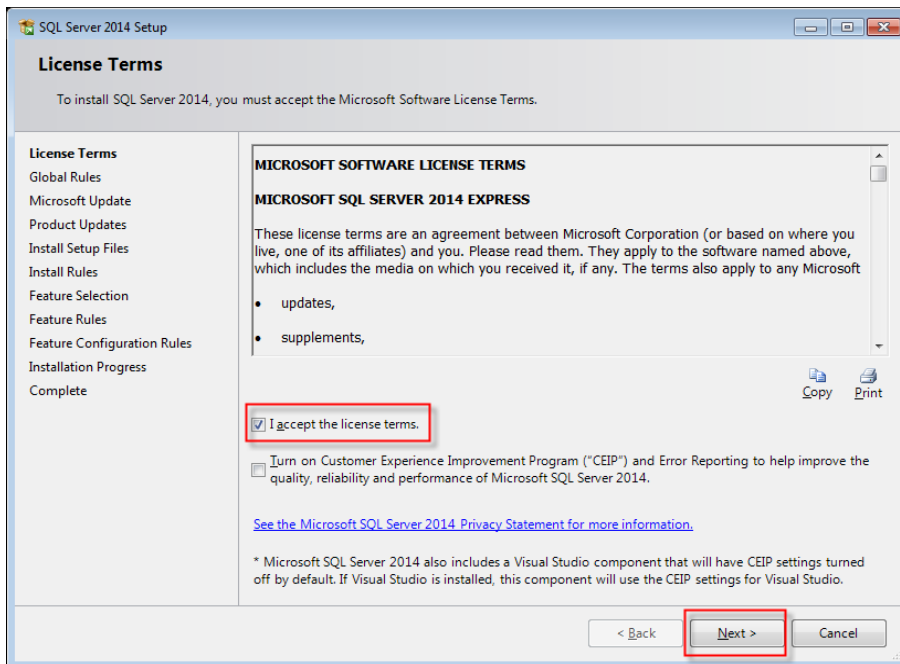


Note : The SQL 2019 version provided with the media is only usable with Windows 10 and since Windows Server 2016. For older versions of Windows server, you have to manually install SQL 2014 Express available on our site ftp://ftp.topsolid.com/Public/TopSolid/Drivers/SQL/en_sql_server_2014_express_with_tools_with_service_pack_2_x64_9009295.exe. In case of a migration of TopSolid, if SQL 2014 Express is already installed, you don't need to update it to SQL 2019 Express.

Select **New installation** and click **Next**.



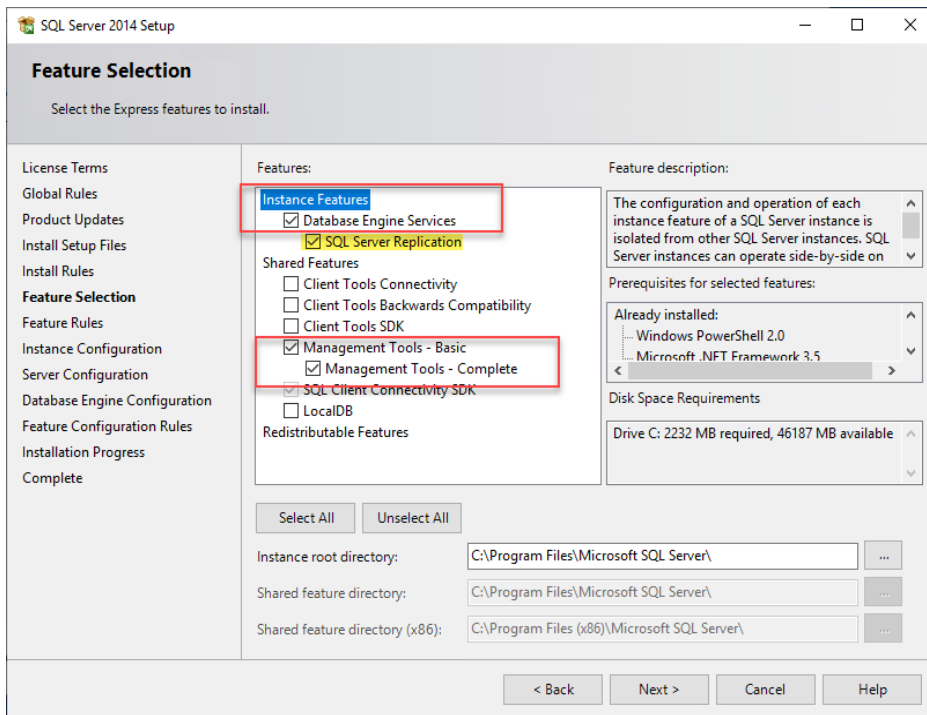
Accept the licence terms and click **Next**.



Check as shown below and click **Next**.

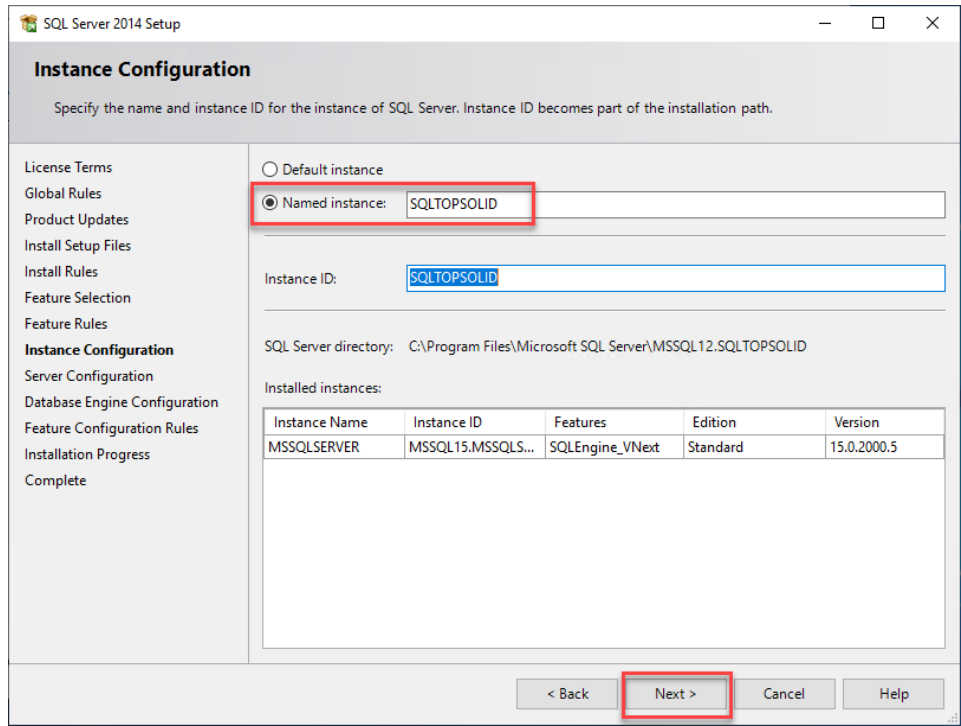
Be sure that Management Tools Complete is checked. For higher SQL versions, the SSMS has to be downloaded and installed separately.

In the case of installing a TopSolid'Pdm Server Multisite (data replication on different sites), the primary server has to be installed with at least a SQL Standard 2014 edition. You also have to check the «SQL Server Replication» feature as highlighted below. (only for the primary one)

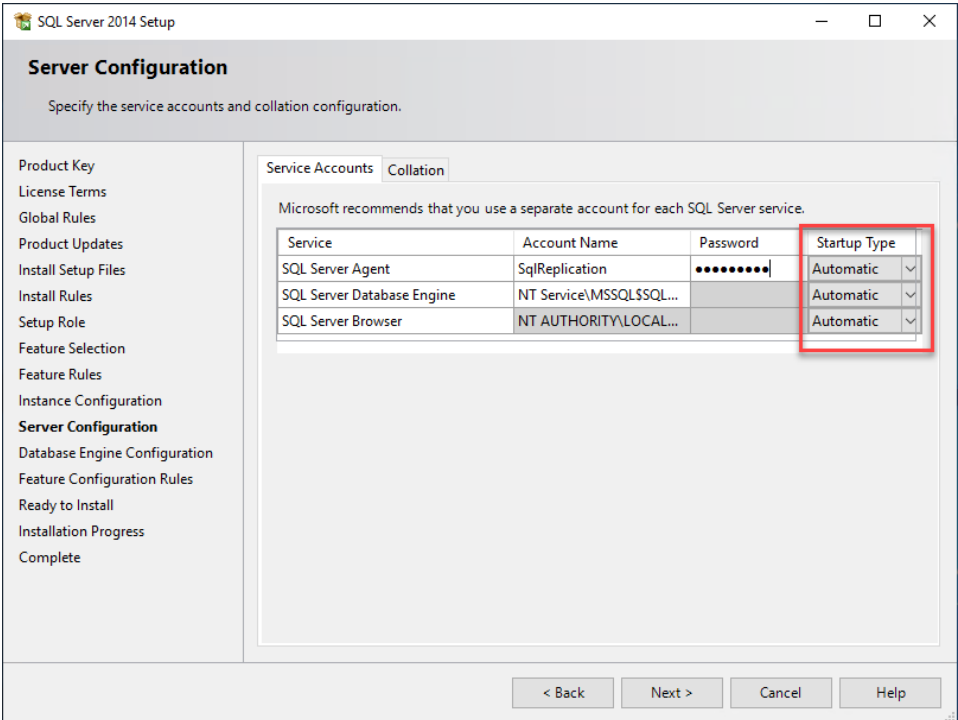


Enter an instance name , for example «SQLTOPSOLID» and click **Next**.

If the instance is for a TopSolid usage with a Local Pdm Server, it must be called SQLTOPSOLID.



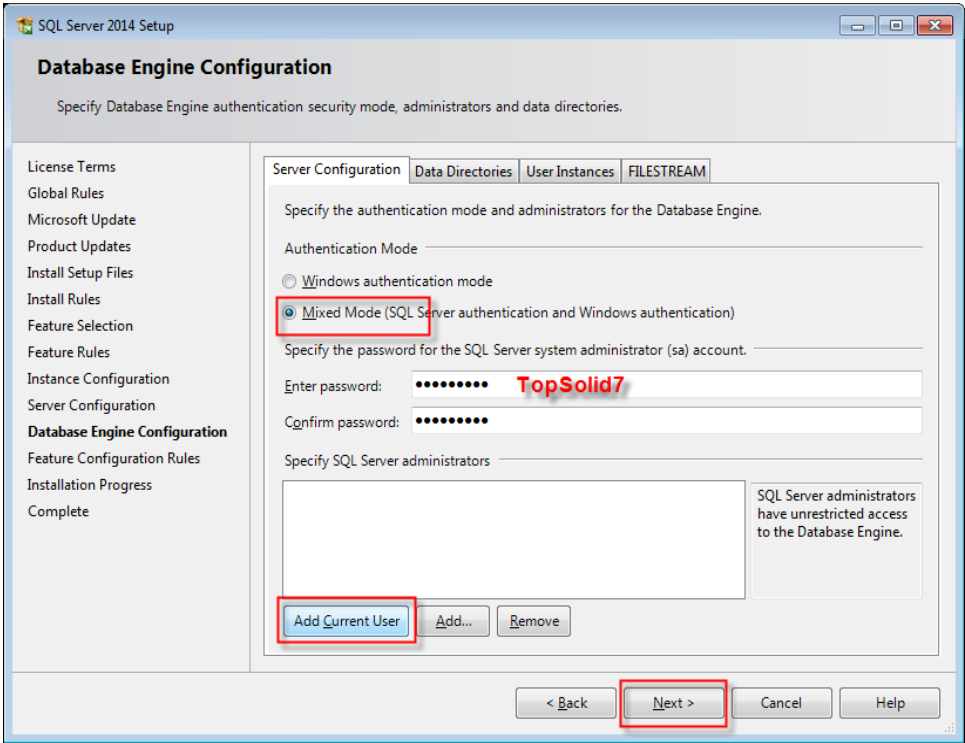
The SQL Server Database Engine and SQL Server Browser services must be set as **Automatic**. The SQL Server Agent service does not exist with a SQL Express version. In case of multisite installation (with replication), the SQL Server Agent service has also to be started for the primary server with a local SqlReplication user (see Multi-site chapter for more details).
Click **Next**.



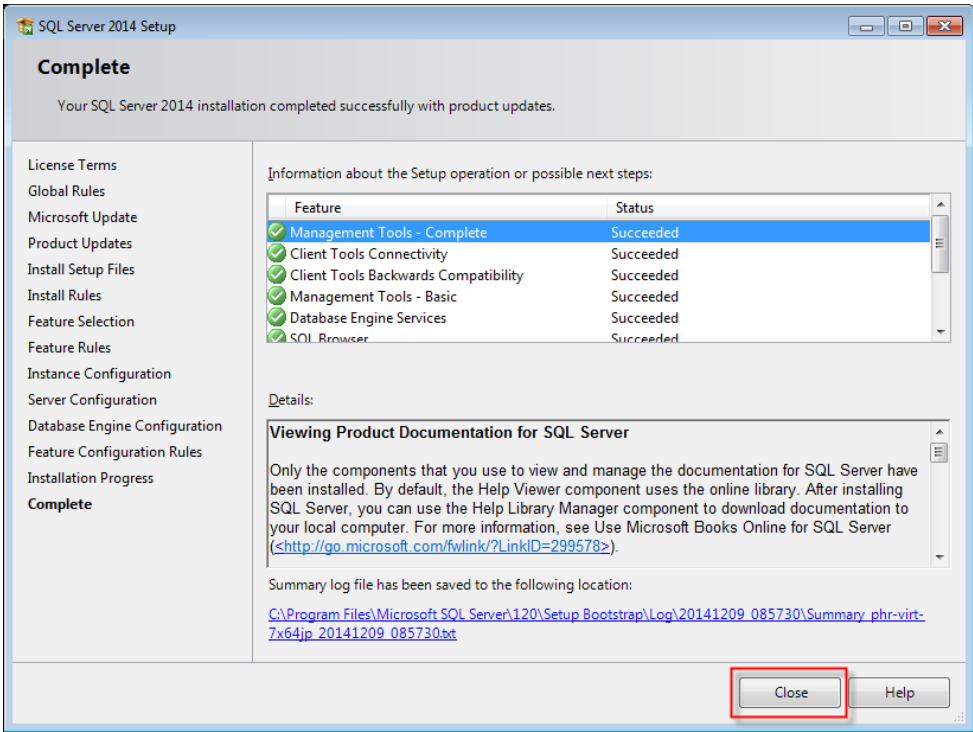
Select **Mixed mode**, enter the password **TopSolid7** (it is the password for the TopSolid PDM of the SQL administrator «sa»).

Click **Add current user**. The actual user who installs will be added. This Windows account must be member of a local network domain. He will be used for backups in a shared folder of the network and will allow to avoid creation «jobs» errors if replicating (multisite).

Click **Next**. This user must have rights through the network. He will also be used for the connection of the TopSolid'Pdm service and for the backup through the network.



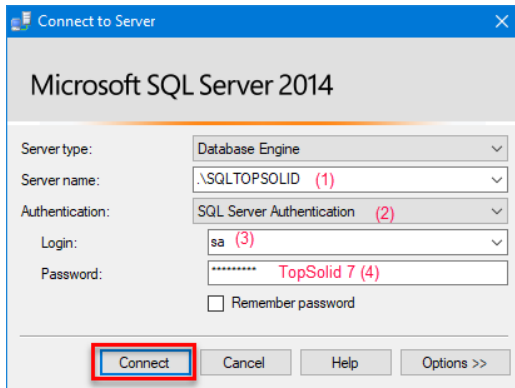
The installation is complete, click **Close**.



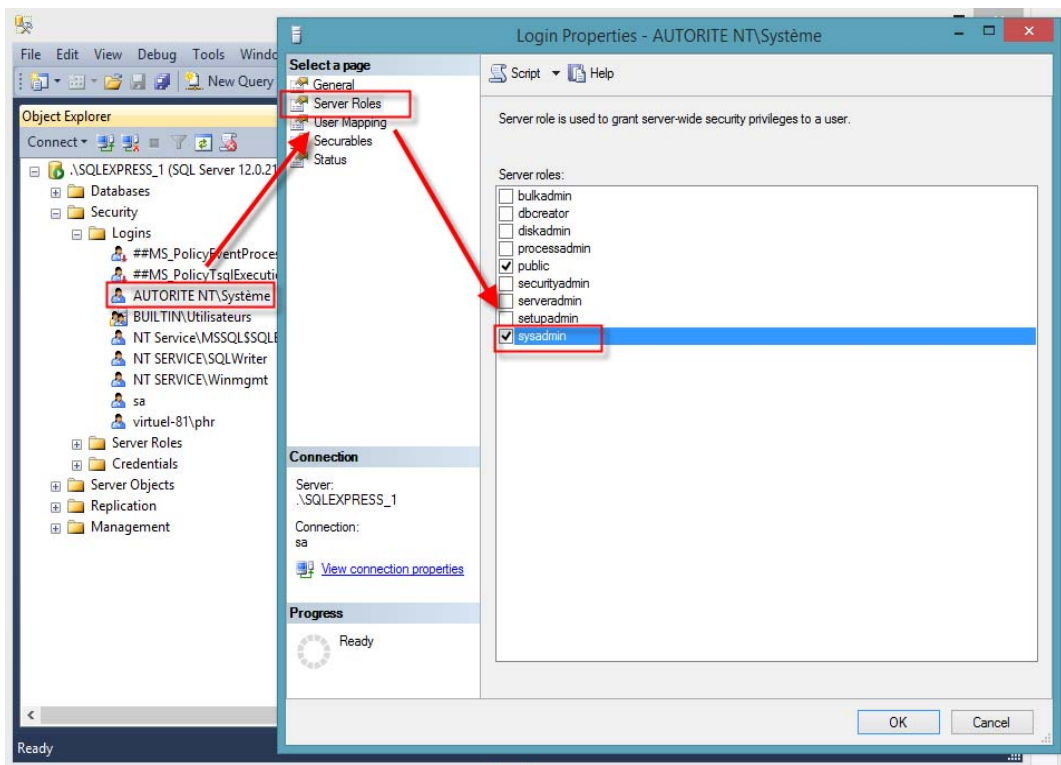
SQLSysClrTypes and SharedManagementObjects have also to be installed. They are in the **Setupredistx64** folder of the media.

Now, run Microsoft Studio Management. (Windows Start menu > All programs > Microsoft SQL Server 2014).

Connect to the server « .\SQLTOPSOLID » (1) with SQL server authentication (2), and log in as «sa» (3) with the password : TopSolid7 (4).



In Security\Logins, double click on NT AUTHORITY\System, then click **Server Roles**, check **Sysadmin** and click **OK**. If he isn't **SysAdmin**, it is not possible de create a new database. This account is used by default by the TopSolid'Pdm Server service. After the first start of the Pdm, the database is created and this role is no longer needed.

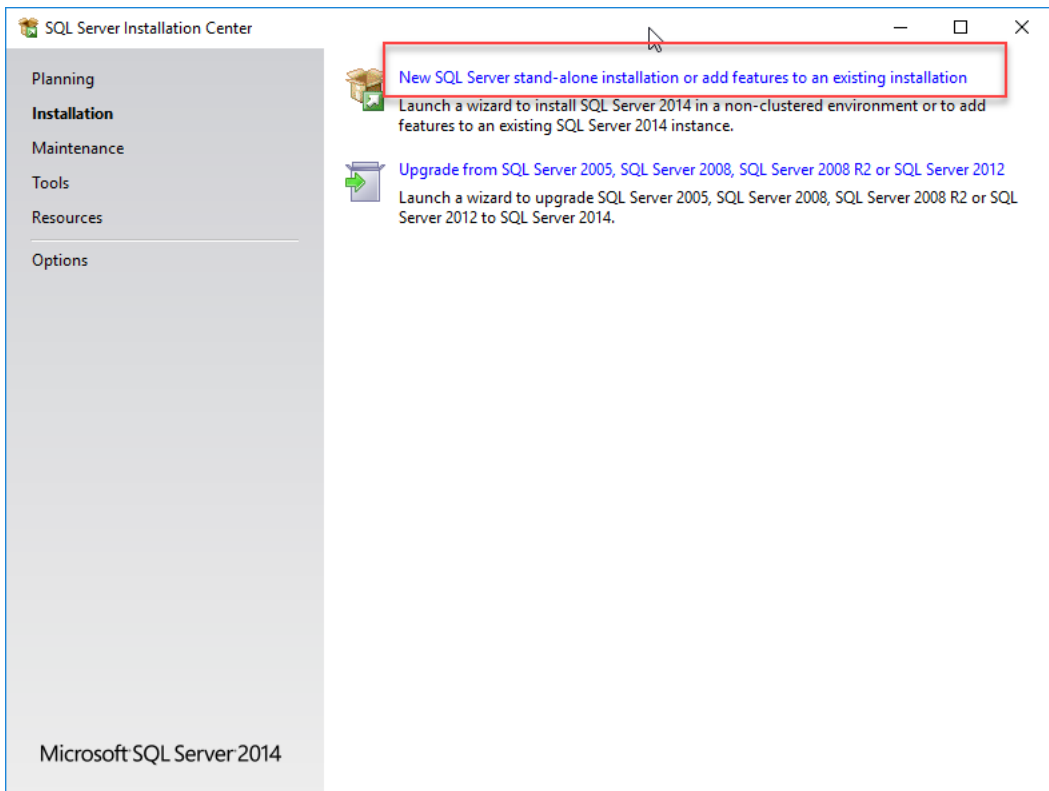


Microsoft SQL 2014 Studio Management installation

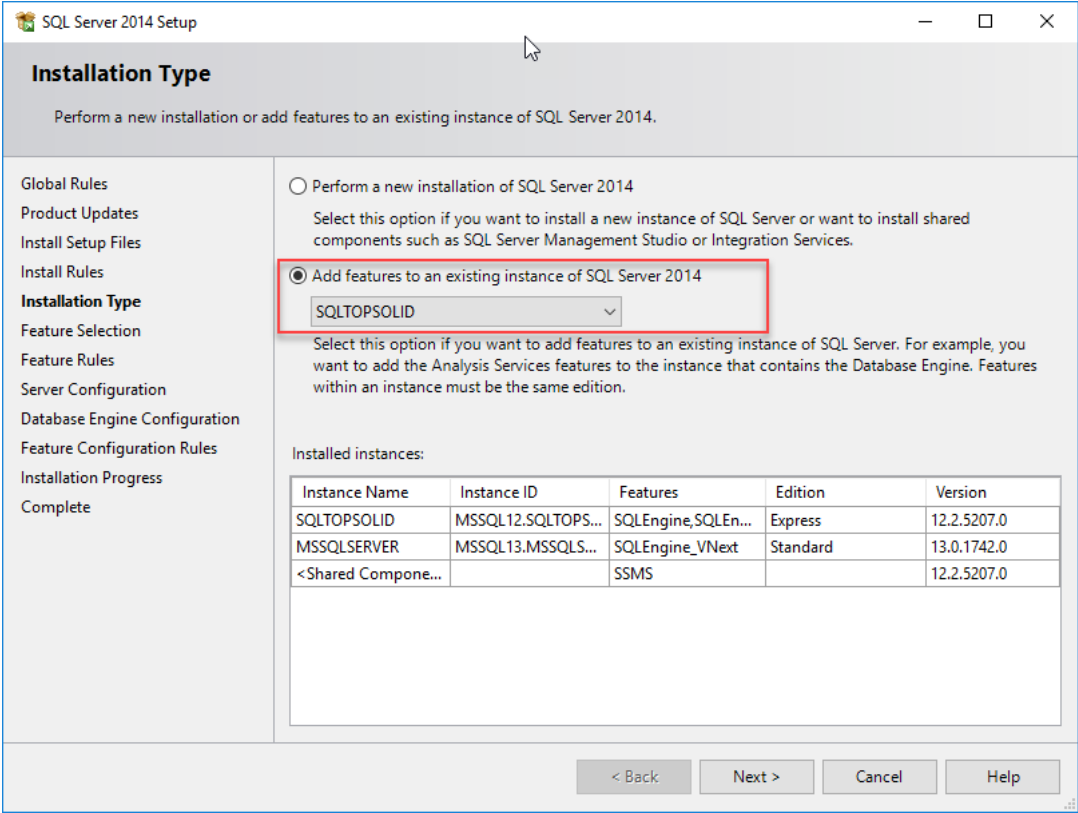
For some database handlings, Microsoft SQL Studio Management is needed. If it is not installed, follow the steps below to install it:

- The SQL 2014 version has to be manually installed. It is available on our site ftp://ftp.topsolid.com/Public/TopSolid/Drivers/SQL/en_sql_server_2014_express_with_tools_with_service_pack_2_x64_9009295.exe.

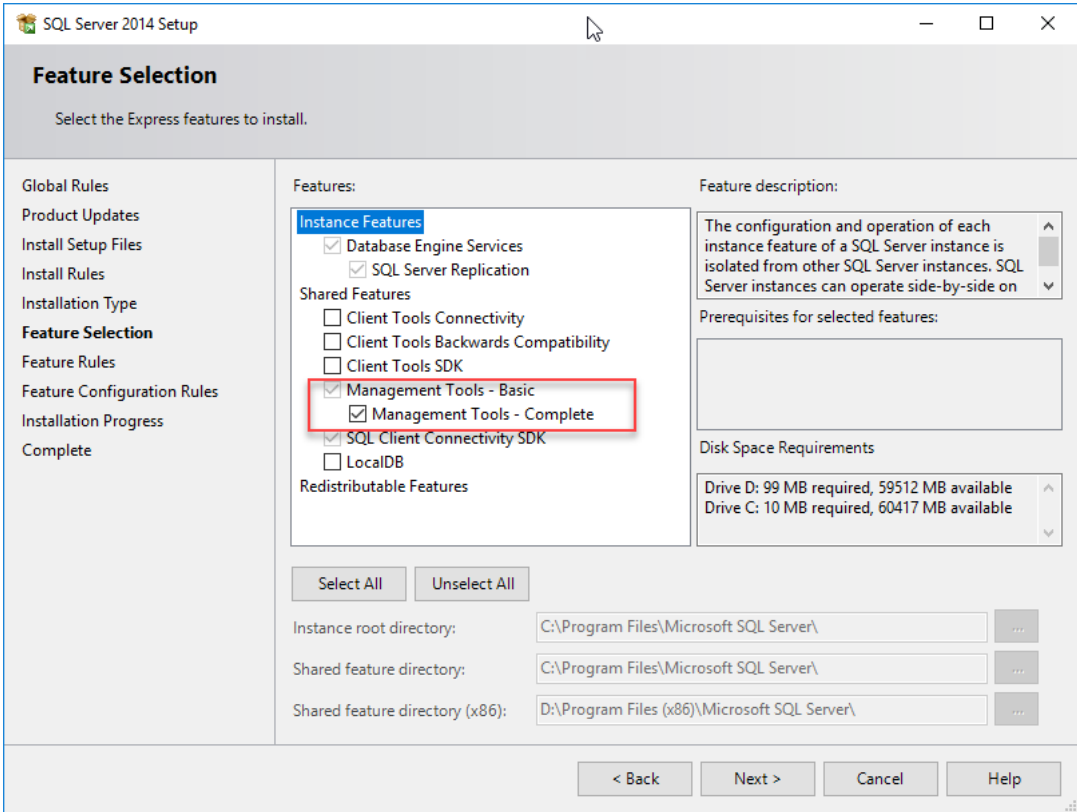
Click the **New SQL Server stand-alone installation or add features** link.



Select Add feature and click Next.



Check **Management Tools - Complete** and click **Next**.



Now it is installed.

Shortcut

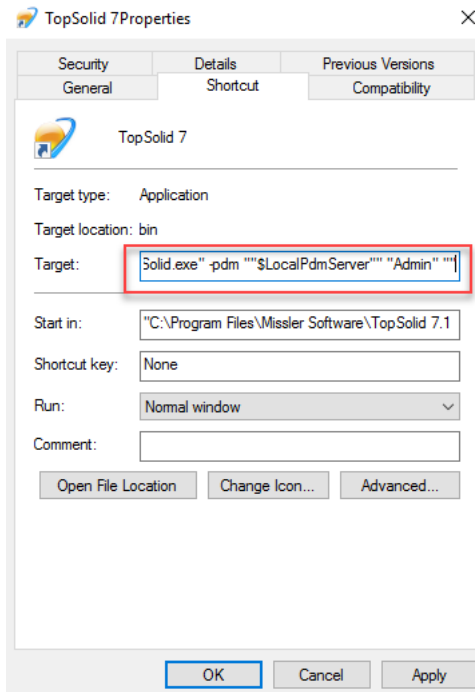
It is possible to force TopSolid to start on a specific Pdm and/or with a specific user. Just right click on the TopSolid icon and click the **Properties** contextual command to add an argument in the target field as following.

For a use with a Local Pdm Server:

-pdm ""\$LocalPdmServer"" "Admin" ""

You should have something like this in the shortcut target:

"c:\Program Files\TopSolid\TopSolid 7.16\bin\TopSolid.exe" -pdm ""\$LocalPdmServer""
"Admin" ""



For a use with a Pdm Server:

-pdm ""Connection name"" true or false "User" "Password"
true or false is for the Windows authentication (true) or TopSolid authentication (false). If the Windows authentication is used, the user and his password have to be kept blank:

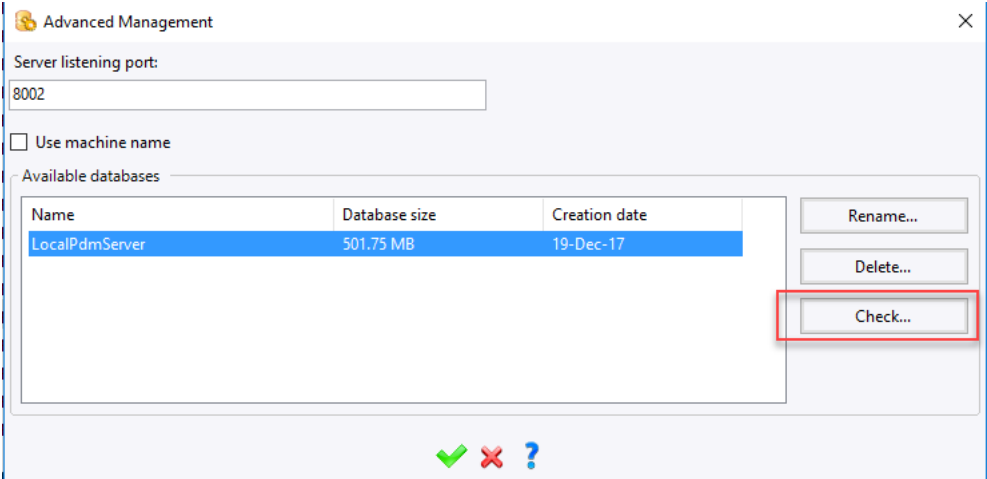
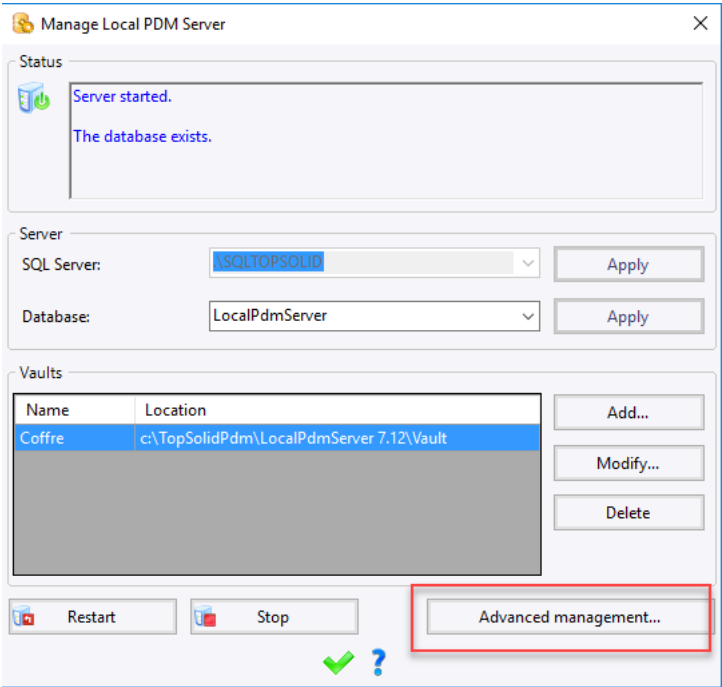
"c:\Program Files\TopSolid\TopSolid 7.16\bin\TopSolid.exe" -pdm ""*Connection_name*"" true
"" ""

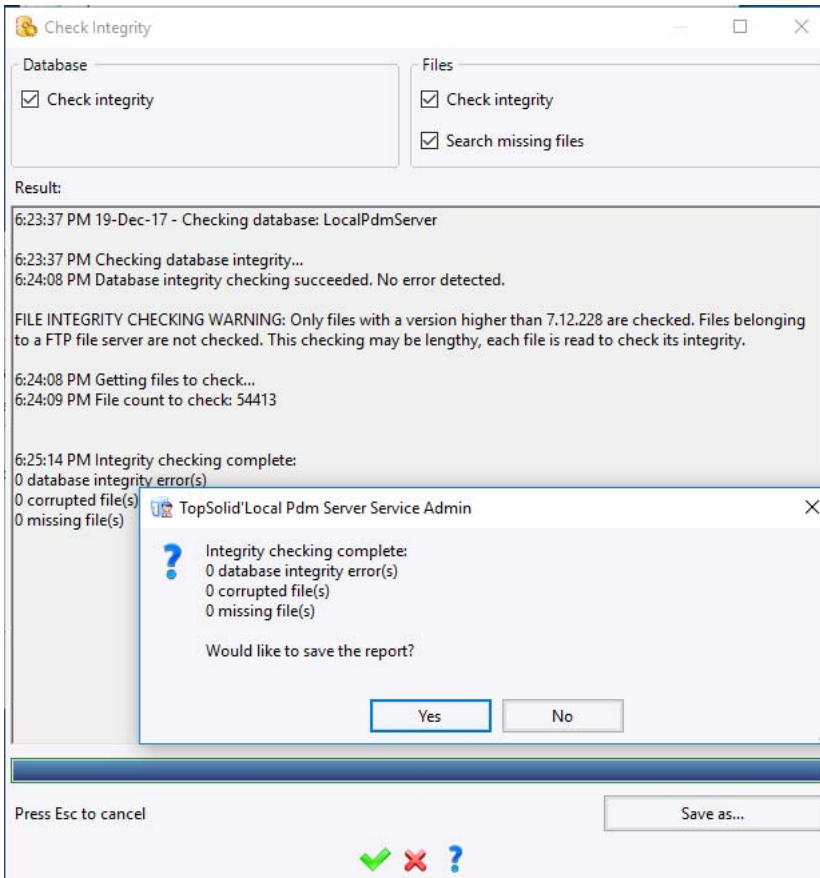
With a TopSolid authentication, you should have something like this in the shortcut target:

"c:\Program Files\TopSolid\TopSolid 7.16\bin\TopSolid.exe" -pdm ""*Connection name*"" false
"User" "Password" where "*Connection name*" "User" "Password" have to be changed according to your settings.

Pdm maintenance

Like for disks, it is necessary to check the database and files integrities as well as searching for missing files. The operation is automatically done every night. You can also done it manually by clicking the **Check** button of the **Advanced management** of the Pdm Server or the Local Pdm Server.





Get the configuration of another Pc (menus, icon bars, ...)

Customized icon bars, menus, connection settings, ... of a previous version of TopSolid or a newly installed one, can be transferred to TopSolid by using the **Tools > Settings management** command. First by exporting it to create the TopSet file, then by importing it on the new Pc.

Using FTP Server

TOPSOLID SAS recommends to use a TCP file server instead of a FTP server. FTP is only available for the compability with existing old installations. A TCP file server is more secure for data with a checksum of transfered files through the network and the possibility to check files after they have been written on the server. It also allows to compress sended files through the network. it sends directly the asked files to the client workstation.

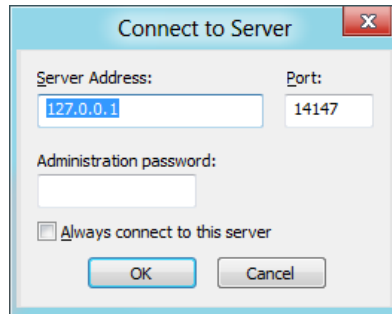
The FTP server has to send the files to the PDM server which transfers it to the client workstation. This increase the network activity.

The FTP server is not provided, not installed and not configured by TOPSOLID SAS or one of its resellers. Screenshots below correspond to FileZilla Server; others FTP servers have approximately the same capabilities.

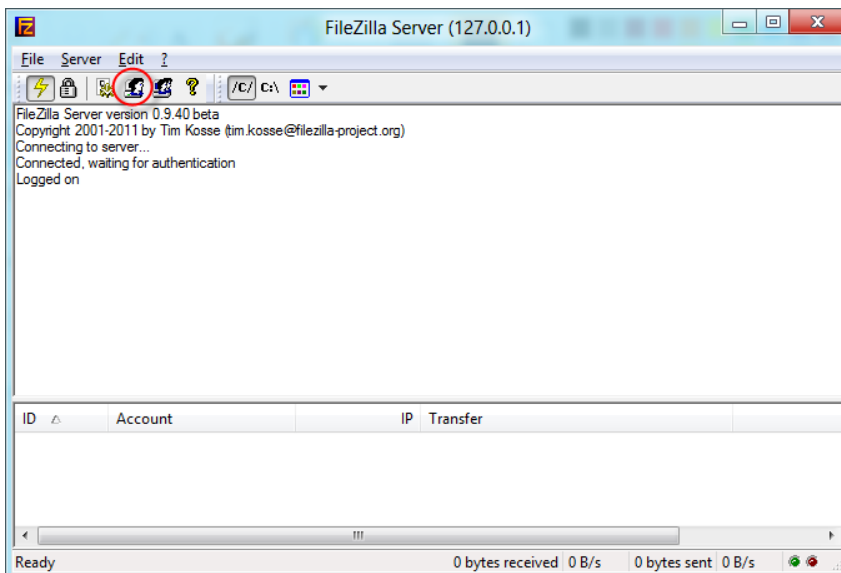
- Start the administration homepage.

The local IP address is always 127.0.0.1.

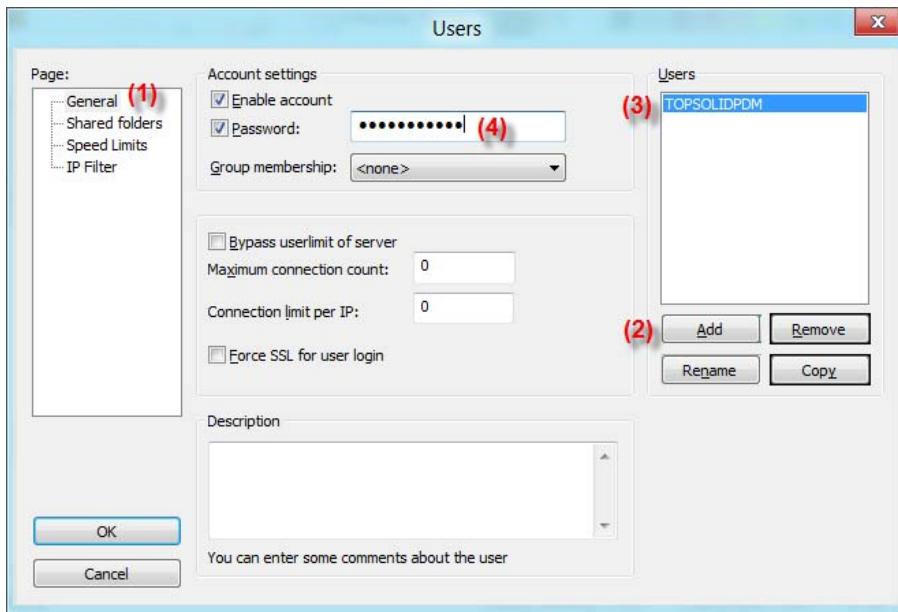
- Click the **OK** button.



- Click on the user's icon.

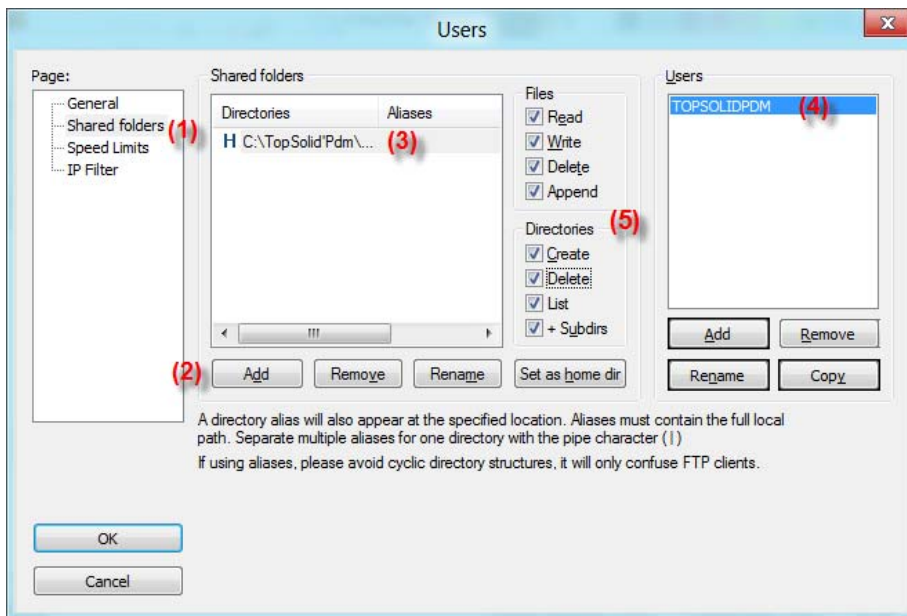


- In the **General** section (1), click the **Add** button (2), name the user **TOPSOLIDPDM** (3), and then enter **TOPSOLIDPDM** as the password (4).



- In the **Shared folders** section (1), click the **Add** button (2) to be able to define a folder for the storage of the PDM files (3), select the user **TOPSOLIDPDM** (4) and give him all rights (5).

The chosen folder contains all TopSolid files.



- Check that the FTP server is started.

Using NAS Server

TOPSOLID SAS recommends to use a TCP file server instead of a NAS server. NAS is only available for the compability with existing installations. A TCP file server is more secure for data with a checksum of transfered files through the network and the possibility to check files after they have been written on the server. It also allows to compress sended files through the network. it sends directly the asked files to the client workstation.

The NAS server has to send the files to the PDM server which transfers it to the client workstation. This increase the network activity.

NAS server are not provided and not installed by TOPSOLID SAS or one of its resellers. Screenshots below correspond to a generic NAS server, the purpose being to activate the FTP mode on this server.

- Start the administration homepage.

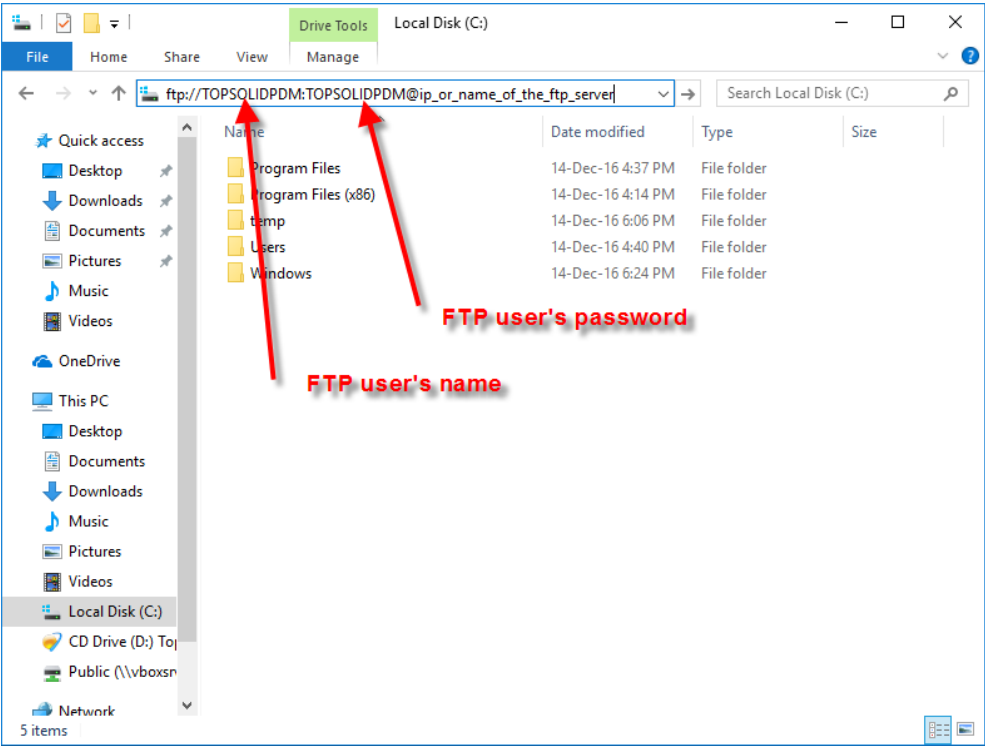
The screenshot displays the Linksys ENAS administration interface. The 'System Information' section is active, showing fields for Server Name, Comment, Workgroup, and Printer Name. The 'Location' section includes Language Support, Time Zone, and Local Date/Time. The 'WINS' section has an 'Enable WINS' checkbox. The 'Options' section is expanded, showing several checkboxes: 'Enable Guest Logins', 'Enable FTP Server' (checked and circled in red), 'Enable UPnP Support', and 'Enable Printer Icon'. The 'Port number for HTTP (Web Browser) connections to this Server' is set to 80. The 'Save' button is visible at the bottom.

- Activate the FTP transfer mode on the NAS server, if possible by creating a user TOPSO-LIDPDM with a password TOPSOLIDPDM and with all rights for this folder.

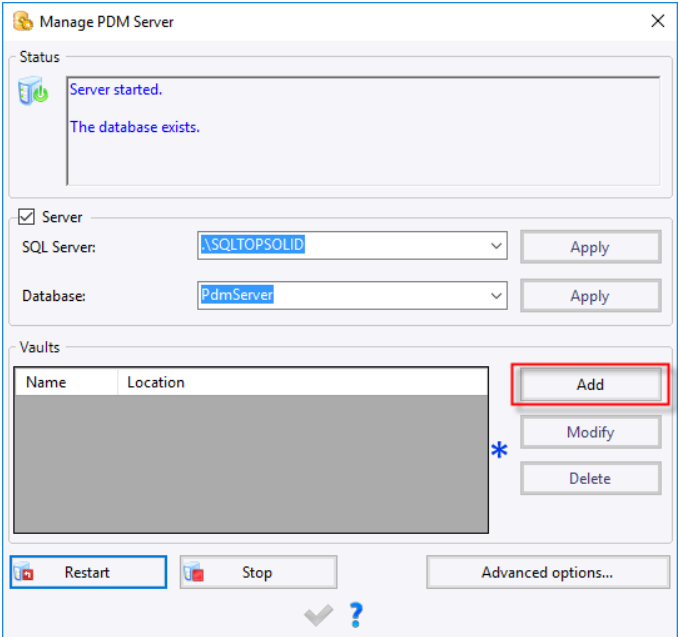
The chosen folder contains all TopSolid files.

File Permission	Owner	Group	Other
Read	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Write	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execute	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Directory Permission	Owner	Group	Other
Read	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Write	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execute	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Enable FXP	<input type="checkbox"/>		
Allow Transfer Resumption	<input type="checkbox"/>		
Always Chroot	<input checked="" type="checkbox"/>		
Require IDENT Authentication	<input type="checkbox"/>		
Require Reverse DNS for IP	<input type="checkbox"/>		
Masquerade address	<input type="text" value="127.0.0.1"/>		

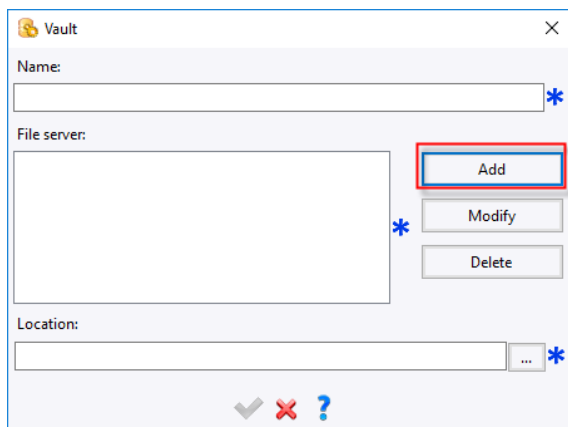
To test if all these settings are correct, open a Windows Explorer and enter the following address `ftp://TOPSOLIDPDM:TOPSOLIDPDM@IP_or_name_of_the_ftp_server`
The Explorer must display the chosen folder in the ftp settings and you must be able to manually, create, modify or delete files and sub-folders.



You have now to configure TopSolid'Pdm Server to use this FTP vault by adding a vault.

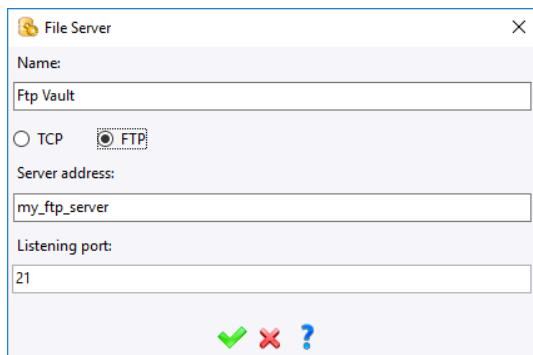


Add a file server




The 'Vault' dialog box is shown. It has a title bar with a yellow vault icon and the text 'Vault'. Inside, there is a 'Name:' label followed by a text input field. Below that is a 'File server:' label followed by a large empty rectangular area. To the right of this area are three buttons: 'Add', 'Modify', and 'Delete'. The 'Add' button is highlighted with a red rectangular border. At the bottom, there is a 'Location:' label followed by a text input field and a small button with three dots. At the very bottom are three icons: a green checkmark, a red X, and a blue question mark.

Select the FTP protocol and enter the IP address or the the Ftp server name.



The 'File Server' dialog box is shown. It has a title bar with a yellow vault icon and the text 'File Server'. Inside, there is a 'Name:' label followed by a text input field containing 'Ftp Vault'. Below that are two radio buttons: 'TCP' and 'FTP'. The 'FTP' radio button is selected. Below the radio buttons is a 'Server address:' label followed by a text input field containing 'my_ftp_server'. Below that is a 'Listening port:' label followed by a text input field containing '21'. At the bottom are three icons: a green checkmark, a red X, and a blue question mark.

Enter a vault name and the Ftp user name and his password.

 Vault

×

Name:

FtpVault

File server:

FTP: Ftp Vault

Add

Modify

Delete

FTP login:

TOPSOLIDPDM

FTP password:

FTP password confirmation:

FTP relative folder (optional, leave blank if unused):

✓

✗

?

Validate and start the TopSolid'Pdm Server service.

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Glossary

The definitions of key terms used in this document are listed below.

ERP: Acronym for "Enterprise Resource Planning", which is a "production management" system designed to manage the company's operational processes, such as purchasing, order fulfillment, inventory, material requirements, etc.

Library: Type of project containing documents frequently used in projects.

PDM: Acronym for "Product Data Management", which is a system used to manage data securely, and specifically to control the access, sharing, retrieval and storage of data, etc.

Project: Group of documents organized in folders managed by the PDM system.

Vault: Secured location where project documents are stored.