Solver Private Host Installation Guide

Version 5.2

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Introduction

Solver Private Host (also known as Solver 5x) is a web-based corporate performance management solution providing organizations with reporting, budgeting, data warehouse, and dashboard capabilities, to name a few, on both financial and operational data. This guide will walk users through the installation process. This guide is broken down into two sections. The first section details upgrading from BI360 4x, while the second section will detail installing Solver Private Host.

The installation steps detailed in this guide require SQL admin permissions and local computer admin for their respect steps described.

In 2020, Solver, Inc. rebranded their BI360 product to Solver. In this user guide, you will see reference to both product names. BI360 is Solver, Inc.'s 4x product while Solver is Solver, Inc.'s Private Host version.

Who Should Read this Manual

This manual is for network professionals responsible for installing the Solver solution within their organization.

Obtaining the Software

Users belonging to an organization that has purchased the software can request a copy of the download files by submitting a request to support@solverglobal.com.

License Keys

Valid license keys are required in order to install the software. Users can obtain their license key by submitting a support request to support@solverglobal.com.

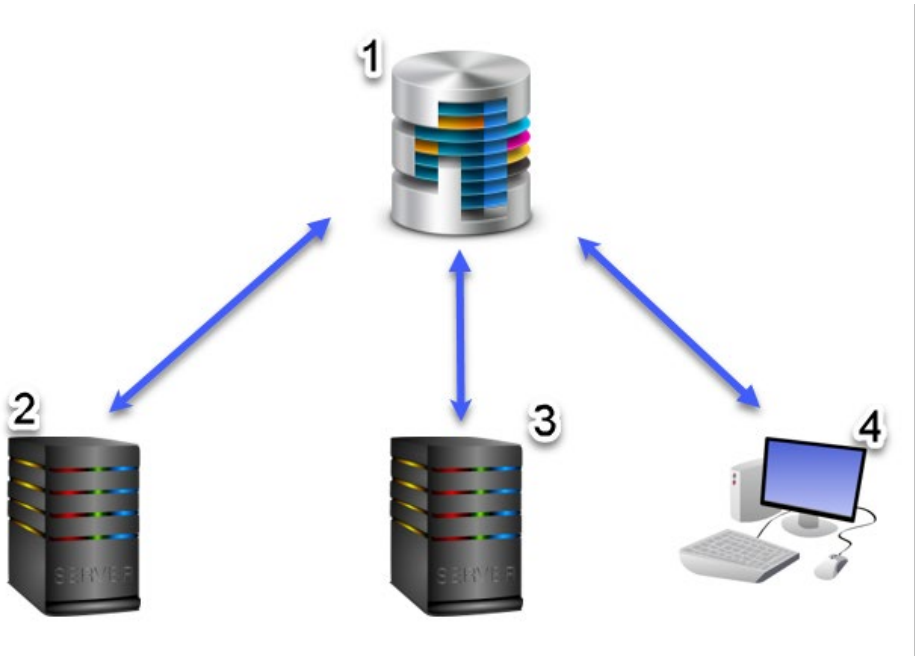
Assistance with Installations

Solver Support offers installation services at a billable rate. Please contact support@solverglobal.com for inquiries on assisted installations.

System Requirements

The following diagram is an ideal Solver implementation. There are 4 machines in this diagram:

1. SQL server
2. Web server
3. Application server
4. End user machine
    - Needed only for Report Designers



All Solver relevant machines are connected to a SQL server where up to 3 Solver related databases may exist:

1. Solver_Repository: This is a non-financial database that stores Solver relevant information such as user permissions, license keys, and data connections.
2. SolverDW: This is the backend database for Solver Private host that is used to store transactions being used for budgeting purposes and reporting purposes.
3. Solver_Scheduler: This database is used for scheduled runs of rules and jobs.

It is strongly recommended that the SolverDW database is put on a separate SQL server than the ERP database. SQL 2016+ Standard Edition or higher is recommended.

The SQL server may also contain the ERP source database, however it is recommended that the source database is located on a separate SQL server.

Solver Server Overview

The following servers (virtual or physical) are needed for Solver:

SQL server	Database server to contain the 1. Repository database 2. Data Warehouse database 3. Job Scheduler database This can be the same server or a separate server from the ERP SQL server. It is recommended that it is a separate server.
Web server	Solver Private Host runs on Windows Web Server (Internet Information Services (IIS))
Services server	The Services server runs many core Solver services: Report Rendering, Integration, Publisher as well as several other micro-services. This machine cannot be a Domain Controller.
End user computer	This machine does not need to be a server. This is a user's work computer used to create and edit Solver Reports in Excel.

Solver Private Host does not support case sensitive SQL servers for the Solver Private Host databases.

SQL Server

The SQL server will contain two or more Solver databases, depending on the software purchased. The specifications below are the minimum requirements; however, it is strongly recommended to configure a SQL server that can be expanded as Solver use grows within the organization.

	SQL Server	
	1-50 Concurrent Users	**50+ Users**
CPU[1,2]	4+ Core	8+ Core
RAM	16GB+	32GB+
Operating System[1,4]	Windows Server 2012/2012R2+	
Database Server*	SQL Server 2014+	
Storage	Based on data integrated into Data Warehouse and/or transactional input within budget model (contact your Partner) • A highly available SSD setup • A SAN that is optimized for online transaction processing (OLTP) throughput • High-performance direct-attached storage (DAS)	
Disk Configuration	• Non-Raid configurations are supported, but redundancy will not be available. • See notes for recommended RAID configurations[5]	
Port Configuration	• Must be able to communicate with the Web and Services servers documented below • Internet access is not required	

** all items below.*

1. *SQL Server Standard or greater version. Latest version of SQL is recommended*
    a. *Case sensitive server and/or database is not supported.*
    b. *SQL Compact and Express are not supported.*
2. *The supported SQL version are for Solver specific databases and are not requirements of the source database, typically the Enterprise Resource Planning (ERP) database. For example, if a customer has their Dynamics database on a SQL2005 instance, it is not required to upgrade or move this database to a new SQL server.*

Technical Information

1. The latest updates to the operating system and Microsoft Office are required. Please note that this may require a reboot and therefore should be done during non-business hours if the installation is being done on the terminal server.

Customers using Microsoft Click to Run (C2R), please review our notes on C2R installs found here.

2. The Reporting application will install a small repository database on the designated SQL server that can be the same server as the ERP and/or Data Warehouse.
3. Solver Private Host typically supports service packs and cumulative updates of SQL. New versions of SQL Server are tested and confirmed by the Solver development team. Please contact Solver Support (support@solverglobal.com) should you have any questions.
4. The Solver Suite is not supported on systems that use FIPS or ADFS.

Web Server

The following are the web server system requirements for Solver Private Host.

System Requirements for Solver Private Host	
Operating System	Windows Server 2012+
Ram	8 GB+
CPU	1+ CPU, 2+ Core
Other applications (installed by the installer if not installed)	• .NET Framework 4.7.2 • IIS URL REWRITE 2.0

Server	• Internet Information Services (IIS) 7+ with
	  ○ ASP.NET support enabled
	  ○ HTTP Activation enabled
	• MSDTC enabled

Internet Access	This server must be able to communicate with the following Solver IP addresses • 13.69.228.4 • Marketplace.app.solverglobal.com

1. *If installing Web Budgeting, the Solver and/or ERP database must be set to SQL Compatibility mode 2008R2+. More information can be found on the Microsoft Docs website by clicking here.*

Services Server

Solver utilizes Microsoft Service Fabric to manage the Report/Budget template rendering, Data Integrations, Publisher, and other Solver services. The below are guidelines for the Services server but specifications many need to be increased depending on

1. Number of concurrent users
2. Size of the reports being ran

Infrastructure should be scalable to meet the changing data size and needs of the Solver Private Host solution.

The following are the Services server requirements for Solver Private Host.

System Requirements for Rendering & Integration Services		
Operating System	Windows Server 2012+	
Ram	20 Concurrent Users or fewer • 16gb ram	20 or more Concurrent Users • 32gb ram
Drive Space	A minimum of 40GB additional, available disk space	
CPU	20 Concurrent Users or fewer • 2 CPU • 2+ Core each	20 or more Concurrent Users • 4+ CPU • 2+ Core each
Other	• NET Framework 4.7.2, full install • Windows PowerShell 3.0 • The RemoteRegistry service should be running on all the machines. • For organizations with multiple SQL instances on their SQL server, SQL Server Browser must be enabled. Enabling this feature requires a restart of the SQL Service on the SQL Server.	
Ports	The following ports should be open for communication with the web server • 19081 (inbound) • 31313 (inbound)	
Internet Access	This server must be able to communicate with the following URLs • Microsoft.com	

End User Computer

The end user computer is the work computer or laptop where Report Designers will be creating and editing reports. These can be the users, standard work provided laptops with the following requirements

1. Windows 10+ or Windows Server 2012+
2. Microsoft Excel 2016+
3. .net Framework 4.7+
4. Min 8gb ram

The installation of Report Designer requires computer admin permissions. Users with restricted access on their computer may need to work with their IT to get the Report Designer application installed on their computer.

This section has been left blank intentionally.

Getting Started

This user guide will detail installing and running Solver 5.2 Private Host. The installation of Solver Private Host consists of 9 main steps on specific machines as listed below:

1. Uninstalling a Previous Version
    a. Upgrading from BI360 4x
2. Data Warehouse database (SQL Server)
3. Web Application Installer (Web Server)
4. Service Fabric Install (Application Services Server)
5. Add solverappuser and Service Fabric entries (SQL server)
6. Enable Data Warehouse (Web Portal*)
7. Enter Data Warehouse License (Web Portal*)
8. Create a New Connection (Web Portal*)
9. Use Active Directory to Add Users (Web Portal*)

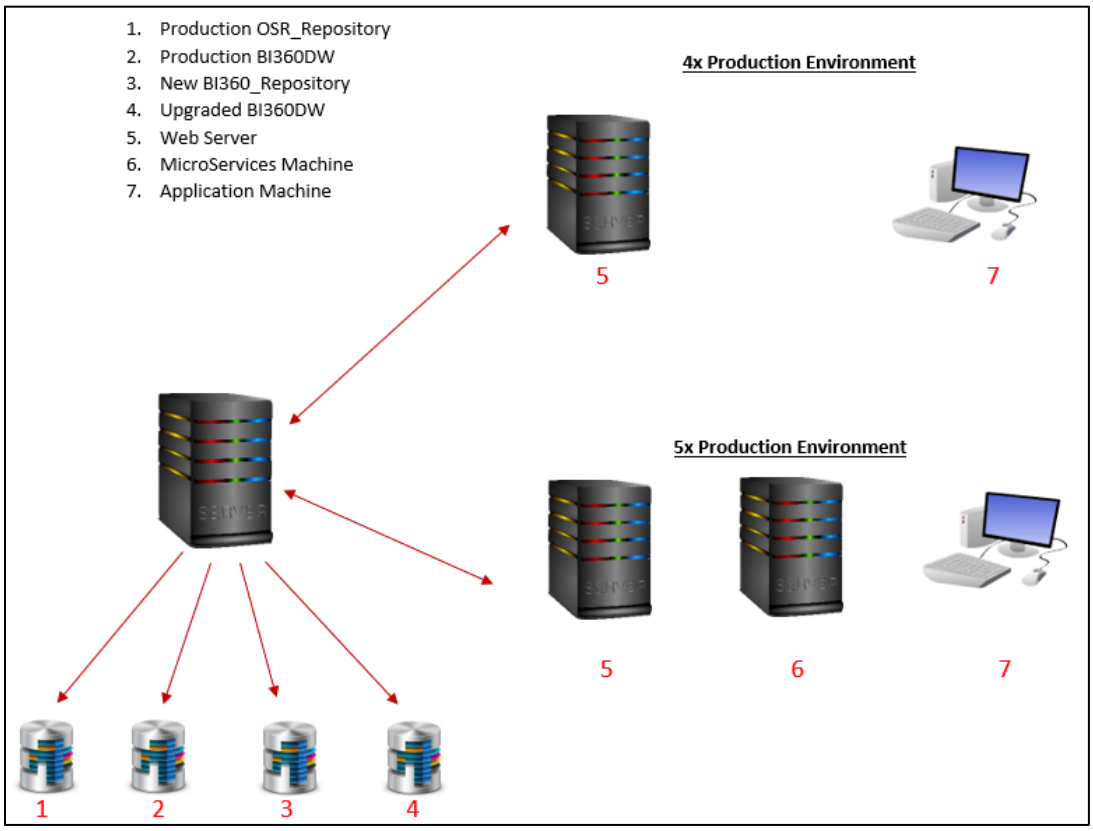
For existing customers, it is STRONGLY recommended to create a new environment to test the upgrade to Solver Private Host. See next page.

This section has been left blank intentionally.

The development environment will consist of the following:

1. New Web server
2. New Application server
3. New Services machine
4. Backup of the Solver Data Warehouse database

Below is a diagram of what this deployment may look like.



Organizations will maintain their 4.x installation (shown in the upper-right corner). This will enable an organization to continue using Solver daily while others perform full User Acceptance Testing (UAT) in a development environment (lower-right corner) to confirm the upgrade to 5x. Some important aspects to point out:

- Development environment consists of new machines, end users performing UAT testing are not using a production machine to test 5x.
- Development environment consists of a new machine, micro services machine, which is not part of the 4x installation.
- One SQL server is maintained. A new repository database (Solver_Repository is created) and a copy of the 4x Repository database is restored and upgraded. This is needed to fully test the 5x version while end users are still using 4x daily. Once the upgrade has been fully tested, only then should the upgrade to production begin.
    - Organizations can choose to “switch” development over to production or upgrade the current production environment to 5x; either option works.

Uninstalling a Previous Version

This section details steps for existing BI360 4x customers. For new installation, please navigate to this section.

For existing customers with a 4.x installation there are two steps required before running the Solver Private host installer:

1. Uninstall the previously installed version
2. Upgrade the Solver database to Private Host schema

Backups of the database should be taken prior to any upgrade.

For organizations that plan to keep their existing web server, it is required to uninstall the 4x Portal installation first. For organizations that plan to create a new web server, please see *Upgrading the Solver Data Warehouse*, later in this document.

Steps to Uninstall

Prior to installing Solver Private Host, it is required to uninstall Solver on any machine that has BI360 4x installed on it. This will include:

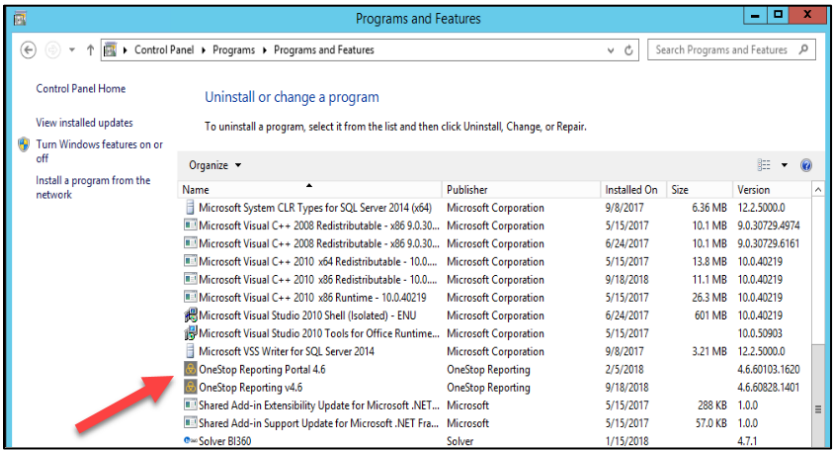
- The web server
- The end user computer

The following section will detail uninstalling the application from these environments.

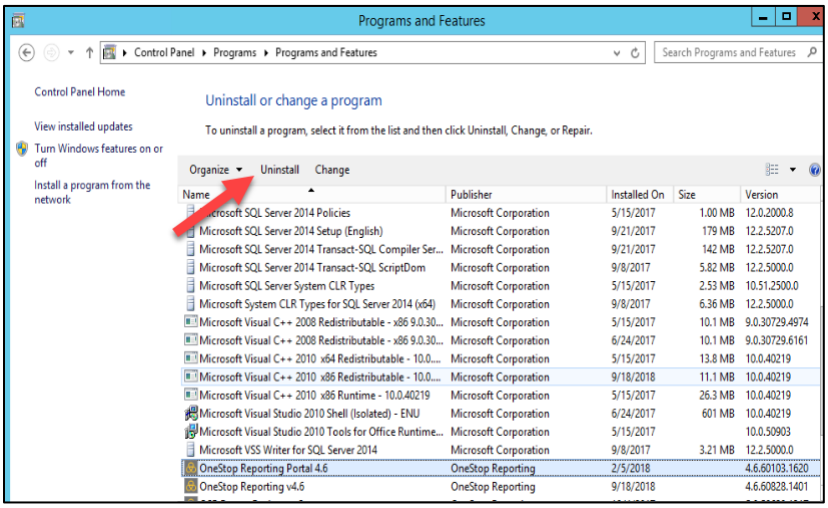
Uninstalling the Web Application

Prior to uninstalling the web application, ensure no one is using the BI360 4x Portal. This should be done during a maintenance period. To uninstall the web application:

1. From the web server, open **Control Panel** >**Programs and Features**.
2. Select **OneStop Reporting Portal**.



3. Click the **Uninstall** button.



4. The uninstaller will launch. A prompt will appear asking the user to confirm the uninstall of the application. Click **Yes** to continue.
5. After the uninstall completes, open **Internet Information Services (IIS) Manager** to ensure that the website was successfully removed.

This completes the uninstall of the Portal application.

This section has been left blank intentionally.

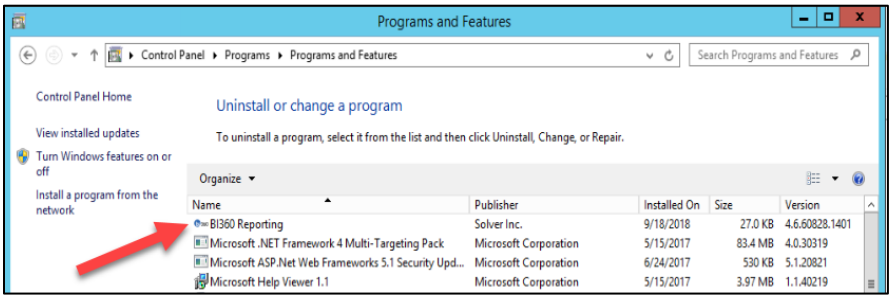
Uninstalling the Application from the End User Computer

The application must also be removed from the end user computer as the user will now use the Solver Private Host web interface. There are three components to be uninstalled:

1. BI360 Reporting
2. OneStop Reporting
3. Solver BI360

To uninstall the application off the end user's computer:

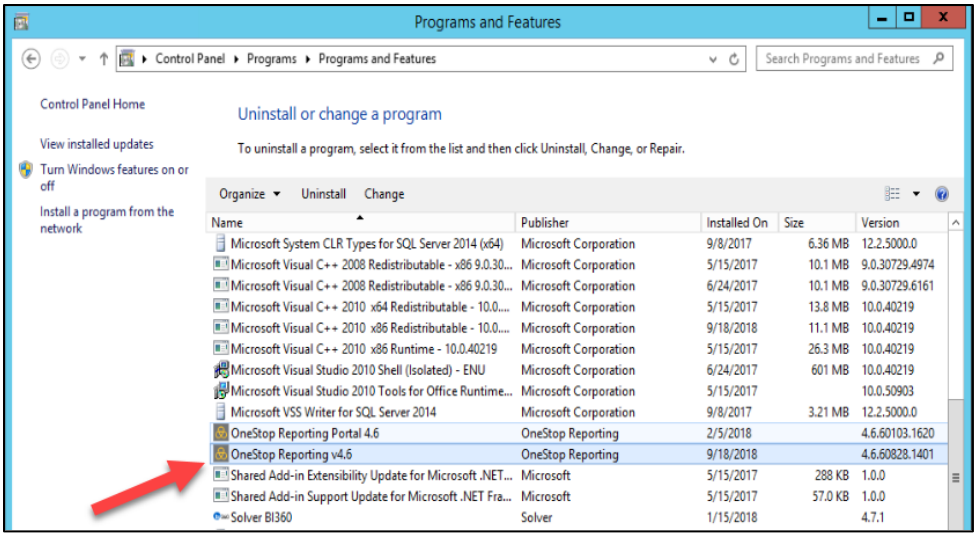
1. Ensure that all BI360 relevant applications are closed on the user's desktop.
2. Navigate to **Control Panel** -> **Programs and Features**.
3. Select **Solver Reporting** and click **Uninstall**.



4. A popup will appear asking the user to confirm the uninstall of the application. Click **Yes**.
5. For users who are not a local administrator, a User Access Control popup may appear as well asking users to confirm the uninstall of the application. Click **Yes**. Type in the credentials of a computer admin user to proceed.
6. The uninstall will begin and remove the feature from the machine and the Programs and Features list.

Next, uninstall OneStop Reporting. To do so:

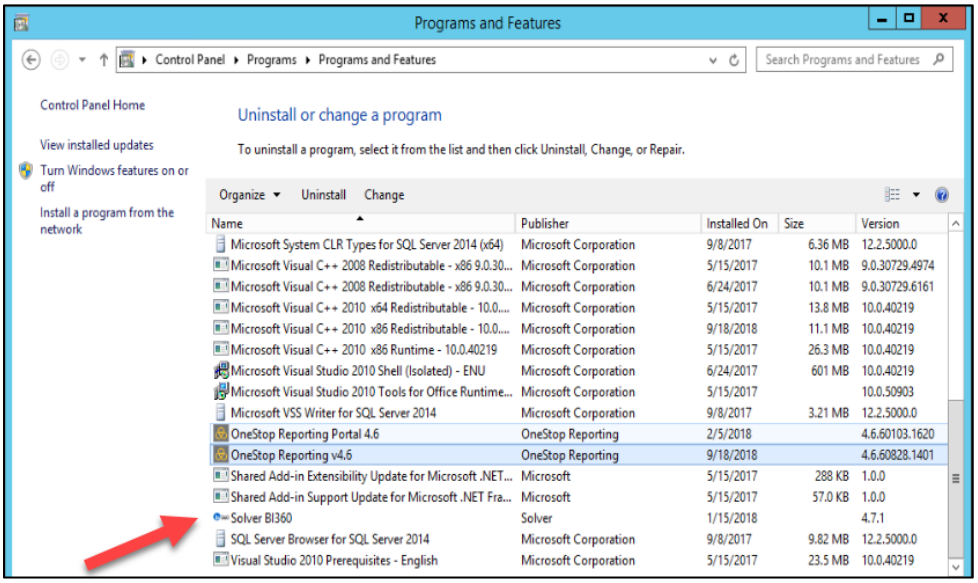
1. In the Programs and Features list, find **OneStop Reporting** and click **Uninstall**.



2. A prompt will appear asking the user to confirm the uninstall of Solver, click **Yes**.
3. The uninstall will begin and remove the feature from the machine and the Programs and Features list.

Next, uninstall Solver BI360. To do so:

1. In the Programs and Features list, find **Solver BI360** and click **Uninstall**.



2. A prompt will appear asking the user to confirm the uninstall of Solver, click **Yes**.
3. The uninstall will begin and remove the feature from the machine and the Programs and Features list.

This completes the uninstall of all Solver desktop components off the end user's computer. At this point, the organization is ready to install Solver Private Host.

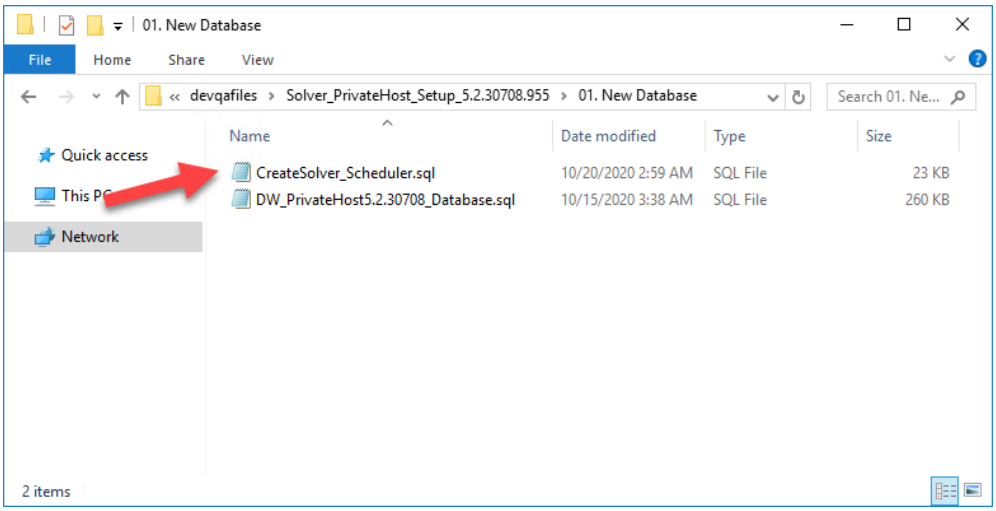
Upgrading the Solver Data Warehouse

Whether coming from BI360 4x or Solver Private Host, the following steps are required to migrate to Solver Private Host 5.2. The following steps are modifying and/or creating a database and must be performed in SQL Server Management Studio (SSMS). Please contact your IT if you are not familiar with this application.

Always take a backup of your databases before performing an upgrade.

The following steps modify databases and should be performed by users familiar with using SQL Server Management Studio (SSMS).

1. After downloading the setup file (.zip) from the Solver Support site and extracting its contents, Navigate to the **1. New Database** folder.
2. Run **CreateSolver_Scheduler.sql** which will create a new database called Solver_Scheduler. This database must be on the same SQL server as the Solver Data Warehouse database.



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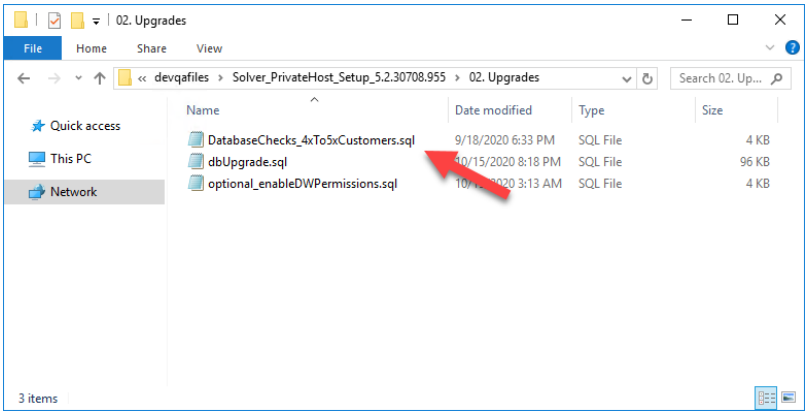
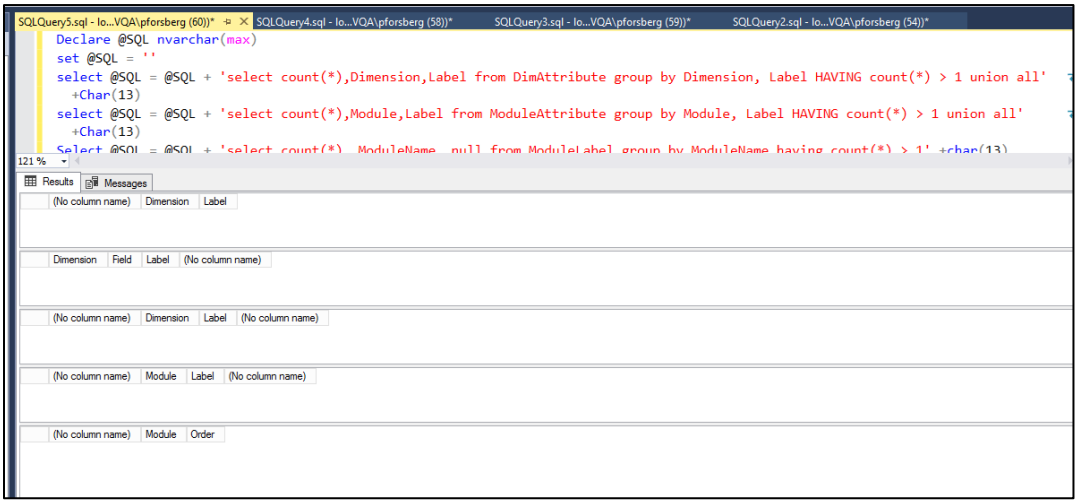
3. Next, navigate to **2. Upgrades**.

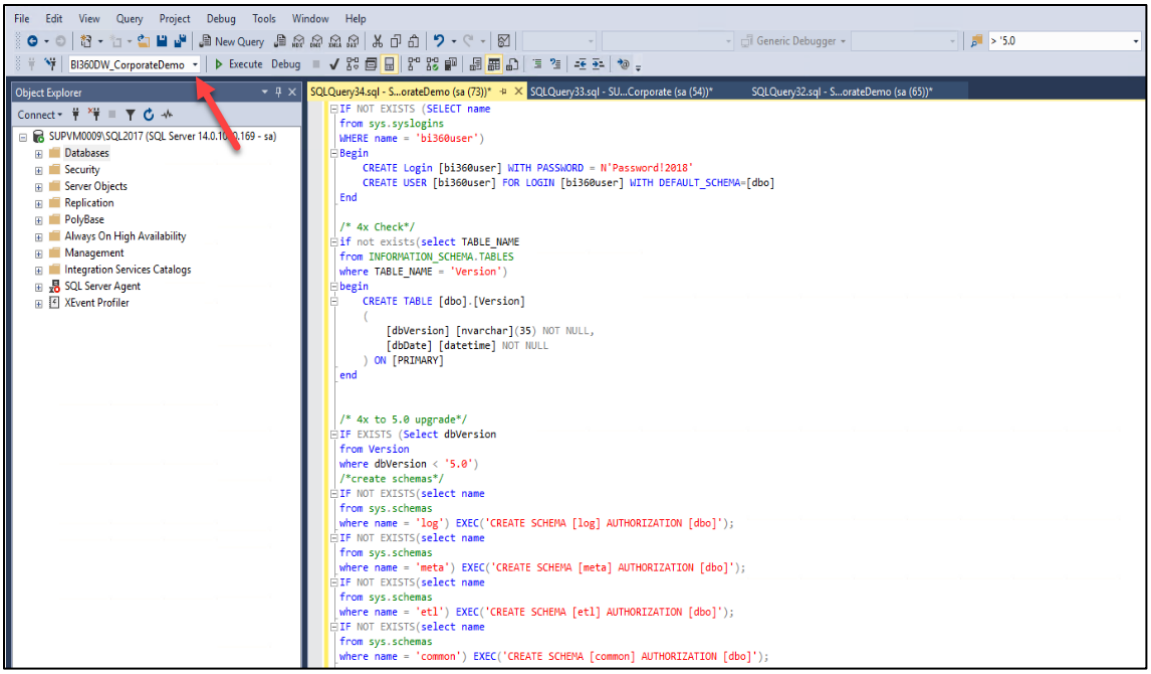
    a. If you are upgrading from 4x to 5x, please run the first script DatabaseChecks_4xTo5xCustomers.sql.

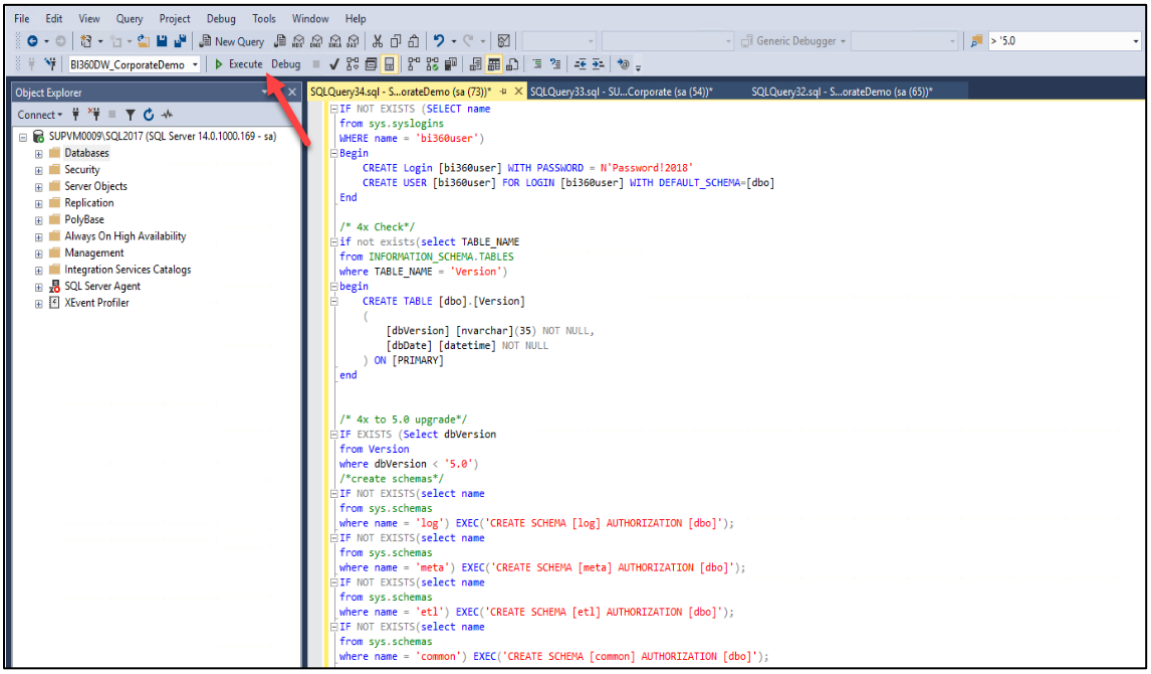


Running this script should return no results as shown below. If it returns results, please contact Solver Support.



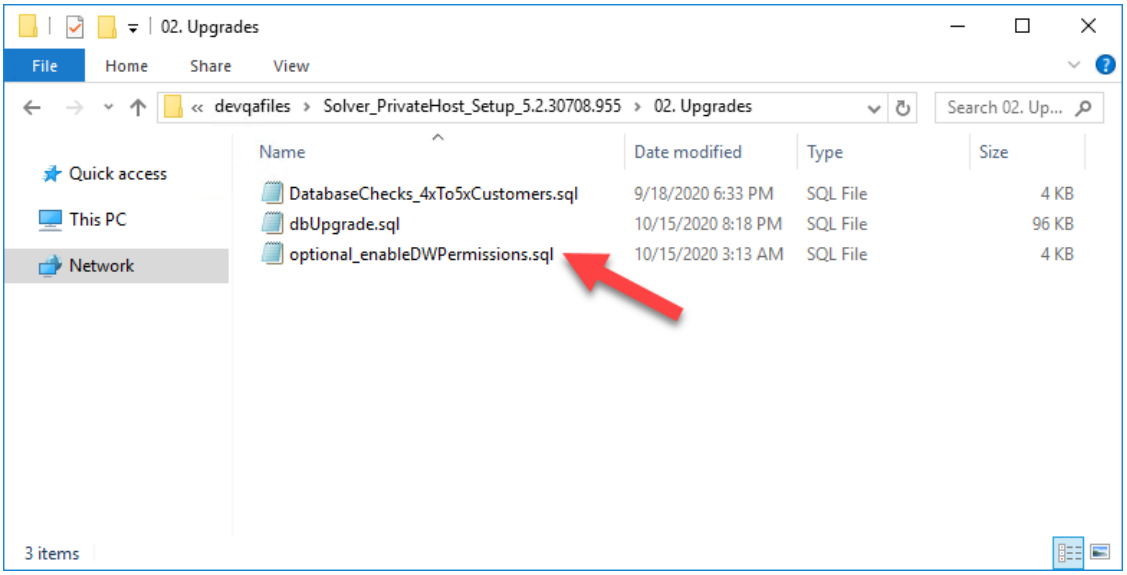
4. Run the dbUpgrade.sql script on your BI360DW database. Depending on the size of the database, this script can take anywhere from a couple seconds to run to 10+ minutes.


File Edit View Query Project Debug Tools Window Help
New Query
Generic Debugger
> '5.0
BI360DW_CorporateDemo
Execute Debug
Object Explorer
Connect
SUPVM0009\SQL2017 (SQL Server 14.0.1000.169 - sa)
Databases
Security
Server Objects
Replication
PolyBase
Always On High Availability
Management
Integration Services Catalogs
SQL Server Agent
XEvent Profiler
SQLQuery34.sql - S...orateDemo (sa (73))*
SQLQuery33.sql - SU...Corporate (sa (54))*
SQLQuery32.sql - S...orateDemo (sa (65))*
IF NOT EXISTS (SELECT name
from sys.syslogins
WHERE name = 'bi360user')
Begin
CREATE Login [bi360user] WITH PASSWORD = N'Password!2018'
CREATE USER [bi360user] FOR LOGIN [bi360user] WITH DEFAULT_SCHEMA=[dbo]
End
/* 4x Check*/
if not exists(select TABLE_NAME
from INFORMATION_SCHEMA.TABLES
where TABLE_NAME = 'Version')
begin
CREATE TABLE [dbo].[Version]
(
[dbVersion] [nvarchar](35) NOT NULL,
[dbDate] [datetime] NOT NULL
) ON [PRIMARY]
end
/* 4x to 5.0 upgrade*/
IF EXISTS (Select dbVersion
from Version
where dbVersion < '5.0')
/*create schemas*/
IF NOT EXISTS(select name
from sys.schemas
where name = 'log') EXEC('CREATE SCHEMA [log] AUTHORIZATION [dbo]');
IF NOT EXISTS(select name
from sys.schemas
where name = 'meta') EXEC('CREATE SCHEMA [meta] AUTHORIZATION [dbo]');
IF NOT EXISTS(select name
from sys.schemas
where name = 'etl') EXEC('CREATE SCHEMA [etl] AUTHORIZATION [dbo]');
IF NOT EXISTS(select name
from sys.schemas
where name = 'common') EXEC('CREATE SCHEMA [common] AUTHORIZATION [dbo]');

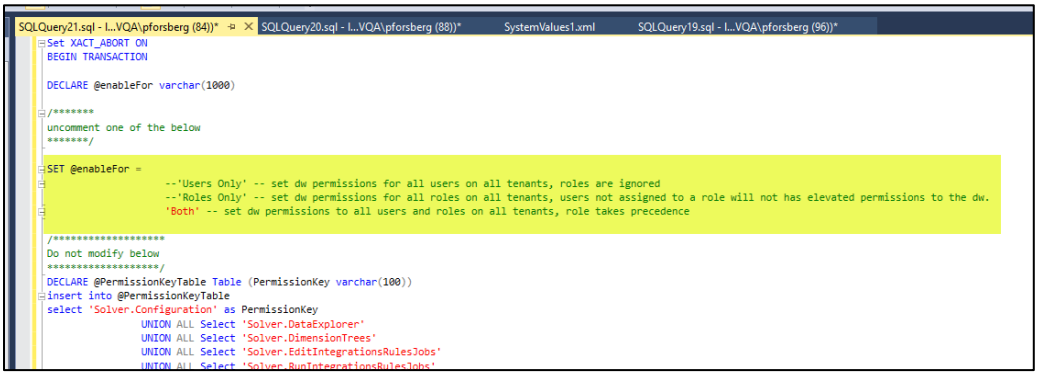

File Edit View Query Project Debug Tools Window Help
New Query
Generic Debugger
> '5.0
BI360DW_CorporateDemo
Execute Debug
Object Explorer
Connect
SUPVM0009\SQL2017 (SQL Server 14.0.1000.169 - sa)
Databases
Security
Server Objects
Replication
PolyBase
Always On High Availability
Management
Integration Services Catalogs
SQL Server Agent
XEvent Profiler
SQLQuery34.sql - S...orateDemo (sa (73))*
SQLQuery33.sql - SU...Corporate (sa (54))*
SQLQuery32.sql - S...orateDemo (sa (65))*
IF NOT EXISTS (SELECT name
from sys.syslogins
WHERE name = 'bi360user')
Begin
CREATE Login [bi360user] WITH PASSWORD = N'Password!2018'
CREATE USER [bi360user] FOR LOGIN [bi360user] WITH DEFAULT_SCHEMA=[dbo]
End
/* 4x Check*/
if not exists(select TABLE_NAME
from INFORMATION_SCHEMA.TABLES
where TABLE_NAME = 'Version')
begin
CREATE TABLE [dbo].[Version]
(
[dbVersion] [nvarchar](35) NOT NULL,
[dbDate] [datetime] NOT NULL
) ON [PRIMARY]
end
/* 4x to 5.0 upgrade*/
IF EXISTS (Select dbVersion
from Version
where dbVersion < '5.0')
/*create schemas*/
IF NOT EXISTS(select name
from sys.schemas
where name = 'log') EXEC('CREATE SCHEMA [log] AUTHORIZATION [dbo]');
IF NOT EXISTS(select name
from sys.schemas
where name = 'meta') EXEC('CREATE SCHEMA [meta] AUTHORIZATION [dbo]');
IF NOT EXISTS(select name
from sys.schemas
where name = 'etl') EXEC('CREATE SCHEMA [etl] AUTHORIZATION [dbo]');
IF NOT EXISTS(select name
from sys.schemas
where name = 'common') EXEC('CREATE SCHEMA [common] AUTHORIZATION [dbo]');

5. The following is an optional step.

   For customers upgrading from version 5.2.30309 and older, after successful completion of the dbUpgrade.sql, you can run the optional_enableDWPermissions. script.



   In version 5.2.30708, Solver introduced Data Warehouse permission. By default, upon upgrade, users will be locked from performing any action in the Data Warehouse. By running this query, users can opt to give “full permissions” to all user, roles or a combination of both for the Data Warehouse menu



   The script is set to run for both Roles and Users by default but you can change this by “commenting out” by adding a -- before the word ‘Both’ and “uncommenting” (removing the --) on the options above.

Whether you choose to run just the dbUpgrade script or the dbUpgrade and the optional_enableDWPermissions scripts, upon successful execution of these two scripts, you have successfully upgraded your BI360DW database.

If any script errors out, please contact Solver Support for assistance.

Databases Creation of New Customer

The database upgrade is now complete. The next section will detail the creation of the necessary databases for new installs of Solver Private Host and can be skipped by customers who are upgrading.

Please navigate to this section to continue the installation.

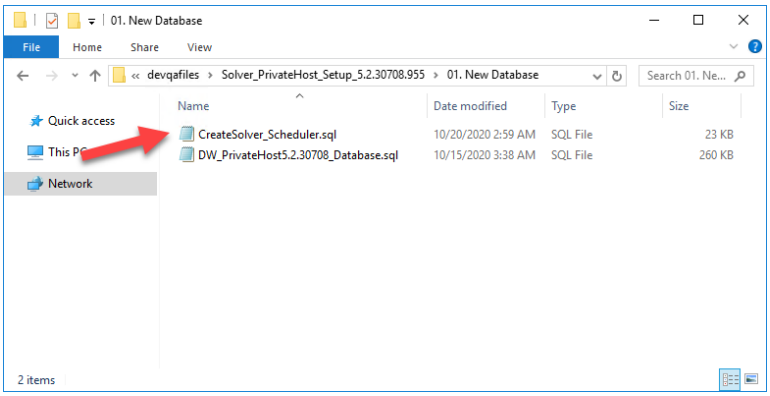
Data Warehouse

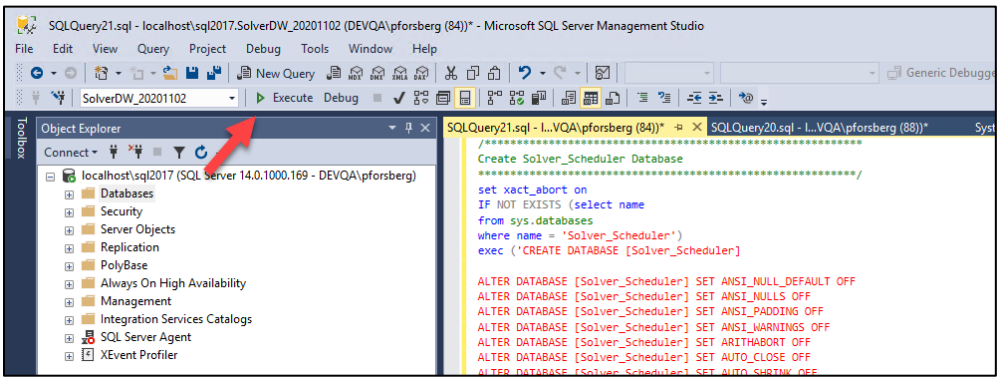
For customers who are not migrating from BI360 4x, the first step in the installation process is to create the necessary Solver Private Host databases.

Creating a Solver Database:

To create the Solver Data Warehouse database:

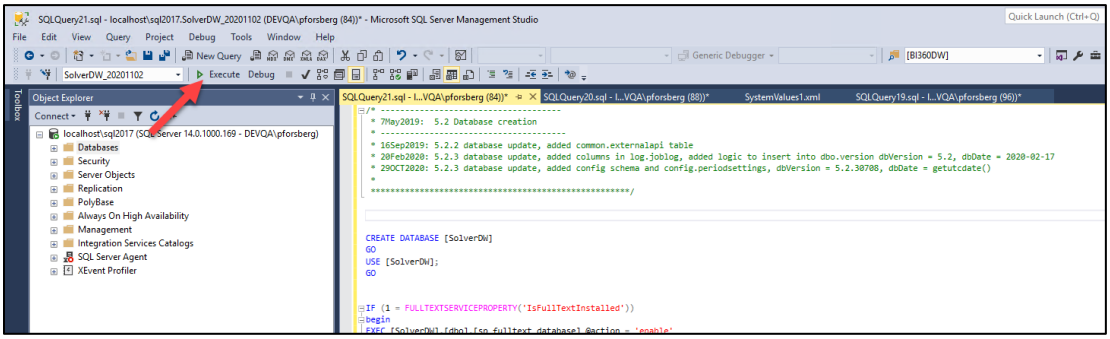
1. After downloading the setup file (.zip) from the Solver Support site and extracting its contents, Navigate to the **1. New Database** folder.
2. Run **CreateSolver_Scheduler.sql** which will create a new database called Solver_Scheduler. This database must be on the same SQL server as the Solver Data Warehouse database.





Should this script error out, please contact Solver Support (support.solverglobal.com).

3. Next, open the **DW_PrivateHost5.#.####_database.sql** script and execute this via SSMS.



Should this script error out, please contact Solver Support.

This completes the database creation process for new installs of Solver Private Host. The next section will detail the steps to install Solver Private Host.

This section has been left blank intentionally.

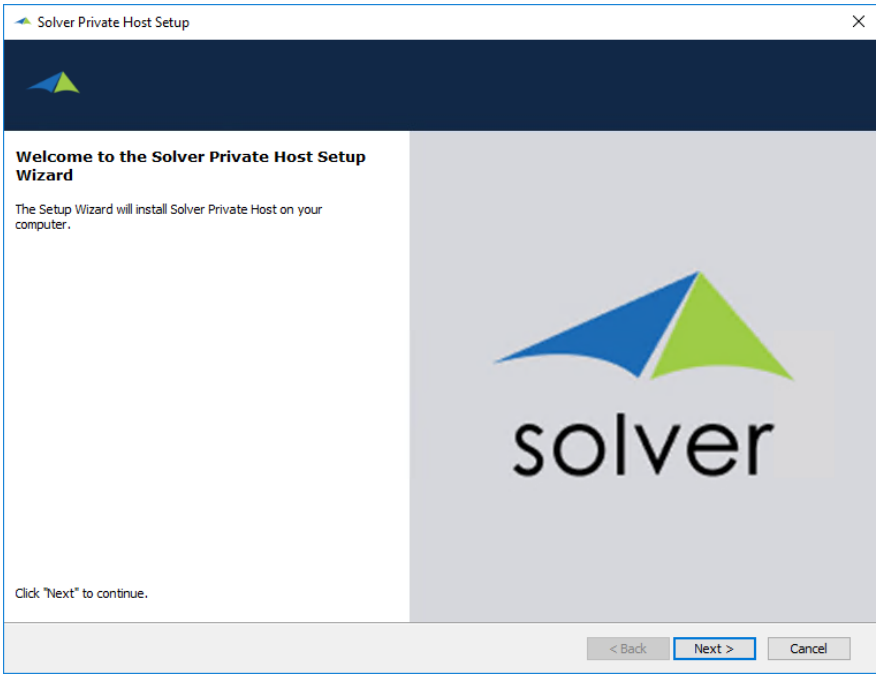
Private Host Installer – Web Component

Prior to running the Private Host installer, ensure that network and computer firewalls allow for communication with the SQL Server. Check that SQL Port (default port 1433) is open and the user performing the installation has permissions on the server for the installation. Please contact your IT should you need confirmation of this ports status within your organization's network.

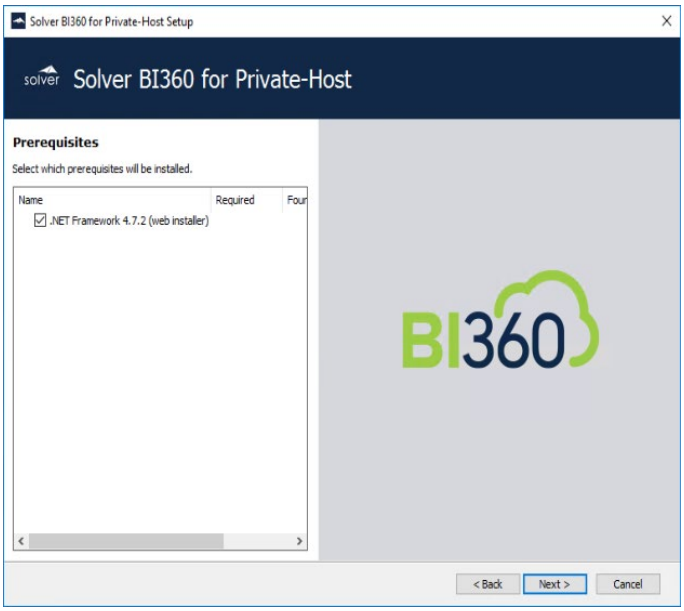
The installer is included with the download that has been request from Solver Support.

1. The following steps require administrative permissions on the web server.
2. The steps listed are performed on the web server.
3. The following should be performed during a scheduled maintenance period.

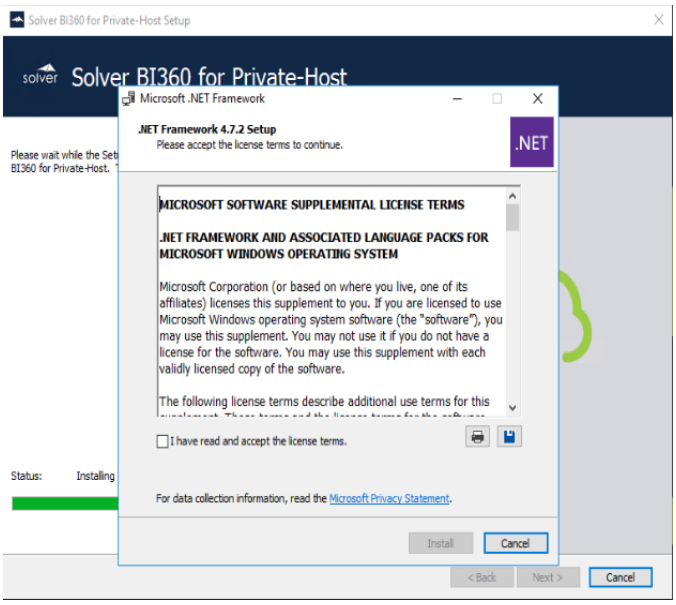
1. Move the 03. Installer folder to the web server.
2. Once copied, open the folder and choose to run the **Solver_PrivateHost_#.#.####.exe**.
    - If prompted for User Access Controls (UAC), please click Yes and type in appropriate, administrative user permissions.
3. One of the two below setup screens will appear. Click **Next** to begin the installation process.



4. If pre-requirements are not met, they will appear on this screen. As shown in the screenshot below .NET Framework 4.7.2 is not installed and will be installed by the installer.



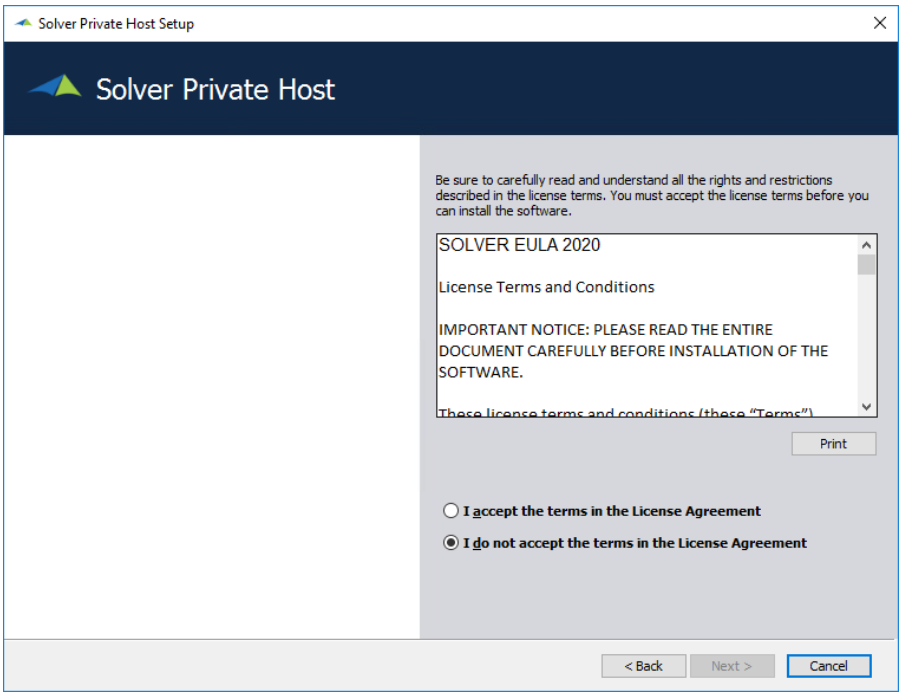
5. Upon clicking Next, the installation process will begin.



Accept the licensing terms of the .NET Framework installer to begin the installation process.

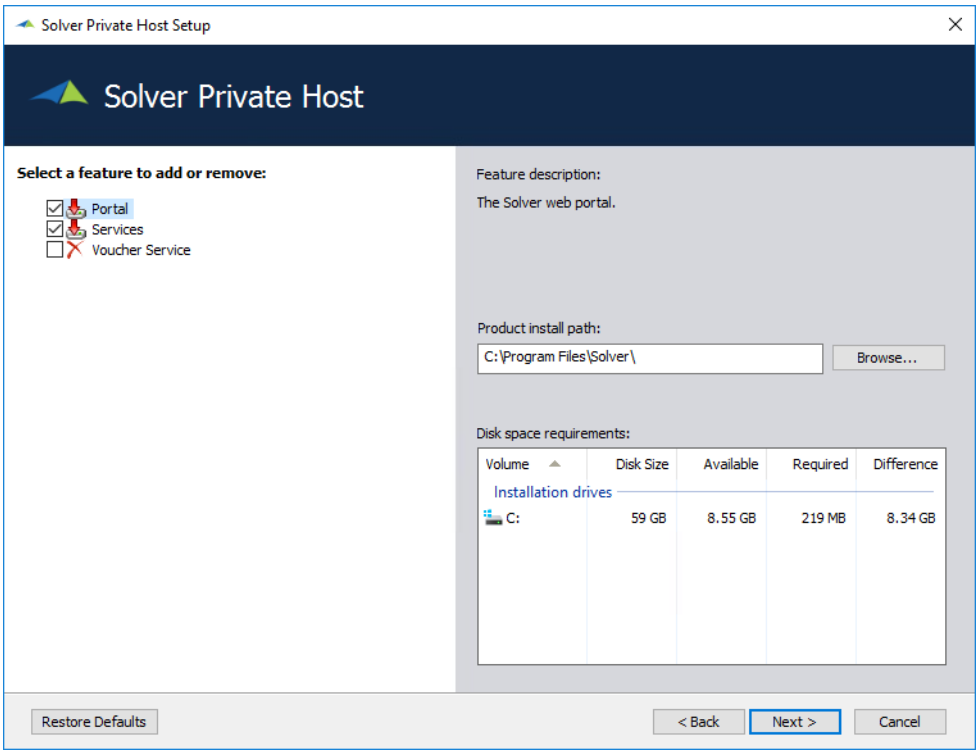
The installation process may take several minutes and will require a reboot on the web server.

6. Once .NET Framework 4.7.2 is installed, the next screen will show the Solver Private Host License Terms. Select the “I accept…” option to begin the installation of Solver Private Host.



This section has been left blank intentionally.

7. Select which feature(s) to install:
    - **Portal**: select this option to install Solver Private Host web component. This should be selected when running the installer on the Web Server.
    - **Services**: select this option to install the Solver Private Host services, responsible for running reports and publisher jobs. This should selected when running the installer from the Services machine.
    - **Voucher Services**: choose this option if you are using Visma, otherwise you can leave this unchecked



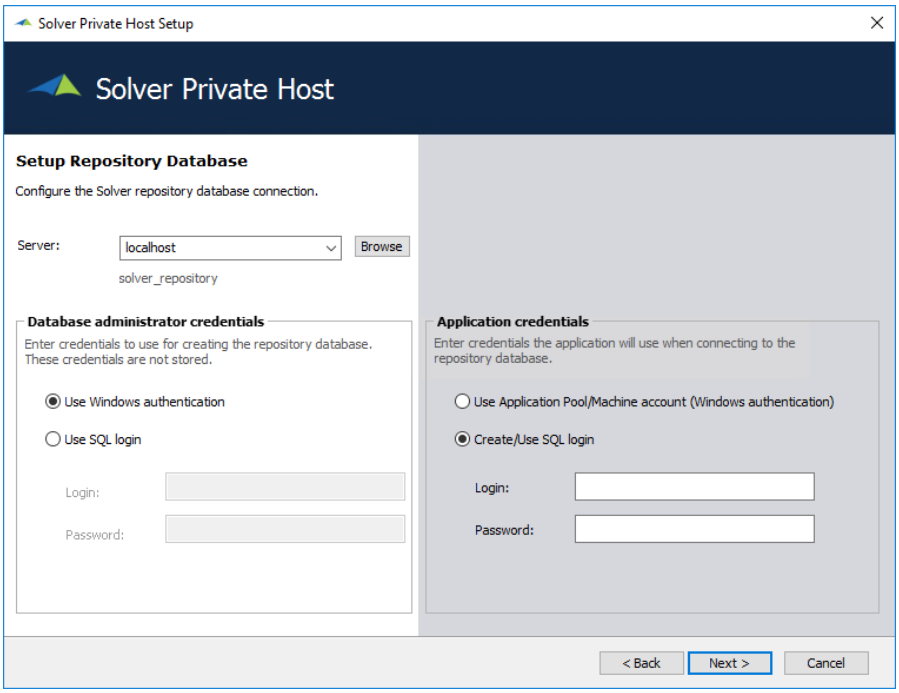
Portal and Services are selected by default. Services are used to run Reporting and Publisher.

- Under **Product install path**, the default will be kept in most instances but can be changed if needed.
- The **Disk space requirements** for the application are shown in the table of the same name.

For this step, since we are on the web server, we want to select only the Portal Options.

8. Click **Next**.

9. The next page will prompt users to setup the Repository database. The repository database is a non-financial database that is used by the application to store user and application settings. Define the following options:



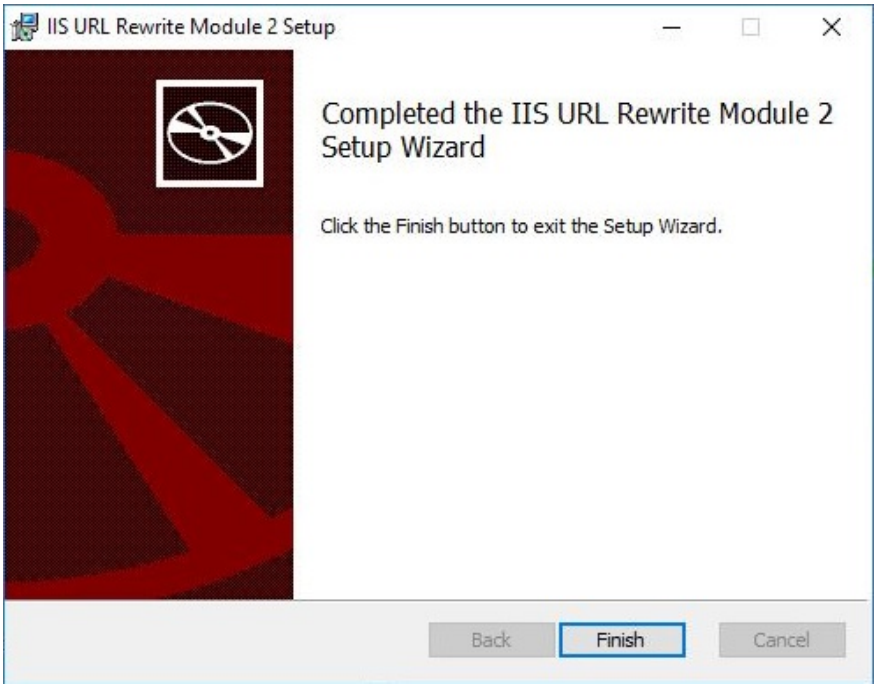
Remember these settings, they will be used later on in this installation process.

- **Server**: type in the name of the SQL server where the Repository database will be created. Click **Browse** to view a list of Servers this machine can see or type the name in manually.
    - Host name or IP address are allowed
- **Database administrator credentials**, select how to create the repository:
    - **Windows authentication** – the user will need permissions to create a database and tables.
    - **SQL login** – the user will automatically be given db_owner permissions.
        - If using SQL credentials, if password enforcement policies are turned on for the SQL user, the installation will need to be redone each time the password expires. It is recommended to turn off Password Policies.
- **Application credentials**, enter the credentials the application will use when connecting to the repository database:

- **Use Application Pool/Machine account (Windows authentication)** –
  - The Internet Information Services (IIS) is using the machine account in order to communicate with the database. The account that will be created on the SQL server will be “domain\machineName$”. This user will be assigned db_owner to the Solver_Repository.
- **Create/Use SQL login**.
- With this option, the SQL user will get db_owner access rights to the Solver_Repository database. Ensure that this user has enforce password policy turned off.

Complete these options and click **Next**.

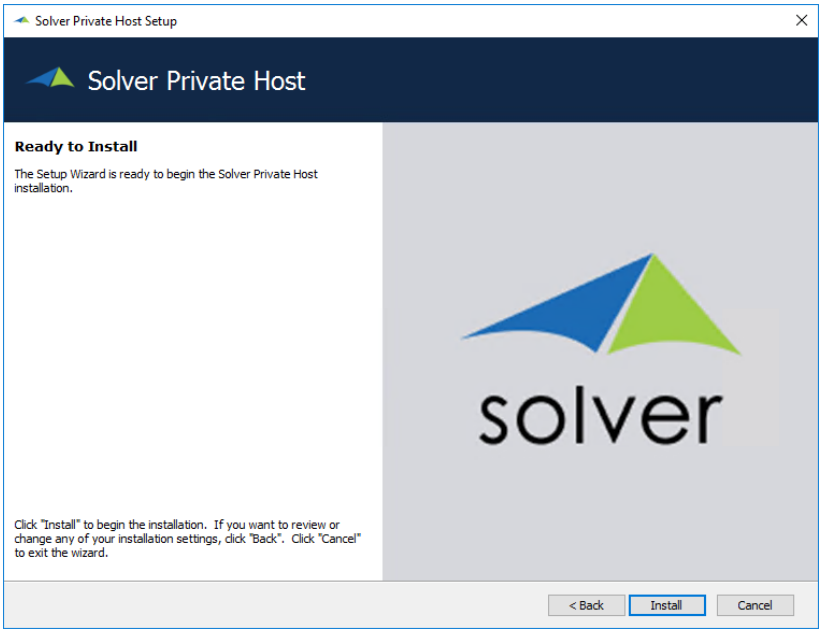
10. On the next screen ***Internet Information Services (IIS) URL Rewrite Module 2*** *Setup Wizard* will launch if it is not already installed on the machine. This is needed for the notification emails in the application to get sent from the URL your organization has associated to Solver Private Host.



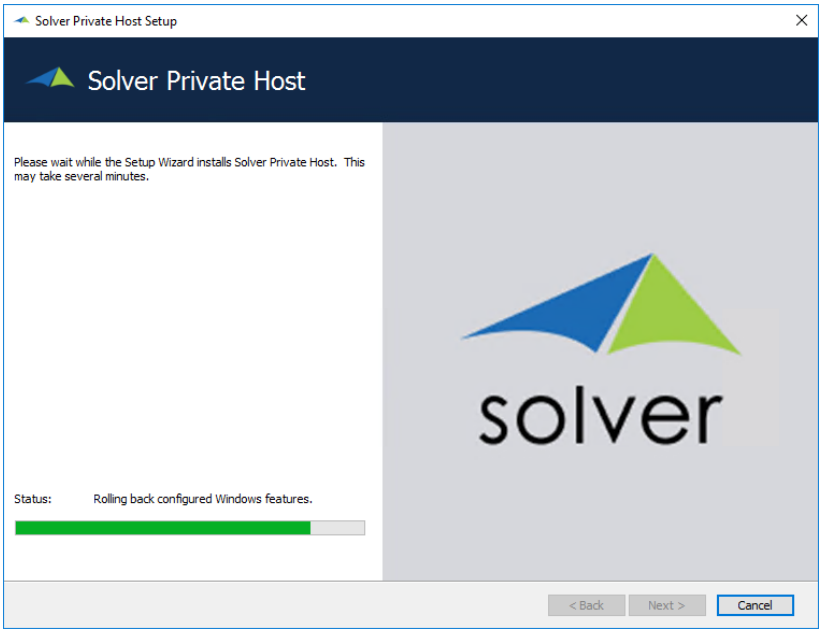
Simply click through the prompts of the installer to install the IIS URL Rewrite Module.

11. Once the IIS URL Rewrite Module 2 Setup has been completed, Solver Private Host is ready to install.

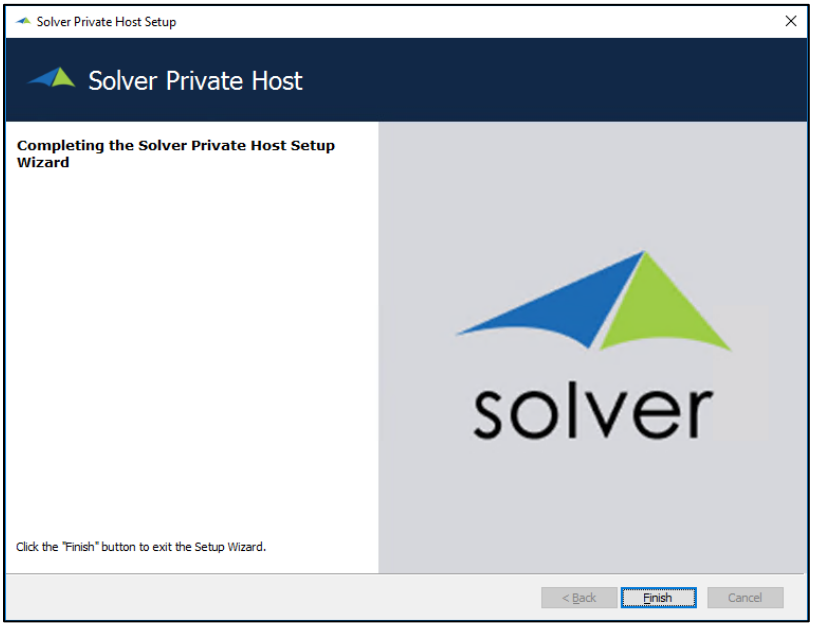
    Click the **Install** button to proceed.



12. A progress bar shows you the steps of the installer. The installation typically takes under 1 minute to complete.



13. When the installation is complete, click **Finish** to close the installation wizard.



14. The site **http://solver.local** will then open automatically. This is a default site binding for Solver Private Host in Internet Information Services (IIS) and can be changed.

It is important to note that at this time, Solver Private Host has the following installation properties:

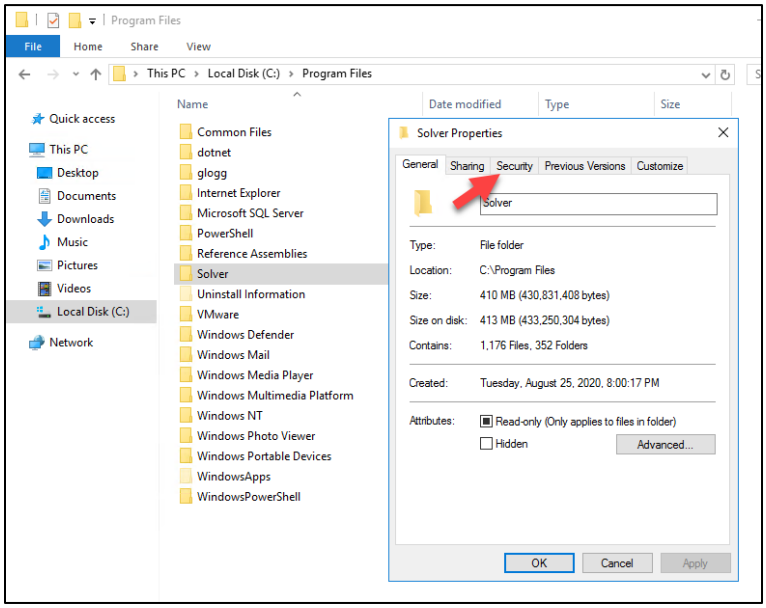
- The site is available only on the web server. Please contact your IT team for steps on making the site available outside of the web server.
- The site is non-secured (HTTP). Please contact your IT team for steps on adding an SSL certificate to the Web Server to make the site secure. **This is strongly recommended**

Minimize the browser for now. We will come back to the Welcome screen after some more configuration changes.

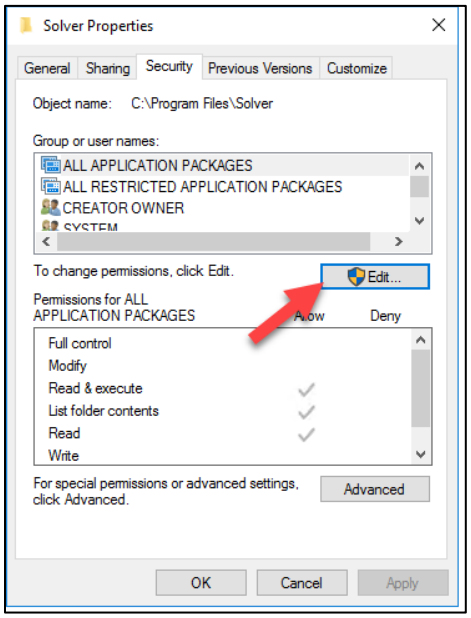
Folder Permissions

After the installer is complete, we need to get the application pool user permissions to the C:\Program Files\Solver Folder. To do so

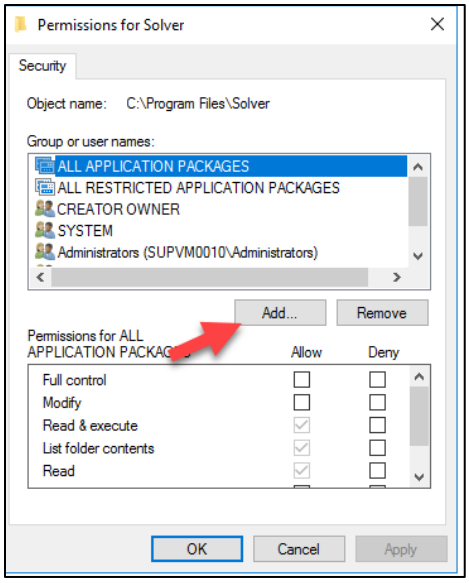
1. From the web server, navigate to C:\Program Files\Solver > right-click > Properties > Security



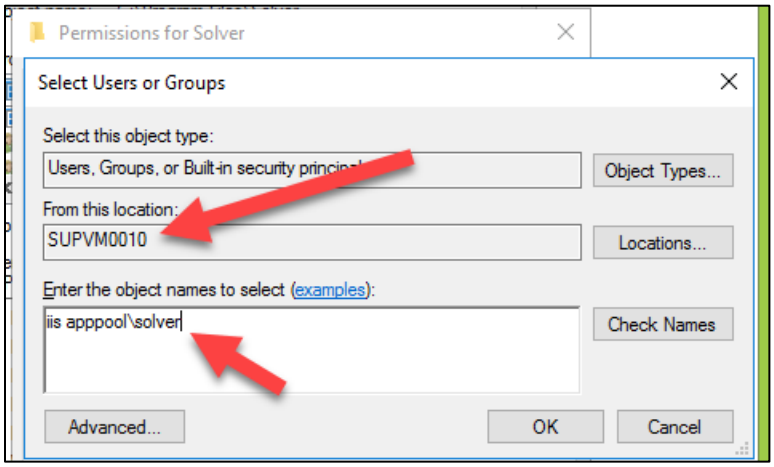
2. Click **Edit**



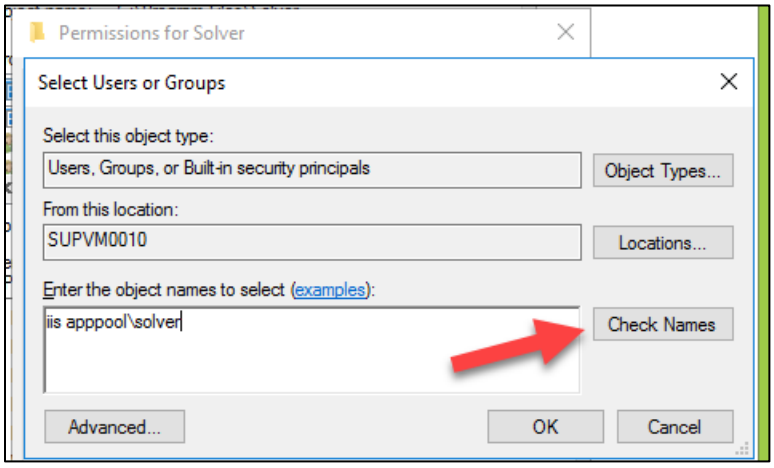
3. Click **Add**



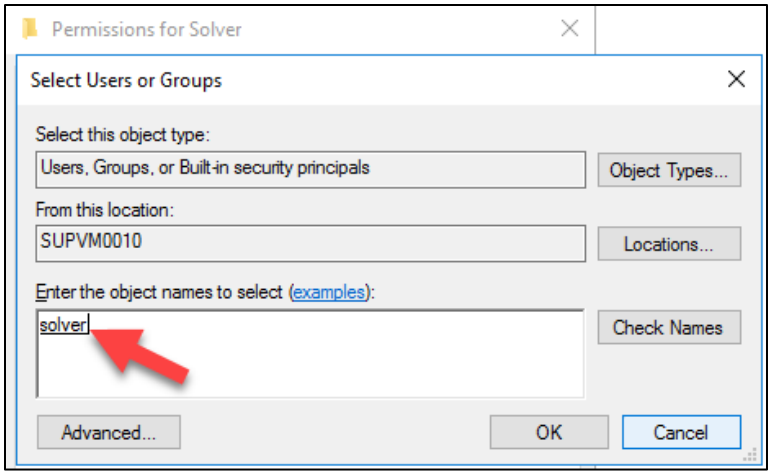
4. In the window that appears, make sure the location is set to the machine name and type in IIS APPPOOL\Solver



Click **Check names**.



The name should change to Solver.



If it does not, the Private Host installation is incomplete or the location has not been set to the web server. Please contact Solver Support for assistance.

This completes setting up folder permissions for Solver Private host.

This section has been left blank intentionally.

Service Server Installation

This section will detail the two installers that need to be ran on the Services server. These two installers are

1. Service Fabric
2. Portal Services

It is recommended to run the Service Fabric installer first before running the Portal Services installer.

Fabric Install

The following detail steps to install Service Fabric. Service Fabric is an underlying Microsoft Technology used by Solver Private host to run integrations and other features related to integrations.

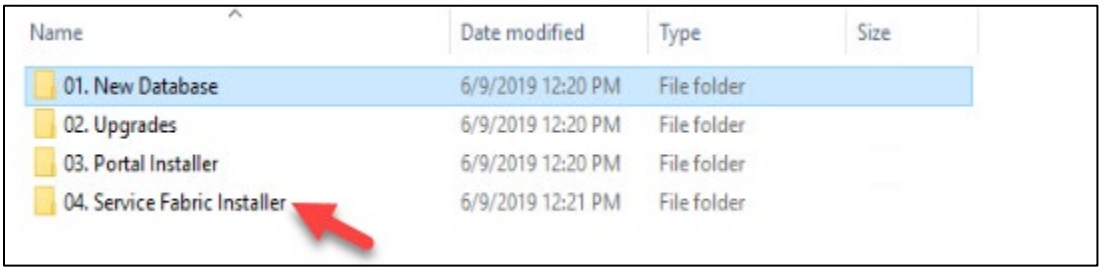
1. The following steps require administrative permissions on the Application server.
2. SQL Server Browser services must be enabled

The installation of Service Fabric can take some time depending on the configuration of the Services machine. Higher end Services machines will complete this installation process in a shorter amount of time (1-5 minutes).

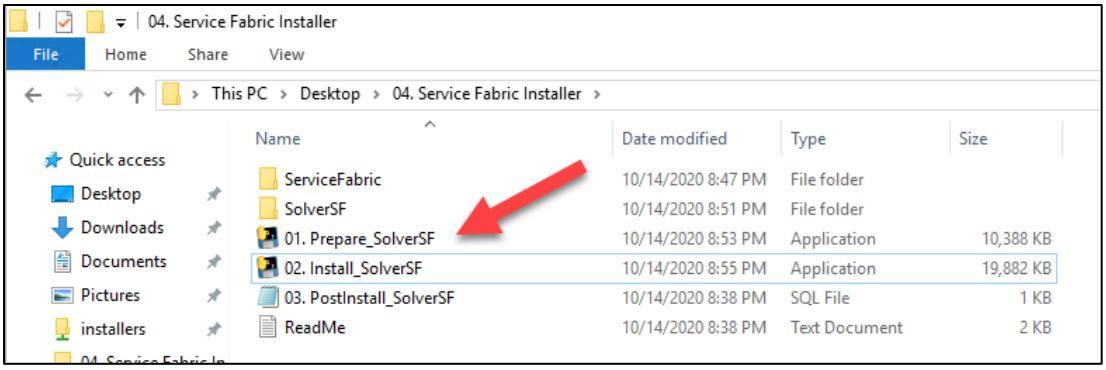
New Install

New installs of Solver must install Solver Service Fabric.

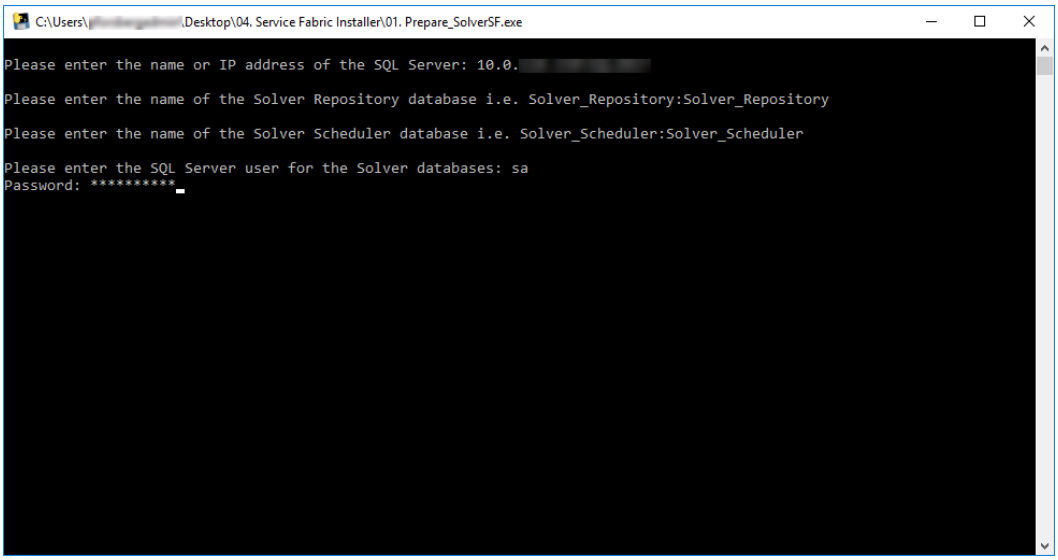
1. In the setup .zip file that was download is a .zip called *04.Service Fabric Installer,* move this folder to the services server.



2. First step will be to run prepare_SolverSF. Right click and choose “Run as Administrator”.



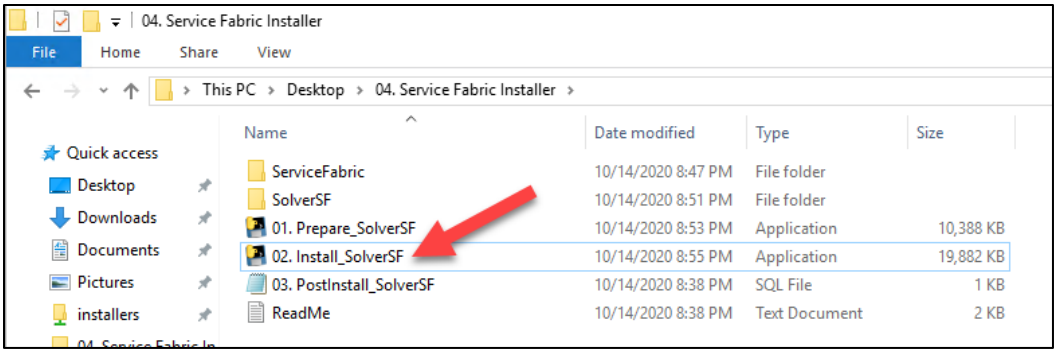
3. The user will be prompted to type in
    a. IP Address of the SQL server
    b. Name of the Repository database
    c. Name of the Scheduler database
    d. SQL user and password used to connect to the Solver Database.
        i. Windows credentials are not valid



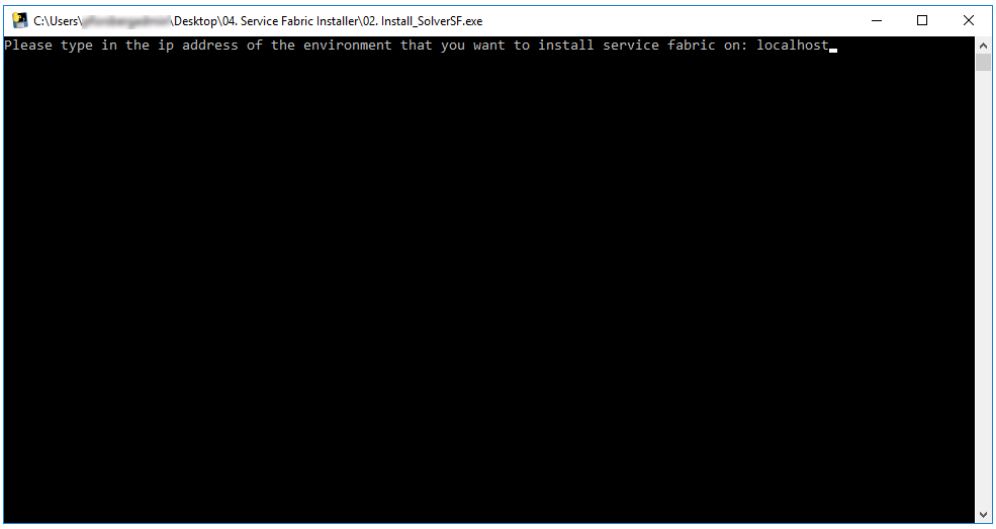
4. Once the password is entered, press Enter. The application will verify that the information typed in is correct.

    This step requires the existence of the Solver_Sheduler database that was created earlier.

5. Assuming that a successful connection is made, a prompt will tell you to click any key. Press **Enter** to exit the window.
    a. If you do not get a Success confirmation, try typing in the password again.
6. Run the Install_SolverSF executable. Right click and choose “Run as Administrator”.



7. Users will be prompted to type in the name of the Services machine. Assuming this is being ran on the services server, you can simply type in “localhost”, without quotes, to indicate the local machine.



This will begin the installation of Service Fabric. Users should expect this process to take five to ten minutes depending on the Service Fabric machine’s configuration.

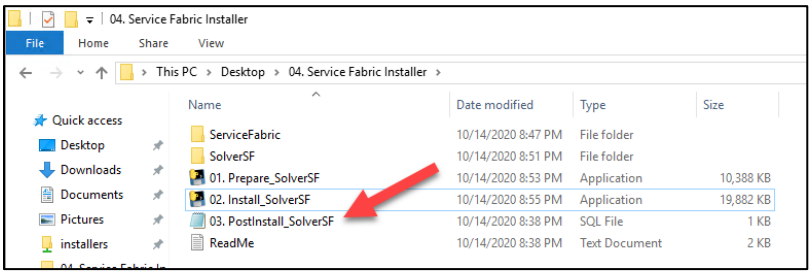
This completes the installation of Service Fabric. The next section will detail steps to link Service Fabric to the Private Host install.

This section has been left blank intentionally.

Add SQL User and Service Fabric entries

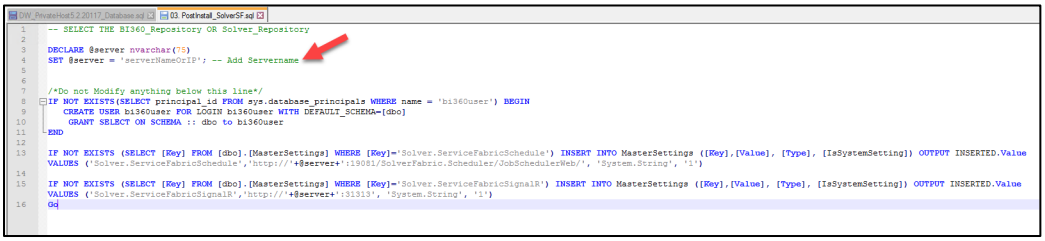
The next step is to add the *solveruser* and add entries to the repository necessary for service fabric. To do this, on the SQL server:

1. In the Service Fabric folder, find the PostInstall_SolverSF.sql file.



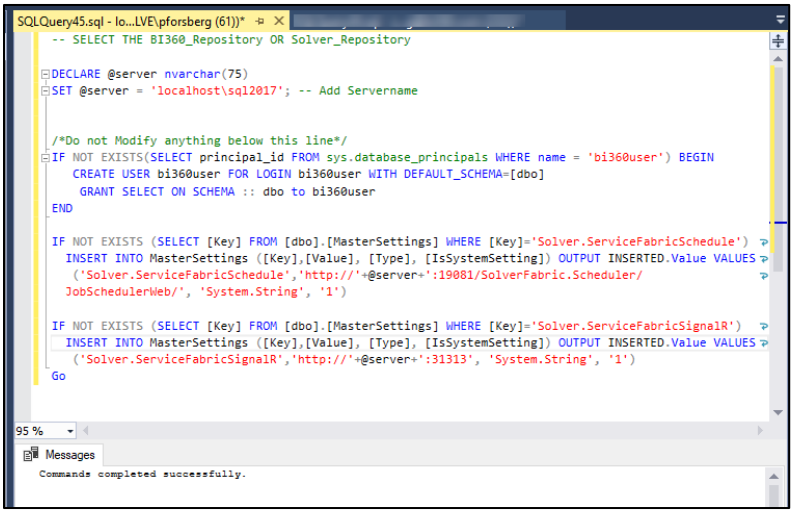
Run this file on the Solver_Repository database. This will create the *solveruser* mentioned in the *Creating a Solver Database* section, if it has not already been created. This script will also insert additional entries into the MasterSettings table of the Solver_Repository database needed for the web application to connect to the Solver marketplace, Service Fabric, and SignalR.

Make sure to change the server to the name of the service fabric machine. See screenshot below.



```
-- SELECT THE BI360_Repository OR Solver_Repository

DECLARE @server nvarchar(75)
SET @server = 'serverNameOrIP'; -- Add Servername


/*Do not Modify anything below this line*/
IF NOT EXISTS(SELECT principal_id FROM sys.database_principals WHERE name = 'bi360user') BEGIN
   CREATE USER bi360user FOR LOGIN bi360user WITH DEFAULT_SCHEMA=[dbo]
    GRANT SELECT ON SCHEMA :: dbo to bi360user
END

IF NOT EXISTS (SELECT [Key] FROM [dbo].[MasterSettings] WHERE [Key]='Solver.ServiceFabricSchedule') INSERT INTO MasterSettings ([Key],[Value], [Type], [IsSystemSetting]) OUTPUT INSERTED.Value
VALUES ('Solver.ServiceFabricSchedule','http://'+@server+':19081/SolverFabric.Scheduler/JobSchedulerWeb/', 'System.String', '1')

IF NOT EXISTS (SELECT [Key] FROM [dbo].[MasterSettings] WHERE [Key]='Solver.ServiceFabricSignalR') INSERT INTO MasterSettings ([Key],[Value], [Type], [IsSystemSetting]) OUTPUT INSERTED.Value
VALUES ('Solver.ServiceFabricSignalR','http://'+@server+':31313', 'System.String', '1')
Go
```

- The query should result in the following results:

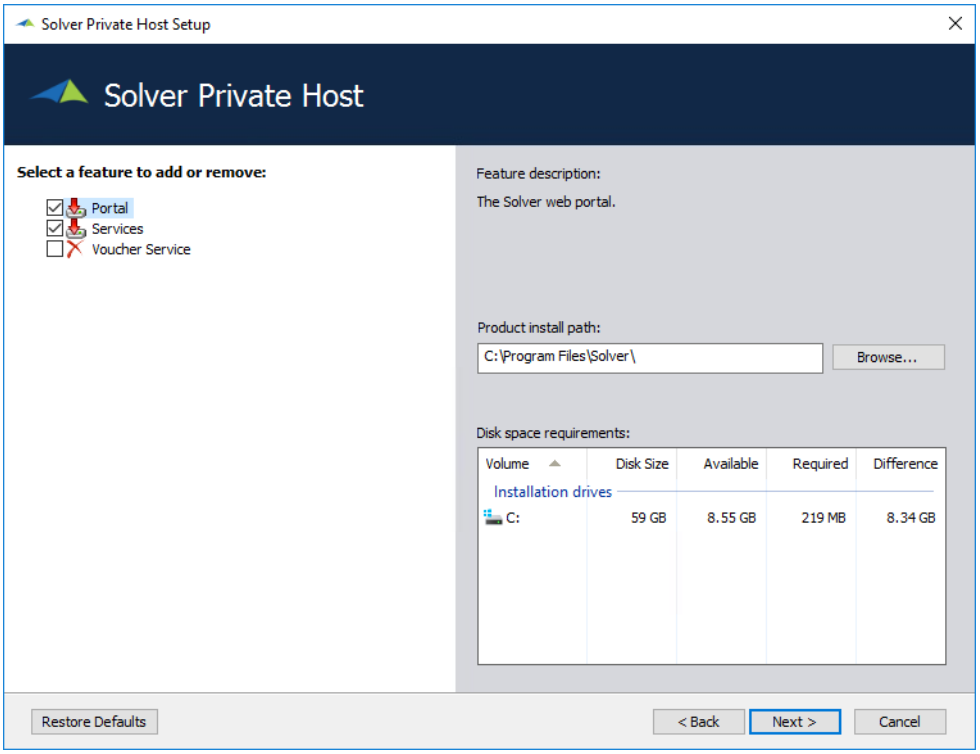


```
SQLQuery45.sql - lo...LVE\pforsberg (61))*
-- SELECT THE BI360_Repository OR Solver_Repository

DECLARE @server nvarchar(75)
SET @server = 'localhost\sql2017'; -- Add Servername


/*Do not Modify anything below this line*/
IF NOT EXISTS(SELECT principal_id FROM sys.database_principals WHERE name = 'bi360user') BEGIN
   CREATE USER bi360user FOR LOGIN bi360user WITH DEFAULT_SCHEMA=[dbo]
    GRANT SELECT ON SCHEMA :: dbo to bi360user
END

IF NOT EXISTS (SELECT [Key] FROM [dbo].[MasterSettings] WHERE [Key]='Solver.ServiceFabricSchedule')
  INSERT INTO MasterSettings ([Key],[Value], [Type], [IsSystemSetting]) OUTPUT INSERTED.Value VALUES
   ('Solver.ServiceFabricSchedule','http://'+@server+':19081/SolverFabric.Scheduler/
  JobSchedulerWeb/', 'System.String', '1')

IF NOT EXISTS (SELECT [Key] FROM [dbo].[MasterSettings] WHERE [Key]='Solver.ServiceFabricSignalR')
  INSERT INTO MasterSettings ([Key],[Value], [Type], [IsSystemSetting]) OUTPUT INSERTED.Value VALUES
   ('Solver.ServiceFabricSignalR','http://'+@server+':31313', 'System.String', '1')
Go
95 %
Messages
Commands completed successfully.
```

Portal Services Install

In this section, we will install the Portal Services. The Portal Services are used to run reports, publisher jobs and other tasks within Solver Private Host.

1. To begin, move the executable found in .03. Installer to the services server. This is the same installer you ran on the web server to install the web component.
2. Run the executable as Admin.
3. Navigate thru the screens as you did previously. On the components to install, choose only the services component.



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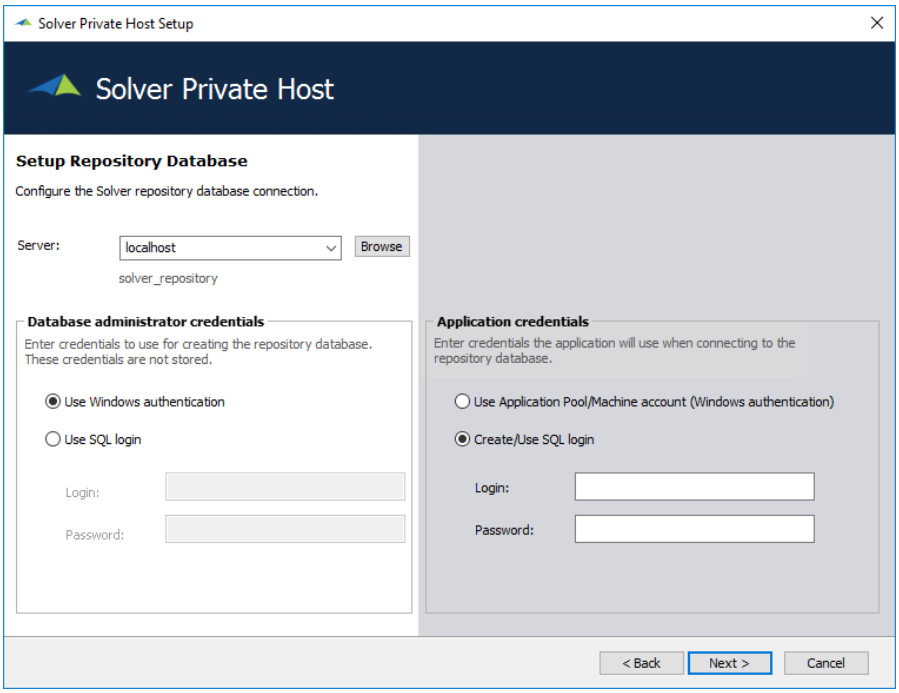
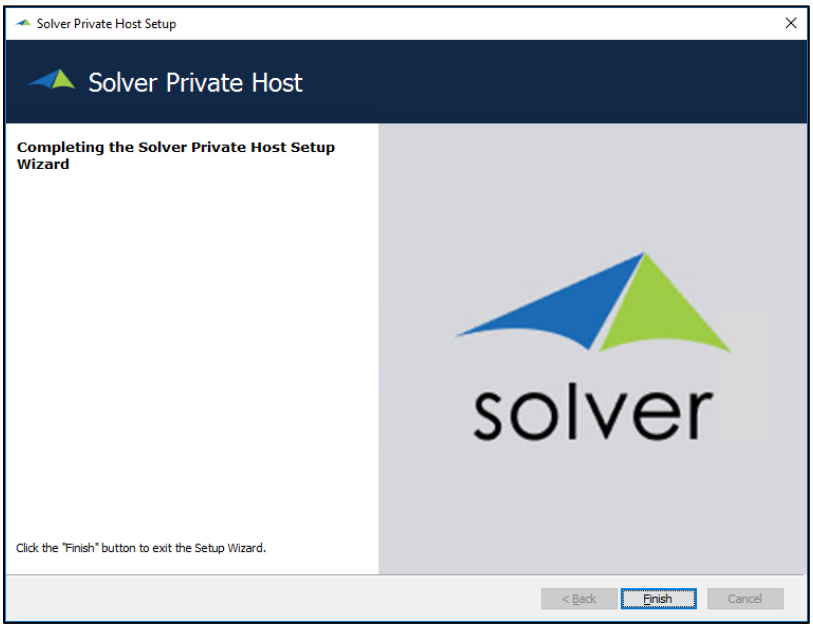
4. The next screen will prompt you for the repository information. Type in the server name,



   This should be the same information as provided during the web installation step.
5. Click Next. The services installation should begin.
6. Once complete, users will get a notification that the installation has completed. Click Finish to exit the menu



Installation Checklist

At this point the installation is complete. Below, you can find a checklist of items the verify are running as a quick indicator that the installation is complete.

- ☐ On the webserver, navigating to http://solver.local should load a Welcome screen
- ☐ On the services server, navigating to http://localhost:19081 should load a service fabric dashboard
- ☐ On the services server, navigating to Start > Services and scrolling down to Solver, you should find 3 services
    - Solver Report Rendering Service
    - Solver Publisher Service
    - Solver Maintenance Service

This section has been left blank intentionally.

Private Host Initial Configuration

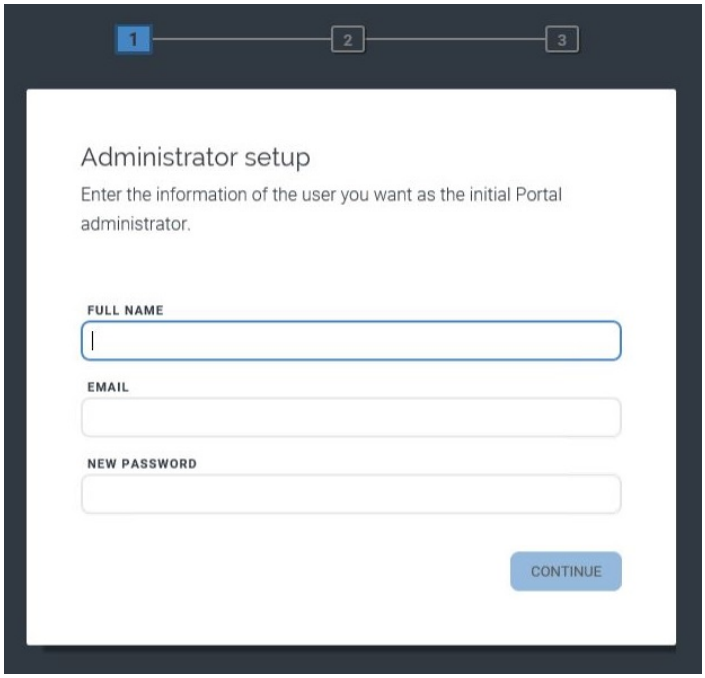
At this point you have a running Solver Private Host. This section details completing the initial configuration of Private Host. Users need to make sure that the following is available

- ☐ Private Host license key and Data Warehouse license keys
  - This is a different key from your 4x license key and must be requested via support@solverglobal.com
- ☐ Web Server is able to communicate with the SMTP server and credentials are available, if applicable.

If either of the following are unavailable, users cannot complete these initial configuration steps.

Begin by navigating to http://solver.local on your web server.

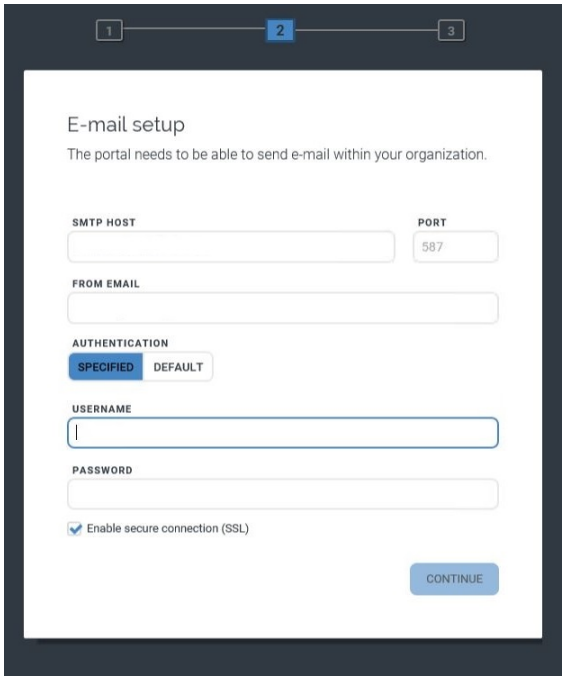
1. **Administrator Setup** – This user does not need to be a Solver user, as long as the email being used is a valid email address. A service account is recommended.



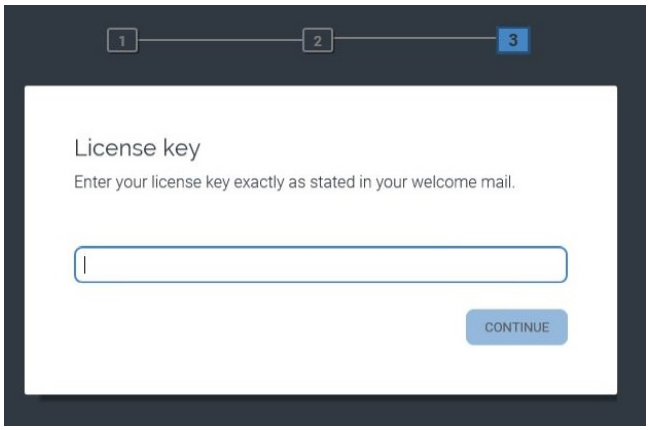
If using Active Directory authentication, do not type in the email of an end user. Use a service account email or an email of a user who will not be using the application.

Click **Continue**.

2. **Email Setup** – This is needed for email notifications from the Solver Cloud.
   - Under **Email setup**, users must enter their organization's SMPT host and port information. Please contact your IT department for this information.
   - In the **From email** field, enter the email address that emails will be coming from. This is typically setup as a no-reply email.
   - Under **Authentication**, select whether to use **Default** or **Specified** authentication:
     - **Default:** uses the default identification (SSL).
     - **Specified**: enter the username and password for the SMPT host.



3. Click **Continue**.
4. Enter the Solver Private Host license key which is available on the Solver Support site.



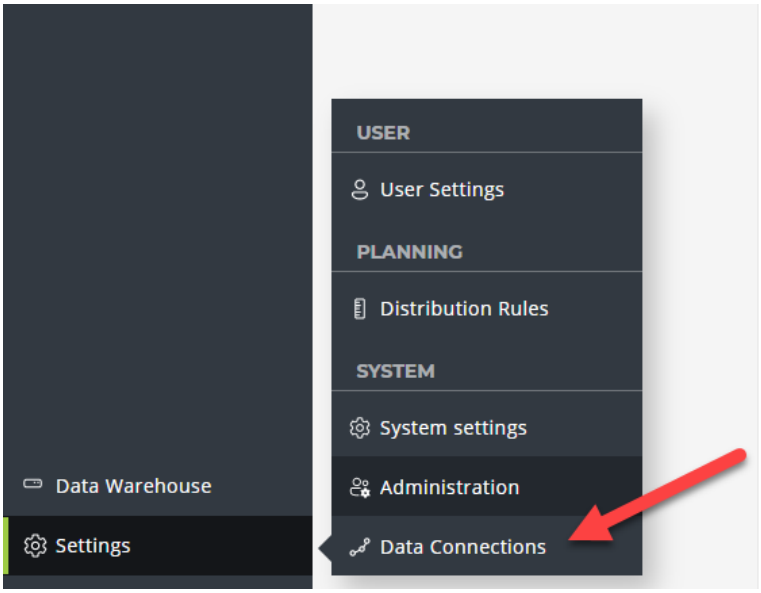
Upon clicking **Continue**, the user will be taken to the landing page of Solver Private Host. This completes the installation of the reporting component of Solver. The next section will detail, installing the Data Warehouse and Service Fabric components.

Enable Data Warehouse

Your installation is now up and running, you now need to connect Solver Private Host to the SolverDW database that was created. To do so:

Only one Data Warehouse connection can be made per tenant.

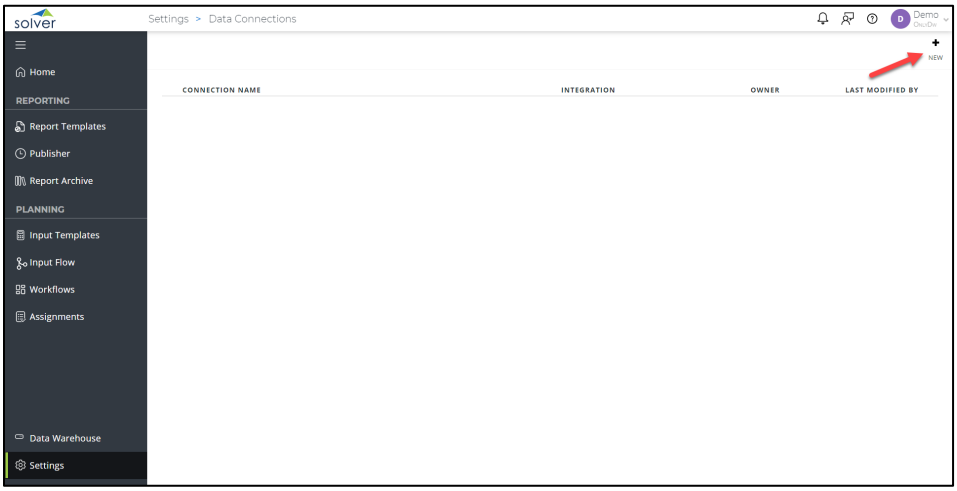
1. Navigate to **Settings**-> **Data Connection**.



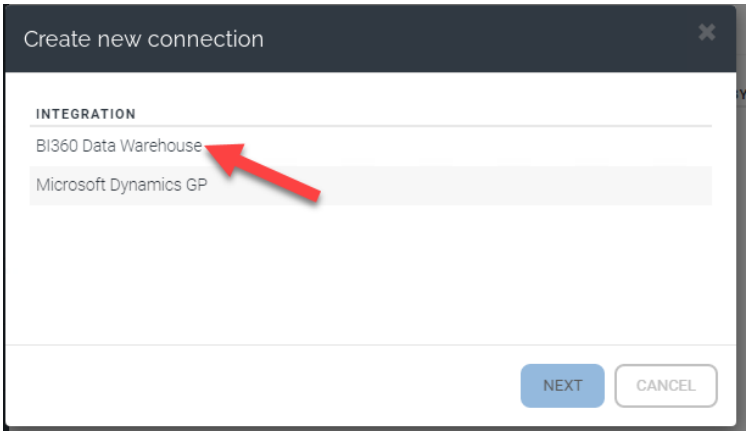
NOTE: You are currently logged in as an administrator. This button will be available to users with Can manage connection permissions

This section has been left blank intentionally.

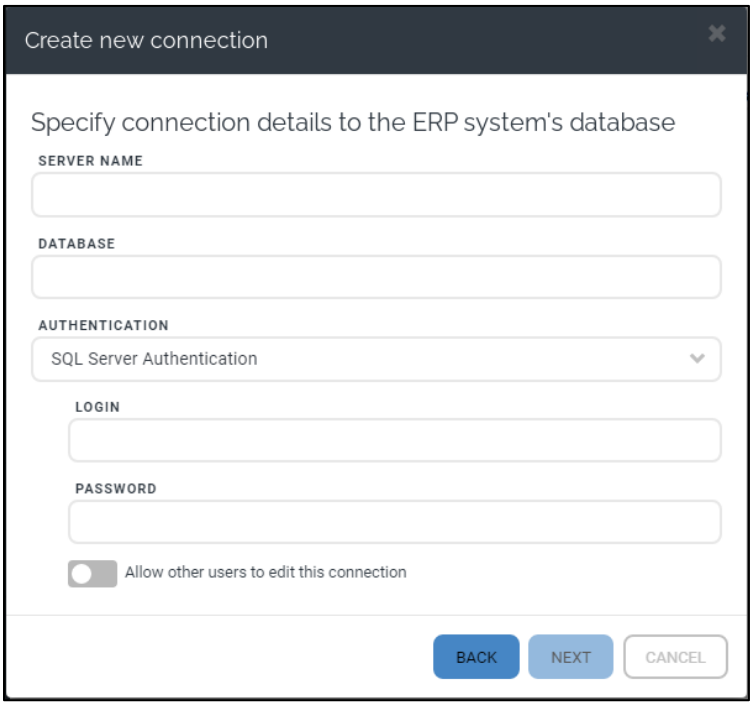
2. In the grid that appears, a listing of all available connections appears. Since this is a new install, the list is blank. Click New in the upper right-hand corner to create a connection to the SolverDW



3. A listing of all available integrations that have been purchased will appear. Click on Data Warehouse

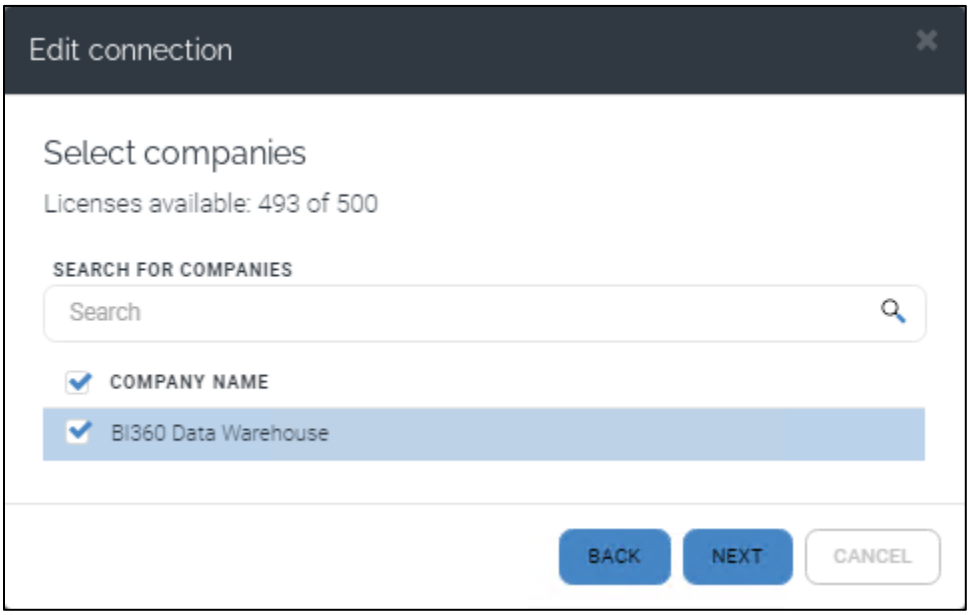


4. Users are then asked to provide the Data Warehouse connection information

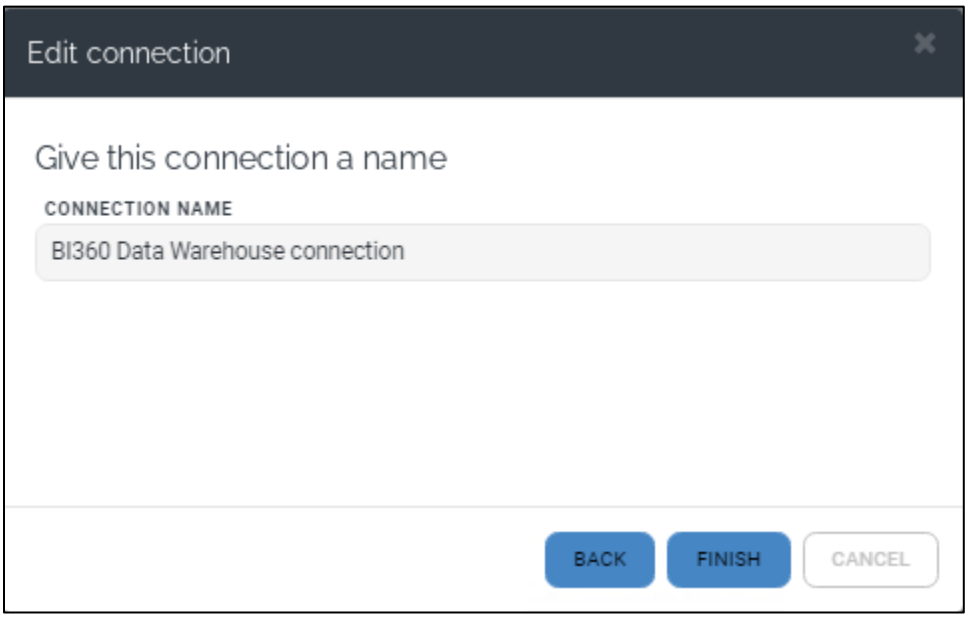


   a. Server Name: SQL server where the SolverDW is located
   b. Database: The name of the SQL database, typically SolverDW
   c. Authentication: Choose between SQL or Window auth to connect to the SolverDW
      i. For SQL authentication, type in the SQL user name and password that has DBO permissions to the database. In the database creation script, a user “solverappuser” was created that has all the permissions needed and can be used here.
      ii. Windows authentication will pick up the logged in user, make sure this user has permissions to the SolverDW database.
   d. Allow other users to edit this connection: Select this option to allow other users with “can manage connection” permissions, to edit this connection information.

5. On the next screen, choose “BI360 Data Warehouse” as the company and click Next.



6. The next screen asks you to type in the connection name, this will be displayed throughout the app and can be set to your preference.

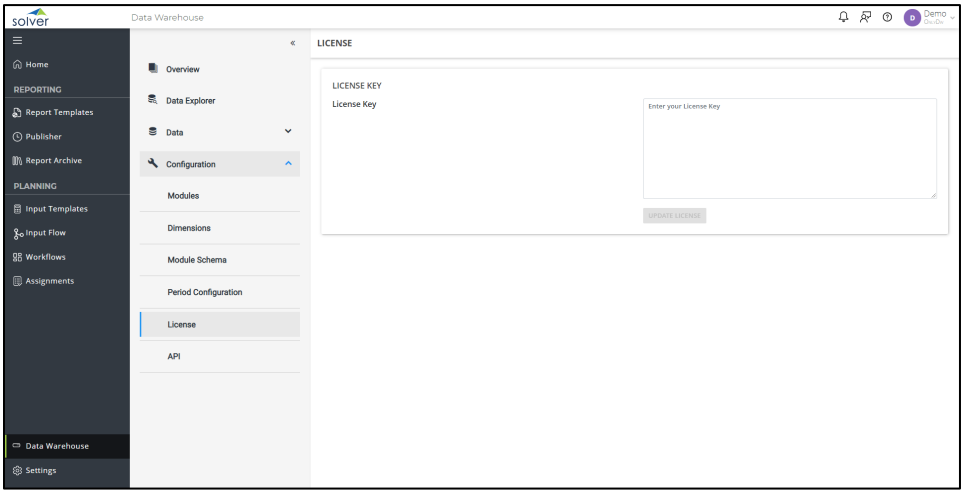


Clicking finish to save the connection and you have now connected Solver Private Host to the SolverDW.

Add Data Warehouse License

Next, the license key must be added. Users must add a license key in order to use the Data Warehouse. To do so:

1. Click on the **Data Warehouse** menu in the left pane.
2. Click **Configuration -> License** and paste in the license provided



3. Then click the **Update License** button.

This completes the installation and the next section will detail initial configuration setup to begin using Solver.

This section has been left blank intentionally.

Site Bindings

Not covered in this User Guide but should be discussed with your IT team is site bindings, host names, redirect rules and SSL certifications. A host name allows for the site to be made available outside of the web server.

Solver Support does not assist in the setup or configuration of host names, SSL certificates and redirect rules

Please consult with your IT team on installing and configuring the site binding.

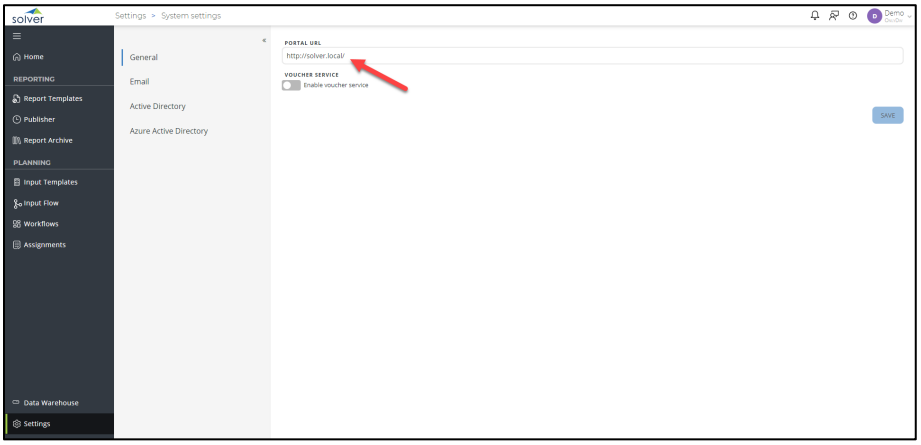
For organizations looking to make their site publicly available, Solver strong encourages the use of SSL and HTTPS.

Portal URL References

The previous section referenced site bindings. If you have chosen to create a hostname, the hostname must be typed in the Portal URL menu in order for emails and Report Designer to reference your host name.

After apply the site binding in the IIS server, users must also update the Solver Private Host Portal URL. To do so:

1. As an administrator, log into Solver and navigate to **Settings** > **System Settings.**
2. On the General Tab, type in your site host name beginning with http or https.

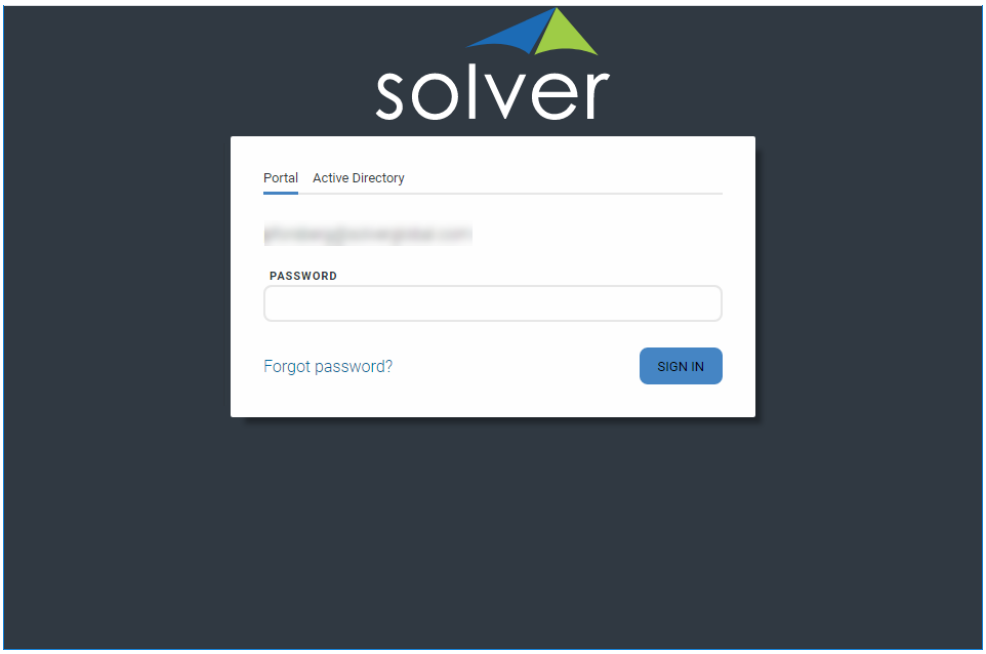


3. Click Save

All emails will now include links to your defined host name.

Active Directory Setup in Solver Private Host

An organization can use their Active Directory, referred to as AD in this section, to automatically add users to Solver Private Host as a way to manage users via Active Directory. Once enabled, users will see two menus on the login screen: Portal and Active Directory. Users will need to choose the appropriate option, the default being Portal.



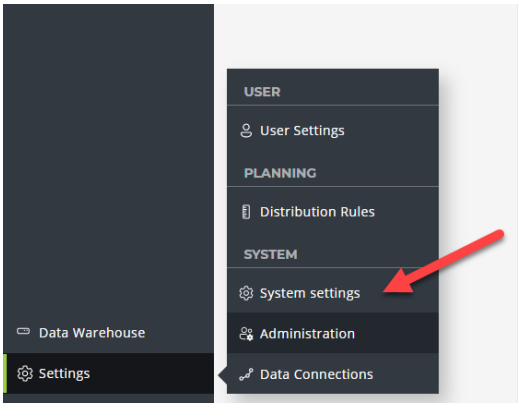
At this time:

1. Multi-Tenant (Solver Feature) does not natively support AD authentication. Please reference this KB article for more information.
2. Azure AD is not supported

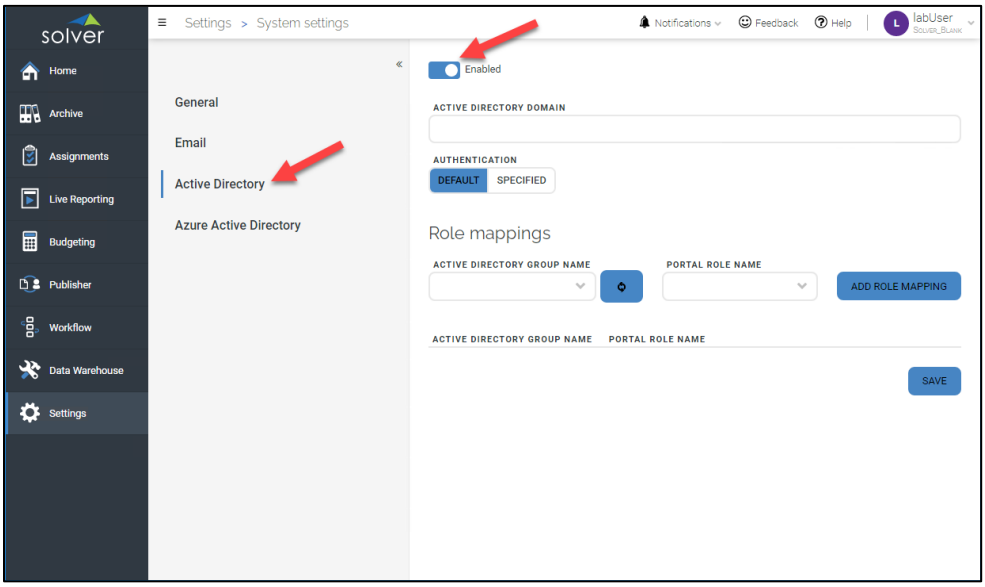
Enabling Active Directory

To enable Active Directory:

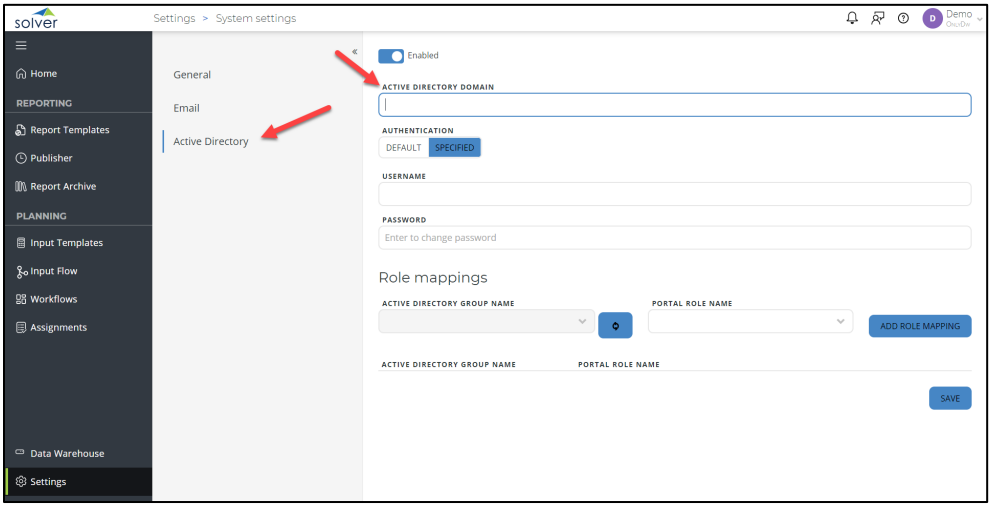
1. Log into the **Solver Private Host** using an administrator account.
2. Click **Settings** -> **System Settings**.



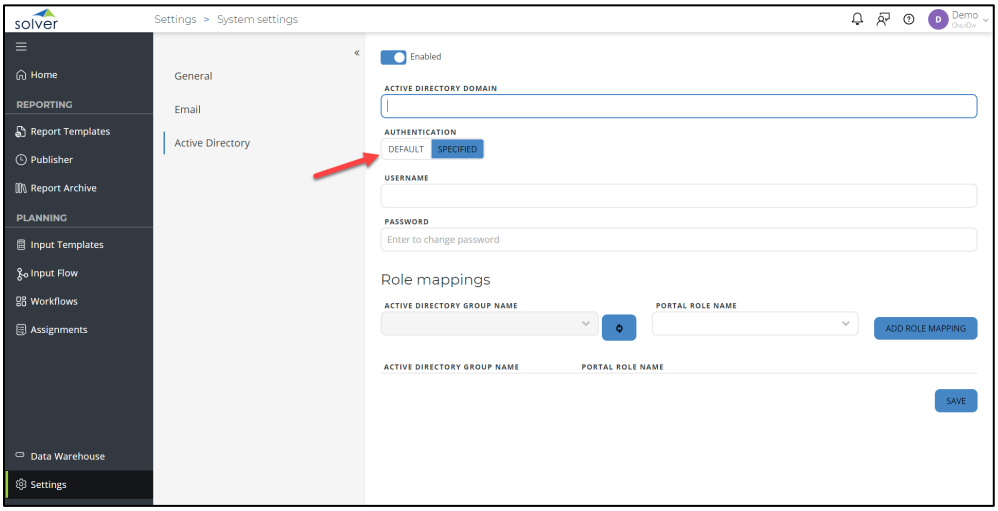
3. Click **Active Directory** and **Enable** in the upper left-hand corner of the main grid to enable Active Directory Support.



4. Type in the name of the **active directory domain**.

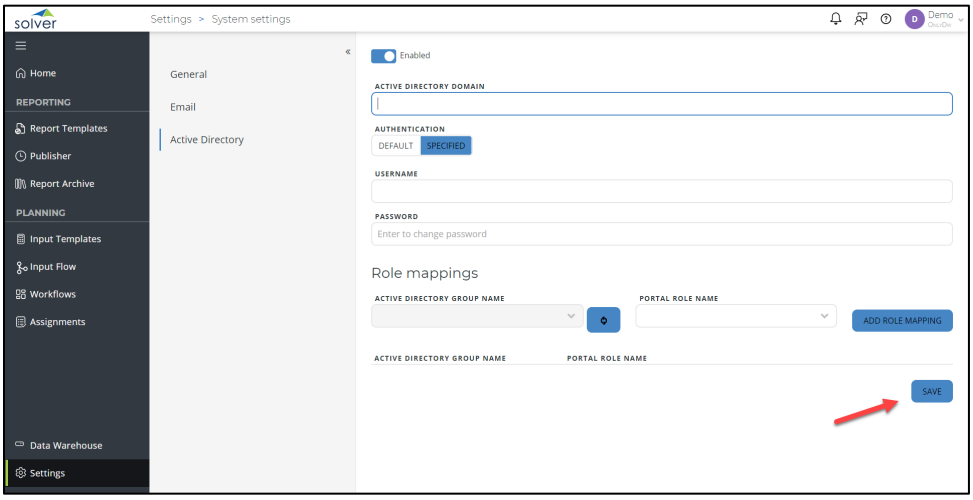


5. Choose an **Authentication** method.



- **Default** – will pick up the domain the web server is on and authenticate users based on this domain.
- **Specified** – user must provide credentials to authenticate against the above-mentioned domain in step 5. This could be required in cases where the web server is placed in a DMZ or for organizations that have multiple domains.

6. Click **Save**.



At this point all users on the domain have access to log into Solver Private Host. However, they do not have any application access. Please read the following section for details on restricting Active Directory Access.

At this point, anyone on the domain has access to log into Solver Private Host. The next section details restricting access to certain groups within a domain.

Restricting Access through Active Directory Groups

As mentioned at the end of the previous section, upon enabling Active Directory, all users will have access to log into the Portal. It is important to note that they only have access to log in but have not been assigned to any application.

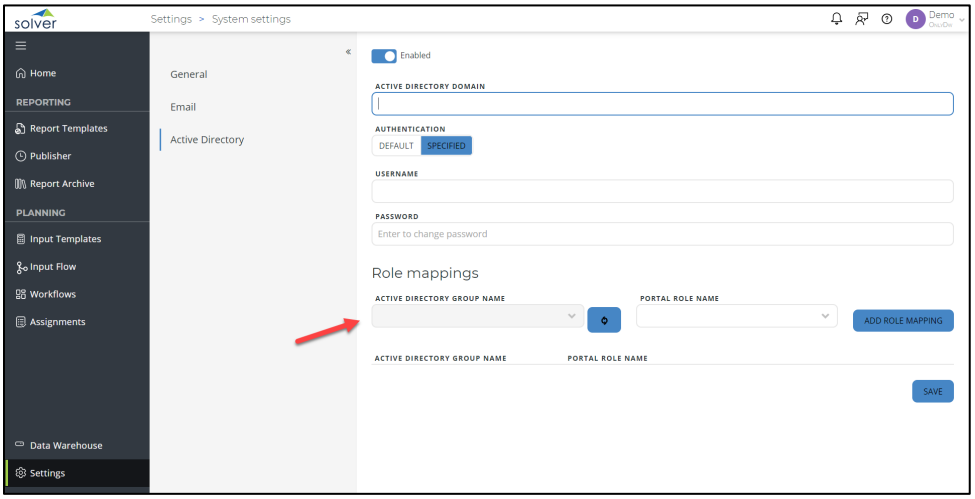
To restrict access to a select group of individuals, organizations can add specific Active Directory groups. Once an Active Directory group is added, the application is locked down to members of that specific group.

Defining a specific Active Directory Group

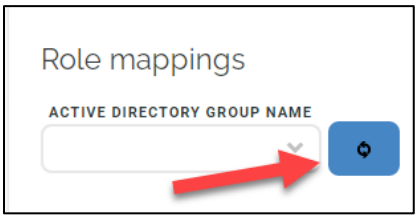
In order to specify a specific Active Directory group, it is required that you know the exact name of the Active Directory group to be added, please contact the organization IT department for more information on this.

To add a specific Active Directory Group, locking down Solver Private Host to a specific set of users:

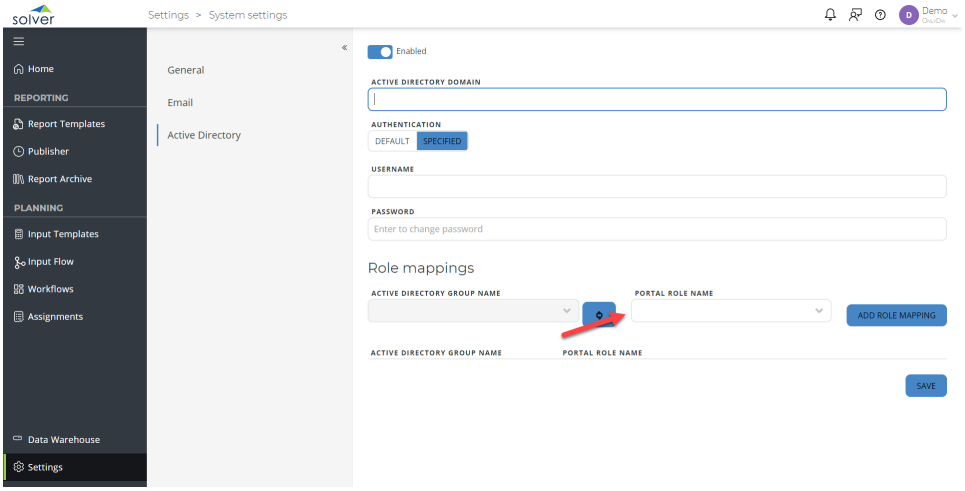
1. Type in the **Active Directory Group Name** exactly how it appears in the Active Directory.



Use the search icon to validate the active directory group. If no names appear, it may be that the authentication method provided above cannot read the active directory.

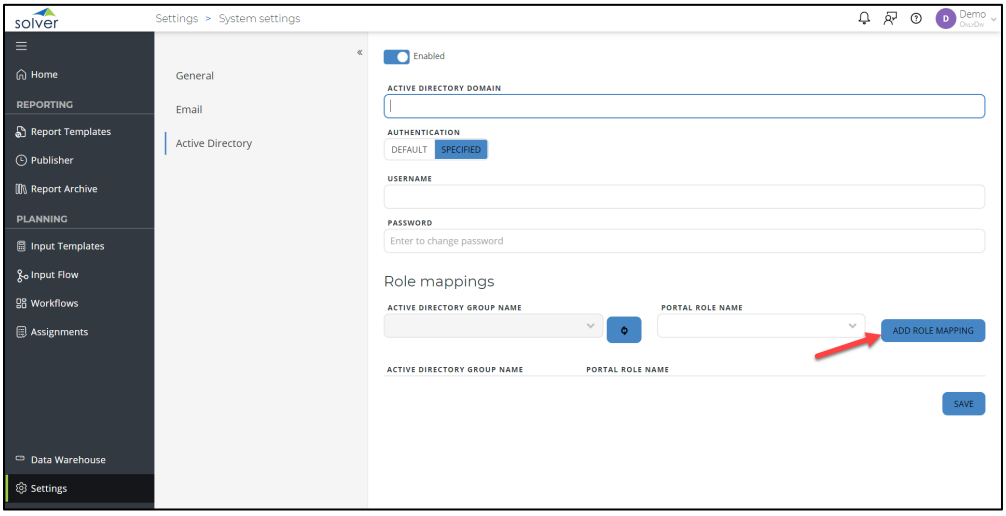


2. Click the dropdown for **Portal Role Name** and select a portal role that has been configured.



This is the role that members of this Active Directory group will be added to. These Active Directory members will inherit the security settings of this role.

3. Click **Add Role Mapping**.



4. Click **Save**.

Repeat the steps to add specific Active Directory Groups.

Active Directory User Logging in for the First Time

As an end user, the user will navigate to the Solver Private Host site. The user will be prompted to provide login information:

- Portal authentication requires an email and password configured by the end user.
- Active Directory authentication requires the users Active Directory email and password.

Upon logging in the user will only have access to the Home Page and Settings pages. At this point the Solver Administrator must assign applications, such as Live Reporting, to the end users.

Installation is now complete. You have successfully installed and configured Solver Private Host. Should you have any further questions, please reach out to Solver Support.

Appendix

Additional Resources

The Solver Support Center (support.solverglobal.com) is the centralized location for users to learn more about the Solver Suite. From opening and managing your support tickets to reading knowledgebase articles about the product, the Solver Support Center has everything a user will need.

Users may contact Solver Support if they have questions about the Solver Suite. One of our technical support consultants will gladly assist you.

Users can access the Solver Knowledgebase for more information about the entire Solver Suite. From user guides, white papers, training manuals and much more, the Solver Support Center has everything a user will need to get started with the application.

Solver Academy is also available by subscription for 24-7 training on the application. Go to academy.solvertraining.com for more information.

Technical Information

Designer Add-In and Excel Click to Run (C2R)

For organizations deploying Excel 2016+ or Excel 365 “Click to Run” version there are some important considerations to be aware of. Click to run automatically installs updates to Excel on a regular interval. These updates have had a history of breaking Excel Add-In’s, including Solver Report Designer. We recommend that organizations using Excel Click to Run, turn off automatic updates to end user computers who are using Solver Report Designer. A development environment should be used to test the upgrade of Excel and Solver functionality. Only after confirmation of the Designer add-in working in development, should the update be pushed out to end users.

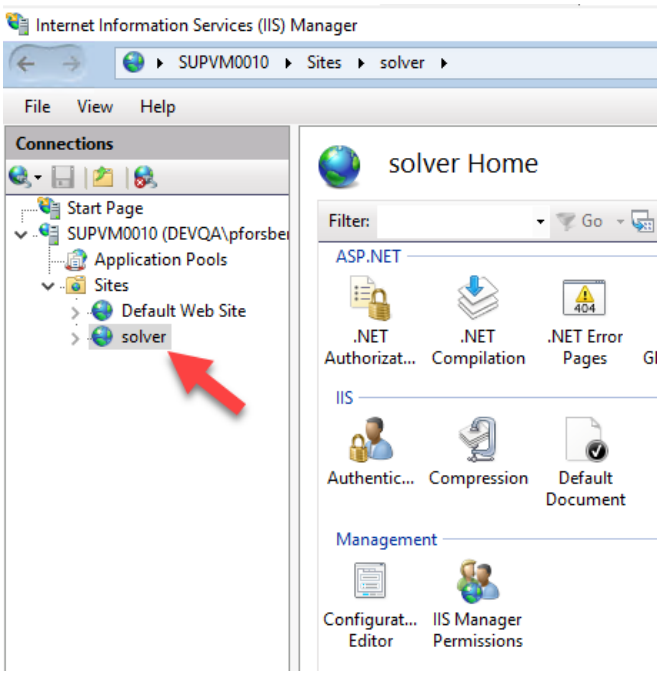
Configuring the Site Bindings

In order to be able to invite users to Solver Private Host via email, the correct site header as defined in IIS -> Site Bindings must be entered in System Settings. This section will detail adding a URL in the Internet Information Service ((IIS) Manager and adding this URL under System Settings in the Solver Private Host 5x.

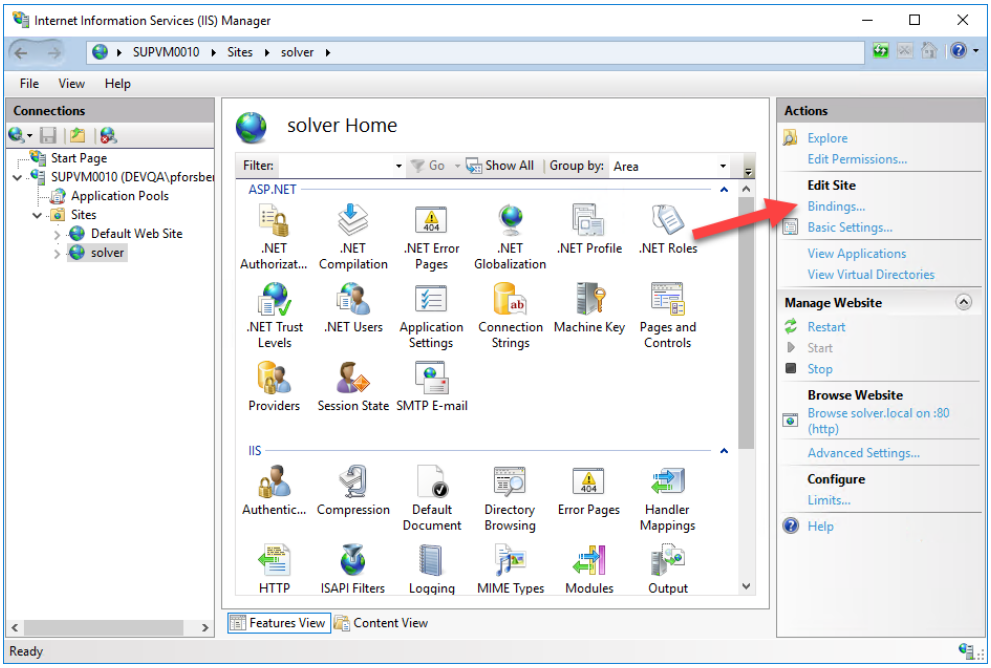
The following steps require assistance from your IT.

First add the Site Binding in the Internet Information Services (IIS) Manager:

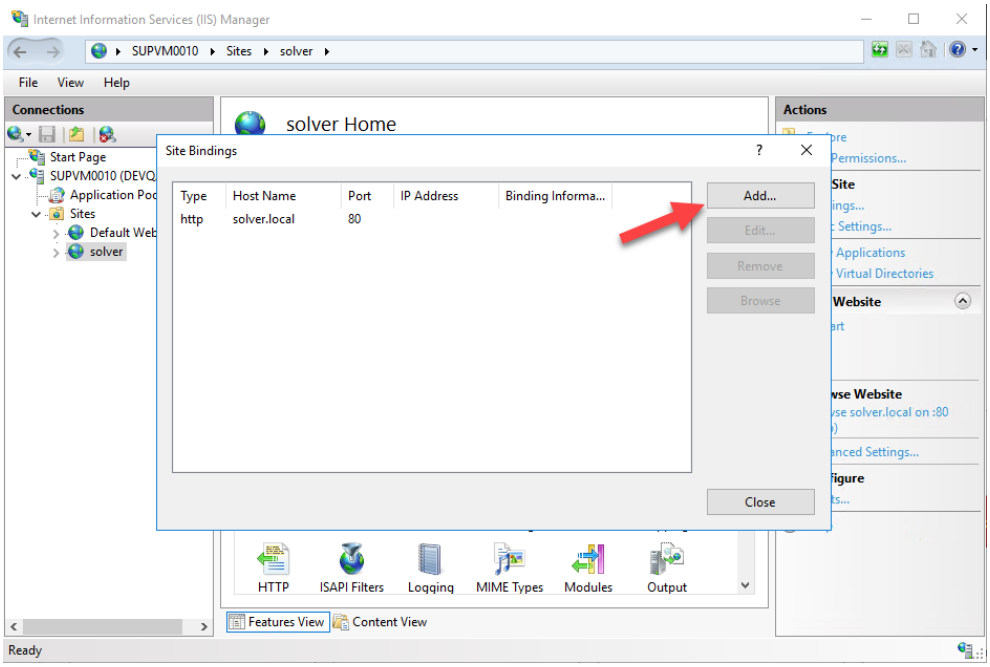
1. In the **Internet Information Services (IIS) Manager**, open the **Sites** -> **Solver**.



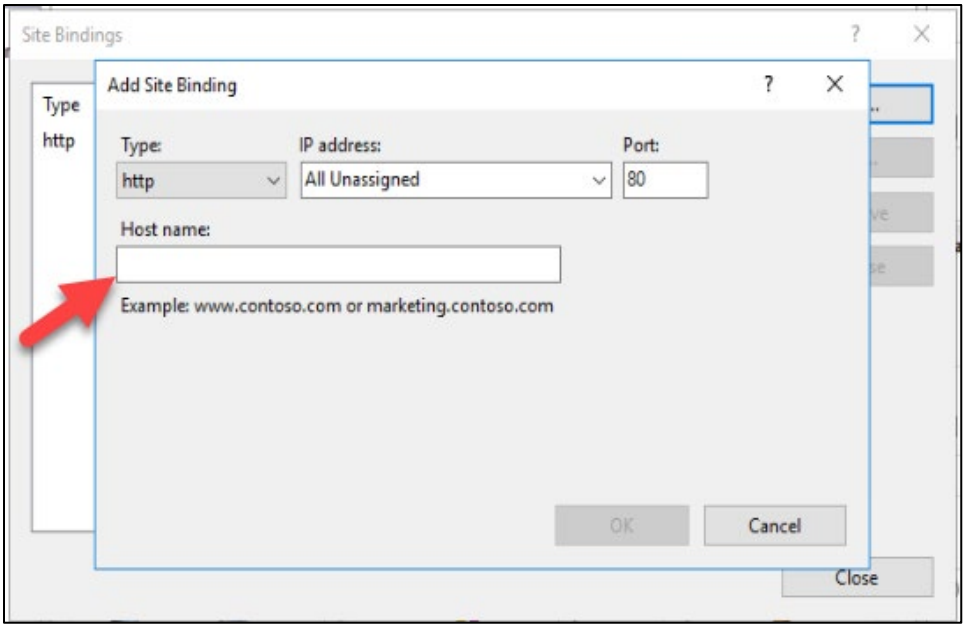
2. Under the **Actions** menu, click **Bindings**.



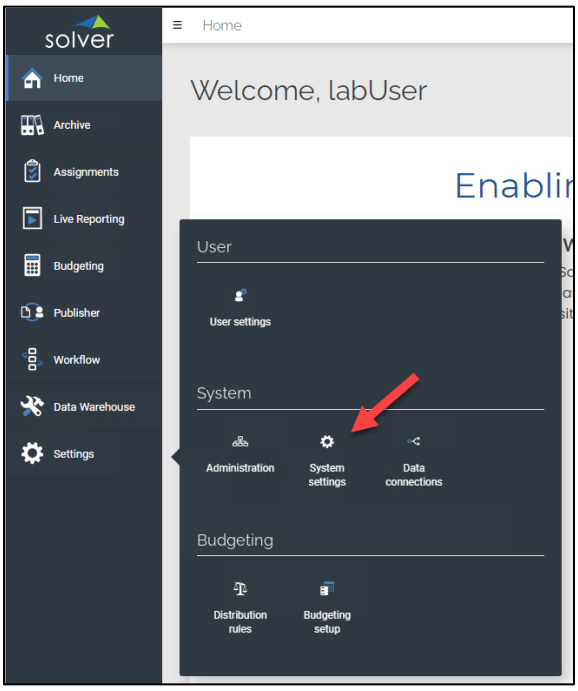
3. In the **Site Bindings** dialog box, click **Add…**.



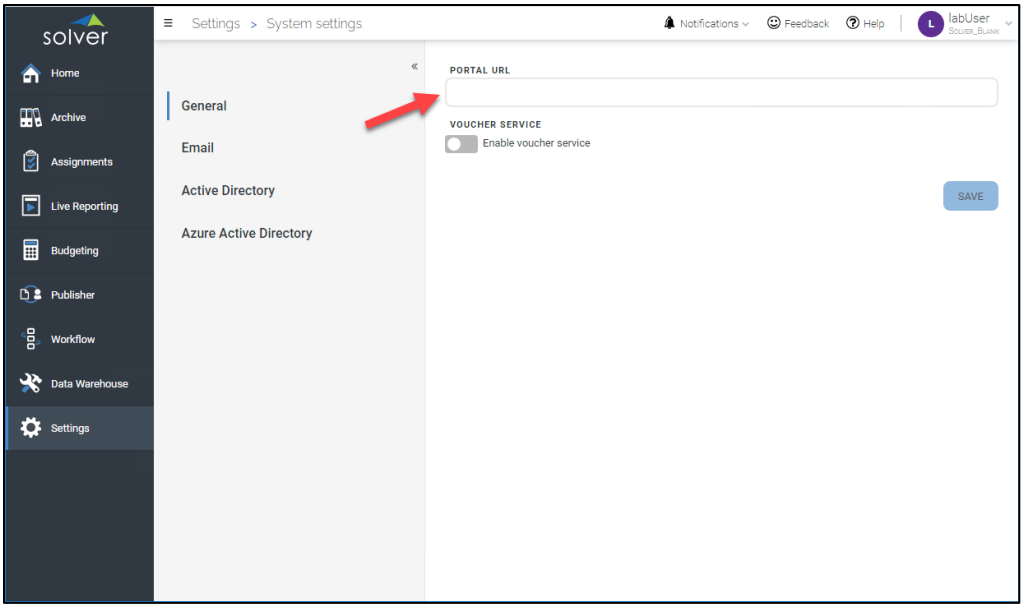
4. In the **Host name** field, enter the host name for the Solver Private Host 5x site. This URL is setup by the organization's IT department.



5. Click **OK**. Next, add this URL to the System Settings in the portal:
6. In **Solver**, click **Settings** and then click **System Settings**.



7. In the **Portal URL** field, enter the URL set up in the **Internet Information Services (IIS) Manager**.

8. 

9. Click **Save**.

NOTE: Under the **Email** tab, the email settings provided earlier can be changed.

Troubleshooting

Check Service Fabric Connection

1. On the service fabric server, open **PowerShell**.
2. **Run**:
   curl http://localhost:19081/SolverFabricConnection/DatabaseConnectionService/connectionStrings/[TenantId]
   - Replace the TenantId with the TenantId created