

# Migration from PostgreSQL database to MS SQL Server



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ADSelfService Plus comes bundled with a PostgreSQL database to store audit, basic user attribute, and enrollment data. It also supports MS SQL Server and allows you to migrate from the built-in PostgreSQL database to the MS SQL database. This guide will walk you through the database migration process.

**Supported versions of MS SQL Server:** 2005, 2008 R2, 2012, 2014, 2016, 2017, 2019, and 2022.

### Prerequisites for the migration process

In the MS SQL Server instance used for migration, make sure that the following conditions are satisfied:

1. The SQL Server browser must be up and running.
2. For SQL Server network configuration, TCP/IP protocol must be enabled.
3. All the client protocols must be enabled.
4. MS SQL Server access is delegated to a user with sysadmin and db\_owner permissions at the server and database levels respectively.

Refer to [Appendix A](#) for configuring prerequisites 1, 2, and 3. Refer to [Appendix B](#) for configuring prerequisite 4.

### Migrating from PostgreSQL to MS SQL

Migrating data from ADSelfService Plus' PostgreSQL database to MS SQL consists of the following two steps:

1. [Backing up the ADSelfService Plus database](#)
2. [Migrating PostgreSQL data to MS SQL](#)

## Step 1: Backing up the ADSelfService Plus database

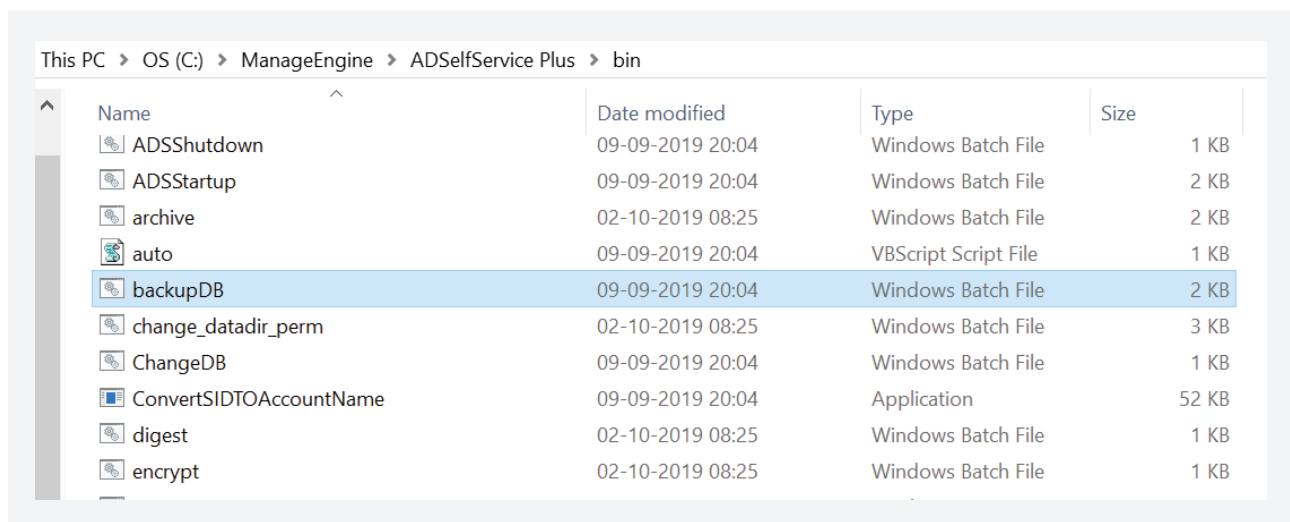
If you're installing ADSelfService Plus for the first time and don't have any data to back up, skip this step and proceed to the next. However, if you want to migrate a database with backed up data, follow the steps given below:

### Method 1: Offline manual backup

1. Start the Command Prompt as an administrator by right-clicking **Command Prompt** and selecting **Run as Administrator**.
  - a. If ADSelfService Plus is running in console mode, click the **Windows** icon. Search for **ADSelfService Plus**, and choose **Stop ADSelfService Plus**.
  - b. If ADSelfService Plus is running as a service, click the **Windows** icon. Search for **Services**. In the window that appears, choose **ManageEngine ADSelfService Plus**, and select the **Stop the service** option on the left side.
2. Navigate to the bin folder in the installation directory (By default: **C:\Program Files\ManageEngine\ADSelfService Plus\bin**) by using the cd command.

**Note:** By default, ADSelfService Plus is installed in: C:\ManageEngine\ADSelfService Plus.

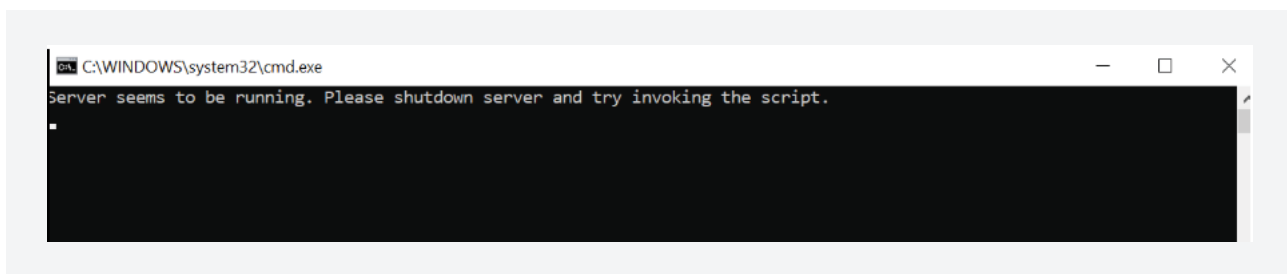
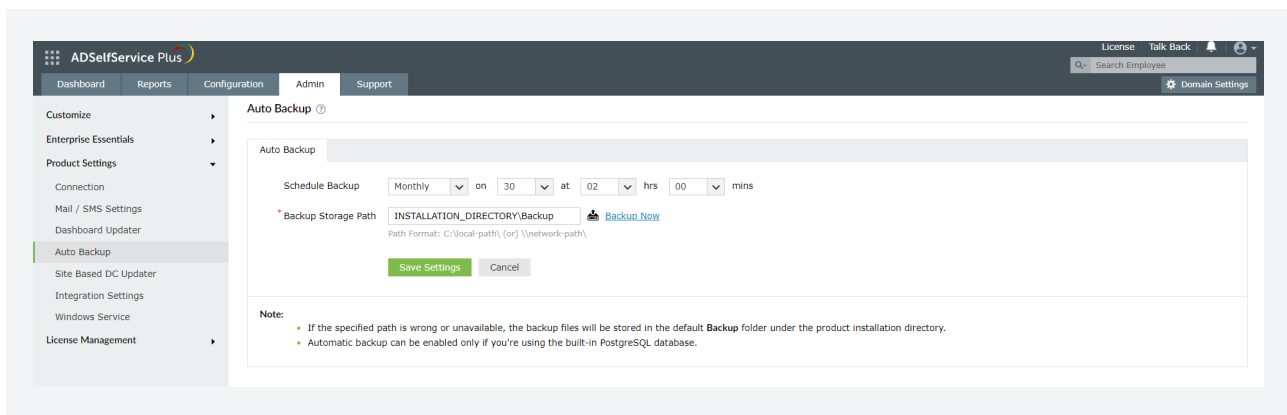
3. Now, execute the command **backupDB.bat** to back up the database.



4. A folder named **Backup** will be created in the ADSelfService Plus installation directory (By default: **C:\Program Files\ManageEngine\ADSelfService Plus\Backup**) and it will contain the database backup in compressed file format (e.g., **OfflineBackup\_20230926151025.ezip**).

## Method 2: Back up using the ADSelfService Plus admin portal

1. Log in to the ADSelfService Plus portal with admin credentials.
2. Go to **Admin > Product Settings > Auto Backup**.
3. In the **Auto Backup** page, enter your preferred file path (by default the installation directory file path will be mentioned).
4. Click **Backup Now**.
5. A folder named Backup will be created at ADSelfService Plus installation directory (By default: **C:\Program Files\ManageEngine\ADSelfService Plus\Backup**) and it will contain the database backup in compressed file format (e.g., **081224-1547.ezip**).



## Step 2: Migrating PostgreSQL Data to MS SQL

**Note:** Make sure you stop the ADSelfService Plus console or service before this process.

1. If MS SQL Server is installed in a remote computer, install the necessary command line utilities, Native Client, or ODBC driver, then proceed to the next step

**Note:** The links provided below will redirect you to the main Microsoft SQL feature pack page. On pressing the corresponding download button, you get a set of command line utilities and native client formats. Install the corresponding SQL Native Client, command line utilities, and ODBC driver as per the MS SQL Server version and CPU type of the machine where ADSelfService Plus is installed. The command line utilities have the term **SQLCMD** in them, and the native client file can be found under the name **sqlncli**.

MS SQL version	Command-line utilities (X86)	Command-line utilities (X64)	Native client (X86)	Native client (X64)	ODBC driver (X86) (Msodbcsql.msi)	ODBC driver (X64) (Msodbcsql.msi)
2012	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">Download</a>	<a href="#">Download</a>	Not applicable	Not applicable
2014	<a href="#">Download</a>	<a href="#">Download</a>	Not applicable	Not applicable	<a href="#">Download</a>	<a href="#">Download</a>
2016	<a href="#">Download</a>	<a href="#">Download</a>	Not applicable	Not applicable	<a href="#">Download</a>	<a href="#">Download</a>
2017	<a href="#">Download</a>	<a href="#">Download</a>	Not applicable	Not applicable	<a href="#">Download</a>	<a href="#">Download</a>
2019, 2022	<a href="#">Download</a>	<a href="#">Download</a>	Not applicable	Not applicable	<a href="#">Download</a>	<a href="#">Download</a>

**Note:** The links provided above will redirect you to the main Microsoft SQL feature pack page. On pressing the corresponding download button, you will get a set of command line utilities and native client formats. Install the corresponding SQL Native Client or command line utilities as per the MS SQL Server version and CPU type of the machine where ADSelfService Plus is installed. The command line utilities have the term *SQLCMD* in them, and the native client file can be found under the name *sqlncli*.

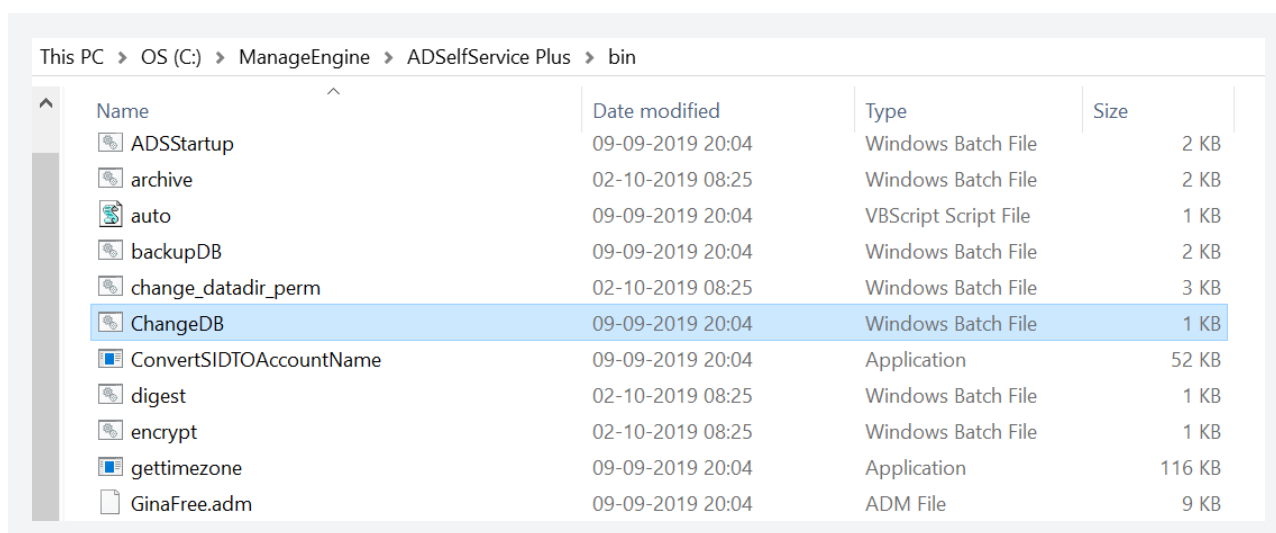
2. Copy the following files to <ADSelfService Plus installation directory>\bin folder.

i. **bcp.exe**- <MSSQL installation directory>\Tools\Binn\bcp.exe

ii. **bcp.rll**- <MSSQL installation directory>\Tools\Binn\Resources\1033\bcp.rll

3. Navigate to <ADSelfService Plus installation directory>\bin.

4. If you don't have any data to migrate, run the **ChangeDB** (Windows batch file) as an administrator.



**Note:** If you want to migrate with the data intact, open **Command Prompt**, navigate to the <ADSelfService Plus installation directory>\bin, and run the **changeDB.bat** true command with admin privileges.

5. The **DB Configuration wizard** will open. Select **MS SQL Server** as the Server Type, and enter the **Host Name** of the MS SQL Server instance.
6. The values for **Port** number and **Available MS SQL Server** Instances will be automatically loaded. From the displayed list of instances, select the one you'd like to use, and enter the **Database Name**.
7. Select the Authentication type.
  - a. If you choose **Windows Authentication**, provide the **Domain Name**, **Username**, and **Password** of the user account that has access to the server.
  - b. If you choose **SQL Server Authentication**, provide the **Username** and **Password** of the user who has access to MS SQL Server.

The image displays two side-by-side screenshots of the 'ADSelfService Plus Database Setup Wizard' window. Both windows show the same configuration for 'Server Type' (MSSQL Server), 'Host Name' (localhost), and 'Port' (1433). The 'Available MSSQL Server Instances' dropdown is set to 'MSSQLSERVER;1433'. The 'Database Name' field is empty in both. The 'Connect Using' section shows 'Windows Authentication' selected in the left window and 'SQL Server Authentication' selected in the right window. The 'Domain Name' field is present in the left window but absent in the right. The 'User Name' and 'Password' fields are present in both. At the bottom of each window are 'Save', 'Cancel', and 'Test' buttons.

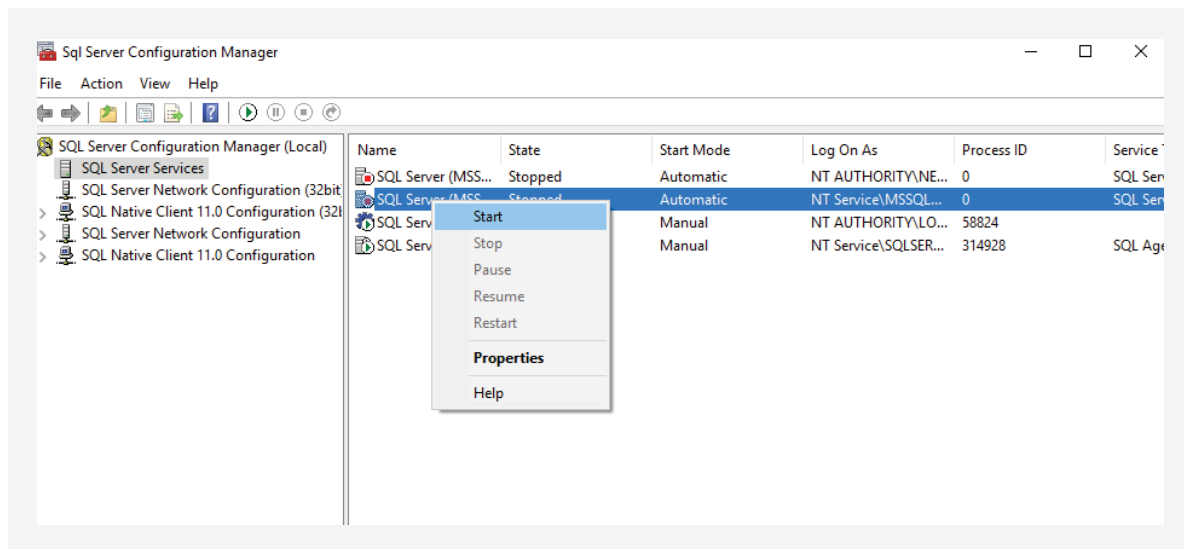
8. Click **Test** to check whether the entered credentials are correct. If the connection fails, the entered credentials may be wrong. Try reentering the correct credentials.
9. Click **Save**.

## Appendix A

### Configuring MS SQL Server

If you already have a functional MS SQL Server instance, then this step is not required. Follow the steps below to configure a freshly installed MS SQL Server instance:

1. Open **SQL Server Configuration Manager**, or run **compmgmt.msc** in Command Prompt.
2. Go to **SQL Server Services > SQL Server Browser**. Make sure the SQL Server Browser is running.



3. Go to **SQL Server Network Configuration**, and double-click **Protocols for <Instance\_Name>**.
4. Click on the **TCP/IP** protocol, and enable it.
5. Restart the **SQL Server Service** for the changes to take effect.

**Note:** SQLEXPRESS is the instance name provided while configuring MS SQL Server in general, however, it can be changed. SQLEXPRESS will be used in document hereafter.

6. Go back to **SQL Server Configuration Manager**. In the left pane:
  - Navigate to **SQL Server Network Configuration > Protocols for SQLEXPRESS**, and enable all the protocols.
  - Navigate to **SQL Native Client Configuration > Client Protocols**, and enable all the protocols.

## Appendix B

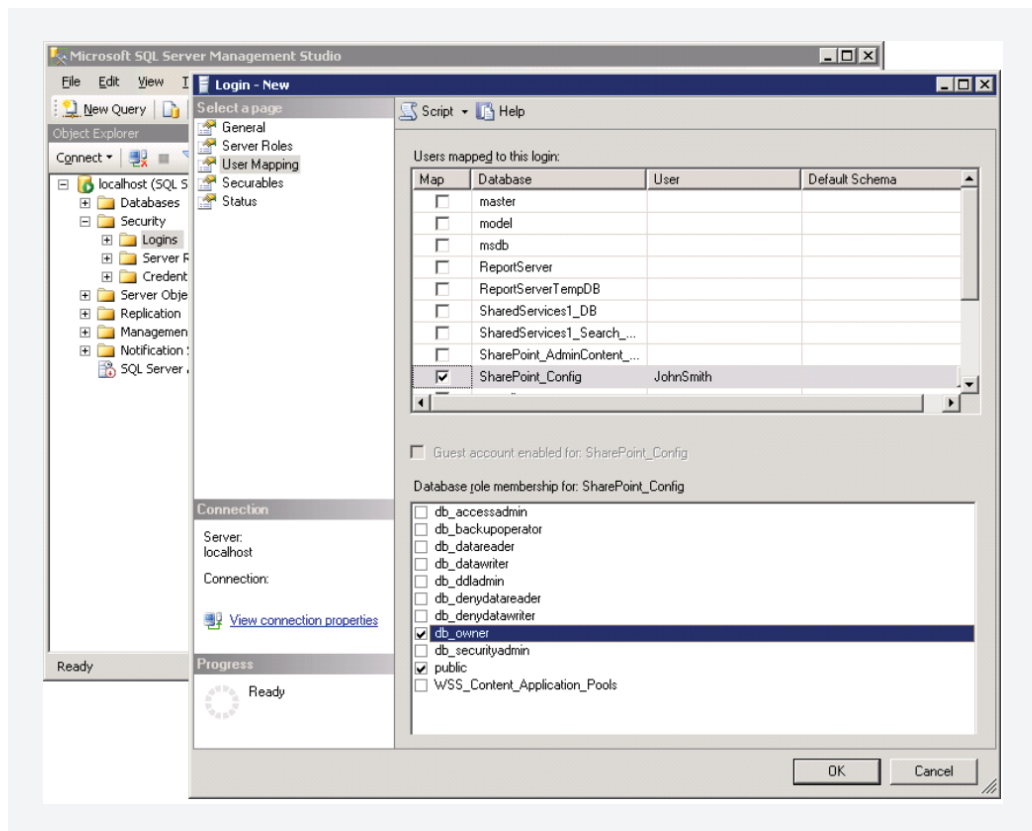
### Delegating MS SQL Server access to users

To complete the migration process, you need a **database admin** account for the MS SQL connection. If ADSelfService Plus is already running as a Windows service, you can use its **service account** as the MS SQL database admin account. Make sure the account has the required privileges. If there is no such account in MS SQL, follow the steps given below to create a new user account and assign the required permissions to it.

1. Log in to **SQL Server Management Studio**.
2. In the left pane, navigate to **Machine Name > SQLEXPRESS > Security > Logins**.
3. Right-click on **Logins**, and select **New Login**.
4. Provide a **Login Name**, and choose whether to use **Windows Authentication** or **SQL Server Authentication**.
  - If you choose Windows Authentication, enter the **Windows NT name** of the user to whom access must be granted.
  - If you choose SQL Server Authentication, you will be prompted to create a new **User-name** and **Password**.
5. The new user must have the **sysadmin** role in the server level and **db\_owner** role in the database level. Follow these steps to provide the sysadmin and db\_owner role permission:
  - Navigate to **Machine Name > SQLEXPRESS > Security > Logins**. Right-click the user > **Properties**.
  - Go to **Server Roles**, select the sysadmin check box, and click **OK**.



- Go to User Mapping in the left pane. In the Users mapped to this login list, check the box next to the database. In the Database role membership for list, select db\_owner, and click OK.



**Note:** For details about user roles, refer to the following documents:

- For Server-Level Roles: <http://msdn.microsoft.com/en-us/library/ms188659.aspx>
- For Database-Level Roles: <http://msdn.microsoft.com/en-us/library/ms189121.aspx>

In general, the configured account needs one of these three sets of privileges to complete the migration process successfully:

	Required database role	Required permissions
Set 1	db_owner	Not required
Set 2	db_datareader, db_datawriter, db_ddladmin, db_backupoperator.	Not required

Set 3	db_ddladmin	ALTER ANY TABLE, ALTER ANY AGGREGATE, ALTER ANY DEFAULT, ALTER ANY FUNCTION, ALTER ANY PROCEDURE, ALTER ANY QUEUE, ALTER ANY RULE, ALTER ANY SYNONYM, ALTER ANY TYPE, ALTER ANY VIEW, ALTER ANY XML SCHEMA COLLECTION, ALTER ANY REFERENCES, CONTROL ON CERTIFICATE::[ZOHO_CERT] TO [user], CONTROL ON SYMMETRIC KEY::[##MS_DatabaseMasterKey##] TO [user], CONTROL ON SYMMETRIC KEY::[ZOHO_SYMM_KEY] TO [user]
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### Important:

Please note that you must have the **db\_owner** permission while migrating PostgreSQL to MS SQL for the first time. After a successful migration, you can revoke the **db\_owner** permission for the account, and provide the set 2 or set 3 permissions.

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### ManageEngine ADSelfService Plus

ADSelfService Plus is an identity security solution to ensure secure and seamless access to enterprise resources and establish a Zero Trust environment. With capabilities such as adaptive multi-factor authentication, single sign-on, self-service password management, a password policy enhancer, remote work enablement and workforce self-service, ADSelfService Plus provides your employees with secure, simple access to the resources they need. ADSelfService Plus helps keep identity-based threats out, fast-tracks application onboarding, improves password security, reduces help desk tickets and empowers remote workforces. For more information about ADSelfService Plus, visit [www.manageengine.com/products/self-service-password](http://www.manageengine.com/products/self-service-password).

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