



Automatic Backups

Domain Account using Network Share

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1. Overview

Passwordstate is an application that communicates to, and stores all or your data in a Microsoft SQL Database. In the event of a disaster, you may need to restore your database and Passwordstate installation files, which will require you to have them backed up.

Passwordstate has a built-in automatic backup feature which can be configured to suit your requirements. For example, you may already have another solution for your SQL database backups, so you can set Passwordstate to not backup up your database, but maybe just the install files.

Not only is the SQL database critical to have a backup of, but there are also encryption keys which are located in your web.config file. These too are also critical to have a copy of in the event of a disaster, so setting up the Passwordstate automated Backup feature will ensure you have everything you need to restore your environment.

This document will help you configure Passwordstate to use an Active Directory Domain account for the backups, and will also use a Network Share to store the data.

Please Note: If using cloud-based database services like Azure SQL or Amazon RDS, you cannot perform database backups using our software, as those platforms do not support it.

2. Backup Permissions and Prerequisites

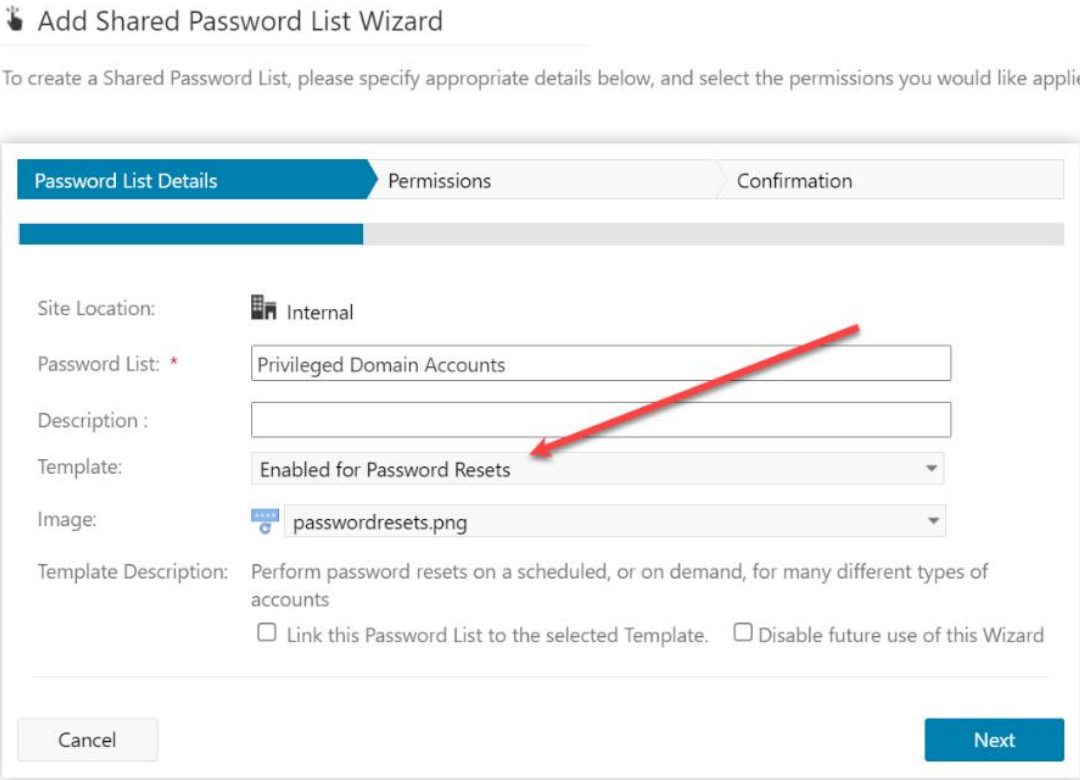
All examples below are using an account we have created specifically for backups in Active Directory called “**Passwordstate Backup**”. The username for this account is **pback**. This account is a member of the **Domain Users** security group only.

The Windows server where SQL is installed and hosting the Passwordstate database is called **dbserver01**.

We have a Network Share called **\\StorageServer01\Backups** located on another server called **StorageServer01**. This network share is converted from a folder called **C:\Data\Backups**.

2.1 Create Password List with the Enabled for Resets Option Selected

You may already have a Password List that is enabled for resets, but if you don’t then you’ll need to create one. Creating a List with this option will allow you to add in a Password Record that can automatically reset and validate the Domain account you will be using for backups:



Add Shared Password List Wizard

To create a Shared Password List, please specify appropriate details below, and select the permissions you would like applied.

Password List Details | Permissions | Confirmation

Site Location: Internal

Password List: * Privileged Domain Accounts

Description :

Template: Enabled for Password Resets

Image: passwordresets.png

Template Description: Perform password resets on a scheduled, or on demand, for many different types of accounts

☐ Link this Password List to the selected Template. ☐ Disable future use of this Wizard

Cancel Next

Note: Additional settings/permissions can be changed after the Password List has been created, if you have permissions.

2.2 Create Password Record

Once you have a Password List ready, you can now add in a new Password Record. When creating this record, deselect the option “**Enabled for Resets**”. By deselecting this option, Passwordstate will not try to automatically reset the password for the account. More information about this in the FAQ at the end of this document.

You should then choose the “**Active Directory**” account type, set the **Domain**, **Username** and current password for the account. You can test the password is valid by clicking the heartbeat icon.

Edit Password

Please edit the password below, stored within the 'Privileged Domain Accounts' Password List (Tree Path = \).

password details | notes | security | reset options | heartbeat options

Title * Passwordstate Backup Account

Managed Account ☐ Enabled for Resets ☒ Enabled for Heartbeat

Account Type Active Directory

Domain contoso

Username pback

Description

Expiry Date

Password Generator Default Password Generator

Password *

Confirm Password *

Password Strength ★★★★★ Compliance Strength ★★★★★

Strength Status:

Reset Tasks (0) Added via Discovery Compliance Mandatory Prevent Bad Password

Save Cancel

2.3 PowerShell Requirements on Database Server

As a once off process, the SQL Server PowerShell module must be installed on your Passwordstate database server, which in this guide is **dbserver01**. This module can be installed by opening an elevated PowerShell ISE session on your server, and execute the following lines of PowerShell code:

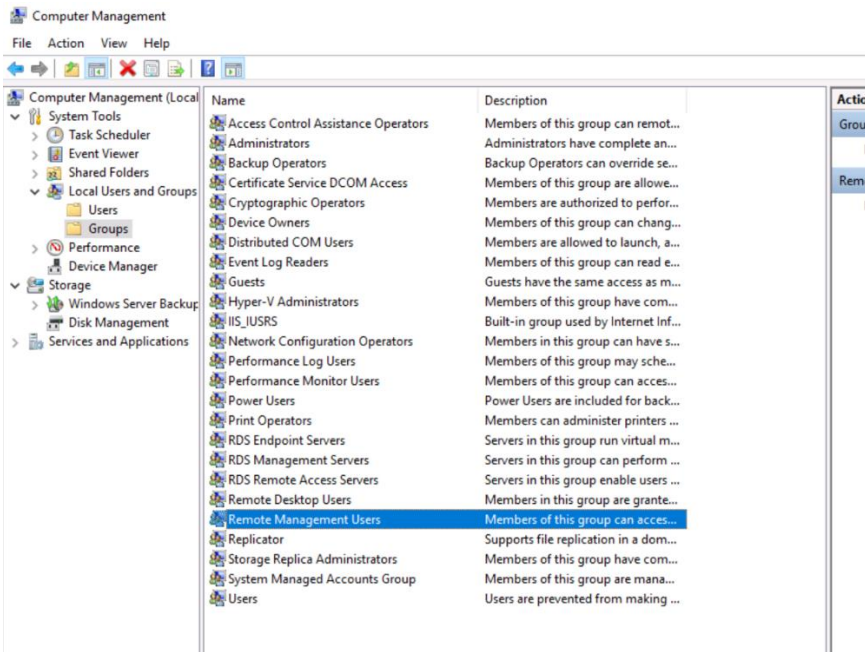
```
[Net.ServicePointManager]::SecurityProtocol = [Net.SecurityProtocolType]::Tls -bor
[Net.SecurityProtocolType]::Tls11 -bor [Net.SecurityProtocolType]::Tls12
Install-Module sqlserver -Scope AllUsers -Force -AllowClobber
```

Installing this module will reach out to some online Microsoft repositories to which you should agree to any prompts to ensure a successful install. More information about this can be found here:

<https://docs.microsoft.com/en-us/sql/powershell/download-sql-server-ps-module?view=sql-server-ver15>

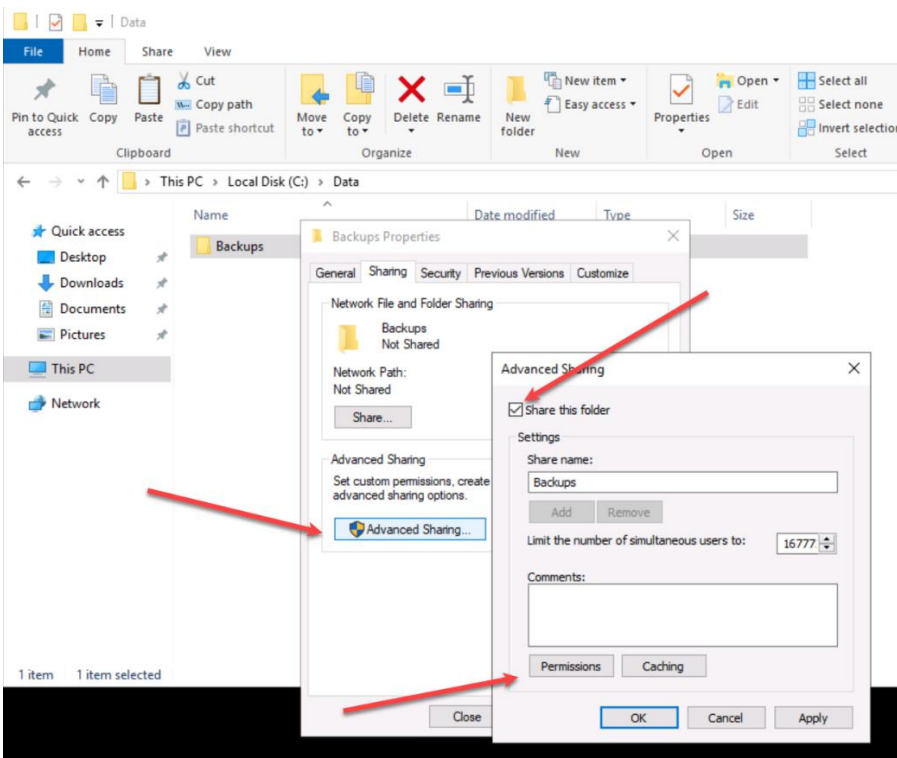
2.4 Grant Backup Account Access to the Remote Management Users Group

Whilst still logged into your Database Server, open **Computer Management** and add your backup account (**pback** in this example), to the **Remote Management Users** group. This will allow the backup account to perform Powershell connections to the Database server, which will then execute back up commands:

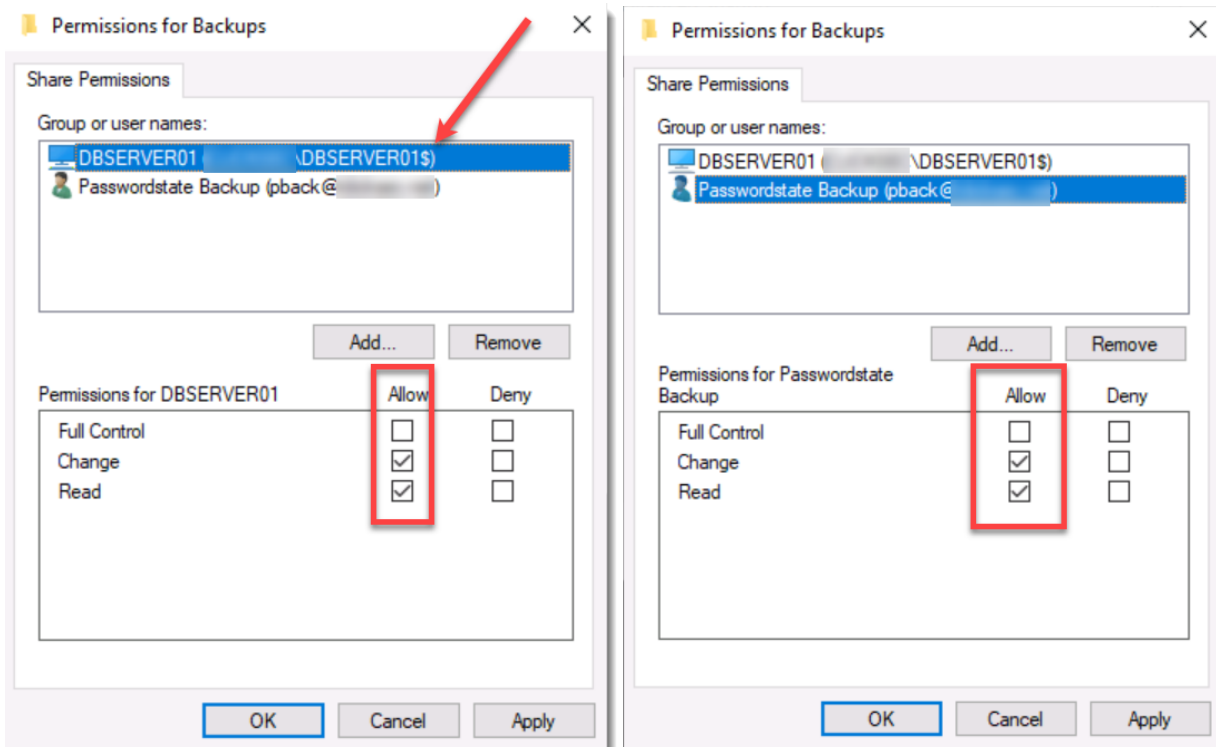


2.5 Share Permissions

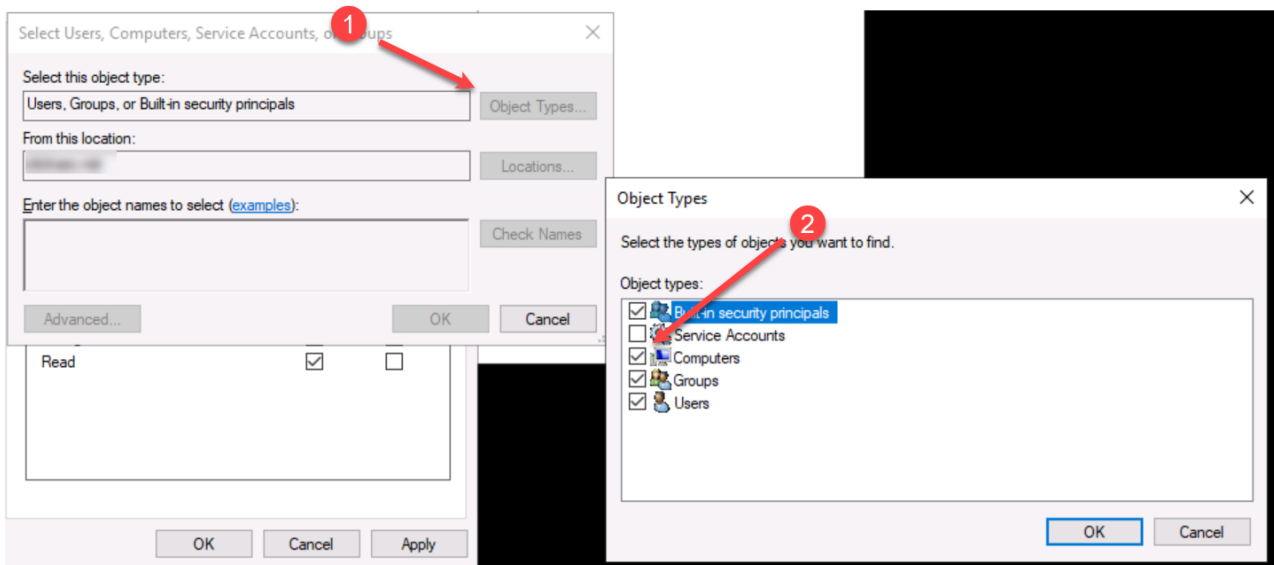
The Network Share will need the following **Change** permissions for the **backup** account, but also the **SQL Server** computer object. To create the Share if you haven't already, right click your folder and select **Properties -> Sharing** tab, then click **Advanced Sharing**. Tick the "Share this Folder" option and click the **Permissions** button:



Now you should grant your **backup** account and the **SQL Server Computer** object **Change** access as per these two screenshots – Note, your SQL Server object will end with a \$ symbol:

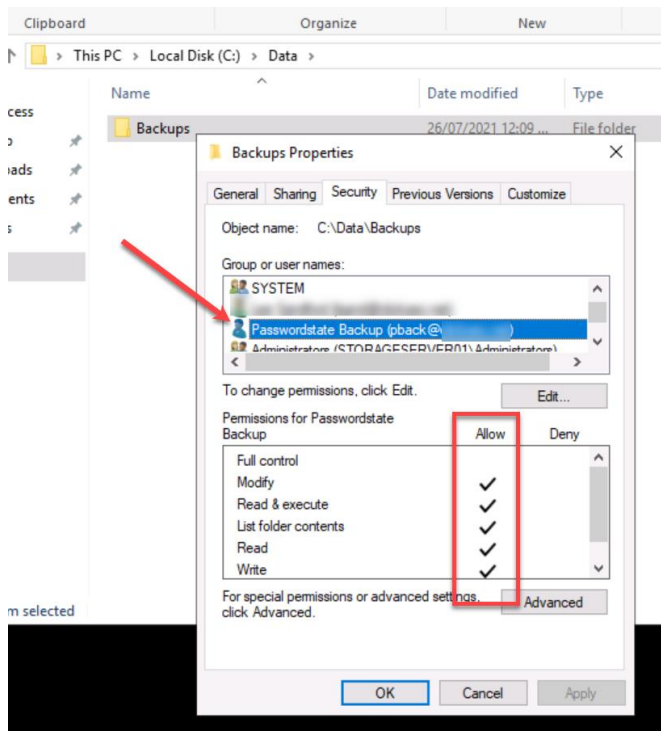


When searching for your SQL server, ensure you tick the Computer Object Type so you can find it easily:



2.6 Backup Folder Permissions

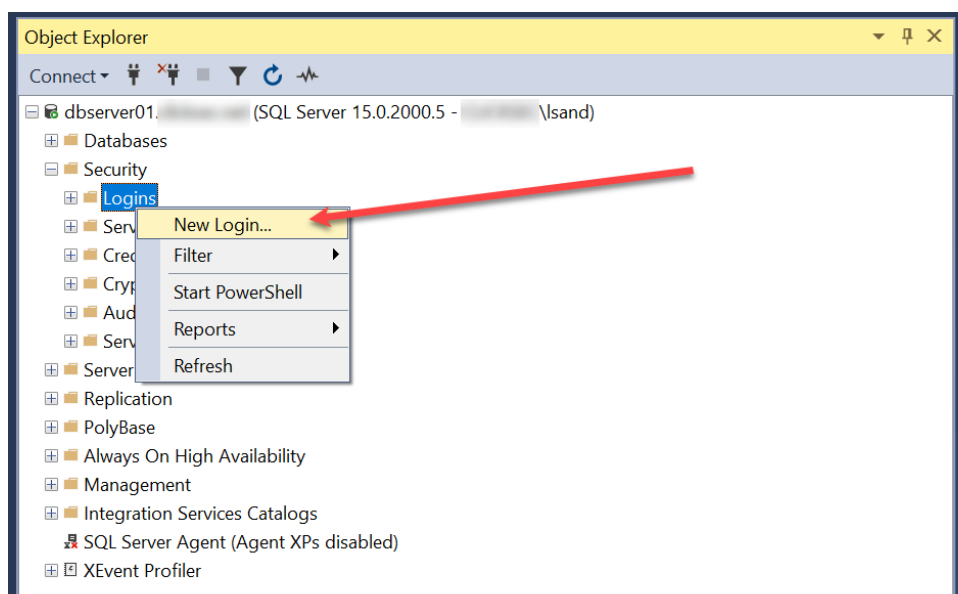
Even though you are using a Network Share, we need to grant the Backup Account **Modify** access to the folder that the Share is converted from. This is due to the way we impersonate the account when performing the backup operations:



2.7 SQL Database and Server Permissions/Requirements

Using SQL Management Studio tools, connect to your database server with any SQL admin account of your choice, and add in the backup account user under **Security -> Logins**. When adding this user, ensure you give it **db_backupoperator** permissions to the Passwordstate database:

Screenshot #1:



Screenshot #2

Login - New

Select a page

- General
- Server Roles
- User Mapping
- Securables
- Status

Script Help

Login name: pback Search...

☒ Windows authentication
☐ SQL Server authentication

Password:
Confirm password:
☐ Specify old password
Old password:

☒ Enforce password policy
☒ Enforce password expiration
☒ User must change password at next login

☐ Mapped to certificate
☐ Mapped to asymmetric key
☐ Map to Credential

Mapped Credentials

Credential	Provider
------------	----------

Add Remove

Default database: master
Default language: <default>

OK Cancel

Screenshot #3

Login - New

Select a page

- General
- Server Roles
- User Mapping
- Securables
- Status

Script Help

Users mapped to this login:

Map	Database	User	Default Schema
<input type="checkbox"/>	master		
<input type="checkbox"/>	model		
<input type="checkbox"/>	msdb		
<input checked="" type="checkbox"/>	passwordstate	pback	
<input type="checkbox"/>	tempdb		

☐ Guest account enabled for passwordstate

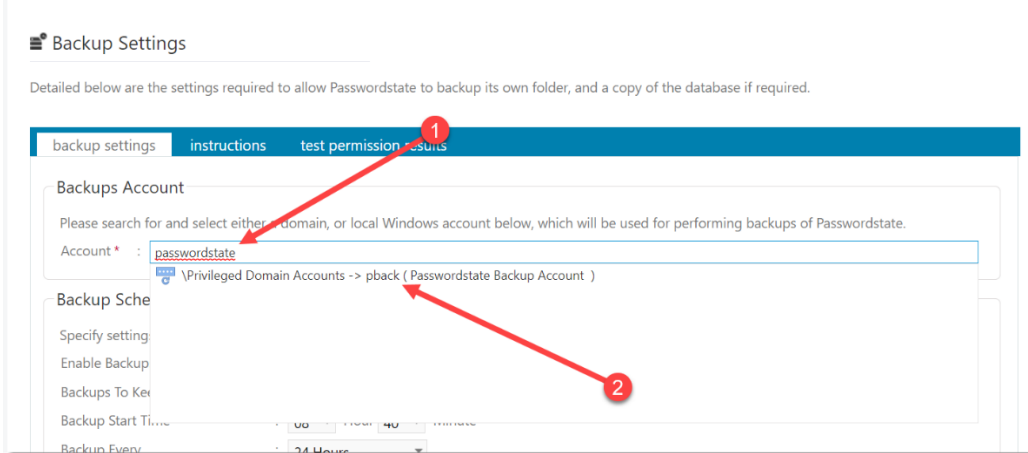
Database role membership for passwordstate

- ☒ db_accessadmin
- ☒ db_backupoperator
- ☐ db_datareader
- ☐ db_datawriter
- ☐ db_ddladmin
- ☐ db_denydatareader
- ☐ db_denydatawriter
- ☐ db_owner
- ☐ db_securityadmin
- ☒ public

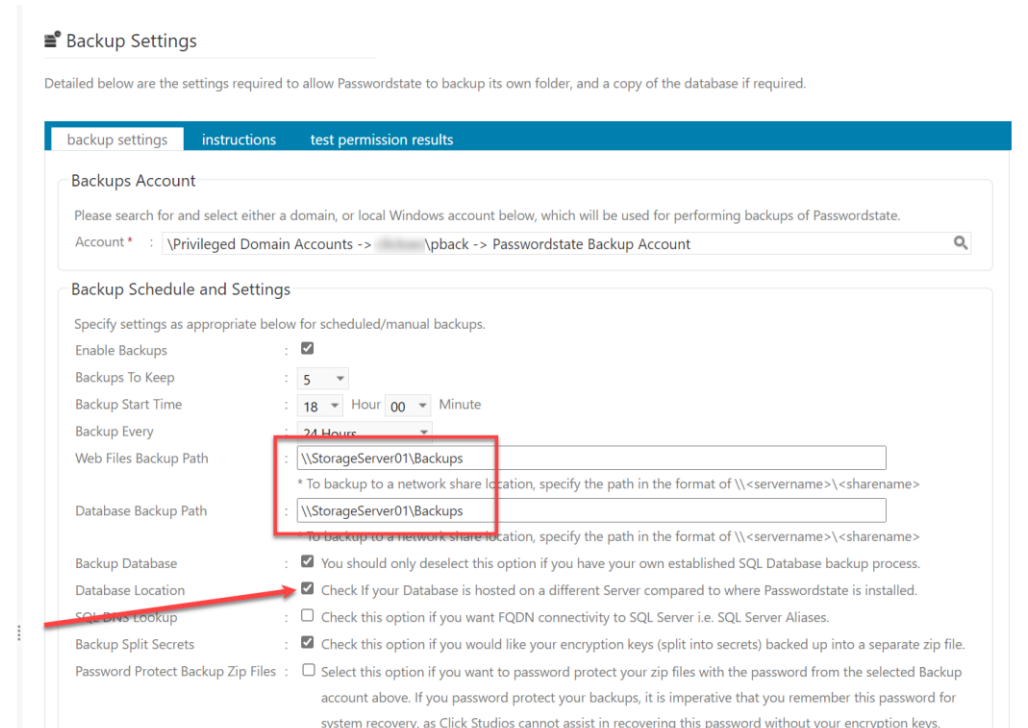
OK Cancel

3. Configure Backups Screen

In Passwordstate, go to **Administration -> Backups -> Settings** and add in the backup account that you previously set up in **Step 2.2** of this document. Search for the account name and select the matching result to set the account:



Next, select the option to **Enable Backups** and choose a schedule of your choice. Add in the **Network Share** path for both web files, and database backup paths, and configure any other settings as appropriate on this screen. Please note the option for **Database Location** is enabled because in this example, SQL is installed on a different server to the Passwordstate website.



You should now be able to press the **Test Permissions** button on this page and if all configured correctly, you will get a successful result and your configuration of backups is complete.

Backup Settings

Detailed below are the settings required to allow Passwordstate to backup its own folder, and a copy of the database if required.

backup settings

instructions

test permission results

Please click the Test Permissions button below in order to confirm correct permissions for your backup account.

Test Permission Results

- Testing if files can be written to the backup path.....
- Testing for correct version of PowerShell on web server.....
- Testing SQL Server database server prerequisites.....
- Testing SQL Server database backup.....

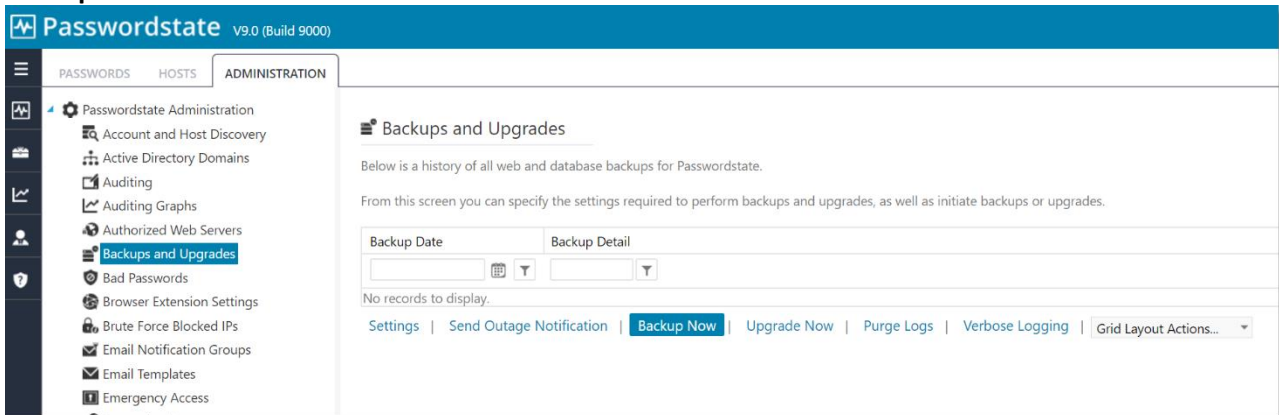
Test Completed Successfully.

Status: Test Permissions Save Cancel

4. FAQ

4.1 Manual Backups

You can run a manual backup at any time if you have configured your settings correctly by clicking the **Backup Now** button:



4.2 Session Recording Files

If using the Browser Based version of the Remote Session Launcher, Session Recordings will not be included in the standard Passwordstate backup functionality, due to the potential size of the files. If you have left the recording folder in the default path, then you need to organize your own backups of these files

4.3 Password Protecting the Backup Files

One of the options on the backups page is to Password Protect your zip files. If you have selected this option, then it is imperative you know the password. We'd recommend storing this in a safe place outside of Passwordstate. Without knowing this password, you will not be able to access your backup files.

4.4 Automatic Reset of Backup Account

If you select the option 'Enable for Resets' for your account on your Password Record, and you have the option to password protect your zip files on the backups page, then it is imperative you know the password after it is reset. We'd recommend storing this in a safe place outside of Passwordstate. Without knowing this password, you will not be able to access your backup files.

4.5 Backup Split Secrets

Backup Split Secrets is another option on the backup **Settings** page you can choose to ensure you have a copy of your encryption keys, half of which reside in your web.config file, and the other half are located in your database. These encryption keys are critical when restoring your environment. By enabling this option, these keys will get backed up to the **Web Files Backup Path**.

4.6 Access Denied Errors when Performing Backup Tests

If you have configured everything as per this documentation, but are still getting errors performing the Permission Tests, please check the following:

Troubleshooting Step #1:

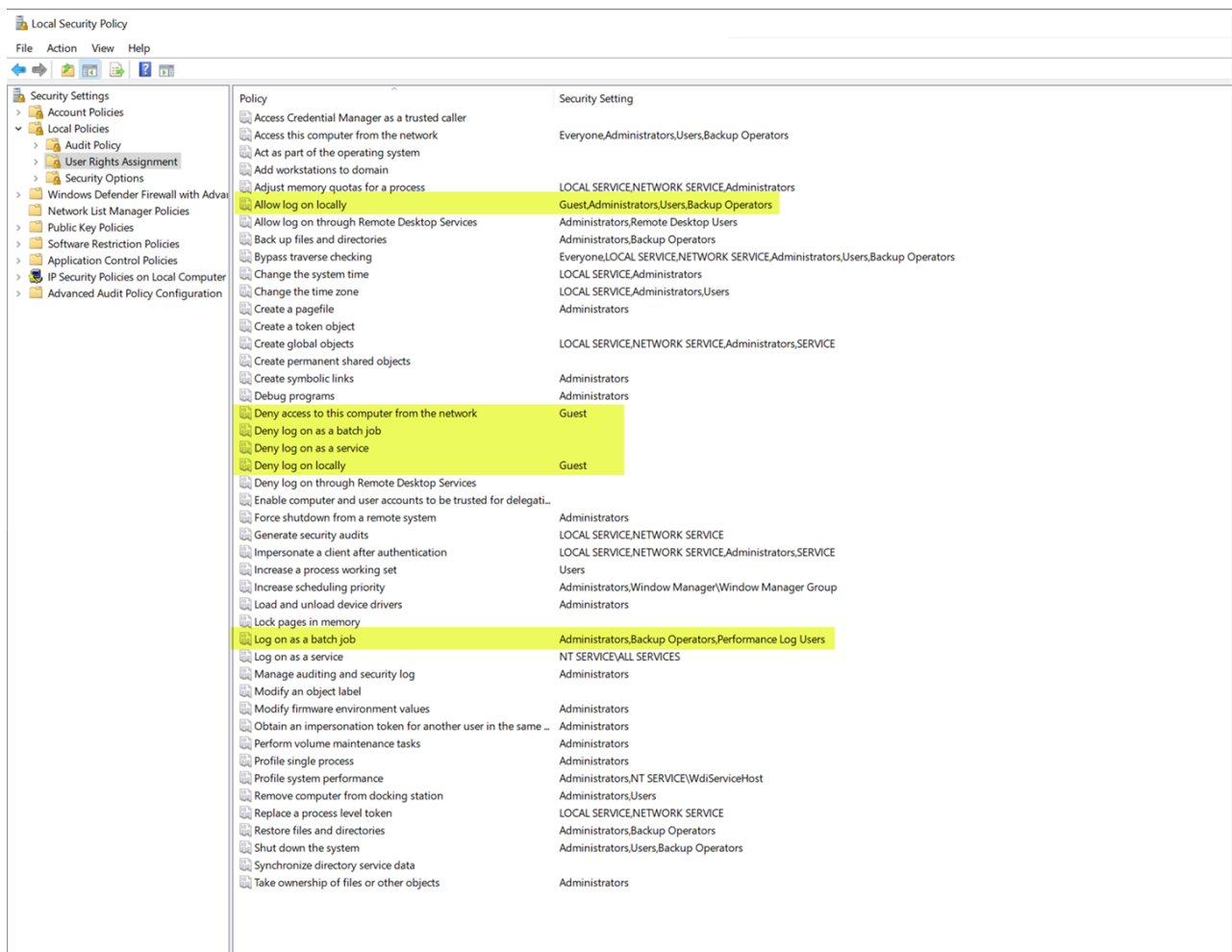
Confirm that the account you set up for backups, has a correct password set within Passwordstate. You can confirm this by opening the Password Record you created, and click on the Heartbeat icon.

Troubleshooting Step #2:

Ensure the account is not locked out in Active Directory

Troubleshooting Step #3:

Investigate if you have a policy applying to your server that is denying the Backup Account from logging on. To check this, run the command “**secpol.msc**” on your Passwordstate server, and the server where you have your network share located, and investigate these options:



Troubleshooting Step #4:

Another reason this error may happen is due to the way we impersonate the backup account. As the Passwordstate website runs under the identity of Network Service by default, which is a built in IIS account, we need to impersonate the backup account when performing tests, so it's the backup account you have configured that effectively performs the backup.

There are three Microsoft values for this impersonation, and the default value is 2. You can change this impersonation type to either 4, or 9 using SQL Management Studio Tools, when connected to your Passwordstate database server.

To change the Impersonation value to 4, run the following SQL Script: (change values to 9 if 4 does not work)

Use Passwordstate

Update BackupSettings Set BackupDatabaseImpersonation = 4

Update BackupSettings Set BackupEncryptionKeysImpersonation = 4

Update BackupSettings Set BackupFilesImpersonation = 4

Update BackupSettings Set BackupTest1Impersonation = 4

Update BackupSettings Set BackupTest2Impersonation = 4

Update BackupSettings Set BackupTest3Impersonation = 4

Update BackupSettings Set BackupTest4Impersonation = 4

Update BackupSettings Set UIImpersonation = 4

Update BackupSettings Set ServiceImpersonation = 4

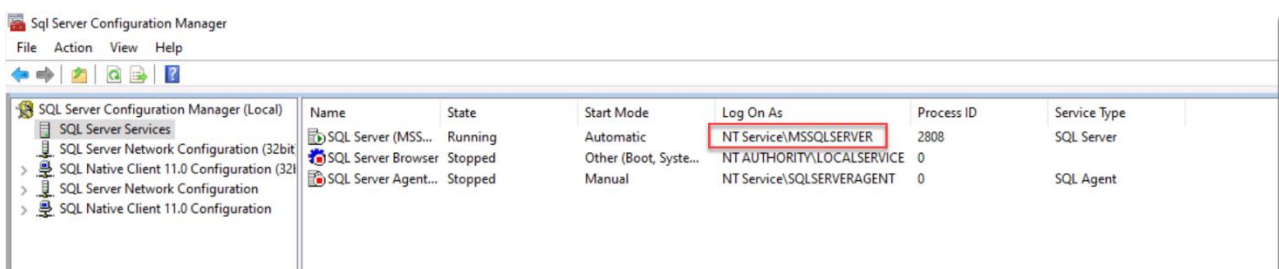
If neither of these impersonation values work, please revert the values back to the default values of 2.

If you still have issues running the tests, please contact Click Studio Support and send a screenshot of the test results for further analysis.

Troubleshooting Step #5:

If you find that the Passwordstate SQL database is not being backed up, either on a schedule or you notice an error when doing a test, please check the following settings:

- If your database resides on a separate server to where you have Passwordstate installed, ensure you have configured the **"Database Location"** setting on the backups page appropriately
- If your SQL Services are configured to run under the identity of a custom account, then that account too will need access to your database, and network share. Unless you have a specific reason to run your services under a custom account, it may be easier to change the **Log On As** value back to the defaults, which can be seen in the screenshot below:



4.7 Backup File Naming Convention

The last section of the settings page gives you control of what your zip files should be called. These values can be changed to anything you like. The current date and time of the backup operation will be appended to these file names below.

The **Test Permissions** button at the bottom of the page can be used to check all your settings are valid.

Backup File Naming Convention

Please specify the file naming convention for your backup zip files below - the current data and time will be appended to these file names.

Web Files Backup Name : PasswordstateFiles

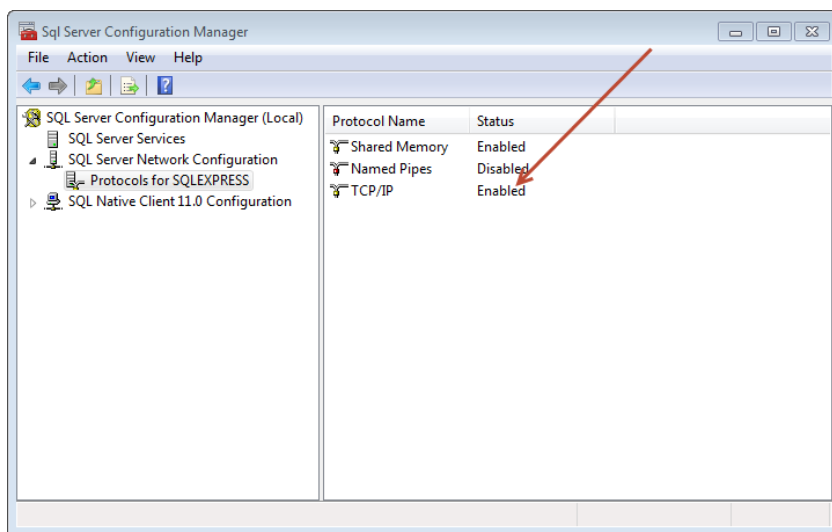
Database File Backup Name : PasswordstateDB

Split Secrets File Backup Name : PasswordstateKeys

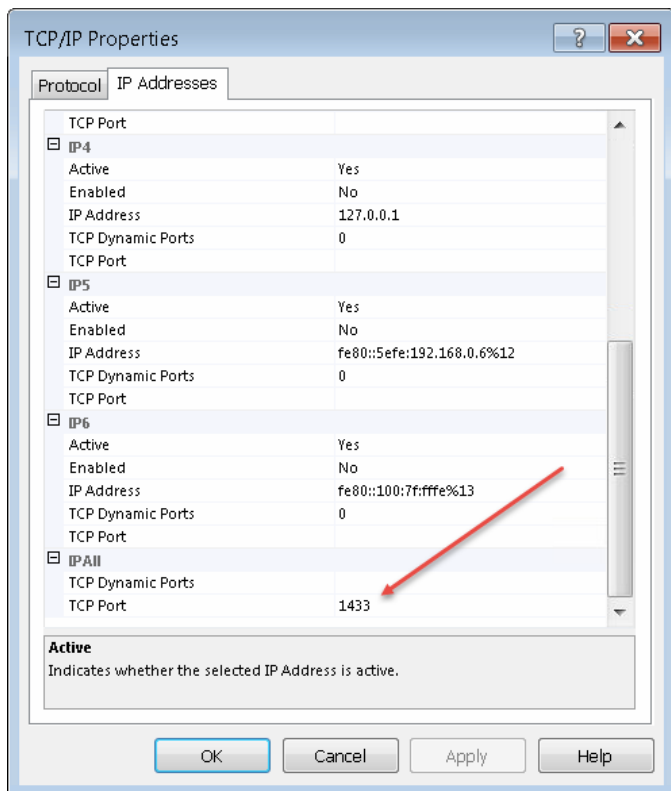
Test Permissions Save Cancel

4.8 SQL Server Express Considerations

If you're using SQL Server Express on a different server to where you installed Passwordstate, please ensure the **TCP/IP Protocol** is enabled (use **SQL Server Configuration Manager** -> **Protocols for SQLEXPRESS**)



By default, SQL Express configures the TCP/IP Protocol to communicate on a dynamic port. If you have a firewall enabled on your database server, you may need to set a static port in the TCP/IP properties which will match your firewall rule. Restart the service again after configuring the option in the screenshot below:



4.9 Azure and Amazon SQL Databases

If you are using either an Azure or Amazon SQL database service to host your Passwordstate data, our backup process will not work with those services as they do not support the Powershell backup commands we use.

We'd recommend configuring those cloud services to back up your database, and then deselect the database backup option in Passwordstate.

5. Server Permission Matrix

So far, this document used an example of having your Passwordstate database hosted in SQL on a separate server to where you have Passwordstate installed. It also assumed you had your backup share on a third, separate server. Below is a matrix to consider if you have a slightly different setup to the above example.

Database on Passwordstate Web Server	Share Permissions	Share Folder NTFS Permissions	Database Permissions
Local Share on Passwordstate Web Server	Change for Backup Account Change for SQL Server Service - Log On As Account	Modify for Backup Account	db_backupoperator Permissions in SQL Server for Backup Account
Local Folder on Passwordstate Web Server		Modify for Backup Account	db_backupoperator Permissions in SQL Server for Backup Account
Remote Network Share	Change for Backup Account Change for SQL Server Host Name	Modify for Backup Account	db_backupoperator Permissions in SQL Server for Backup Account

Database on Different Server	Share Permissions	Share Folder NTFS Permissions	Database Permissions
Remote Network Share, or Local Share on Passwordstate web server	Change for Backup Account Change for SQL Server Host Name	Modify for Backup Account	db_backupoperator Permissions in SQL Server for Backup Account Backup Account in Remote Management Users Security Group PowerShell Remoting on SQL Server Host