Password State Enterprise Password Management

SQL Server Transactional Replication for Passwordstate High Availability

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1 Overview

This document will provide instructions for configuring SQL Server Transactional Replication for High Availability of the Passwordstate Database.

These instructions are created using **SQL Server 2019 Standard** edition and are intended as a guide only. If you have any technical issues with SQL Server, please contact Microsoft for support

Note: When using the High Availability module of Passwordstate, your distribution and publication databases must reside on SQL Server 2012, 2014, 2016, 2017 or 2019 **Standard** or above – SQL **Express** can only act as a subscriber to SQL Server replication. You must also be using the same version of SQL Server for both database servers.

Below is some information about a test environment used to document this process, to help you understand our instructions easier:

tranweb01.halox.net

- Role Passwordstate primary web server
- Microsoft Windows 2019 Server OS
- Primary Passwordstate website installed and is connected SQL on transql.halox.net

transql01.halox.net

- Role Passwordstate primary database Server
- Microsoft Windows 2019 Server OS
- Microsoft SQL Standard 2019
- Hosts a Passwordstate database with data stored in this database from several months of using Passwordstate in a non-high availability configuration.

tranweb02.halox.net

- Role Passwordstate secondary web server
- Microsoft Windows 2019 Server OS
- Has HA instance of Passwordstate installed, but not yet connected to a database. Instructions for HA Install located here: <u>https://www.clickstudios.com.au/downloads/version9/High_Availability_Installation_Instructions.</u>

<u>pdf</u>

transql02.halox.net

- Role Passwordstate secondary database Server
- Microsoft Windows 2019 Server OS
- Microsoft SQL Server Express 2019

Domain account:

- halox\sqlha
- Is a member of the Domain Users group only

Local SQL account used to authenticate Passwordstate websites to SQL

• passwordstate_user

2 Prerequisites

- This process assumes you have a working install of Passwordstate, connected to a database called Passwordstate, running on an instance of SQL Server Standard or above.
- 2. Prior to starting this process, you should ensure that you have the SQL Server Replication feature installed on both your primary, and secondary database servers. You can install this by running your SQL Server installation, and selecting the following options:



• Select Add features to an existing instance of SQL Server, and select the appropriate instance

🏗 SQL Server 2019 Setup					-		\times
Perform a new installation or a	dd features to an existi	ng instance of SQL Sen	er 2019.				
Global Rules Product Updates Install Setup Files Install Rules Installation Type Feature Selection Feature Rules Feature Configuration Rules Ready to Install Installation Progress Complete	 Perform a new in Select this option components. Add features to a MSSQLSERVER Select this option want to add the <i>i</i> within an instance Installed instances: Installed instances: Installed SERVER 	stellation of SQL Server 2 if you want to install a n existing instance of SQ if you want to add feat Analysis Services feature e must be the same edit Instance ID MSSQL15.MSSQLS	1019 new instance of SC IL Server 2019 ures to an existing s to the instance to ion. Features SQLEngine	QL Server or wa instance of SC hat contains th Edition Standard	ant to install sh QL Server, For ne Database En	example, yo ngine. Featu Version 15.0.2000.5	u res
				< Back	Next >	Cance	:I

• Select the **SQL Server Replication** feature if it isn't already selected, and then run through the rest of the process to finish the installation

髕 SQL Server 2019 Setup			- 🗆 X
Feature Selection Select the Standard features to i	nstall.		
Global Rules Product Updates Install Setus Files	 Looking for Reporting Service 	es? <u>Download it fro</u>	m the web
Install Setup Files Install Rules Installation Type Feature Selection Feature Rules Feature Configuration Rules Ready to Install Installation Progress Complete	Instance Features Database Engine Services SQL Server Replication Machine Learning Ser R Python Java Full-Text and Semanti Data Quality Services PolyBase Query Service <	vices and Language	The configuration and operation of each instance feature of a SQL Server instance is isolated from other SQL Server instances. SQL Prerequisites for selected features: Disk Space Requirements Drive C: 0 MB required, 49523 MB available
	Select All Instance root directory: Shared feature directory: Shared feature directory (x86):	C:\Program Files\Mi C:\Program Files\Mi C:\Program Files (x80	crosoft SQL Server\ crosoft SQL Server\ ()\Microsoft SQL Server\
			< Back Next > Cancel

- **3.** You will need a domain account with Domain User rights. For this process we have created an account called **halox\sqlha** in Active directory.
 - Add this account into both SQL Servers using SQL Management Studios Tools by expanding Security -> Logins and selecting New Login



🚦 Login - New	-	
Select a page General	I Script ▼ 😮 Help	
 Server Roles User Mapping Securables Status 	Login name: Windows authentication SQL Server authentication	Search
	Password: Confirm password: Specify old password Old password: Enforce password policy Enforce password expiration User must change password at next login	
	O Mapped to certificate	
Connection	Mapped to asymmetric key	

• Click the Locations button, and then select Entire Directory:

Login - New				—		\times	
Select User or Group			×				
Select this object type:					Caraal		
User or Built-in security principal			Object Types		Search	1	
From this location:							
TRANSQL01			Locations				
Enter the object name to select (examples)						
		Locations					×
		Select the location you wa	nt to search				
	_	Sciect the location you wa					
Advanced		Location:					_
	_	TRANSQL01					
-	0						
Connection	0						
Server: transql01							
Connection: HALOXVsand							
View connection properties				ОК		Cancel	

• Enter your domain account in the format of **domain\username** and click **Check Names**, and then click **OK**

Select User, Service Account, or Group	×
Select this object type:	
User or Built-in security principal	Object Types
From this location:	
Entire Directory	Locations
Enter the object name to select (<u>examples</u>):	
halox\sqlha	Check Names
Advanced OK	Cancel

🚦 Login - New				-		\times
Select a page	🖵 Script 🔻 ? Help					
 Server Roles User Mapping Securables Status 	Login name: Windows authentication SQL Server authentication Password: Confirm password: Specify old password Old password: Enforce password policy Enforce password policy Wanned to certificate	HALOX'sqiha			Search	I
Connection	Mapped to certificate Mapped to asymmetric key					
Server: transql01 Connection:	Mapped to adjunction to y Mapped Credential Mapped Credentials	Credential	Provider	~	Add	
Yiew connection properties Progress Ready	Default database:	master cdefault>		~	Remov	/e
. star.	Default language:	<default></default>		~ OK	Cano	el

Ensure you repeat this process for your second database server, and then proceed to the next step.

4. Later in this process you will need to specify a folder for the Transaction Replication snapshots to be stored in. Microsoft require this folder to be local to the Database server, and not a shared UNC path, even if it's a mapped drive to a shared UNC path.

If you have a second disk in your server, like a D drive for example, then it is preferred that you use this drive. For this documentation, we are using the C drive.

You will need to grant your domain account (halox\sqlha) **Modify** rights to this folder on your primary SQL Server. In this case the default folder in the wizard and the one we'll use is **C:\Data\repIdata**

📜 repldata Properties	×
General Sharing Security Pre	vious Versions Customize
Object name: C:\Data\repldat Group or user names: CREATOR OWNER SYSTEM SQL HA (sqlha@halox.net)	a A A A A A A A A A A A A A A A A A A A
To change permissions, click Ed	it. Edit
	Allow Derly
Full control	Î Î
Read & execute	ž
List folder contents	Č.
Read	Ŭ,
Write	<i>✓ ✓</i>
For special permissions or advan click Advanced.	ced settings, Advanced
ОК	Cancel Apply

3 Configuring the Distribution Database

This section of the document outlines the process required to set up your primary database server as a Distribution Database. This is a once off process and may already be configured if you are using Transaction Replication for other applications on this server.

First, we need to configure the SQL Server Agent to start automatically. This service is what sends replication data to the remote SQL server. Follow these steps below to set the service correctly:

• Open SQL Server Configuration Manager on your primary database server, and go to the properties of the SQL Server Agent service and choose Automatic for the Start Mode property:



• Now Start the service:



 Now we'll configure the Distribution Database. Using SQL Management Studio Tools, right click Replication and select Configure Distribution



Select Next



Confirm transql01 is selected and click Next			
∃ Configure Distribution Wizard	-		×
Distributor Use this server as its own Distributor or select another server as the Distributor.			ſ
The Distributor is the server responsible for storing replication information used during s	ynchroni	izations.	
transql01' will act as its own Distributor; SQL Server will create a distribution databa	ase and I	og	
O Use the following server as the Distributor (Note: the server you select must already Distributor):	y be conf	figured as a	
Help < Back Next > Finish	>>	Cance	1

 On the Snapshot Folder screen, it is preferable to enter another disk on the server to store these snapshots. Don't use a UNC path to a network share, or map a drive letter to a UNC path for this screen. Change the path to the folder you created earlier in this process, (C:\Data\repIdata), and click Next

	-		×
Snapshot Folder Specify the root location where snapshots will be stored.			
To allow Distribution and Merge Agents that run at Subscribers to access the sna publications, you must use a network path to refer to the snapshot folder.	pshots o	f their	
Snapshot folder: C:\Data\repldata			
This snapshot folder does not support pull subscriptions created at the Subscription or it is a drive letter mapped to a network path. To support both push and network path to refer to this folder.	iber. It is pull subs	not a net scriptions,	work use a
Help < Back Next > Finis	h >>	Can	cel

• On the **Distribution Database** page, change the paths for the database file and the log file to your snapshot folder, and click **Next**

📑 Configure Distribution Wizard	_		\times
Distribution Database Select the name and location of the distribution database and log files.			
The distribution database stores changes to transactional publications until Sub- It also stores historical information for snapshot and merge publications.	scribers ca	n be upd	ated.
Distribution database name: distribution			
Folder for the distribution database file: C:\Data\repldata			
Eolder for the distribution database log file: C:\Data\repldata			
The paths must refer to d sks that are local to the Distributor and begin with a loc (for example, C:). Mapped drive letters and network paths are invalid.	al drive let	ter and c	olon
Help < Back Next > Finis	sh >>	Cano	cel

Ensure your Primary database server is selected and click Next

😚 Configure Distribution Wizard	ł	-		×
Publishers Enable servers to use this Dist	ributor when they become Publishers.			
Publishers:				
Publisher 🔺	Distribution Database			
🗹 transql01	distribution			
		Ado	•	
Help	< Back Next > Fi	ìnish >>	Cance	el

•

Select Configure Distribution and click Next		
🖓 Configure Distribution Wizard —		×
Wizard Actions Choose what happens when you click Finish		
At the end of the wizard:		
Configure distribution		
Generate a script file with steps to configure distribution		
Help < Back Next > Finish >>]	Cano	:el .::

• Click Finish

C 🍯	onfigure Distribution Wizard	—		\times
Co	mplete the Wizard Verify the choices made in the wizard and click Finish.			1
Cli	ck Finish to perform the following actions:			- 1
ŀ	Configure distribution.			
Di	stribution will be configured with the following options:			
•	Use transql01' as the Distributor. Configure the SQL Server Agent service on transql01' to start automatically wh started. Use 'C:\Program Files\Microsoft SQL Server\MSSQL15.MSSQLSERVER\MSS root snapshot folder for Publishers using this Distributor. Store the distribution database 'distribution' in 'C:\Program Files\Microsoft SQL : \MSSQL15.MSSQLSERVER\MSSQL\Data'. Store the distribution database log file in 'C:\Program Files\Microsoft SQL Server \MSSQL15.MSSQLSERVER\MSSQL\Data'. Allow the following servers running SQL Server to use transql01 as their Distribu • transql01	en the co SQL\Rep Server er itor:	omputeris IData'asth	ie
	Help < Back Next > Fin	ish	Cance	el

• The Distributor will now be configured, and when finished it will show "Success". You can now click Close:

		—		×
Configuring Click Stop to interrupt the operation.		_		
Success		2 Total 2 Success	0 Error 0 Warr	nina
Details:				
Action	Status	Messag	е	
Configuring the Distributor	Success			
Enabling Publisher 'transql01'	Success			
		Stop	Clos	oort ▼
			0.00	

• Under System Databases, ensure the Distribution Database has been successfully created



 Expand Security -> Logins and select Properties for the domain account which will be used for replication, in this case it is halox\sqlha



• Select User Mapping, tick the Passwordstate database, and enable db_owner rights

Login Properties - HALOX\so	lha		_	
Select a page	🖵 Script 🔻 😮 Help			
Seneral				
Server Roles	l le sur avec e d'an altre le sier.			
Securables	Users mapped to this login:	llees	Defeuth Colorea	
✗ Status	Map Database	User	Derault Schema	
-	distribution			
	master			
	model			
	passwordstate	HALOX\sqina		
	tempdb			
Connection				
C	Guest account enabled	or: passwordstate		
transgl01	Database mie membembin f	or: pagewordstate		
Connection		or, passwordstate		
HALOX\Isand	db_accessadmin			
View connection properties	db_datareader			
	db_datawriter			
	db_ddladmin			
	denvdatawriter			
Progress	✓ db_owner			
Ready	db_securityadmin			
			ОК	Cancel

Login Properties - HALOX	sqlha		_		×
Select a page & General & Server Roles & User Mapping	Script Figure Help Users mapped to the norm:				
 Securables Status 	Map Database distribution master model msdb passwordstate tempdb	User HALOX\sqlha HALOX\sqlha	dbo		
Connection Server: transol01	Guest account enabled for: dist	ribution			
Connection: HALOX\Isand Y View connection properties	Database role membership for: disu db_accessadmin db_backupoperator db_datareader db_datawriter db_ddladmin db_denydatareader	ioution			
Progress Ready	db_owner db_securityadmin public replmonitor				
			ОК	Car	ncel

• Next, tick the **Distribution** database, select **db_owner** rights, and click **OK**

4 Creating the Publisher

- Open SQL Management Studio Tools and connect to transgl01.halox.net
- Expand Replication, right click Local Publication and select New Publication



At the New Publication Wizard page, click Next



• Select the Passwordstate database and click Next

🙀 New Publication Wizard	_		×
Publication Database Choose the database that contains the data or objects you want to publish.			1
Databases:			
passwordstate			
6			
			- 11
			- 11
	/		
Help < Back Next >	Finish >>	Ca	incel

• Select Transactional Replication, and click Next

 New Publication Wizard — □ Publication Type Choose the publication type that best supports the requirements of your application. 	×
Publication type: Snapshot publication Transactional publication Peer-to-Peer publication Merge publication	
Publication type descriptions: Snapshot publication: The Publisher sends a snapshot of the published data to Subscribers at scheduled intervals. Transactional publication: The Publisher streams transactions to the Subscribers after they receive an initial snapshot of the published data. Peer-to-Peer publication: Peer-Peer publication enables multi-master replication. The publisher streams transactions to all the peers in the topology. All peer nodes can read and write changes and the changes are propagated to all the nodes in the topology.	~
Help Next > Finish >> Cancel	

• Tick the Tables & Stored Procedures checkboxes, and then select the Set Properties of All Table Articles

🙀 New Publication Wizard	- 🗆 ×
Articles Select tables and other objects to publish as articles. Select colu	mns to filter tables.
<u>O</u> bjects to publish:	
	Article Properties
	Show only checked articles in the list
Help < Back Next	> Einish >> Cancel

- Set the following options to True if not already set, and click OK, and then click Next
 - Copy foreign key constraints
 - o Copy check constraints
 - o Copy clustered index
 - Copy nonclustered indexes
 - Copy default value specifications
 - o Copy extended properties
 - Copy unique key constraints

	Copy objects and setting		^
	Copy foreign key constraints		- 11
	Copy check constraints		
	Copy clustered index	True	- 1
	Copy nonclustered indexes	True	
L	Copy default value specification	True	- 11
	Copy user triggers	False	
1	Copy extended properties	True	_
	Copy collation	True	
	Copy INSERT, UPDATE and	True	
	Copy unique key constraints	True	
	Copy file group associations	False	
	Copy table partitioning scheme	False	
	Copy index partitioning schem	False	
	Copy user-defined statistics	False	
	Copy default bindings	False	
	Copy rule bindings	False	
	Copy full text indexes	False	
	Copy XML XSD	True	v

•

_		\times
		1
	- 1	
	Add	
	E dit	
	Delete	
	Cano	al
		- Carro

• Tick Create snapshot immediately, and click Next

🛟 New Publication Wizard	—		\times
Snapshot Agent Specify when to run the Snapshot Agent.			1
Subscriptions are initialized with a snapshot of publication schema and data. The Sna snapshot.	ipshot Age	ent creates	the
Create a snapshot immediately and keep the snapshot available to initialize subsci	iptions		
Schedule the Snapshot Agent to run at the following times:			
If you plan to change the snapshot properties, do not start the Snapshot Agent until a	fter non	Change	
properties in the publication property dialog box.	iter you or	nange (ne	
Help < Back Next > Fini	sh >>	Cance	el:

Click the Security Settings button			
i New Publication Wizard	-		×
Agent Security For each agent, specify the account under which it will run and its connection se	tungs.		
Snapshot Agent: Security Settings			
Log Reader Agent			
Security Settings			
✓ Use the security settings from the Snapshot Agent			
▲ You must specify a login for each replication agent before continuing the wizard	L		
Help < Back Next > Finish	>>	Canc	el

• Click **Security Settings** button and set you domain account in the format of **domain\username**, and apply the correct password, and click **OK**

Snapshot Agent Security		×
Specify the comain or machine a	account under which the Snapshot Agent process will run.	
Run under the following	Windows account:	
Process account:	halox\sqlha	
	Example: domain\account	
Password:	******	
Confirm Password:	*******	
 Run under the SQL Server practice.) Connect to the Publisher 	er Agent service account () his is not a recommended security best	
 By impersonating the pro 	ocess account	
 Using the following SQL 	Server login:	
Login:		
Password:		
Confirm Password:		
	OK Cancel Help]

• Click the Security Settings button

🚰 New Publication Wizard		-	- 🗆
Agent Security For each agent, specify the	e account under which it will run	and its connection settings.	
Snapshot Agent:			
halaak\sqlha		Security Settings	
Log Reader Agent:	i		
halox\sqlha		Security Settings	

• Select the Create the Publication option, and click Next

🚰 New Publication Wizard	-		×
Wizard Actions Choose what happens when you click Finish.			
At the end of the wizard:			
Generate a script file with steps to create the publication			
Help < Back Next > Finis	h>>	Cance	el:

•	Give the Publication a	relevant name, su	ch as Passwordstate	_Publication,	and click Finish
---	------------------------	-------------------	----------------------------	---------------	------------------

👬 New Publicatio	n Wizard	_		×
Complete the Verify the choic	e Wizard es made in the wizard and click Finish.		ľ	
Publication name:	Passwordstate_Publication			
Create the pu	blication.			~
 A publication wi Create a trans The Snapsho The Log Rea The publication later. Publish the for 'Accessfine' 'Account 'ADDom. 'AdminTr 'Auditing 'Backupt 	II be created with the following options: actional publication from database 'passwordstate'. t Agent process will run under the 'halox\sqlha' account. der Agent process will run under the 'halox\sqlha' account. in compatibility level will support Subscribers that are servers runnin lowing tables as articles: Requests' Types' ains' eeView' Settings'	ng SQL Se	rver 2008	or
Help	< Back Next > Fir	nish	Cance	

• After the Publication has successfully completed, click Close

v	Success	3 Total 3 Success	0 Error 0 Warning
eta	ails:		
	Action	Status	Message
2	Creating Publication 'Passwordstate_Publication'	Success	
2	Adding article 93 of 93	Success	
2	Starting the Snapshot Agent	Success	

5 Creating the Subscriber

Once the publisher is created the next step is to create the subscriber for it.

 In SQL Server Management Studio, ensure you are connected to transql01, right click Passwordstate_Publication and select New Subscriptions



• At the New Subscription Wizard, click Next



• Ensure you have transql01 selected as the Publisher, and also the Passwordstate_Publication, and click Next

Wew Subscription Wizard	—		Х
Publication Choose the publication for which you want to create one or more subscriptions.			
Publisher: transql01			
	/		
Help < Back Next > Finish) >>	Cance	el

• Select Run all Agents at the Distributor, and click Next

Wew Subscription Wizard	—		\times
Distribution Agent Location Choose where to run the Distribution Agent(s).			
For the subscriptions I create in this wizard:			
Run all agents at the Distributor, TRANSQL01 (push subscriptions)			
This option makes it easier to administer the			
O Run each agent at its Subscriber (pull subscriptions)			
This option reduces the processing overhead at the Distributor and lets each Subscriber administer the			
Run the wizard more than once if you want some agents to run at the Distribut Subscribers.	or and some	e to run at	
Help < Back Next > Fir	nish >>	Cance	əl

• Click Add SQL Server Subscriber

🔤 New Subscription Wizard		-		×		
Subscribers Choose one or more Subscribers and specify each s	subscription database.					
Subscribers and subscription databases: Subscriber 🔺	Subscription Database					
transql01						
		0.110	de e cuile e c	_		
		Add St Add S	SQL Serv	ver Subsc	riber	
You must select a Subscriber and specify the subscriber	ription database to contir	Add N	Non-SQI	Server S	Subscriber	
				_		
Help < Back	Next > Finis	h>>	Cance)		

• Type in the name of your second database server, (transql02\sqlexpress), that you'll be replicating data to. By default, it will try to use the currently logged in user, (halox\lsand), to establish the connection. If this account does not have permissions in SQL on transql02, you'll either need to grant it permissions or use another account that does, such as the local SA account for transql02 server.

Ensure you include the instance name on this remote server if appropriate:

Unnect to Server		×
	SQL Server	
Server type:	Database Engine	~
Server name:	transql02\sqlexpress	~
Authentication:	Windows Authentication	~
User name:	HALOX\lsand	~
Password:		
	Remember password	
[Connect Cancel Help Opt	tions >>

New Subscription Wizard	—	
Subscribers		
Choose one or more Subscribers and	specify each subscription database.	
Subscribers and subscription ustabase	5	
Subscriber 🔺	Subscription Database	
transql01		
✓ transql02\sqlexpress		
	<new database=""></new>	
	<refresh database="" list=""></refresh>	
	Ad	Cuberriber
	Ado	Subscriber
	Ado	1 Subscriber
You must enter a subscription datab	Adr ase name for Subscriber 'transql02\sqlexpress'.	1 Subscriber
You must enter a subscription datab	Adr ase name for Subscriber 'transql02\sqlexpress'.	1 Subscriber
You must enter a subscription datab	Adr ase name for Subscriber 'transql02\sqlexpress'.	1 Subscriber
You must enter a subscription datab	Adr ase name for Subscriber 'transql02\sqlexpress'.	1 Subscriber
You must enter a subscription datab	Adr ase name for Subscriber 'transql02\sqlexpress'.	1 Subscriber

• Set the database name to be **passwordstate**, and then click the **button** to set an Owner of the database

New Database						—		\times
Select a page	🗊 Script 🔻 😯 H	elp						
General Options Filographic	Database name:			password	Istate			
Filegroups	Owner:			<default></default>	•			
	✓ Use full-text in	Se full-text indexing						1
	Database files:							
	Logical Name	File Type ROWS	Filegr	oup ARY	Initial Size (M 8	Autogrowth / Maxsiz By 64 MB Unlimited	ze	Path C:\Pro
	passwordsta	LOG	Not A	pplicable	8	By 64 MB, Unlimited		C:\Pro
Connection Server: transql02\sqlexpress Connection: HALOX\lsand View connection properties						/	/	
Progress								
C Ready	<							>
					Ad	d	Remove	
						ОК	Ca	ncel

• Click the Browse button and select the halox\sqlha account and click OK

Select Database Owner	×
Select these object types:	
Logins	Object Types
Enter the object names to select (examples):	
[HALOX\sqlha]	Check Names
	Browse
ОК	Cancel Help

• Click OK

New Database					_		×
Select a page	🗊 Script 🔻 😧 H	elp F		_			
 General Options Filegroups 	Database name: Owner:	ndexing	password HALOX\s	lstate iqlha			
	Database files:						
	Logical Name passwordstate passwordsta	File Type ROWS LOG	Filegroup PRIMARY Not Applicable	Initial Size (M 8 8	Autogrowth / Maxsi. By 64 MB, Unlimited By 64 MB, Unlimited	ze	Path C:\Pro C:\Pro
Connection Server: transql02\sqlexpress							
Connection: HALOXUsand View connection properties							
Progress							
C Ready	<			F	Add	Remove	>
					ОК	Ca	ancel

Click Next

Wew Subscription Wizard	_		×
Subscribers Choose one or more Subscribers and specify each subscription database.			
Subscribers and subscription databases: Subscription Databases: transql01 transql02\sqlexpress passwordstate			~
	Add	Subscribe	er 🔻
	ich >>l	Can	
		Can	

• Select the **button** shown in the screenshot below

证 New Subscription Wizard		—	
Distribution Agent Securit Specify the process account an	ty d connection options for each Dist	ribution Agent.	
Subscription properties:			
Agent for Subscriber 🔺	Connection to Distributor	Connection to Subscrib	ber
transql02\sqlexpress	Click () to set security opt	Click () to set secur	ity opt
▲ You must specify the security in the security options.	formation for all subscriptions befo	pre continuing the wizard	. Click () to set
Help	< Back Next >	Finish >>	Cancel

• Set you domain account in the format of **domain\username**, and apply the correct password, and click **OK**

Distribution Agent Security		×
Specify the domain or machine account u synchronizing this subscription.	inder which the Distribution Agent process will run when	
Run under the following Windows a	account:	
Process account:	halox\sqlha	
	Example: domain\account	
Password:	*******	
Confirm Password:	*********	
 Run under the SQL Server Agent s practice.) 	ervice account (This is not a recommended security best	
Connect to the Distributor		
By impersonating the process acco	unt	
🔘 Using a SQL Server login		
The connection to the server on w The process account must be a m	hich the agent runs must impersonate the process account. ember of the Publication Access List.	
Connect to the Subscriber		
By impersonating the process acco	unt	
Using the following SQL Server logi	n:	
Login:		
Password:		
Confirm password:		
The login used to connect to the Sub- database.	scriber must be a database owner of the subscription	
	OK Cancel Help	

• Click Next

💷 New Subscription Wizard		— [X
Distribution Agent Secu Specify the process account	Irity and connection options for each D	istribution Agent.	
Subscription properties:			
Agent for Subscriber 🔺	Connection to Distributor	Connection to Subscribe	er
transql02\sqlexpress	Impersonate 'halox\sqlha'	Impersonate 'halox\sql	ha'
Help	< Back Next >	> Finish >>	Cancel

•	Select Run	continuously	, and click	Next
---	------------	--------------	-------------	------

🛄 New Subscription Wizar	d		—		\times
Synchronization Sche Specify the synchronizatio	edule n schedule for each agent.				
Agent schedule:					
Subscriber 🔺	Agent Location	Agent Schedule			
transql02\sqlexpress	Distributor	Run continuously			
				,	
Help	< Back	Next > Fin	ish >>	Can	cel

• Ensure you select to Initialize Immediately, and click Next

🛄 New Subscription W	/izard		-		×
Initialize Subscrip Specify whether to init	tions tialize each subscription with a	snapshot of the publication	on data an	d	(
Subscription properties:	Manage Optimized	L-32-6	1	1	
transgl02/sglexpr	Memory Optimized	Initialize	Initia	lize when ediately	
A subscription database unless it has already been subscripted at the subscription database unless it has already been subscripted at the subscription database unless it has already been subscripted at the subscription database unless it has already been subscripted at the subscription database unless it has already been subscripted at the subscription database unless it has already been subscripted at the subscription database unless it has already been subscripted at the subscripted at the subscription database unless it has already been subscripted at the subscripted at	e needs to be initialized with a sen specially prepared for the se	snapshot of the publicatio ubscription.	n data and	schema	>
The Snapshot Agent be initialized.	must run and generate a snap	oshot of the publication be	fore the su	ıbscription	s can
Help	< Back	Next > Fini	sh >>	Cance	əl

• Tick Create the Subscriptions, and click Next



• Click Finish

III New Subscription Wizard	-		\times
Complete the Wizard Verify the choices made in the wizard and click Finish.			Ĭ 🌏
Click Finish to perform the following actions:			
 Create a subscription to publication 'Passwordstate_Publication' from P 'TRANSQL01'. 	ublisher	r	
Create subscriptions at the following Subscriber(s): transql02\sqlexpress Subscription database: passwordstate Agent location: Distributor Agent schedule: Run continuously Agent process account: halox\sqlha Connection to Distributor: Impersonate 'halox\sqlha' Connection to Subscriber: Impersonate 'halox\sqlha' Initialize: Immediately	/	/	
Help < Back Next > Fini	sh	Can	cel

•	After successfully creating the Subscription, click Close
	May Subscription Wizard

Success		2 To 2 S	otal uccess	0 0	Error Warnina
Details:					
Action	Status		Message	Э	
Oreating subscription for 'transql02\sqlexpress'	Success				
Starting the Snapshot Agent	Success				

Note: If creating the subscriber fails at this point, and you are using SQL Server 2019, this may be caused by a bug in SQL. Please see **Section 7: How to troubleshoot Transaction Replication** for a fix for this issue.

6 Connect Passwordstate to your replicated Database

Now that you have your data replicating to a second database, you can set up your second Passwordstate website so you can have instant read only fail over access. Please note you will need to High Availability Module in Passwordstate for this, as this allows for two production instances of Passwordstate running in real time.

To set up your second Passwordstate website, please follow these instructions: <u>https://www.clickstudios.com.au/downloads/version9/High_Availability_Installation_Instructions.pdf</u>

Prior to installing your second website using the instructions above, you'll need to add your **passwordstate_user** SQL account into your second database instance.

 Open SQL Management Studio Tools and connect to your second database server, and under Security -> Logins, select New Login:



• Ensure you select SQL Server Authentication, and set your name for the account and a password. Note these details will be used during the initial install of your High Availability server:

Login - New			_		\times
Select a page	🗊 Script 🔻 😮 Help		_		
General Server Roles User Mapping Securables Status	Login name:	passwordstate_user		Search	
	SQL Server authentication				
	Password: Confirm password: Specify old password Old password: Enforce password policy Enforce password expira User must change pass	ation word at next login			
	Mapped to certificate				
Connection	Mapped to asymmetric key				
Server: sqltran02 Connection: HALOXIsand W View connection properties	Mapped Credentials	Credential Pro	ovider	Add	
Beady				Remov	/e
The second secon	Default database: Default language:	master <default></default>	~		
			ОК	Cance	el

• Now you need to give this new account db_owner rights to the Passwordstate database:

Login - New			-		\times	
Select a page	Script 🔻 🕄 Help					
General Server Roles Liger Managing	Users mapped to this login:					
Securables	Map Database	User	Default Schema	э		
✤ Status	master					
	model					
	msdb				_	
	✓ passwordstate	passwordstate_user				
	tempdb					
Connection						
Connection						
Server: sqltran02	Guest account enabled for: passw	ordstate				
Connection: HALOX\lsand	Database role membership for: passw	rordstate				
Wew connection properties	db backupoperator					
	db_datareader					
	db_datawriter					
	db_denydatareader					
Progress	db_denydatawriter					
	✓ db_owner					
Ready	✓ public					
			ОК	Cano	cel	

7 Transactional Replication Considerations

Allow large blocks of data to replicate:

If using transactional replication, you will need to run the following SQL Statement against your primary and your secondary database as a once off process. This will allow replication of documents to occur between the two databases.

The below statement configures SQL Server to allow an unlimited size document to replicate as by default SQL is configured with a maximum size limit.

GO EXEC sp_configure 'show advanced options', 1 ; RECONFIGURE ; GO EXEC sp_configure 'max text repl size', -1 ; GO RECONFIGURE; GO

8 How to troubleshoot Transaction Replication

- Ensure your SQL Services are started on both servers and are running under the default accounts
- Ensure your domain account, which was **halox\sqlha** in this document, the following permissions:
 - It must have **db_owner** rights to both Passwordstate databases on both servers
 - It must have **db_owner** rights on the Distribution database on your Primary database server
 - o It must have Modify permissions to the snapshot folder on your primary database server
- If you Launch the Replication Monitor from the Publication, it will give you any errors if you are experiencing them.
- A quick test to see if replication is working between the two Passwordstate databases, is to run the following SQL Query in **SQL Management Studio** when connected to each database server. This will return a count of the Auditing table, and you should get the exact same results from both queries if replication is working successfully

USE Passwordstate SELECT COUNT(*) FROM Auditing

• Check your snapshot folder for any files. If there are no files then replication is not working. Check all permissions are set correctly, and possibly reinitialize the replication



SQL Server2019 Issue:

SQL Server 2019, at the time of writing this document, contained a bug which affected the creation of snap shots. If you find that your replication is failing try adding the following environment variables to your System Path on your primary database server:

%SystemRoot%\SysWOW64\

%SystemRoot%\SysWOW64\1033

Variable	Value		
Path	C:\Users\Isand\AppData\Local\Microsoft\WindowsApps;		
TEMP	C:\Users\Isand\AppData\Local\Temp		
TMP	C:\Users\\sand\AppData\Loca\\Temp		
	New Edit Delete		
rstem variables Variable	New Edit Delete		
rstern variables Variable OS	New Edit Delete		
rstem variables Variable OS Path	New Edit Delete Value Windows_NT C\Windows\system32;C\\Windows;C\\Windows\System32\\Wbern;_		
rstem variables Variable OS Path PATHEXT	New Edit Delete Value Windows_NT C:\Windows/System32;C:\Windows;C:\Windows/System32\Wbems; C:COM;EXE;BAT;.CMD;.VBS;.VBE;JS;JSE;WSF;WSH;MSC		
rstem variables Variable OS Path PATHEXT PROCESSOR_ARCHITECTURE	New Edit Delete Value Windows_NT C:Windows/System32;C:\Windows;C:\Windows;System32;Wbern;- C:CM;EXE;:BAT;.CMD;.VBS;.VBE;JS;JSE;WSF;:WSF;:WSF;:MSC .COM;:EXE;:BAT;.CMD;:VBS;.VBE;JS;JSE;WSF;:WSF;:WSF;:MSC AMD64 AMD64		
rstern variables Variable OS Path PATHEXT PROCESSOR_ARCHITECTURE PROCESSOR_IDENTIFIER	New Edit Delete Value Windows_NT C:\Windows\system32;C:\Windows\System32\Wbern;_ .COM;:EXE;.BAT;.CMD;.VBS;.VBE;.JS;JSE;.WSF;.WSH;.MSC .AMD64 Intel64 Family 6 Model 62 Stepping 4, GenuineIntel		
variables Variable OS Path PATHEXT PROCESSOR_ARCHITECTURE PROCESSOR_LEVEL PROCESSOR_LEVEL PROCESSOR_LEVEL	New Edit Delete Value Windows_NT C:Windows/System32;C:Windows/System32;Wbern;-C:M:,EXE;BAT;.CMD;VBS;,VBE;JS;JSE;WSF;WSH;MSC AMD64 Intel64 Family 6 Model 62 Stepping 4, GenuineIntel 6		
rstem variables Variable OS Path PATHEXT PROCESSOR_ARCHITECTURE PROCESSOR_IDENTIFIER PROCESSOR_LEVEL PROCESSOR_REVISION	New Edit Delete Value Windows_NT C:Windows_System32;C:Windows:System32;Wbern;- C:OM;EXE;BAT;.CMD;.VBS;.VBE;JS;JSE;WSF;WSH;MSC AMD64 Intel64 Family 6 Model 62 Stepping 4, GenuineIntel 6 3e04		

%SystemRoot%\system32	New
%SystemRoot%	
%SystemRoot%\System32\Wbem	Edit
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\	
%S1/STEMROOT%(System32\OpenSSi1\	Browse
%SystemRoot%\SysWOW64\	
%SystemRoot%\SysWOW64\1033	Delete
C:\Program Files (x86)\Microsoft SQL Server\150\DTS\Binn\	
C:\Program Files\Microsoft SQL Server\Client SDK\ODBC\170\Tools\B	3i
C:\Program Files (x86)\Microsoft SQL Server\150\Tools\Binn\	Move Up
C:\Program Files\Microsoft SQL Server\150\Tools\Binn\	
C:\Program Files\Microsoft SQL Server\150\DTS\Binn\	Move Dow
	Edit text