

DRAFT**KB 1058****How to configure the database replication****Applies to**

Microsoft SQL Server 2008 onwards. Corresponding to PcVue 9 onwards.
Procedure built with SQL Server 2017.

Summary

This document introduces the way to prepare and configure database replication.

Native transactional replication is used in the procedure. This procedure can be useful for consolidation of PcVue's database between two redundant servers.

Revision record

Revision	Date	Author	Reason
0.0	08/04/20	LPMA	Original article
1.0	22/07/20	LPMA	First release for KB
1.1	12/11/20	LM	Improve agent profiles chapter (GRCH remarks)

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Details

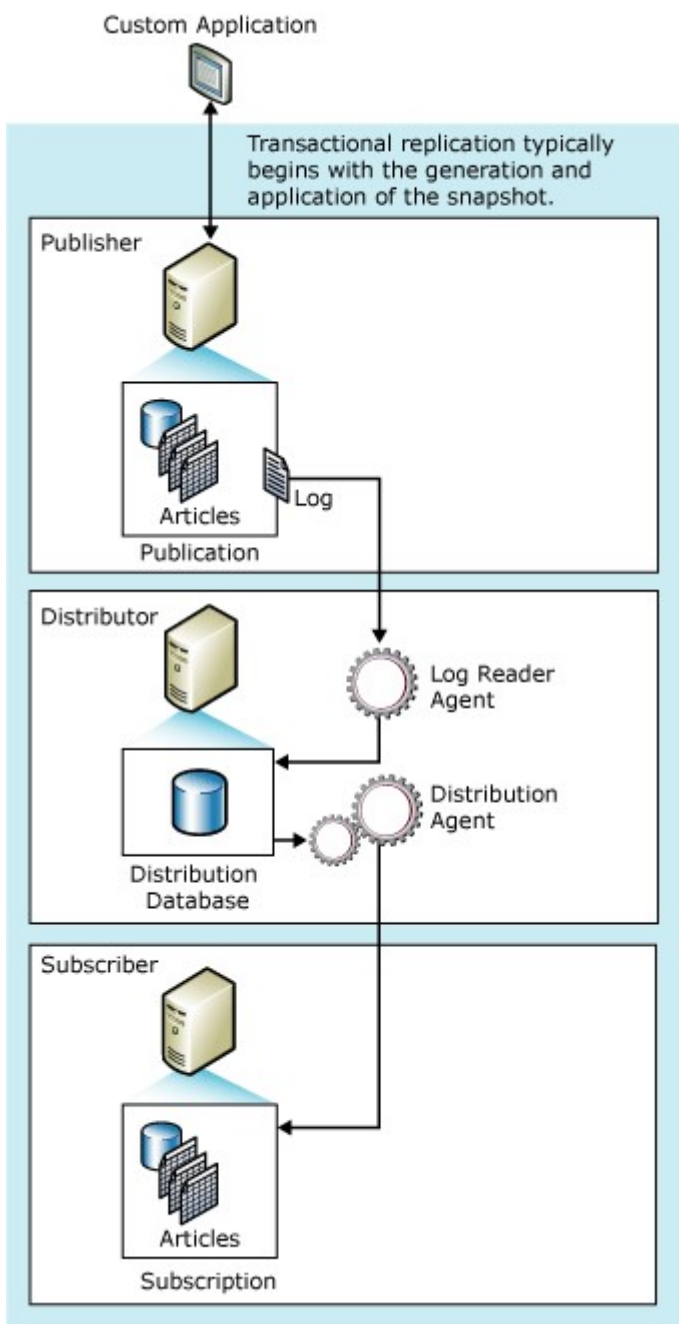
Pre-requisite

Need to have 2 machines with SQL Server version Standard, Enterprise or Developer. SQL Express does not include replicas functions.

Concept

A transactional replication consists of a publishing server, the server with the custom application's data being written, and a server called the subscriber which has the data of the publishing server in the belly. Then we have a distribution server that copy this pair work. We talk about Push if the agent runs at the Distributor, or Pool if it runs at the Subscriber.

Diagram

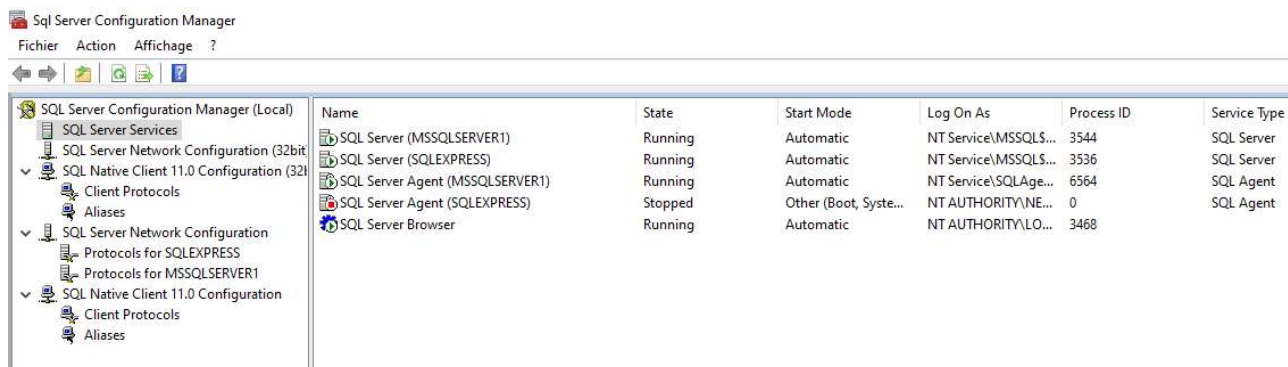


Network configuration for SQL

There are some details to check before starting the replication.

Open SQL Server Configuration Manager from Windows menu.

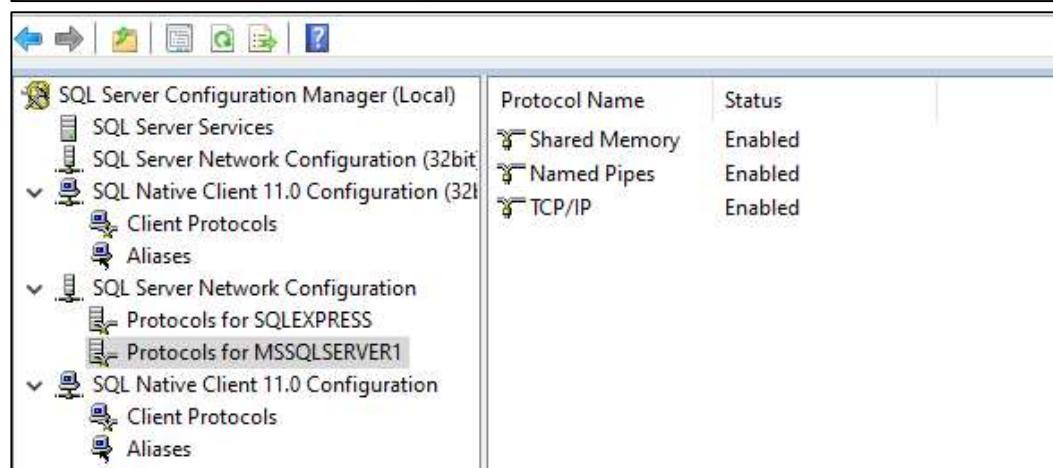
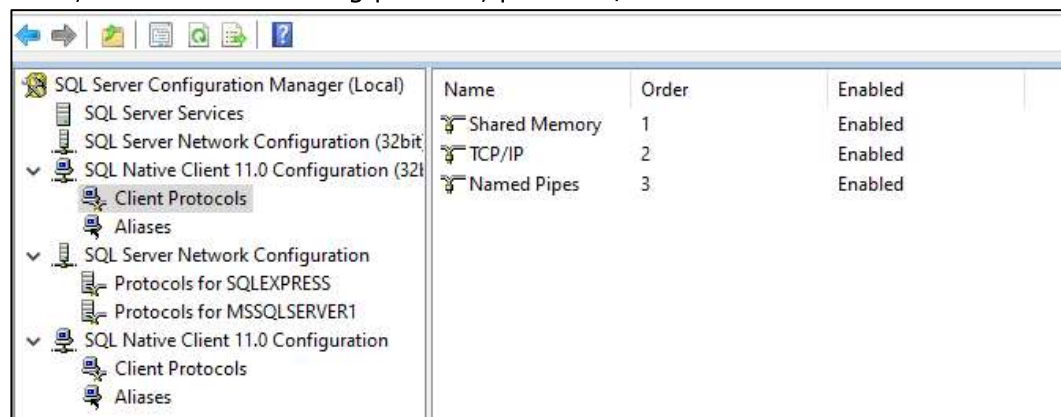
If you don't find it, you can reach it from Windows settings: Computer Management > Services and Applications > SQL Server Configuration Manager

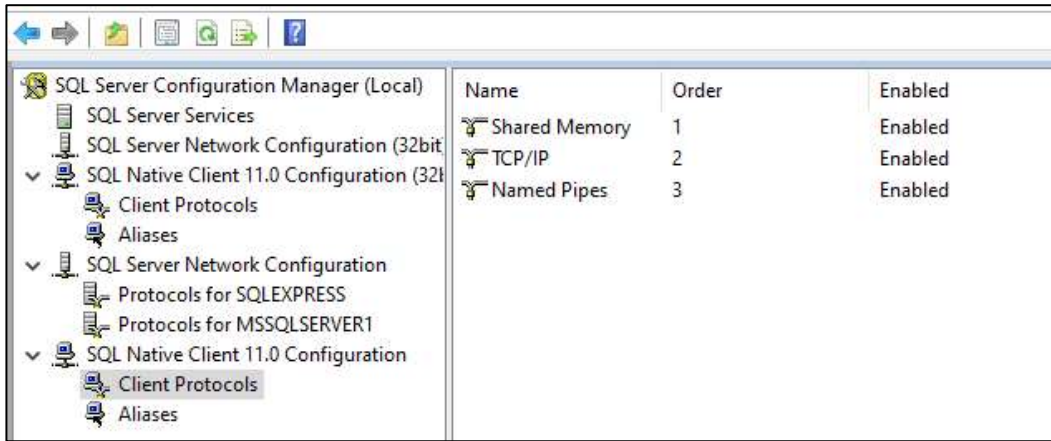


From here in SQL Server Services, be sure that are running:

- SQL Server (server's name)
- SQL Server Agent (server's name)
- SQL Server Browser

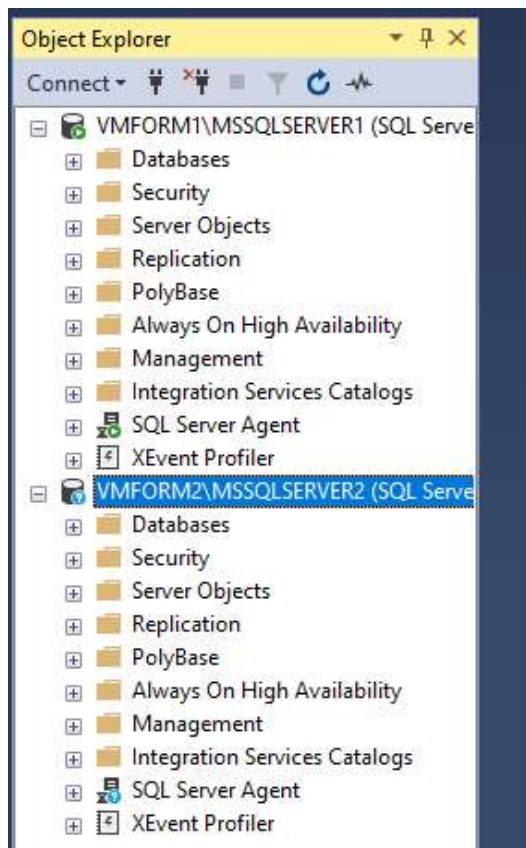
Then, as in the 3 following pictures, put "TCP/IP" on Enabled:





After that, a ping request is a good way to check the bidirectional connexion with SSMS (in other terms, if each VM can see the other's database)

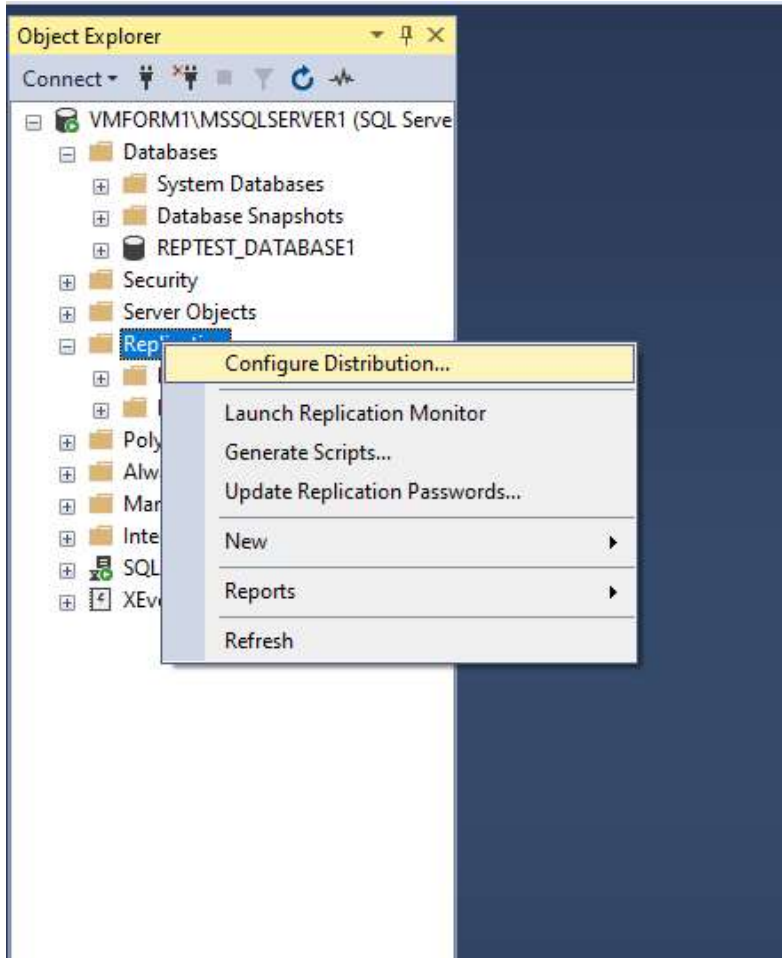
Then you can add both SQL instances on the same VM for a final check:



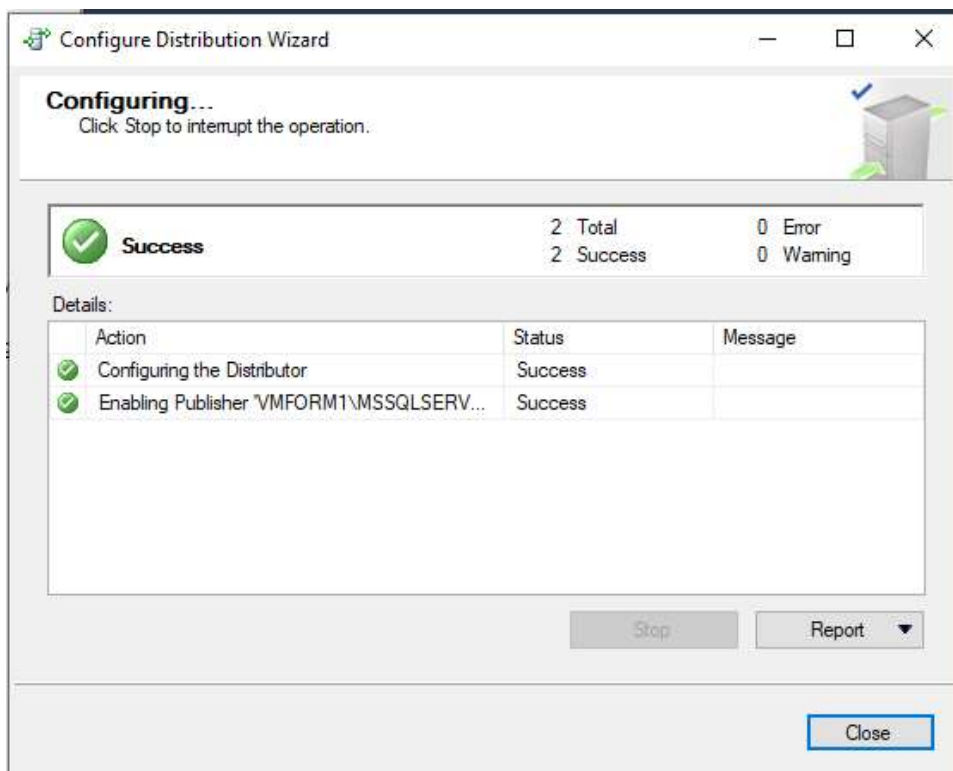
Replication configuration: 1st direction

The first way will be a replication from VMFORM1 to VMFORM2.

Go on VMFORM1's SQL Server and select 'Replication' in your Database's SQL Instance.



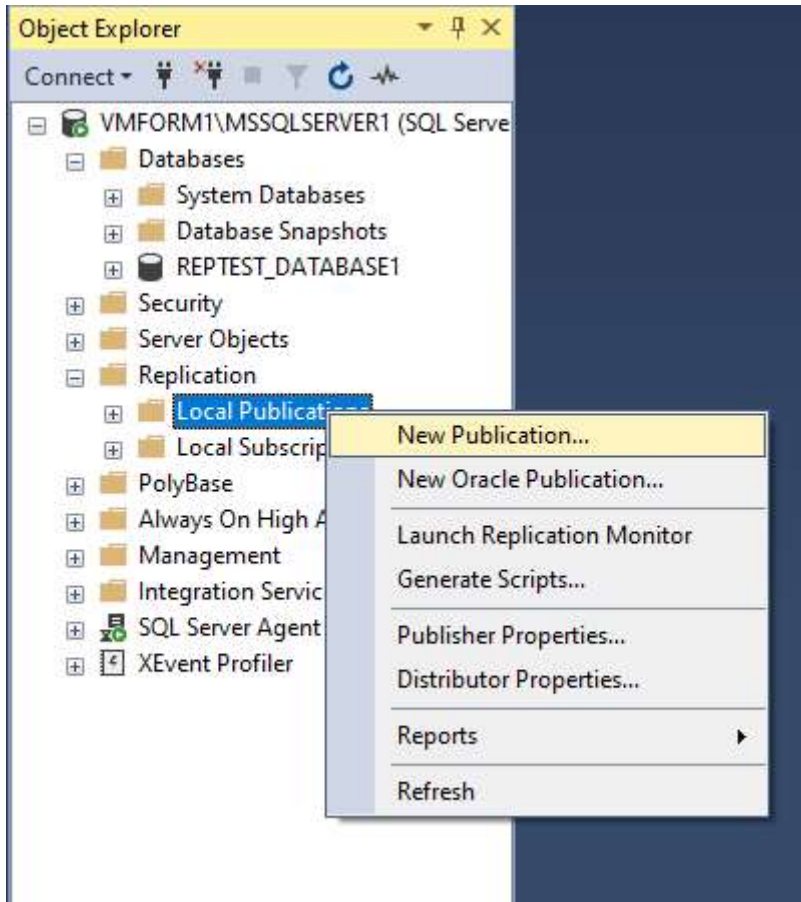
Right click on Replication -> Configure distribution...



Go on to the end by clicking "Next" when it is needed. The distribution will be created.

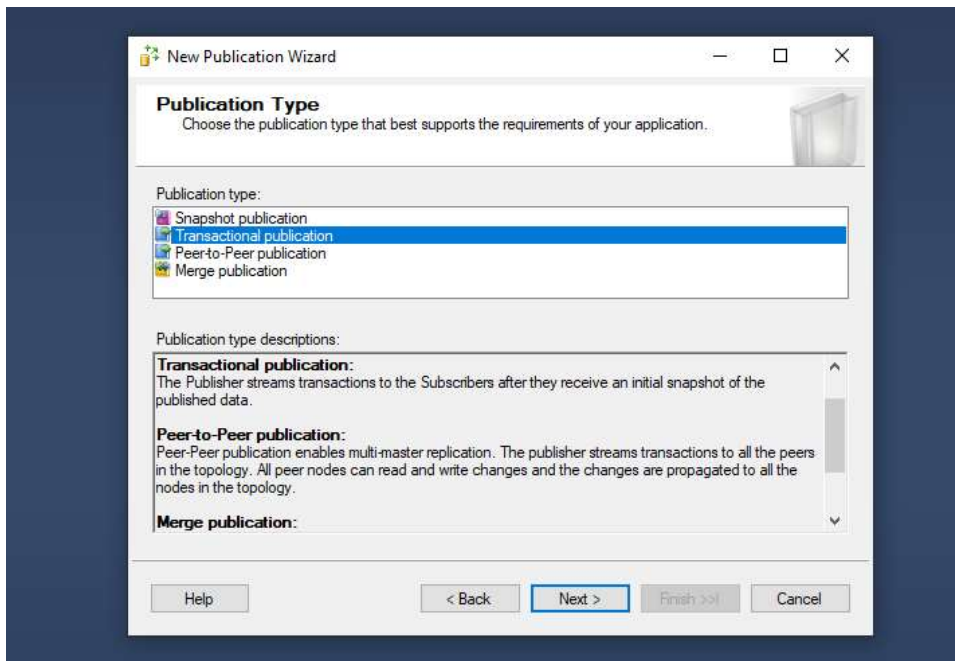
Publication

Under Replication is 2 other directories: Local Publications and Local Subscription.

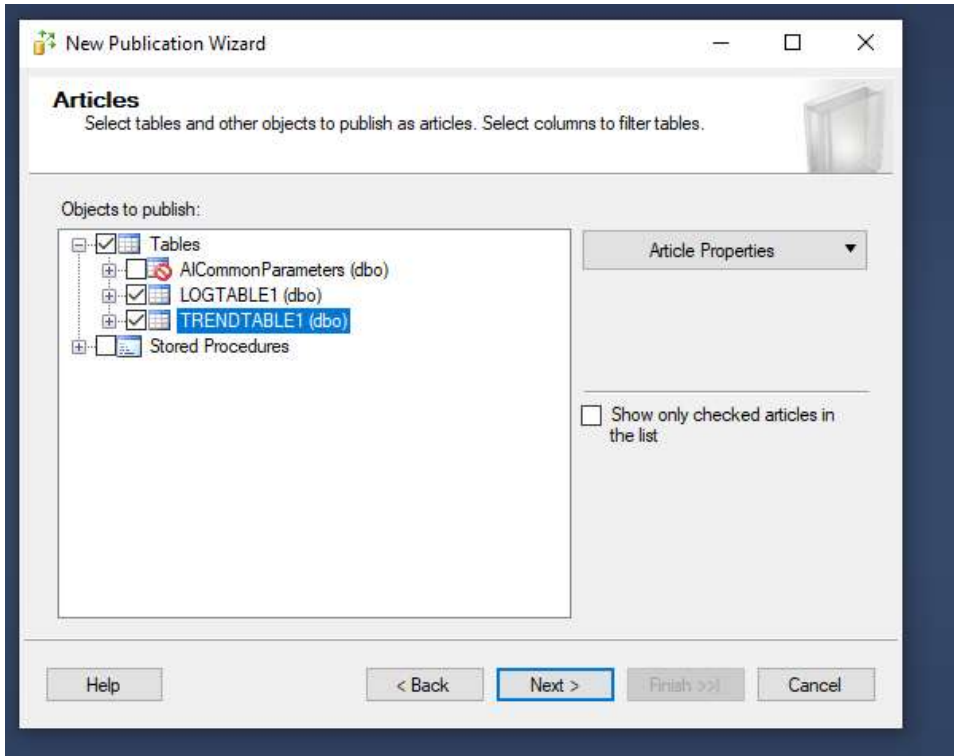


Select the database you want to replicate, the local DB of VMFORM1 in this case.

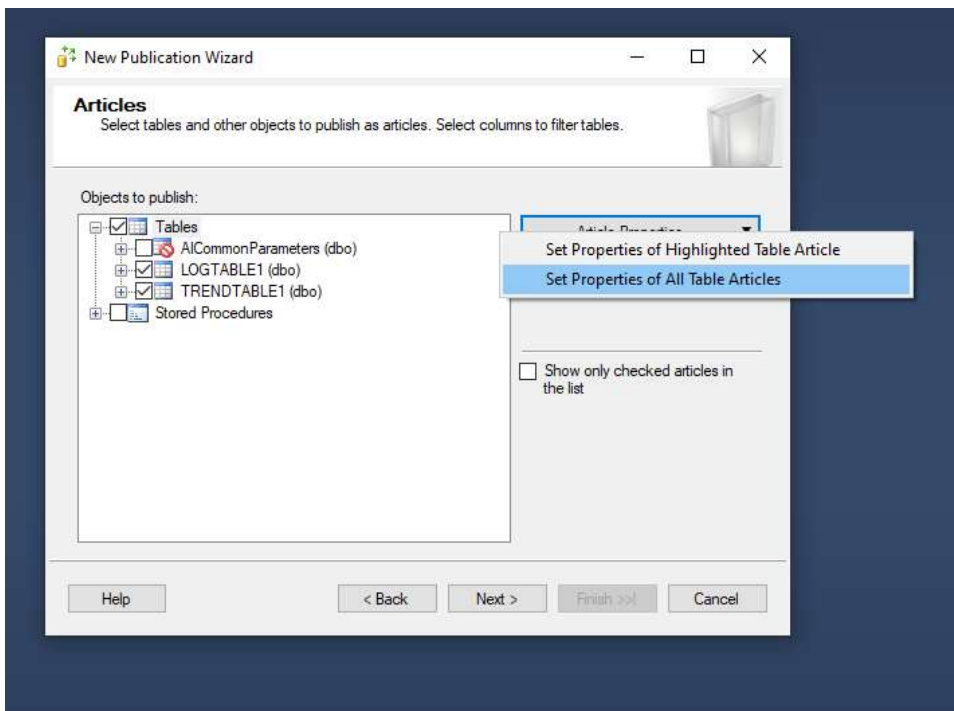
Right click on Local Publications -> New Publication...



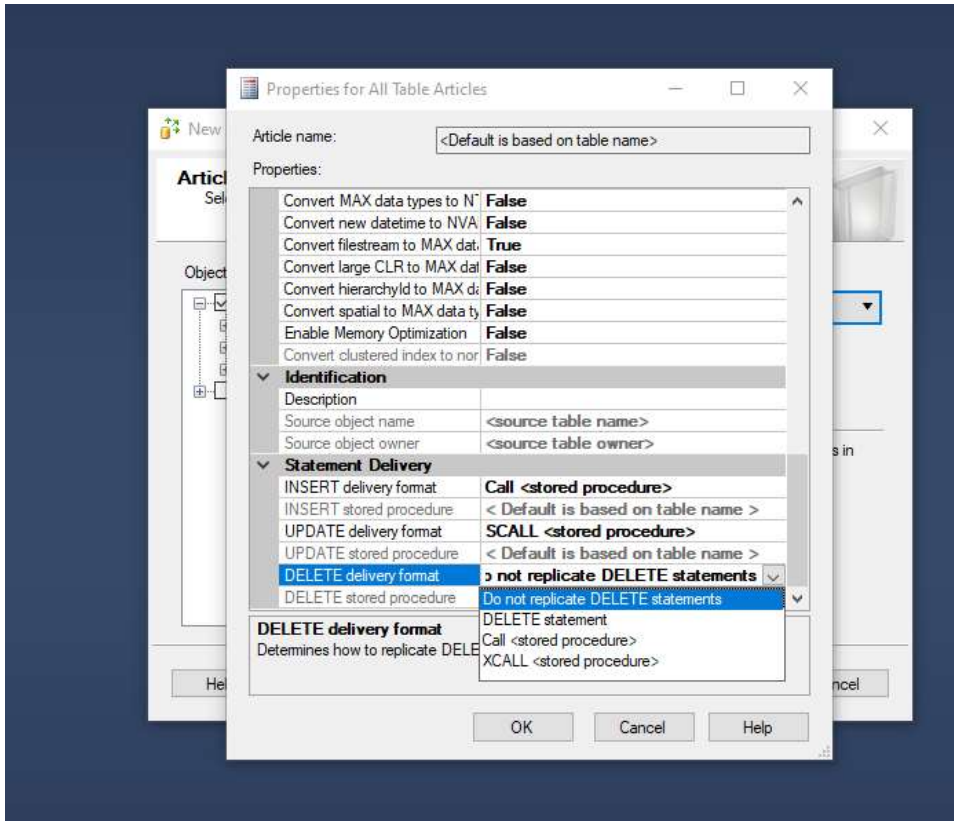
We want to do a Transactional publication (for a transactional replication)



After it, choose every table you want to take in account.

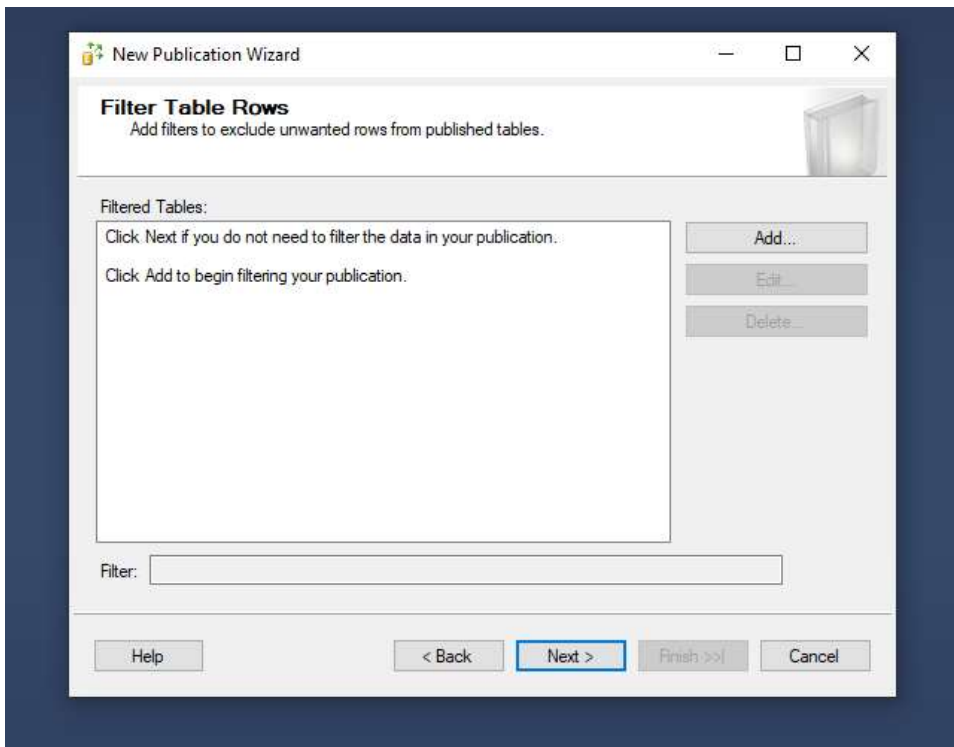


Article Properties -> Set Properties of All Table Article

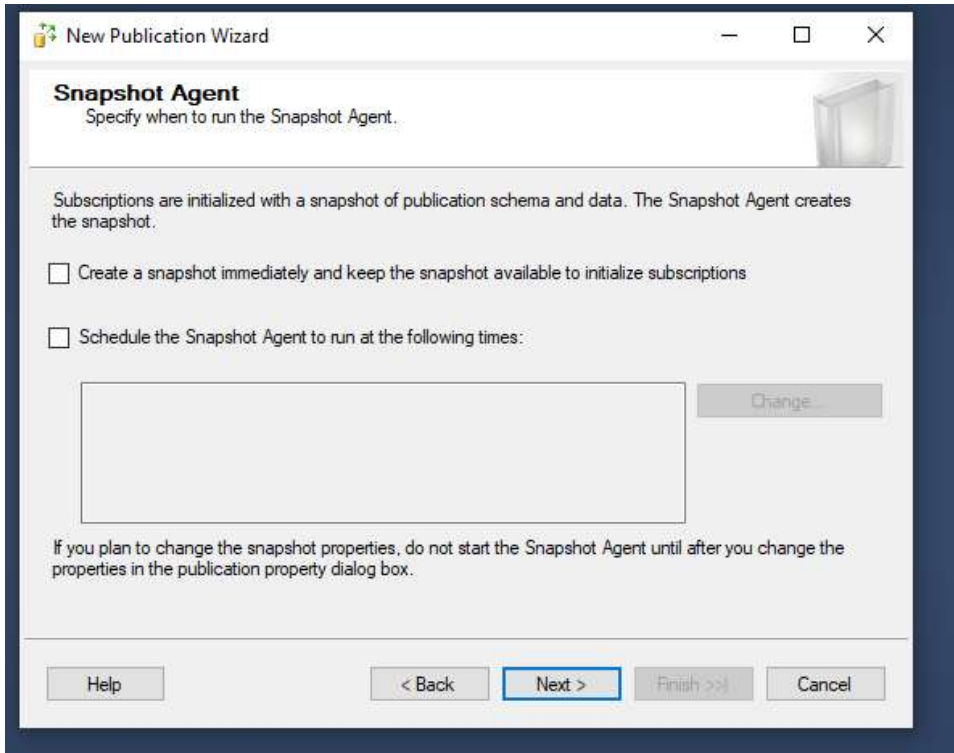


In the last table: DELETE delivery format -> Do not replicate DELETE statement

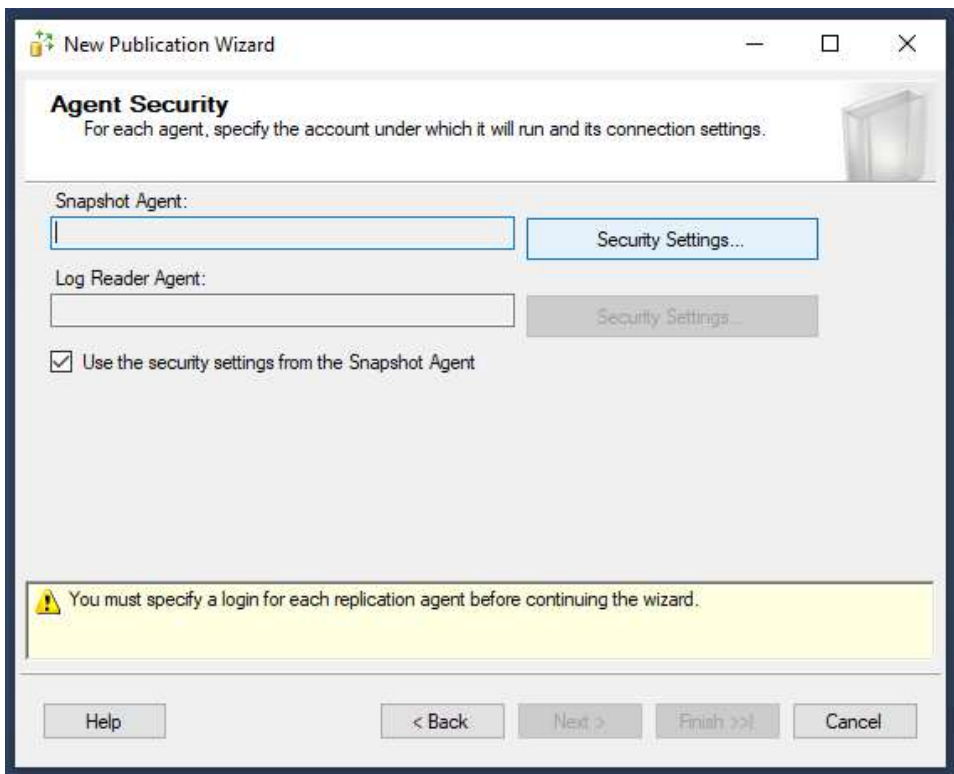
*This step is not compulsory, but it is a general step for safer database management. If a data is involuntarily deleted in one database, the replicate base will keep the data so we can always find it somewhere.



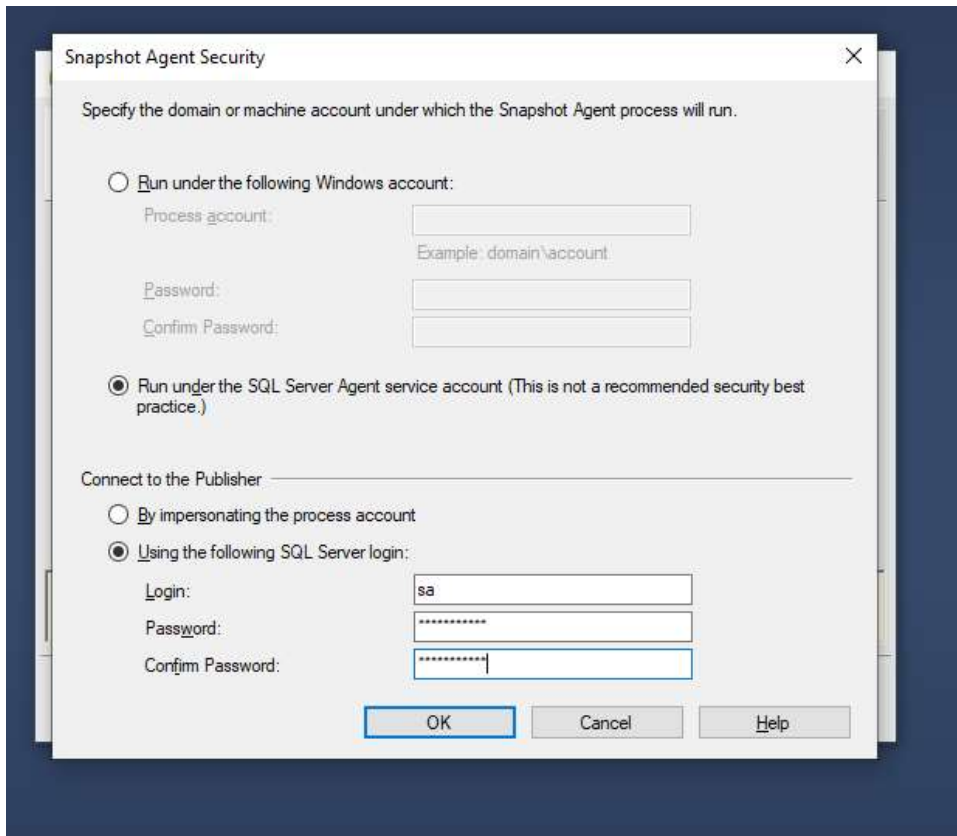
You can add filter on specific table column. No need by default with PcVue.



Don't check anything neither. No need to create snapshot if you are sure that database structure is identical.

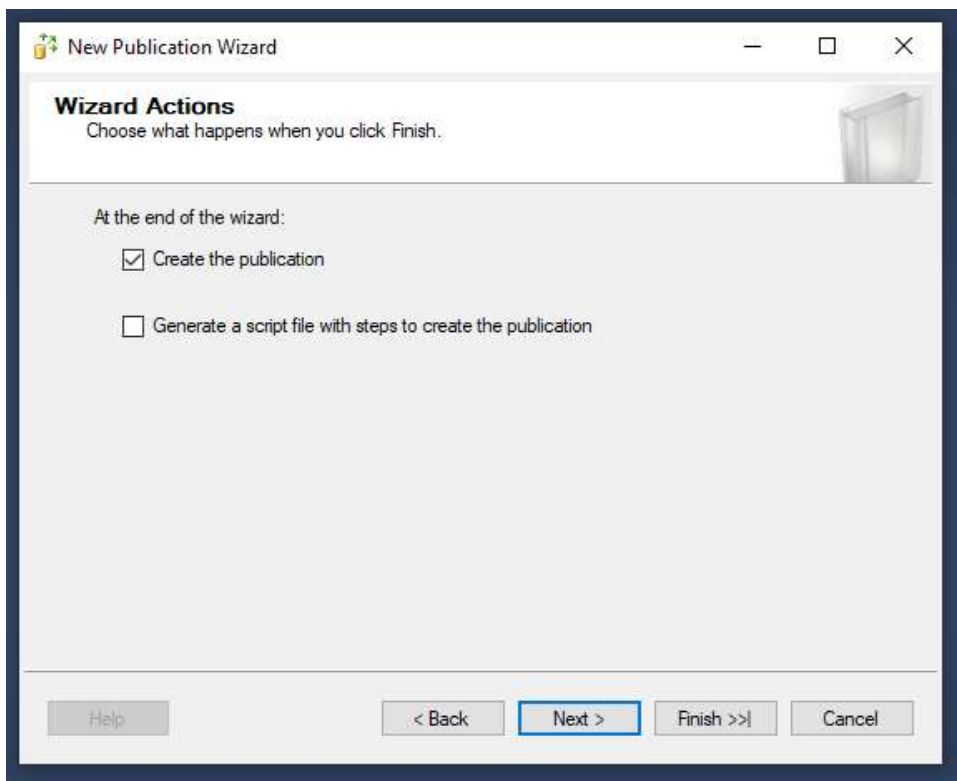


Here is the profile/account management.

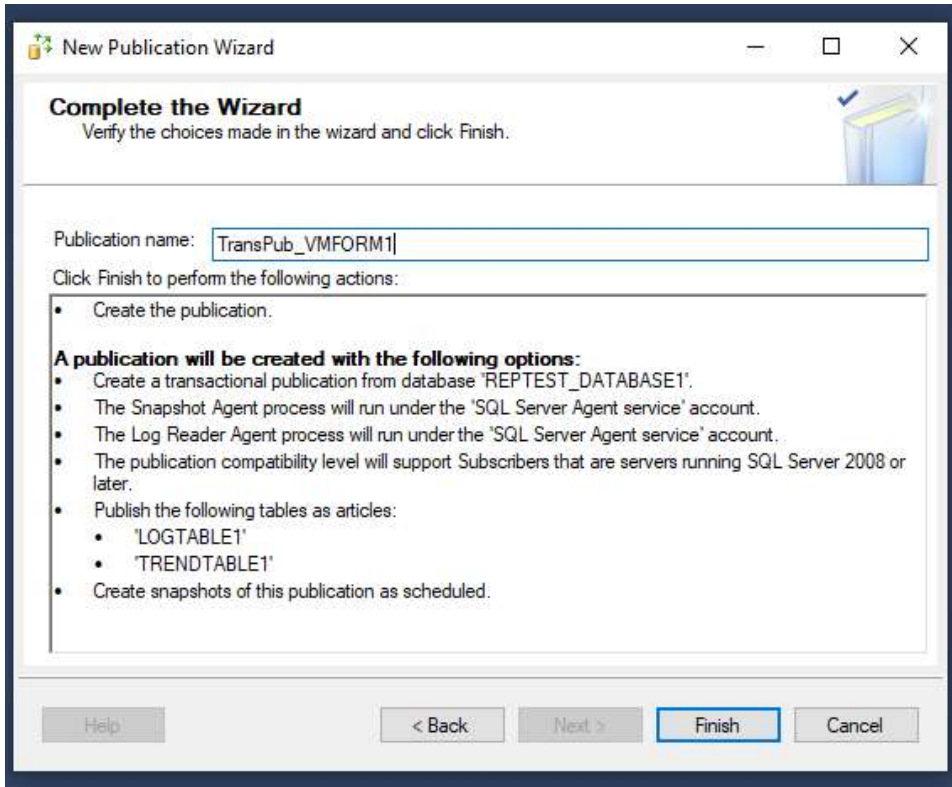


Account on which run the Snapshot Agent : best is to use Windows account.

Connect to the Publisher: **Always** use the same identifying method. The best is to use the same account for everything, which will let less error possible and not spread confusion between different profiles.



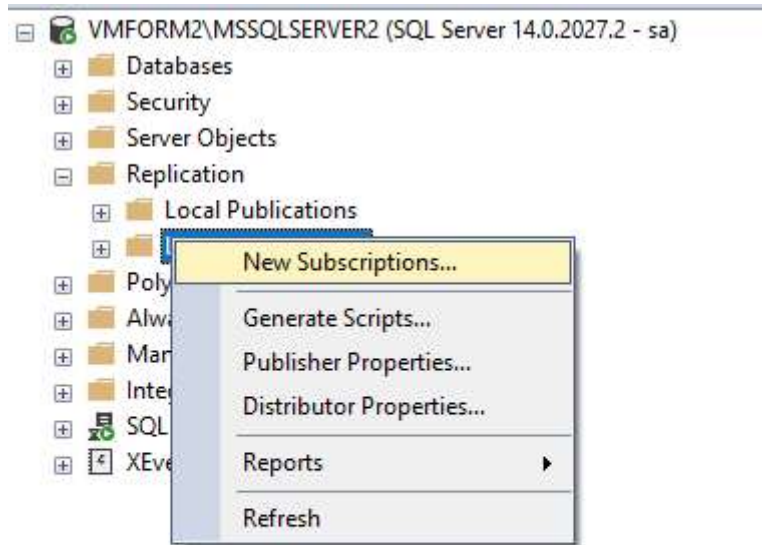
Let the first checked "Create publication".



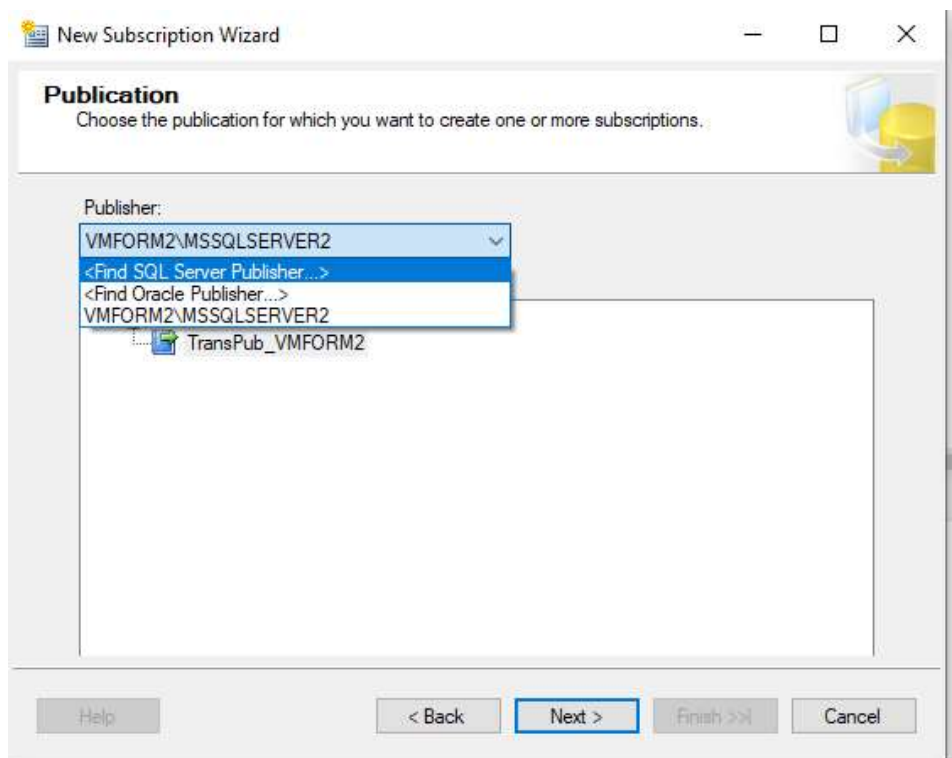
Then give a name to the publication and Finish the creation.

Subscription

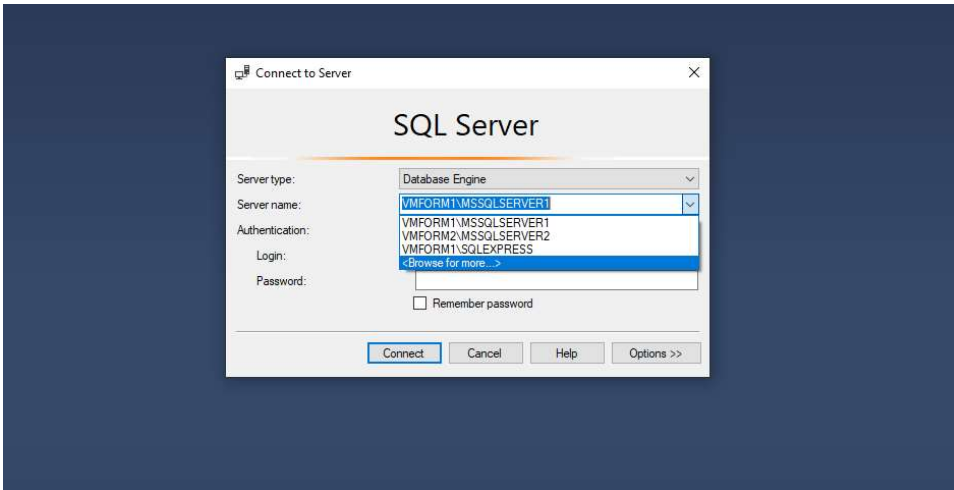
You have now to go on VMFORM2 to prepare the subscription.



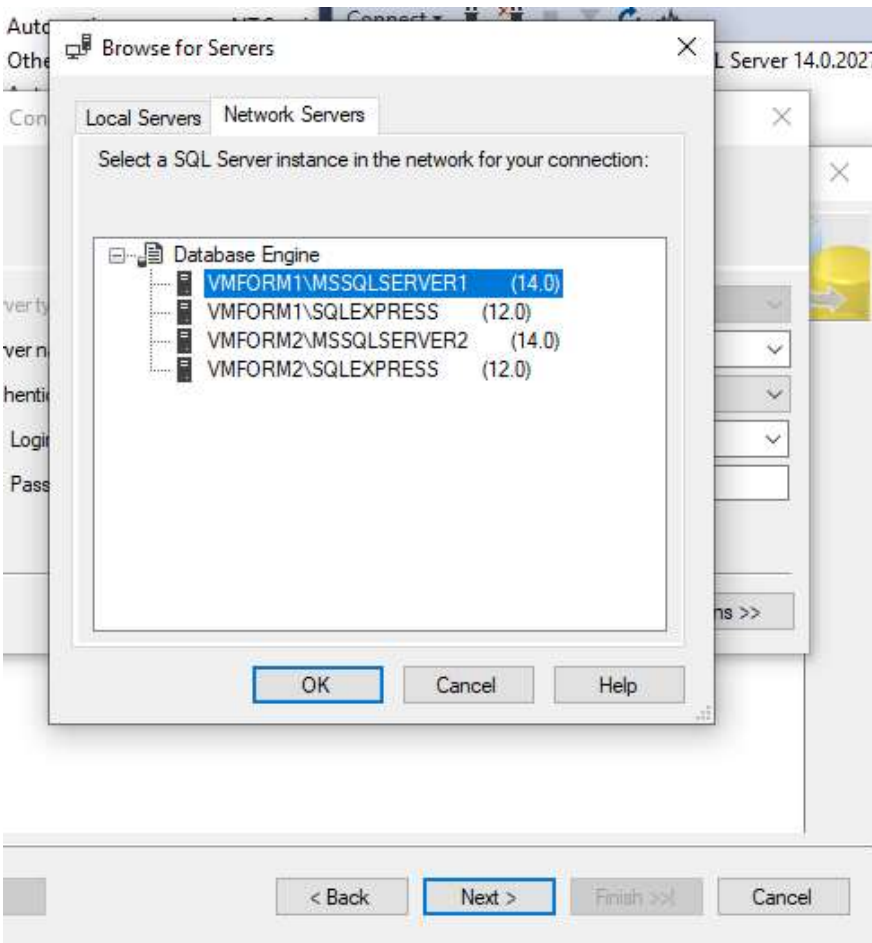
On this 2nd SQL instance, go on Replication, then right click on Local Subscription -> New subscriptions...

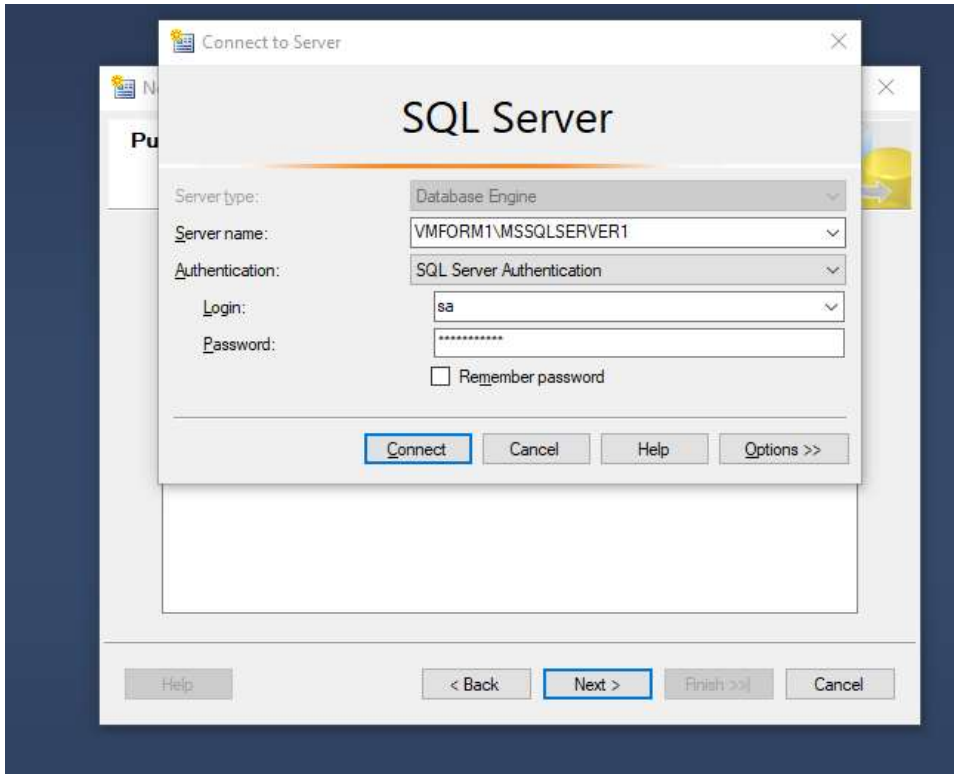


In Publisher: <Find SQL Server Publisher...>

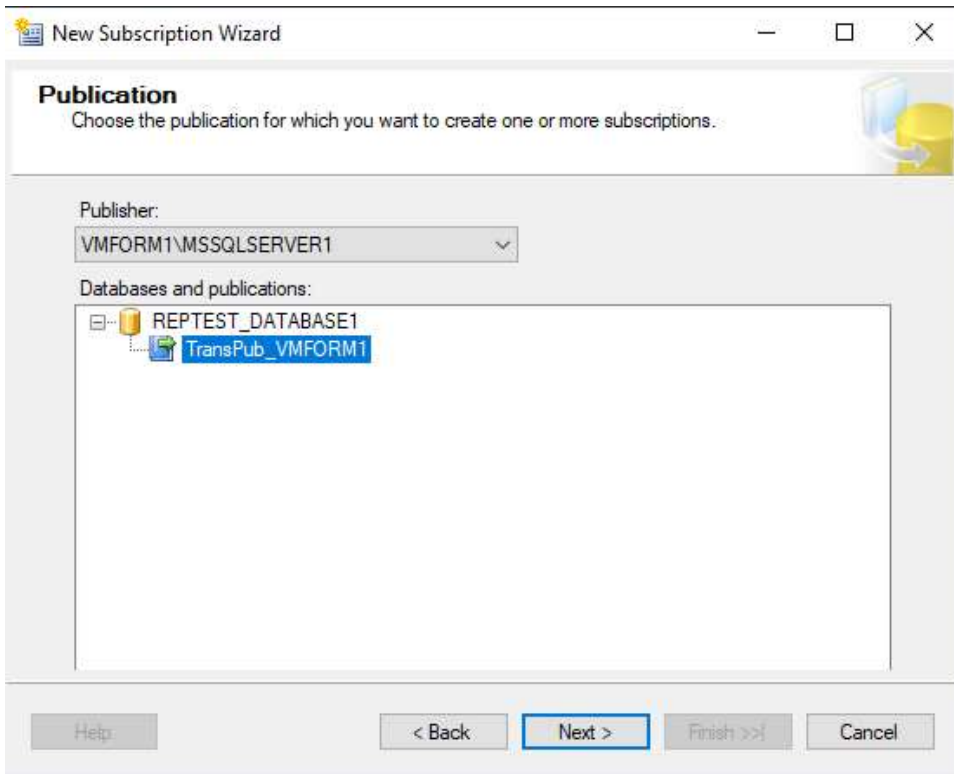


Select VMFORM1, the server with the Publication.

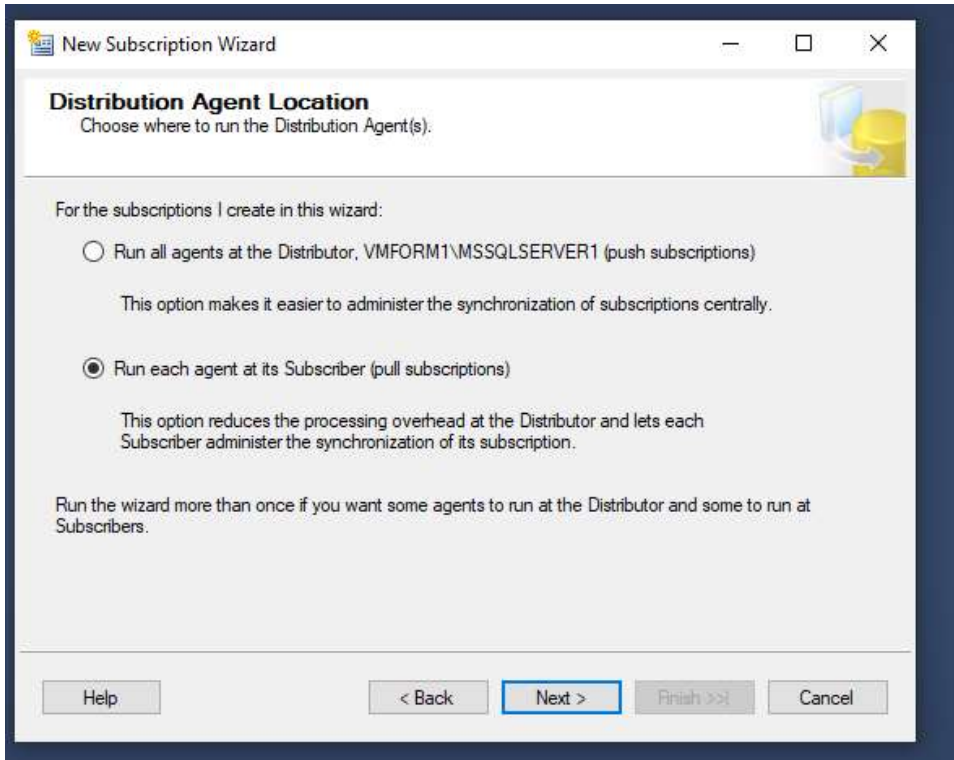




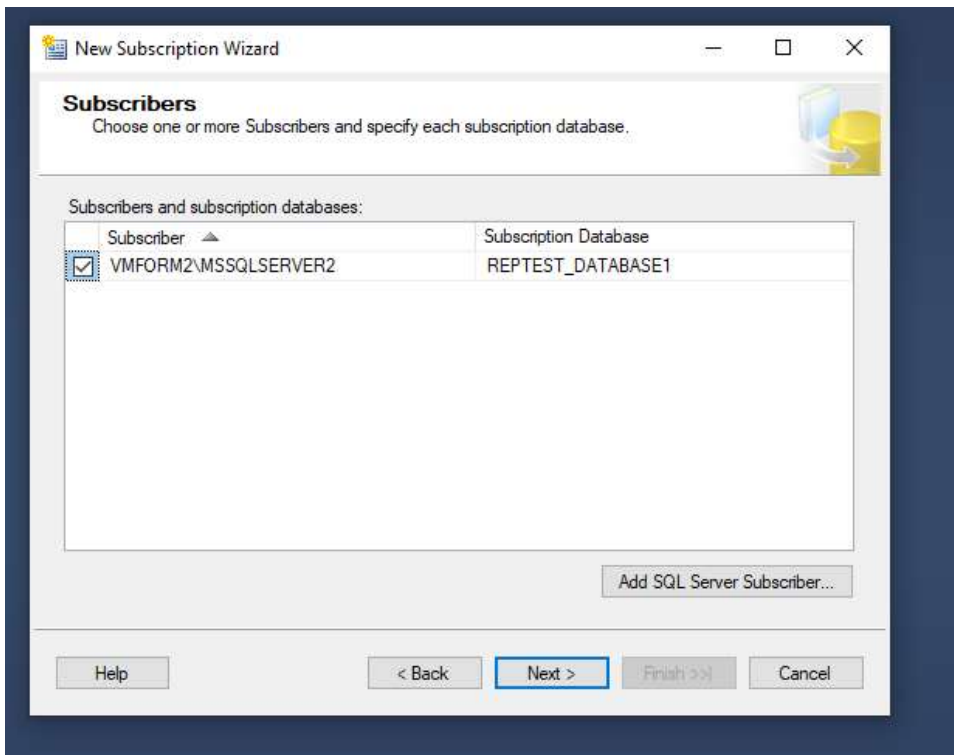
Authentication on the same mode as always.



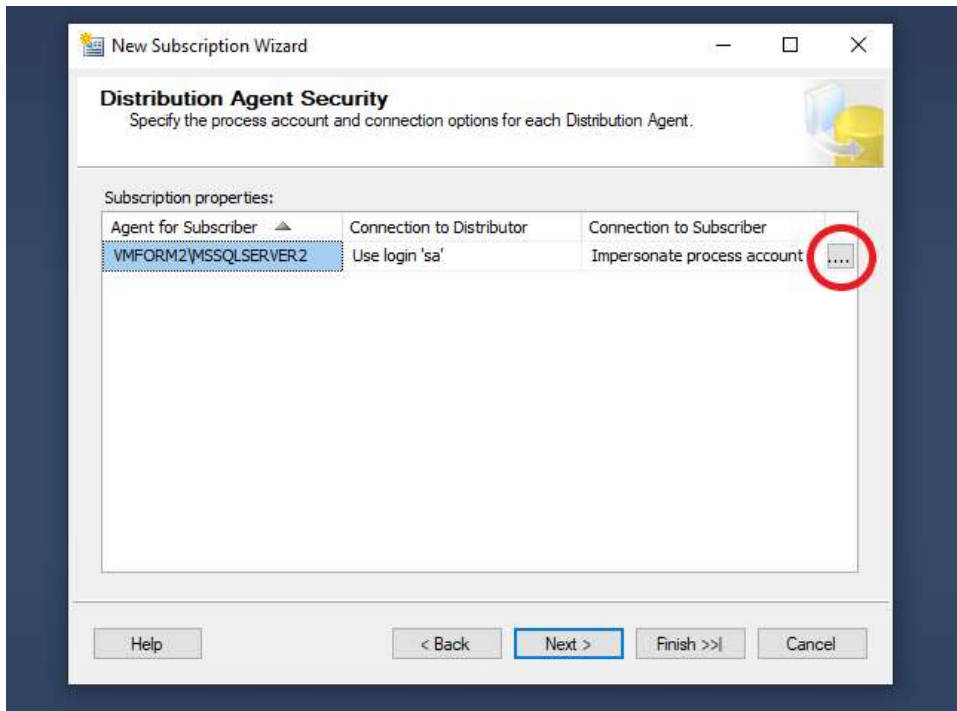
Connect -> You will see the Publication you created before. Select it and go next.



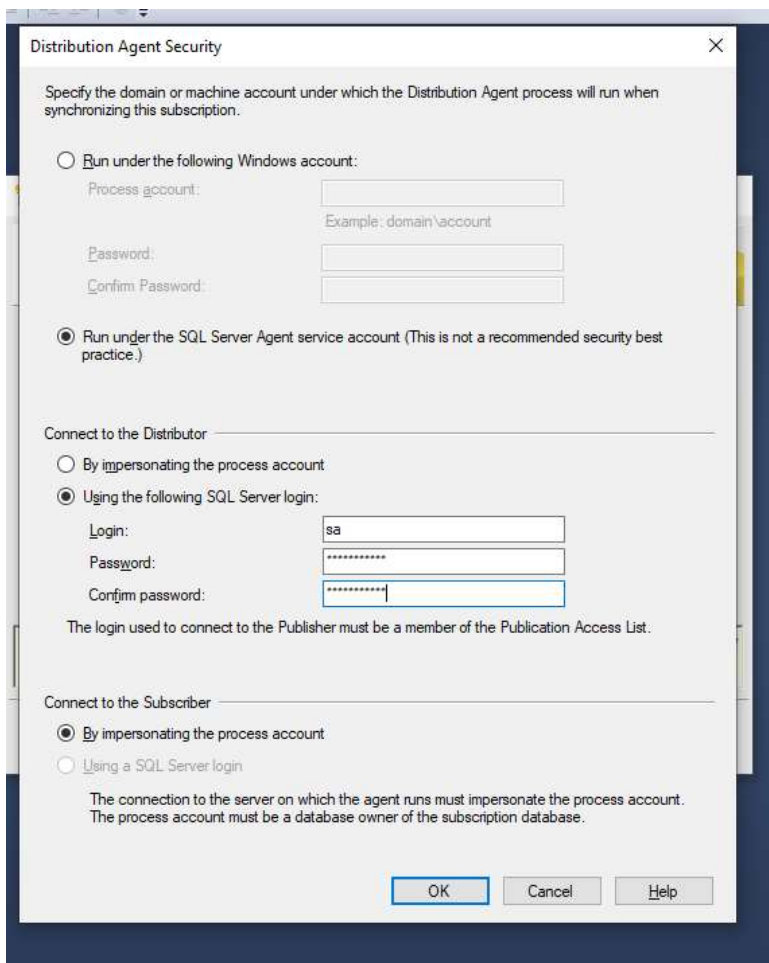
Leave the default setting: Run each agent at is Subscriber (pull subscriptions)



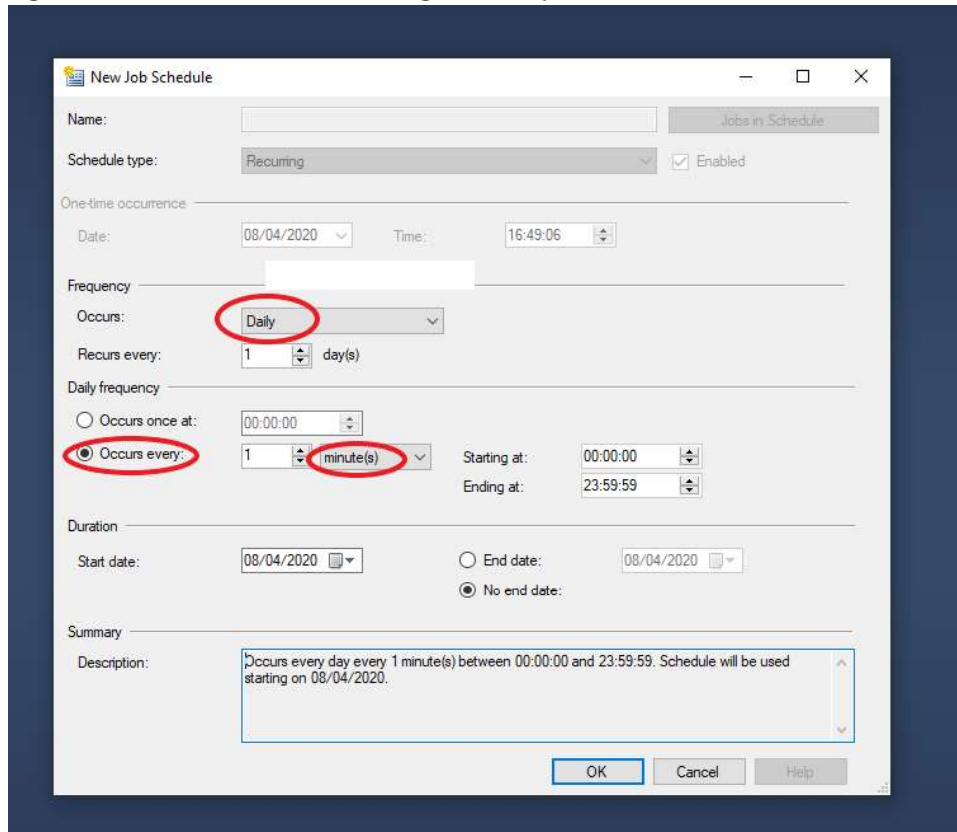
Subscription Database: select the one of VMFORM1.



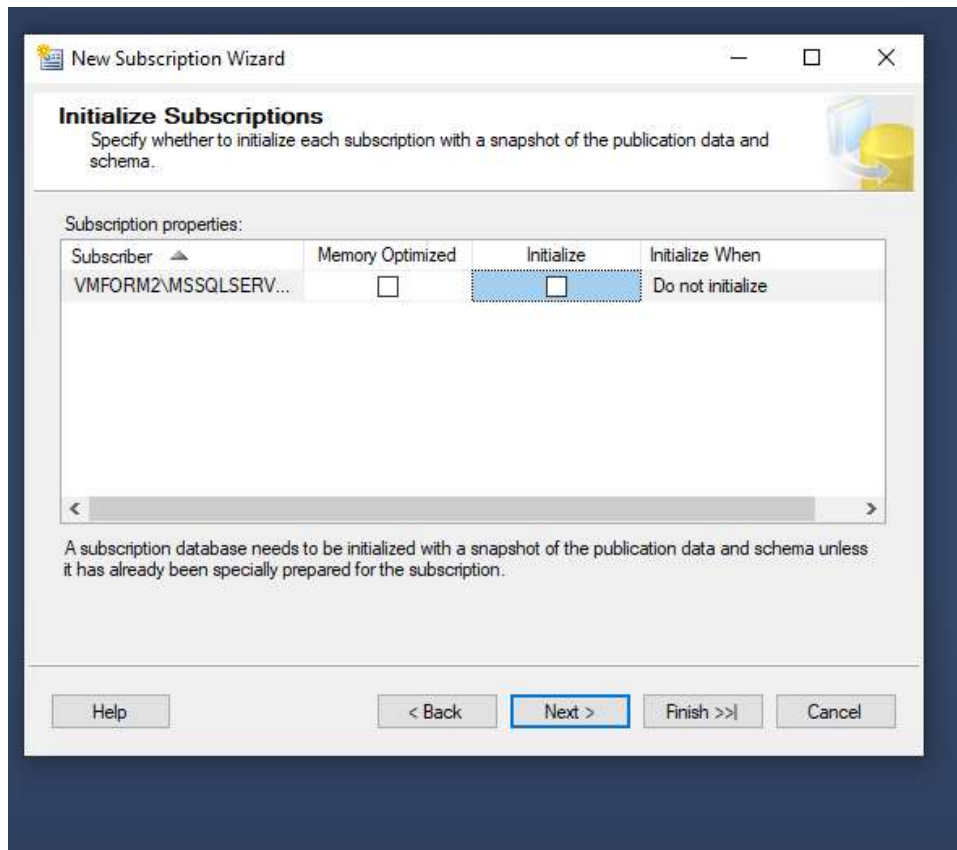
As in the Publication, there are Agent Security settings.



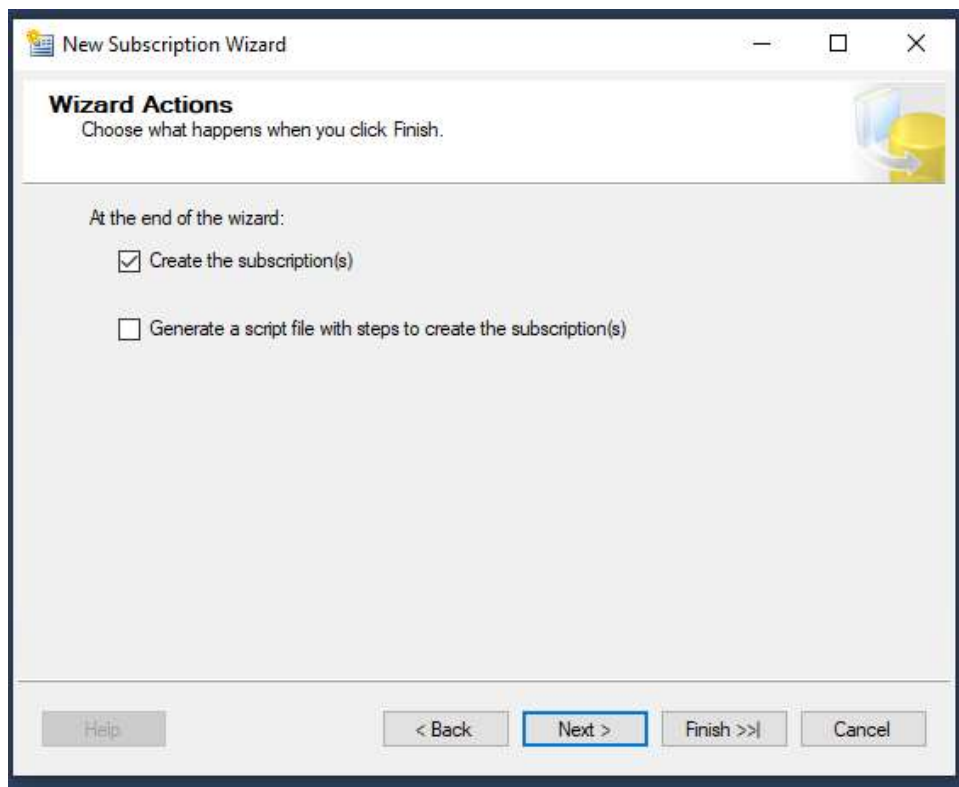
Agent Schedule allows to configure the period or schedules of execution of the replication.



To set a periodical replication:
 Select 'Define schedule', and configure as followed or the way you want.



Uncheck "Initialize" and Next



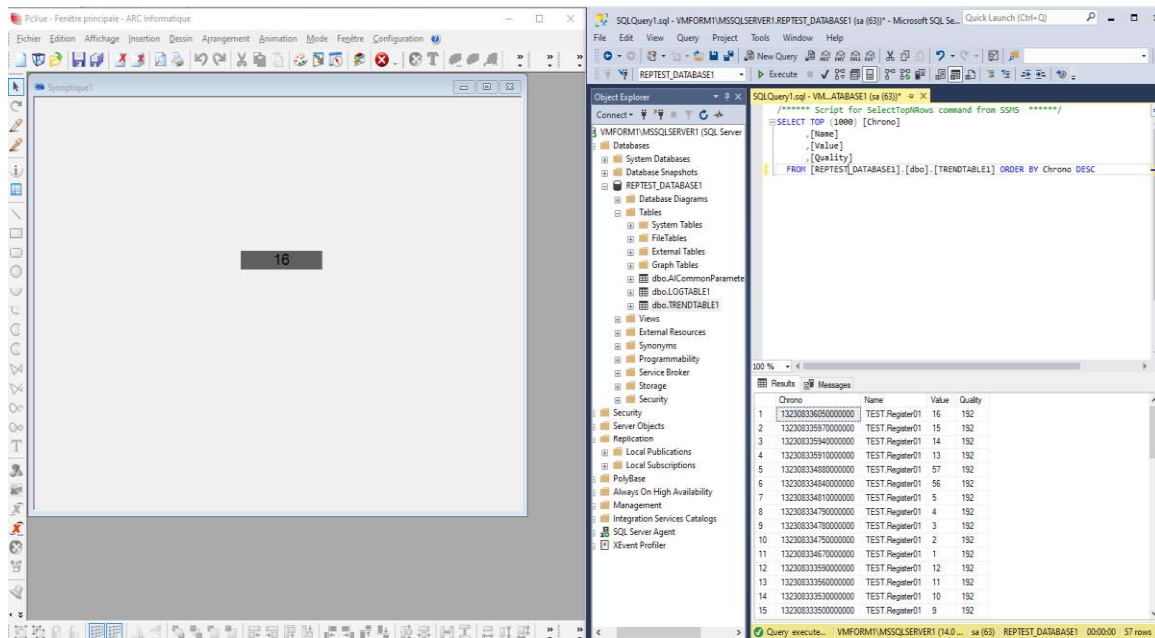
Leave by default, "Create the subscription(s)"

Next and finish.

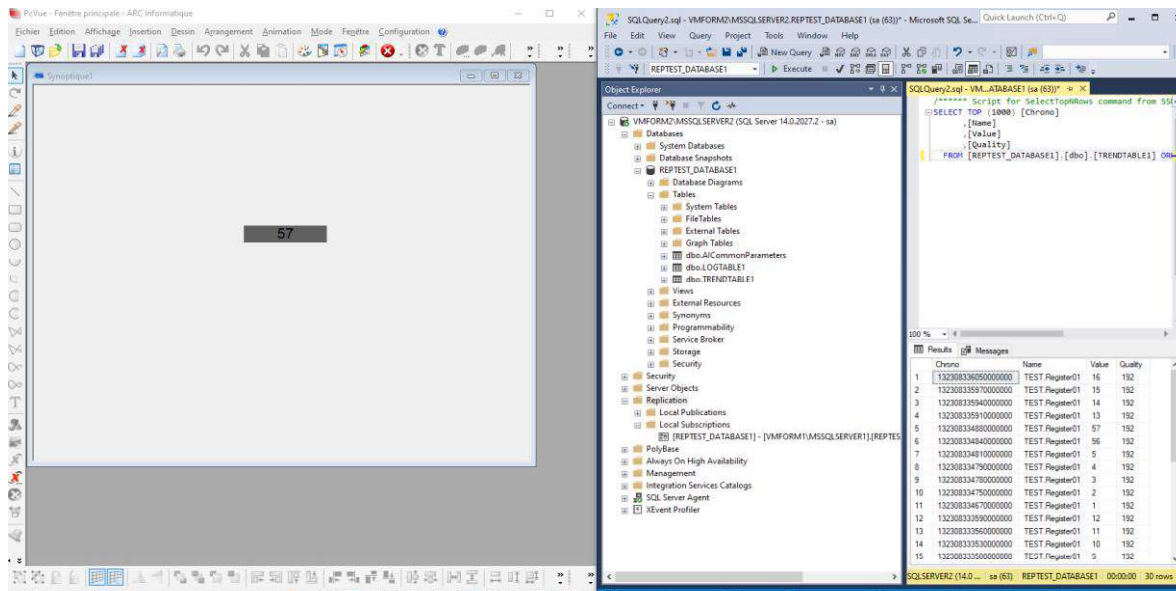
Replication configuration: 2nd direction

It is the exact same method than the first direction but publication and subscription are configured on inverted VMs this time.

Here are the final results of this replication if we start to push some data from PcVue to our database:



Results on VMFORM1



Results on VMFORM2

As you can see, data are replicated on each databases of the different machines. The data that we have inserted on VMFORM1 has been replicated to VMFORM2 and vice-versa.


```
SQLQuery12.sql - P...Administrator (67) X
USE [distribution]
GO
/***** Object: Trigger [dbo].[MSrepl_errors_2627]    Script Date: 21/02/2020 14:25:53 *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
-- =====
-- Author:      <Author,,Name>
-- Create date: <Create Date,,>
-- Description: <Description,,>
-- =====

ALTER TRIGGER [dbo].[MSrepl_errors_2627] ON [dbo].[MSrepl_errors]
AFTER INSERT
AS
BEGIN
    DELETE
    FROM [dbo].[MSrepl_errors]
    where error_code = 2627;
END
;
```

The script file is attached in the KB article.

Important notes:

- The trigger must be added on all SQL Server instances where the 'distribution' system database is present. At least on both VMFORM, and the SS.

Databases > System Databases > distribution

- Since the MSrepl_errors table will now be several GB, **before** launching the script above to create the trigger, it is essential to:

- Run the query DROP TABLE DBO.MSRepl_Errors on the distribution DB (N.B. Don't use DELETE FROM... it would take too long and risk to saturate the hard disk by exploding the Transaction Log).
- Next, right click on the DB distribution, choose Task > Shrink > Database and when finished, Task > Shrink > File.
- Also check that the DB distribution Recovery Model is set to "Simple".
distribution > Right click > Properties > Options
- Check the size of the DB distribution, which should be a few MB (instead of several GB as before).

Points and options to highlight

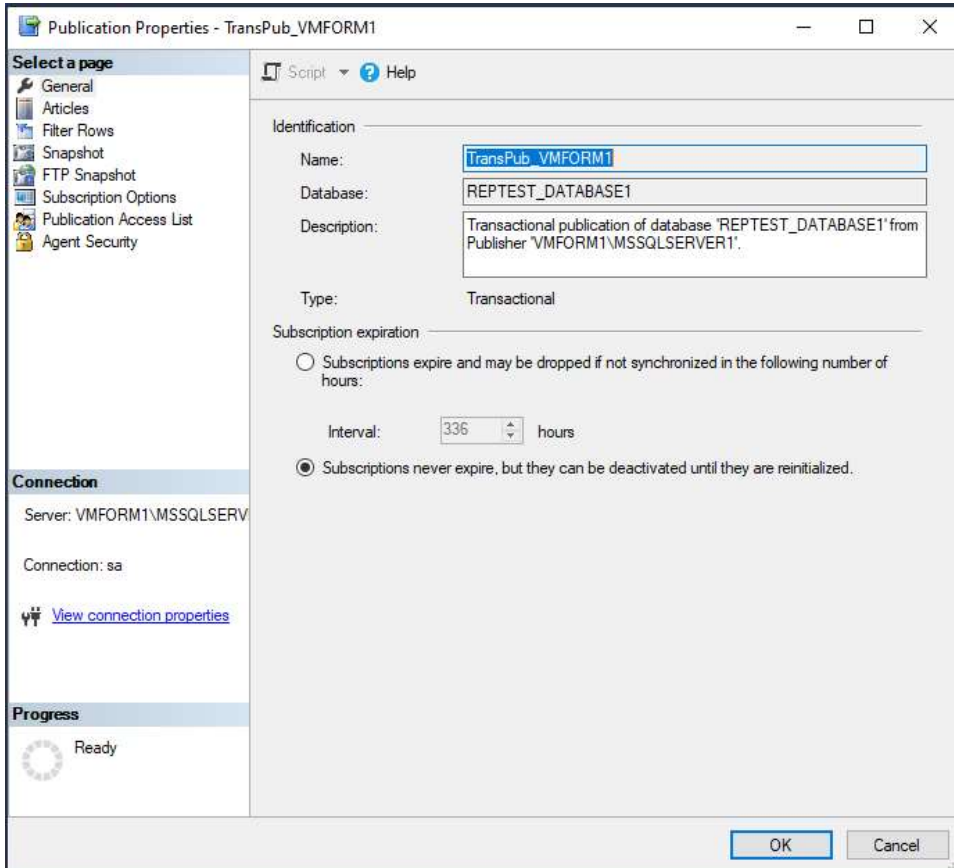
Publication retention period timeout

It detects and removes expired subscriptions, were failed to connect to the subscriber server within Publication retention period, from Publication database.

This retention period can be configured from:

Replication > Local Publications > Right click > Properties

It is advised to put it on "never expires" which is equal to infinite number of hours timeout.



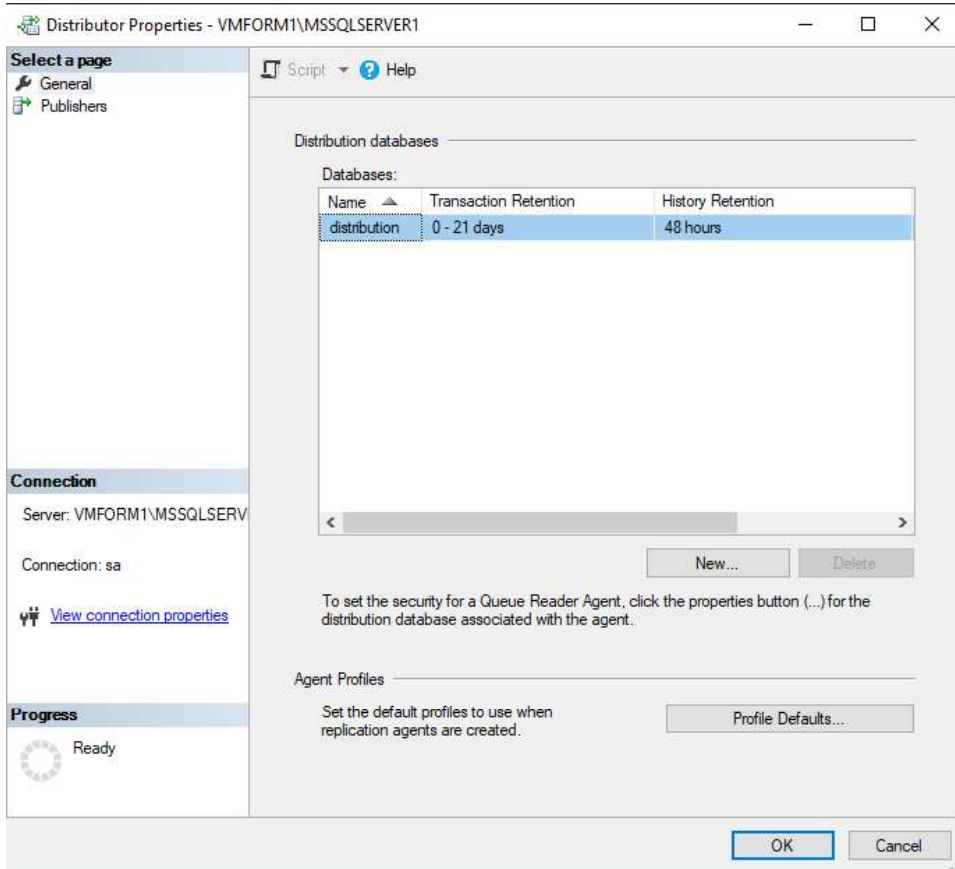
Distribution retention period timeout

It removes replicated transaction from Distribution database by making sure that each transaction has been replicated from Distribution database to Subscriber database successfully.

This period can be configured from: Replication > Right click > Distributor properties...

It is advised to put it to 21 days, as it is not possible to enter infinite value as Publication retention, and 72 hours (default value) is probably too short.

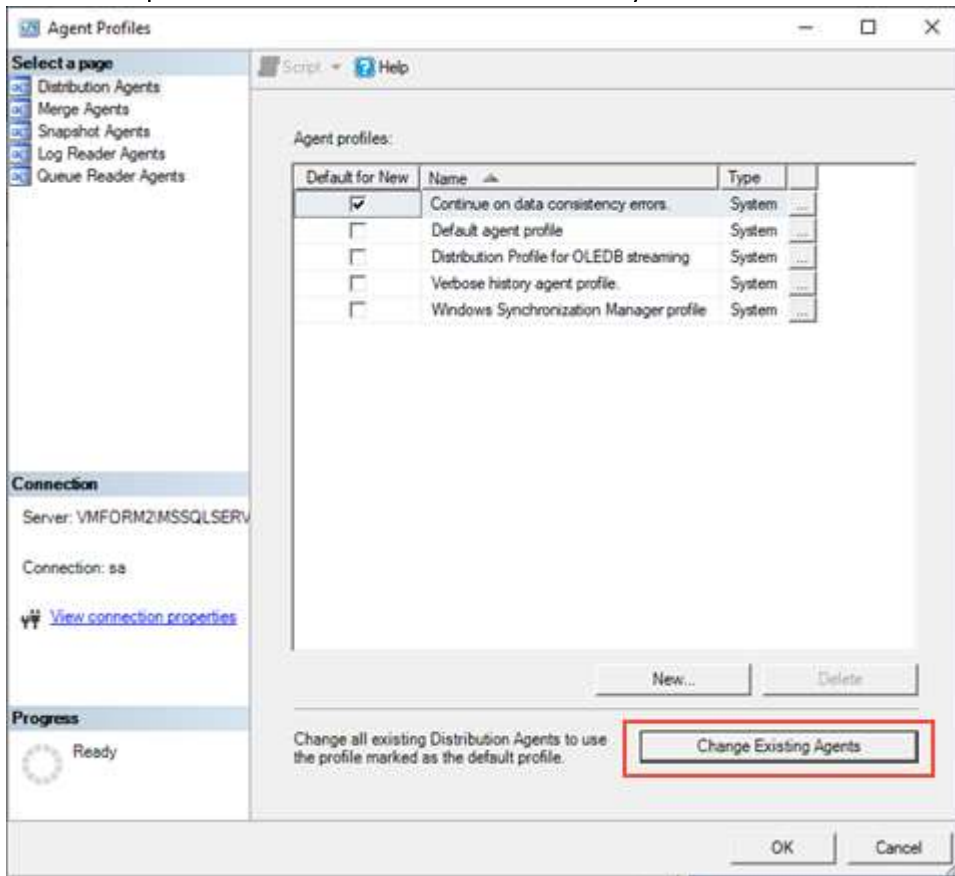
History Retention can be set to 21 days also.



Agent Profiles

This window is reachable from the previous one (Distributor Properties) with the bottom right button "Profile Defaults...".

It allows to configure different settings for each type of Agent and fix profiles used for them. Here you select the profile "Continue on data consistency errors." And click on "Change Existing Agents"



It has to be done all the two servers.