Contenido

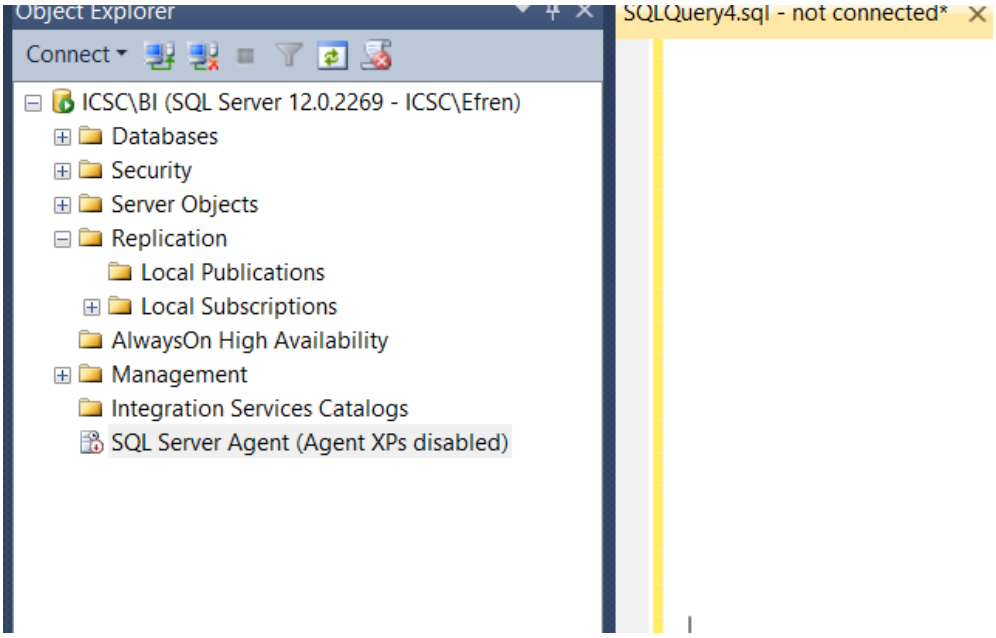
Replicación

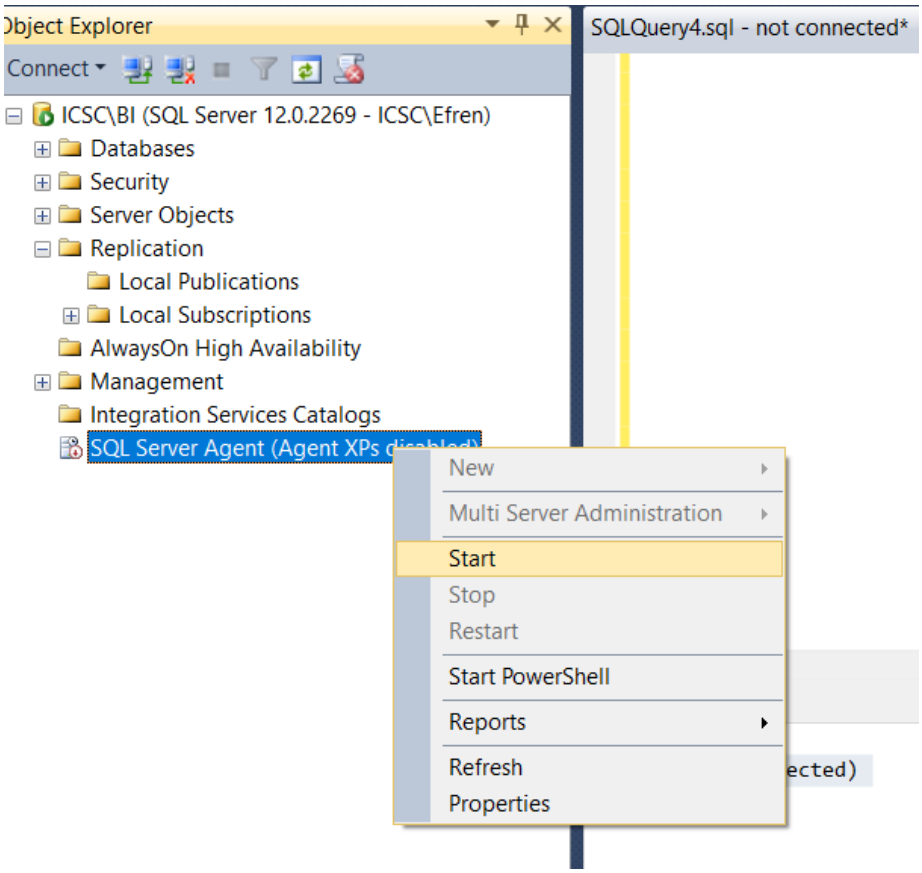
La replicación es un conjunto de tecnologías destinadas a la copia y distribución de datos y objetos de base de datos desde una base de datos a otra, para luego sincronizar ambas bases de datos y mantener su coherencia.

La replicación transaccional se usa normalmente en escenarios servidor a servidor que requieren un alto rendimiento, como, por ejemplo, la mejora de la escalabilidad y la disponibilidad, el almacenamiento de datos y la creación de informes, la integración de datos procedentes de varios sitios, la integración de datos heterogéneos, y la descarga del procesamiento por lotes. La replicación de mezcla se ha diseñado principalmente para las aplicaciones móviles o de servidores distribuidos que pueden encontrarse con conflictos de datos. Los escenarios más frecuentes son: el intercambio de datos con usuarios móviles, las aplicaciones de punto de venta (POS) a consumidores, y la integración de datos de varios sitios. La replicación de instantáneas se usa para proporcionar el conjunto de datos inicial para la replicación transaccional y de mezcla; también se puede usar cuando está indicada una actualización completa de los datos.

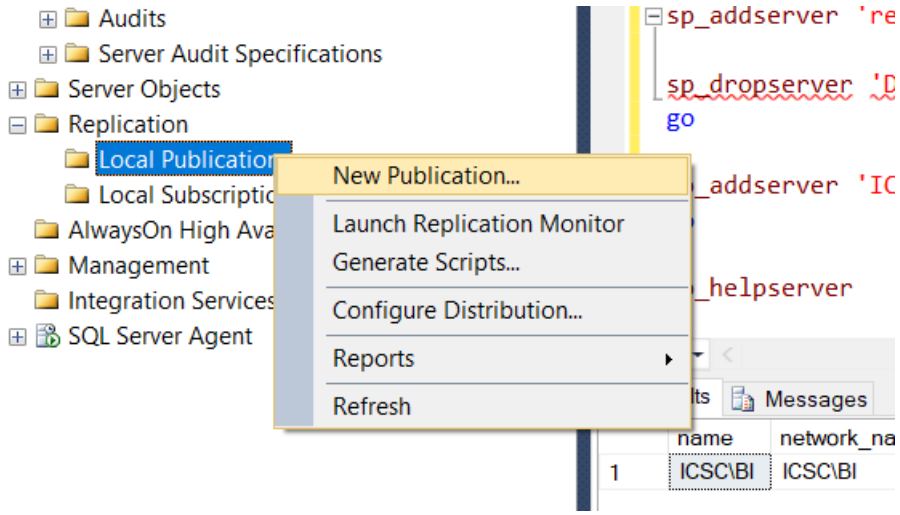
Implementación Replicación

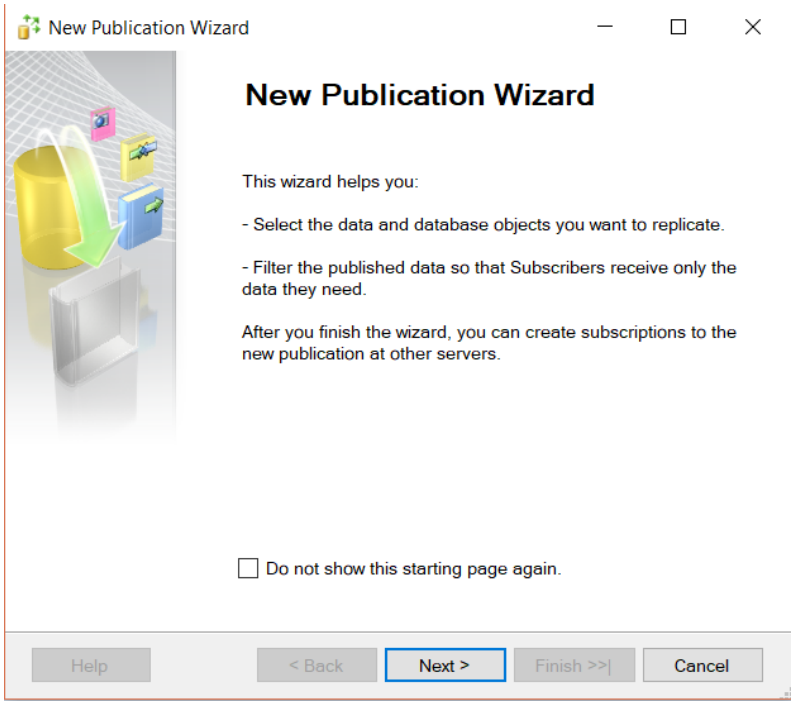
1. Se realizará la activación del Agente de SQL

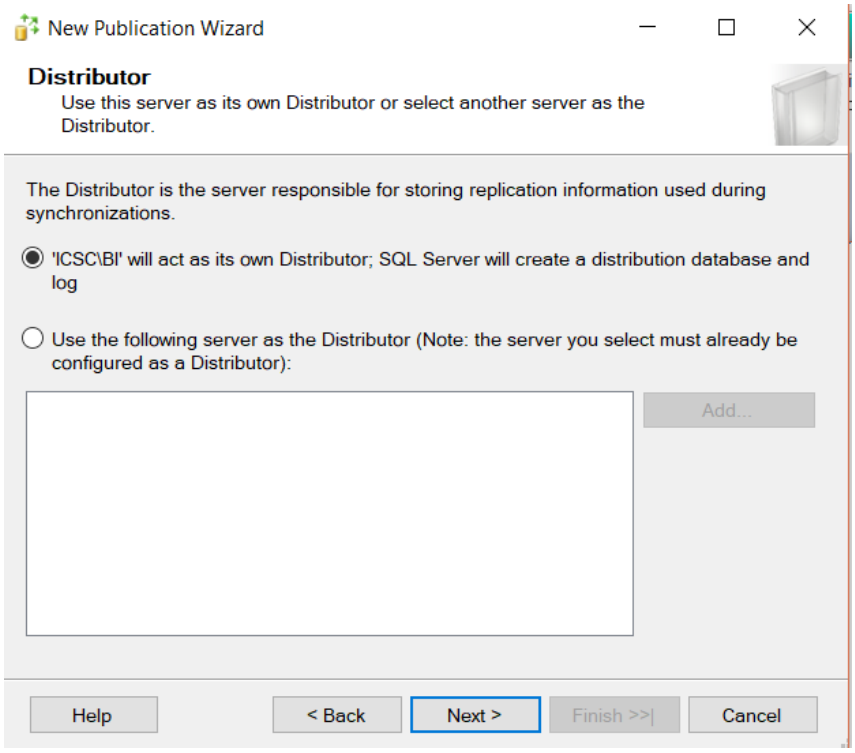




2. Se realizará una nueva publicación




New Publication Wizard
New Publication Wizard
This wizard helps you:
- Select the data and database objects you want to replicate.
- Filter the published data so that Subscribers receive only the data they need.
After you finish the wizard, you can create subscriptions to the new publication at other servers.
Do not show this starting page again.
Help
< Back
Next >
Finish >>|
Cancel


New Publication Wizard
Distributor
Use this server as its own Distributor or select another server as the Distributor.
The Distributor is the server responsible for storing replication information used during synchronizations.
'ICSC\BI' will act as its own Distributor; SQL Server will create a distribution database and log
Use the following server as the Distributor (Note: the server you select must already be configured as a Distributor):
Add...
Help
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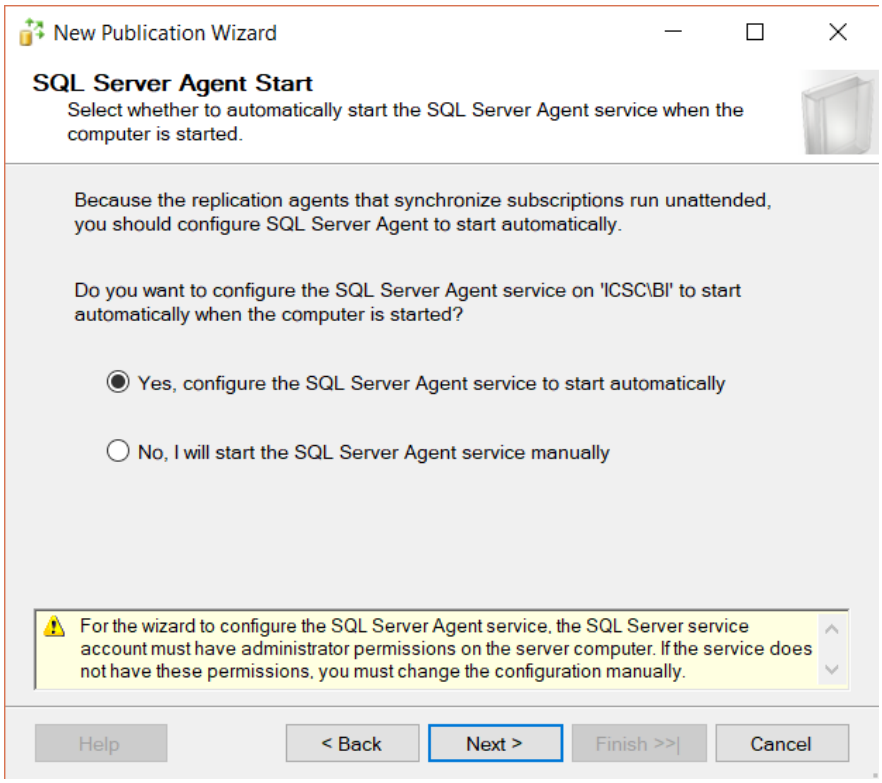
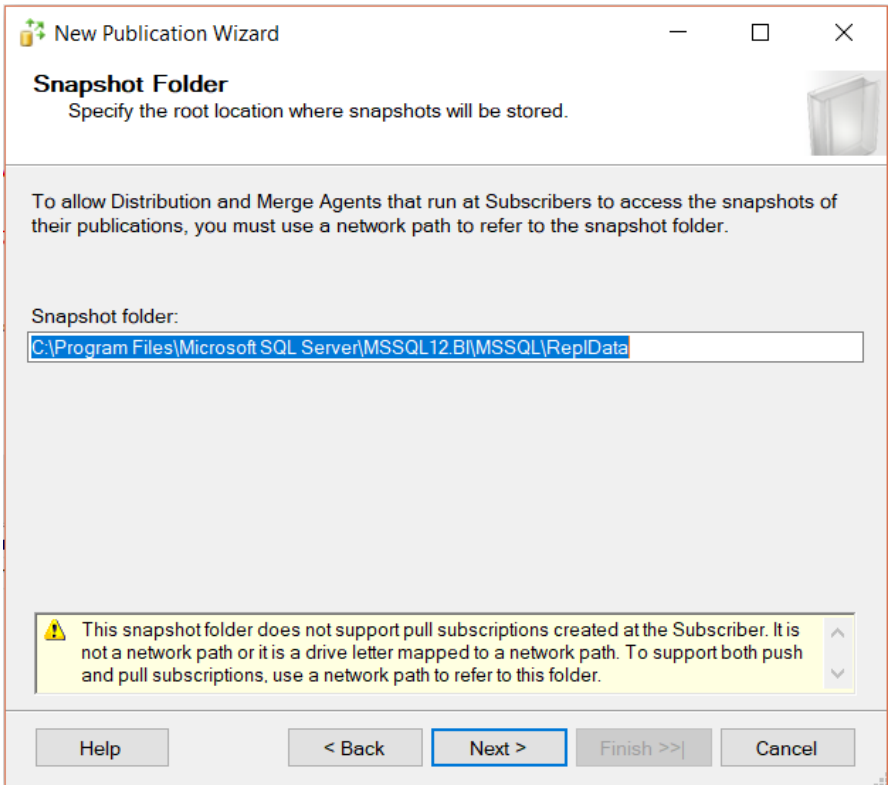
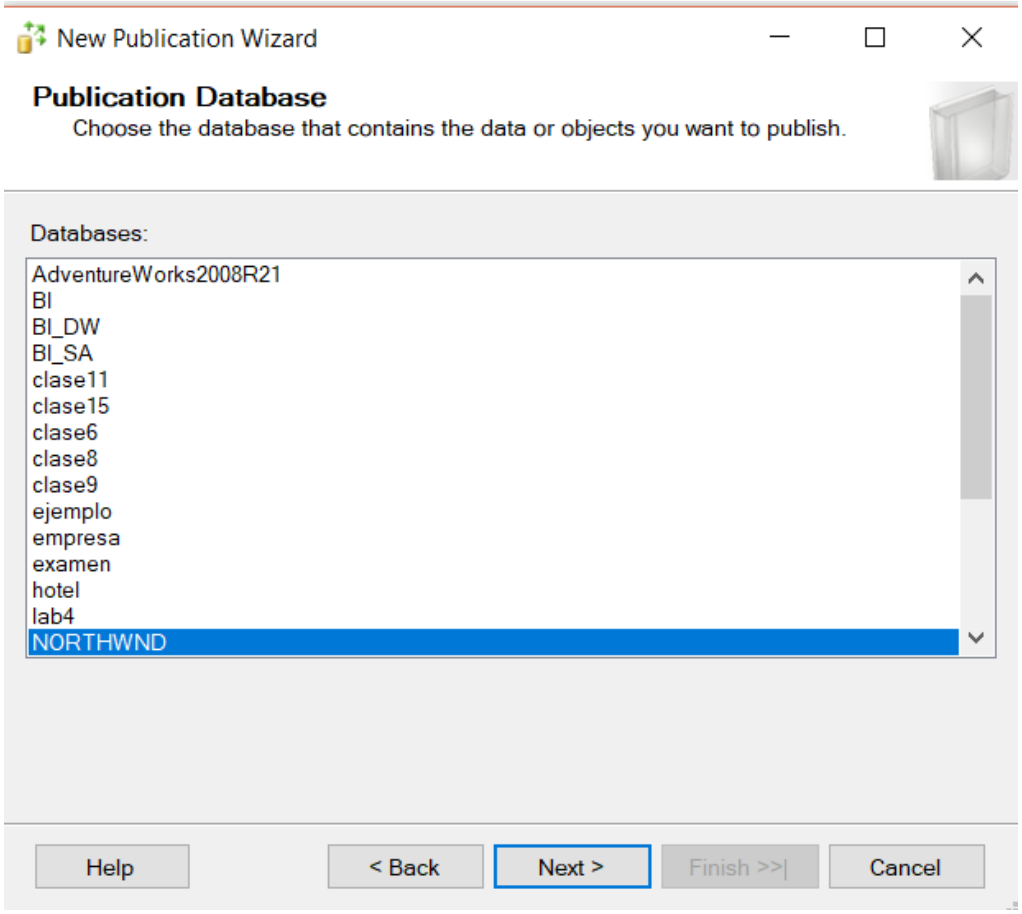
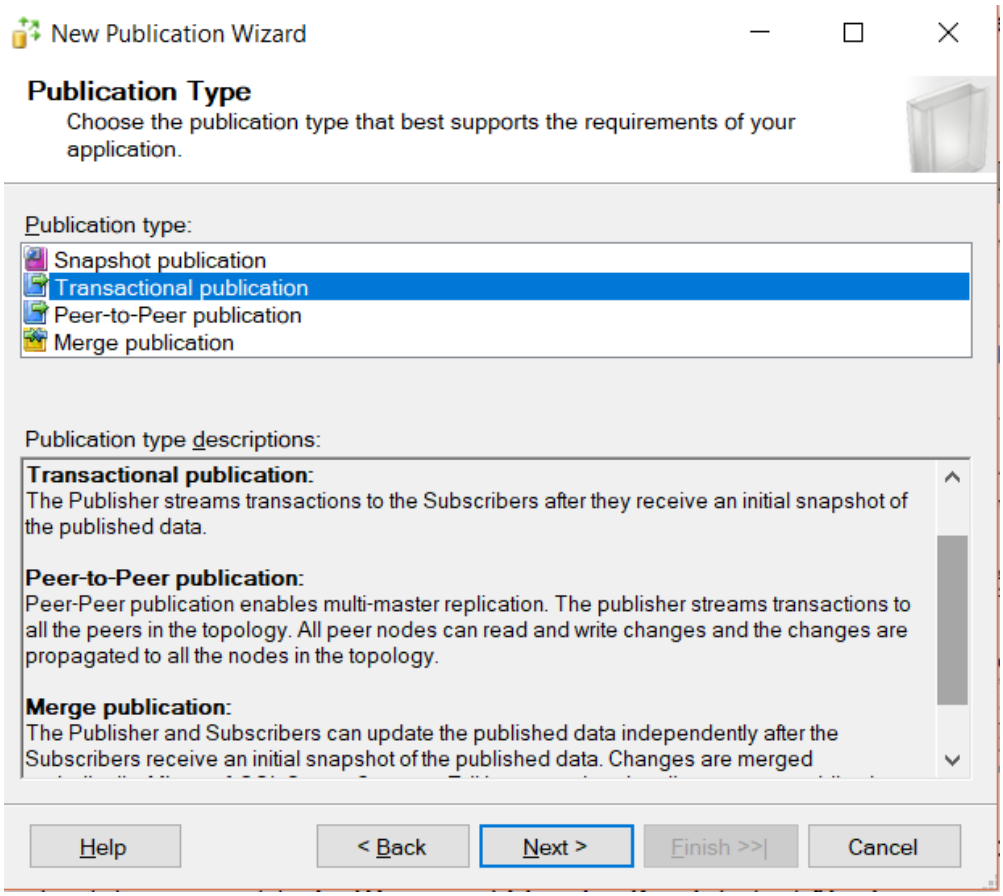
Next >
Finish >>|
Cancel


New Publication Wizard
SQL Server Agent Start
Select whether to automatically start the SQL Server Agent service when the computer is started.
Because the replication agents that synchronize subscriptions run unattended, you should configure SQL Server Agent to start automatically.
Do you want to configure the SQL Server Agent service on 'ICSC\BI' to start automatically when the computer is started?
Yes, configure the SQL Server Agent service to start automatically
No, I will start the SQL Server Agent service manually
For the wizard to configure the SQL Server Agent service, the SQL Server service account must have administrator permissions on the server computer. If the service does not have these permissions, you must change the configuration manually.
Help
< Back
Next >
Finish >>|
Cancel


New Publication Wizard
Snapshot Folder
Specify the root location where snapshots will be stored.
To allow Distribution and Merge Agents that run at Subscribers to access the snapshots of their publications, you must use a network path to refer to the snapshot folder.
Snapshot folder:
C:\Program Files\Microsoft SQL Server\MSSQL12.BI\MSSQL\ReplData
This snapshot folder does not support pull subscriptions created at the Subscriber. It is not a network path or it is a drive letter mapped to a network path. To support both push and pull subscriptions, use a network path to refer to this folder.
Help
< Back
Next >
Finish >>|
Cancel


New Publication Wizard
Publication Database
Choose the database that contains the data or objects you want to publish.
Databases:
AdventureWorks2008R21
BI
BI_DW
BI_SA
clase11
clase15
clase6
clase8
clase9
ejemplo
empresa
examen
hotel
lab4
NORTHWND
Help
< Back
Next >
Finish >>|
Cancel


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:
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.
Merge publication:
The Publisher and Subscribers can update the published data independently after the Subscribers receive an initial snapshot of the published data. Changes are merged
Help
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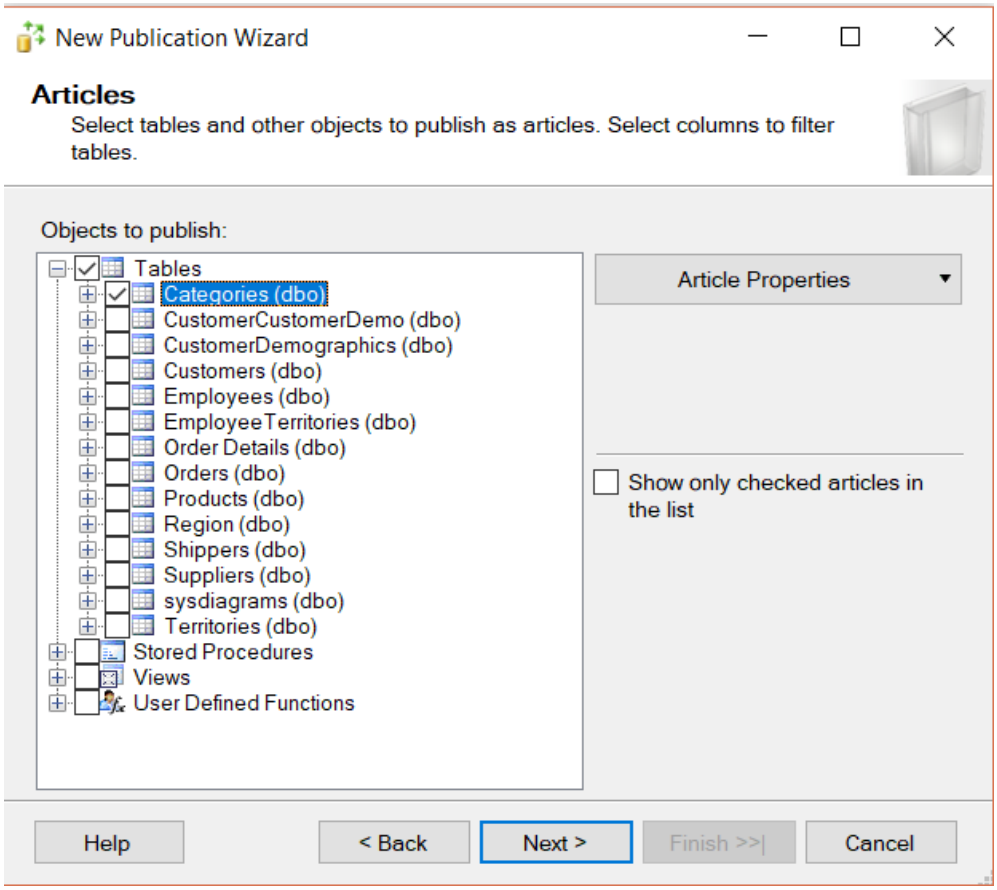
Finish >>|
Cancel


New Publication Wizard
Articles
Select tables and other objects to publish as articles. Select columns to filter tables.
Objects to publish:
Tables
Categories (dbo)
CustomerCustomerDemo (dbo)
CustomerDemographics (dbo)
Customers (dbo)
Employees (dbo)
EmployeeTerritories (dbo)
Order Details (dbo)
Orders (dbo)
Products (dbo)
Region (dbo)
Shippers (dbo)
Suppliers (dbo)
sysdiagrams (dbo)
Territories (dbo)
Stored Procedures
Views
User Defined Functions
Article Properties
Show only checked articles in the list
Help
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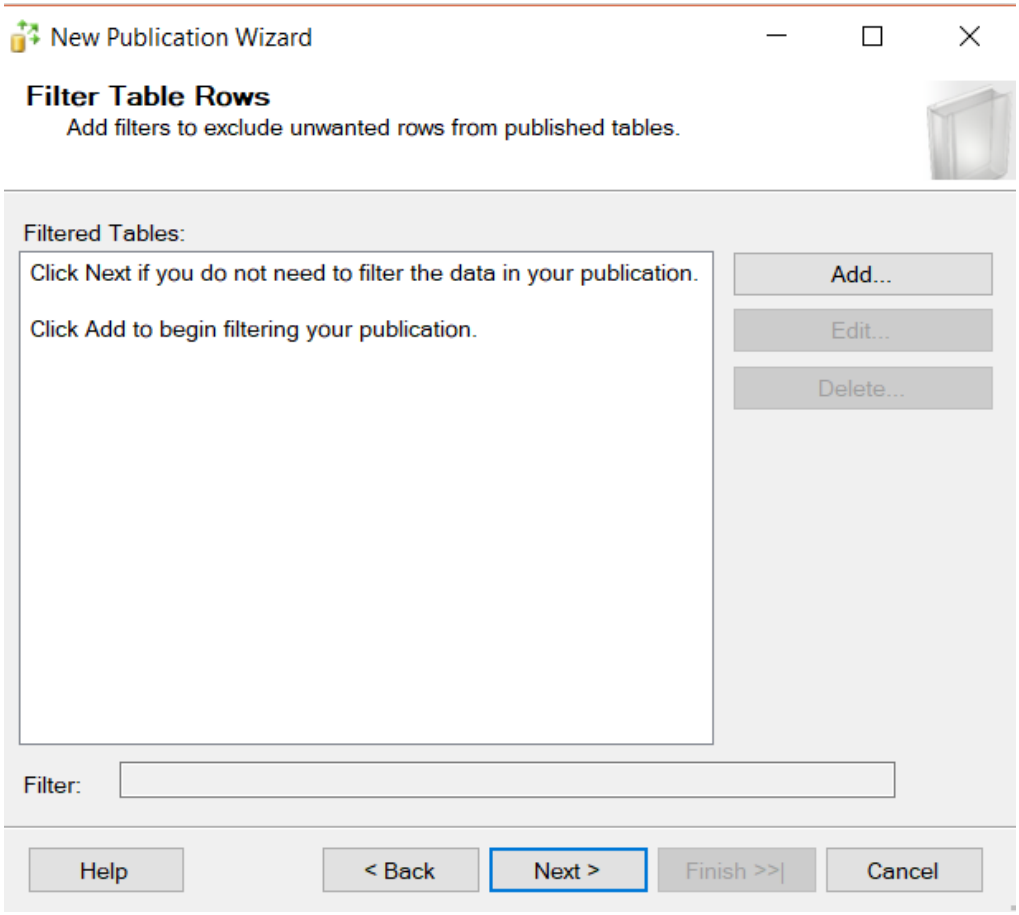
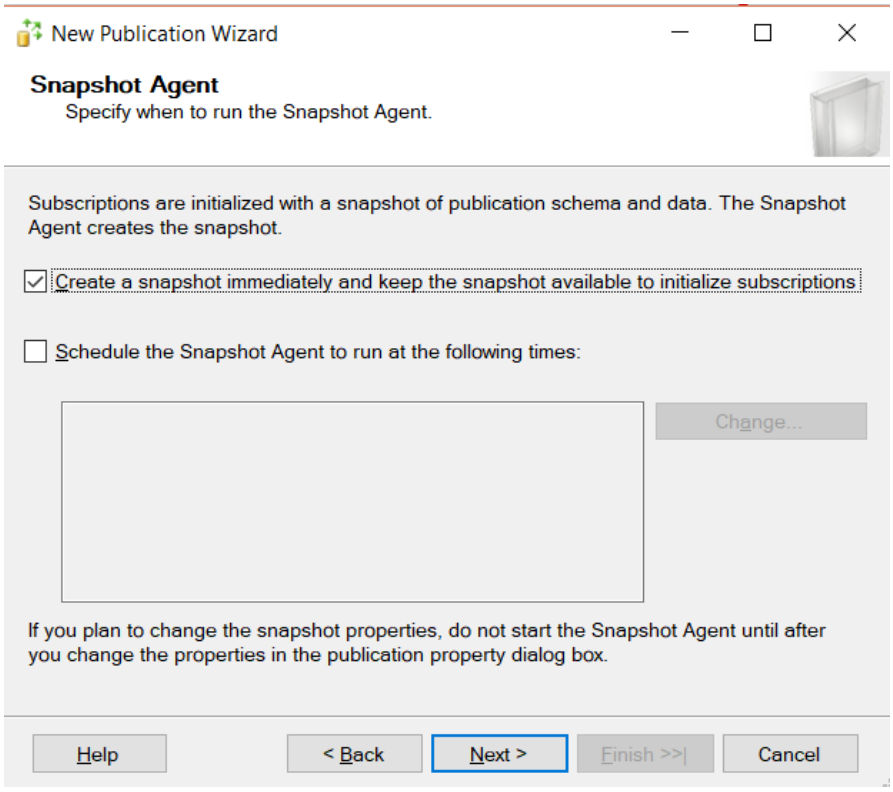
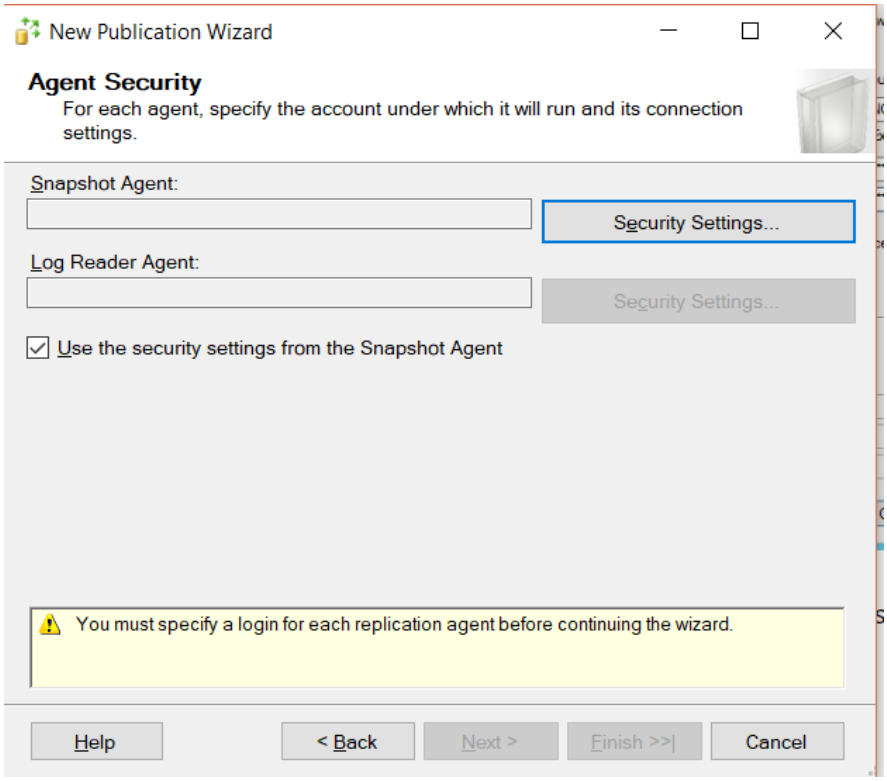
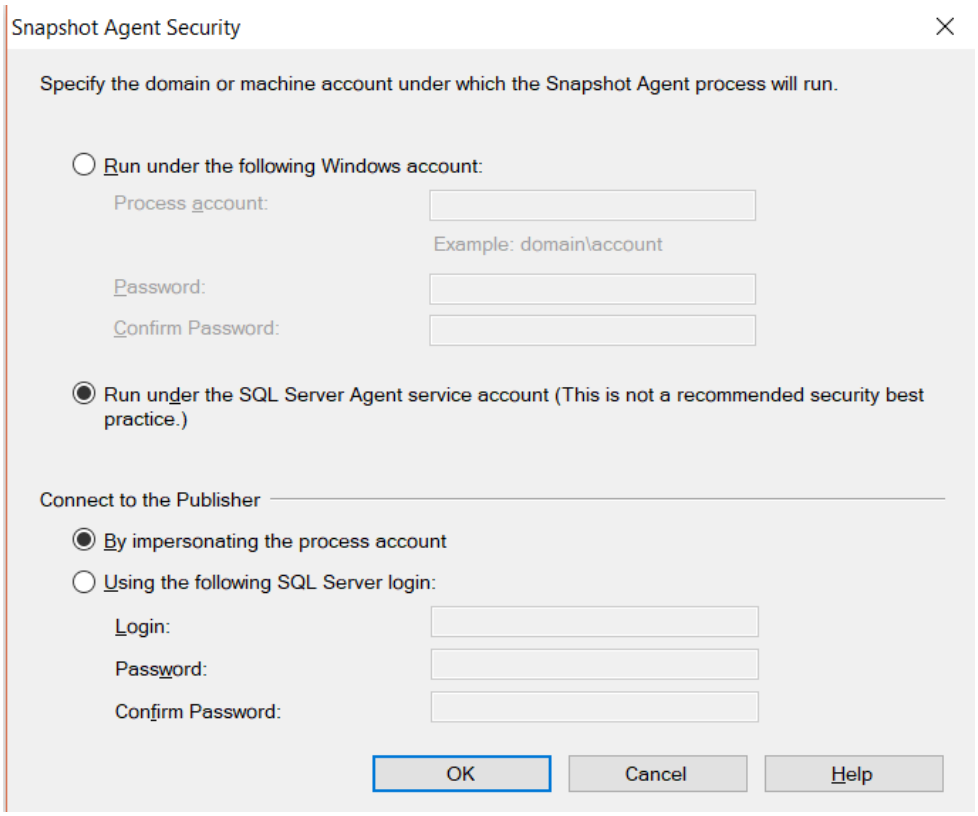
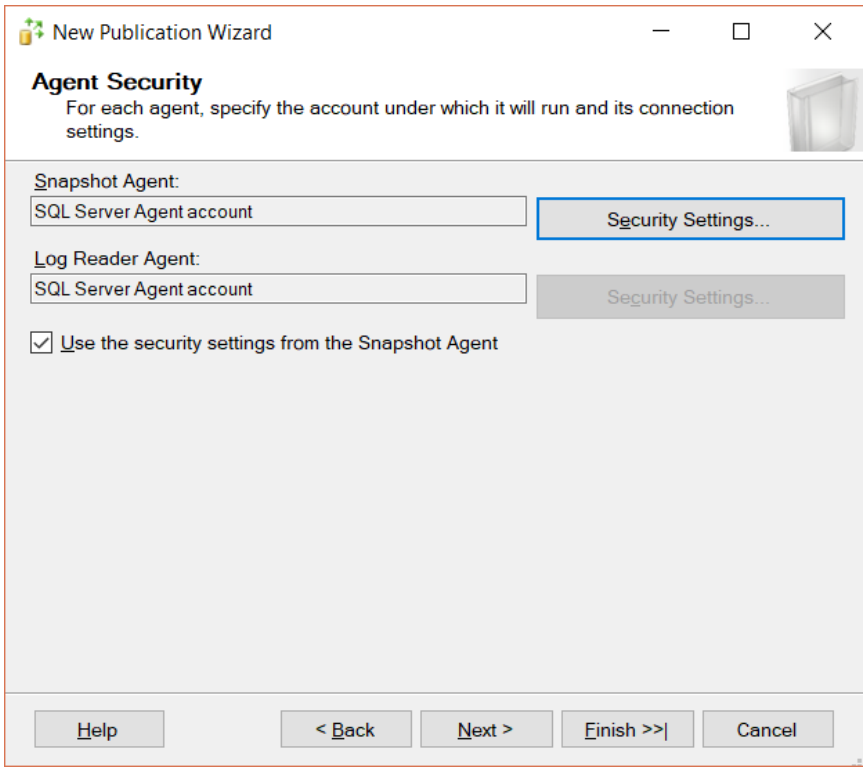
Next >
Finish >>|
Cancel

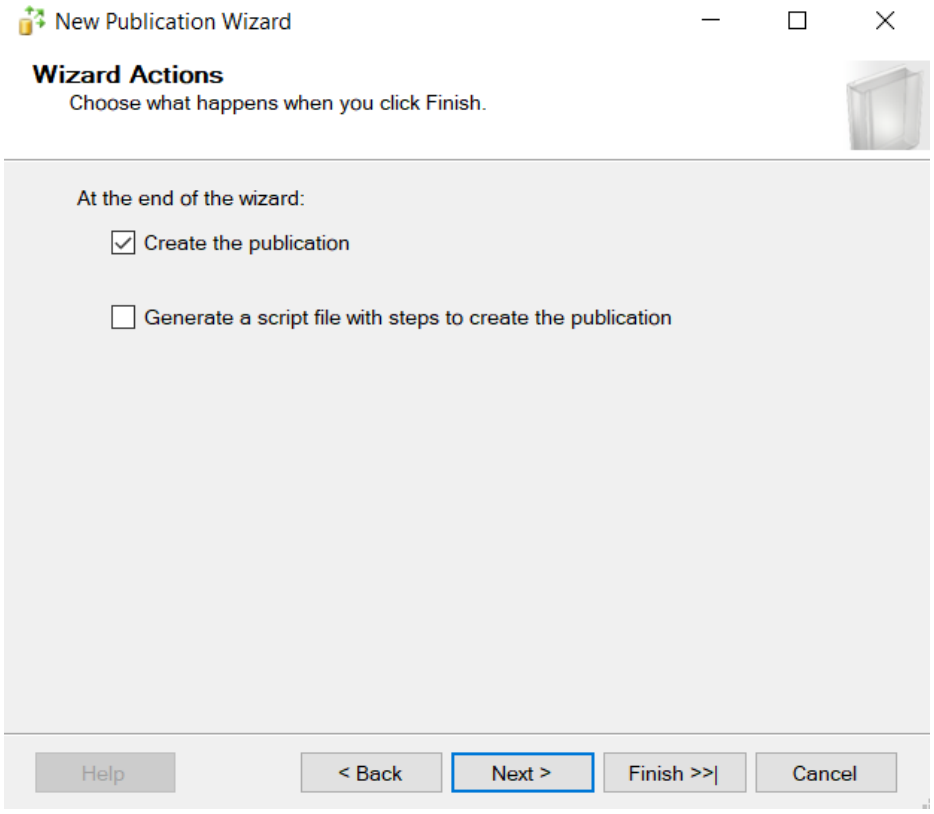

New Publication Wizard
Filter Table Rows
Add filters to exclude unwanted rows from published tables.
Filtered Tables:
Click Next if you do not need to filter the data in your publication.
Click Add to begin filtering your publication.
Add...
Edit...
Delete...
Filter:
Help
< Back
Next >
Finish >>|
Cancel

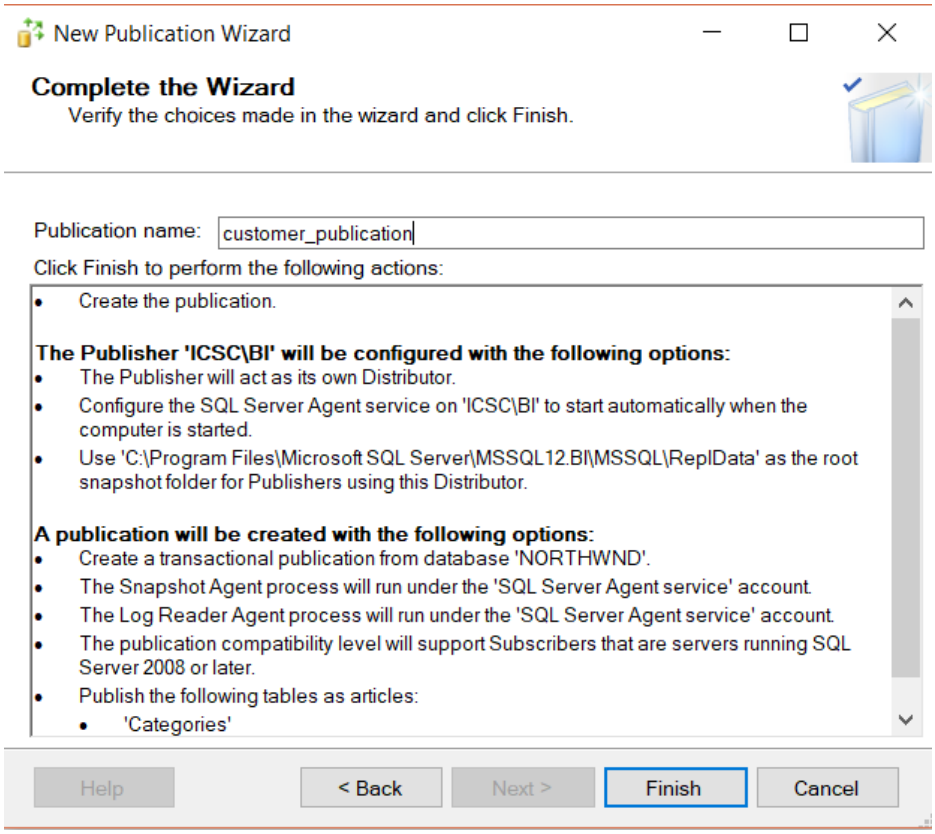

New Publication Wizard
Snapshot Agent
Specify when to run the Snapshot Agent.
Subscriptions are initialized with a snapshot of publication schema and data. The Snapshot Agent creates the snapshot.
Create a snapshot immediately and keep the snapshot available to initialize subscriptions
Schedule the Snapshot Agent to run at the following times:
Change...
If you plan to change the snapshot properties, do not start the Snapshot Agent until after you change the properties in the publication property dialog box.
Help
< Back
Next >
Finish >>|
Cancel

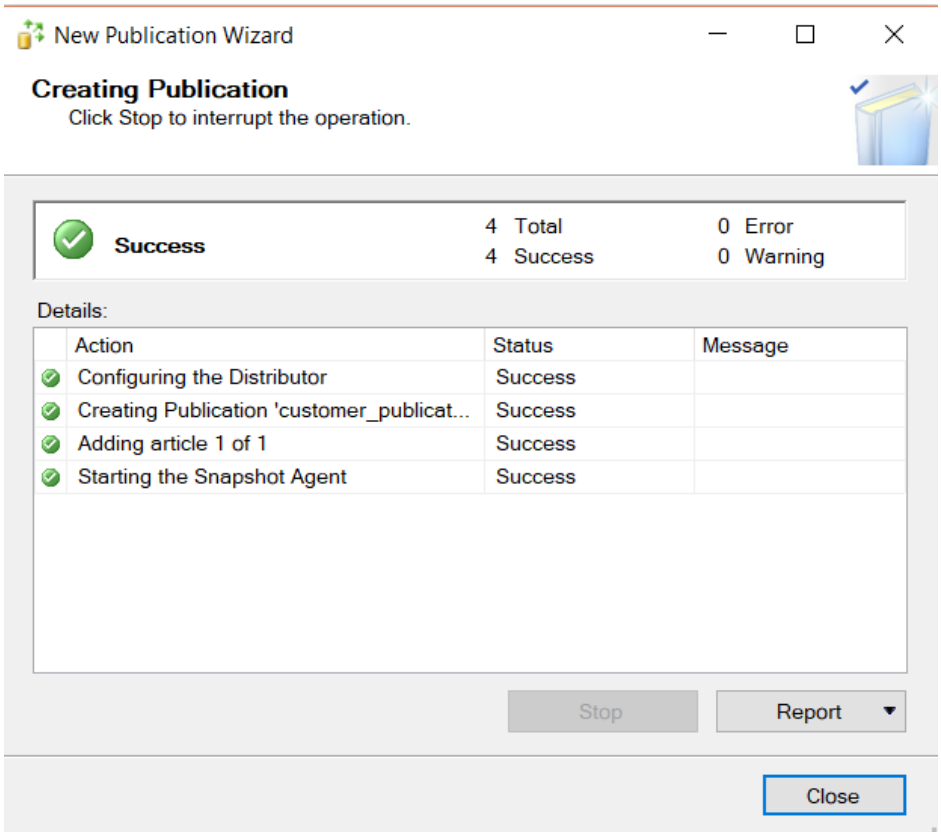

New Publication Wizard
Agent Security
For each agent, specify the account under which it will run and its connection settings.
Snapshot Agent:
Security Settings...
Log Reader Agent:
Security Settings...
Use the security settings from the Snapshot Agent
You must specify a login for each replication agent before continuing the wizard.
Help
< Back
Next >
Finish >>|
Cancel


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

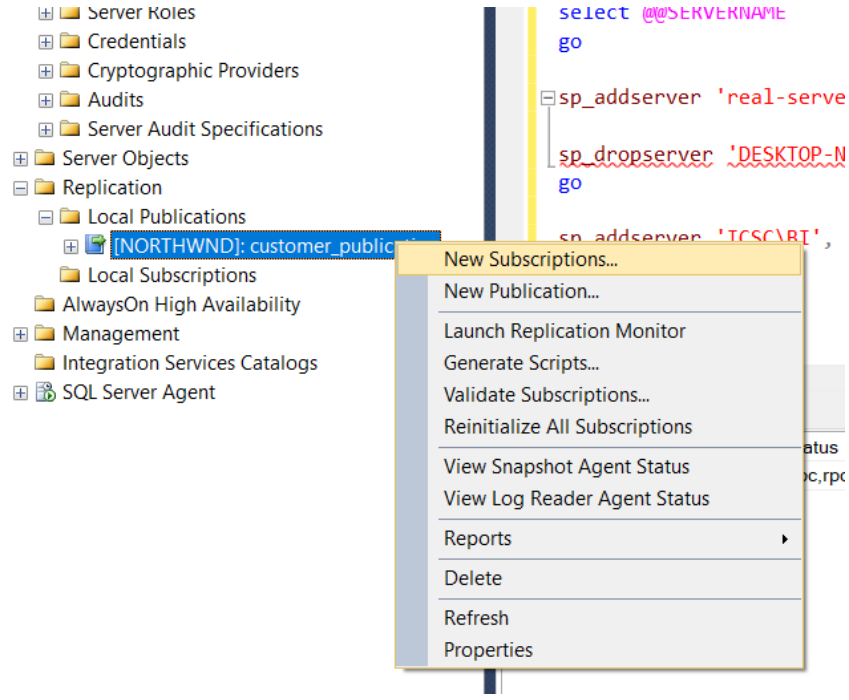

New Publication Wizard
Agent Security
For each agent, specify the account under which it will run and its connection settings.
Snapshot Agent:
SQL Server Agent account
Security Settings...
Log Reader Agent:
SQL Server Agent account
Security Settings...
Use the security settings from the Snapshot Agent
Help
< Back
Next >
Finish >>|
Cancel

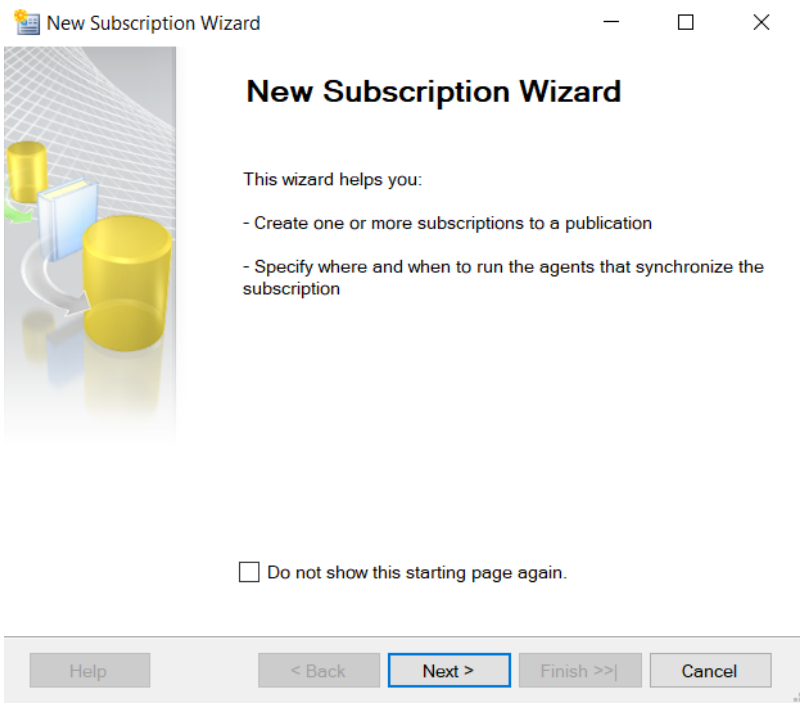

New Publication Wizard
Wizard Actions
Choose what happens when you click Finish.
At the end of the wizard:
Create the publication
Generate a script file with steps to create the publication
Help
< Back
Next >
Finish >>|
Cancel

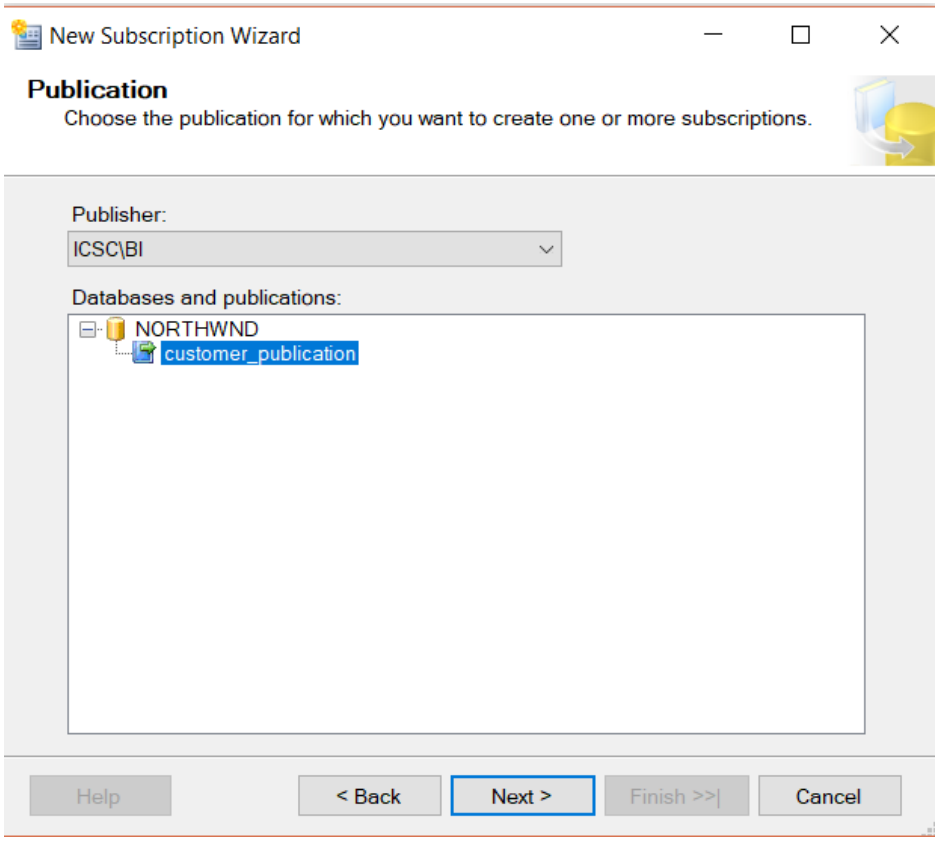

New Publication Wizard
Complete the Wizard
Verify the choices made in the wizard and click Finish.
Publication name: customer_publication
Click Finish to perform the following actions:
Create the publication.
The Publisher 'ICSC\BI' will be configured with the following options:
The Publisher will act as its own Distributor.
Configure the SQL Server Agent service on 'ICSC\BI' to start automatically when the computer is started.
Use 'C:\Program Files\Microsoft SQL Server\MSSQL12.BI\MSSQL\ReplData' as the root snapshot folder for Publishers using this Distributor.
A publication will be created with the following options:
Create a transactional publication from database 'NORTHWND'.
The Snapshot Agent process will run under the 'SQL Server Agent service' account.
The Log Reader Agent process will run under the 'SQL Server Agent service' account.
The publication compatibility level will support Subscribers that are servers running SQL Server 2008 or later.
Publish the following tables as articles:
'Categories'
Help
< Back
Next >
Finish
Cancel

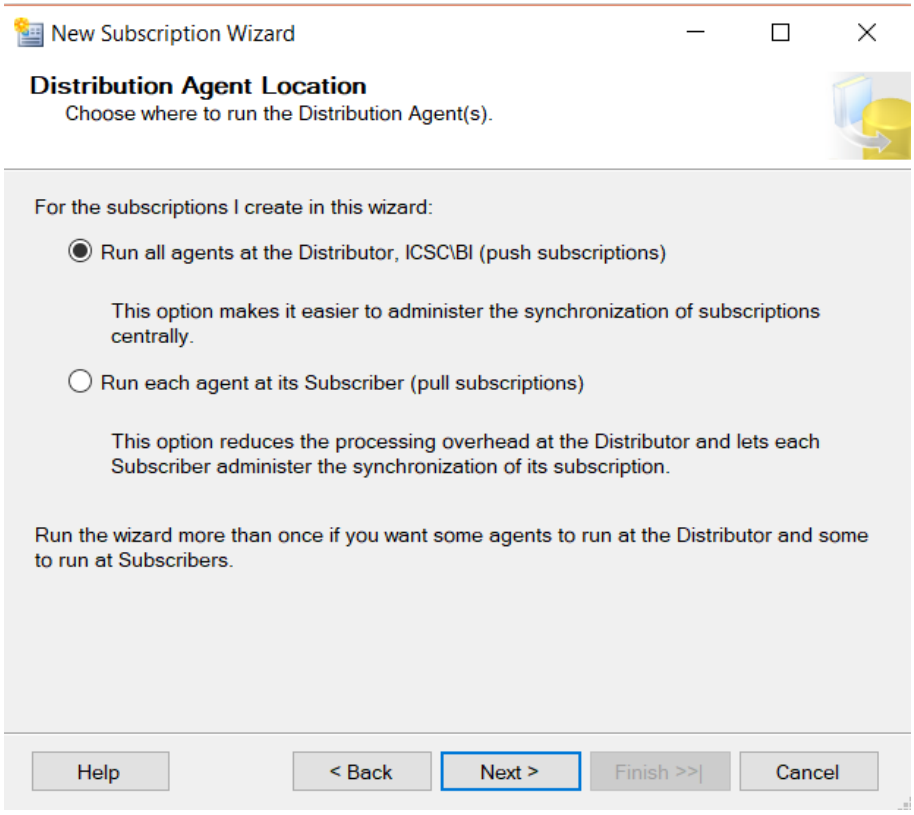

New Publication Wizard
Creating Publication
Click Stop to interrupt the operation.
Success
4 Total
4 Success
0 Error
0 Warning
Details:
Action
Status
Message
Configuring the Distributor
Success
Creating Publication 'customer_publicat...
Success
Adding article 1 of 1
Success
Starting the Snapshot Agent
Success
Stop
Report
Close

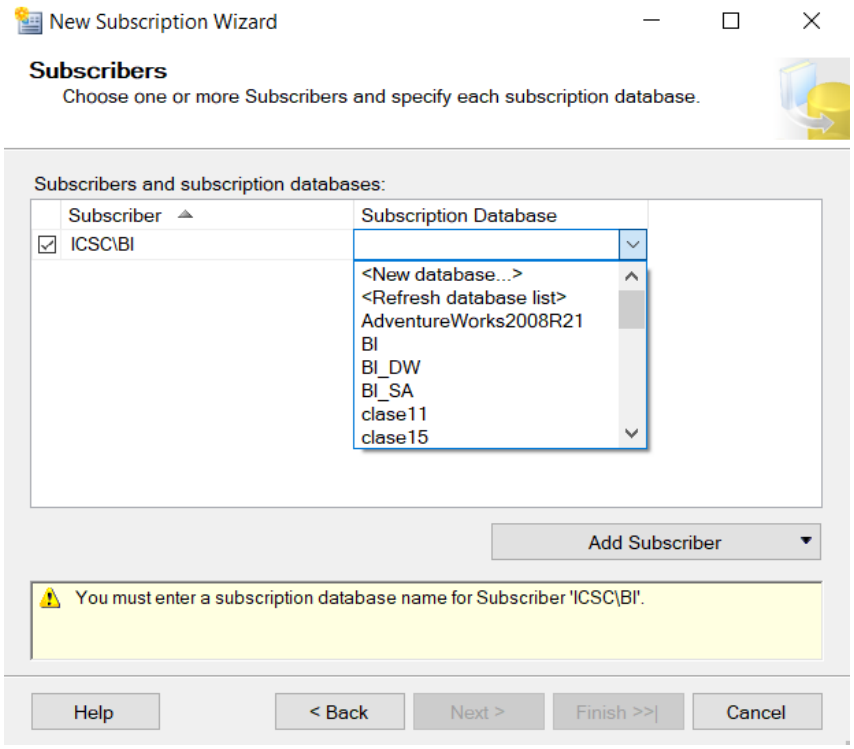
3. Se realizará una nueva suscripción

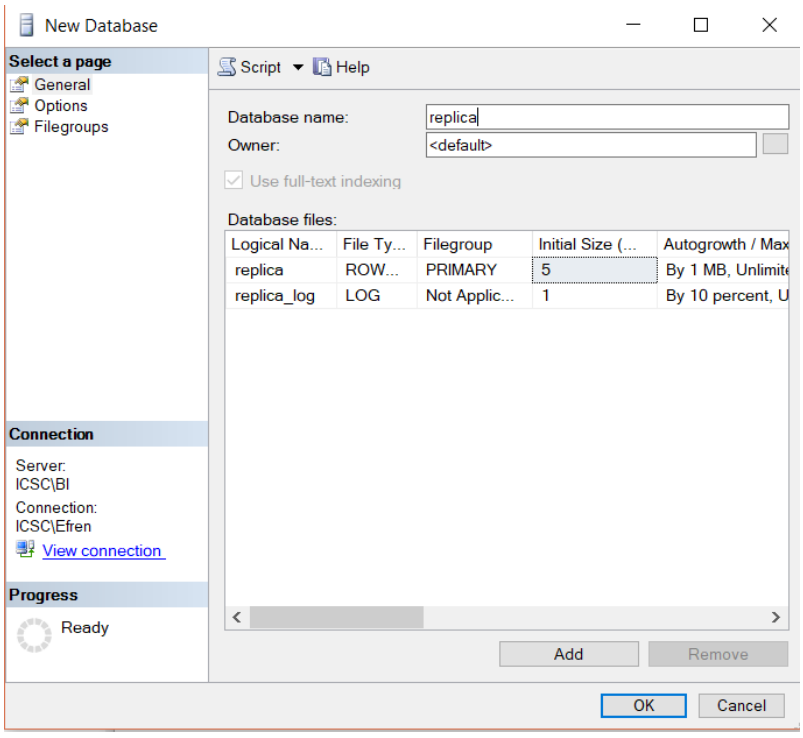


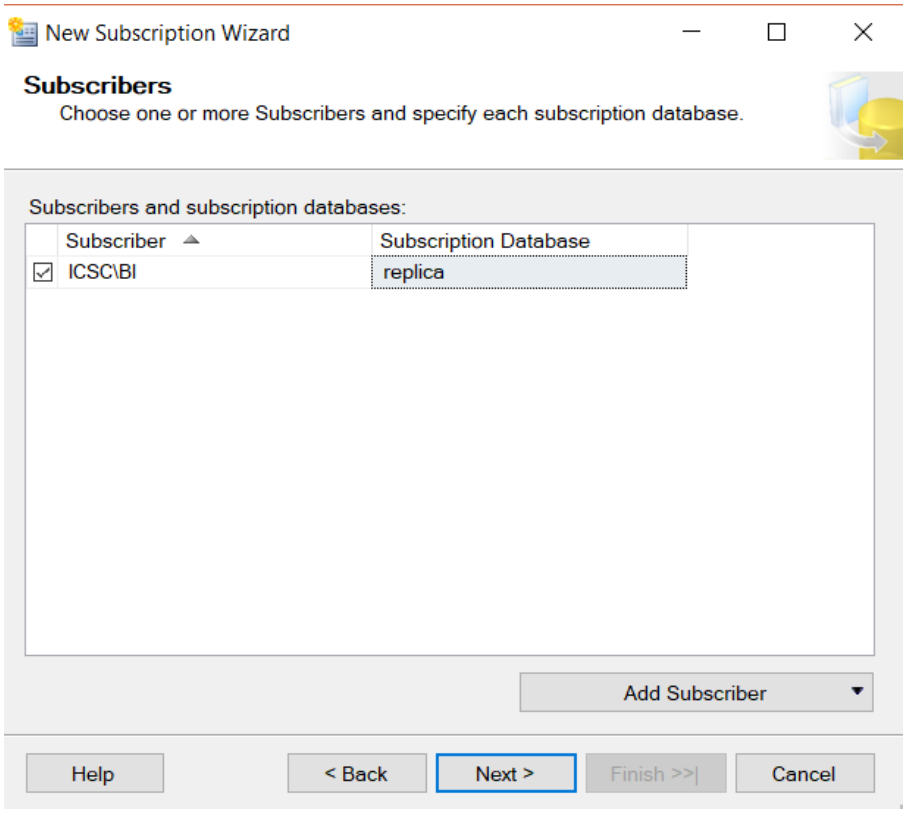


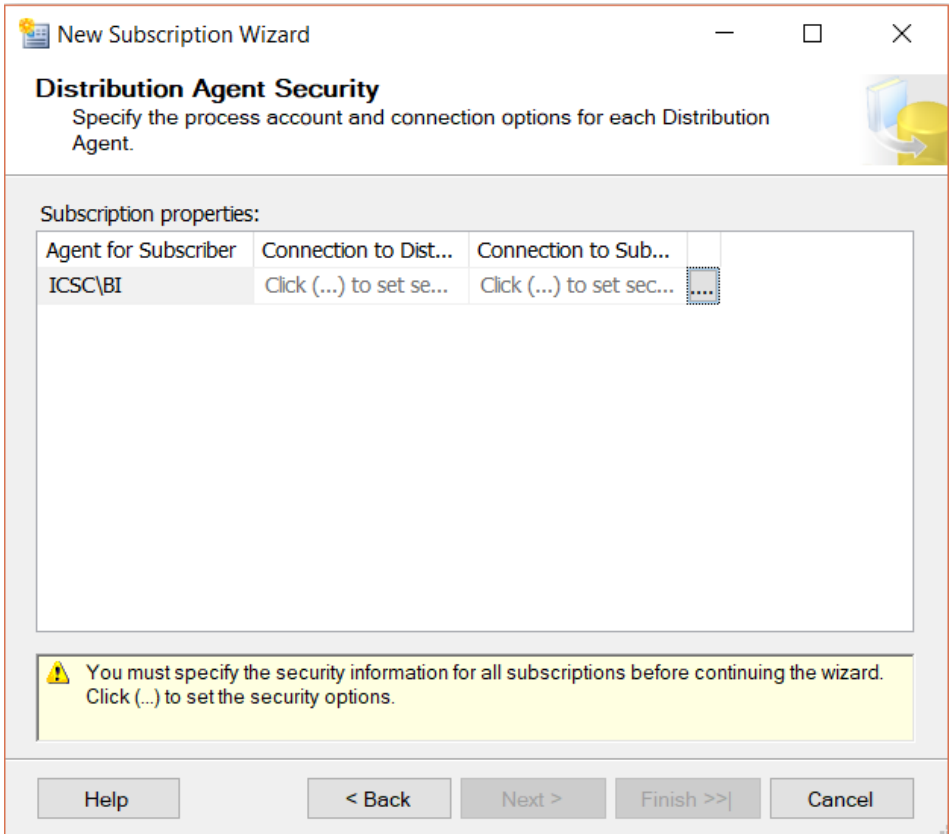

New Subscription Wizard
Publication
Choose the publication for which you want to create one or more subscriptions.
Publisher:
ICSC\BI
Databases and publications:
NORTHWND
customer_publication
Help
< Back
Next >
Finish >>|
Cancel

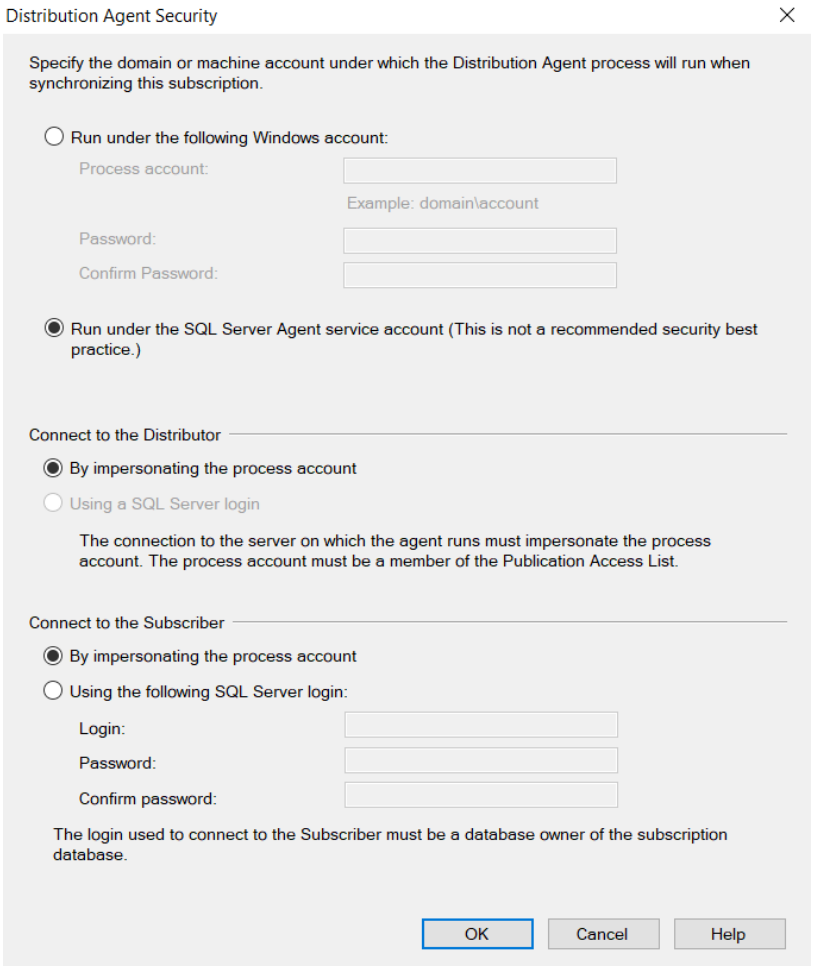

New Subscription Wizard
Distribution Agent Location
Choose where to run the Distribution Agent(s).
For the subscriptions I create in this wizard:
Run all agents at the Distributor, ICSC\BI (push subscriptions)
This option makes it easier to administer the synchronization of subscriptions centrally.
Run each agent at its Subscriber (pull subscriptions)
This option reduces the processing overhead at the Distributor and lets each Subscriber administer the synchronization of its subscription.
Run the wizard more than once if you want some agents to run at the Distributor and some to run at Subscribers.
Help
< Back
Next >
Finish >>|
Cancel

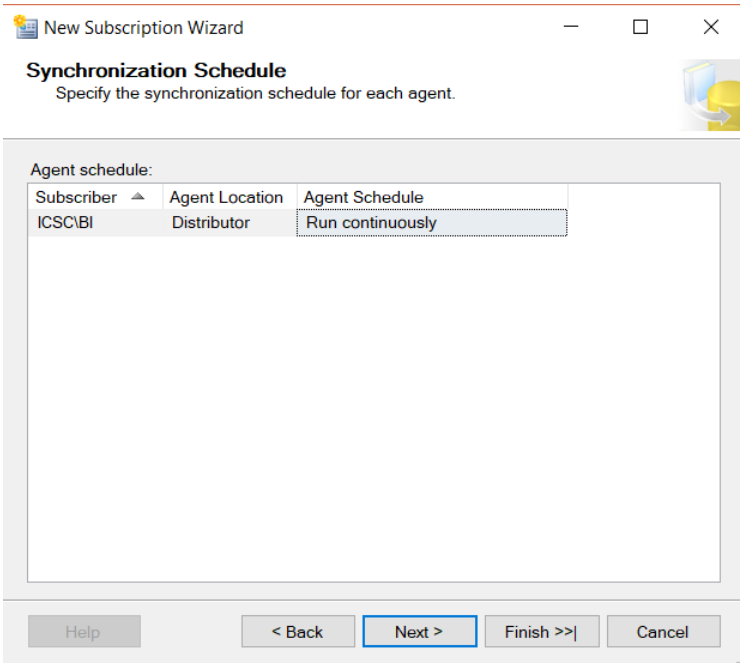

New Subscription Wizard
Subscribers
Choose one or more Subscribers and specify each subscription database.
Subscribers and subscription databases:
Subscriber
Subscription Database
ICSC\BI
<New database...>
<Refresh database list>
AdventureWorks2008R21
BI
BI_DW
BI_SA
clase11
clase15
Add Subscriber
You must enter a subscription database name for Subscriber 'ICSC\BI'.
Help
< Back
Next >
Finish >>|
Cancel

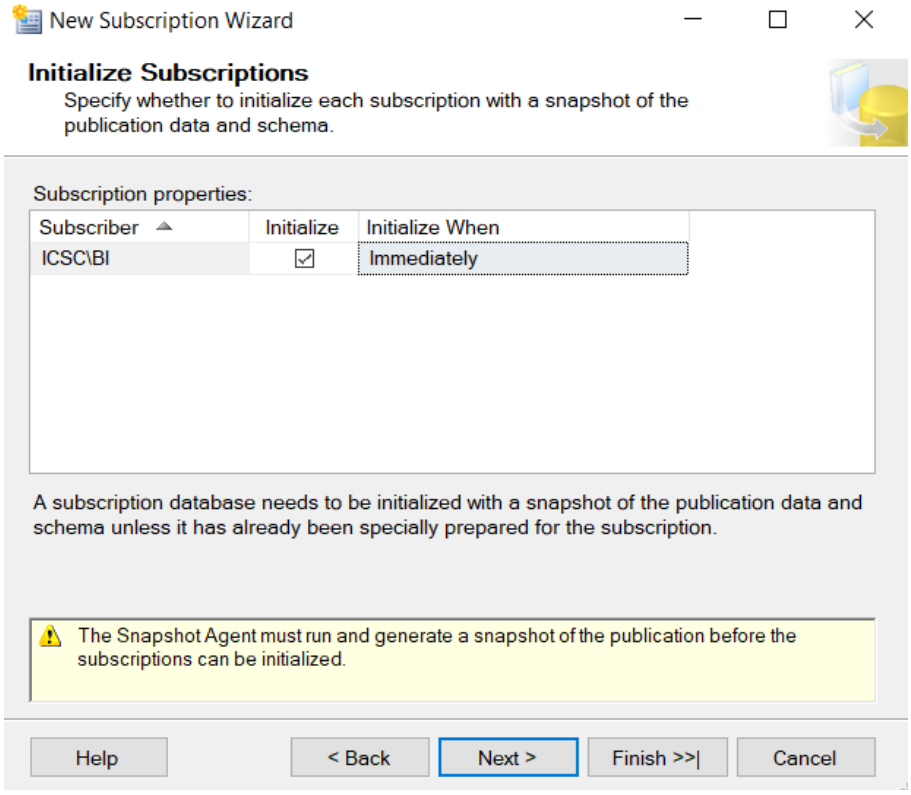

New Database
Select a page
General
Options
Filegroups
Script
Help
Database name:
replica
Owner:
<default>
Use full-text indexing
Database files:
Logical Na...
File Ty...
Filegroup
Initial Size (...
Autogrowth / Max
replica
ROW...
PRIMARY
5
By 1 MB, Unlimit
replica_log
LOG
Not Applic...
1
By 10 percent, U
Connection
Server:
ICSC\BI
Connection:
ICSC\Efren
View connection
Progress
Ready
Add
Remove
OK
Cancel

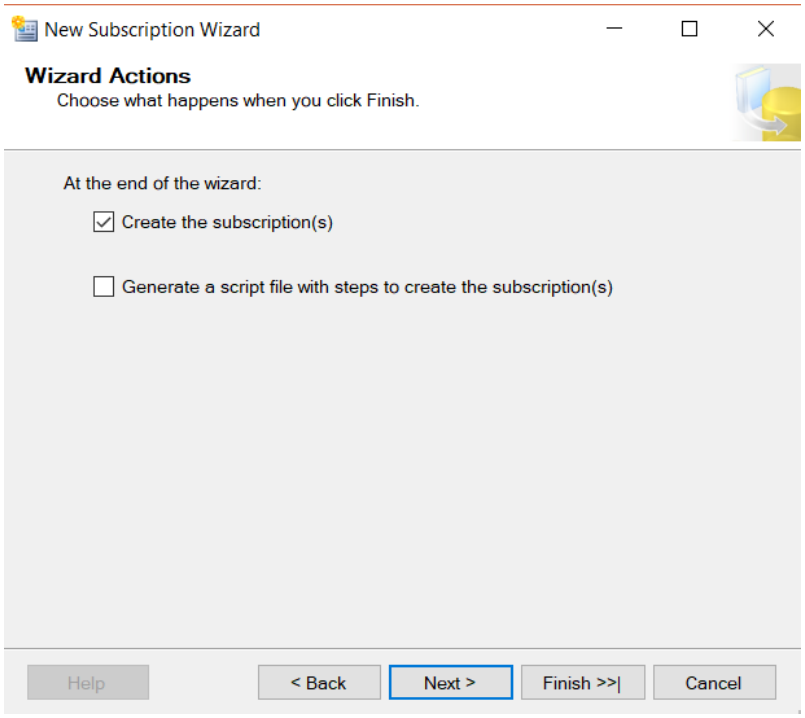

New Subscription Wizard
Subscribers
Choose one or more Subscribers and specify each subscription database.
Subscribers and subscription databases:
Subscriber
Subscription Database
ICSC\BI
replica
Add Subscriber
Help
< Back
Next >
Finish >>|
Cancel

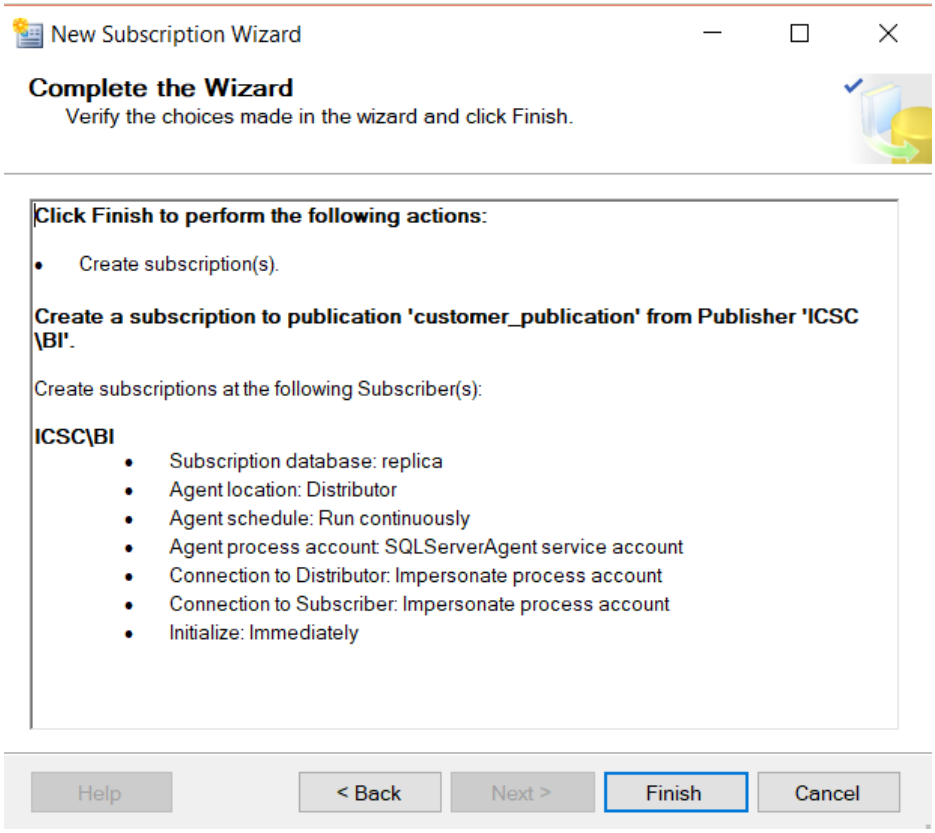

New Subscription Wizard
Distribution Agent Security
Specify the process account and connection options for each Distribution Agent.
Subscription properties:
Agent for Subscriber
Connection to Dist...
Connection to Sub...
ICSC\BI
Click (...) to set se...
Click (...) to set sec...
You must specify the security information for all subscriptions before continuing the wizard.
Click (...) to set the security options.
Help
< Back
Next >
Finish >>|
Cancel

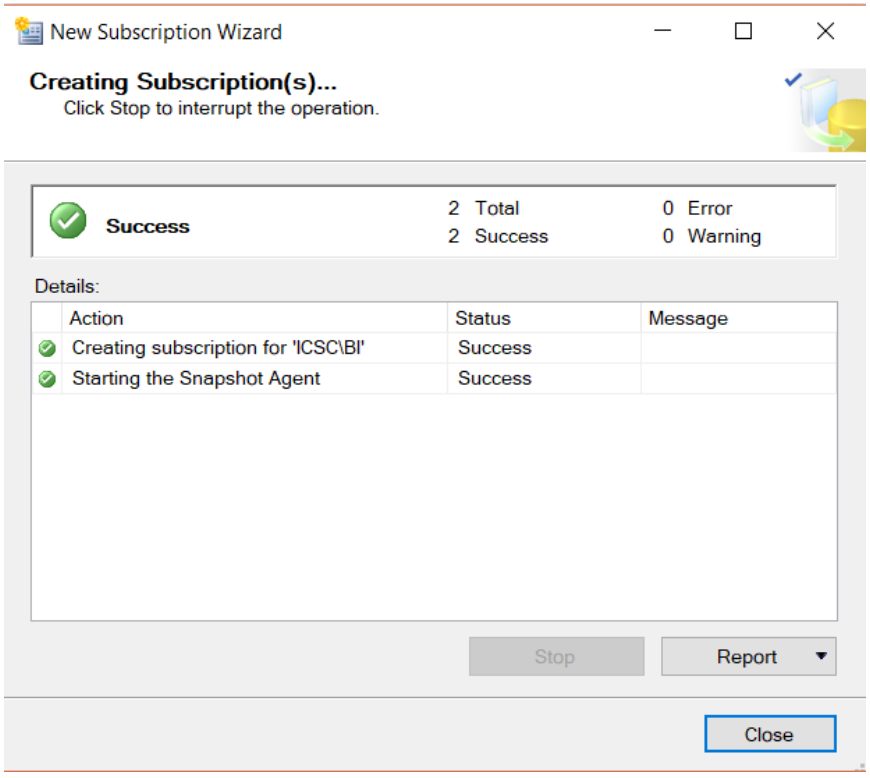

Distribution Agent Security
Specify the domain or machine account under which the Distribution Agent process will run when synchronizing this subscription.
Run under the following Windows account:
Process account:
Example: domain\account
Password:
Confirm Password:
Run under the SQL Server Agent service account (This is not a recommended security best practice.)
Connect to the Distributor
By impersonating the process account
Using a SQL Server login
The connection to the server on which the agent runs must impersonate the process account. The process account must be a member of the Publication Access List.
Connect to the Subscriber
By impersonating the process account
Using the following SQL Server login:
Login:
Password:
Confirm password:
The login used to connect to the Subscriber must be a database owner of the subscription database.
OK
Cancel
Help

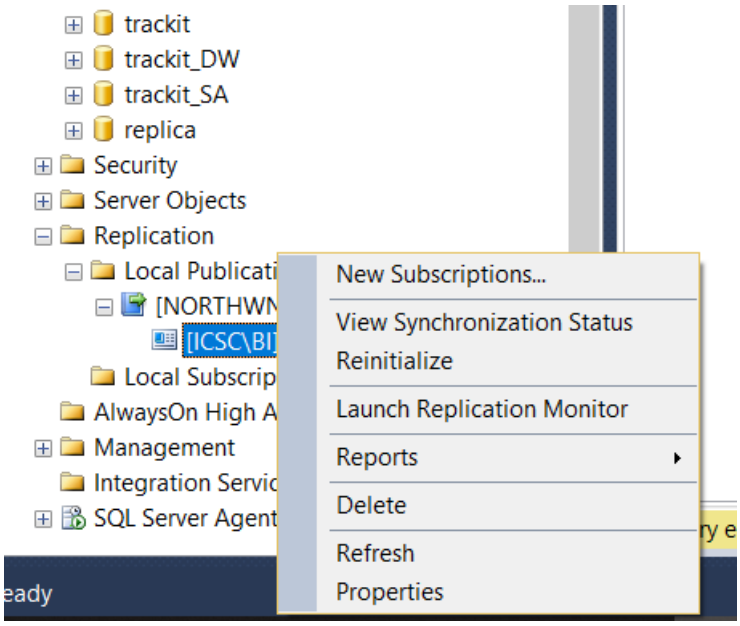

New Subscription Wizard
Synchronization Schedule
Specify the synchronization schedule for each agent.
Agent schedule:
Subscriber
Agent Location
Agent Schedule
ICSC\BI
Distributor
Run continuously
Help
< Back
Next >
Finish >>|
Cancel

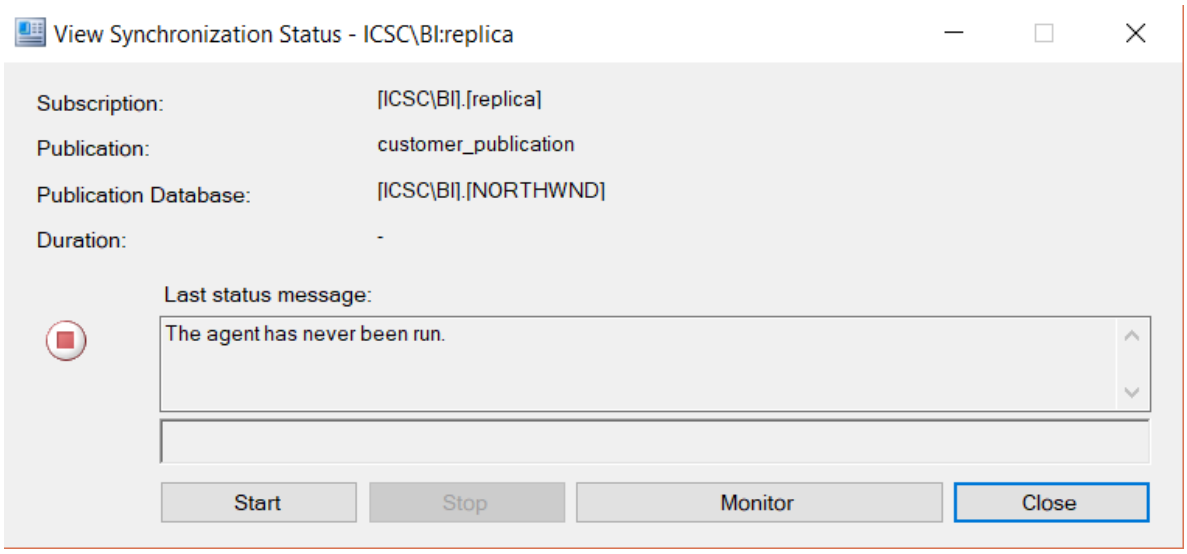

New Subscription Wizard
Initialize Subscriptions
Specify whether to initialize each subscription with a snapshot of the publication data and schema.
Subscription properties:
Subscriber
Initialize
Initialize When
ICSC\BI
Immediately
A subscription database needs to be initialized with a snapshot of the publication data and schema unless it has already been specially prepared for the subscription.
The Snapshot Agent must run and generate a snapshot of the publication before the subscriptions can be initialized.
Help
< Back
Next >
Finish >>|
Cancel

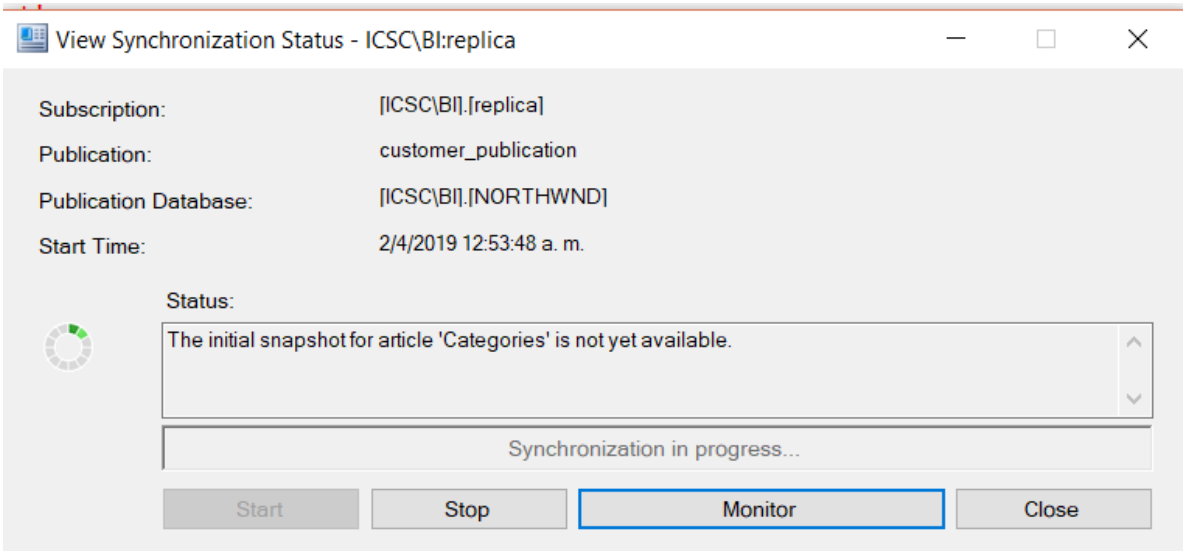

New Subscription Wizard
Wizard Actions
Choose what happens when you click Finish.
At the end of the wizard:
Create the subscription(s)
Generate a script file with steps to create the subscription(s)
Help
< Back
Next >
Finish >>|
Cancel


New Subscription Wizard
Complete the Wizard
Verify the choices made in the wizard and click Finish.
Click Finish to perform the following actions:
Create subscription(s).
Create a subscription to publication 'customer_publication' from Publisher 'ICSC\BI'.
Create subscriptions at the following Subscriber(s):
ICSC\BI
Subscription database: replica
Agent location: Distributor
Agent schedule: Run continuously
Agent process account: SQLServerAgent service account
Connection to Distributor: Impersonate process account
Connection to Subscriber: Impersonate process account
Initialize: Immediately
Help
< Back
Next >
Finish
Cancel


New Subscription Wizard
Creating Subscription(s)...
Click Stop to interrupt the operation.
Success
2 Total
2 Success
0 Error
0 Warning
Details:
Action
Status
Message
Creating subscription for 'ICSC\BI'
Success
Starting the Snapshot Agent
Success
Stop
Report
Close


trackit
trackit_DW
trackit_SA
replica
Security
Server Objects
Replication
Local Publicati
[NORTHWN
[ICSC\BI
Local Subscrip
AlwaysOn High A
Management
Integration Servic
SQL Server Agent
eady
New Subscriptions...
View Synchronization Status
Reinitialize
Launch Replication Monitor
Reports
Delete
Refresh
Properties


View Synchronization Status - ICSC\BI:replica
Subscription:
[ICSC\BI].[replica]
Publication:
customer_publication
Publication Database:
[ICSC\BI].[NORTHWND]
Duration:
-
Last status message:
The agent has never been run.
Start
Stop
Monitor
Close


View Synchronization Status - ICSC\BI:replica
Subscription:
[ICSC\BI].[replica]
Publication:
customer_publication
Publication Database:
[ICSC\BI].[NORTHWND]
Start Time:
2/4/2019 12:53:48 a. m.
Status:
The initial snapshot for article 'Categories' is not yet available.
Synchronization in progress...
Start
Stop
Monitor
Close

Log Shipping

Esencialmente Log Shipping se refiere al proceso de respaldar automáticamente la base de datos y el log de transacciones, restaurándolos en un servidor de respaldo. Esto mantiene a los dos equipos en sincronía en caso de que el servidor de producción tenga alguna falla. Para poder continuar la operación, lo que se tendría que hacer es apuntar a todos los usuarios al nuevo equipo.

Beneficios de usar Log Shipping:

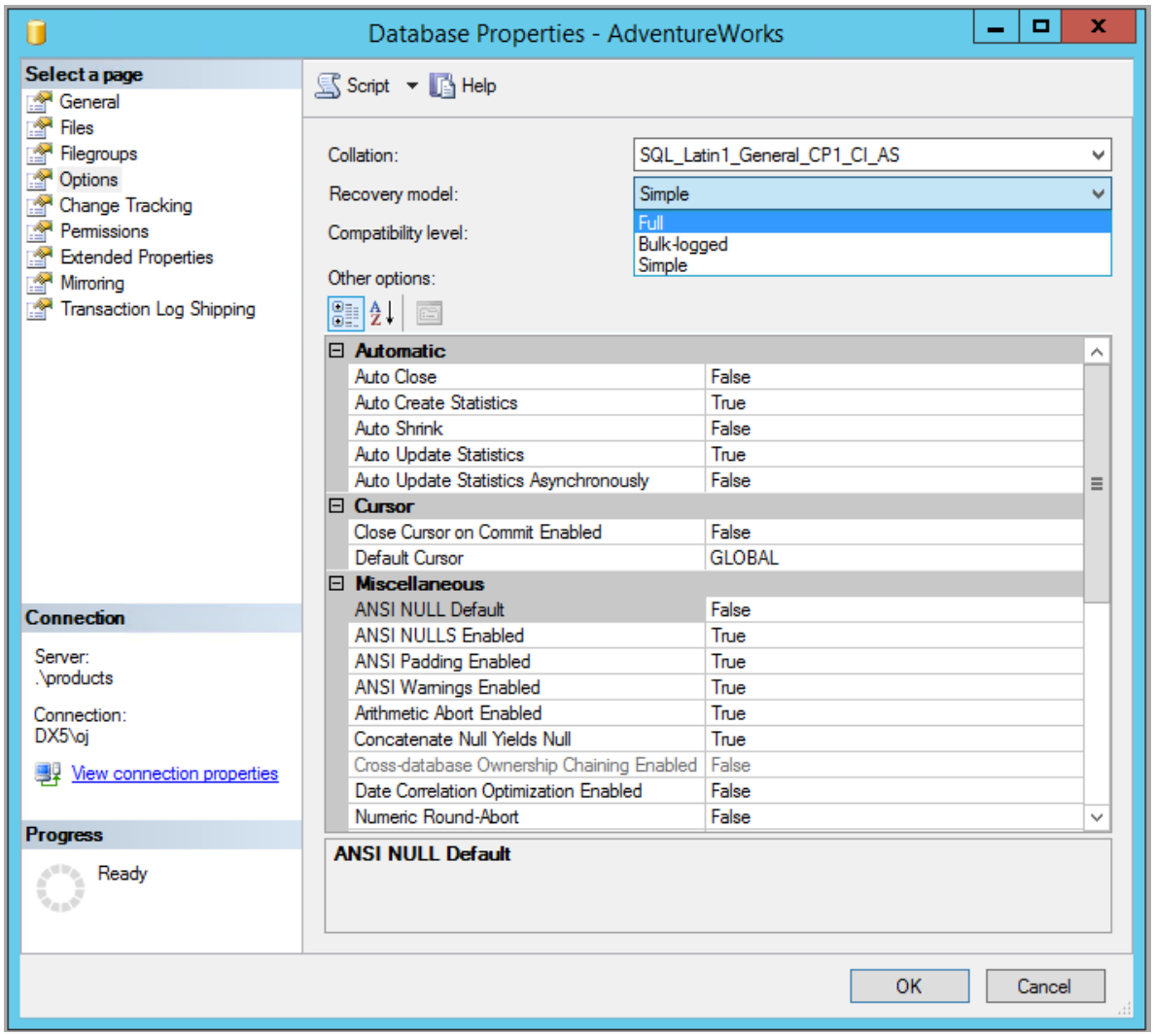
- No requiere de gastos de hardware o software
- Es muy sencilla su implementación
- Es muy sencillo su mantenimiento
- El cambio de un equipo al otro es sencillo

Problemas al usar Log Shipping:

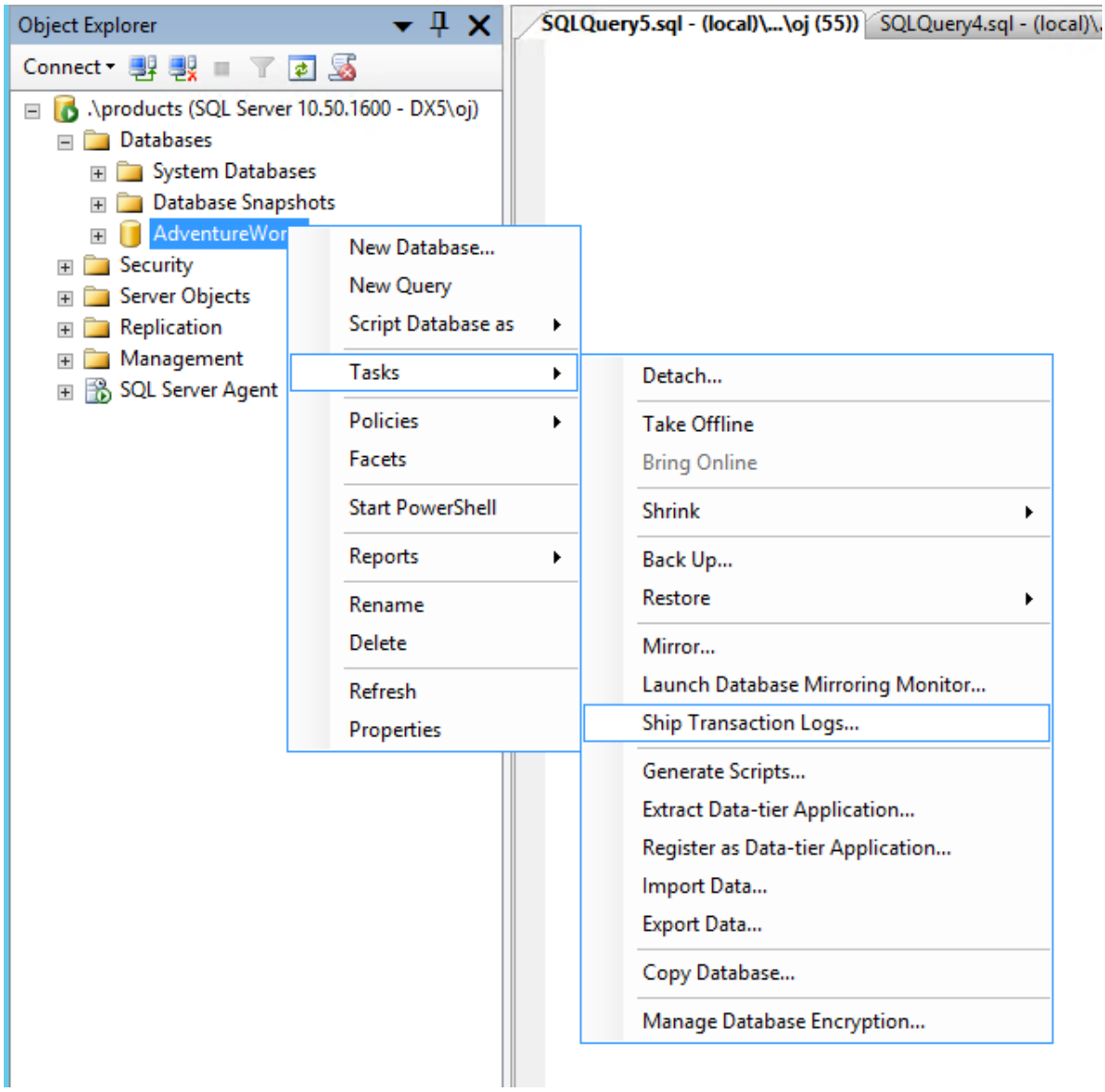
- El cambio de un servidor a otro no es de manera automática
- Existe perdida de datos, dependiendo de la frecuencia en que se ejecute el log shipping.
- La base de datos del servidor de respaldo no puede estar en uso mientras se tenga habilitado el log shipping
- Cuando ocurra una falla en el quipo primario, se tienen que realizar una de las siguientes opciones: Renombrar el servidor de respaldo y cambiar su dirección IP con las de producción o apuntar todos los aplicativos al servidor de respaldo.

4. Vamos a conectarnos a él server primario.

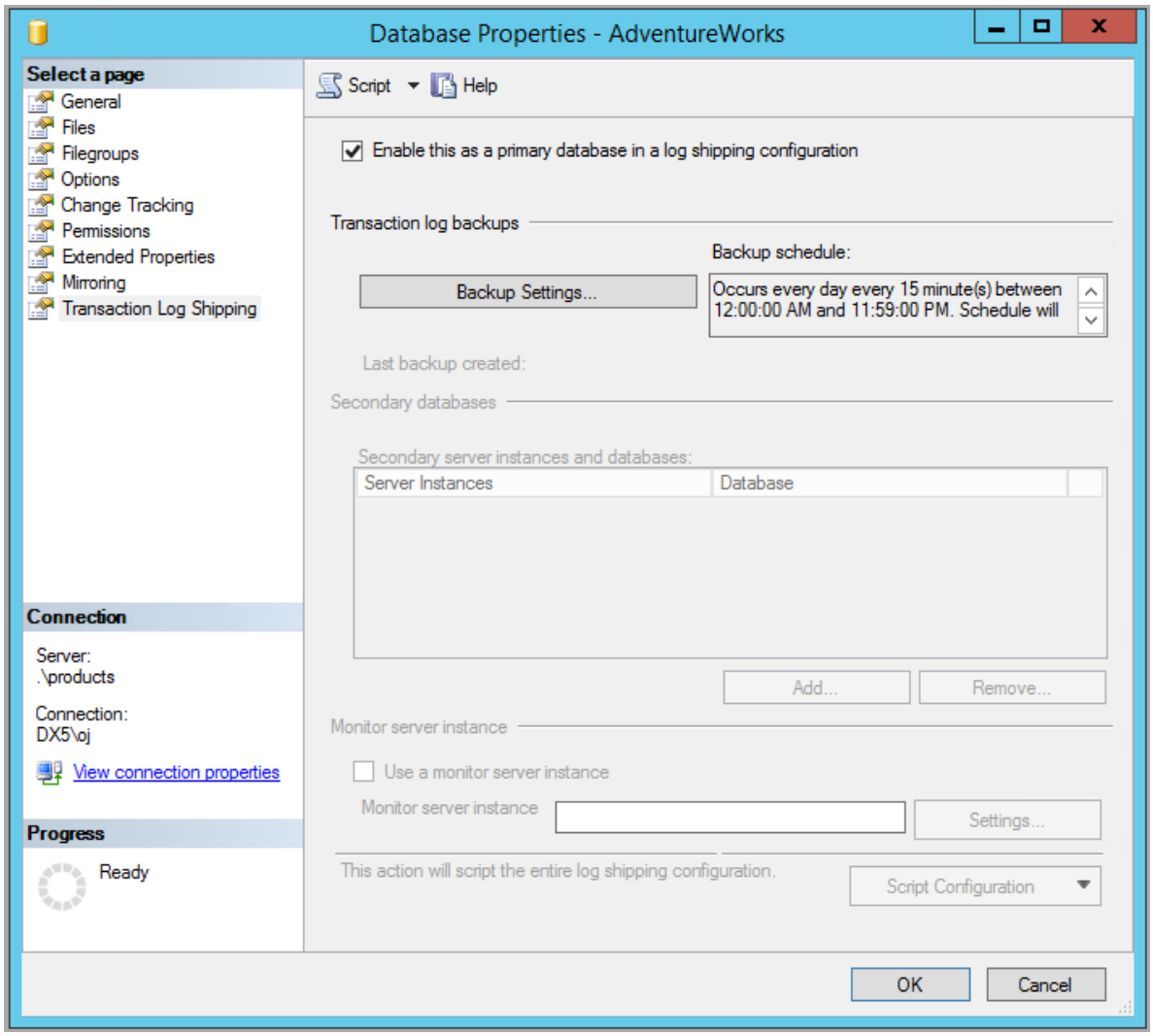
5. Luego aseguraremos que la base de datos está en el modelo de recuperación Full o Bulk-logged.

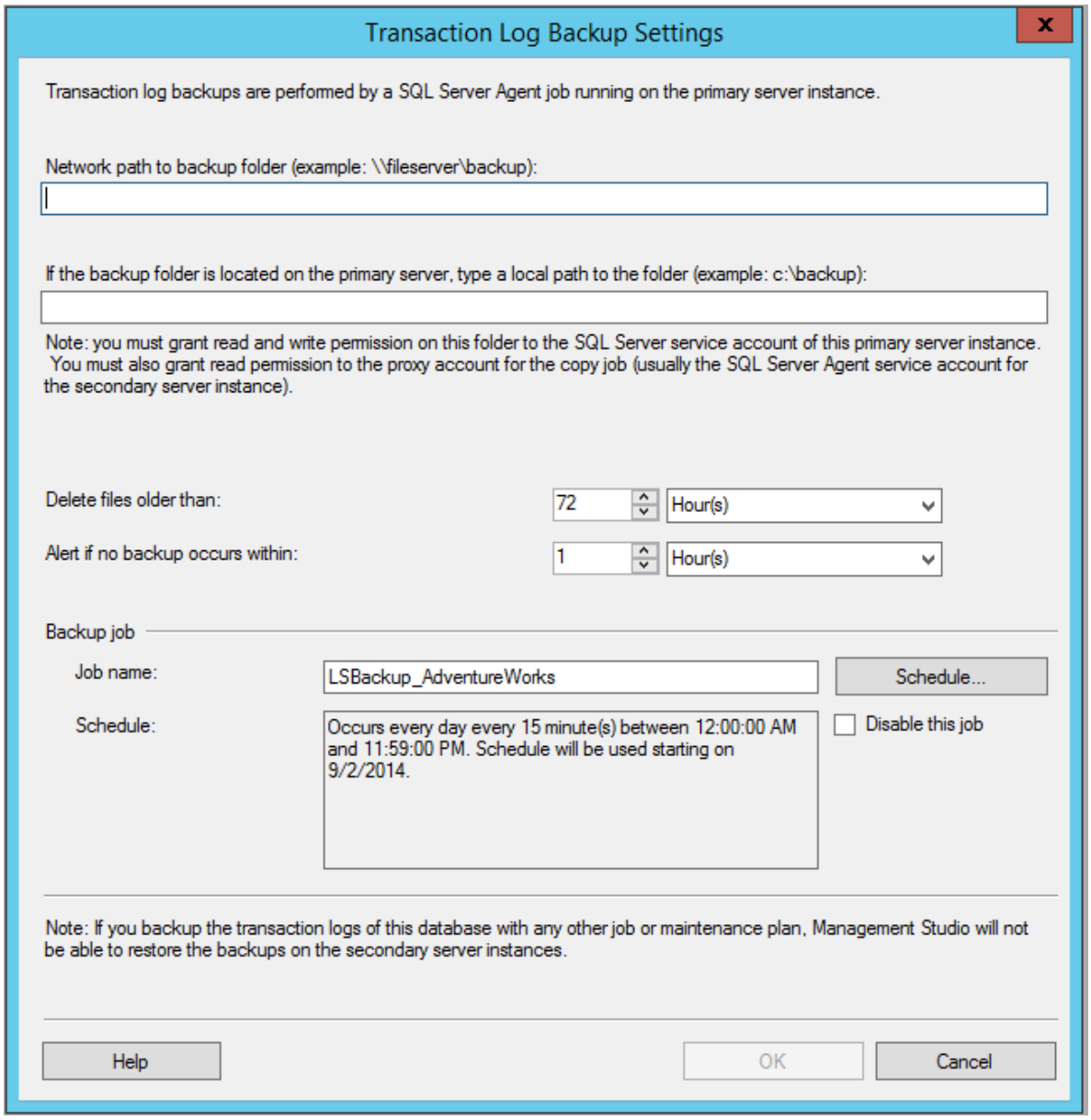


6. Colocaremos como habilitado la opción de Log Shipping.

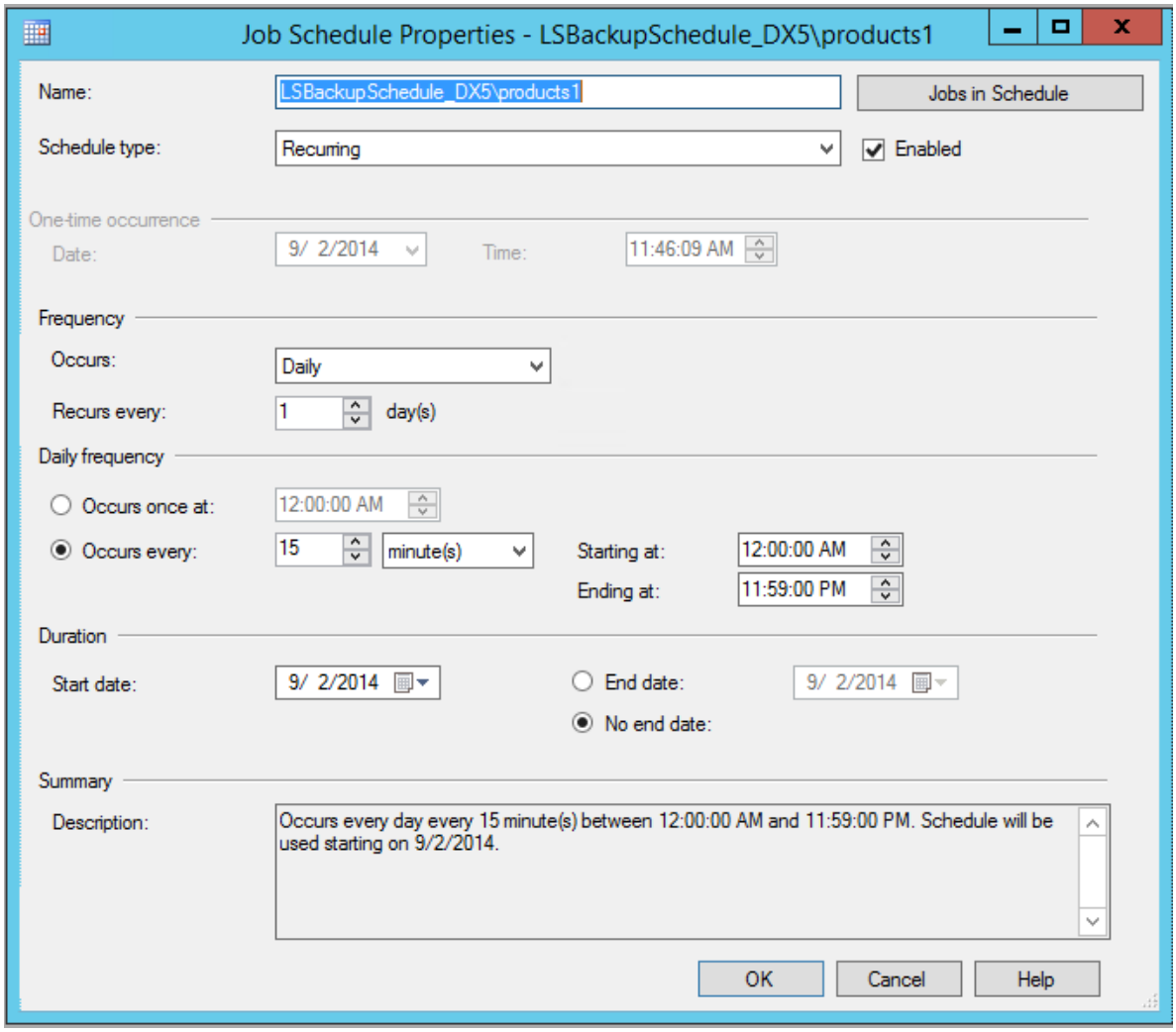


7. En este paso definiremos la configuración de copia de seguridad (es decir, la carpeta de copia de seguridad, política de eliminación, de alerta, y nombre de trabajo). Es importante utilizar un recurso compartido en red, que se puede escribir desde el servidor primario y legible desde el servidor secundario.

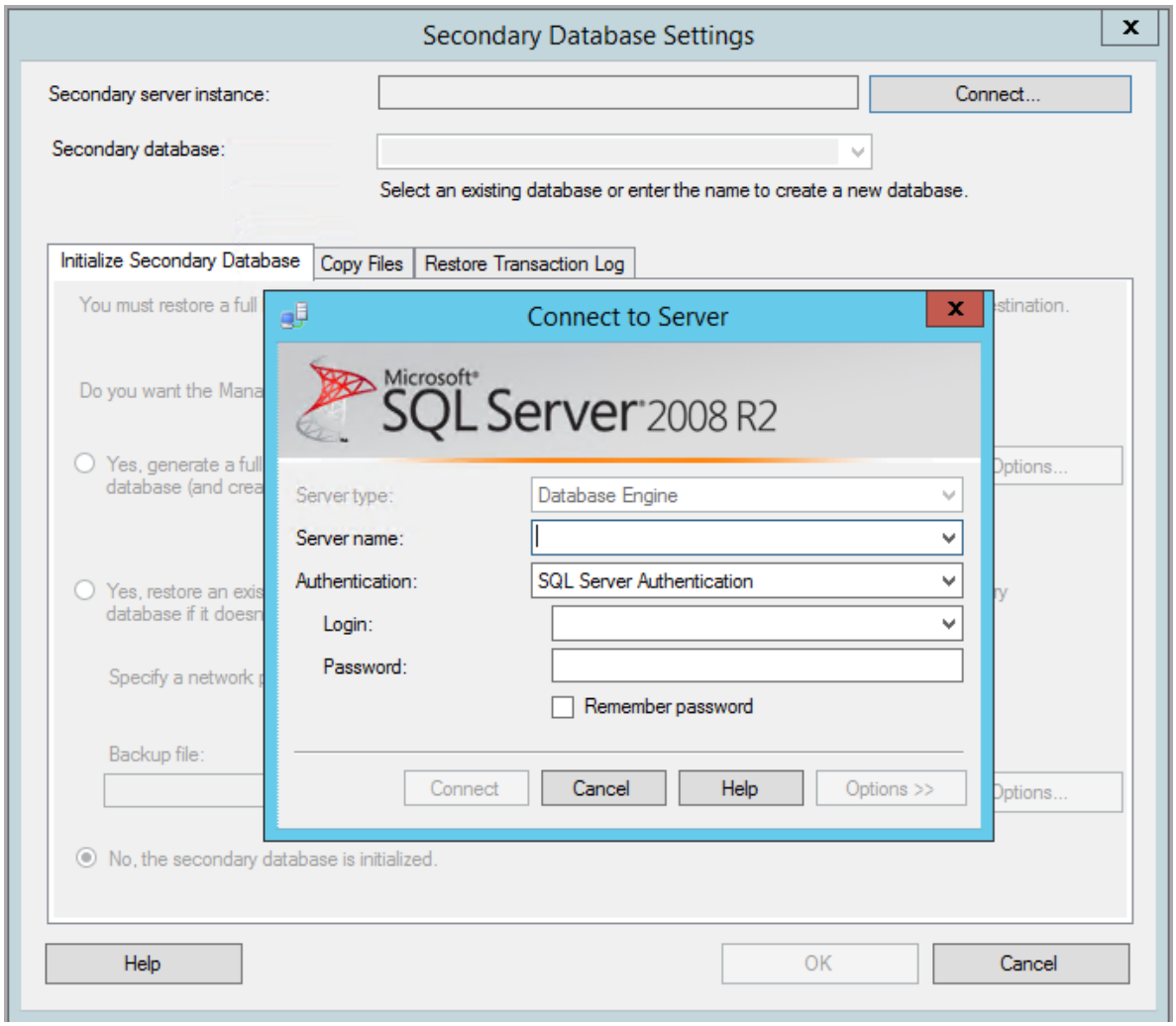

Database Properties - AdventureWorks
Select a page
General
Files
Filegroups
Options
Change Tracking
Permissions
Extended Properties
Mirroring
Transaction Log Shipping
Script
Help
Enable this as a primary database in a log shipping configuration
Transaction log backups
Backup schedule:
Backup Settings...
Occurs every day every 15 minute(s) between 12:00:00 AM and 11:59:00 PM. Schedule will
Last backup created:
Secondary databases
Secondary server instances and databases:
Server Instances
Database
Add...
Remove...
Monitor server instance
Use a monitor server instance
Monitor server instance
Settings...
This action will script the entire log shipping configuration.
Script Configuration
Connection
Server:
.\products
Connection:
DX5\oj
View connection properties
Progress
Ready
OK
Cancel



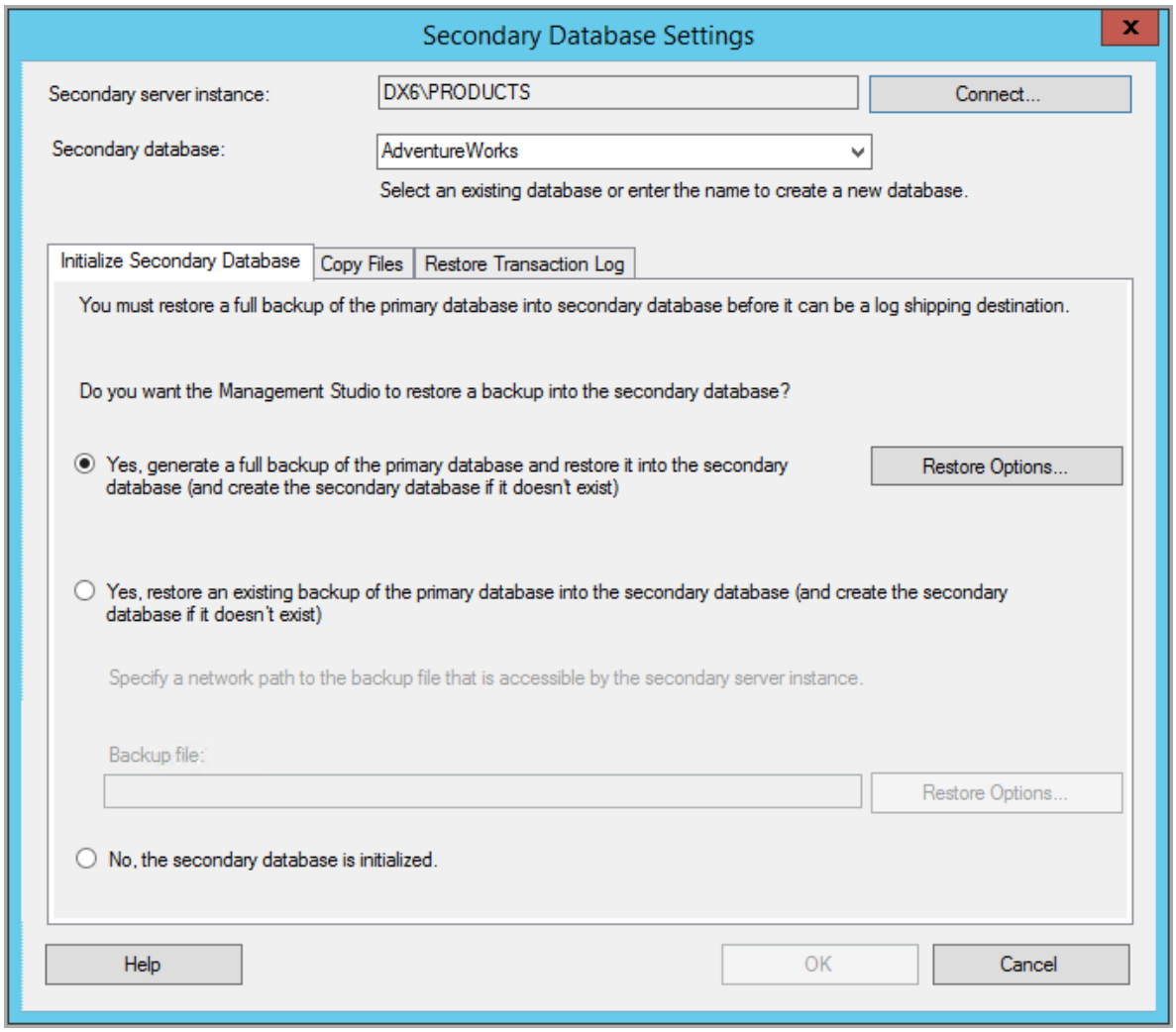
8. Ahora colocaremos la programación de la copia de seguridad.



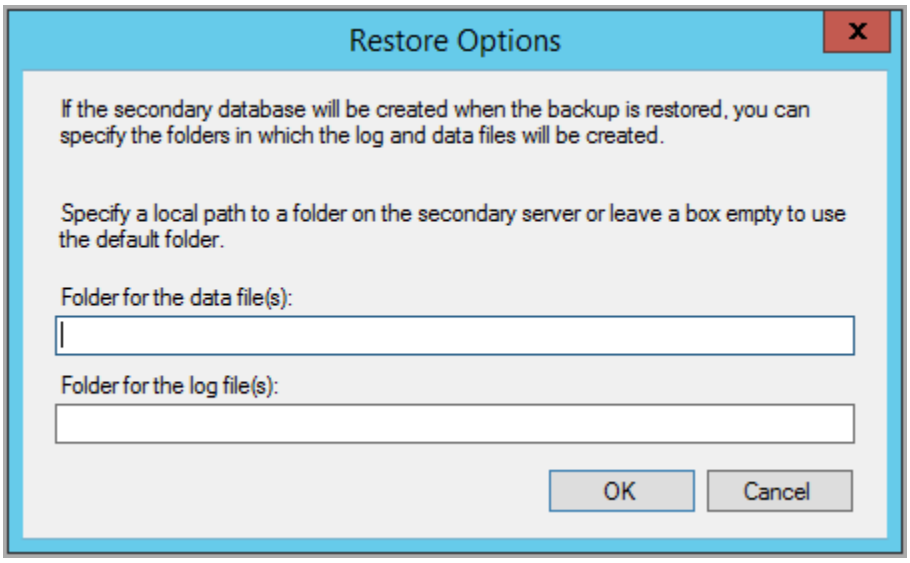
9. Definiremos el servidor secundario. Con el fin de conectar correctamente al servidor secundario, debemos asegurar que el puerto de la instancia este escuchando y que los puertos del SQLBrowser además de abiertos también estén escuchando.



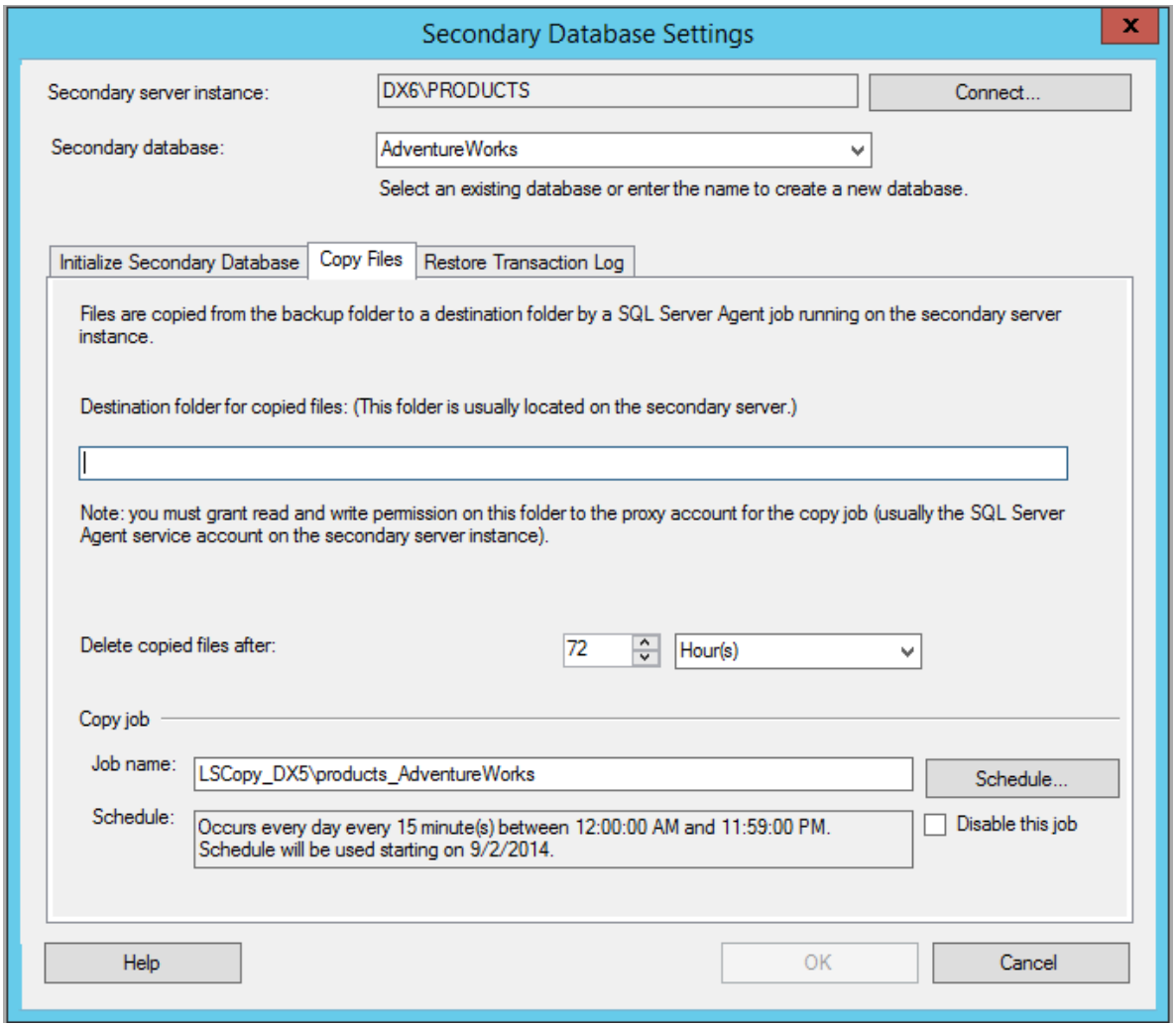
10. Inicializamos la instancia secundaria.



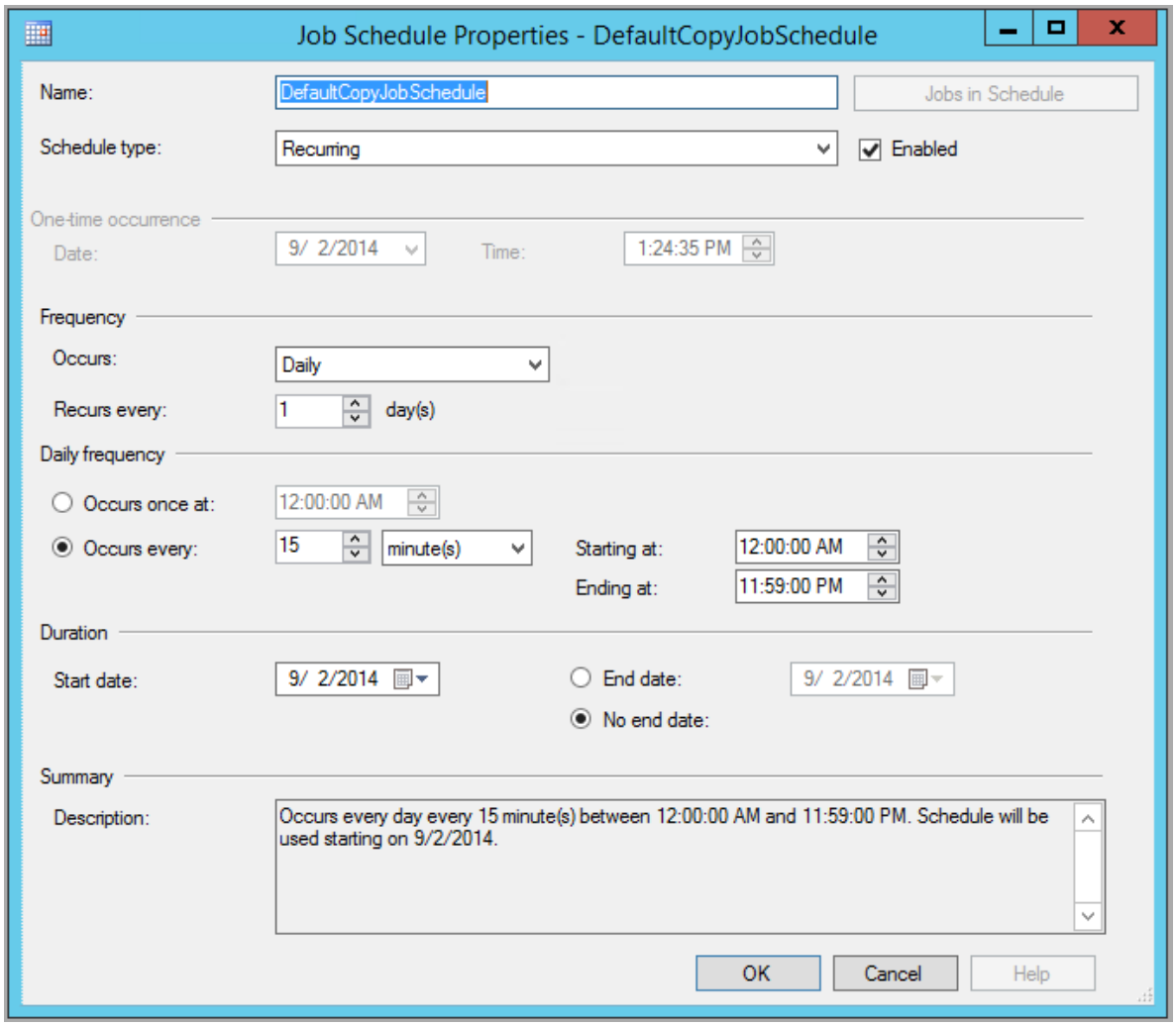
11. Si se elige la opción #1, es necesario definir la ubicación de los datos de base de datos e inicie sesión en el servidor secundario.



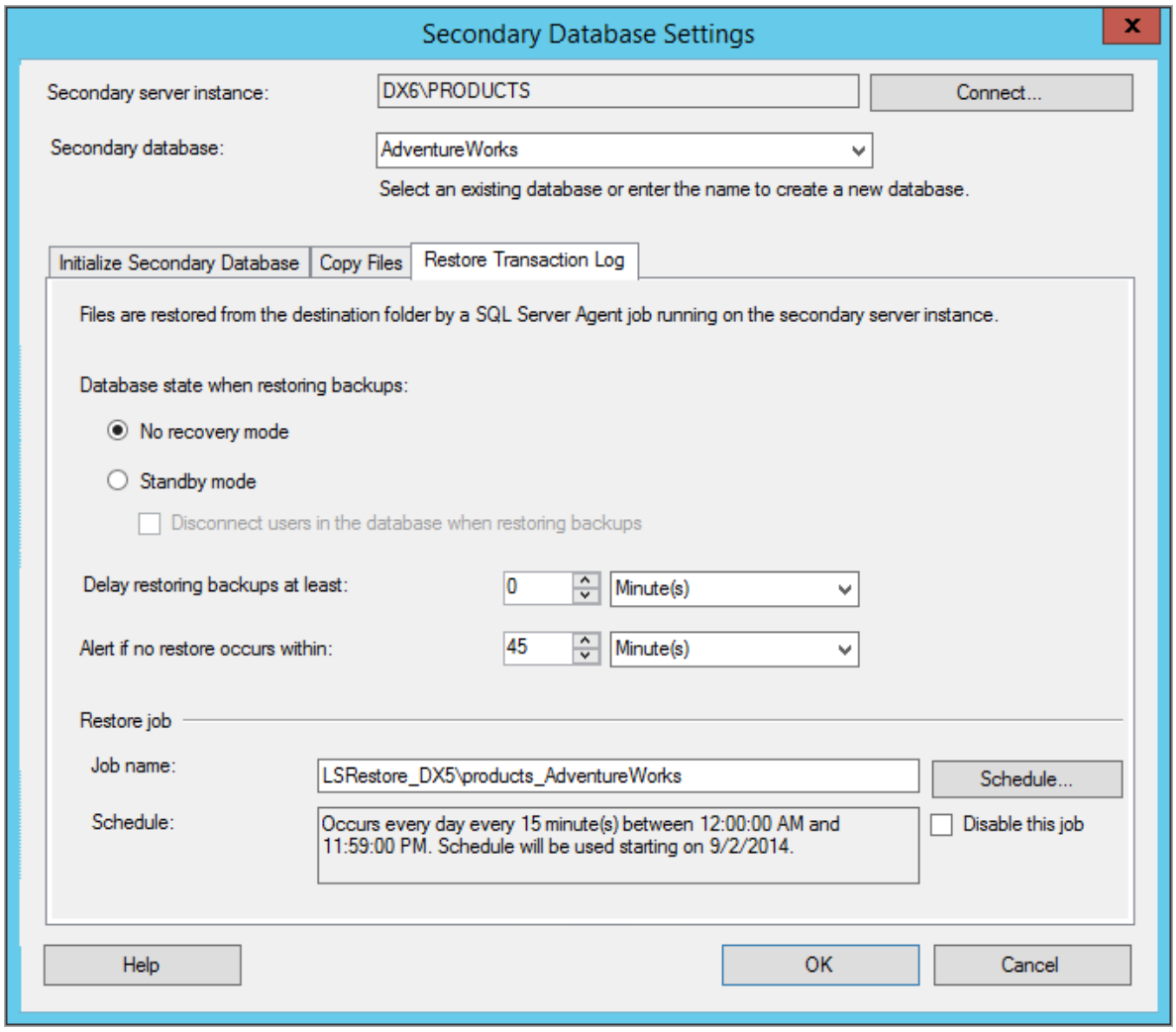
12. Definimos el almacenamiento de datos en el servidor secundario para copiar los archivos de copia de seguridad.



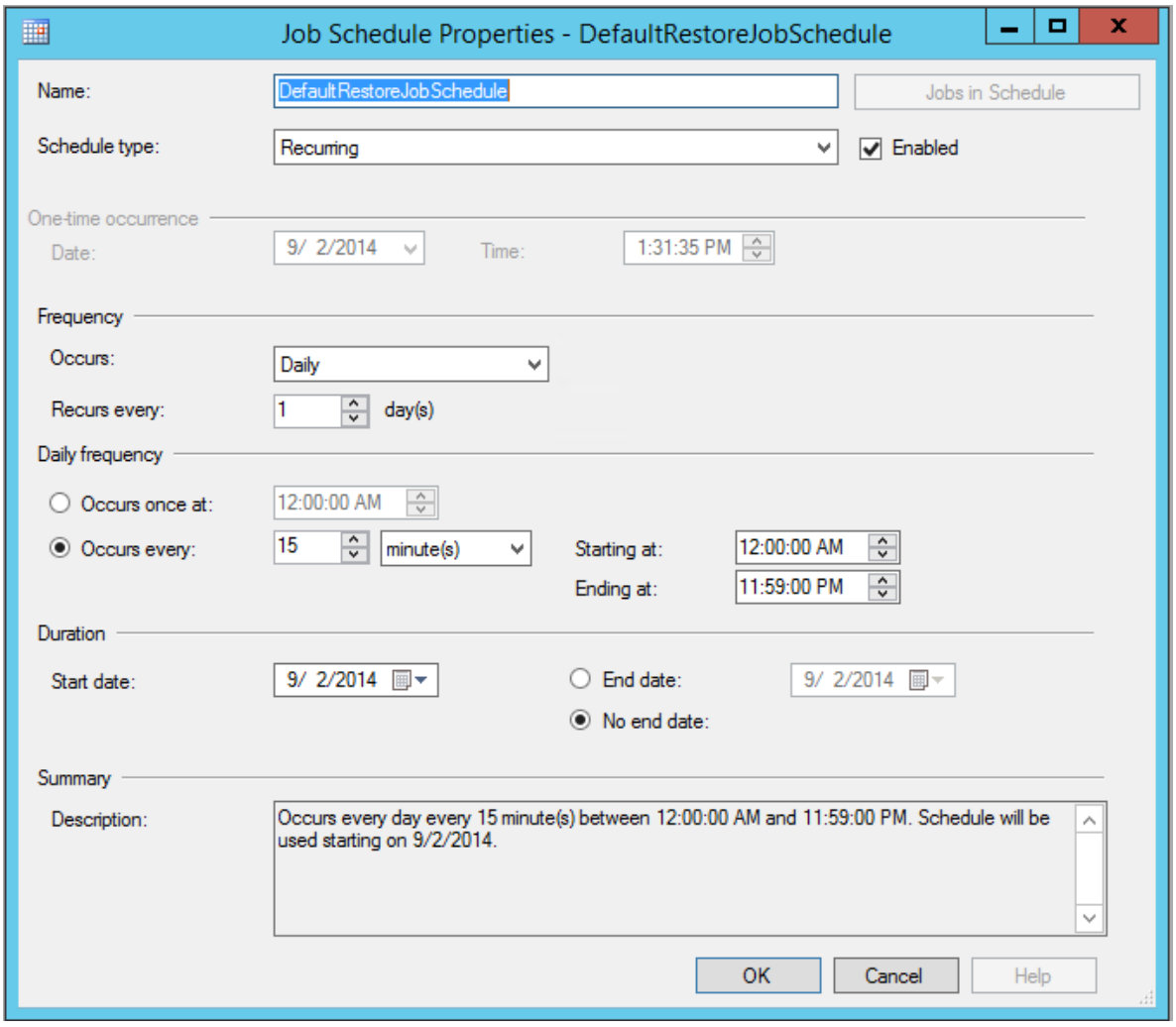
13. Asignamos el calendario de restauración en el servidor secundario.



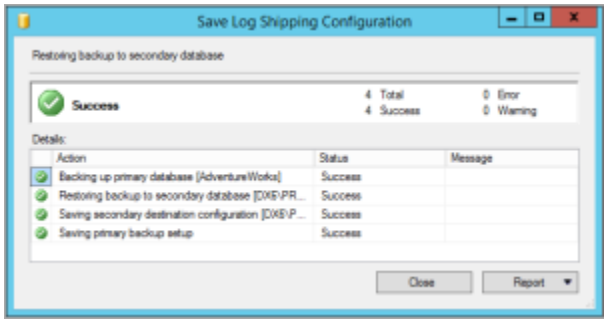
14. Elegimos el modo de restauración de recuperación de los logs: **No recovery** - la base de datos es inaccesible; **Standby** - la base de datos es accesible, pero los usuarios se desconectan cuando la restauración de copias de seguridad se activa.



15. Definimos los registros de transacciones a restaurar sobre la programación en el servidor secundario.



16. Hacemos un clic en el botón Aceptar para confirmar la configuración **log shipping.** Si todo está configurado correctamente, deberíamos obtener un diálogo de progreso exitoso.



Mirroring

Base de Datos Espejo (Database Mirroring) es una configuración donde dos o tres servidores de dase de datos, ejecutándose en equipos independientes, cooperan para mantener copias de la base de datos y archivo de registro de transacciones (log).

Tanto el servidor primario como el servidor espejo mantienen una copia de la base de datos y el registro de transacciones, mientras que el tercer servidor, llamado el servidor testigo, es usado cuando es necesario determinar cuál de los otros dos servidores puede tomar la propiedad de la base de datos. El testigo no mantiene una copia de la base de datos. La configuración de los tres servidores de base de datos (el primario, el espejo y el testigo) es llamado Sistema Espejo (Mirroring System), y el servidor primario y espejo juntos son llamados Servidores Operacionales (Operational Servers) o Compañeros (Partners).

Beneficios de usar Mirroring

- Mirroring esta técnica fue introducida en la edición 2005 de sql server.
- Se puede decir que es la evolución del log shipping.
- La principal diferencia es el tiempo de espera para tener la información más actual el espejeo es un recurso más rápido que el log shipping.
- El servidor en stand by automáticamente puede levantarse en caso de que el servidor principal fallara.

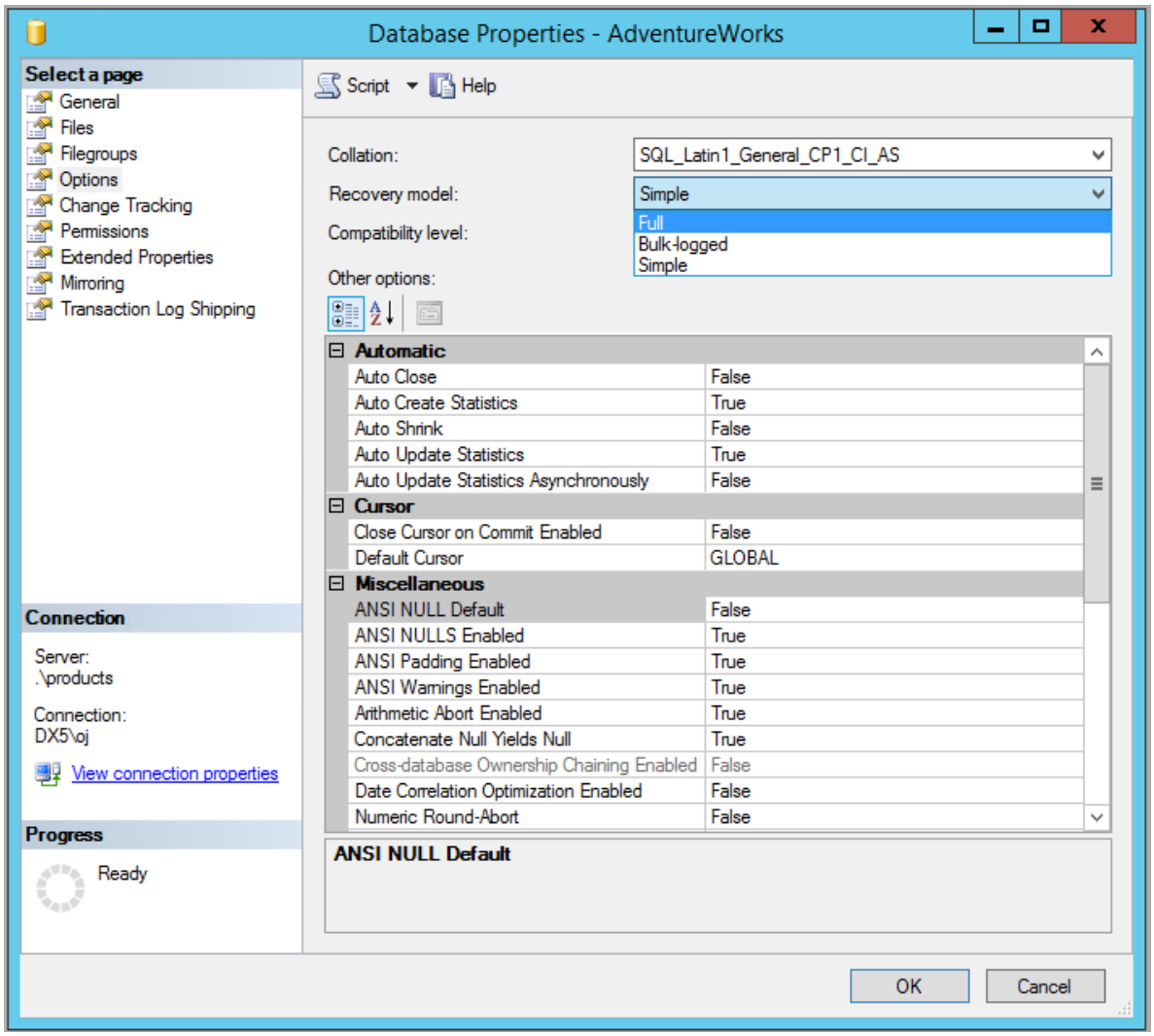
La creación de Mirroring tiene 2 modalidades:

- Asíncrono:
    - Confirma una transacción sin esperar a la instancia espejo para escribir el registro en el disco.
- Sincrónica:
    - Una transacción debe estar comprometida en tanto el principal como en la instancia espejo antes de ser terminada.

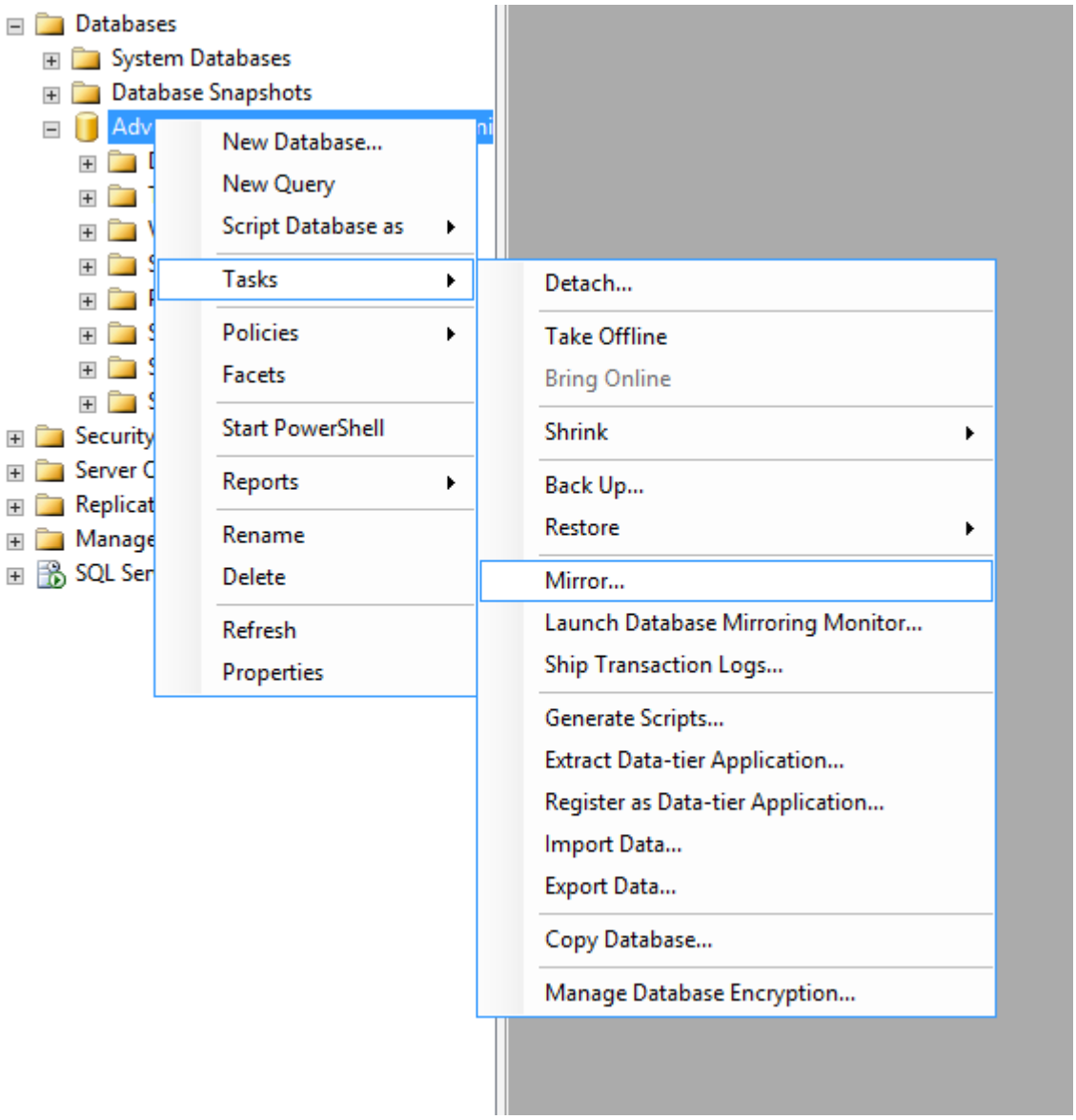
Implementación Mirroring

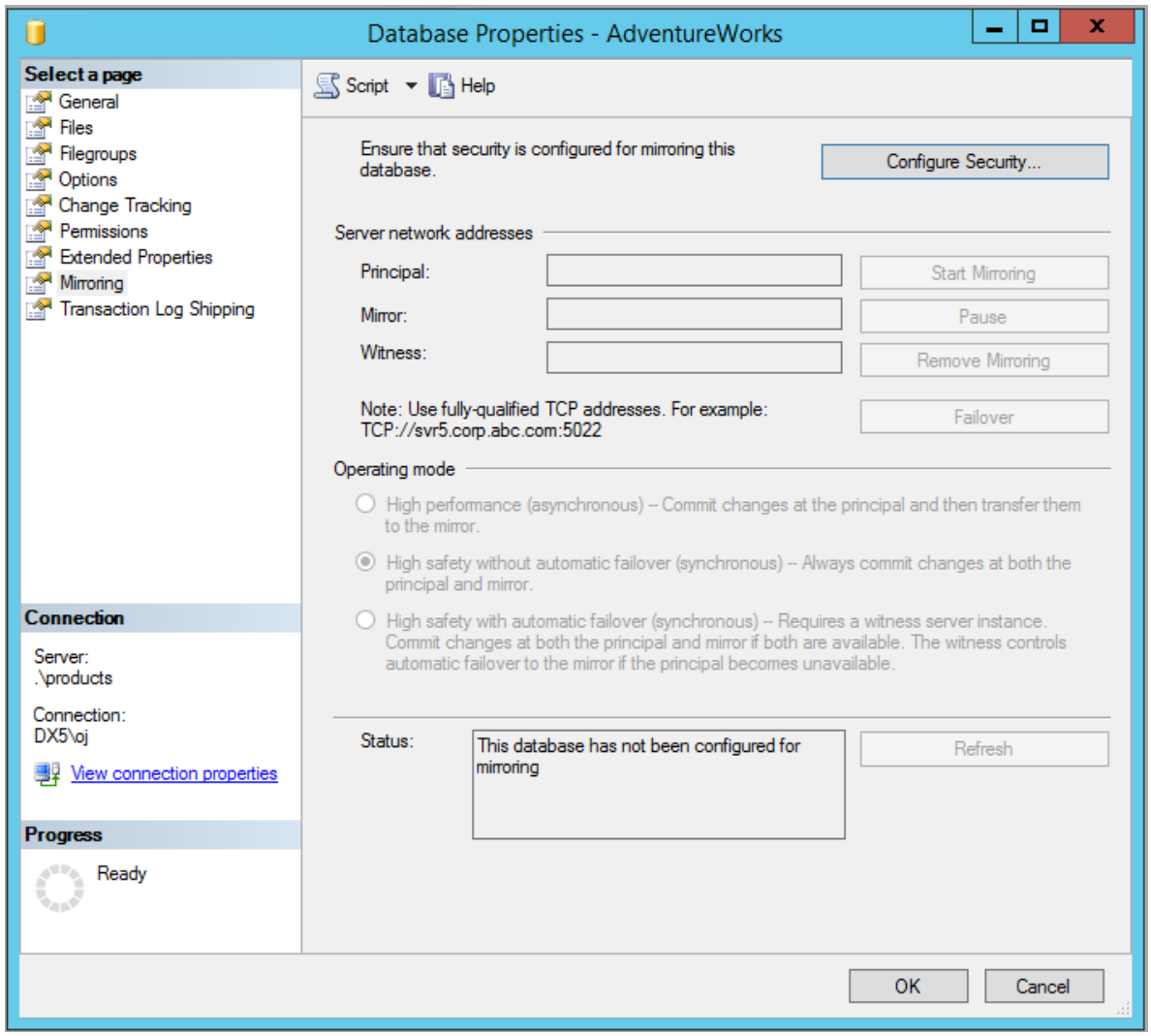
1. Conectar con el servidor primario.

2. Asegúrese de que la base de datos está en el modo Full recovery
3. Realizar el backup en los servidores mirror y witness
    a. Suggestion 1: Make sure that on Mirror Server the database is restored with NO RECOVERY option (This is the most common problem).



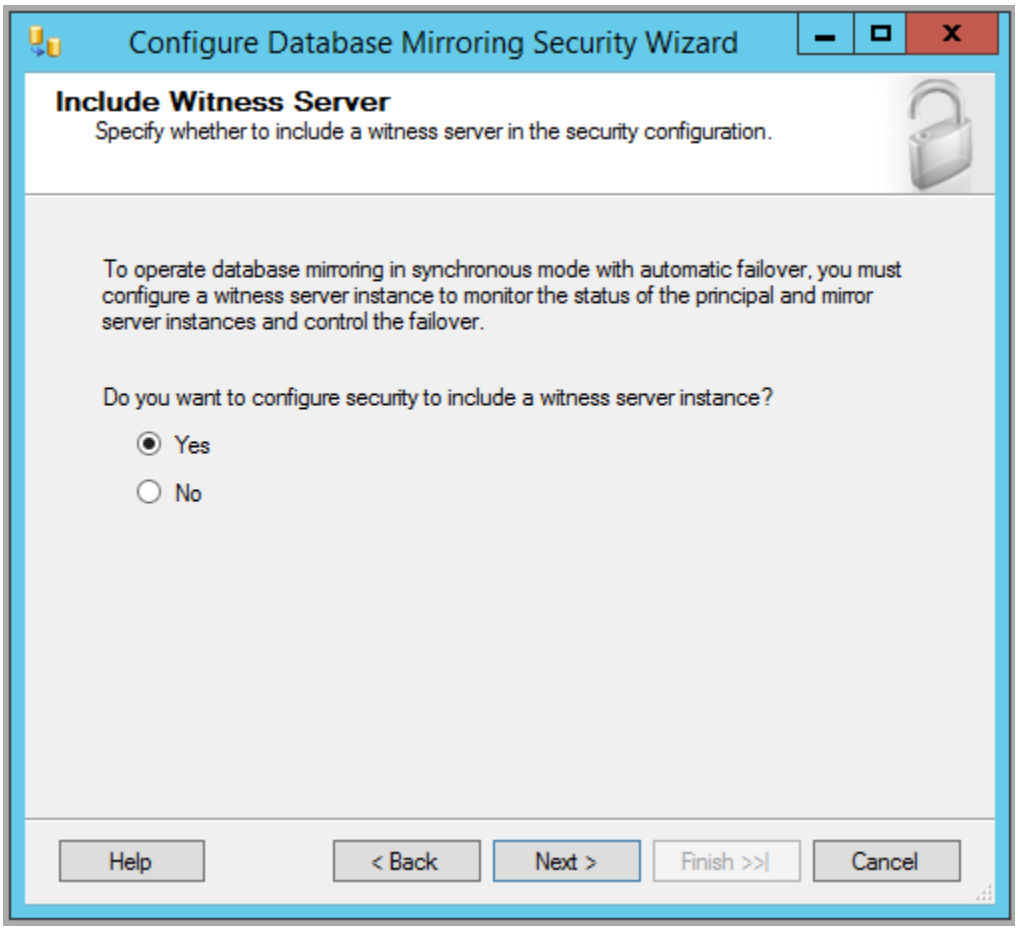
4. Habilitar la creación del mirroring de la base de datos.


Databases
System Databases
Database Snapshots
Adv
Security
Server C
Replicat
Manage
SQL Ser
New Database...
New Query
Script Database as
Tasks
Policies
Facets
Start PowerShell
Reports
Rename
Delete
Refresh
Properties
Detach...
Take Offline
Bring Online
Shrink
Back Up...
Restore
Mirror...
Launch Database Mirroring Monitor...
Ship Transaction Logs...
Generate Scripts...
Extract Data-tier Application...
Register as Data-tier Application...
Import Data...
Export Data...
Copy Database...
Manage Database Encryption...

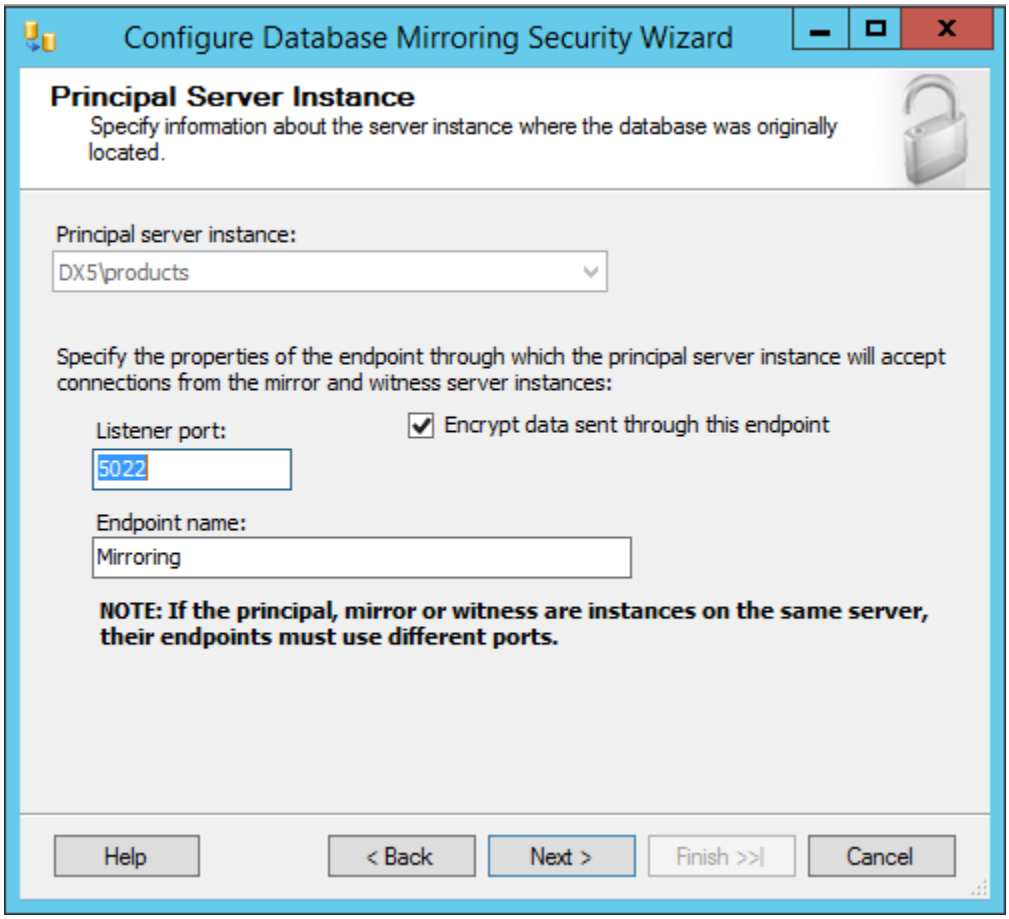


5. Luego configuramos la seguridad de la base de datos mirror.

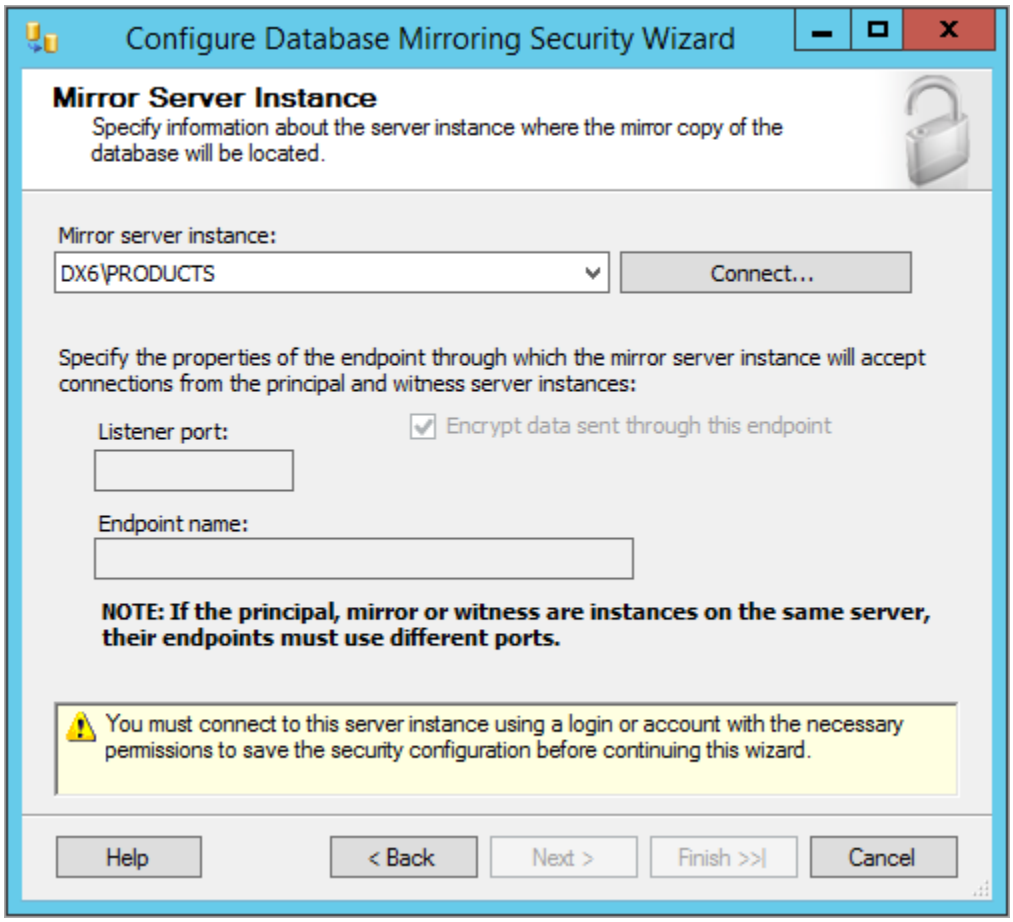
6. Definimos un servidor testigo, se utiliza para la conmutación automática por algún error durante la comunicación. Seleccionamos que sí.

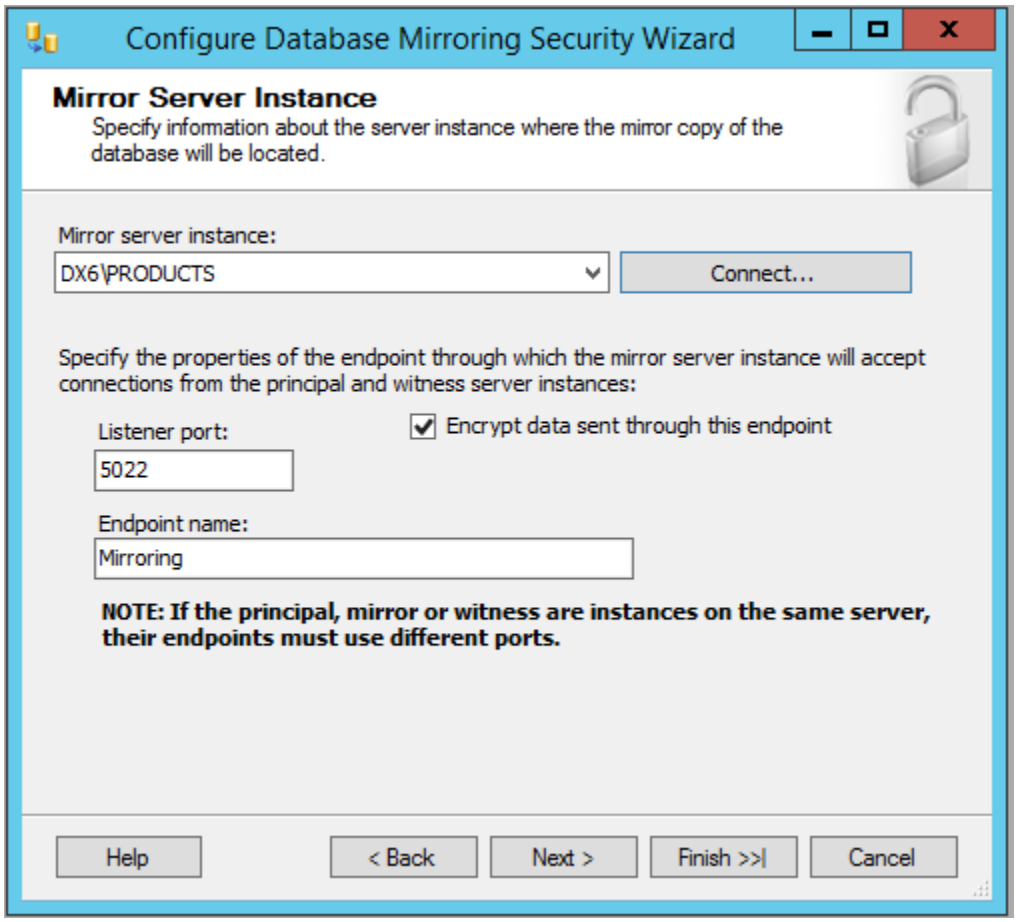


7. Definimos una base de datos para el servidor principal. Debemos asegurarnos de abrir el puerto de escucha en el firewall del servidor.

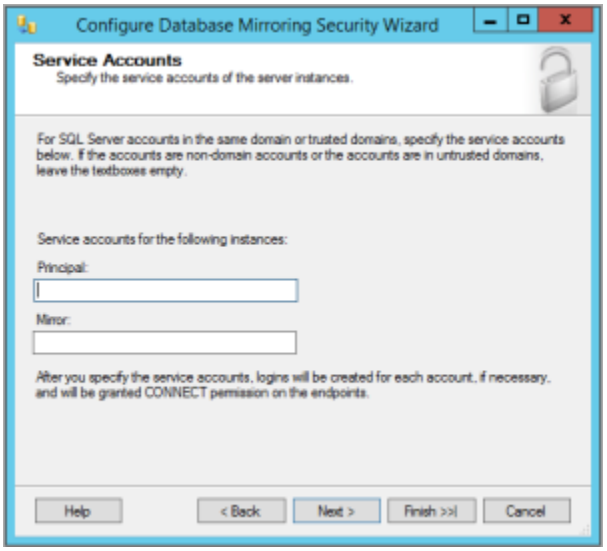


8. Conectamos y definimos los parámetros del servidor espejo. Con el fin de conectar correctamente al servidor secundario, debemos asegurarnos que el puerto de la instancia esta escuchado y que el SQLBrowser tiene los puertos abiertos y escuchando también.

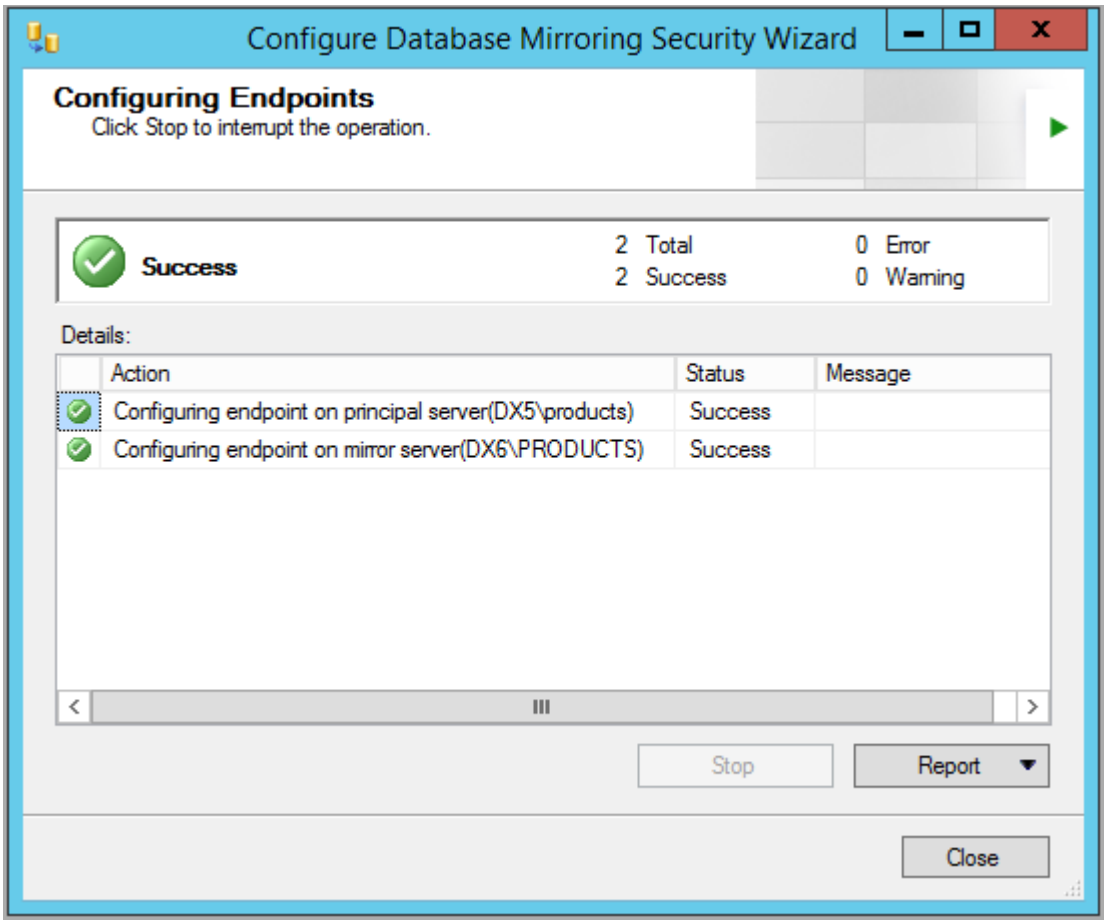

Configure Database Mirroring Security Wizard
Mirror Server Instance
Specify information about the server instance where the mirror copy of the database will be located.
Mirror server instance:
DX6\PRODUCTS
Connect...
Specify the properties of the endpoint through which the mirror server instance will accept connections from the principal and witness server instances:
Listener port:
Encrypt data sent through this endpoint
Endpoint name:
NOTE: If the principal, mirror or witness are instances on the same server, their endpoints must use different ports.
You must connect to this server instance using a login or account with the necessary permissions to save the security configuration before continuing this wizard.
Help
< Back
Next >
Finish >>|
Cancel



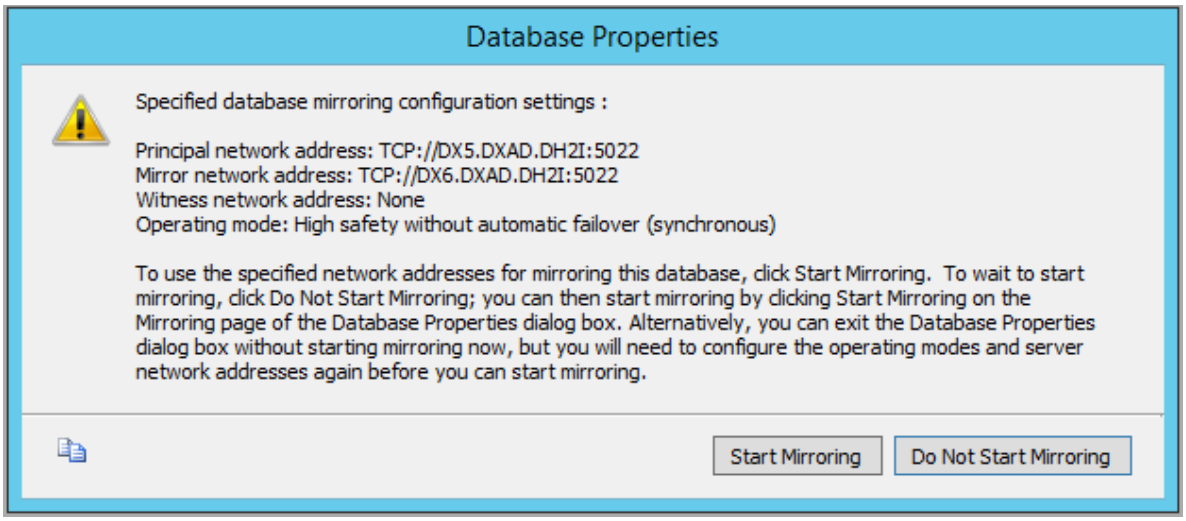
9. Definimos la cuenta de seguridad para la instancia principal y el servidor espejo.



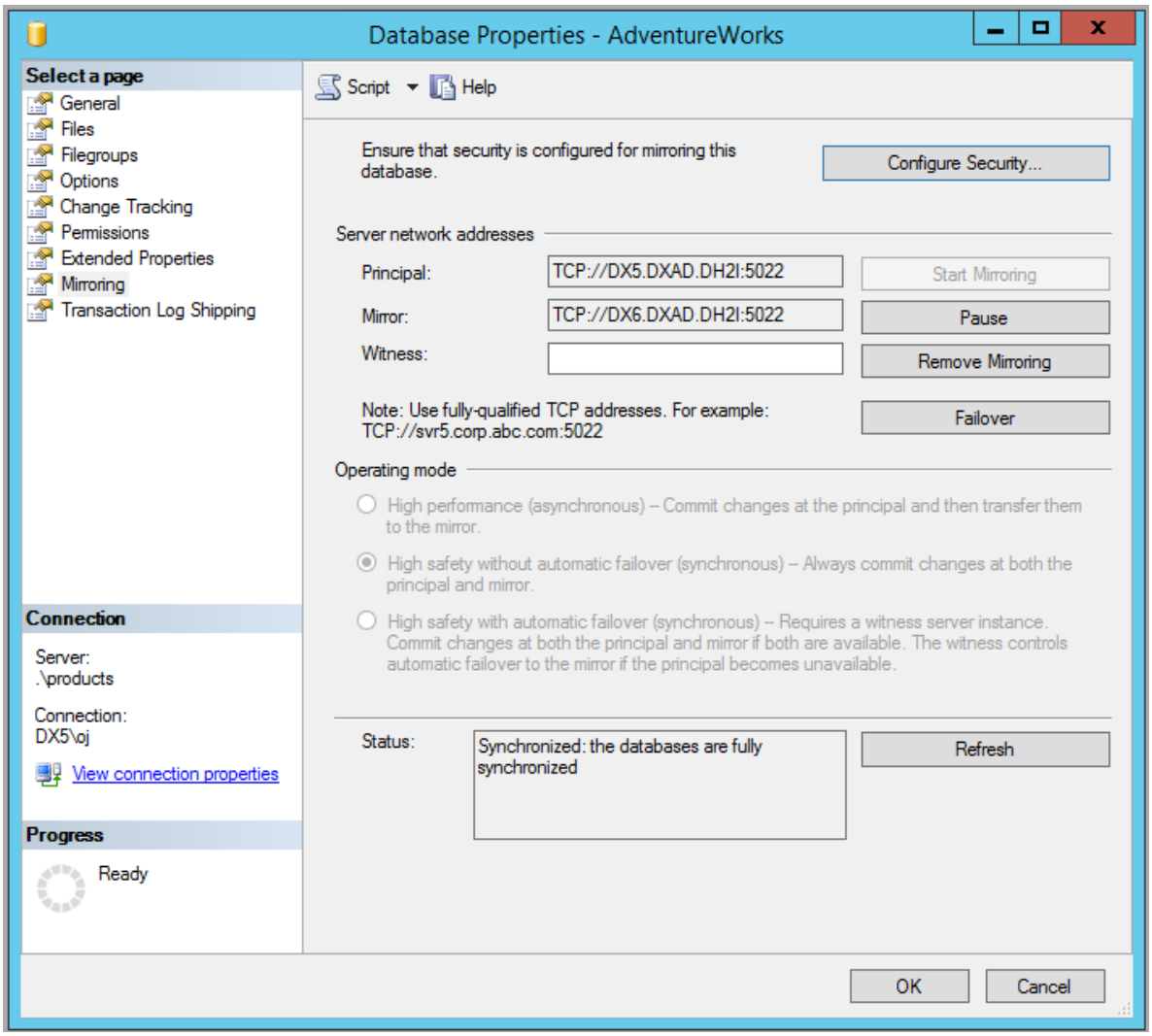
10. Le damos clic al botón de Finalizar para confirmar la configuración de las instancias.



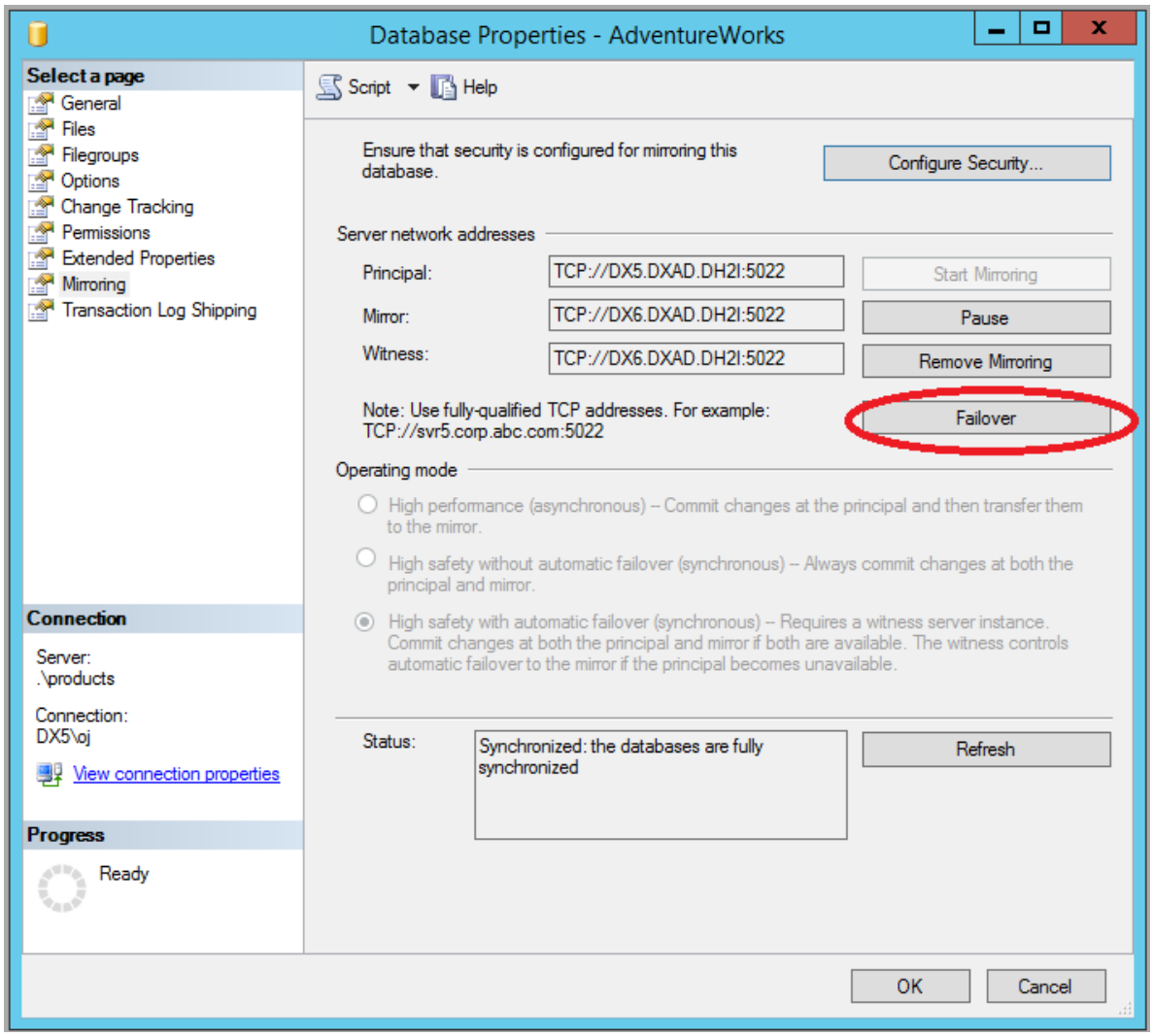
11. Vamos a iniciar con la sesión de duplicación.



12. Si todo está configurado correctamente, la base de datos espejo debería ya tener una sesión activa.



13. Ahora activamos el servidor testigo y seleccionamos la opción de operación “High-Safety with automatic failover”



14. Le damos un clic al botón Failover y de esta manera la instancia espejo pasara a hacer la instancia principal.