



Environment Manager

Replication

Version 2019.1

Contents

Before you start...	3
Principles	4
Prerequisites	5
Initial Steps	6
Post Setup	7
Supported Operating Systems	7
Perform the Setup	8
Read Committed Snapshot Isolation	8
Manually Set Read Committed Snapshot	8
Configure the Prerequisites	9
Configure the SQL Server Publication	9
Add Site Information to Replication	14
Change Configuration Compatibility Levels	17
Add Archives to Replication	18
Reinitialize Subscriptions for Configuration and Data	18
Modify the Replication Schedules	21
Configure the SQL Server Subscription	23
Test the Replication Topology	27
Advanced Replication Scenarios	29
Configure Config and Data Publications Separately	29
Branch Office Replication Scenario	29
Replication and personalization Server Upgrades	30
Upgrade Replication Servers	30
Enable Replication without a Snapshot Delivery	31
Replication and personalization Server Upgrades from Pre-8.3 Versions	32

Before you start...

The 10.1 FR2 release saw the introduction of the first stage of GeoSync functionality into Environment Manager personalization. This significantly reduces the complexity required to implement and administer multi-site environments and introduces a highly configurable approach to manage your users, configurations and data across those environments.

The GeoSync functionality, introduced in this release, provides a solution to scenarios that could previously only be addressed by Merge Replication. If you are currently using Merge Replication, or are planning to use it in the future, you are advised to refer to the GeoSync documentation to determine the best approach for your organization.

For more information, see the online help @ help.ivanti.com



Note

In future releases, as the GeoSync feature develops, support for the Merge Replication scripts that are currently provided with the installation media will be deprecated.

Principles

**Caution**

The set up for database replication requires an experienced SQL server administrator. This document is aimed at guiding an experienced administrator through a quick setup only.

Environment Manager personalization server replication requires one database to be the master and the other databases to be subscribers, in replication terms. The following Microsoft SQL servers can be used:

- Microsoft SQL Server 2016
- Microsoft SQL Server 2014 Service Pack 1
- Microsoft SQL Server 2012 Service Pack 2

If a variety of versions are used, the SQL server hosting the latest version must be used as the master.

**Note**

Microsoft SQL Express cannot serve as a publisher or distributor but can be used as a subscriber.

The default frequencies for SQL replication with Environment Manager are:

- Configuration - Every five minutes, every day
- Data - Every day at 12.00am local to the SQL server acting as the master. Subscribers download and upload updates at 12.00am local to the master, not themselves if different.

**Caution**

When a subscriber system is first added, all the existing data is deleted and replaced with data from the master. After replication is set up, data can be created on the subscriber and regularly merged with the master.

Prerequisites

For a default installation on the C: drive, the setup files required can be found in the folder *C:\Program Files\AppSense\Environment Manager\Personalization Server\Support\Replication* on any personalization server. It is recommended that this folder be copied to the master Microsoft SQL server database machine if it is not a personalization server itself. The setup files require 'sqlcmd.exe' to be installed on the machine (a component of SQL Server).

Configure replication using scripts that are the same version as your personalization server. Scripts from previous versions of Environment Manager are not compatible with the current version.



Caution

You must be a member of the **sysadmin** server role to set up and configure replication.

Initial Steps

1. Ensure that TCP/IP access is enabled for your Microsoft SQL Server instances by running SQL Server Configuration Manager and examining the SQL Server Network Configuration node. (SQL Configuration Manager is part of the Management Tools and may not be installed with SQL Server).
2. Ensure that personalization server databases have been created on all servers by installing personalization Servers connecting to the databases.
3. Ensure that any firewall software allows remote access to SQL server.
4. The SQL Agent service on the master must be running under an account that has sysadmin database access to all servers via Windows Authentication; this is not the default and can be changed with the Services applet in Administrative tools.
5. To run the setup procedure, you must be logged in to an account that has sysadmin database access to all servers via Windows Authentication.

**Note**

For further information on enabling remote access, refer to Microsoft SQL Server documentation.

Post Setup

The login used by the personalization server is set up by the Server Configuration Portal at time of installation. For Synchronize Site Databases to work, this login must be identified and changed using Management Studio. The login needs to be added to the **SQLAgentOperatorRole** in the **msdb** database, using the 'User Mapping' tab of the login properties page for the login (under 'Security').

Supported Operating Systems

The design in this document includes support for only the software revisions listed below:

- Microsoft SQL Server 2012, 2014, or 2016
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2012
- Microsoft Windows Server 2016



Note

For full details, see the [Environment Manager Maintained Platforms Matix](#).

Perform the Setup

The scripts for setting up database replication can be found in the following directory:

C:\Program Files\AppSense\Environment Manager\Personalization Server\Support\Replication.

Two scripts are used for setting up replication:

- **SetMasterUp.cmd** - Run to set up the distributer and the master.
- **AddSubscriber.cmd** - Run to add a subscriber.

The scripts should always be run on the master database machine. However, in the case of an SQL Server Cluster, the scripts may be run on any cluster member. Run the files either by opening a command prompt and entering the name of the file when in the current directory.



Note

SetMasterUp.cmd supports cluster installation and contains guidance on how to install in this scenario.

Read Committed Snapshot Isolation

Both scripts give you the option of enabling Read Committed Snapshot Isolation (RCSI) on your databases. When enabled, a copy of any row being modified is stored in the temporary database (tempdb). Any reads use the copy so the write transaction is not affected. This reduces the likelihood of readers blocking writers and vice-versa, subsequently preventing some deadlocking.

Using read committed snapshot can result in an increase in the usage of the tempdb. Whether you enable read committed snapshot on your databases should be determined by your setup and requirements.

Manually Set Read Committed Snapshot

To manually enable RSCI, run the following script on the required server. Replace PersonalizationServer with the name of your database if different.

```
alter database PersonalizationServer set read_committed_snapshot on with rollback immediate
```

To manually disable read-committed snapshot:

```
alter database PersonalizationServer set read_committed_snapshot off with rollback immediate
```

This can also be done with Management Studio.

Configure the Prerequisites

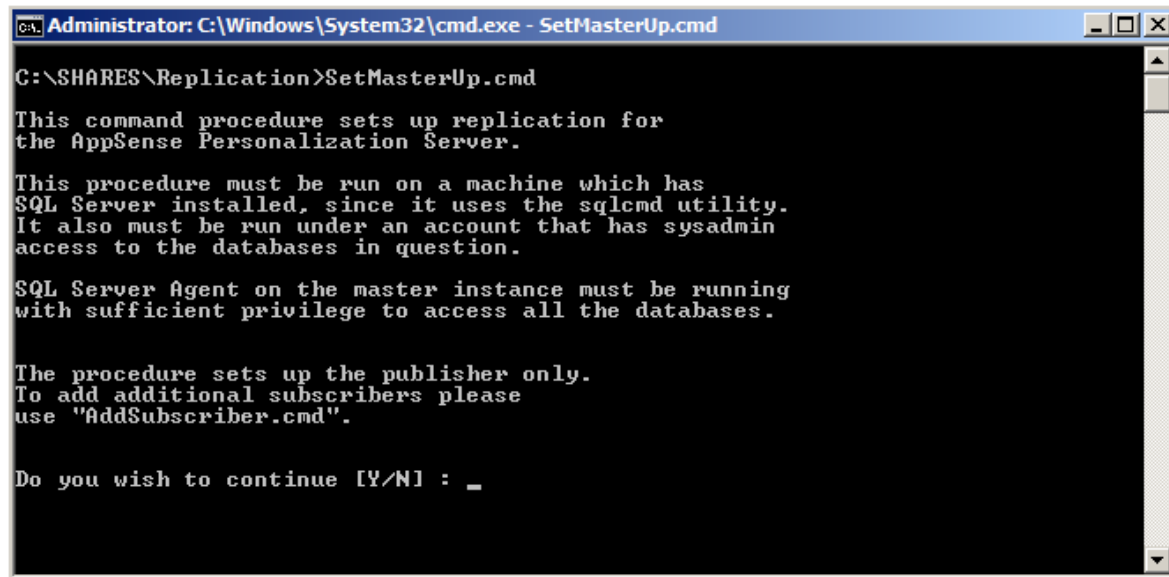
This section outlines the steps required to configure the replication prerequisites and needs to be completed on the personalization server that will act as the master.

1. Select a personalization server to act as the **primary** server. Logon, Open **Windows Explorer** and Navigate to **C:\Program Files\AppSense\Environment Manager\Personalization Server\Support\Replication**
2. Copy the contents of the **Replication** folder to a folder **on the SQL server** that will act as the Publisher / Distributor.

Configure the SQL Server Publication

This section outlines the steps required to configure the SQL Server Publication and needs to be completed on the SQL server that will act as the Publisher / Distributor.

1. Open a command prompt and navigate to the folder created in [Configuring the Pre-Requisites](#) and run **SetMasterUp.cmd**.



```
Administrator: C:\Windows\System32\cmd.exe - SetMasterUp.cmd

C:\SHARES\Replication>SetMasterUp.cmd

This command procedure sets up replication for
the AppSense Personalization Server.

This procedure must be run on a machine which has
SQL Server installed, since it uses the sqlcmd utility.
It also must be run under an account that has sysadmin
access to the databases in question.

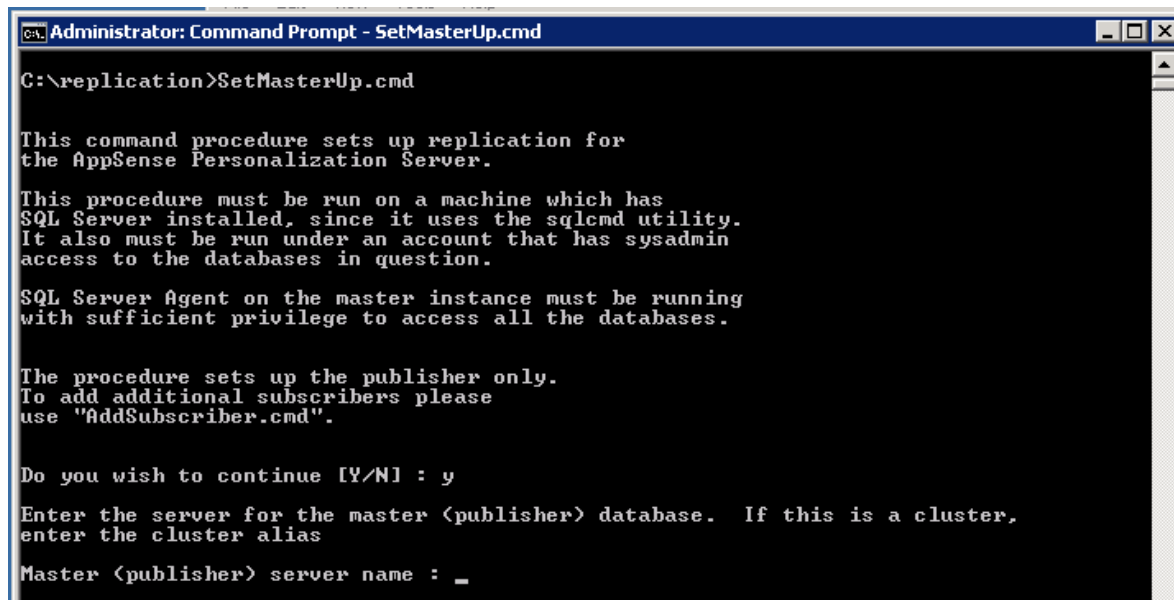
SQL Server Agent on the master instance must be running
with sufficient privilege to access all the databases.

The procedure sets up the publisher only.
To add additional subscribers please
use "AddSubscriber.cmd".

Do you wish to continue [Y/N] : _
```

2. Provide the Master Server Name and press **Enter**.

This is the name of the SQL server that will act as the publishing server.



```

Administrator: Command Prompt - SetMasterUp.cmd

C:\replication>SetMasterUp.cmd

This command procedure sets up replication for
the AppSense Personalization Server.

This procedure must be run on a machine which has
SQL Server installed, since it uses the sqlcmd utility.
It also must be run under an account that has sysadmin
access to the databases in question.

SQL Server Agent on the master instance must be running
with sufficient privilege to access all the databases.

The procedure sets up the publisher only.
To add additional subscribers please
use "AddSubscriber.cmd".

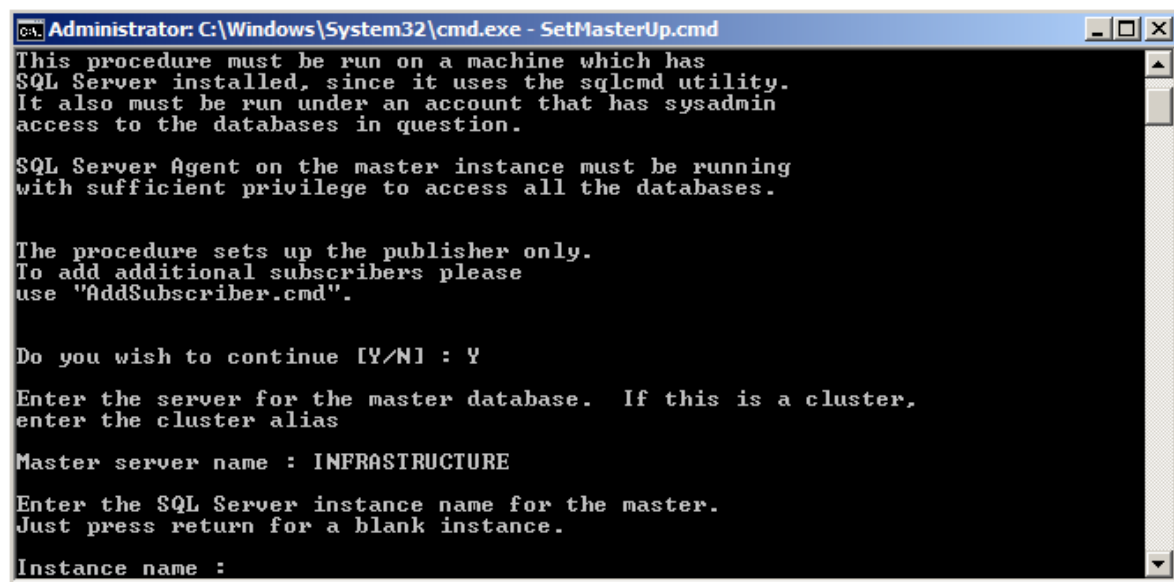
Do you wish to continue [Y/N] : y

Enter the server for the master (publisher) database. If this is a cluster,
enter the cluster alias

Master (publisher) server name : _
  
```

3. Provide the Instance Name and press **Enter**.

If replication is being configured on the default instance, then leave blank and press **Enter**.



```

Administrator: C:\Windows\System32\cmd.exe - SetMasterUp.cmd

This procedure must be run on a machine which has
SQL Server installed, since it uses the sqlcmd utility.
It also must be run under an account that has sysadmin
access to the databases in question.

SQL Server Agent on the master instance must be running
with sufficient privilege to access all the databases.

The procedure sets up the publisher only.
To add additional subscribers please
use "AddSubscriber.cmd".

Do you wish to continue [Y/N] : Y

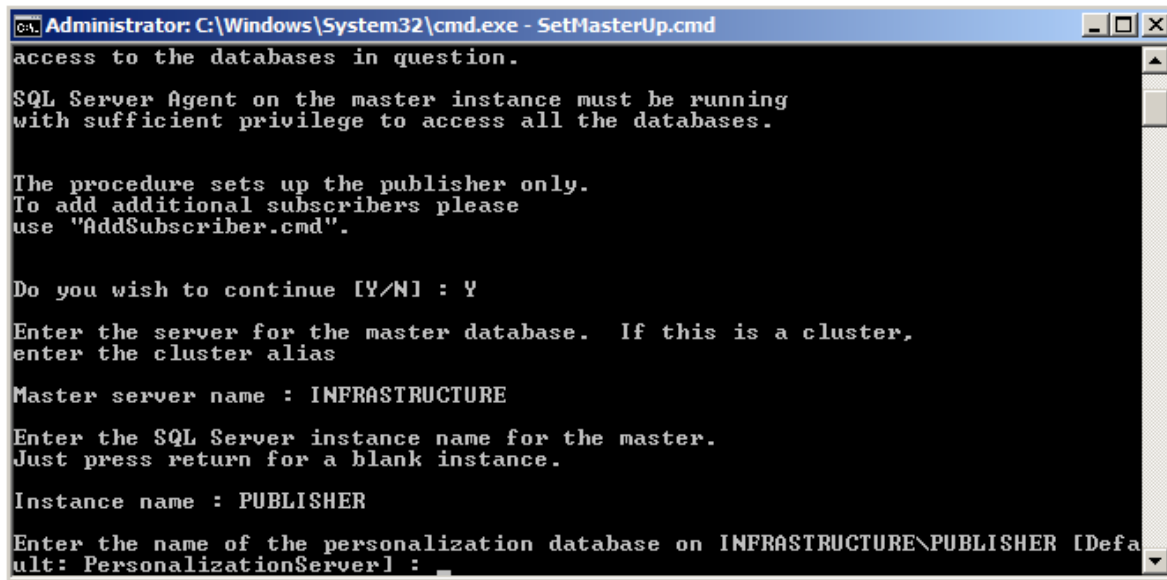
Enter the server for the master database. If this is a cluster,
enter the cluster alias

Master server name : INFRASTRUCTURE

Enter the SQL Server instance name for the master.
Just press return for a blank instance.

Instance name :
  
```

4. Provide the name of the personalization Database and press **Enter**. To use the default name, press **Enter**.



```
Administrator: C:\Windows\System32\cmd.exe - SetMasterUp.cmd
access to the databases in question.

SQL Server Agent on the master instance must be running
with sufficient privilege to access all the databases.

The procedure sets up the publisher only.
To add additional subscribers please
use "AddSubscriber.cmd".

Do you wish to continue [Y/N] : Y

Enter the server for the master database.  If this is a cluster,
enter the cluster alias

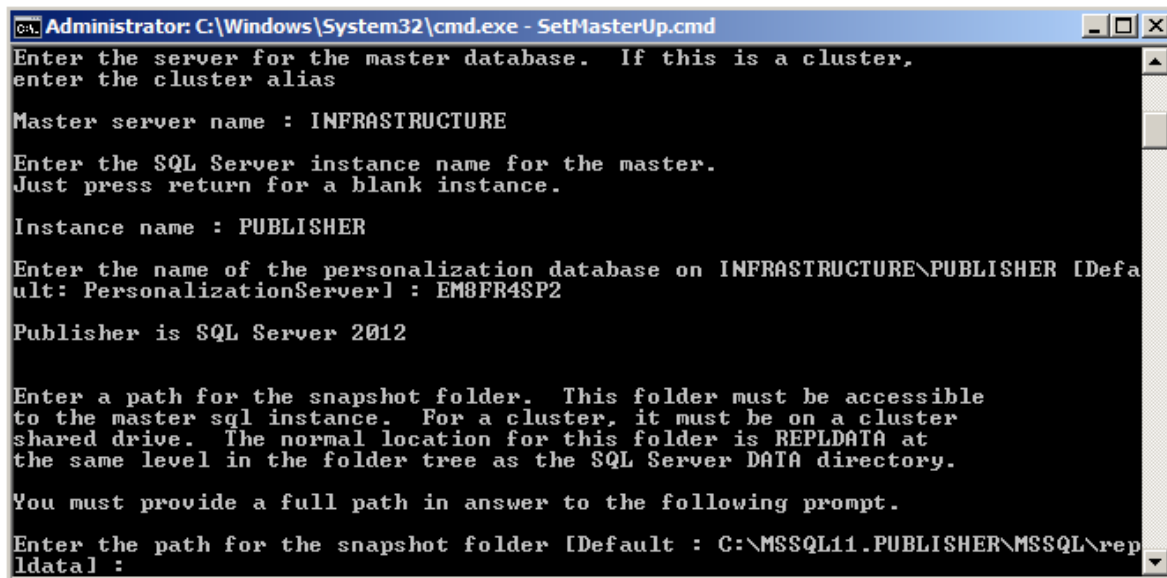
Master server name : INFRASTRUCTURE

Enter the SQL Server instance name for the master.
Just press return for a blank instance.

Instance name : PUBLISHER

Enter the name of the personalization database on INFRASTRUCTURE\PUBLISHER [Default: PersonalizationServer] :
```

5. Enter the path to the snapshot folder and press **Enter**.



```
Administrator: C:\Windows\System32\cmd.exe - SetMasterUp.cmd
Enter the server for the master database.  If this is a cluster,
enter the cluster alias

Master server name : INFRASTRUCTURE

Enter the SQL Server instance name for the master.
Just press return for a blank instance.

Instance name : PUBLISHER

Enter the name of the personalization database on INFRASTRUCTURE\PUBLISHER [Default: PersonalizationServer] : EM8FR4SP2

Publisher is SQL Server 2012

Enter a path for the snapshot folder.  This folder must be accessible
to the master sql instance.  For a cluster, it must be on a cluster
shared drive.  The normal location for this folder is REPLDATA at
the same level in the folder tree as the SQL Server DATA directory.

You must provide a full path in answer to the following prompt.

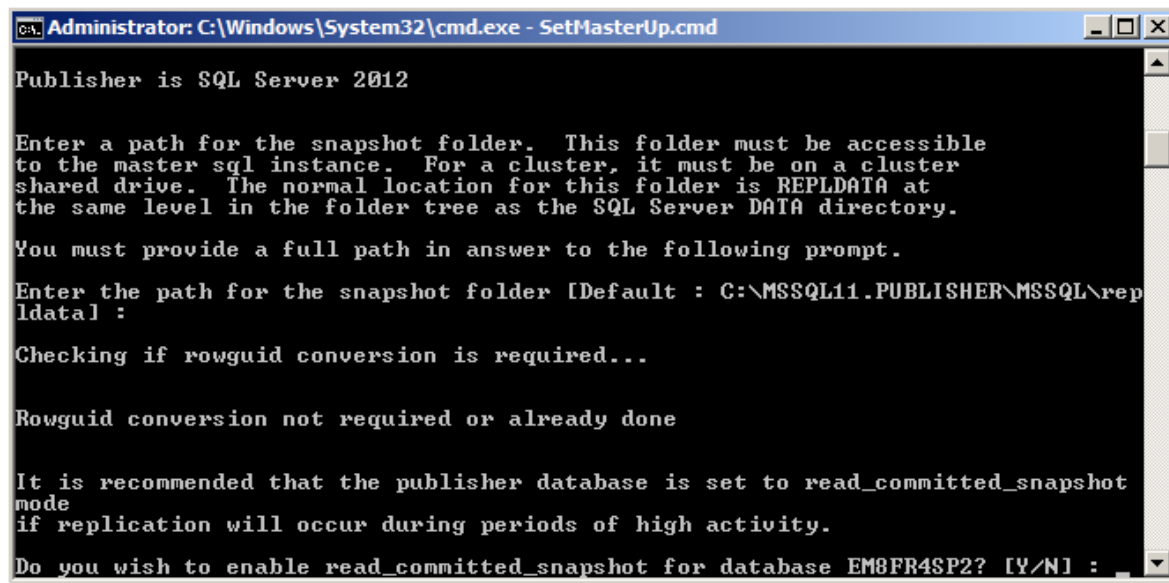
Enter the path for the snapshot folder [Default : C:\MSSQL11.PUBLISHER\MSSQL\rep\ldatal] :
```

6. The script then prompts to enable read_committed_snapshot for the personalization server database.



Note

Enabling read_committed_snapshot results in every row that is read during a transaction is first written to a temporary area within tempdb. This eliminates the read / write deadlocks to the same row that is often seen when replicating and synchronizing at the same time. Therefore, greater care should be taken with regards to sizing and performance considerations for tempdb.



```
Administrator: C:\Windows\System32\cmd.exe - SetMasterUp.cmd

Publisher is SQL Server 2012

Enter a path for the snapshot folder. This folder must be accessible
to the master sql instance. For a cluster, it must be on a cluster
shared drive. The normal location for this folder is REPLDATA at
the same level in the folder tree as the SQL Server DATA directory.

You must provide a full path in answer to the following prompt.

Enter the path for the snapshot folder [Default : C:\MSSQL11.PUBLISHER\MSSQL\repldata] :

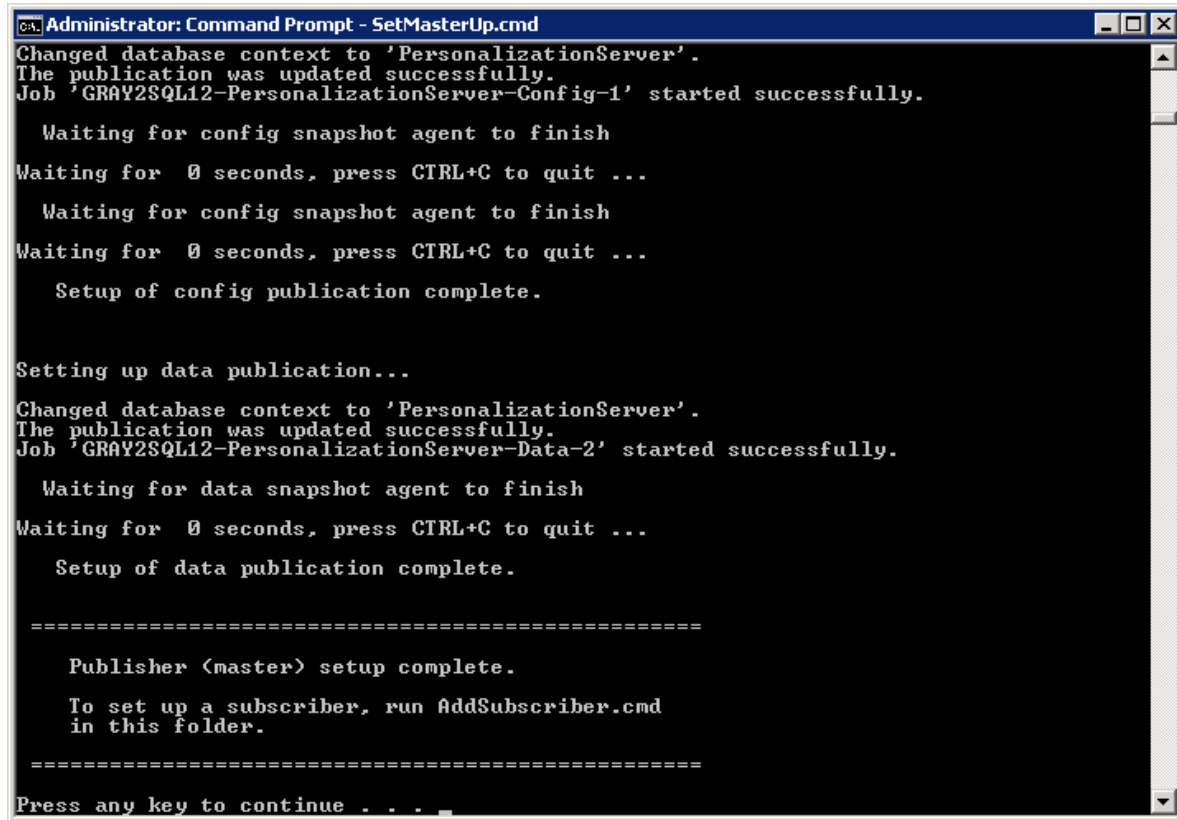
Checking if rowguid conversion is required...

Rowguid conversion not required or already done

It is recommended that the publisher database is set to read_committed_snapshot
mode
if replication will occur during periods of high activity.

Do you wish to enable read_committed_snapshot for database EM8FR4SP2? [Y/N] : _
```

7. The SetMasterUp script configures the Config and Data replication publications. There are two places where the script needs to wait for snapshot agents to finish, so the process may take a few minutes to complete.



```
Administrator: Command Prompt - SetMasterUp.cmd
Changed database context to 'PersonalizationServer'.
The publication was updated successfully.
Job 'GRAY2SQL12-PersonalizationServer-Config-1' started successfully.

    Waiting for config snapshot agent to finish
Waiting for  0 seconds, press CTRL+C to quit ...

    Waiting for config snapshot agent to finish
Waiting for  0 seconds, press CTRL+C to quit ...

    Setup of config publication complete.

Setting up data publication...
Changed database context to 'PersonalizationServer'.
The publication was updated successfully.
Job 'GRAY2SQL12-PersonalizationServer-Data-2' started successfully.

    Waiting for data snapshot agent to finish
Waiting for  0 seconds, press CTRL+C to quit ...

    Setup of data publication complete.

=====

    Publisher <master> setup complete.

    To set up a subscriber, run AddSubscriber.cmd
    in this folder.

=====

Press any key to continue . . .
```

Add Site Information to Replication

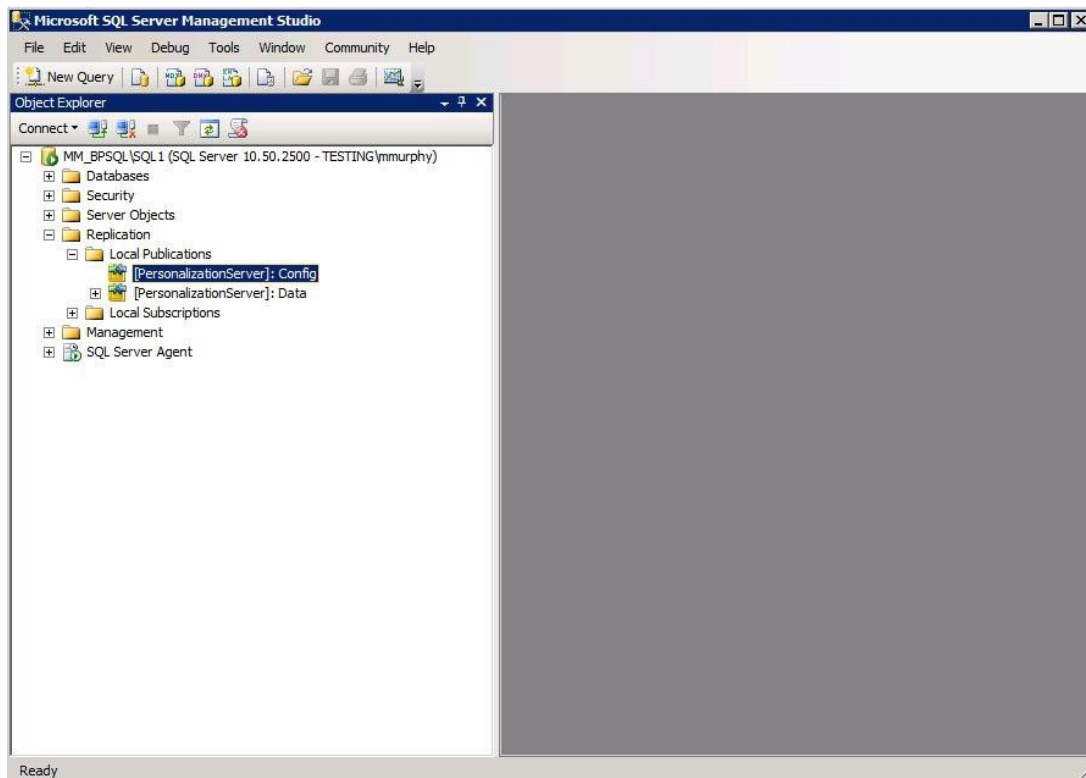
This section outlines the steps required to add site information to the Configuration Publication and needs to be completed on the SQL server that will act as the Publisher / Distributor.



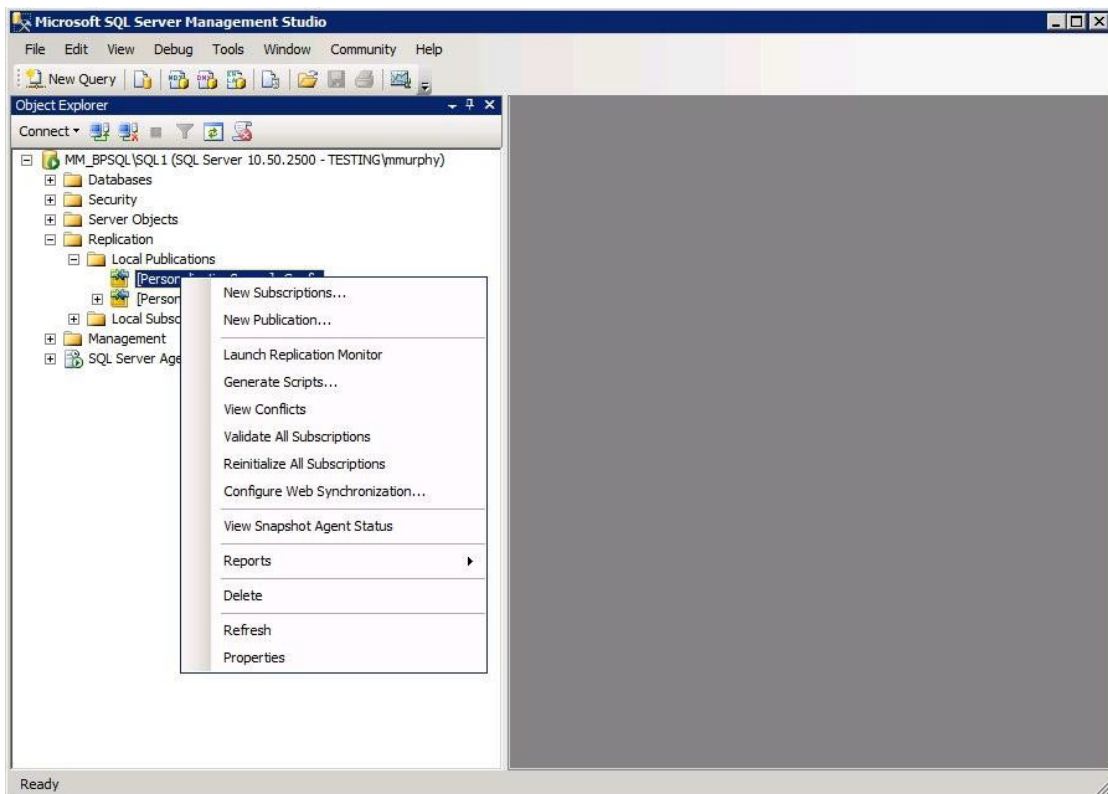
Note

Sites should not be added to the replication publication unless you do not have global server load balancing capabilities or are unable to use the ADM/ADMX templates for specifying site specific personalization servers.

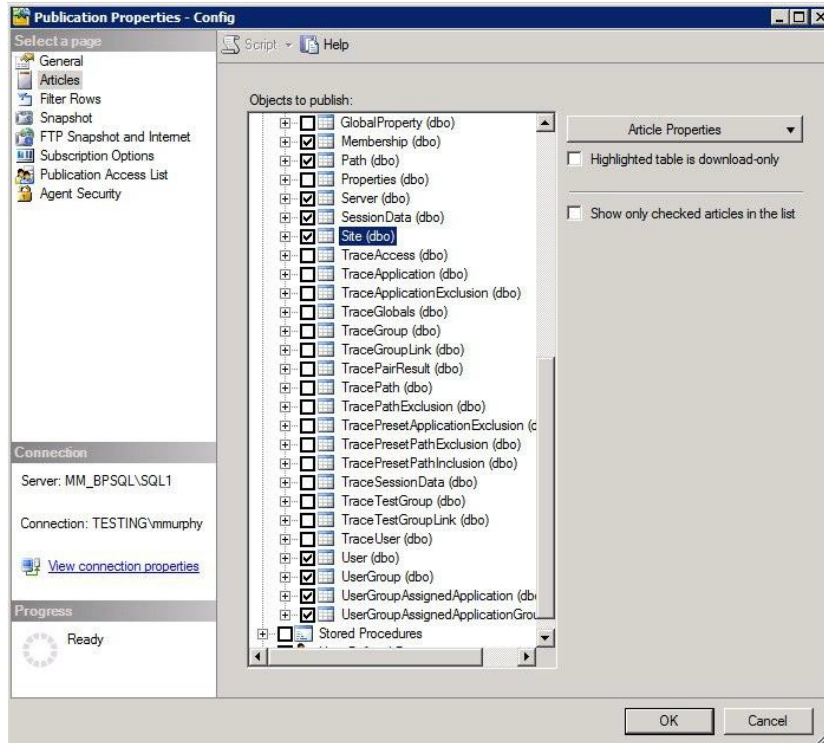
1. Open **SQL Server Management Studio** and connect to the SQL server instance that will act as the publisher.



2. Right-click the **[PersonalizationServer]: Config local publication** and select **Properties**.



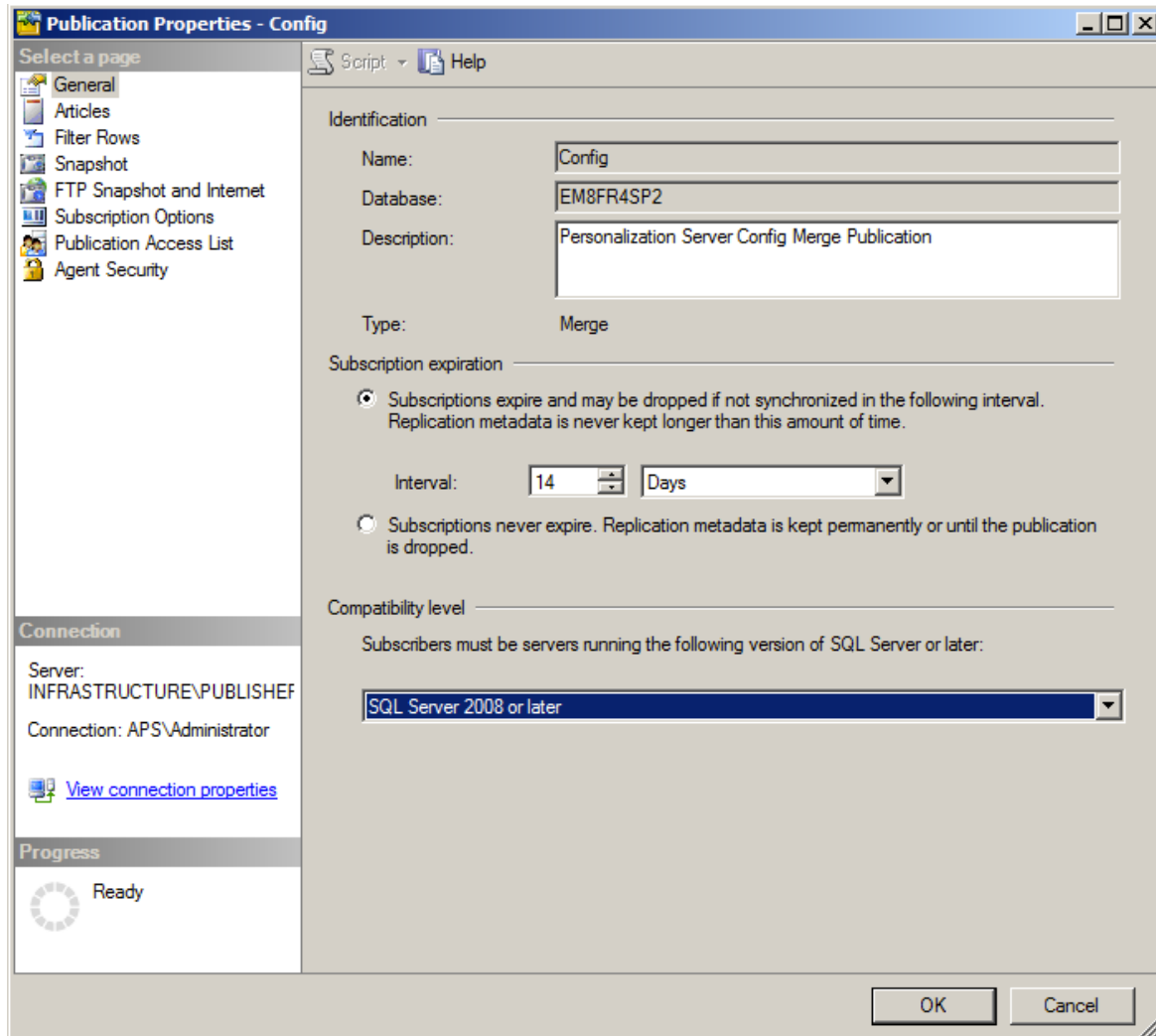
3. On the Articles page uncheck **Show only checked articles in the list** and add **server** and **site**.



Change Configuration Compatibility Levels

This section outlines the steps required to change the compatibility level on the Configuration Publication. The compatibility level controls the minimum SQL version required for subscribers to the publication; for efficiency, this should be set to match the actual subscriber databases to be used. The level is set on the SQL server that will act as the Publisher / Distributor.

1. On the General page, select the appropriate Compatibility level that matches your version of SQL server as closely as possible. For Example; SQL Server 2012 or later.



Publication Properties - Config

Select a page: General, Articles, Filter Rows, Snapshot, FTP Snapshot and Internet, Subscription Options, Publication Access List, Agent Security

Script Help

Identification

Name: Config

Database: EM8FR4SP2

Description: Personalization Server Config Merge Publication

Type: Merge

Subscription expiration

☒ Subscriptions expire and may be dropped if not synchronized in the following interval. Replication metadata is never kept longer than this amount of time.

Interval: 14 Days

☐ Subscriptions never expire. Replication metadata is kept permanently or until the publication is dropped.

Compatibility level

Subscribers must be servers running the following version of SQL Server or later:

SQL Server 2008 or later

Connection

Server: INFRASTRUCTURE\PUBLISHER

Connection: APS\Administrator

[View connection properties](#)

Progress

Ready

OK Cancel

Add Archives to Replication



Note

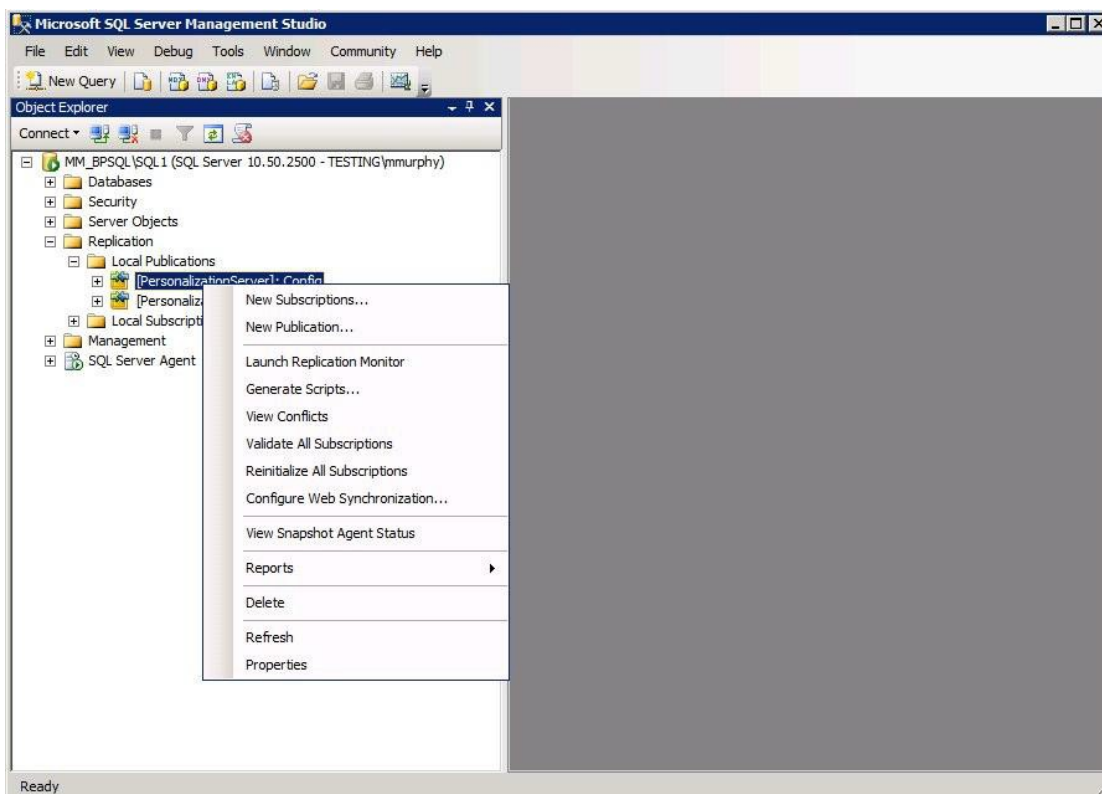
For version 8.6 software, the system may be configured to archive either profiles modified locally (default) or all profiles (i.e. including profiles transferred via replication). To do the latter modify the **ArchiveLocalProfilesOnly** advanced setting to 'false' on the console. In 8.6 the ArchiveFile table, used for holding deduplicated data, does not have a row guid for replication use.

Therefore, adding archives to the replication publication is not recommended.

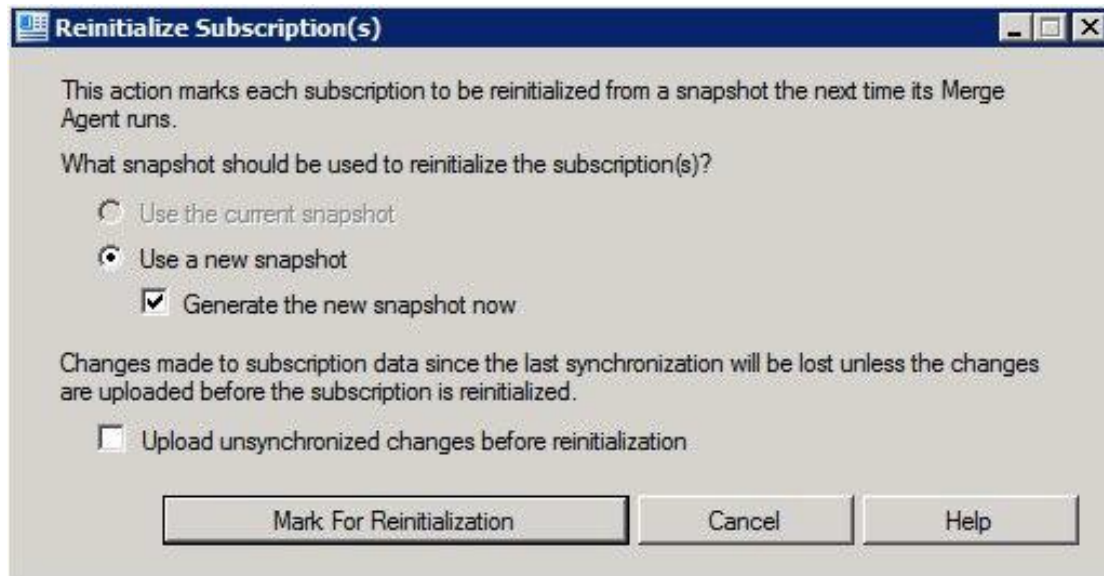
Reinitialize Subscriptions for Configuration and Data

This section outlines the steps required to reinitialize the subscriptions on the Configuration and Data Publications and needs to be completed on the SQL server that will act as the Publisher / Distributor.

1. Right-click the **[PersonalizationServer]: Config local publication** and select **Reinitialize All Subscriptions**.

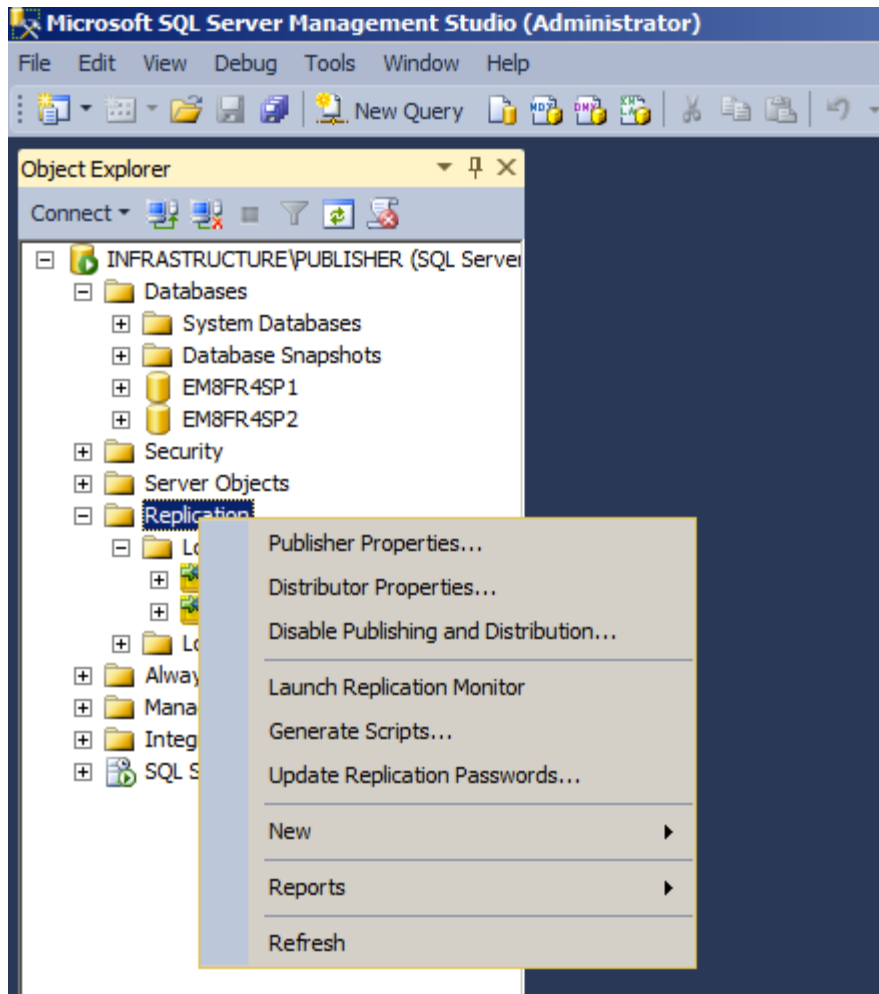


2. Check the **Generate the new snapshot now** and select **Mark For Reinitialization**.

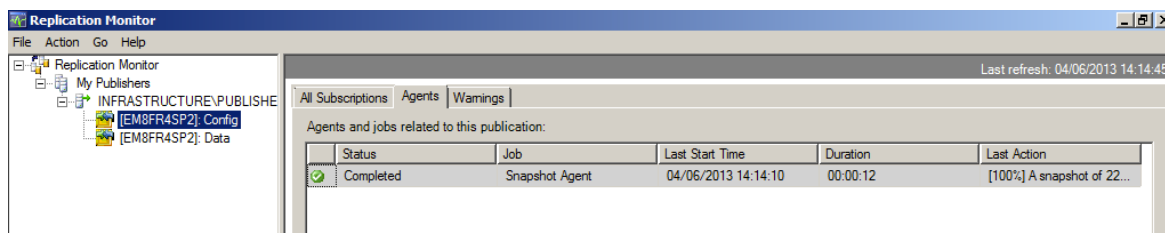


3. Right-click the **[PersonalizationServer]: Data** local publication and select **Reinitialize All Subscriptions** and check the **Generate the new snapshot now** and select **Mark For Reinitialization**.

4. Launch Replication Monitor by right-clicking on the Replication folder within SQL Server Management Studio and selecting replication monitor.



5. Expand replication monitor to show the Config and Data publications. Then select a publication and click on the Agents tab. Monitor the status shows as Completed. Repeat this process for the other publication as well.



Modify the Replication Schedules

This section outlines the steps required to modify the replication schedules. By default, the Environment Manager personalization server replication scripts configure replication to run at the following intervals:

- Config – Every 5 minutes
- Data – Every 24 hours at midnight

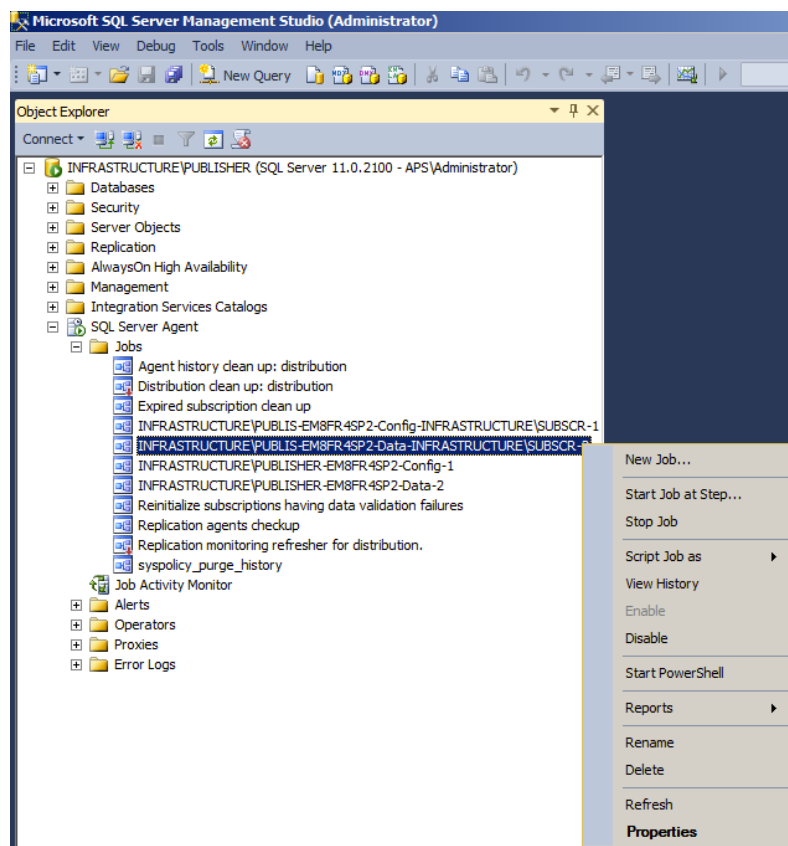


Note

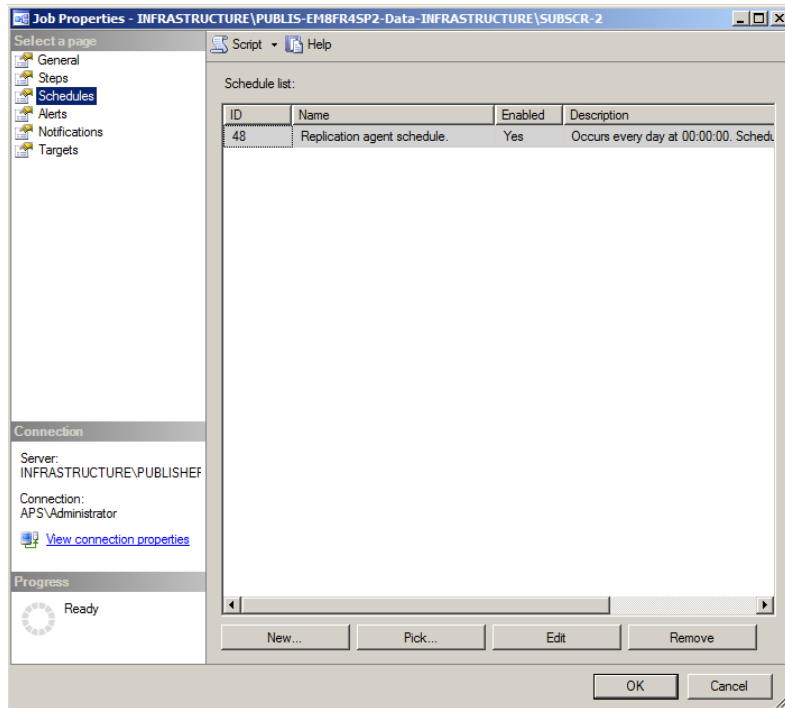
Changing the default data replication schedule is not recommended without a comprehensive understanding of the implications and exhaustive testing of the impact this has on the replication window.

When changing the default config replication schedule, it is important to ensure that the config and data publications are not run in parallel as this increases the likelihood of Microsoft SQL deadlocks resulting in replication failure.

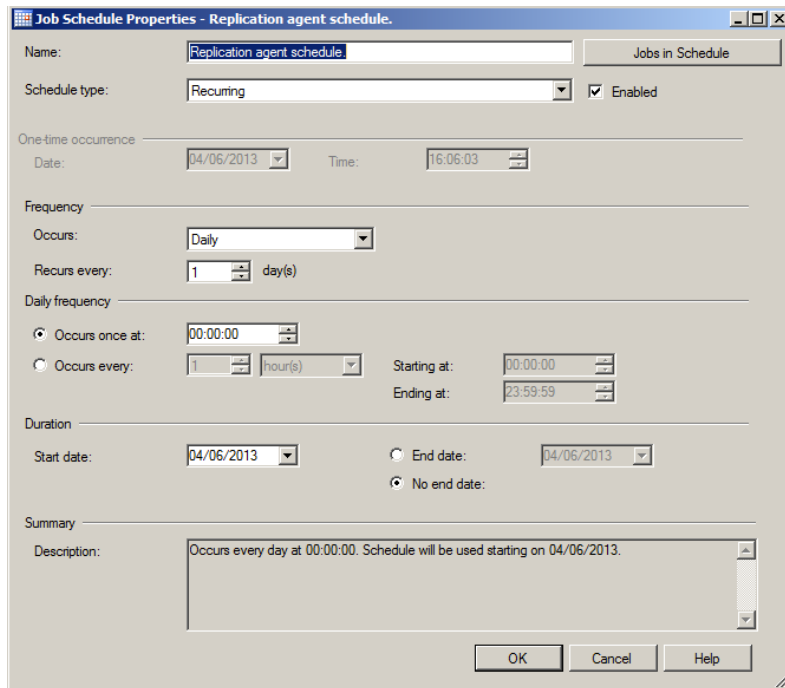
1. Expand the SQL Server Agent, expand the Jobs list and then locate the job that references the Publisher, Data publication and the subscriber in the title as indicated below. Right click on this job and select **Properties**.



2. Click on the Schedules page, then click **Edit**.



3. Edit the schedule to reflect the desired replication interval.



4. Repeat the steps above for the Config job if required.

Configure the SQL Server Subscription

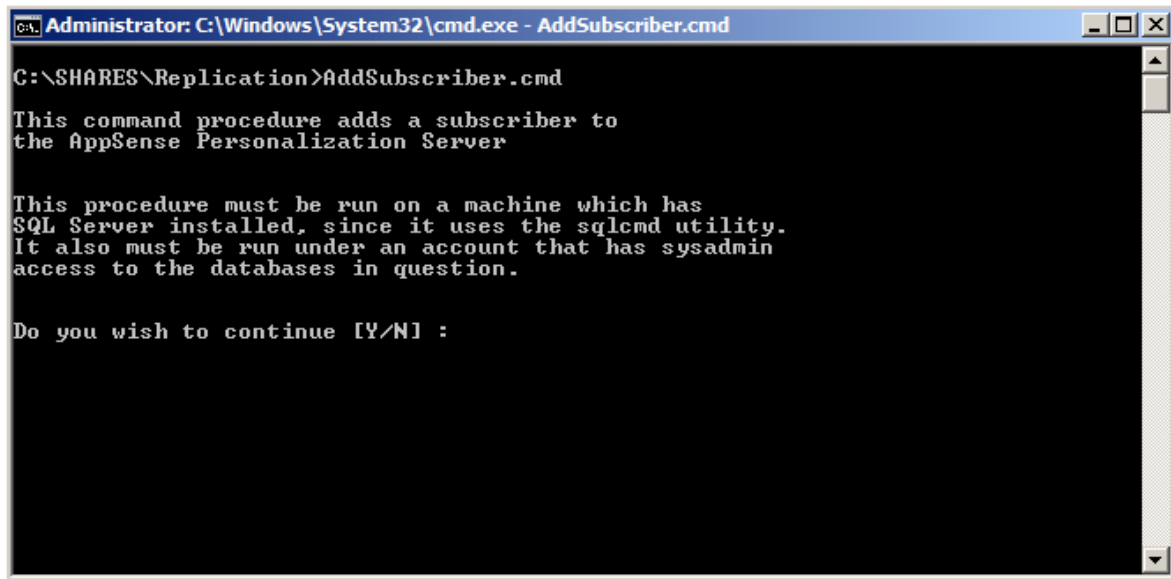
This section outlines the steps required to configure the SQL Server Subscription and needs to be completed on the SQL server that will act as the Publisher / Distributor.



Note

This is needs to be completed for each subscribing database and the data in subscription database will be deleted.

1. From the command prompt run **AddSubscriber.cmd**. When prompted to continue select **Y**.



```
Administrator: C:\Windows\System32\cmd.exe - AddSubscriber.cmd

G:\SHARES\Replication>AddSubscriber.cmd

This command procedure adds a subscriber to
the AppSense Personalization Server

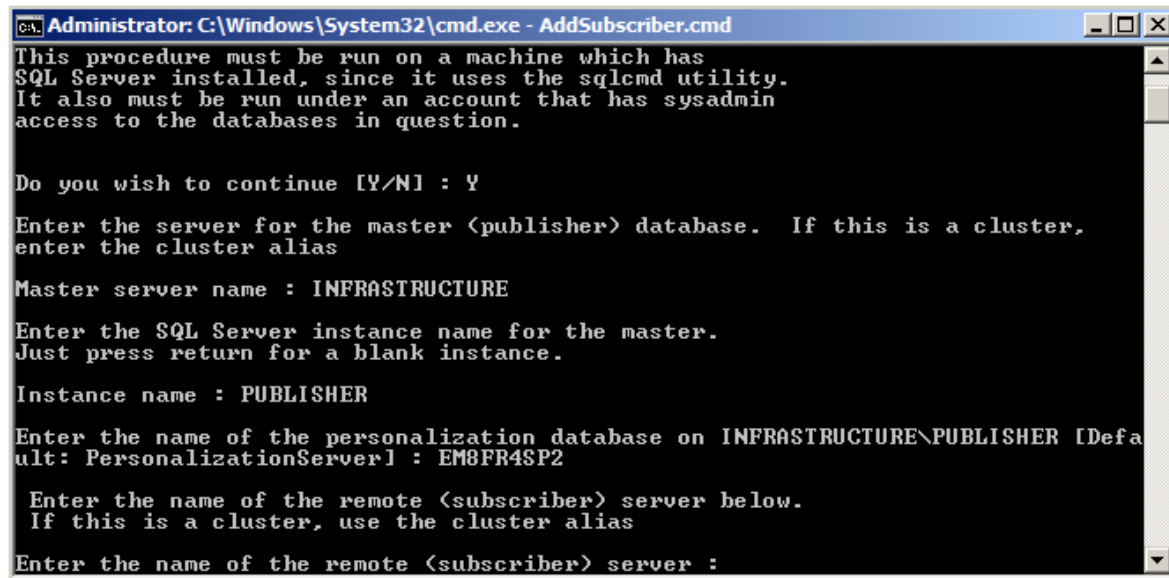
This procedure must be run on a machine which has
SQL Server installed, since it uses the sqlcmd utility.
It also must be run under an account that has sysadmin
access to the databases in question.

Do you wish to continue [Y/N] :
```

Details of the configured publisher are displayed.

2. Select whether you want to use this publisher or enter details for an alternative publisher. If you are using an alternative publisher, enter details when prompted.

3. Provide the Subscriber Server Name and press **Enter**. This is the name of the SQL server that will act as the subscribing server.



```
Administrator: C:\Windows\System32\cmd.exe - AddSubscriber.cmd
This procedure must be run on a machine which has
SQL Server installed, since it uses the sqlcmd utility.
It also must be run under an account that has sysadmin
access to the databases in question.

Do you wish to continue [Y/N] : Y

Enter the server for the master <publisher> database. If this is a cluster,
enter the cluster alias

Master server name : INFRASTRUCTURE

Enter the SQL Server instance name for the master.
Just press return for a blank instance.

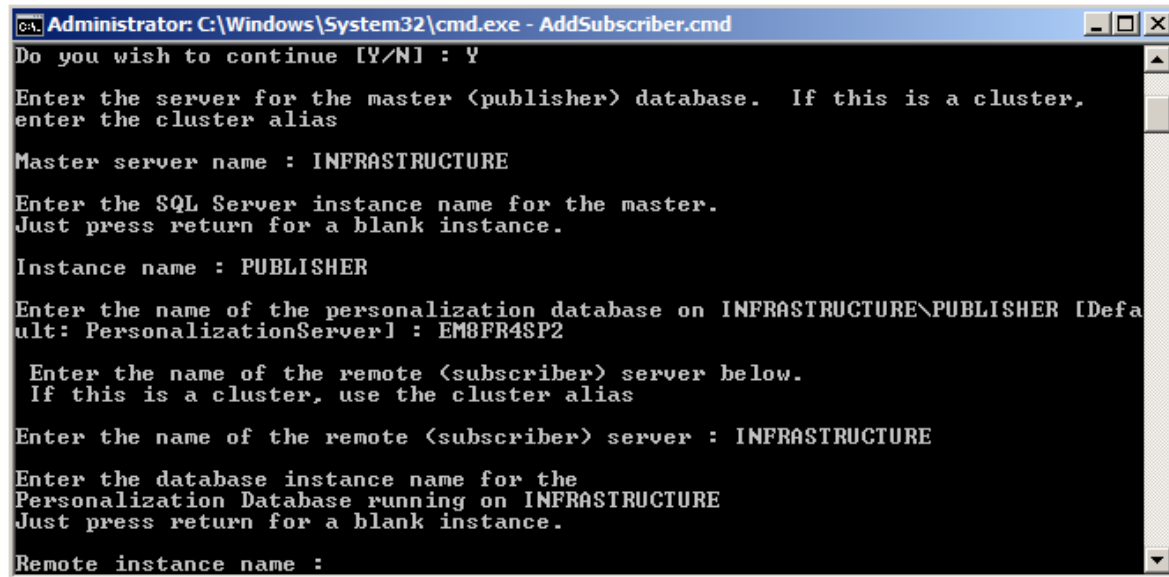
Instance name : PUBLISHER

Enter the name of the personalization database on INFRASTRUCTURE\PUBLISHER [Default: PersonalizationServer] : EM8FR4SP2

Enter the name of the remote <subscriber> server below.
If this is a cluster, use the cluster alias

Enter the name of the remote <subscriber> server :
```

4. Provide the Remote Instance Name and press **Enter**.
If replication is being configured on the default instance, leave blank and press **Enter**.



```
Administrator: C:\Windows\System32\cmd.exe - AddSubscriber.cmd
Do you wish to continue [Y/N] : Y

Enter the server for the master <publisher> database. If this is a cluster,
enter the cluster alias

Master server name : INFRASTRUCTURE

Enter the SQL Server instance name for the master.
Just press return for a blank instance.

Instance name : PUBLISHER

Enter the name of the personalization database on INFRASTRUCTURE\PUBLISHER [Default: PersonalizationServer] : EM8FR4SP2

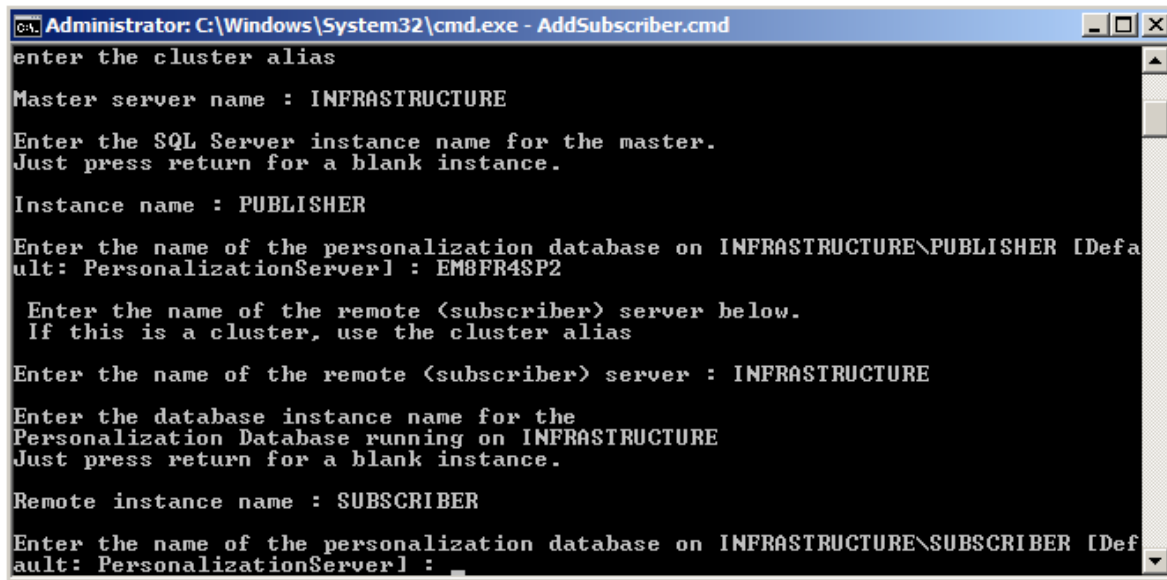
Enter the name of the remote <subscriber> server below.
If this is a cluster, use the cluster alias

Enter the name of the remote <subscriber> server : INFRASTRUCTURE

Enter the database instance name for the
Personalization Database running on INFRASTRUCTURE
Just press return for a blank instance.

Remote instance name :
```


- Provide the Subscriber Database Name and press **Enter**.



```
Administrator: C:\Windows\System32\cmd.exe - AddSubscriber.cmd
enter the cluster alias
Master server name : INFRASTRUCTURE
Enter the SQL Server instance name for the master.
Just press return for a blank instance.
Instance name : PUBLISHER
Enter the name of the personalization database on INFRASTRUCTURE\PUBLISHER [Default: PersonalizationServer] : EM8FR4SP2
Enter the name of the remote <subscriber> server below.
If this is a cluster, use the cluster alias
Enter the name of the remote <subscriber> server : INFRASTRUCTURE
Enter the database instance name for the
Personalization Database running on INFRASTRUCTURE
Just press return for a blank instance.
Remote instance name : SUBSCRIBER
Enter the name of the personalization database on INFRASTRUCTURE\SUBSCRIBER [Default: PersonalizationServer] :
```

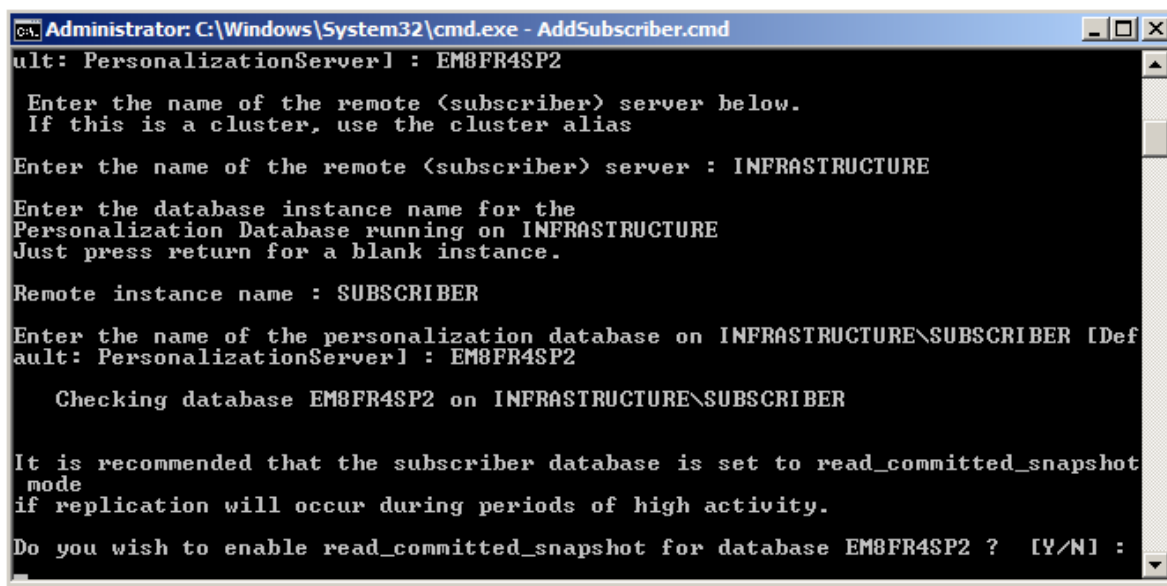
- The script will then prompt to enable read_committed_snapshots for the personalization server database.



Note

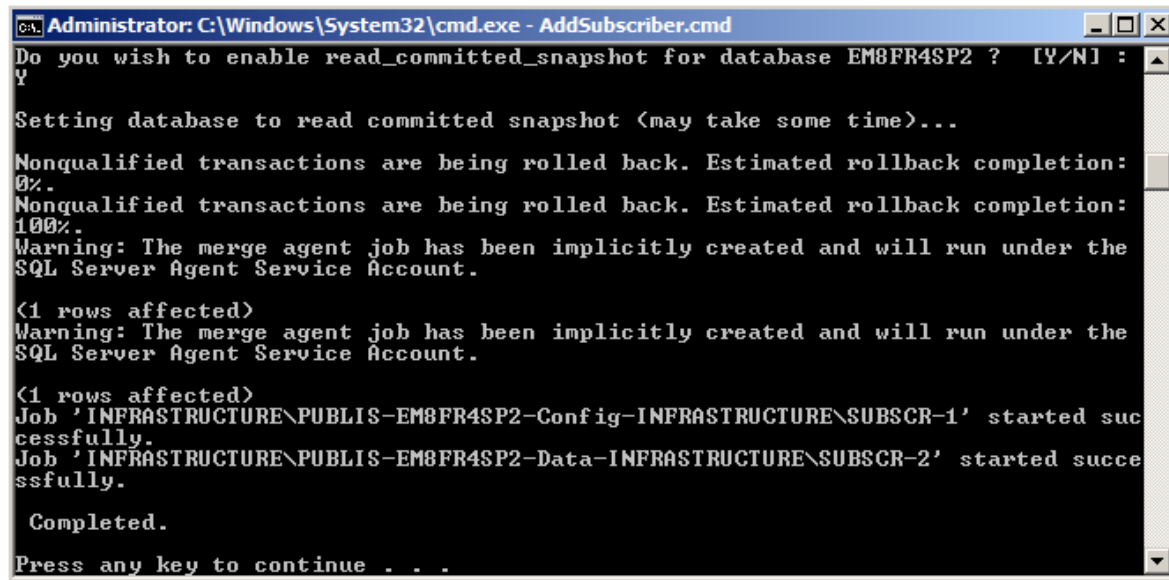
Enabling read_committed_snapshots results in every row that is read during a transaction is first written to a temporary area within tempdb. This eliminates the read / write deadlocks to the same row that is often seen when replicating and synchronizing at the same time.

Therefore, greater care should be taken with regards to sizing and performance considerations for tempdb.



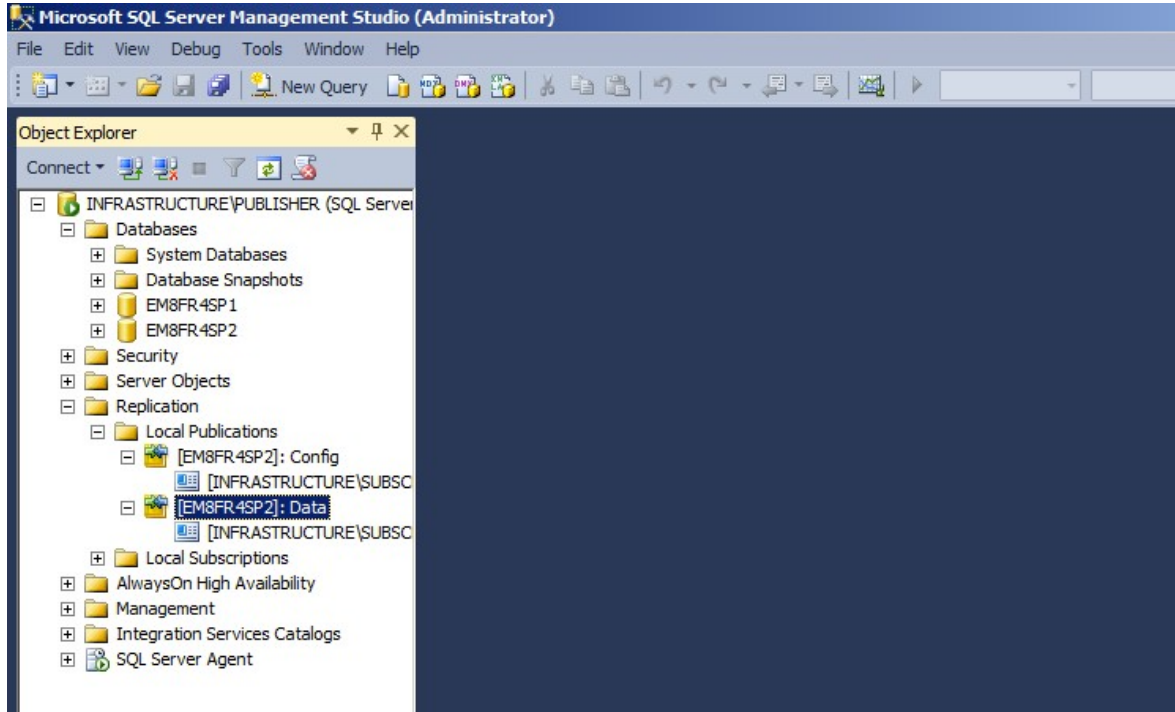
```
Administrator: C:\Windows\System32\cmd.exe - AddSubscriber.cmd
ult: PersonalizationServer] : EM8FR4SP2
Enter the name of the remote <subscriber> server below.
If this is a cluster, use the cluster alias
Enter the name of the remote <subscriber> server : INFRASTRUCTURE
Enter the database instance name for the
Personalization Database running on INFRASTRUCTURE
Just press return for a blank instance.
Remote instance name : SUBSCRIBER
Enter the name of the personalization database on INFRASTRUCTURE\SUBSCRIBER [Default: PersonalizationServer] : EM8FR4SP2
Checking database EM8FR4SP2 on INFRASTRUCTURE\SUBSCRIBER
It is recommended that the subscriber database is set to read_committed_snapshot
mode
if replication will occur during periods of high activity.
Do you wish to enable read_committed_snapshot for database EM8FR4SP2 ? [Y/N] : Y
```

7. The installation will complete. Press any key to continue.



```
Administrator: C:\Windows\System32\cmd.exe - AddSubscriber.cmd
Do you wish to enable read_committed_snapshot for database EM8FR4SP2 ? [Y/N] :
Y
Setting database to read committed snapshot (may take some time)...
Nonqualified transactions are being rolled back. Estimated rollback completion:
0%.
Nonqualified transactions are being rolled back. Estimated rollback completion:
100%.
Warning: The merge agent job has been implicitly created and will run under the
SQL Server Agent Service Account.
<1 rows affected>
Warning: The merge agent job has been implicitly created and will run under the
SQL Server Agent Service Account.
<1 rows affected>
Job 'INFRASCTURE\PUBLIS-EM8FR4SP2-Config-INFRASTRUCTURE\SUBSCR-1' started suc
cessfully.
Job 'INFRASCTURE\PUBLIS-EM8FR4SP2-Data-INFRASTRUCTURE\SUBSCR-2' started succe
ssfully.
Completed.
Press any key to continue . . .
```

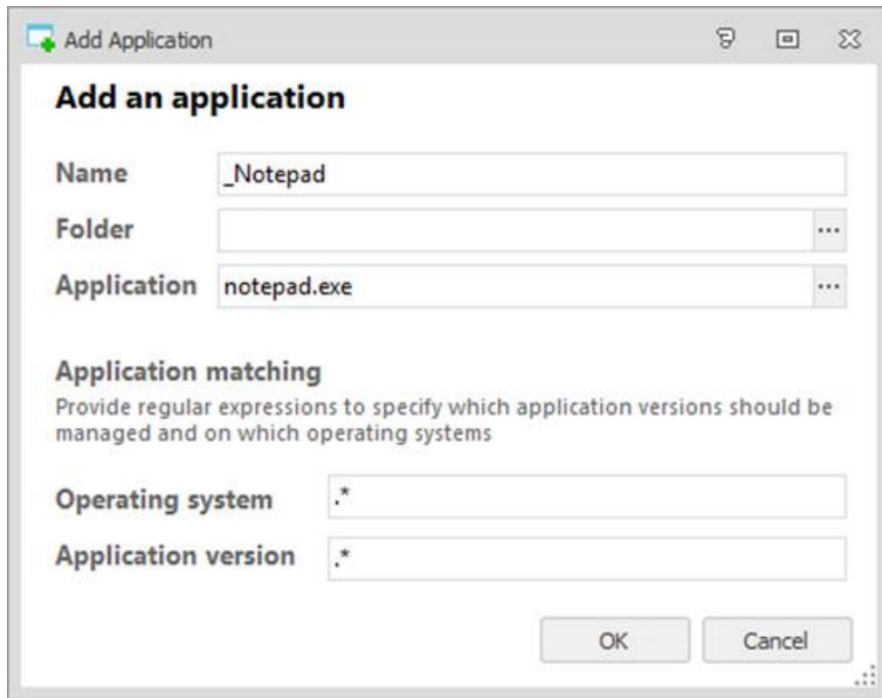
8. Repeat for each subscription required
9. From SQL Server Management Studio expand the Local Publications. The configuration and data subscriptions will be visible.



Test the Replication Topology

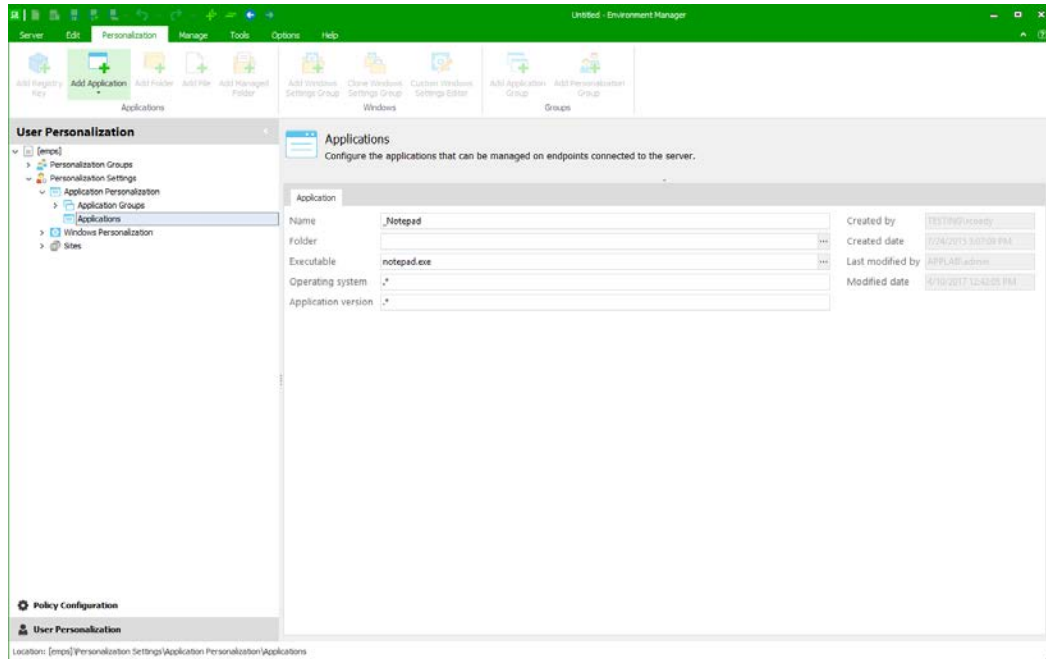
This section outlines the steps required to configure the test Environment Manager personalization server replication and needs to be completed the personalization server that will act as the master.

1. Launch the Environment Manager Console and connect to the primary personalization server.
2. Add a test application under Users Applications. For example; Notepad.exe.



Wait for the default time period of 5 minutes to elapse for Configuration Replication

3. Launch another instance of the Environment Manager Console and connect to the secondary PERSONALIZATION server. The test application should be visible.



Advanced Replication Scenarios

Configure Config and Data Publications Separately

Use of the standard **SetMasterUp** and **AddSubscriber** batch files as described above will create both Config and Data publications and add a subscriber to both Config and Data publications respectively. Instead of this standard setup the publications may be configured using the following batch files:

- **CreateConfigPublication.cmd** - Create a Config publication only
- **CreateDataPublication.cmd** - Create a Data publication only
- **AddConfigSubscriber.cmd** - Add a subscriber to a config publication
- **AddDataSubscriber.cmd** - Add a subscriber to a data publication

Use of these batch files enables advanced configurations to be constructed as discussed in the following section.

To remove replication, the standard **RemoveReplication.cmd** batch file is used. This requires the name of a publisher database and will remove the publications and associated subscriptions. If a database is acting as both a subscriber and a publisher, **RemoveReplication.cmd** will only remove the publications. RemoveReplication must be applied to the associated publisher to remove subscriptions.

Branch Office Replication Scenario

In this configuration, a branch office database may receive its config data from a master central database but replicate its user data to a third database for recovery reasons.

A typical usage might be where there is a central location contains a config master (to which configuration changes are made) and several branch offices which all receive config changes from the master but publish their data changes to separate 'recovery' databases.

These recovery databases can also be situated at the central location and may be implemented in the same SQL server instance. By using the multi-instance install feature of the personalization server each recovery database may have an associated PS and can act as a warm standby.

In this configuration, care must be taken that each publishing database has an equal or later SQL server version than the subscriber.

Steps to set this up are:

- Create all the required databases by installing personalization Servers
- Run CreateConfigPublication.cmd at the master configuration database
- Run ConfigSubscriber.cmd at the master for each branch office database
- Run ConfigSubscriber.cmd at the master for each recovery database
- Run CreateDataPublication.cmd at each branch office database
- Run AddDataSubscriber.cmd at each branch office database to add its associated recovery database as a subscriber.

Replication and personalization Server Upgrades

Major upgrades to the personalization server require replication to be disabled before upgrade and re-enabled afterwards. Future service pack upgrades may or may not require replication to be disabled - this will be stated in the tech notes. The Server Configuration Portal detects if replication is enabled on a database and will not allow the upgrade if that upgrade requires replication disabled.

When all servers have been upgraded to the same version, replication can be re-enabled on each server.

Upgrade Replication Servers

1. Log on to the master personalization server.
2. Navigate to the following folder:

C:\Program Files\AppSense\Environment Manager\Personalization Server\Support\Replication and select the folder for your server version.

This is the default installation path. If you have installed to an alternative location, update the path accordingly.

3. Run **RemoveReplication.cmd** and follow the instructions as prompted.



Note

It is recommended that you rerun all agent config and data jobs before running the **RemoveReplication.cmd**



Caution

To fully remove replication, **RemoveReplication.cmd** must be run as *Administrator*.

4. When prompted, enter one of the following:
 - To disable all replication on your server, enter **Y**.

Select this option to remove all replication databases on the specified server.

- To disable all replication for the specified database, enter **N**.

When this procedure is complete, upgrade the master database using AppSense personalization server Configuration Utility and set up replication as described earlier in this chapter.



Caution

If you are upgrading from a pre-8.3 version of Environment Manager, see [Replication and personalization Server Upgrades from Pre-8.3 Versions](#).

Enable Replication without a Snapshot Delivery

When replication is re-enabled following a database upgrade, the delivery of the initial snapshot causes the archive data on each subscriber to be cleared. The volume of data being deleted can lead to timeouts and cause the delivery of the snapshot to fail.

By re-enabling replication without snapshot delivery, archive data is preserved. The likelihood of timeouts is reduced and databases are guaranteed to be consistent when replication is enabled.

This method can also be used to restore a backup of the publisher database onto the subscriber which is ideal for large databases.



Caution

All users must be disconnected from the personalization server before performing this procedure.

1. Manually synchronize the **Config** and **Data** merge publications.
You may need to perform this step multiple times to ensure all rows have correctly propagated to the publisher and each subscriber.
2. Check the replication summary - to ensure the databases have successfully synced, the number of update/insert/delete changes in the replication summary should be **0**. If this is not the case, repeat step 1.



Note

If any conflicting rows exist due to primary/foreign key violations, a new snapshot must be delivered, or a backup of the publisher restored.

3. Remove replication as described on Step 3 of the [Upgrade Replication Servers](#) process.
4. Upgrade all personalization Servers on the publisher and subscriber sites, upgrading databases when prompted.
5. Navigate to the following folder:
C:\Program Files\AppSense\Environment Manager\Personalization Server\Support\Replication and select the folder for your server version. If you have not used the default installation location, update the path accordingly.
6. Open the **CreateConfigSubscription.sql** and **CreateDataSubscription.sql** files in a text editor.
7. Replace all instances of `@sync_type = N'Automatic'` with `@sync_type = N'none'`
8. If you are upgrading from a personalization Server earlier than 8.3.253.0, run the ConvertRowGuids.sql script on all subscribers. The script is in the Replication folder.
This script is not required for personalization server versions 8.3.253.0 or later.
9. Execute the SetMasterUp.cmd and AddSubscriber.cmd scripts as described in [Performing the Setup](#).
The initial snapshot is not delivered to subscribers; archive data is not removed, and replication continues as normal.

Replication and personalization Server Upgrades from Pre-8.3 Versions

After upgrading the database, the background service runs for each user. This can cause issues if replication is set up before the background upgrade has completed.

It is recommended that you perform one of the following steps when upgrading Environment Manager from a version prior to 8.3:

- Ensure all background service processes are complete before setting up replication. In the Event Viewer check that the personalization Background Service shows the upgrades are complete
- Stop the background service on all personalization Servers following the upgrade before setting up replication. IN the Environment Manager Server Configuration Portal (SCP), Select **Services>AppSense personalization Background Service** and click **Stop**. Once replication is successfully set up, restart the background service from the SCP.