





Version 2018.3

### Contents

Notice
Introduction4
Purpose of this Document4
Assumptions 4
Management Center Replication Design6
Setup Process
Supported Operating Systems
Design Notes
Logical Replication Design for Multiple Sites
Configuring the SQL Server Agent
Configuring the Distributor
Reference10
Configuring the Publication
Configuring the Subscriber(s)
Upgrading Management Servers When Replication Is Configured42
Removing Replication
Upgrade Replication Publisher & Subscriber Servers
Set Up New Replication

### Notice

While every precaution has been taken in the preparation of the document, no responsibility is assumed for errors or omissions, nor is any liability assumed for loss or damage resulting from the use of the information it contains.

### Introduction

#### **Purpose of this Document**

The purpose of this document is to provide the steps required to configure replication for the Ivanti Management Center (AMC) across a global environment. This configuration is supported by Ivanti User Workspace Manager for a global rollout.



#### Note

This guide covers the steps required to configure Replication using Microsoft SQL Server 2014. The steps required to set up Network Load Balancing (NLB) of the Ivanti Management Center are not covered

The current AMC design requires an AMC database per serving site and all configuration/agent updates must be saved and distributed at each serving site.

The solution uses Microsoft SQL Server replication to implement an AMC publisher and AMC subscribers. All agents and configuration updates are saved to the publisher database and the data replicated to each serving site database. This ensures a single point for managing all Ivanti Management Center instances.

#### Assumptions

This guide assumes the following:

• An Ivanti Management Center is installed at all serving sites and the Management Server database is configured using the UWM Server Configuration Portal.



#### Note

The subscriber database must be empty when it is first initialized. If any machines have polled the subscriber, or if any edits have been made with the Management Console since installing the server, the snapshot fails to initialize.

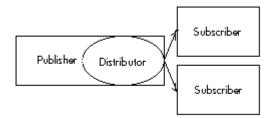
- An extra AMC is installed that will be used as the AMC publisher and the Management Server database is configured using the UWM Server Configuration Portal.
- The SQL Server Agent is running.

The table below shows the functionality available at the publisher and subscribers:

AMC Publisher Functionality	AMC Subscribers Functionality
Packages = Prerequisites, Agents, & Configurations	Computers = Computers, Discovered Computers (from Membership Rules), CCA Install
Deployment Groups = Settings, Installation Schedule, Event Filtering, Deployment Credentials & Package Assignment	Auditing = Events, Alerts
Deployment Group Membership = Membership Rules	Failover = Failover Servers
Security = Users, Policy, and ownership of all objects	
Licensing = Licenses are replicated.	
Auditing = Alert Rules, Event Definitions, Report Definitions	

### **Management Center Replication Design**

The replication model supported is publisher, distributer, and subscriber using a central publisher replication topology. One SQL Server is configured as a publisher and distributor and the other SQL servers are configured as subscribers.



This design allows for one-way replication using SQL Server transactional replication, where an initial snapshot of data is applied at the subscribers. When data modifications are made at the publisher, the individual transactions are captured and sent to subscribers.

The transaction log is used to capture incremental changes made to data in the published articles, which is stored in the distribution database. Changes are then pushed to the subscribers and applied in the same order as they occurred.

One database must be the publisher and other databases are subscribers. The distribution database is set up on the publisher.

Only members of the **sysadmin** server role can set up and configure replication.

#### **Setup Process**

- 1. Configuring the SQL Server Agent
- 2. Configuring the Distributor
- 3. Configuring the Publication
- 4. Configuring the Subscribers

### **Supported Operating Systems**

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

Software	AMC 8.2	AMC 8.3	AMC 8 FR4	AMC 8 FR5	AMC 8.6	AMC 8.7	AMC 10.0	AMC 10.1	MC 2018
Microsoft SQL Server 2008 R2	•	•	•	•	•	•			
Microsoft SQL Server 2012				•	•	•	•	•	•
Microsoft SQL Server 2014							•	•	•
Microsoft Windows Server 2003 (32-bit and 64-bit editions)	•	•	•						
Microsoft Windows Server 2008 R2	•	•	•	•	•	•	•	•	•
Microsoft Windows Server 2012				•	•	•	•	•	•
Microsoft Windows Server 2012 R2				•	•	•	•	•	•

#### **Design Notes**

The following technical points must be followed for supported replication using Microsoft SQL Server:

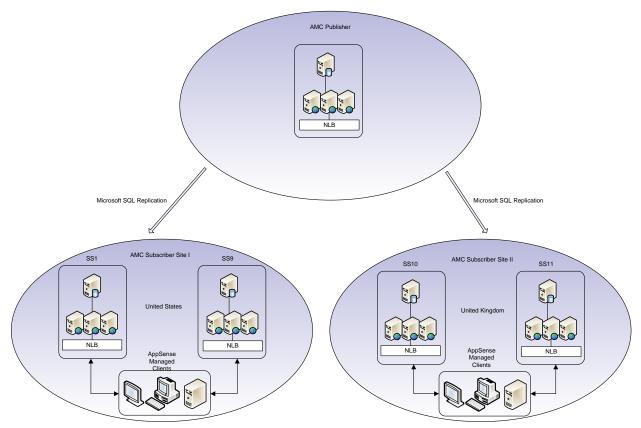
- The times of all SQL servers must be synchronized (however they can be in different time zones).
- The default collation of all SQL servers must be the same.
- Machine package status information is not automatically updated on AMC subscribers when changes are
  made to the **Deployment Group** > **Settings** > **Packages** page in the Management Console connected to
  the AMC publisher. The package status information on the AMC subscriber is only updated when the
  Deployment Agent (CCA) polls.
- To ensure that the CCA Install functionality works on all subscribers, the encryption key must be stored on the Publisher AMC, and retrieved on all Subscriber AMC's. See the <u>Server Configuration Portal Help</u> for more details.
- The Management Center does not prevent edits to replicated data on any of the Subscriber AMCs. To ensure edits don't happen, it is recommended to set up the security on the Publisher AMCs to ensure users of the Subscriber AMCs cannot change replicated data.
- The Subscriber AMC's database must be a newly created database when the subscriber is first initialized. If any machines have polled the subscriber before the first initialization, or if any edits have been made with the Management Console since installing the server, the initial snapshot fails.



#### Caution

The **max text repl size** configuration setting of all SQL Servers must be sufficiently large to store agents and configurations. A minimum of 30MB (31457280 Bytes) is recommended

### Logical Replication Design for Multiple Sites



### **Configuring the SQL Server Agent**

This section outlines the steps required to configure the SQL Server Agent, which must be completed on all SQL Server nodes.

- 1. Launch the SQL Server Configuration Manager.
- 2. Open the **Properties** of the SQL Server Agent service.
- 3. Set the Account to run with a Domain Account that has SA rights.

SQL Server Agent (N	ASSQLSERVER) Properties (Local C 💌
General Log On Reco	overy Dependencies
Log on as:	
○ Local System accou ○ Allow service to in	nt nteract with desktop
	MSDN\Administrator Browse
Password:	•••••
<u>C</u> onfirm password:	•••••
	OK Cancel <u>A</u> pply

- 4. Start the SQL Server Agent service.
- 5. Repeat on all SQL nodes (Publisher and Subscribers).



### **Configuring the Distributor**

This section outlines the steps required to configure the AMC\_Distribution, which must be completed on the SQL node used by the AMC publisher.

Before configuring the distributor, you need to enable Agent XPs for the SQL Server Agent. To do this, execute the following SQL query:

```
sp_configure 'show advanced options', 1;
GO
RECONFIGURE;
GO
sp_configure 'Agent XPs', 1;
GO
RECONFIGURE
GO
```

The output should read:

Configuration option 'show advanced options' changed from 0 to 1. Run the RECONFIGURE statement to install. Configuration option 'Agent XPs' changed from 0 to 1. Run the RECONFIGURE statement to install.

#### Reference

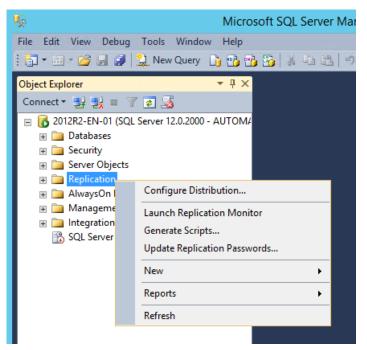
http://blog.sqlauthority.com/2014/05/27/sql-server-fix-agent-starting-error-15281-sql-server-blocked-access-toprocedure-dbo-sp\_get\_sqlagent\_properties-of-component-agent-xps-because-this-component-is-turned-off-aspart-of-the/

#### Replication - Version 2018.3

## ivanti

Configuring a SQL Distribution involves three elements:

- Configuring the Distributor
- Enabling the Publisher
- Configuring the SQL Agent
- 1. Launch an elevated SQL Server Management Studio and log in with an Account that has SA rights.
- 2. Right-click the **Replication** folder, and then click the **Configure Distribution** to launch the Configure Distribution Wizard.



3. Select [SQL Name] will act as its own Distributor; SQL Server will create a distribution database and log. The SQL Server name will vary depending on your naming conventions. Click Next.

æ	Configure Distribution Wizard	_ <b>D</b> X							
	butor this server as its own Distributor or select another server as the Distrib	outor.							
	The Distributor is the server responsible for storing replication information used during synchronizations.								
• '201: and	2R2-EN-01' <u>wi</u> ll act as its own Distributor; SQL Server will create a dist log	ribution database							
	the following server as the Distributor (Note: the server you select mus igured as a Distributor):	t already be							
		<u>A</u> dd							
He	elp < <u>B</u> ack <u>N</u> ext > <u>F</u> inish >>	Cancel							

4. Configure the SQL Server Agent service to start **automatically** and click **Next**.



#### Note

This prompt may not appear if the agent was configured to start automatically in the SQL server installation.

æ	Configure Distribution Wizard 📃 🗖 🗙
SC	<b>QL Server Agent Start</b> 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 '2012R2-EN-01' to start automatically when the computer is started?
	O Yes, configure the SQL Server Agent service to start automatically
	$\bigcirc~{\rm N}_{\underline{0}},$ I will start the SQL Server Agent service manually
4	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

#### Replication - Version 2018.3

### ivanti

The Snapshot Folder page displays.

5. The Snapshot folder is not required for Transactional Replication at the subscriber nodes, but it is still required to configure a Distributor. Accept the default setting, and click **Next**.

🛷 Configure Distribution 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.MSSQLSERVER\MSSQL\RepIData
This snapshot folder does not support pull subscriptions created at the Subscriber. It is not
A This shapshot folder does not support pull subscriptions created at the subscripter. 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

6. Change the name of the Distribution Database to **AMC\_Distribution**. This ensures that the AMC distribution database can be clearly identified. Click **Next**.

In the second se
Distribution Database Select the name and location of the distribution database and log files.
The distribution database stores changes to transactional publications until Subscribers can be updated. It also stores historical information for snapshot and merge publications.
Distribution database name:
AMC_Distribution
Folder for the distribution database file:
C:\Program Files\Microsoft SQL Server\MSSQL12.MSSQLSERVER\MSSQL\Data
Folder for the distribution database log file:
C:\Program Files\Microsoft SQL Server\MSSQL12.MSSQLSERVER\MSSQL\Data
The paths must refer to disks that are local to the Distributor and begin with a local drive letter and colon (for example, C:). Mapped drive letters and network paths are invalid.
Help          Next >         Finish >>          Cancel

7. Accept the Publishers default settings and click Next.

đ		Configure Distrib	oution Wizar	d	-		x			
	<b>ishers</b> able servers to use th	iis Distributor when the	y become Publish	iers.			P			
<u>P</u> u	Publishers:									
	Publisher 🔺	D	istribution Databa	se						
	2012R2-EN-01	A	MC_Distribution							
					<u>A</u> dd	•				
Ŀ	lelp	< <u>B</u> ack	<u>N</u> ext > <u>F</u>	ìnish >>		Cancel				

8. Select Configure distribution, and click Next.

-8°	Configure Distributio	on Wizard	_ <b>D</b> X
Wizard Actions Choose what happens	when you click Finish.		
At the end of the wiza	rd:		
✓ Configure distr	ibution		
<u>G</u> enerate a sc	ript file with steps to configure	distribution	
Help	< <u>B</u> ack <u>N</u> ext	> <u>Finish &gt;&gt;</u>	Cancel

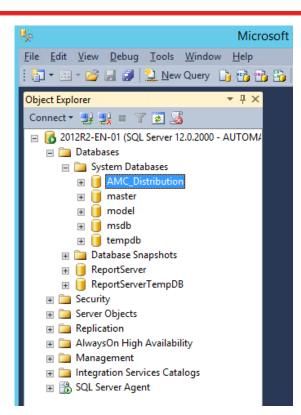
9. Allow the Configure Distribution Wizard to complete.

æ	Configure Distribution Wizard 📃 🗖 🗙							
Co	Complete the Wizard Verify the choices made in the wizard and click Finish.							
Cli	ck Finish to perform the following actions:							
•	Configure distribution.							
Di	stribution will be configured with the following options:							
	<ul> <li>Distribution will be configured with the following options:</li> <li>Use '2012R2-EN-01' as the Distributor.</li> <li>Configure the SQL Server Agent service on '2012R2-EN-01' to start automatically when the computer is started.</li> <li>Use 'C:\Program Files\Microsoft SQL Server\MSSQL12.MSSQLSERVER\MSSQL \RepIData' as the root snapshot folder for Publishers using this Distributor.</li> <li>Store the distribution database 'AMC_Distribution' in 'C:\Program Files\Microsoft SQL Server\MSSQL12.MSSQLSERVER\MSSQL\Data'.</li> <li>Store the distribution database log file in 'C:\Program Files\Microsoft SQL Server \MSSQL12.MSSQLSERVER\MSSQL\Data'.</li> <li>Allow the following servers running SQL Server to use 2012R2-EN-01 as their Distributor:</li> <li>2012R2-EN-01</li> </ul>							
	Help < Back Next > Finish Cancel							

10. All three elements should complete successfully, Configuring the Distributor, Enabling the Publisher, and Configuring the SQL Agent.

-8°	Configure Distril	bu	ition W	/izard		-		x
	figuring lick Stop to interrupt the operation.							Ĩ
	C	-	Total Success	3	0 0	Error Wami	ing	
<u>D</u> eta	ils:							
	Action			Status			Messa	age
0	Configuring the Distributor			Success				
0	Enabling Publisher 'LB-SQL2014-2\NODE1	1		Success				
0	Configuring SQL Server Agent to start autor	nai	tically	Success				
<								>
		_						/
			<u>S</u>	top		<u>R</u> e	eport	•
							Close	

11. To check that the Distribution Database has been successfully created, open the **System Databases** node and ensure that an **AMC\_Distribution** database is present.



### **Configuring the Publication**

This section outlines the steps required to configure the AMC\_Publication, which must be completed on the SQL node used by the AMC publisher.

An SQL publication involves three elements:

- Configuring the AMC database
- Creating the Publication
- Adding the Articles

The publication is called **AMC\_Publication** and includes the following articles in the **ManagementServer** database.



#### Note

Management Server 8.2 and 8.3 - 27 articles are published.

Management Server 8 FR4 – 28 articles are published.

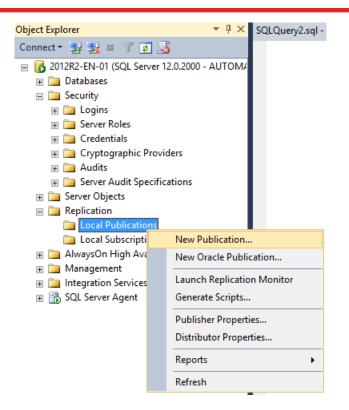
Management Server 8 FR5, 8.6 and 8.7 - 29 articles are published.

Management Server 10, 10.1 and 2018 – 30 articles are published.

#### **Publication Articles:**

- ActionConfigurations
- Actions
- AlertRules
- Conditions
- DeploymentCredentials
- EventDefinitionParams
- EventDefinitions
- GroupEventFilter
- GroupInstallationSchedule
- GroupPackages
- Groups
- LicenseFeature (Management Server 10 and later)
- Licenses
- LicensingV2 (Management Server 8 FR5 and later)
- Packages

- PackageVersionPrerequisites
- PackageVersions
- Patches (Management Server 8 FR4 and later)
- Policies
- PrerequisiteCheck
- PrerequisiteCommand
- PrerequisiteExitCode
- PrerequisiteResource
- Prerequisites
- Products
- Properties
- ReportDefinitions
- SecurityElements
- SecurityRoles
- Users
- 1. Open SQL Server Management Studio and log in with an Account that has SA rights.
- 2. Open the supplied **PrepareManagementCenterForReplication.sql**. Ensure that the ManagementServer database is the active database in the toolbar.
- 3. Select **Execute** and ensure that the script completes successfully.
- 4. Right-click the **Local Publications** folder under the Replication folder. Select **New Publication** to launch the New Publication Wizard.





5. The New Publication Wizard launches. Select the ManagementServer database, and click Next.

ů <sup>2</sup>	New Publication Wizard	_		x
	n Database e database that contains the data or objects you want to publis	h.		1
Databases:				
AMC_DB1				
Help	< Back Next > Finish >>		Cancel	

6. Select Transaction publication, and click Next.

New Publication Wizard	-		x
Publication Type Choose the publication type that best supports the requirements of your application.		P	1
Publication type:			
Snapshot publication			
Publication type descriptions: Transactional publication: The Publisher streams transactions to the Subscribers after they receive an ini the published data.	tial snaj	pshot (	of ^
Peer-to-Peer publication: Peer-Peer publication enables multi-master replication. The publisher streams to all the peers in the topology. All peer nodes can read and write changes and the propagated to all the nodes in the topology.			
Merge publication: The Publisher and Subscribers can update the published data independently a Subscribers receive an initial snapshot of the published data. Changes are me		•	~
Help         < Back         Next >         Finish >>		Cance	<b>:</b>

Select the **publication articles** listed at the top of this section. No Stored Procedures, Views, or User Defined Functions will be published.

₫ <sup>4</sup>	New Publication	on V	Vizard 🗕 🗖 🗙
Articles Select tabl tables.	es and other objects to publish as art	icles.	Select columns to filter
Objects to pu	olish:		
	ables ActionConfigurations (dbo) Actions (dbo) AlertEvents (dbo) AlertEventsDeprecated (dbo) AlertRules (dbo) Alerts (dbo) Conditions (dbo) DeploymentCredentials (dbo) DeploymentInstructions (dbo) DeploymentStatusHistory (dbo) EventDefinitionParams (dbo) EventDefinitionParams (dbo) EventParamDateTimesDeprecated III		Article Properties    Article Properties
Help	< Back 1	Vext >	Finish >>  Cancel

7. Right-click the **Properties (dbo)** table and select **Set Properties of This Table Article**. In the Article Properties dialog, change **Action if name is in use** to **Delete Data. If article has a row filter, delete only data that matches the filter**. Click **OK** to close the dialog. Then click **Next** to continue.

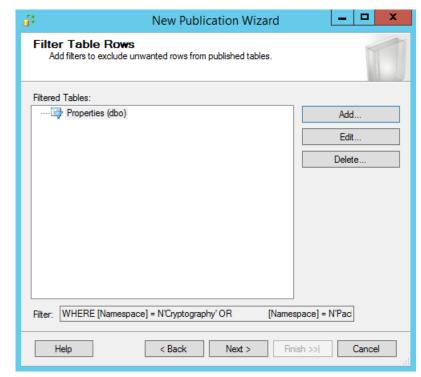
10	perties:		_
	Copy filtered indexes	False	1
	Copy data compression attribu	False	
	Copy sparse column attribute	False	
⊿	Destination Object		
	Destination object name	Properties	
	Destination object owner	dbo	
	Action if name is in use	Delete data. If article has a row filte ∨	
	Convert data types	False	
	Convert TIMESTAMP to BINA		h
	Create schemas at Subscriber	True	
	Convert XML to NTEXT	False	
	Convert MAX data types to N		Ξ
	Convert new datetime to NVA	False	
	Convert filestream to MAX data	True	
	Convert large CLR to MAX dat	False	L
	Convert hierarchyld to MAX da	False	
	Convert spatial to MAX data ty	False	
⊿	Identification		L
	Description		Ŀ
De	<b>tion if name is in use</b> termines the action to perform if bscriber.	an object of the same name exists at the	

- 8. The properties table requires filtering, select **Add**. In the Add Filter dialog, select the **Properties (dbo)** table in the dropdown.
- 9. In the Filter Statement, modify the second line to state "*WHERE* [Namespace] = N'Cryptography' OR [Namespace] = N'Packages'"

<b>.</b>		Add Filter
1.	Select the table to filter.	
	Properties (dbo)	~
2.	Complete the filter statement to identi statements	ify which table rows Subscribers will receive. Example
	Columns:	Filter statement:
	Namespace (nvarchar) Name (nvarchar) Value (sql_variant)	SELECT <published_columns> FROM [dbo].[Properties] WHERE [Namespace] = N'Cryptography' OR [Namespace] = N'Packages]</published_columns>
_		OK Cancel Help

#### 10. Click **OK**.

#### 11. Click Next.



12. The Snapshot Agent page displays, ensure that neither option is selected, and Click Next.

ini <sup>3</sup>	New Publication Wizard 📃 🗖 🗙
Snapshot Ag Specify when t	ent orrun the Snapshot Agent.
Subscriptions are in Agent creates the s	itialized with a snapshot of publication schema and data. The Snapshot napshot.
Create a snapsł	ot immediately and keep the snapshot available to initialize subscriptions
Schedule the S	napshot Agent to run at the following times:
	Change
	e the snapshot properties, do not start the Snapshot Agent until after you es in the publication property dialog box.
Help	< Back Next > Finish >>  Cancel

13. The Agent Security page displays, click **Security Settings**.

👬 New Publication Wi	zard 🗕 🗖 🗙
Agent Security For each agent, specify the account under which it will settings.	run and its connection
Snapshot Agent:	
	Security Settings
Log Reader Agent:	
	Security Settings
You must specify a login for each replication agent be	fore continuing the wittend
Tou must specify a login for each replication agent be	fore continuing the wizara.
Help < Back Next >	Finish >>  Cancel



14. The Snapshot Agent Security dialog displays.

Snaps	hot Agent Security
Specify the domain or machine account und	ler which the Snapshot Agent process will run.
Run under the following Windows accession	ccount:
Process account:	
	Example: domain\account
Password:	
Confirm Password:	
practice.) Connect to the Publisher	
<ul> <li>By impersonating the process account</li> </ul>	nt
Using the following SQL Server login	u.
Login:	
Password:	
Confirm Password:	
	OK Cancel Help

- 15. Select **Run under the SQL Server Agent service account** as the account under which the Snapshot Agent process will run.
- 16. Select connect to the publisher by impersonating the process account. Click OK.



#### Note

Security is not compromised because the SQL Agent is already configured to run under the context of a Windows Account and uses Kerberos authentication.

17. The Agent Security page displays, click Next.

<b>1</b> 3	New Publication Wizard 📃 🗖 🗙
A	gent Security For each agent, specify the account under which it will run and its connection settings.
Si	napshot Agent:
S	QL Server Agent account Security Settings
Lo	og Reader Agent:
S	QL Server Agent account Security Settings
~	Use the security settings from the Snapshot Agent
	,,,, <u>-</u>
	Help < Back Next > Finish >>  Cancel

**18.** The Wizard Actions page displays, select **Create the publication**, and click **Next**.

<b>1</b> 4	New Publication Wizard	_ <b>D</b> X
v	<b>Vizard Actions</b> 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

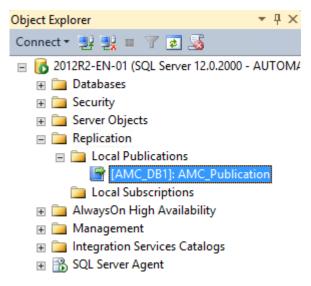
19. The Complete the Wizard page displays, enter the name **AMC\_Publication**. This ensures that the AMC articles can be clearly identified. Click **Finish**.

ů <sup>2</sup>	New Publication Wizard 📃 🗖 🗖	x
	Implete the Wizard         Verify the choices made in the wizard and click Finish.	*
	blication name: AMC_Publication	
• • • •	Create the publication.	< III >
	Help < Back Next > Finish Cancel	

20. Both elements should complete successfully: Creating the Publication and Adding the articles.

ting Publication k Stop to interrupt the operation. Success	2 Total 2 Success	0 Error 0 Warning
ction	Status	Message
Treating Publication 'AMC_Publication'	Success	
	Stop	Report   Close
	dding article 30 of 30	dding article 30 of 30 Success

21. Check that the Publication has been successfully created. Open the **Local Publications** node and ensure that **[ManagementServer]: AMC\_Publication** is present.



22. Right-click the **Publication** and select **Properties** to open the **Properties** window. Navigate to **Subscription Options** and change **Replicate schema changes** to **False**.

B		Publication Properties - AMC_Pu	Iblication
Select a page	<b>R</b> 9	icript 🔻 🎼 Help	
🚰 General 🛛	<u>ب</u>	Cubr - Di Heib	
Articles			
Tilter Rows	⊿	Creation and Synchronization	
🜃 Snapshot		Independent Distribution Agent	True
😭 FTP Snapshot		Snapshot always available	False
Subscription Options		Allow anonymous subscriptions	False
Mail Publication Access List		Attachable subscription database	False
Gent Security		Allow pull subscriptions	True
		Allow initialization from backup files	False
		Allow non-SQL Server Subscribers	False
	⊿	Data Transformation	
		Allow data transformations	False
	⊿	Peer-to-Peer Replication	
		Allow peer-to-peer subscriptions	False
		Allow peer-to-peer conflict detection	False
		Peer originator id	0
		Continue replication after conflict detection	False
	⊿	Schema Replication	
		Replicate schema changes	False V
	⊿	Updatable subscriptions	
Connection		Allow immediate updating subscriptions	False
Server: 2012R2-EN-01		Allow queued updating subscriptions	False
Server: 2012R2-EN-01			
Connection: AUTOMATION\slaveadmin			
AUTOMATION\slaveadmin			
View connection properties			
_			
Progress			
		eplicate schema changes	
Ready	De	termines whether to replicate schema change	es to published objects.
New Y			
			OK Cancel

23. In the same property sheet, navigate to **Snapshot** and change both the before and after scripts to the supplied **PrepareManagementCenterForReplication.sql**. Click **OK**.

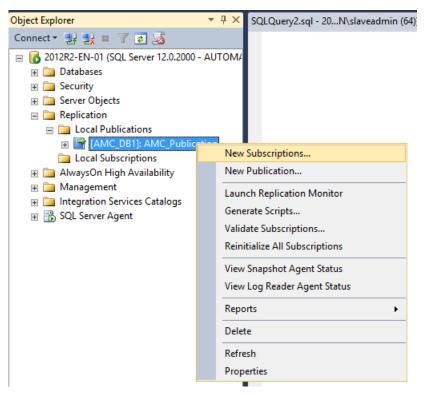
F	Publication Properties - AMC_Publication
Select a page General Articles Filter Rows Snapshot FTP Snapshot Subscription Options	Script  Help  Snapshot format  Native SQL Server - all Subscribers must be servers running SQL Server  Character - required if a Publisher or Subscriber is not running SQL Server
Mai Publication Access List	Location of snapshot files          Image: Put files in the default folder         Image: C:\Program Files\Microsoft SQL Server\MSSQL12.MSSQLSERVER\MSSQL\RepIData         Image: Put files in the following folder:
Connection	Browse         Compress snapshot files in this folder         Run additional scripts         Before applying the snapshot, execute this script:
Server: 2012R2-EN-01	C:\AMCScripts\PrepareManagementCenterForReplication.sql Browse
Connection: AUTOMATION\slaveadmin	After applying the snapshot, execute this script:  C:\AMCScripts\PrepareManagementCenterForReplication.sql  Browse
Progress	
C Ready	
	OK Cancel

### Configuring the Subscriber(s).

This section outlines the steps required to configure the AMC Subscriber, which must be completed on the SQL Server used by the AMC Publisher. Repeat for each subscriber node in the replication topology.

Configuring an SQL Subscription involves one element:

- Creating the Subscription
- 1. Launch SQL Server Management Studio and log in with an Account that has SA rights.
- Navigate to Replication > Local Publications > right-click the AMC\_Publication and select New Subscriptions.



3. The New Subscription Wizard launches. Select the **Publisher** from the dropdown and select **AMC\_Publication**. Click **Next**.

<b>1</b>	New Subscription Wizard 📃 🗖 🗙
Ρι	Ublication Choose the publication for which you want to create one or more subscriptions.
	Publisher: 2012R2-EN-01 ✓ Databases and publications:
	AMC_DB1
	Help < <u>B</u> ack <u>N</u> ext > Enish >>  Cancel

4. Select Run all agents at the Distributor, [SQL name] (push subscriptions) and click Next.

🖆 New Subscription Wizard 📃 🗖 🗙
Distribution Agent Location Choose where to run the Distribution Agent(s).
For the subscriptions I create in this wizard:
<ul> <li><u>R</u>un all agents at the Distributor, 2012R2-EN-01 (push subscriptions)</li> </ul>
This option makes it easier to administer the synchronization of subscriptions centrally.
O Run <u>e</u> ach 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 >         Enish >>          Cancel

5. Select Add Subscriber -> Add SQL Server Subscriber.

1 New	Subscription Wizard
Subscribers Choose one or more Subscribers	and specify each subscription database.
Subscribers and subscription databa	ises:
Subscriber 🔺	Subscription Database
LB-SQL2014-2\NODE1	
	<u>A</u> dd Subscriber ▼
You must select a Subscriber a wizard.	nd specify the subscription database to continue the
Help < B	lack Next > Finish >>  Cancel

6. In the SQL Server login dialog, enter the log in credentials to connect to the SQL Server. The Account must have SA rights.

<b>1</b>	Connect to Server	x
Microsoft SC	QL Server 2014	
Server type:	Database Engine	~
Server name:	2012R2-EN-02	~
<u>A</u> uthentication:	Windows Authentication	¥
<u>U</u> ser name:	AUTOMATION\slaveadmin	~
<u>P</u> assword:		
	Remember password	
<u>C</u> onnect	Cancel Help Option	ons >>

7. Select the ManagementServer database on the Subscriber SQL node and then click Next.

<b>1</b>		New Subsci	ription Wizar	d l	-		x
Subscri Choose		bscribers and spec	ify each subscripti	ion database.		K	
<u>S</u> ubscriber	s and subscription	on databases:					
Subs	criber 🔺		Subscription	Database			
2012	2R2-EN-01						
2012	2R2-EN-02		AMC_DB2				~
				<u>A</u> dd Subsc	riber	•	•
<u>H</u> elp		< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish >>	С	ancel	

8. Specify the **Process account** and the **Connection options** for the distribution agent.

Agent.		
Agent for Subscriber	 Connection to Distributor	Connection to Subscriber
2012R2-EN-02	Click () to set securit	Click () to set security

9. Select **Run under the SQL Server Agent service account**. Connect to the distributor and the subscriber **by impersonating the process account**. Click **OK**. Then click **Next**.

Note

Security is not compromised because the SQL Agent has already been configured to run under the context of a Windows Account and will use Kerberos authentication

Distributio	on Agent Security
Specify the domain or machine account under v synchronizing this subscription.	vhich the Distribution Agent process will run when
$\bigcirc$ Run under the following Windows accour	t:
Process <u>a</u> ccount:	
Exa	mple: domain\account
Password:	
Confirm Password:	
<ul> <li>Run under the SQL Server Agent service practice.)</li> </ul>	account (This is not a recommended security best
Connect to the Distributor	
$\textcircled{\begin{tabular}{ll} \bullet \\ \hline \hline \end{array}} y$ impersonating the process account	
O Using a SQL Server login	
The connection to the server on which the process account must be a member	ne agent runs must impersonate the process account. of the Publication Access List.
Connect to the Subscriber	
<ul> <li>By impersonating the process account</li> </ul>	
$\bigcirc~$ Uging the following SQL Server login:	
Login:	
Pass <u>w</u> ord:	
Con <u>fi</u> rm password:	
The login used to connect to the Subscriber database.	must be a database owner of the subscription
	OK Cancel <u>H</u> elp



10. Ensure that the Agent is scheduled to Run Continuously. Click Next.

1	New Subsc	ription Wizard	_ 🗆 🗙		
Synchronizati Specify the sync	Synchronization Schedule Specify the synchronization schedule for each agent.				
Agent schedule:					
Subscriber 🔺	Agent Location	Agent Schedule			
2012R2-EN-02	Distributor	Run continuously	~		
Help	< <u>B</u> ack	<u>N</u> ext > <u>F</u> inish >:	> Cancel		

11. Ensure that the Subscriber is initialized Immediately. Click Next.

#### Note

When using SQL Server 2016 the option to use Memory Optimization is available for each subscriber, this feature is **not** compatible with Ivanti User Workspace Manager (UWM) products.

I N	lew Subscr	iption Wizard	_ <b>D</b> X
Initialize Subscription Specify whether to initialize e data and schema.		on with a snapshot of the pu	ublication
Subscription properties:			
Subscriber	Initialize	Initialize When 🔍	
2012R2-EN-02	✓	Immediately	V
A subscription database needs t schema unless it has already be			cation data and
The Snapshot Agent must subscriptions can be initiali	run and genera zed.	ate a snapshot of the publica	ation before the



12. In Wizard Actions, select Create the subscription(s) and Click Next.

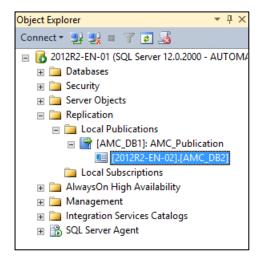
<b>1</b>	New Subscription Wizard	_		x
	ard Actions hoose what happens when you click Finish.		Ţ	
	At the end of the wizard:			
	☑ <u>C</u> reate the subscription(s)			
	Generate a script file with steps to create the subscription(s)			
	Help < Back Next > Finish >>	С	ance	<b>і</b> і

13. Click **Finish**. This creates a subscriber for the corresponding publisher.

<b>1</b>	New Subscription Wizard	_ 🗆 X
	plete the Wizard mfy the choices made in the wizard and click Finish.	Ĭ.
Click	Finish to perform the following actions:	
Create subscription(s).		
Create a subscription to publication 'AMC_Publication' from Publisher '2012R2- EN-01'.		
Create subscriptions at the following Subscriber(s):		
2012	PR2-EN-02         Subscription database: AMC_DB2         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	
	_elp < <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel



14. Expand the Local Publications node to view the subscriber.



### **Upgrading Management Servers When Replication Is Configured**

In this section:

- <u>Removing Replication</u>
- Upgrade Replication Publisher & Subscriber servers
- Setup new Replication

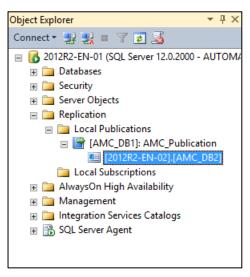
#### **Removing Replication**

Remove the replication from the environment to ensure that the upgrades run smoothly.

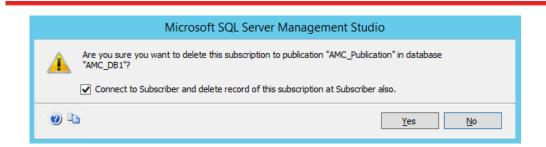
Removing replication leaves the replicated databases in a disconnected mode where updates to the publisher are no longer pushed to the subscribers. However, on the subscribers, events and alerts can still be collected and machines will still join groups. Removing replication does not prevent the subscriber servers operating for this automatic day-to-day usage.

Once replication is stopped, it is not be possible to push out new configurations or agents until the upgrade process is complete. Do not change configuration directly on the subscribers because this can cause failures when replication is re-enabled.

- 1. Open Microsoft SQL Server Management Studio.
- 2. Connect to the SQL instance that is acting as the publisher.
- 3. Expand the **Replication** node in Object Explorer until you see all the subscribers.



4. Select each subscriber in turn and delete using right-click > **Delete**. Ensure **Connect to Subscriber and delete record of this subscription at the Subscriber also** is selected.



5. Once all the subscribers are deleted, delete the Publication in the same way.

Once this is done, replication has been removed for the estate.

#### **Upgrade Replication Publisher & Subscriber Servers**

Use the standard product guides to upgrade the Publisher and Subscriber servers.

Upgrades can be done in any order. However, replication can only be re-enabled when the publisher and subscriber have matching versions. Therefore, it may make sense to upgrade the Publisher server first, and then upgrade the Subscribers individually.

#### **Set Up New Replication**

Once the **Publisher** server has been upgraded to the latest version, follow the steps in this document for configuring the publisher. See <u>Configuring the Publication</u>.

Once a **Subscriber** server has been upgraded to the latest version, follow the steps in this document for configuring the subscribers. See <u>Configuring the Subscriber(s)</u>