



Replication

Version 2023.3

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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.

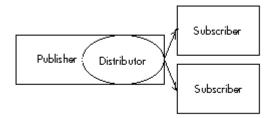
- An extra AMC is installed that will be used as the AMC publisher and the Management Server database is configured using the UWM Server Configuration Portal.
- The SQL Server Agent is running.

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

Design Notes

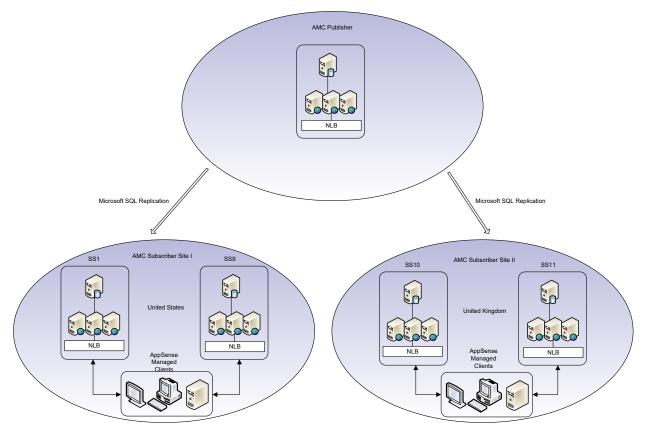
The following technical points must be followed for supported replication using Microsoft SQL Server:

- 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	ISSQLSERVER) Properties (Local C 💌
General Log On Reco	overy Dependencies
Log on as:	
Local System accourt 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

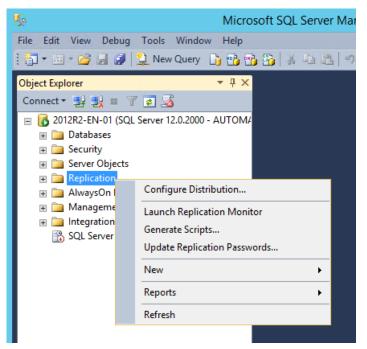
http://blog.sqlauthority.com/2014/05/27/sql-server-fix-agent-starting-error-15281-sql-server-blocked-access-toprocedure-dbo-sp_get_sqlagent_properties-of-component-agent-xps-because-this-component-is-turned-off-aspart-of-the/

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Configuring a SQL Distribution involves three elements:

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



8. 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**.

đ°		Configure	Distrib	oution W	/izard	_		x
Distribu Use thi		own Distributor	or select a	another ser	ver as the [Distributor.		
The Distrib synchroniza		er responsible fo	or storing	replication i	information	used during	9	
'2012R' and log		t as its own Dis	tributor; S	QL Server	will create a	a distributio	n datab	ase
	following serve red as a Distrib	er as the Distrib utor):	utor (Note	e: the serve	r you select	t must alrea	ady be	
						A	<u>\</u> dd	
<u>H</u> elp		< <u>B</u> ack		<u>N</u> ext >	<u>F</u> inish	>>	Cance	.

9. 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 📃 🗖 🗙
so	AL 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 '2012R2-EN-01' to start automatically when the computer is started?
	$\textcircled{\begin{tabular}{ll} \bullet \end{tabular}} \underline{Y} es, configure the SQL Server Agent service to start automatically$
	O No. 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 < <u>B</u> ack <u>N</u> ext > <u>F</u> inish >> Cancel

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The Snapshot Folder page displays.

10. 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**.

ත් Co	nfigure Distrib	ution Wizard	_	
Snapshot Folder Specify the root location w	here snapshots will b	e stored.		
To allow Distribution and Merg publications, you must use a n				ots of their
<u>S</u> napshot folder: C:\Program Files\Microsoft SQ	L Server\MSSQL12.	MSSQLSERVER\M	ISSQL\RepID	ata
This second at folder day			a altan Curdonarak	an his ant
This snapshot folder doe a network path or it is a o pull subscriptions, use a	lrive letter mapped to	a network path. To	support both	push and
Help	< <u>B</u> ack	Next > Finis	h >>	Cancel

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

🐨 Configure Distribution Wizard 🗖 🗖 🗙
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
Fold <u>e</u> r 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 < Back Next > Finish >> Cancel

12. Accept the Publishers default settings and click Next.

đ		Configure Dis	tribution Wizard	_		x
Ρι	Iblishers Enable servers to use	this Distributor when	they become Publishers.		1 million	P
	Publishers:					
	Publisher 🔺		Distribution Database			
	2012R2-EN-01		AMC_Distribution			
				<u>A</u> dd	•	
	<u>H</u> elp	< <u>B</u> ack	<u>N</u> ext > <u>F</u> inish >	>	Cancel	



13. Select Configure distribution, and click Next.

æ	Configure Distribution Wizard	_		x
w	izard Actions Choose what happens when you click Finish.			
	At the end of the wizard:			
	☑ Configure distribution			
	Generate a script file with steps to configure distribution			
	Help < Back Next > Finish >>		Cance	:

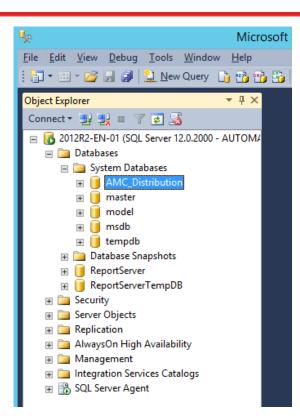
14. Allow the Configure Distribution Wizard to complete.

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

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

P	Configure Distri	bι	ition W	/izard		-		x
	figuring lick Stop to interrupt the operation.							1
	Success	_	Total Success	\$	0	Error Warn	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	ma	tically	Success				
<								>
			<u>S</u>	top		Re	eport	•
							Close	

16. 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.

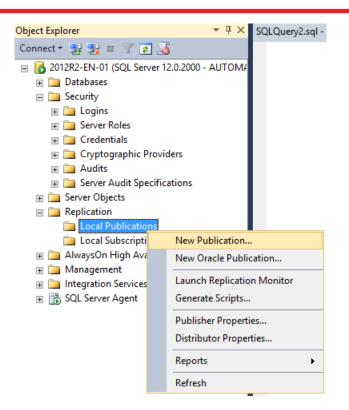
Management Server 8 FR5, 8.6 and 8.7 - 29 articles are published.

Management Server 10, 10.1, 2018, 2019 and 2020 – 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
- 17. Open SQL Server Management Studio and log in with an Account that has SA rights.
- Open the supplied PrepareManagementCenterForReplication.sql. Ensure that the ManagementServer database is the active database in the toolbar.
 Refer to the following community article for a script to achieve this: <u>BP09 Configuring SQL Replication for UWM Management Center</u>.
- 19. Select **Execute** and ensure that the script completes successfully.
- 20. Right-click the **Local Publications** folder under the Replication folder. Select **New Publication** to launch the New Publication Wizard.





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

ů ²		New Pu	ublicat	ion Wiz	ard		-		x
	ation Data e the database	base that contains th	ne <mark>da</mark> ta o	or objects y	ou want to p	ublish.			1
Database	8:								
AMC_DB									
Help		< Back		Next >	Finish	>>	(Cance	

22. Select Transaction publication, and click Next.

New Publication Wizard	-		x
Publication Type Choose the publication type that best supports the requirements of your application.			1
Publication type:			
Snapshot publication			
Transactional publication			
Peer to-Peer publication			
Merge publication			
Transactional publication: The Publisher streams transactions to the Subscribers after they receive an initia the published data.	al snap	oshot d	of
Peer-to-Peer publication: Peer-Peer publication enables multi-master replication. The publisher streams tra 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 af Subscribers receive an initial snapshot of the published data. Changes are merged		;	~
Help Rinish >>		Cance	I

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

₫ ²	New Publicatio	ion Wizard 📃 🗖 🗙
Articles Select table tables.	es and other objects to publish as arti	articles. Select columns to filter
Objects to pub	lish:	
	bles ActionConfigurations (dbo) Actions (dbo) AlertEvents (dbo) AlertEventsDeprecated (dbo) AlertRules (dbo) Alerts (dbo) Conditions (dbo) DeploymentCredentials (dbo) DeploymentInstructions (dbo) DeploymentInstructions (dbo) DiscoveredMachines (dbo) EventDefinitionParams (dbo) EventDefinitions (dbo) EventParamDateTimes (dbo) EventParamDateTimes (dbo)	
Help	< Back N	Next > Finish >> Cancel

23. 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.

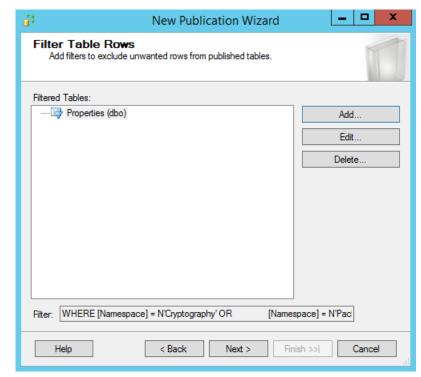
110	perties:		_
	Copy filtered indexes	False	1
	Copy data compression attribu		
	Copy sparse column attribute	False	
⊿	Destination Object		L
	Destination object name	Properties	
	Destination object owner	dbo	
	Action if name is in use	Delete data. If article has a row filte	I.
	Convert data types	False	
	Convert TIMESTAMP to BINA		
	Create schemas at Subscriber		
		False	
	Convert MAX data types to N		Ξ
	Convert new datetime to NVA		
	Convert filestream to MAX data	1100	
	Convert large CLR to MAX dat		-
	Convert hierarchyld to MAX da		
	Convert spatial to MAX data ty	False	
⊿			Ļ
	Description		<u> </u>

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

₫ ²		Add Filter
1.	Select the table to filter.	
	Properties (dbo)	~
2.	Complete the filter statement to identify statements	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

26. Click **OK**.

27. Click Next.



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

d ²	New Publication Wizard	_ 🗆 🗙
Snapshot Ager Specify when to n	nt un the Snapshot Agent.	
Subscriptions are initia Agent creates the snaj	lized with a snapshot of publication schema and data. pshot.	The Snapshot
Create a snapshot	immediately and keep the snapshot available to initialize	e subscriptions
Schedule the Snap	oshot Agent to run at the following times:	
		Change
	the snapshot properties, do not start the Snapshot Ager in the publication property dialog box.	nt until after you
	< Back Next > Finish >>	Cancel
Help	< Back Next > Finish >>	Cancel

29. The Agent Security page displays, click Security Settings.

ii [‡]	New Publication Wiza	ard 🗕 🗖 🗙
Agent Security For each agent, speci settings.	fy the account under which it will ru	in and its connection
Snapshot Agent:		
		Security Settings
Log Reader Agent:		
		Security Settings
You must specify a k	gin for each replication agent befo	re continuing the wizard
Help	< Back Next >	Finish >> Cancel



30. The Snapshot Agent Security dialog displays.

Sn	apshot Agent Security	
Specify the domain or machine account under which the Snapshot Agent process will run.		
 Run under the following Windo 	ws account:	
Process account:		
	Example: domain\account	
Password:		
Confirm Password:		
Connect to the Publisher		
 By impersonating the process a 	account	
O Using the following SQL Server	r login:	
Login:		
Password:		
Confirm Password:		
	OK Cancel Help	

- 31. Select **Run under the SQL Server Agent service account** as the account under which the Snapshot Agent process will run.
- 32. 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.



33. The Agent Security page displays, click Next.

😚 New Publication Wi	zard 🗕 🗖 🗙	
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		
• Ose the second		
Help < Back Next >	Finish >> Cancel	

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



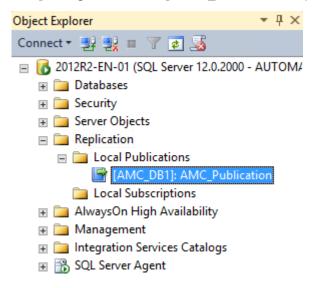
35. The Complete the Wizard page displays, enter the name **AMC_Publication**. This ensures that the AMC articles can be clearly identified. Click **Finish**.

1 4	New Publication Wizard 📃 🗖 🗖	x
Co	Verify the choices made in the wizard and click Finish.	×
	blication name: AMC_Publication	
• • • •	Create the publication.	< III >
	Help < Back Next > Finish Cancel]

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

	New Public	ation Wizard	_ □ ×
	eating Publication Click Stop to interrupt the operation.		*
(Success	2 Total 2 Success	0 Error 0 Warning
Det		-	
	Action	Status Success	Message
	Creating Publication 'AMC_Publication' Adding article 30 of 30	Success	

37. Check that the Publication has been successfully created. Open the **Local Publications** node and ensure that **[ManagementServer]: AMC_Publication** is present.



38. 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_Publicat	ion 💶 🗖 🗙
General Ciencia	Script 🔻 📳 Help	
Articles	C 10 1	
Tilter Rows	Creation and Synchronization	
Snapshot	Independent Distribution Agent True	
FTP Snapshot	Snapshot always available False	
Subscription Options	Allow anonymous subscriptions False	
Publication Access List	Attachable subscription database False	
Garage Agent 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	✓
	Updatable subscriptions	
Connection	Allow immediate updating subscriptions False	
Server: 2012R2-EN-01	Allow queued updating subscriptions False	
Connection: AUTOMATION\slaveadmin		
View connection properties		
Progress		
Ready	eplicate schema changes termines whether to replicate schema changes to pub	lished objects.
		OK Cancel

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

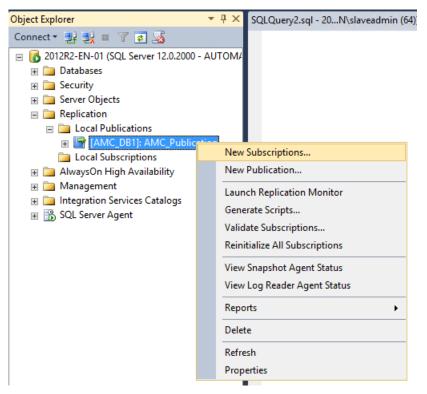
F	Publication Properties - AMC_Publication
Select a page General Articles Filter Rows Snapshot FTP Snapshot Subscription Options	Script Help Snapshot format Native SQL Server - all Subscribers must be servers running SQL Server Character - required if a Publisher or Subscriber is not running SQL Server
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
- 40. Launch SQL Server Management Studio and log in with an Account that has SA rights.
- 41. Navigate to **Replication > Local Publications >** right-click the **AMC_Publication** and select **New Subscriptions**.



42. The New Subscription Wizard launches. Select the **Publisher** from the dropdown and select **AMC_Publication**. Click **Next**.

1	New Subscription Wizard 📃 🗖 🗙
Ρι	Iblication Choose the publication for which you want to create one or more subscriptions.
	<u>P</u> ublisher:
	2012R2-EN-01 V
	Databases and publications:
	AMC_DB1
	Help < Back Next > Enish >> Cancel

43. 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:
 <u>R</u>un all agents at the Distributor, 2012R2-EN-01 (push subscriptions)
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 >>I Cancel



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

🖆 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	
	Add Subscriber 💌
You must select a Subscriber a wizard.	nd specify the subscription database to continue the
Help < B	ack Next > Finish >> Cancel

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

1	Connect to Server				
Microsoft SQL Server 2014					
Server type:	Database Engine	v			
Server name: 2012R2-EN-02		~			
<u>A</u> uthentication:	Windows Authentication	~			
<u>U</u> ser name:	AUTOMATION\slaveadmin	~			
Password:					
	Remember password				
Con	nect Cancel Help Options	>>			

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

1	New Subscrip	otion Wizard	_		x
Subscribers Choose one or more Subscribers and specify each subscription database.					
Subscribers and subscription	databases:				
Subscriber 🔺		Subscription Database			
2012R2-EN-01					
2012R2-EN-02		AMC_DB2			$\overline{}$
<u>A</u> dd Subscriber ▼					•
Help	< <u>B</u> ack	<u>N</u> ext > <u>F</u> inish >>	(Cancel	

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

1	New Subscription Wiz	zard 🗕 🗖 🗙
Distribution Agent S Specify the process account Agent.	Security Int and connection options for	each Distribution
Subscription properties:		
Agent for Subscriber 🔺	Connection to Distributor	Connection to Subscriber
2012R2-EN-02	Click () to set securit	Click () to set security
You must specify the sec Click () to set the secur	surity information for all subscrip ity options.	tions before continuing the wizard.
Help	< <u>B</u> ack <u>N</u> ext >	<u>Finish >>1</u> Cancel

48. 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

Distribution Agent Security							
Specify the domain or machine account under which the Distribution Agent process will run when synchronizing this subscription.							
O Run under the following Windows account:							
Process <u>a</u> ccount:							
	Example: domain\account						
Password:							
Confirm Password:							
 Run under the SQL Server Agent sen practice.) 	vice account (This is not a recommended security best						
Connect to the Distributor							
• By impersonating the process account	t						
O Using a SQL Server login							
The connection to the server on whi The process account must be a men	ch the agent runs must impersonate the process account. nber of the Publication Access List.						
Connect to the Subscriber							
By impersonating the process account	t						
\bigcirc Using the following SQL Server login:							
<u>L</u> ogin:							
Pass <u>w</u> ord:							
Confirm password:							
The login used to connect to the Subscriber must be a database owner of the subscription database.							
	OK Cancel <u>H</u> elp						



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

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

50. 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.

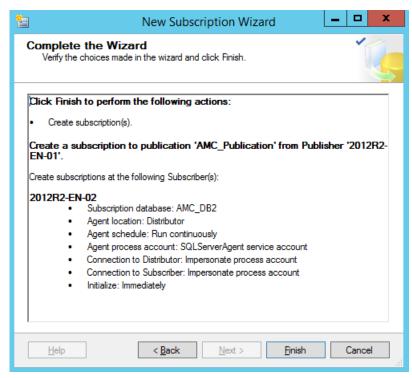
I N	lew Subscr	iption Wizard	_ □ X		
Initialize Subscription Specify whether to initialize data and schema.		on with a snapshot of the pu	blication		
Subscription properties:					
Subscriber	Initialize	Initialize When 🔍			
2012R2-EN-02	✓	Immediately	¥		
A subscription database needs schema unless it has already be			cation data and		
The Snapshot Agent must run and generate a snapshot of the publication before the subscriptions can be initialized.					
Help	< <u>B</u> ack	Next > <u>F</u> inish >>	Cancel		



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

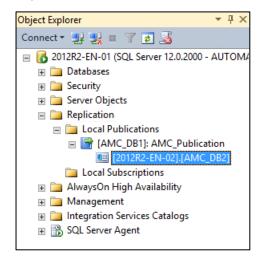
1	New Subscription Wizard	_		x
W	Fizard Actions Choose what happens when you click Finish.		Į	¢,
	At the end of the wizard:			
	\checkmark Create the subscription(s)			
	Generate a script file with steps to create the subscription(s)			
	Help < Back Next > Einish >>]	ance	I

52. Click Finish. This creates a subscriber for the corresponding publisher.





53. 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

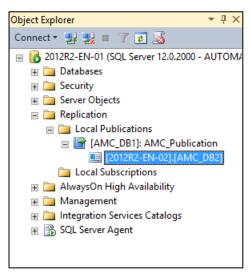
Remove the replication from the environment to ensure that the upgrades run smoothly.

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.

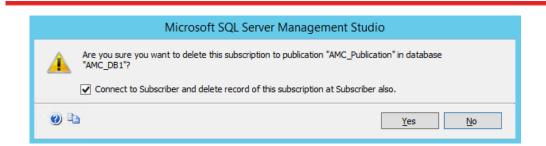
Once replication is stopped, it is not be possible to push out new configurations or agents until the upgrade process is complete. Do not change configuration directly on the subscribers because this can cause failures when replication is re-enabled.

54. Open Microsoft SQL Server Management Studio.

- 55. Connect to the SQL instance that is acting as the publisher.
- 56. Expand the **Replication** node in Object Explorer until you see all the subscribers.



57. 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.



58. 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>