

Sage 300 Construction and Real Estate

*Sage SQL Replicator Setup Guide  
(Version 18.1)*

Certified course curriculum



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# Sage SQL Replicator

Sage SQL Replicator is a tool that copies your Sage 300 Construction and Real Estate data from the Pervasive data management system into a SQL Server database. The replicated data includes your Purchasing, Inventory, and Service Management data if you use those products.

Why is copying your data into SQL Server useful to you?

- In many cases, using the SQL Server data for reporting results in improved processing performance. When you generate Crystal reports in your on-premises Sage 300 Construction and Real Estate applications, you can use the **Use SQL** check box to switch the data source from the Pervasive data to the SQL Server data.
- Sage SQL Replicator lays the foundation for accessing your data through Sage Mobile solutions. It is required whether you use Sage Construction Central for Mobile Reports or Mobile Dashboards.

The replication process works in the background and it can continuously synchronize the Pervasive and SQL Server databases. This means you can work in the Sage on-premises and mobile solutions without interruption and always get up-to-the-minute information.

If there are databases for which continuous synchronization is not needed, you can specify when and how often to run the replication.

This reference guide provides the setup and configuration needed to implement Sage SQL Replicator in System Administration (Sage 300 Construction and Real Estate version 18.1). The material applies to system administrators or information technology specialists who will complete the server configuration tasks.

In this chapter, you learn about preparing for the Sage SQL Replicator implementation. Information the next chapters, include:

- How to install SQL Server.
- How to configure Sage SQL Replicator and begin the replication process.
- What happens during the replication process.



**NOTE:** If you are implementing the 17.1 version of Sage SQL Replicator, download the setup guide for that version from the Product Documents web page.

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# Prepare to implement Sage SQL Replicator

Before implementing Sage SQL Replicator:

- Verify that your server configuration meets the recommended technical specifications.
- Evaluate whether you will use SQL Server Express or full SQL Server.
- Upgrade to Sage 300 Construction and Real Estate version 18.1.

If you use the Canadian or Australian edition of Sage 300 Construction and Real Estate, you must also:

- Specify the regional settings on the machine where your Sage software is installed.
- Create a domain Windows account for use with Sage SQL Replicator.

## System requirements for version 18.1

Installing SQL Replicator to use with Sage 300 Construction and Real Estate adds to the demands on your server resources. Review the [18.1 technical specifications](#) documented in the Sage Support Knowledgebase to ensure that your server meets the recommended configuration in terms of the operating system and hardware.



**NOTE:** Solid State Drive (SSD) is required for the server if it hosts both Sage 300 Construction and Real Estate and SQL Server.

## Microsoft SQL Server edition

SQL Replicator requires a dedicated instance of SQL Server which can be installed on the accounting server or on a different server. Later, in “Install SQL Server” on page 11, you will learn how to use the Sage SQL Installer to install and configure the instance.

SQL Server comes in different editions.

- SQL Server Express Edition is available at no additional cost—you can download it from Microsoft or let the Sage SQL Installer download it for you.
- SQL Server Standard Edition and SQL Server Enterprise Edition, both full SQL Server, are purchased separately.

Check with your IT vendor to determine which edition best suits your organization based on the features, the size of your database, and processing needs.

Please be aware that SQL Server Express Edition has limitations in terms of CPU and RAM usage—each database can be no larger than 10 GB. See this [Microsoft article](#) for more information. Even if the size of your Pervasive company folder is under 10 GB, it does not mean that you can use SQL Server Express. This is because the replication process adds views and indexes to the SQL Server database, increasing its size.

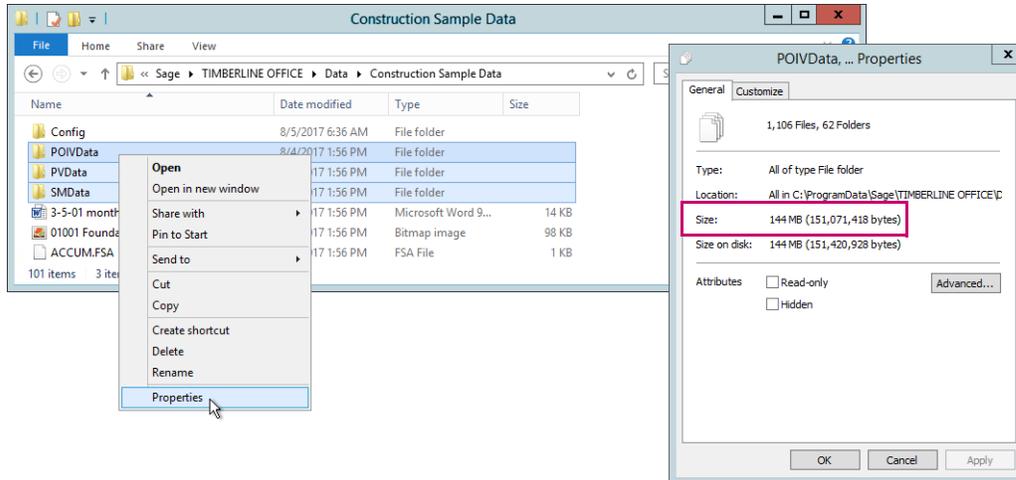
To check whether the size of your Pervasive data is suitable for using SQL Server Express, follow these steps:

1. On the accounting server, browse to the location of your Sage 300 Construction and Real Estate company folders.
2. Open the first company folder you want to replicate, and select the **POIVData**, **PVData**, and **SMDData** folders and make a note of the size of these three folders.



**NOTE:** You might not have all of these folders. The **POIVData** folder will only be present if you use Purchasing and Inventory. The **SMDData** will only be present if you use Service Management.

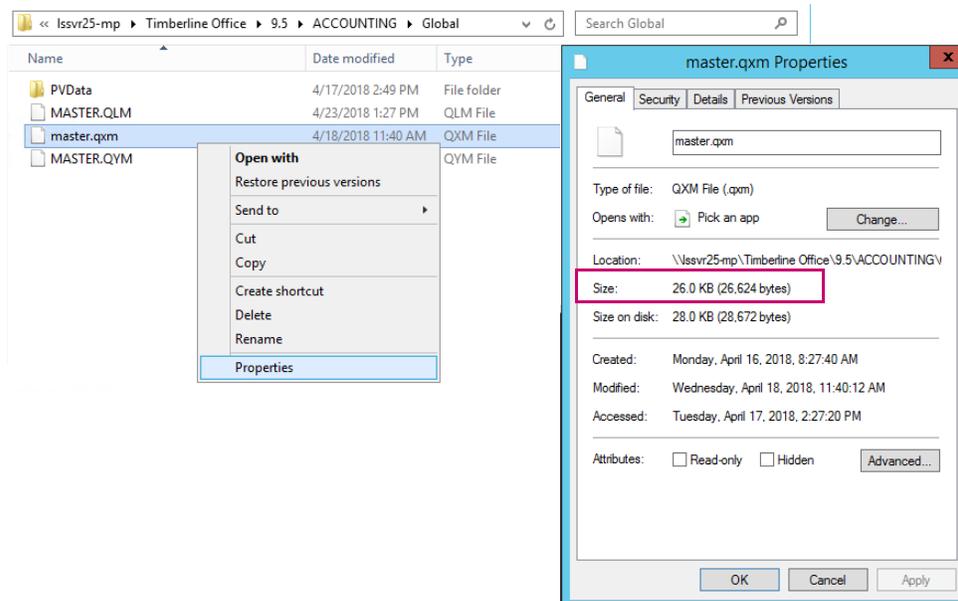
### 3. Right-click the selected folders and select **Properties**.



### 4. Next, browse to the location of the **MASTER\_QXM** folder. This is in your installation directory, which is in the following location by default:

C:\ProgramData\Sage\TIMBERLINE OFFICE\9.5\Accounting\Global\PVData

### 5. Right-click the **MASTER\_QXM** folder and select **Properties**.



### 6. Make a note of the size of the folder, and add it to the others.

(POIVData) + (PVData) + (SMDData) + (MASTER\_QXM)

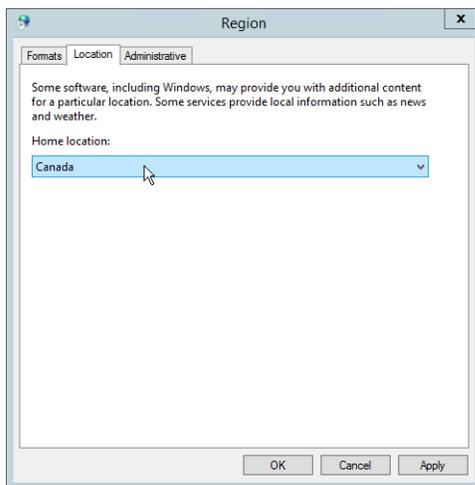
- If the total sum is under 6 GB, you can use SQL Server Express.
- If the total sum is greater than 6 GB, you must use full SQL Server (Standard Edition or Enterprise Edition).

## Additional requirements for Canadian and Australian editions

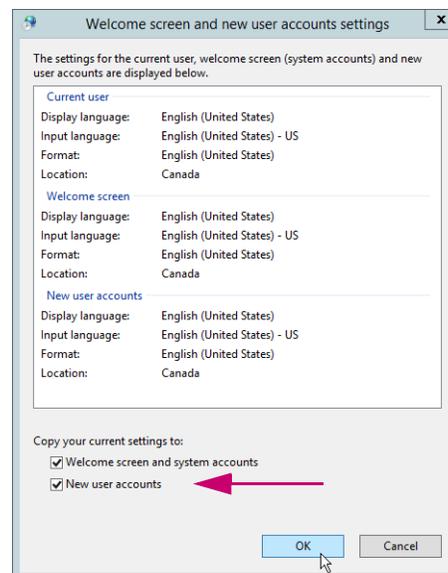
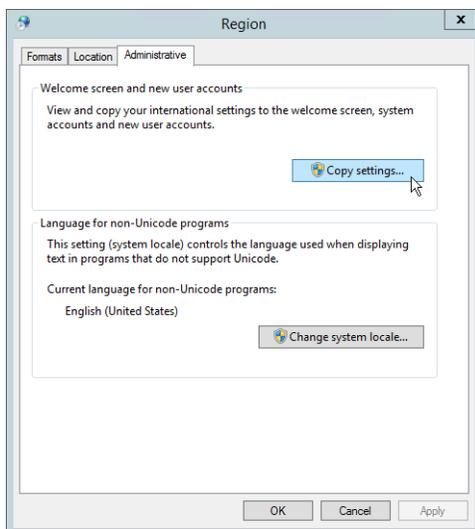
If you have the Canadian or Australian edition of Sage 300 Construction and Real Estate installed, Sage SQL Replicator requires a Windows user with the **Region** set to Canada or Australia. This enables the country-specific fields in Accounts Payable and Payroll to be replicated. This account must have local administrative privileges on the accounting server, and must also be added to the **sysadmin** SQL Server role when you install SQL Server.

### Set the regional settings

1. In the Windows Control Panel, go to **Regions**.
2. On the **Location** tab, verify that the appropriate country is selected. Change it and click **Apply** if needed.



3. On the **Administrative** tab, select the **New user accounts** check box if not already selected, and then click **OK**.



4. Click **OK** again to close the **Region** window.

If you changed the country setting in step 2, you'll need to create a new Windows user so it will have the correct regional settings. You'll use this Windows ID when you configure replication.

Next, you create a domain Windows account to use with the replication process.

## Create a domain Windows account to use with replication

Create a Windows domain account to be used for running replication and add this account to the following roles and groups:

- The local **Administrators** group on the accounting server.
- The local **Administrators** group on the computer where the SQL Server instance is installed.
- The **sysadmin** server role on the SQL Server instance—see step 17 of the topic "Install SQL Server using the Microsoft Installer" on page 19.

## Upgrade your Sage software

Follow the steps in the **Installation Checklist** and **User's Guide** to prepare for and upgrade to version 18.1. These documents are posted on the Product Documents web page.

Next, you install SQL Server. The instructions are in the next chapter.



# Install SQL Server

SQL Replicator requires a dedicated instance of SQL Server which you can install using the Sage SQL Installer, a tool that comes with your Sage software.

In this chapter, you learn:

- How to use the Sage SQL Installer to perform a Basic and an Advanced installation.
- The required configuration settings for the instance when you use the SQL Server Installation Center.
- How to use SQL Server Management Studio to create a backup system administrator for your SQL Server instance.

Before you proceed with the installation, make decisions on the following:

- Whether to install the SQL Server instance on your Sage 300 Construction and Real Estate accounting server or on a different server.
- If you will use SQL Server Express or full SQL Server. (See “Microsoft SQL Server edition” on page 6.)
- The file locations for the instance and the data.

## Sage SQL Installer

The Sage SQL Installer is automatically installed with Sage 300 Construction and Real Estate. If you are installing the SQL Server instance on another server (not the accounting server), install the Sage SQL Installer tool on that server.



**WARNING:** The Sage SQL Installer installs the SQL Server instance to work correctly with Sage SQL Replicator. We strongly recommend you use it to install SQL Server.

### ► To install the Sage SQL Installer on a remote server

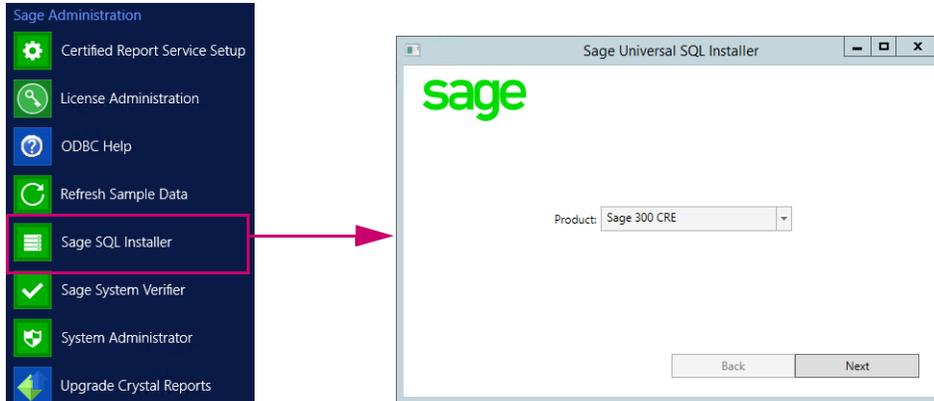
1. In the extracted installation files for Sage 300 Construction and Real Estate 18.1, browse to this location: **AccountingServer\Install\Prerequisites\SUSI**.



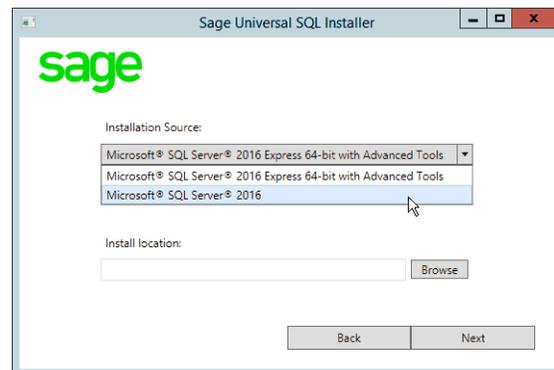
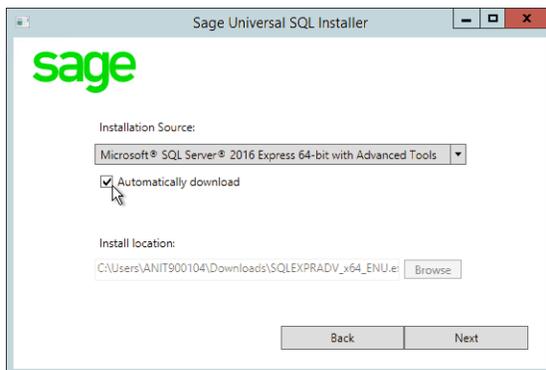
2. Copy the file **SUSI.exe** to the server on which you will install the SQL Server instance for SQL Replicator.
3. On the computer on which you will install SQL Server, double-click **SUSI.exe** to install the Sage SQL Installer.

## Install the SQL Server instance for SQL Replicator

1. Go to the computer on which the SQL Server Instance will be installed and log on as a user with local administrative permissions. During the installation, this Windows user will be added to the SQL Server **sysadmin** server role.
2. In the Windows Start menu, go to the **Sage Administration** group and click **Sage SQL Installer**.

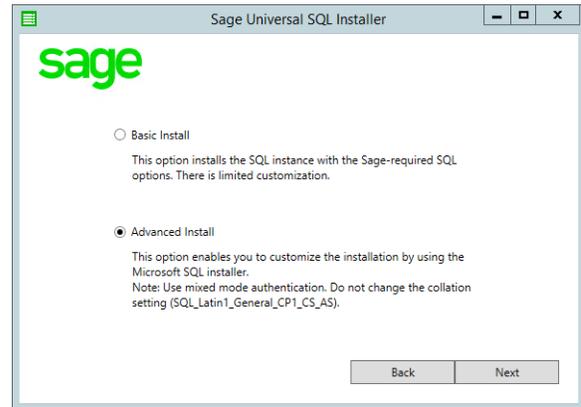
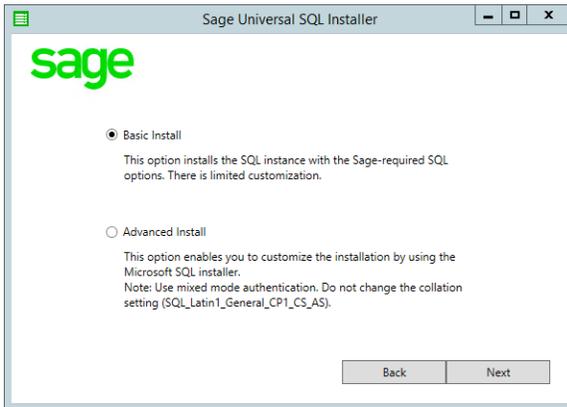


3. Leave **Sage 300 CRE** selected and click **Next**. You might see a warning indicating that your server doesn't meet the minimum hardware requirements. We don't recommend continuing unless your server meets all requirements.
4. Click **Next** if you are ready.
5. Select the **Automatically download** check box if you want the installer to download the latest version of SQL Express 2016 SP1 with Advanced Tools. If you already have the installation file, browse to its location. Alternately, if you have installation media for the Standard or Enterprise edition of SQL Server 2016 SP1, select **Microsoft SQL Server 2016** from the dropdown and browse to the installation file.



6. Click **Next**. In the next window, select the type of installation.

- Selecting **Basic** installs SQL Server on the server's system drive (usually the C: drive).
- Selecting **Advanced** takes you to Microsoft SQL Servers installation interface so that you can customize options as you move through the wizard, such as the location of the instance root directory.

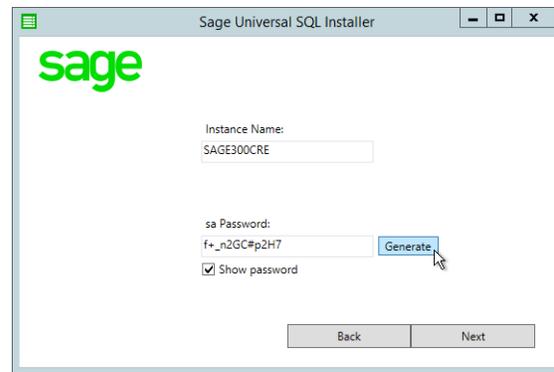
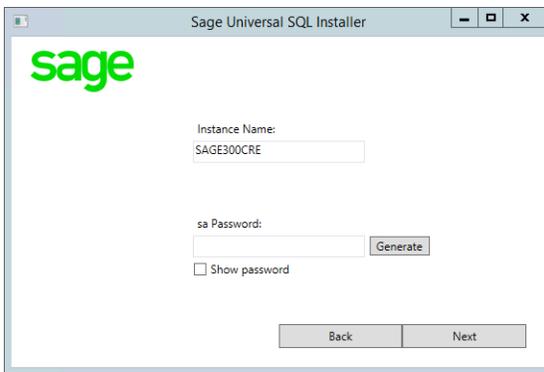


7. Click **Next**, and wait for the file to be downloaded (if you selected that option). The remaining steps depend on whether you selected the **Basic** or **Advanced** installation option.

8. When the installation is complete, you can install Microsoft SQL Server Management Studio as an option—see “Install SQL Server Management Studio” on page 21.

## ► Basic installation

1. The next window shows the name for the new instance. By default, this is **SAGE300CRE**, but you can change it.



2. Enter or generate a password for SQL Server's **sa** (administrative) user. In addition to **sa**, the Windows user name for the person currently logged in will be added to the **sysadmin** server role.



**WARNING:** Be sure to record the **sa** password and save it for your records.

3. Click **Next**, and wait while the installer creates and configures the SQL Server instance.

## ► Advanced installation

You are taken to Microsoft's SQL Server's installation wizard where you can change the prefilled settings in each of the configuration windows.



The options that are entered are the default settings for a Sage SQL Replicator instance. See “Install SQL Server using the Microsoft Installer,” on page 14 for detailed information about using the SQL Server Setup wizard.



**WARNING:** Using the Sage SQL Installer's **Advanced** installation option, the server's default collation is set at **SQL\_Latin1\_General\_CP1\_CS\_AS**. Do not change this setting!

## Install SQL Server using the Microsoft Installer

In some cases, you may want to install SQL Server yourself rather than allowing the Sage SQL Installer to install for you. To install an instance compatible with Sage SQL Replicator, follow these instructions.



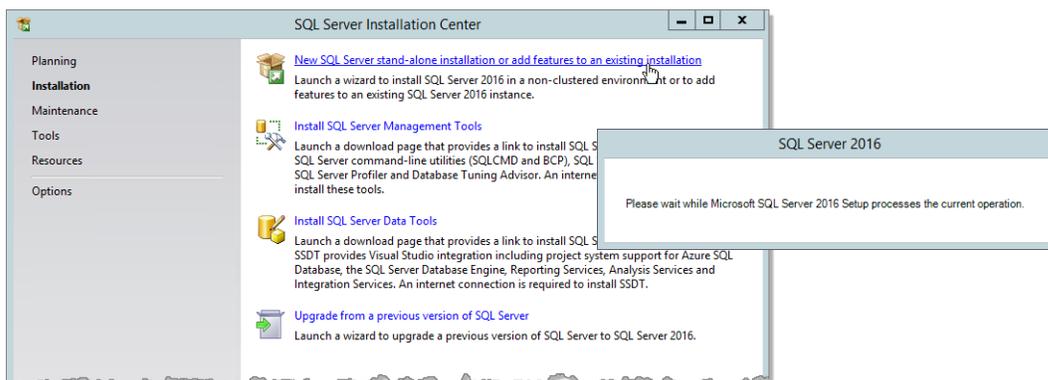
**NOTE:** If you are installing SQL Server using the **Advanced** option of the Sage SQL Installer, skip to step 4.

1. Log on to the computer on which you will install the SQL Server.
2. In the Windows Start menu, go to the **Microsoft SQL Server 2016** group and open **SQL Server 2016 Installation Center**.

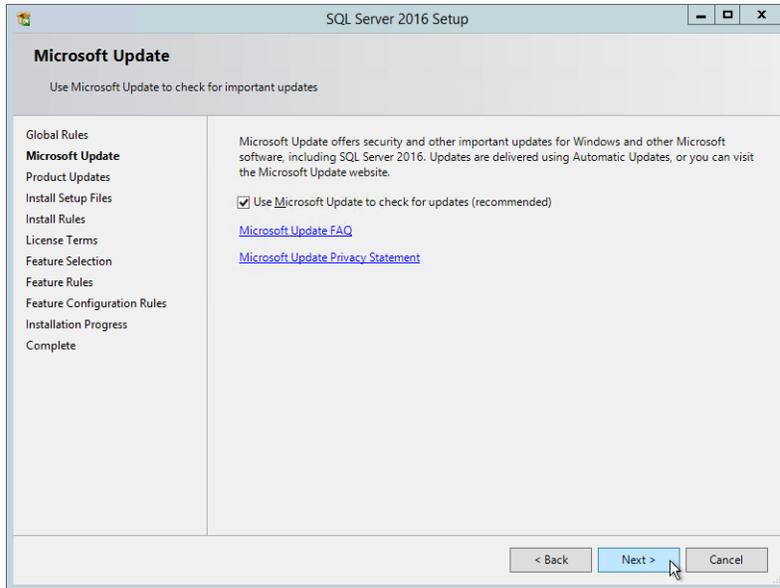


**NOTE:** If you used the Sage SQL Installer to download SQL Server Express (see step 5 of the topic "Install the SQL Server instance for SQL Replicator" on page 12), locate the file called SQLEXPADV\_64\_ENU.exe and double-click the file to extract the contents. When the files are extracted, open the folder location, and double-click **Setup.exe** to open the SQL Server Installation Center.

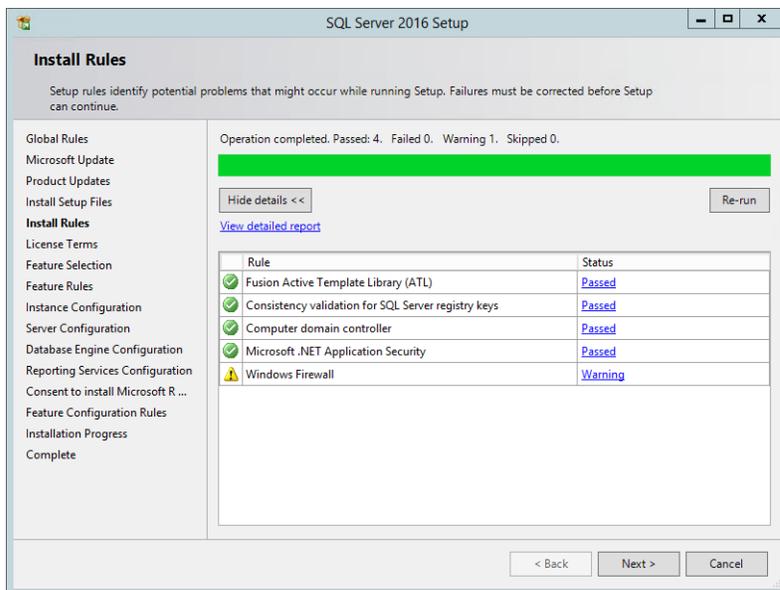
3. In the **SQL Server Installation Center** window, click **Installation** on the left, and then click the first option, **New SQL Server stand-alone ...** in the list. When prompted, provide the location for the installation media.



4. We strongly recommend that you select the option to **Use Microsoft Update to check for updates**. Click **Next**.

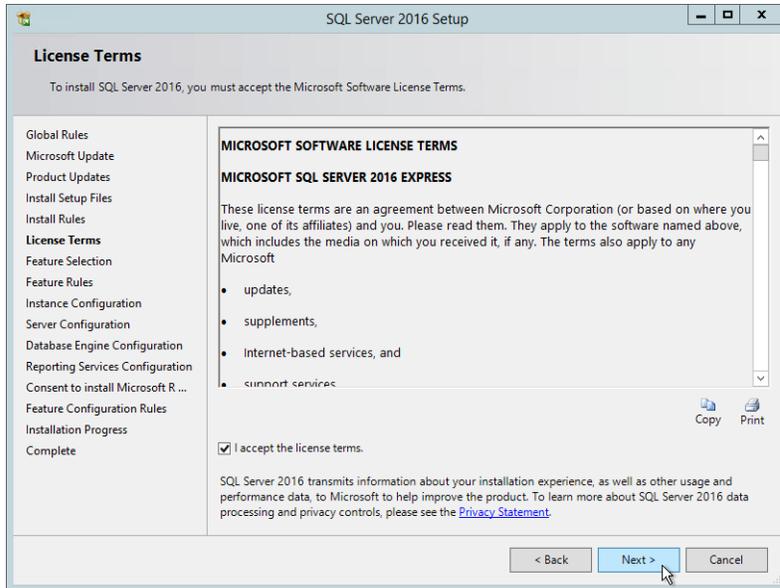


5. The next window shows the results of the setup rules check. You can ignore warnings about the firewall. If any elements of the check failed, you'll need to fix those issues before you can continue. Click **Next**.



6. In the **Installation Type** window, select to perform a new installation of SQL Server. Click **Next**.

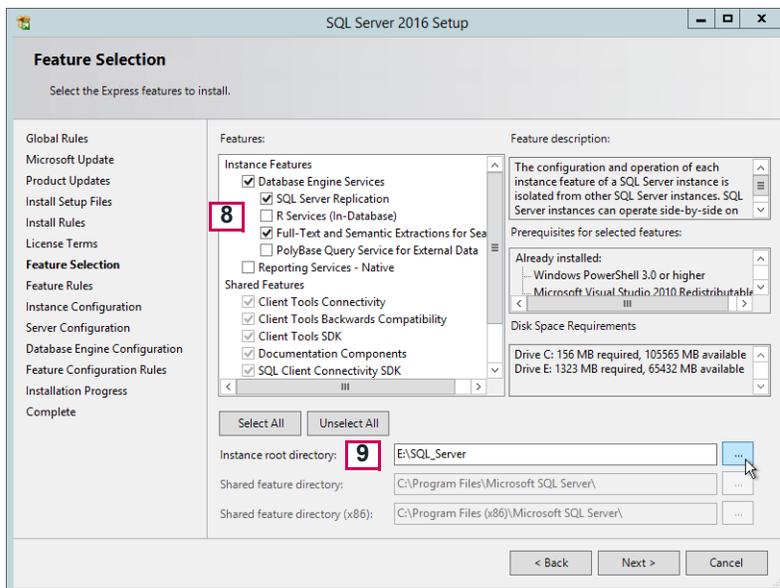
7. In the **License Terms** window, select **I accept the license terms**, and then click **Next**.



8. In the **Feature Selection** window, at a minimum you must select these check boxes. You can select others if you wish.

- **Database Engine Services**
- **SQL Server Replication**
- **Full-Text and Semantic Extractions for Search.**

9. You can change the **Instance root directory** to another local drive or location on your server if you wish. For example, if an SSD is available, using that drive for your root directory can improve performance considerably.



10. Click **Next**.

11. In the **Instance Configuration** window, we recommend that you install a **Named instance** using the name **SAGE300CRE** but you can use a different name.



**WARNING:** Avoid using **Default instance**. Because your Sage software does not support sharing its instance with other SQL Server based software solutions, if you use the default instance, you will need to install other SQL based solutions to different instances.

SQL Server 2016 Setup

**Instance Configuration**

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

Global Rules  
Microsoft Update  
Product Updates  
Install Setup Files  
Install Rules  
License Terms  
Feature Selection  
Feature Rules  
**Instance Configuration**  
Server Configuration  
Database Engine Configuration  
Feature Configuration Rules  
Installation Progress  
Complete

Default instance

Named instance: SAGE300CRE

Instance ID: SAGE300CRE

SQL Server directory: C:\Program Files\Microsoft SQL Server\MSSQL13.SAGE300CRE

Installed instances:

Instance Name	Instance ID	Features	Edition	Version
SAGE_ESTIMATING	MSSQL12.SAGE_ES...	SQLEngine	Express	12.2.5000.0
<Shared Compone...		Conn, BC, SDK		13.0.14500.10
<Shared Compone...		SSMS		12.2.5000.0

< Back   Next >   Cancel

12. Click **Next**.



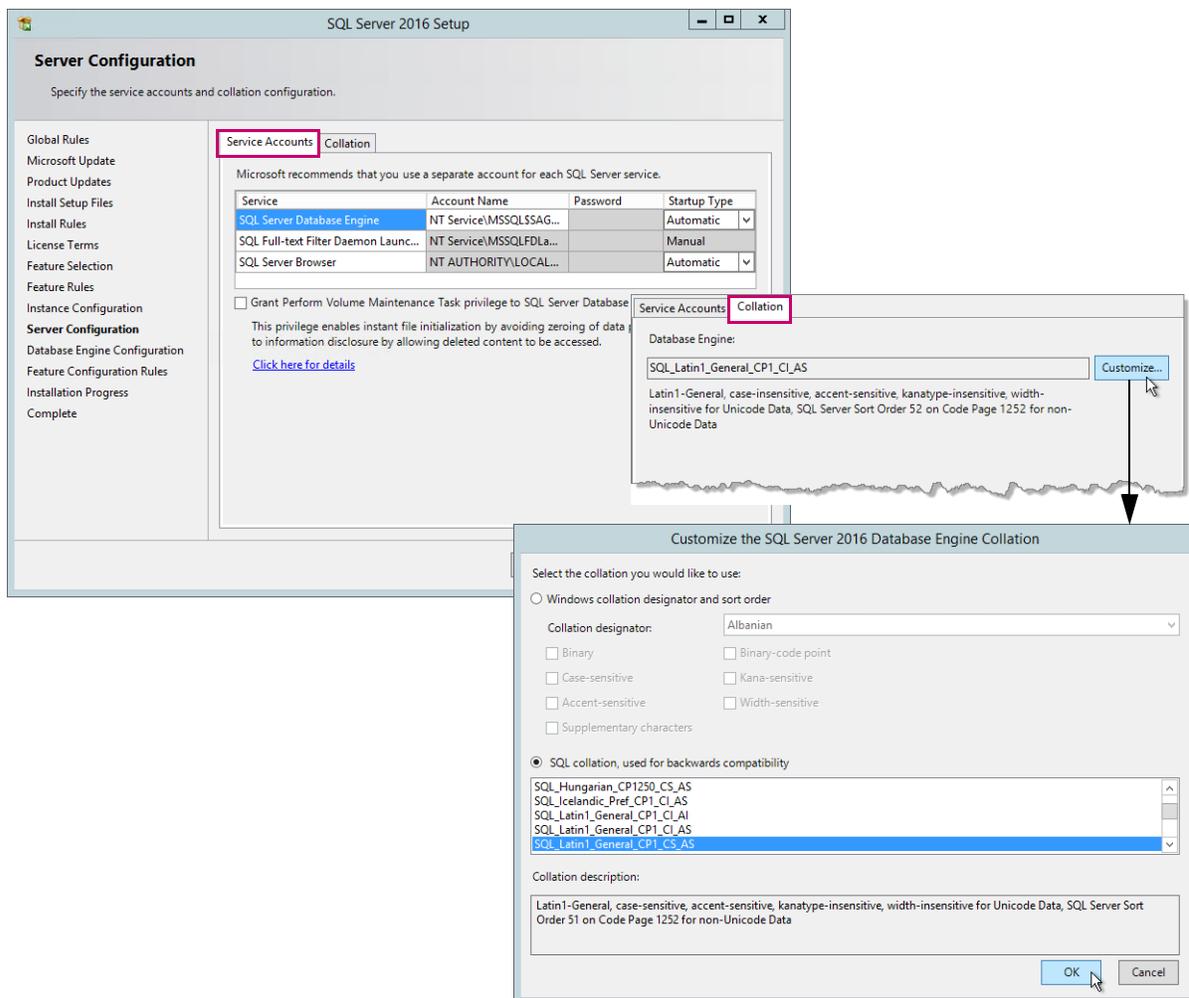
**WARNING:** The settings in the next window are critical to installing a SQL Server instance that will work with SQL Replicator. Configure this window exactly as instructed.

13. In the **Server Configuration** window:

- On the **Service Accounts** tab, leave the default options as they are.
- Click the **Collation** tab. The collation under **Database Engine** must be set to **SQL\_Latin1\_General\_CP1\_CS\_AS**.
  - ◆ If you are not using the **Advanced** option of the Sage SQL Installer, you must click **Customize** and select the correct SQL collation.
  - ◆ If you are using the **Advanced** option of the Sage SQL Installer, the correct SQL collation is already selected by default.



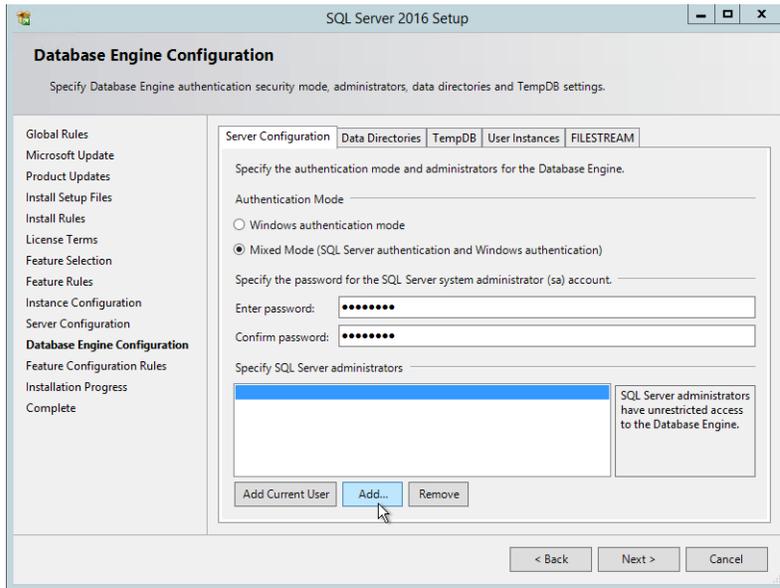
**WARNING: SQL\_Latin1\_General\_CP1\_CS\_AS** is the required collation setting for Sage SQL Replicator. Note that the last characters are “CS\_AS” which stands for “case-sensitive, accent-sensitive.”



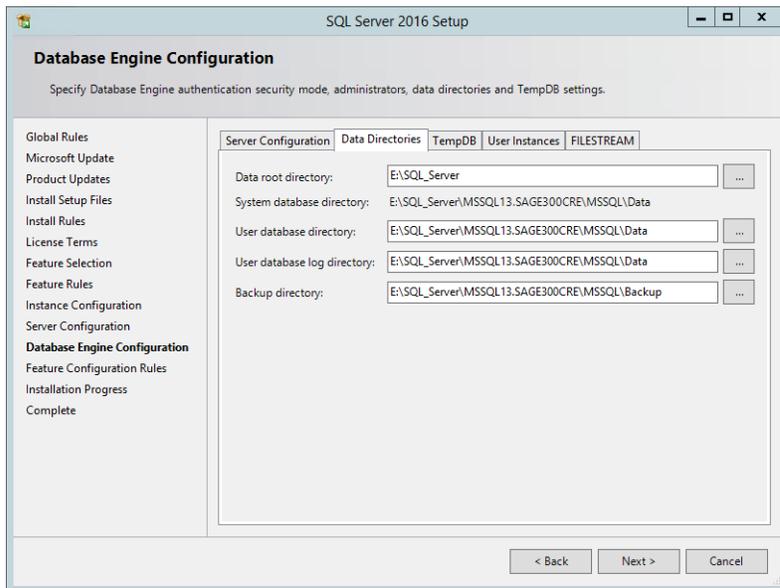
14. When you are finished with the **Server Configuration** window, click **Next**.

15. In the **Database Engine Configuration** window, you must select **Mixed Mode**. This mode is required for SQL Replicator.

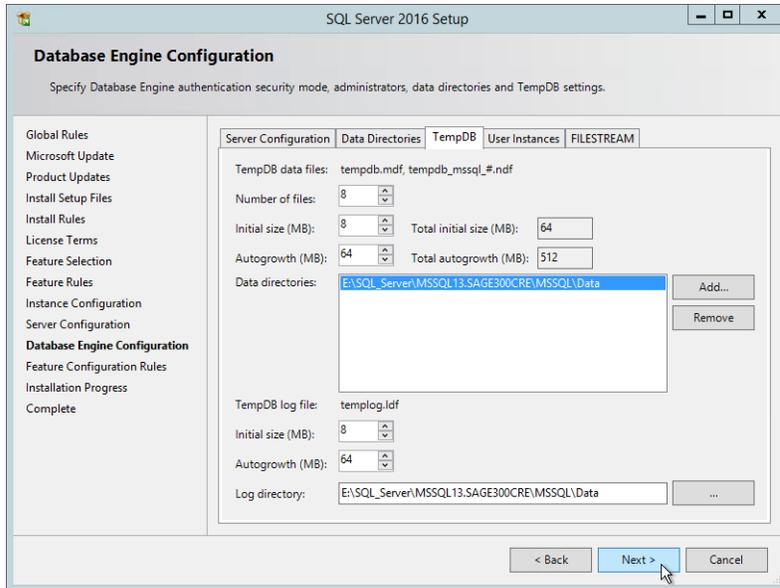
16. Enter and confirm a password for the administrator (**sa**) account.
17. The windows user logged in to the computer will be added automatically as an administrator. Click **Add** to add additional administrators. If you use the Canadian or Australian edition of Sage 300 Construction and Real Estate, add the Windows domain account (as described on page 9) to this list as well.



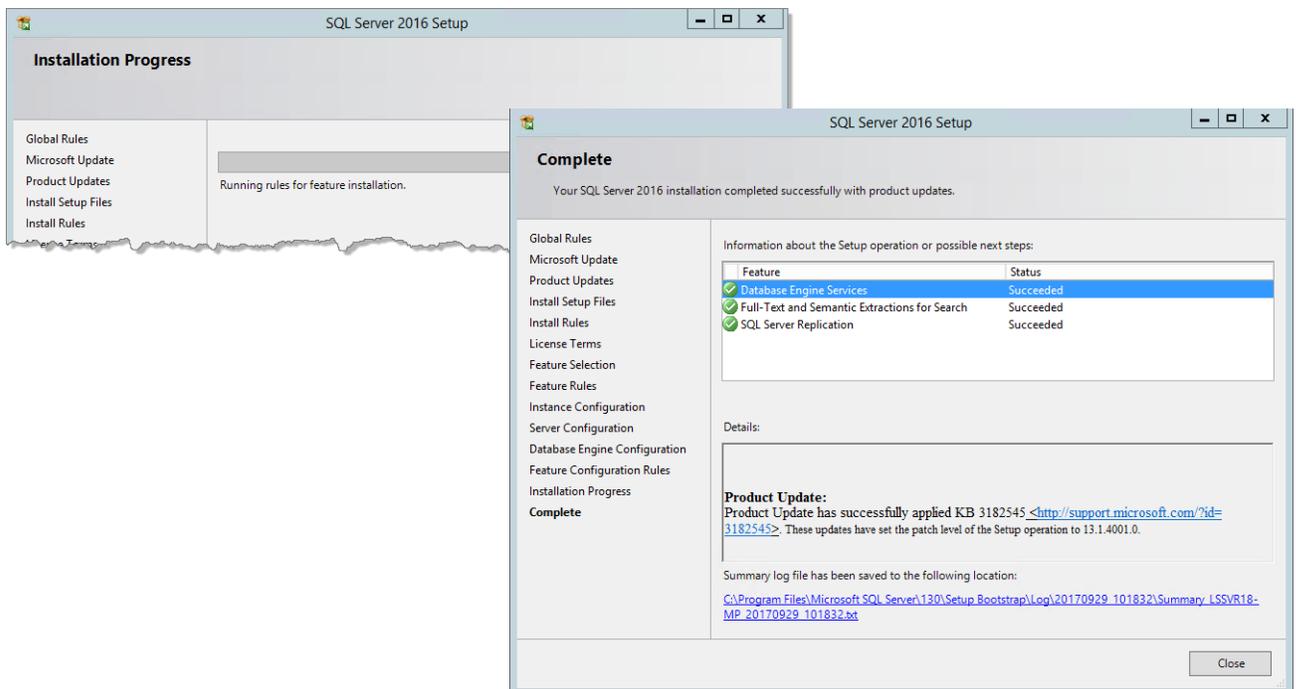
18. On the **Data Directories** tab, the default location reflects the **Instance root location** you selected in step 9. You can change this to an SSD drive if one is available. This does not have to be a local drive.



19. On the **TempDB** tab, you can add and remove files to store the **tempdb** database on an SSD drive if available.

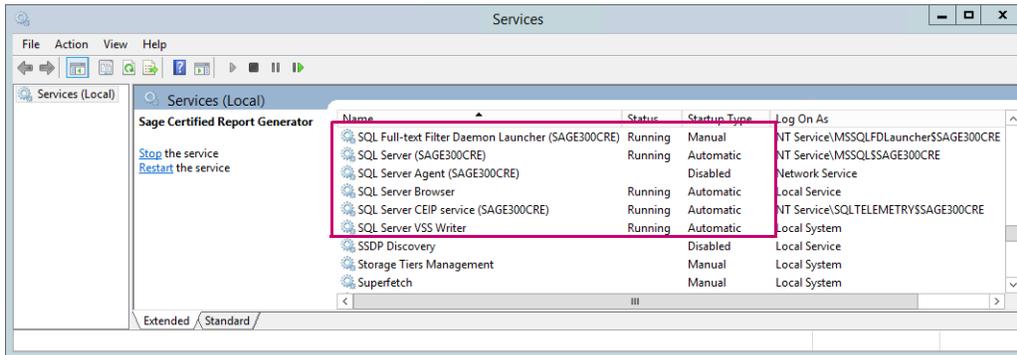


20. Click **Next**. The next window shows installation progress. When it is finished, click **Close**.



## Important information about SQL Server

SQL Server is installed as a Windows service. If services related to SQL Server are stopped, SQL Replicator cannot replicate data.



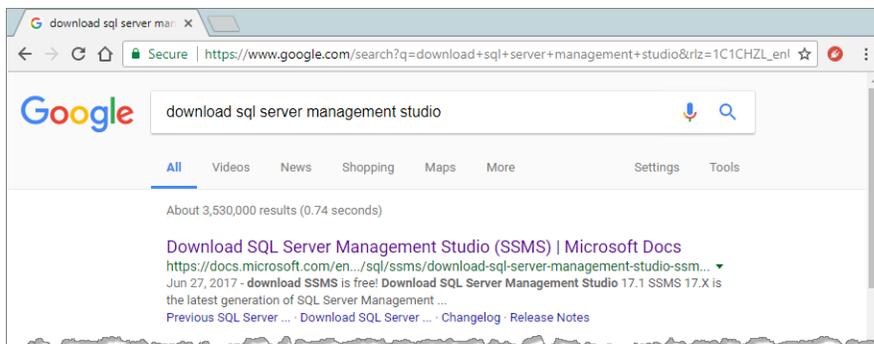
## Install SQL Server Management Studio

SQL Server Management Studio is useful tool for configuring, managing, and administering all components within SQL Server. It is not installed as part of the database engine installation. We recommend that you download and install SQL Server Management Studio if it is not already installed on your server.



**WARNING:** This procedure will require you to restart your accounting server.

1. In your web browser search for “Download SQL Server Management Studio.”



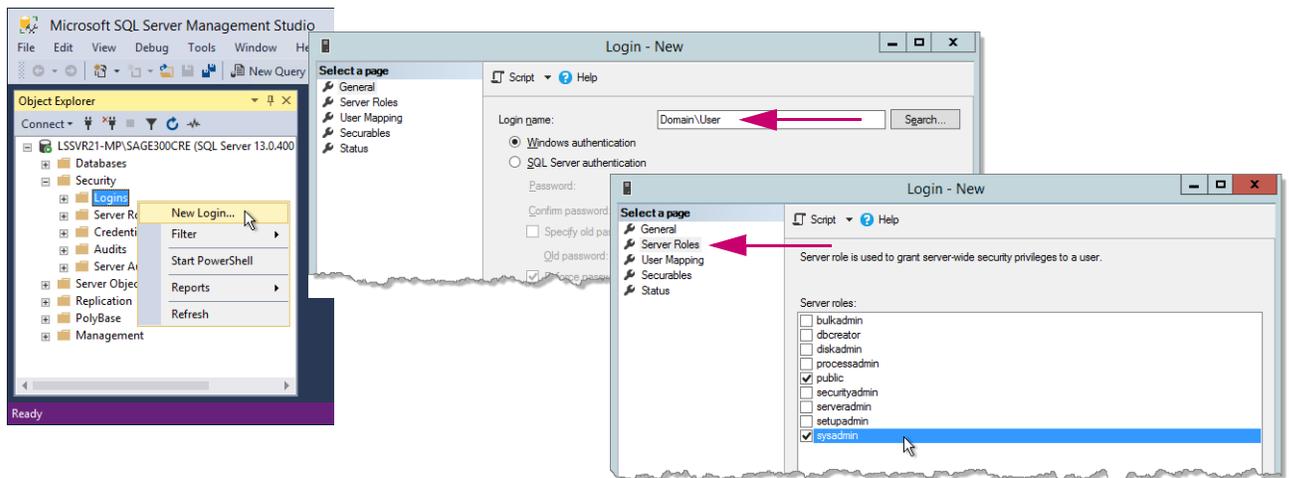
2. Click the link to the Microsoft page and download the program.
3. When the download is finished, double-click the file and follow the steps in the wizard to install SQL Server Management Studio. When the installation is finished, you'll be required to restart your server.

## Create a backup system administrator

We recommend that you add a backup system administrator to your SQL Server instance. Your backup administrator should be set up as a user in Sage 300 Construction and Real Estate and linked to a Windows ID. This user should also have local administrative permissions on the accounting server.

1. When the server has re-started, open SQL Server Management Studio and log in to the Sage 300 Construction and Real Estate instance.
2. Under **Security**, right-click **Logins** and select **New Login**.

3. Next to **Login name**, enter the domain and Windows ID of your backup system administrator.
4. On the **Server Roles** page, select the **sysadmin** server role.



5. Click **OK** to save your changes and close the **Login - New** window.
6. Repeat these steps if this instance is on a different machine than the accounting server and you created a new Windows domain account as described on page 9.

# Replicate data into SQL Server

After upgrading your Sage software to the latest version and installing a dedicated SQL Server instance, you are ready to copy your data to SQL Server. Sage SQL Replicator creates a separate SQL Server database for each Pervasive database that you replicate.



**NOTE:** While the replication is in process, users can continue to work in Sage 300 Construction and Real Estate without interruption.

In this chapter, you learn:

- How to set up the replicator configuration and start the replication process.
- What happens during the replication process.
- How Sage 300 Construction and Real Estate security is passed to the replicated SQL Server data.

## Sage SQL Replicator configuration settings and replication

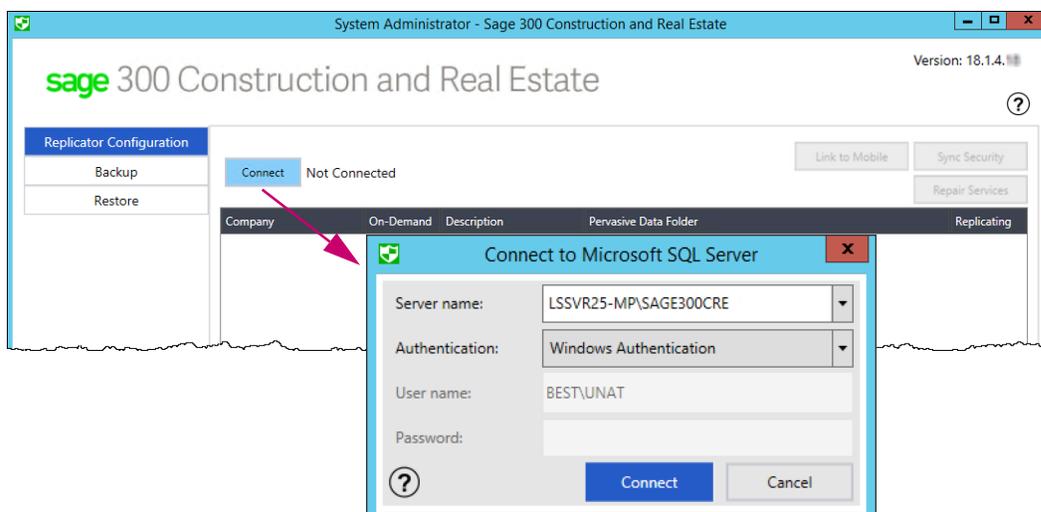
The controls for Sage SQL Replicator are located in **System Administrator** (in the **Sage Administration** group). You must first define the configuration settings for each company before beginning the replication.

1. Log on to the Sage 300 Construction and Real Estate accounting server as a user with local administrative permissions. The Windows user name must also have the **sysadmin** role in SQL Server.

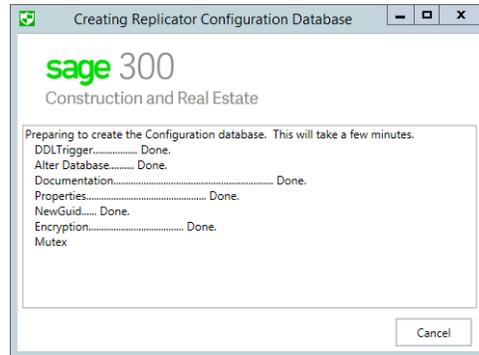
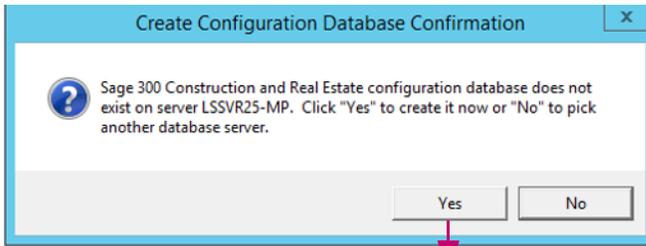


**NOTE:** The user who used Sage SQL Installer to install the SQL Server instance is automatically assigned the **sysadmin** role.

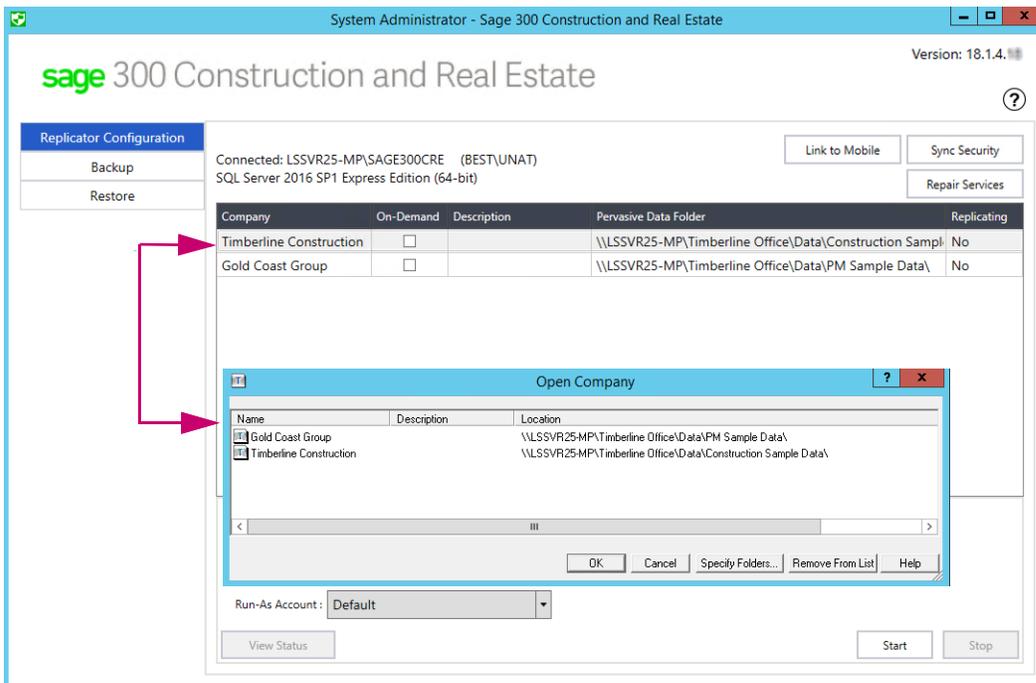
2. On the Windows Home page, go to the **Sage Administration** group and click **System Administrator**.
3. In the **Log On** window, you must enter the credentials for a Sage 300 Construction and Real Estate user that has the **Application Administrator** role.
4. If the connection window does not open, click **Connect**.
  - In the box next to **Server name**, select the name of the instance that you created—see page 13.
  - For **Authentication**, select **Windows Authentication**. Your Windows domain and user name are automatically entered for the **User name**.
  - Click **Connect**.



- Because you have never replicated your data before, you are prompted to create the configuration database. Click **Yes**, and wait while the database is created.



- When finished, the **Replicator Configuration** tab shows the list of companies in your **Open Company** list.



- If you will access the data through Sage Construction Central for Sage Mobile services, click **Link to Mobile**.



**NOTE:** Your mobile website will be available once the initial replication is finished.

- Locate the first company that you want to replicate and click the row to select it.

9. Use the **On-Demand** check box to indicate how often the Pervasive and SQL Server databases are synchronized.
  - Clear the **On-Demand** check box for continuous synchronization between the Pervasive and SQL Server databases. This ensures up-to-the-minute information in both your on-premises applications and Sage Mobile solutions. Clear the **On-Demand** check box for company data folders that you will access through Sage Mobile solutions.
  - Select the **On-Demand** check box if you want control over the replication frequency. After the first replication is completed, click **Start** to replicate again. Or, use the Windows Task Scheduler to specify when the replication will run again.
10. In the box next to **Run-As Account**:
  - For U.S. editions of Sage 300 Construction and Real Estate, select **Default**.
  - For Canadian and Australian editions of Sage 300 Construction and Real Estate, select **Other**. Next, enter the Windows credentials for the user whose region is set to the appropriate country— see “Additional requirements for Canadian and Australian editions” on page 8.



**NOTE:** The **Run-As Account** is company-specific. It does not automatically apply to all the companies in the list.

11. Click **Save Configuration** if you changed the configuration setting for any company.
12. To begin replication, select the company from the list and click **Start**. You can click **View Status** to open the log see the progress.
13. Repeat these steps for each company you want to replicate. You do not need to wait for the replication for one company to finish before starting another.
14. If you will access the data through Sage Construction Central for Sage Mobile services, you must follow the instructions in the Sage Construction Central Setup Guide to grant security permissions and licenses to users, and deploy your mobile website through Microsoft Azure Cloud Services.



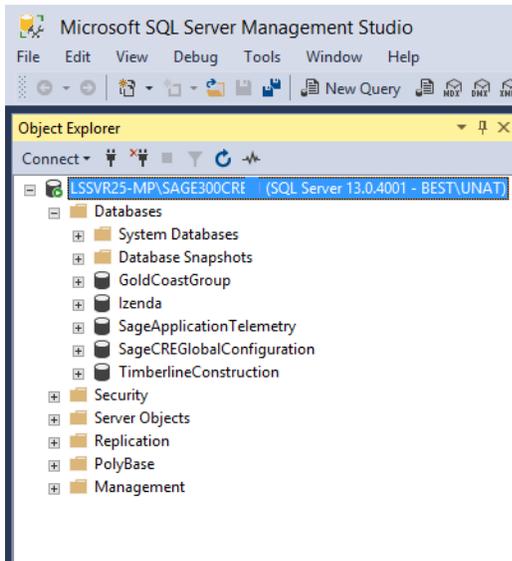
**WARNING:** If you use the replicated data with Mobile Reports or Mobile Dashboards, when you back up your Pervasive data, you must also back up the corresponding SQL Server database. You can use the Backup feature in the System Administrator—see “Backing Up and Restoring” on page 34

## About the replication process

The first time that you configure the settings for Sage SQL Replicator, the following databases are added to your SQL Server instance:

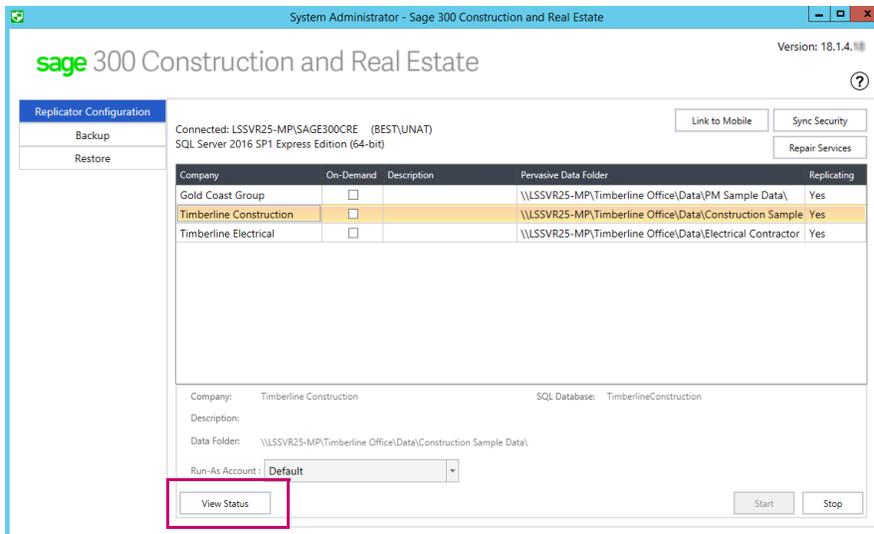
- SageCREGlobalConfiguration
- SageApplicationTelemetry
- Izenda

For each Pervasive company that you replicate, a database named after the company is added to the instance. In the example below, GoldCoastGroup and TimberlineConstruction are companies replicated into SQL Server.

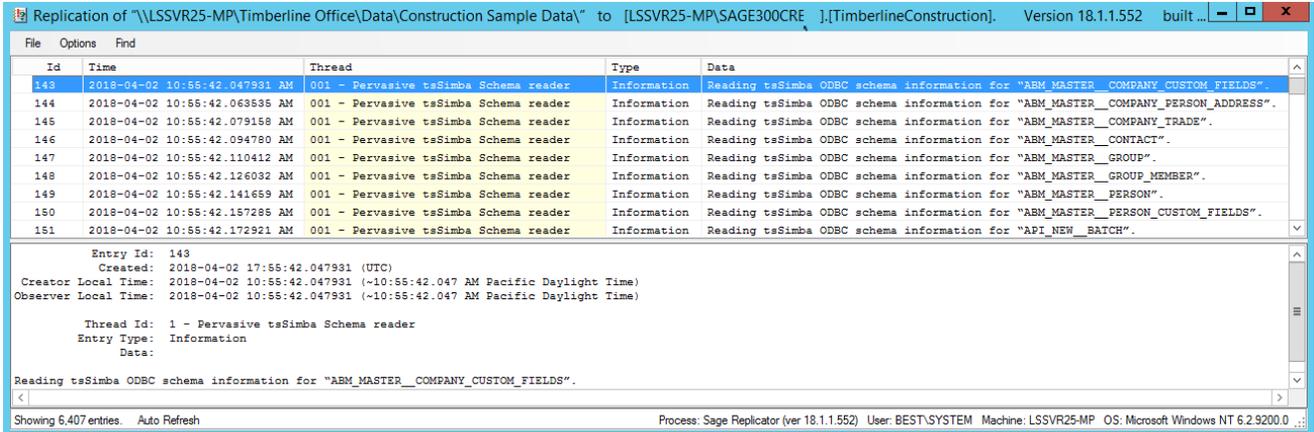


For each company database, the replication process creates a series of database tables, views, and settings for security. While the process is in progress, users can continue to work in Sage 300 Construction and Real Estate applications without interruption. When you replicate the data for the very first time, you cannot access the SQL Server database until the replication is finished.

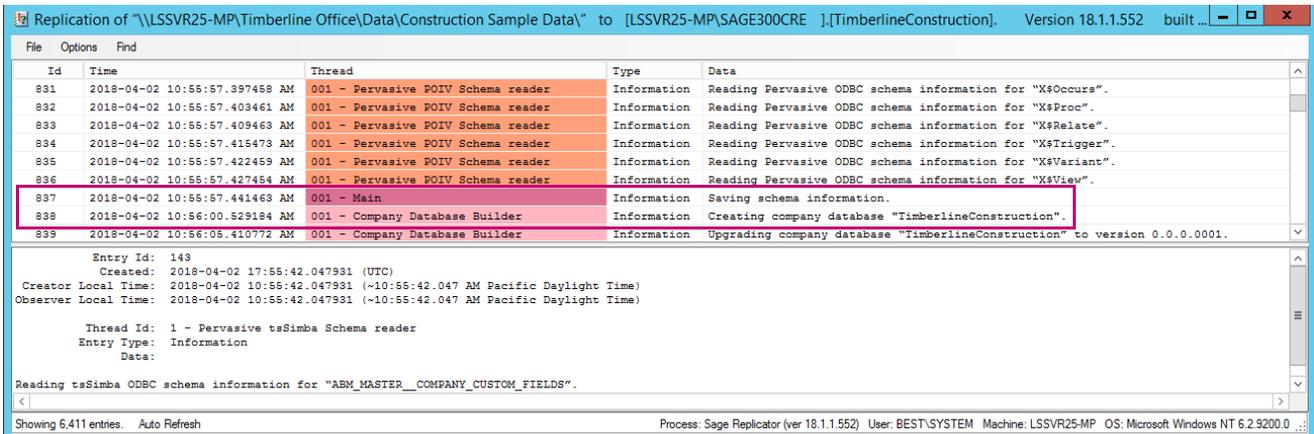
The length of time it takes to complete the initial replication depends on the size of your database and your server hardware. In **System Administrator > Replicator Configuration** tab, you can click **View Status** to open the log see the progress.



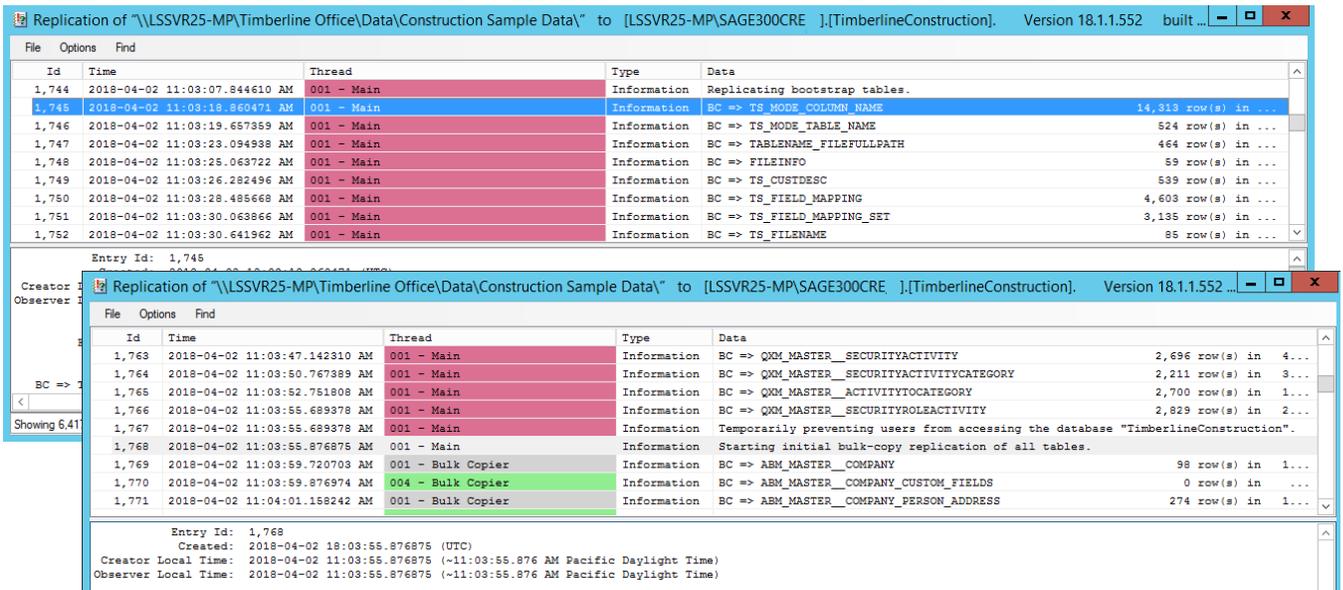
When the replication begins, schema information is read from the Pervasive data.



Once all the data from the Pervasive schema is read, the information is saved and a new database is created in SQL Server.



Next, the replication enters **BC** (Bulk Copy) mode and copies all the information from the Pervasive schema into the SQL Server database, beginning with the company's customizations and security setup, and then continuing with all the database tables. **DC** (Dynamic Bulk Copy) validates the schema to see if it has changed before it completes the bulk copy operation.



Once the bulk copy cycle is finished, row-level security (**RLS**) is applied. Next, various views are created for reporting purposes. The views are categorized into four groups:

- **Std** views (based on the Pervasive DSN table naming option of Standard descriptions).
- **Custom** views (based on the Pervasive DSN table naming option of Custom descriptions).
- **Dict** views (based on the Pervasive DSN table naming option of Dictionary names).
- **Reports** views.

The process creates a Windows scheduled task for nightly database maintenance to optimize performance, such as recalculating statistics and clearing out temp files. If needed, you can edit the time when it occurs by accessing the task in the Windows Task Scheduler.



**NOTE:** Users can access the SQL Server data without interruption during database maintenance.

The initial replication is finished when you see an entry with the text “Database <your database name> is ready” in the **Data** column.

Replication of "\LSSVR25-MP\Timberline Office\Data\Construction Sample Data" to [LSSVR25-MP\SAGE300CRE].[TimberlineConstruction]. Version 18.1.1.552 ...

Id	Time	Thread	Type	Data
2,445	2018-04-02 11:07:55.241316 AM	027 - Bulk Copier	Information	BC => TS_LISTITEM 3,7...
2,446	2018-04-02 11:08:35.617174 AM	001 - Bulk Copier	Information	Completed initial bulk-copy replication of all tables. Δt: 04...
2,447	2018-04-02 11:08:35.617174 AM	001 - Bulk Copier	Information	Creating combined table views.
2,448	2018-04-02 11:08:37.945344 AM	001 - Bulk Copier	Information	Dropping dynamic reporting views.
2,449	2018-04-02 11:09:21.102516 AM	001 - Bulk Copier	Information	Configuring RLS
2,450	2018-04-02 11:09:23.946322 AM	001 - Bulk Copier	Information	Creating dynamic reporting views.
2,451	2018-04-02 11:09:23.961944 AM	001 - Standard-Mode Reporting View Generator	Information	Creating Standard-mode views
2,452	2018-04-02 11:09:24.008819 AM	050 - Dictionary-Mode Reporting View Generator	Information	Creating Dictionary-mode views
2,453	2018-04-02 11:09:25.008839 AM	056 - Custom-Mode Reporting View Generator	Information	Creating Custom-mode views
2,454	2018-04-02 11:10:13.962999 AM	001 - Standard-Mode Reporting View Generator	Information	Granting permissions to virtual tables.
2,455	2018-04-02 11:10:14.150953 AM	001 - Standard-Mode Reporting View Generator	Information	Apply new security permissions
2,456	2018-04-02 11:10:14.150953 AM	050 - Maintenance scheduler	Information	Scheduling nightly database maintenance.
2,457	2018-04-02 11:12:11.449859 AM	001 - Standard-Mode Reporting View Generator	Information	Completed applying new security permissions. Δt: 00:01:57.2989051
2,458	2018-04-02 11:12:11.449859 AM	001 - Standard-Mode Reporting View Generator	Information	Starting change scanning.

Entry Id: 2,446  
 Created: 2018-04-02 18:08:35.617174 (UTC)  
 Creator Local Time: 2018-04-02 11:08:35.617174 (~11:08:35.617 AM Pacific Daylight Time)  
 Observer Local Time: 2018-04-02 11:08:35.617174 (~11:08:35.617 AM Pacific Daylight Time)

Thread Id: 1 - Bulk Copier  
 Entry Type: Information  
 Data:

Showing 8,045 entries. Process: Sage Replicator (ver 18.1.1.552) User: BEST\SYSTEM Machine: LSSVR25-MP OS: Microsoft Windows NT 6.2.9200.0

If you chose not to use On-Demand replication (see page 25), replication enters **SJ** (SQL Journal) mode where it looks for changes by continuously scanning the database.



**NOTE:** Beginning in version 17.1, each Pervasive database table has two additional fields, **Row\_ID** and **Row\_Version**. The replication process uses these fields to identify changes to the data.

Replication of "\\LSSVR25-MP\Timberline Office\Data\Construction Sample Data\" to [LSSVR25-MP\SAGE300CRE ],[TimberlineConstruction]. Version 18.1.1.552...

Id	Time	Thread	Type	Data
2,484	2018-04-02 11:12:21.778205 AM	001 - Scanning Thread	Information	SJ => EQH_HISTORY_MISC_ENTRY_HISTORY_TOTALS
2,485	2018-04-02 11:12:23.012609 AM	001 - Scanning Thread	Information	SJ => PRX_TAX_LOCAL_TAX_GROUP
2,486	2018-04-02 11:12:23.872003 AM	001 - Scanning Thread	Information	SJ => AFM_MASTER_AUTHORIZATION
2,487	2018-04-02 11:12:24.590775 AM	001 - Scanning Thread	Information	SJ => AFM_MASTER_ELECTRONIC_PAYMENT
2,488	2018-04-02 11:12:25.262654 AM	001 - Scanning Thread	Information	SJ => CNC_ACTIVE_CONTRACT_ITEM_TEXT
2,489	2018-04-02 11:12:25.918922 AM	001 - Scanning Thread	Information	SJ => EQZ_ISSUE_EQUIPMENT_TYPE_ISSUE
2,490	2018-04-02 11:12:26.559555 AM	001 - Scanning Thread	Information	SJ => PRT_CURRENT_BATCH
2,491	2018-04-02 11:12:27.356474 AM	001 - Scanning Thread	Information	SJ => CNC_STANDARD_CONTRACT_ITEM
2,492	2018-04-02 11:12:28.465848 AM	001 - Scanning Thread	Information	SJ => PRM_MASTER_EMPLOYEE_FRINGE
2,493	2018-04-02 11:12:29.403974 AM	001 - Scanning Thread	Information	SJ => PRT_NEW_CHECK_PAY
2,494	2018-04-02 11:12:30.044005 AM	001 - Scanning Thread	Information	SJ => GLM_MASTER_ACCOUNT_ACTIVITY_HISTORY
2,495	2018-04-02 11:12:31.044026 AM	001 - Scanning Thread	Information	SJ => RIM_MASTER_EMPLOYEE
2,496	2018-04-02 11:12:31.700291 AM	001 - Scanning Thread	Information	SJ => ARS_STANDARD_CONTACT
2,497	2018-04-02 11:12:32.559688 AM	001 - Scanning Thread	Information	SJ => EQM_MASTER_FISCAL_DATE

Entry Id: 2,484  
 Created: 2018-04-02 18:12:21.778205 (UTC)  
 Creator Local Time: 2018-04-02 11:12:21.778205 (~11:12:21.778 AM Pacific Daylight Time)  
 Observer Local Time: 2018-04-02 11:12:21.778205 (~11:12:21.778 AM Pacific Daylight Time)

Thread Id: 1 - Scanning Thread  
 Entry Type: Information  
 Data:

Showing 8,045 entries. Process: Sage Replicator (ver 18.1.1.552) User: BEST\SYSTEM Machine: LSSVR25-MP OS: Microsoft Windows NT 6.2.9200.0

When replication finds differences in the **Row\_ID** and **Row\_Version** fields since the last scan, it copies the changes to the SQL Server database. They are reflected in the status log by insertions (**I**), updates (**U**), and deletions (**D**).

Replication of "\\LSSVR25-MP\Timberline Office\Data\Construction Sample Data\" to [LSSVR25-MP\SAGE300CRE ],[TimberlineConstruction]. Version 18.1.1.552 built on 3/27/2018 6:39:22 AM

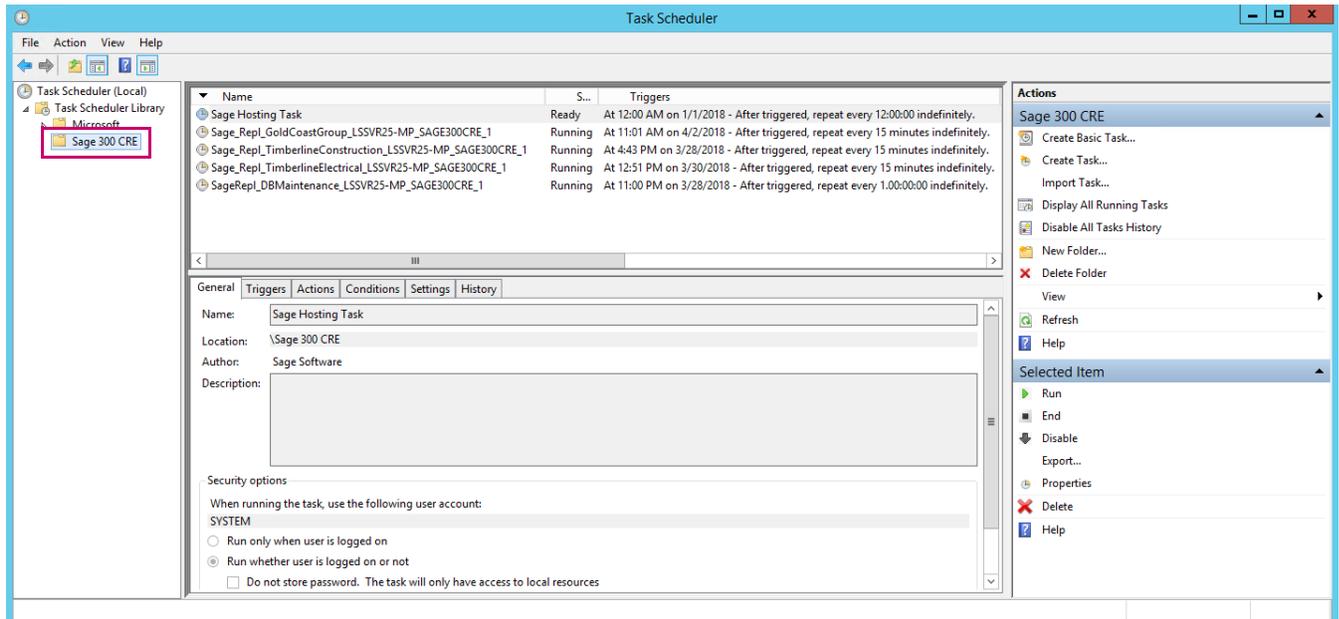
Id	Time	Thread	Type	Data
8,476	2018-04-03 09:41:28.161197 AM	001 - Scanning Thread	Information	GLT_NEW_BATCH scheduled for replication because an entry in the change queue was found.
8,477	2018-04-03 09:41:28.712255 AM	001 - Scanning Thread	Information	SJ => GLT_NEW_BATCH 1 row(s) in 540 ms 1 rows/sec. I: 1 U: 0 D: 0
8,478	2018-04-03 09:41:28.784181 AM	001 - Scanning Thread	Information	GLT_NEW_GLT_GENERAL scheduled for replication because an entry in the change queue was found.
8,479	2018-04-03 09:41:29.124203 AM	001 - Scanning Thread	Information	BC => GLT_NEW_GLT_GENERAL 1 row(s) in 398 ms 2 rows/sec.
8,480	2018-04-03 09:41:29.218226 AM	001 - Scanning Thread	Information	BC => GLT_NEW_GLT_GENERAL 1 row(s) in 399 ms 2 rows/sec.
8,481	2018-04-03 09:41:30.195388 AM	001 - Scanning Thread	Information	JCT_NEW_TRANSACTION scheduled for replication because an entry in the change queue was found.
8,482	2018-04-03 09:41:31.123407 AM	001 - Scanning Thread	Information	SJ => JCT_NEW_TRANSACTION 23 row(s) in 864 ms 26 rows/sec. I: 1 U: 0 D: 0
8,483	2018-04-03 09:41:31.662402 AM	001 - Scanning Thread	Information	GLT_NEW_TRANSACTION scheduled for replication because an entry in the change queue was found.
8,484	2018-04-03 09:41:32.368445 AM	001 - Scanning Thread	Information	SJ => GLT_NEW_TRANSACTION 2 row(s) in 639 ms 3 rows/sec. I: 2 U: 0 D: 0
8,485	2018-04-03 09:41:32.534550 AM	001 - Scanning Thread	Information	BLT_NEW_TRANSACTION scheduled for replication because an entry in the change queue was found.
8,486	2018-04-03 09:41:33.158565 AM	001 - Scanning Thread	Information	SJ => BLT_NEW_TRANSACTION 26 row(s) in 612 ms 42 rows/sec. I: 1 U: 0 D: 0
8,487	2018-04-03 09:41:33.288607 AM	001 - Scanning Thread	Information	API_CURRENT_TRANSACTION scheduled for replication because an entry in the change queue was found.
8,488	2018-04-03 09:41:34.039356 AM	001 - Scanning Thread	Information	SJ => API_CURRENT_TRANSACTION 411 row(s) in 740 ms 555 rows/sec. I: 1 U: 0 D: 0
8,489	2018-04-03 09:41:34.839581 AM	001 - Scanning Thread	Information	EQT_NEW_BATCH scheduled for replication because an entry in the change queue was found.
8,490	2018-04-03 09:41:35.390746 AM	001 - Scanning Thread	Information	SJ => EQT_NEW_BATCH 1 row(s) in 488 ms 1 rows/sec. I: 0 U: 0 D: 0
8,491	2018-04-03 09:41:35.760829 AM	001 - Scanning Thread	Information	EQT_NEW_GENERAL scheduled for replication because an entry in the change queue was found.
8,492	2018-04-03 09:41:36.170797 AM	001 - Scanning Thread	Information	BC => EQT_NEW_GENERAL 2 rows/sec.
8,493	2018-04-03 09:41:36.171781 AM	001 - Scanning Thread	Information	BC => EQT_NEW_GENERAL 2 rows/sec.
8,494	2018-04-03 09:41:36.215810 AM	001 - Scanning Thread	Information	API_NEW_BATCH scheduled for replication because an entry in the change queue was found.
8,495	2018-04-03 09:41:36.749806 AM	001 - Scanning Thread	Information	SJ => API_NEW_BATCH 0 rows/sec. I: 0 U: 0 D: 1
8,496	2018-04-03 09:41:37.208821 AM	001 - Scanning Thread	Information	API_NEW_INVOICE scheduled for replication because an entry in the change queue was found.

Showing 8,502 entries. User: BEST\SYSTEM Machine: LSSVR25-MP OS: Microsoft Windows NT 6.2.9200.0



**WARNING:** For data integrity, when you back up your Pervasive data, you must also back up the corresponding SQL Server database. You can use the Backup feature in the System Administrator—see “Backing Up and Restoring” on page 34

To see the background replication processing, open Windows Task Scheduler and click the **Sage 300 CRE** folder. Each company folder is represented by its own task in this window. If you stop replication for a company, it changes the status to disabled.



## Restarting replication

The following actions require you to stop and start replication on all company folders. (In **System Administrator**, click **Stop** and then **Start** for each company folder.)

- Changes to custom descriptions.
- Changes or additions of custom fields.
- Creating a new file, such as an archive file.
- Changes to file or record security.

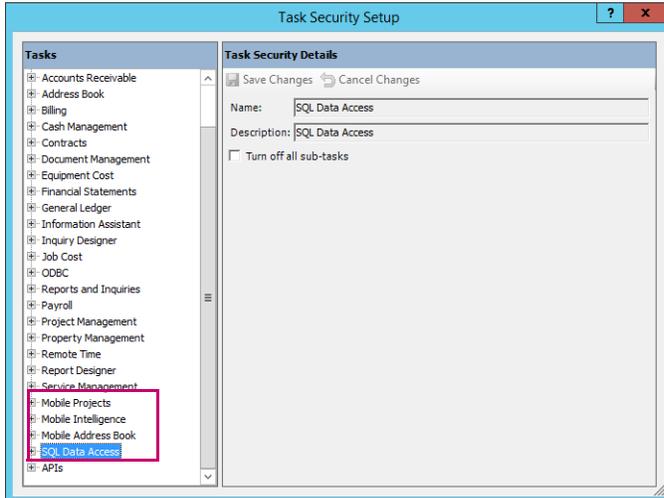
When replication starts, it reads and stores the database schema. Changes to the schema after replication has started are not picked up until the next time replicator is re-started. This could result in some columns or tables being skipped by replication.



**NOTE:** You need to stop and restart the replication when you upgrade your Sage software.

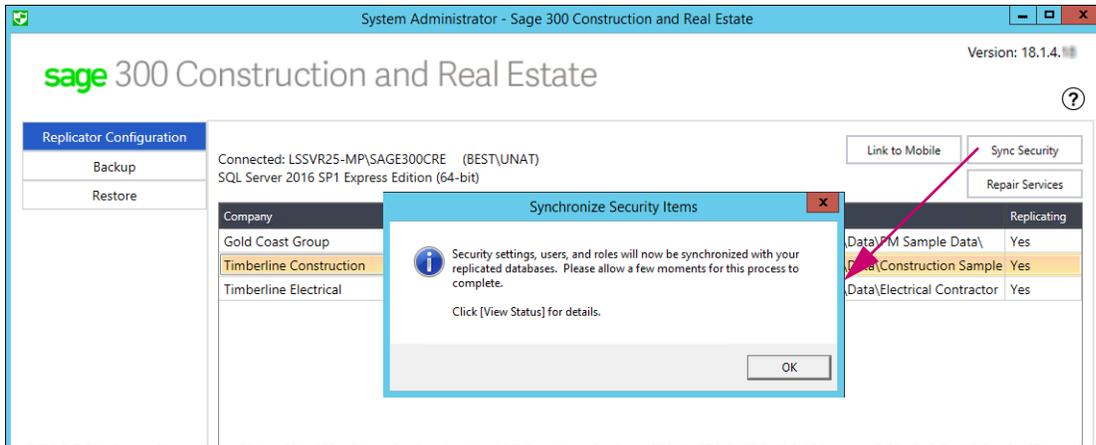
# Security

In order to allow users access to the SQL Server data through reports or Mobile solutions, you must grant the appropriate task permissions in Sage 300 Construction and Real Estate **Security Administration**.

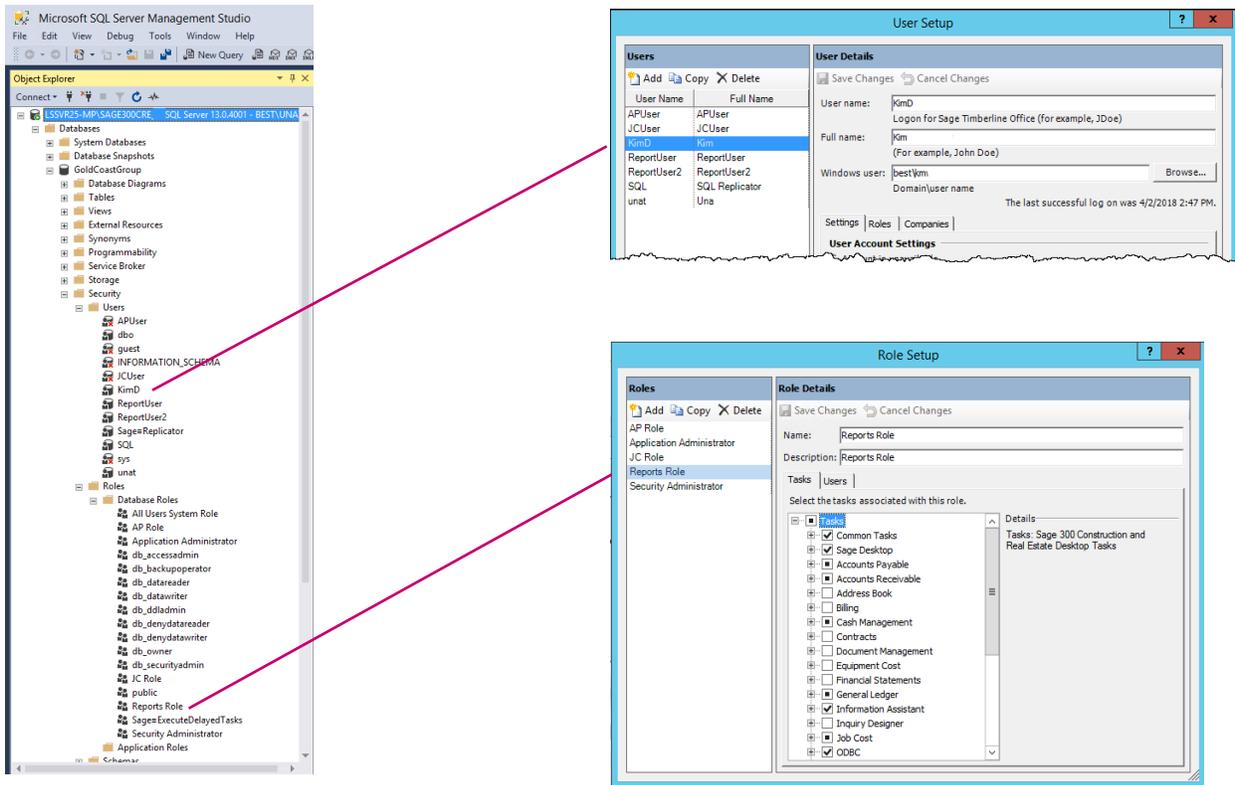


The replication process enforces Sage 300 Construction and Real Estate security settings in the SQL Server data. Any user, role, task, company, and record permissions established in Sage 300 Construction and Real Estate are respected when users access the SQL Server data through Sage Construction Central, reports, or in any other manner.

The initial replication process copies the security settings into the SQL Server instance. When you make changes to the security setup afterwards, such as adding new users, you must manually synchronize the changes with the SQL Server data. In System Administrator, on the **Replicator Configuration** tab, click **Sync Security**.



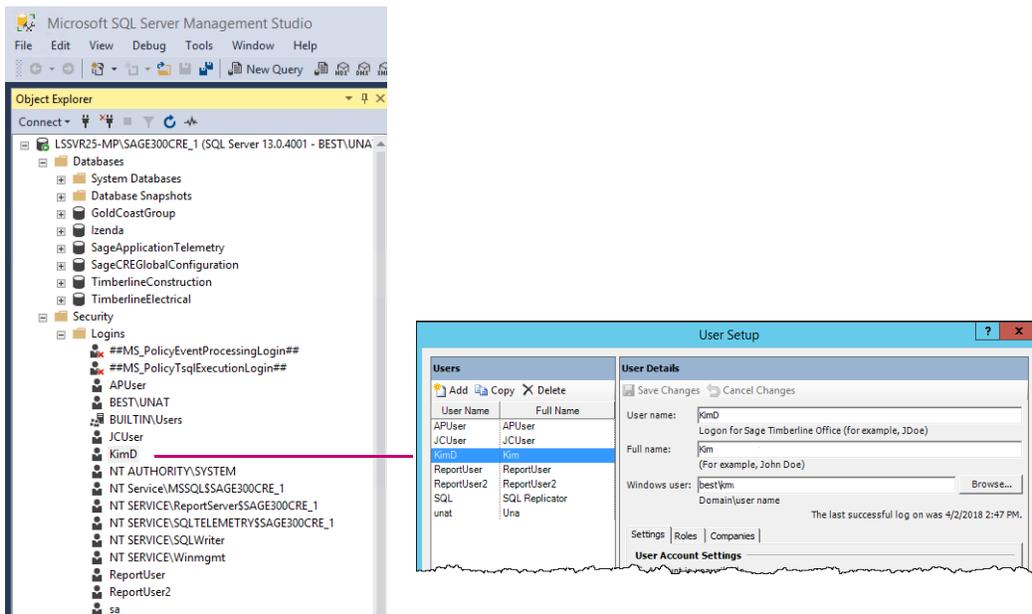
Sage 300 Construction and Real Estate user names and roles, along with their task and company permissions are copied to each SQL Server database.



For each Sage 300 Construction and Real Estate user name, a SQL Server login is created with SQL Server Authentication. The passwords (in Sage and in SQL Server) are automatically synchronized when the user logs into Sage 300 Construction and Real Estate for the first time after replication. This lets you use your Sage 300 Construction and Real Estate credentials whenever you access the SQL Server data in on-premises Sage and third party applications such as Microsoft Excel or Access.



**NOTE:** User names and passwords are case-sensitive.



Anyone who accesses the SQL Server data through Sage Construction Central must have a Windows user name associated with their Sage 300 Construction and Real Estate user setup. This is because Sage Construction Central requires Windows authentication—you log on using your Windows credentials.

## Repair Sage-managed SQL system accounts

Sage creates several different SQL system accounts to manage the functions used by SQL Replicator and Mobile Intelligence solutions. In some cases, these Sage-managed SQL accounts may become out of sync with SQL Replicator and the Mobile features, causing the processes to stop.

If the Sage Worker Engine stops and you are unable to start it or you are directed by Sage Support, click the **Repair Services** button in the **System Administrator** to repair the Sage-managed SQL system accounts used by SQL Replicator, Mobile Reports, and Mobile Dashboards.

Company	On-Demand	Description	Pervasive Data Folder	Replicating
Gold Coast Group	<input type="checkbox"/>		\\LSSVR25-MP\Timberline Office\Data\PM Sample Data\	Yes
Timberline Construction	<input type="checkbox"/>		\\LSSVR25-MP\Timberline Office\Data\Construction Sample	Yes
Timberline Electrical	<input type="checkbox"/>		\\LSSVR25-MP\Timberline Office\Data\Electrical Contractor	Yes

# Backing Up and Restoring

If you implement SQL Replicator, you'll need to use the new **System Administrator** utility to configure and run your regular backups. Even if you don't implement SQL Replicator at this time, we recommend that you use **System Administrator's** backup and restore tools after upgrading to version 17.1 or later. When you use **System Administrator** to back up your data, the following areas are included in a single, zipped backup file:

- Files in the **Program Files (x86)\Sage\Timberline Office\9.5** folder, such as custom reports, inquiries, formula files, and application settings. The **WinInst** folder is not included.
- SQL Server databases generated by SQL Replicator, including the SageCREGlobalConfiguration database.
- Certain registry keys from numerous locations on your server that store system preferences are included.
- You can include files from other network locations with your backups; for example, a shared folder for attachment files.

These items are essential to successfully restoring to a new installation of Sage 300 Construction and Real Estate.



**WARNING:** If you use Sage SQL Replicator to replicate your data and you need to back up your data, you must use the System Administrator backup utility. Do not use SQL Server Management Studio to back up and restore your databases.

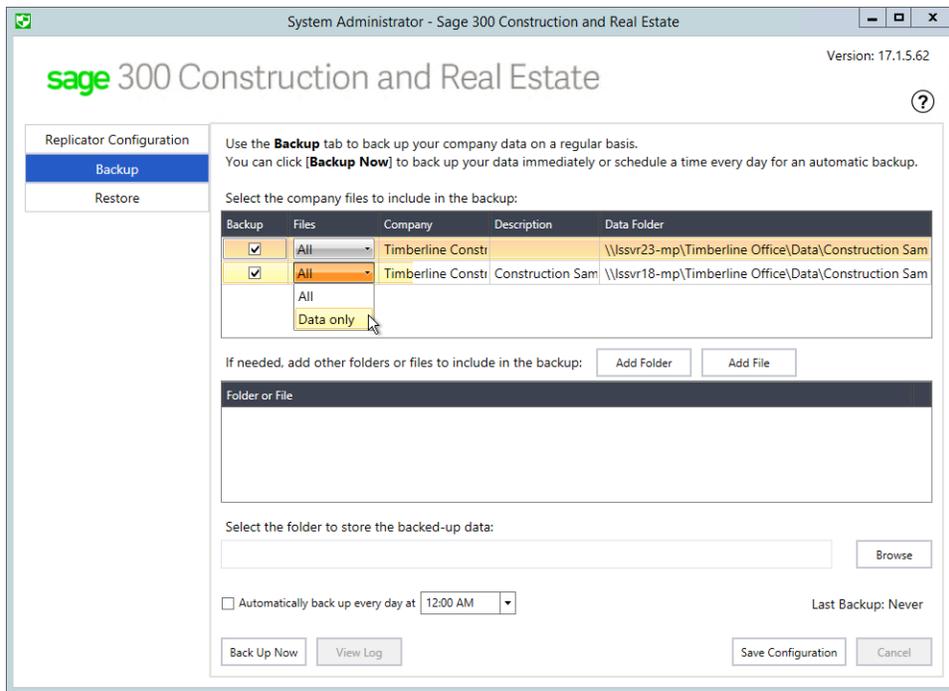
## Backing up

SQL Replicator does more than simply copy your data into SQL Server. Your databases contain production data related to Sage Construction Central and attachment files in addition to the Pervasive data, and this information is required to remain synchronized in order to restore successfully from a backup.

### ► To back up your data

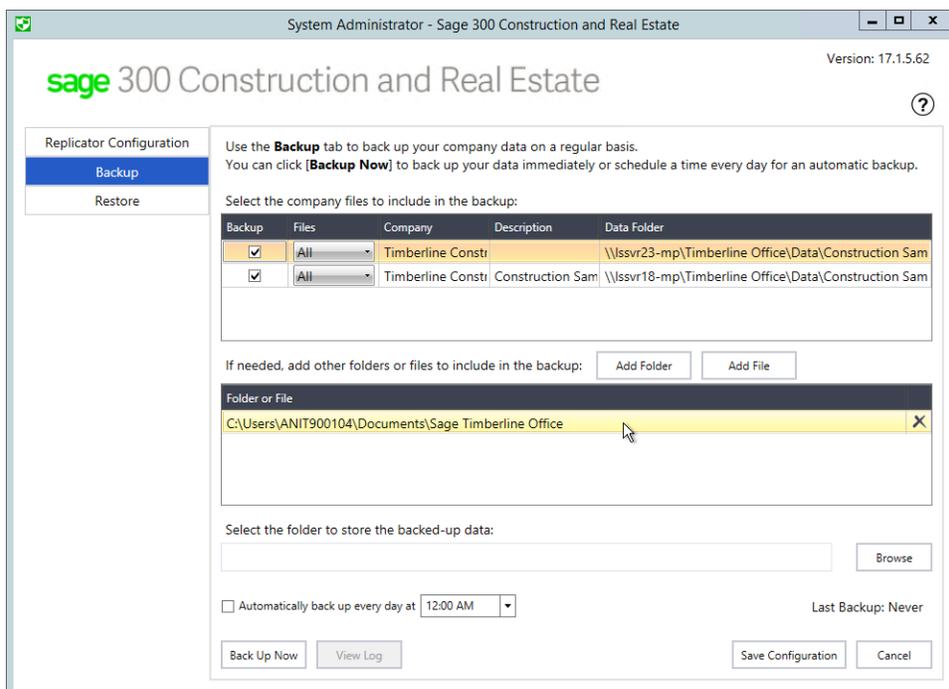
1. In **System Administrator**, click **Backup**.
2. Select the check box next to the folders you want to back up.

- By default, the **Files** selection is set to **All**. This includes files such as print files or attachments. You can change the selection to **Data only** to exclude these files for a smaller backup file.

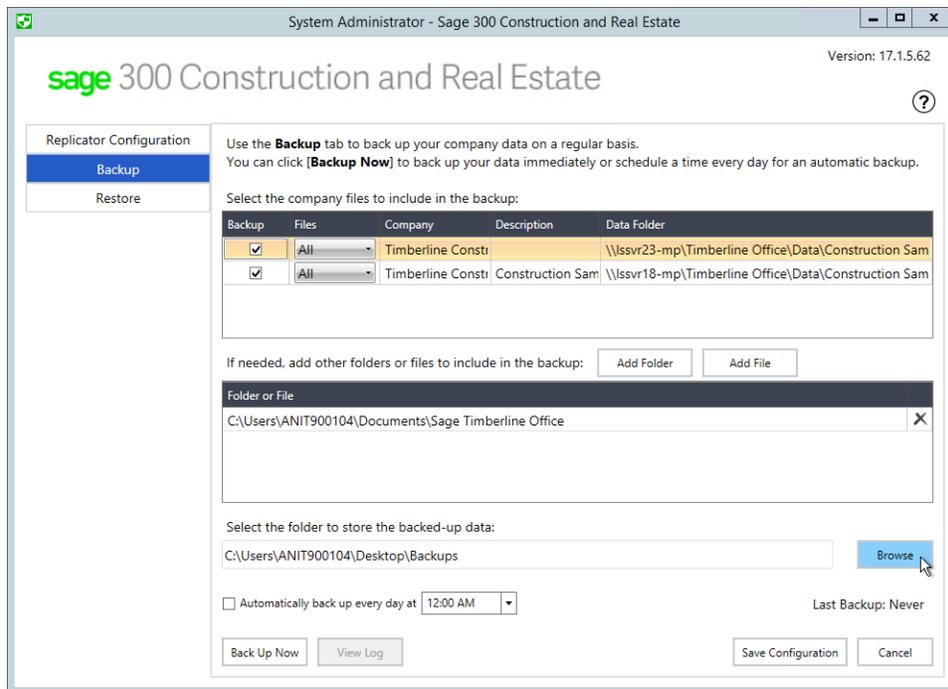


**NOTE:** If you choose **Data only**, system files in the **Program Files (x86)\Sage\Timberline Office\9.5** folder are still included with the backup.

- To add additional folders to include in the backup, click **Add Folder** and select the folder.



5. Click **Browse** to select backup location.



6. For the time of day to run regular backups, select a time when the data will not be in use.



**NOTE:** When the backup starts, the replication tasks are paused. They resume when the backup is complete.

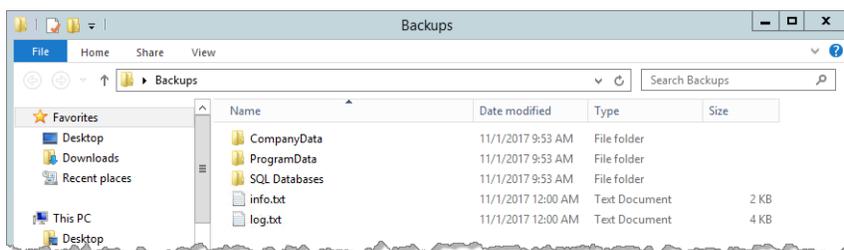
7. Click **Save Configuration** to preserve your changes.

8. Click **Back Up Now** to create an immediate backup.

### ► To view the backup results

After a backup is complete, the backup folder contains the following folders and files.

- The **info.txt** and **log.txt** files to check for messages related to the backup. These files indicate the time the backup was created and the contents.
- The **CompanyData** folder contains the Pervasive data, including Purchasing, Inventory, and Service Management.
- The **ProgramData** folder contains your Sage 300 Construction and Real Estate program files.
- The **SQL Databases** folder contains the .mdb and .ldb files associated with your replicated data, as well as the SageCREGlobalConfiguration database. The configuration database contains setup information that applies to your installation.





**NOTE:** As with any backup, we recommend that you validate and test the backup to ensure that the process is working properly and that you have usable backups. Environmental issues and files in use can affect the integrity of a backup.

## Restoring from a backup



### WARNINGS:

- Only persons familiar with the Pervasive and SQL Server file systems should restore Sage 300 Construction and Real Estate data from backup. Incorrectly restoring data can cause data integrity issues.
- If you share Pervasive files between folders—for example, a single General Ledger file specified in **File Locations** for multiple company folders—you must restore all folders that share the data files.

Depend on the scenario, the steps for restoring your data will differ. Are you restoring the data:

- To replace the current live data?
- To a different location for testing or archiving?
- For data and server migration?

The steps for each scenario are documented in article 86066 of the Sage Support Knowledgebase.