

Getting Started with Attunity CloudBeam for Azure SQL Data Warehouse - BYOL

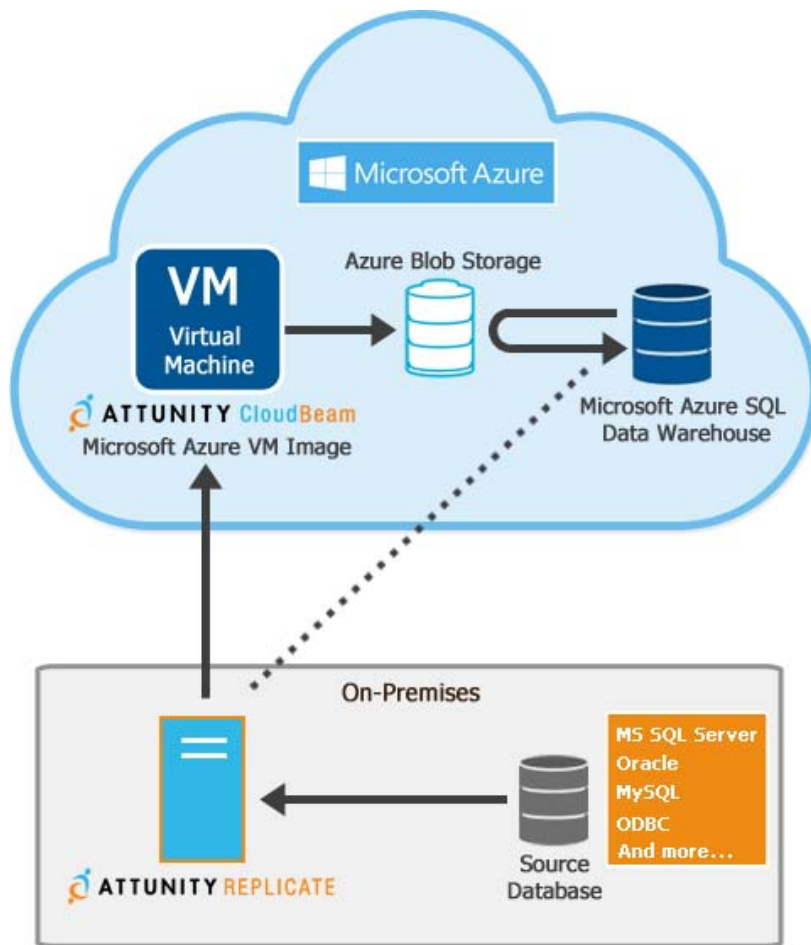
Overview

This short guide explains how to use Attunity CloudBeam to replicate data from your on-premises database to Microsoft Azure SQL Data Warehouse in the cloud.

The entire process can be set up in minutes and consists of the following stages:

- [Stage 1: Purchase Attunity CloudBeam for Microsoft Azure SQL Data Warehouse](#)
- [Stage 2: Configure the Attunity CloudBeam VM Image \(Virtual Machine Image\)](#)
- [Stage 3: Download and Install Attunity Replicate](#)
- [Stage 4: Define an On-Premises to Microsoft Azure SQL Data Warehouse Replication Task](#)

The figure below shows how Attunity Replicate leverages the Attunity CloudBeam VM Image to replicate data from an on-premises source database to Microsoft Azure SQL Data Warehouse in the cloud.



Before starting, please review the list of [Prerequisites](#) below.

Links to additional resources that you may find helpful:

- [Attunity CloudBeam Community Forum](#)
- [Attunity CloudBeam Interactive Support Options](#)

Prerequisites

- On-premises Windows Server 64-bit dedicated to running [Attunity Replicate](#).
 - ♦ The Server must be located in the same local network as the source database.
 - ♦ Minimum recommended hardware requirements: Windows Server 2008 R2; Quad-core processor; 8 GB RAM and 320 GB disk space.

For a detailed description of the hardware requirements, please refer to Chapter 1 of the *Attunity Replicate User Guide*.

- One of the following browsers (for the Attunity Replicate Console):
 - ♦ Microsoft Internet Explorer 8 or above with Adobe Flash Player version 10.2.5 or above
 - ♦ Mozilla Firefox (latest version)
 - ♦ Google Chrome (latest version)
- [SQL Server Native Client 11](#) (for connecting to Microsoft Azure SQL Data Warehouse) must be installed on the Attunity Replicate machine.
- A database client for connecting to the source database must be installed on the Attunity Replicate machine. The table below lists the supported databases and clients.

Source Database	Client
Oracle	Oracle Instant Client for Microsoft Windows (x64) Version 11.2.0.3.0
Microsoft SQL Server (All Versions)	Microsoft SQL Server Native Client 11.0
ODBC	The specific client you need to install depends on your ODBC provider. For example, if you are using a DB2 database, install a DB2 client.
MySQL	MySQL ODBC 5.2.6 64-bit client

Note: Attunity Replicate is only compatible with 64-bit ODBC provider clients.

- Firewall ports **5746** (Attunity CloudBeam) and **1433** (Microsoft Azure SQL Data Warehouse) opened for outbound communication.
- A Microsoft Azure SQL Data Warehouse.
 - ♦ **Access credentials:** Make a note of the server name, port, user name, password, database name and Azure Blob Storage access Credential - you will need to provide them later. Note that if you have not already created an Azure Blob Storage access Credential, you can configure Replicate to create one automatically.
 - ♦ **Access permissions:** Attunity Replicate performs the following operations on the replicated tables within Microsoft Azure SQL Data Warehouse:
 - ♦ SELECT, INSERT, UPDATE and DELETE
 - ♦ Bulk Load

- ♦ CREATE, ALTER, DROP (if required by the task's definition)

Unless the user is the DB Owner, the user specified in the Attunity Replicate Microsoft Azure SQL Data Warehouse settings must be granted the above permissions.

- An Azure Blob Storage account:

- ♦ **Account information:** Make a note of the account name, account key, container name and target folder - you will need to provide them later.
- ♦ **Access permissions:** Attunity Replicate performs the following operations on the Azure Blob Storage container/folder:
 - ♦ On the Azure Blob Storage container: LIST
 - ♦ On the Azure Blob Storage folder: READ, WRITE and DELETE

The user specified in the Attunity Replicate Microsoft Azure SQL Data Warehouse settings must be granted the above permissions.

Note: For optimal performance, the Azure Blob Storage container should be in the same region as your Microsoft Azure SQL Data Warehouse.

Stage 1: Purchase Attunity CloudBeam for Microsoft Azure SQL Data Warehouse

1. Sign in to your Microsoft Azure account at <https://portal.azure.com/>.
2. Click the **Browse** button on the left and select **Marketplace** from the available options.
3. In the Marketplace, select **Attunity CloudBeam for Microsoft Azure SQL Data Warehouse**.
4. In the **Attunity CloudBeam Azure SQL DW - BYOL** pane, read the description and then click the link to [download Attunity Replicate](#).

Note: You need a license in order to use Attunity Replicate. A license will be emailed to you after you complete the registration form on the [download page](#).

5. Click the **Create** button below the product description.
6. In the **Create virtual machine** pane, provide the required information (Steps 1-3).

Note: Make a note of the virtual machine name and access credentials. You will need them later in [Stage 2: Configure the Attunity CloudBeam VM Image \(Virtual Machine Image\)](#).

7. Review the **Summary** (Step 4) and then conclude your purchase (Step 5 - **Buy**).
8. Check that the machine is running by clicking the **Browse** button on the left and selecting **Virtual Machines**.

Stage 2: Configure the Attunity CloudBeam VM Image (Virtual Machine Image)

1. Log in to your Attunity CloudBeam VM Image using Remote Desktop or a similar utility. A shortcut to the Attunity CloudBeam VM Image Configuration utility should appear on your desktop.



2. Open the Attunity CloudBeam VM Image Configuration utility.

A screenshot of the "Attunity CloudBeam VM Image Instance Configuration" window. The window has a dark header bar with the Attunity CloudBeam logo on the left and the title "VM Image Instance Configuration" on the right. The main content area is white and contains the following sections: "Product" with the text "Attunity CloudBeam for Microsoft Azure SQL Data Warehouse (Premium) - BYOL"; "Authentication and Data Encryption" with a paragraph explaining the need for a password; a list of three steps to create a password; a text input field labeled "Password is Not set"; and three buttons: "Generate Strong Password", "Set Password", and "Copy to Clipboard". A "Close" button is located in the bottom right corner of the window.

Notes:

- ◆ In an environment with multiple Attunity Replicate Servers, a separate Attunity CloudBeam VM instance needs to be purchased for each Attunity Replicate Server being used to replicate data to Microsoft Azure SQL Data Warehouse.
 - ◆ In an environment with a single Attunity Replicate Server, if you require concurrent replication from multiple source databases to Microsoft Azure SQL Data Warehouse, a separate Attunity CloudBeam VM instance needs to be purchased for each source.
3. Either manually enter a password or click **Generate Strong Password**. Attunity CloudBeam requires a password for authentication and data encryption purposes.
 4. Click **Set Password** and then **Copy to Clipboard**. You will need to enter this password later when configuring the Microsoft Azure SQL Data Warehouse target in Attunity Replicate.
 5. Close the Attunity CloudBeam VM Image Configuration utility and then disconnect from your Attunity CloudBeam VM Image.

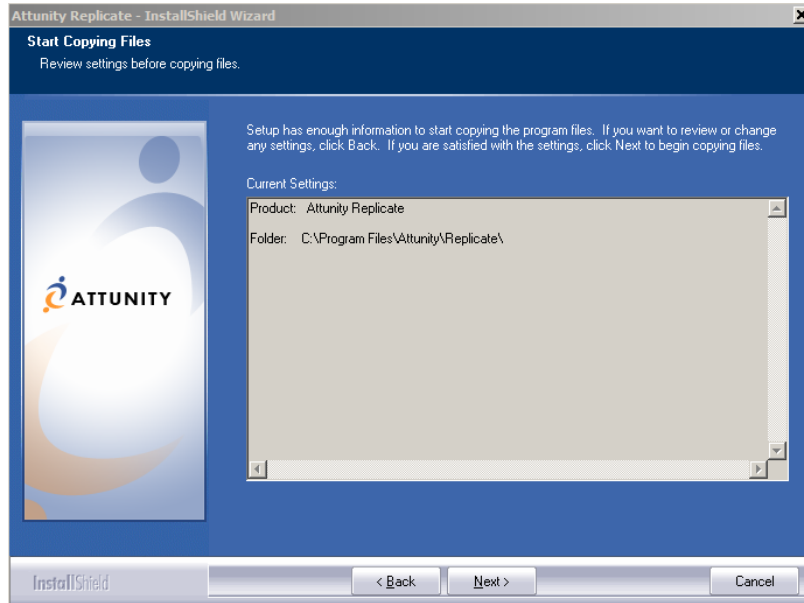
Stage 3: Download and Install Attunity Replicate

6. If you haven't already done so, download the Attunity Replicate software from:
www.attunity.com/products/attunity-cloudbeam/azure-sql-dw/download-replicate.

Note: You need a license in order to use Attunity Replicate. A license will be emailed to you after you complete the registration form on the [download page](#).

For further information, please contact cloud.sales@attunity.com.

7. Run the Attunity Replicate setup file on the Window Server machine set aside for this purpose.



8. Click **Next**, accept the terms of the license and then continue clicking **Next** until the installation completes.

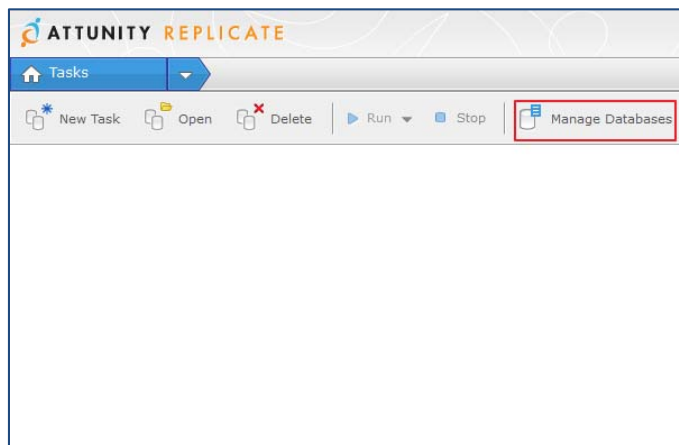
Stage 4: Define an On-Premises to Microsoft Azure SQL Data Warehouse Replication Task

After installing Attunity Replicate, and providing the appropriate license, the next step is to define a replication task that moves data from your on-premises database to Microsoft Azure SQL Data Warehouse. Defining a replication task in Attunity Replicate consists of the following steps:

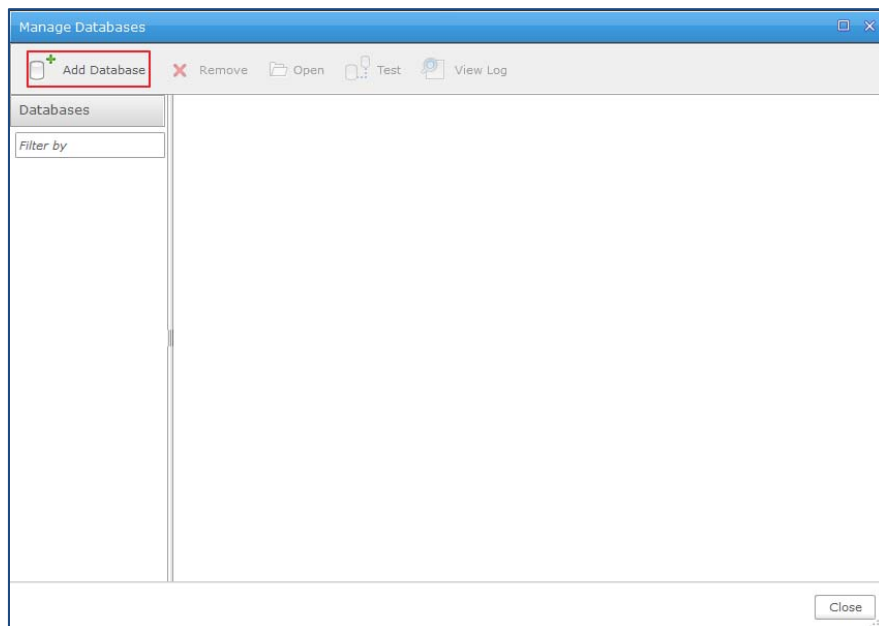
- A. Configure connectivity to your source and target databases.
- B. Create a task and add the databases to the task.
- C. Select which tables to replicate from the source database.
- D. Run and monitor the task.

A: Configure connectivity to your source and target databases.

1. Open Attunity Replicate and click **Manage Databases**.



The **Manage Databases** window opens.



2. Click **Add Database**.

The **Add Database** window opens.

3. Add the Microsoft Azure SQL Data Warehouse as follows:
 - a. Provide a Name for your database and then select **TARGET** as the database role.
 - b. From the **Type** drop-down list, select **Microsoft Azure SQL Data Warehouse**.

The following settings are displayed.

The screenshot shows the 'Add Database' dialog box with the 'Microsoft Azure SQL Data Warehouse' section expanded. It contains the following fields and options:

- Server name:** Text input field.
- Port:** Text input field with '1433' entered.
- User name:** Text input field.
- Password:** Text input field.
- Database name:** Text input field with a dropdown arrow on the right.
- Azure Blob Storage Access:** Two radio buttons: 'Automatically create SQL Server credential' (unselected) and 'Use existing SQL Server credential:' (selected, followed by a text input field).

Below these fields are two collapsed sections: 'Attunity CloudBeam VM Image' and 'Microsoft Azure Storage'. At the bottom of the dialog are 'Test' and 'View Log' buttons with icons, and 'OK' and 'Cancel' buttons.

- c. Click the **Attunity CloudBeam VM Image** heading and specify your **VM Image type** (**Microsoft Azure SQL Data Warehouse Premium – Hourly/BYOL**), your **VM Image IP address** and your **CloudBeam password**. Your CloudBeam password must be the same password that you [set with the Attunity CloudBeam Configuration utility earlier](#).

The screenshot shows the 'Add Database' dialog box with the 'Attunity CloudBeam VM Image' section expanded. It contains the following fields and options:

- VM Image type:** Dropdown menu with 'Microsoft Azure SQL Data Warehouse Premium - Hourly/BY' selected.
- VM Image IP address:** Text input field.
- CloudBeam password:** Text input field.

- d. Click the **Microsoft Azure Blob Storage** heading and specify your **Account name**, **Container name**, **Account key** and **Folder**.

The screenshot shows the 'Add Database' dialog box with the 'Microsoft Azure Blob Storage' section expanded. It contains the following fields and options:

- Account name:** Text input field.
- Container name:** Text input field.
- Account key:** Text input field.
- Folder:** Text input field with a 'Browse...' button next to it.

- e. Click **Test** to check if Replicate is able to connect to Microsoft Azure SQL Data Warehouse. If the test fails, an error message will indicate which settings are incorrect.
 - f. Click **OK** to save your settings and close the **Add Database** dialog box.

4. Add your source database as follows:

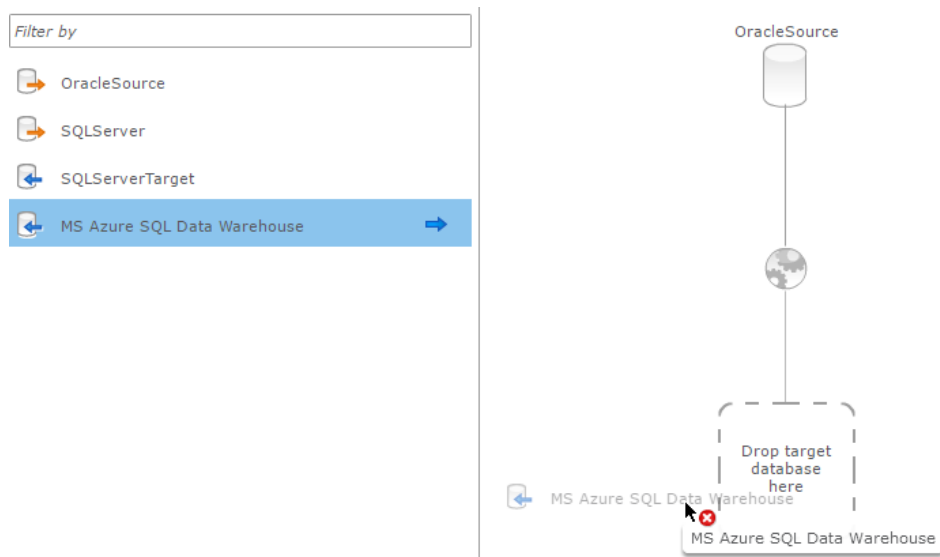
- a. Click **Add Database**.
- b. Provide a **Name** for your database and then select **SOURCE** as the database role.
- c. From the **Type** drop-down list, select one of the [supported source databases](#) and then enter the required connection settings.

For information on Oracle, Microsoft SQL Server and MySQL prerequisites, see [Prerequisites for using Oracle, Microsoft SQL Server or MySQL as Sources](#) below.

- d. Click **Test** to check if Replicate is able to connect to your source database. If the test fails, an error message will indicate which settings are incorrect.
 - e. Click **OK** to save your settings and close the **Add Database** dialog box
5. Close the **Manage Databases** window.

B: Create a task and add the databases to the task

1. In the main console window, click **New Task**.
2. In the **New Task** window, enter a name for your task and then click **OK**.
3. Drag your source database from the panel on the left to the **Drop source database here** area in the upper middle part of the console.
4. Drag the Microsoft Azure SQL Data Warehouse database from the panel on the left to the **Drop target database here** area in the lower middle part of the console.



C: Select which tables to replicate from the source database

1. Click the **Table Selection** button on the right.

The **Select Tables** window opens.

The screenshot shows the 'Select Tables' window with the following components:

- Source Tables:** A section with a 'Schema:' dropdown set to 'dbo' and an empty 'Table:' text box. A 'Search' button is located below these fields.
- Table List:** A table listing available tables in the 'dbo' schema:

Schema	Table Name
dbo	Audit
dbo	AuditFiles
dbo	CfdActorAudit
dbo	CfdTaskAudit
dbo	DataStoreData
dbo	R1TaskAudit
dbo	ReplicateTaskStatus
dbo	Status
dbo	TaskDeployment
- Table Selection Patterns:** An empty table with 3 rows and 2 columns.
- Explicitly Selected Tables:** A table showing the tables currently selected for replication:

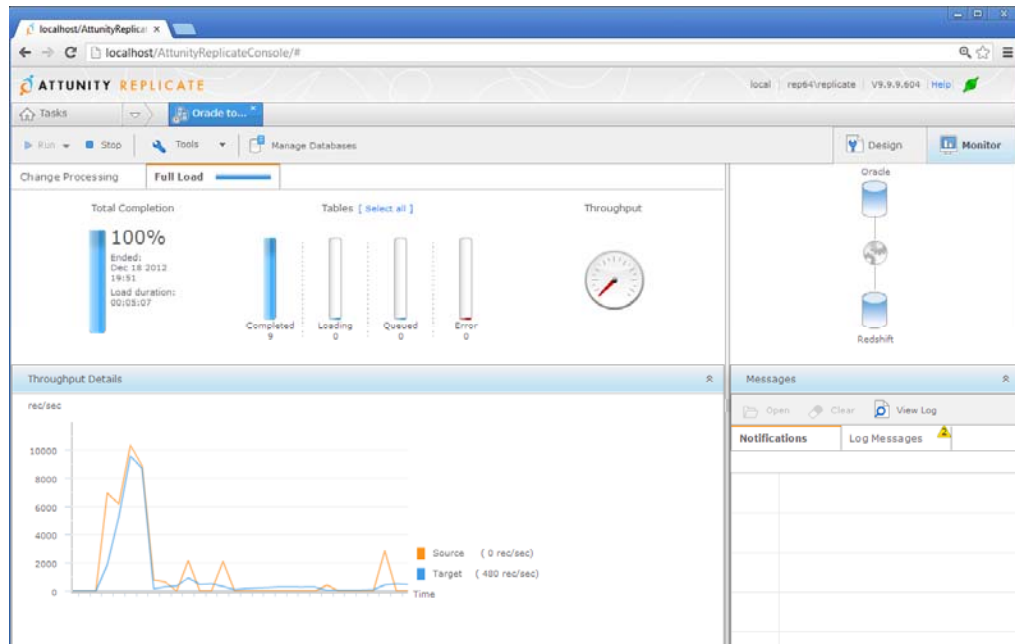
Schema	Table Name
dbo	DataStoreData
dbo	TaskDeployment
dbo	AuditFiles
- Buttons:** Between the 'Table List' and 'Explicitly Selected Tables' are buttons for 'Add >', 'Remove', 'Add All >>', and 'Remove All'. Above the 'Table Selection Patterns' table are buttons for 'Include', 'Exclude', and 'Remove'.
- Navigation:** At the bottom of each table are navigation controls: '1 - 9 of 9' for the Table List and '1 - 3 of 3' for the Explicitly Selected Tables.
- Footer:** 'OK' and 'Cancel' buttons are at the bottom right.

2. From the **Schema** drop-down list, select a schema.
3. Click **Search** to find tables in the schema.
4. Add the tables you want to replicate using the **Add** or **Add All** buttons and then click **OK**

D: Run and monitor the task

1. Click the **Run** toolbar button.

After you click **Run**, the console automatically switches to **Monitor** mode allowing you to monitor and control the task.



2. To return to design mode, click the **Design** tab on the right.

Prerequisites for using Oracle, Microsoft SQL Server or MySQL as Sources in an Attunity Replicate Task

Oracle Prerequisites

- A supported Oracle driver must be installed on the Attunity Replicate machine. See the database clients table in [Prerequisites](#) for details.
- Attunity Replicate uses either Log Miner or BFILE to capture changes from the Redo and Archive logs.

The following Attunity Forum article explains how to enable Archive Logging:

<http://www.attunity.com/forums/replicate-console/replicate-consol-warning-no-archive-log-2792.html>

- Attunity Replicate requires Supplemental Logging to be enabled for each Oracle source table on which Changed Data Capture (CDC) is performed. Supplemental Logging can either be turned on automatically by Attunity Replicate or by your DBA.

Note: When capturing UPDATE and DELETE operations, a Primary Key or Unique Index is highly recommended to prevent performance issues.

- The User Account being used to connect to the Oracle Database must be granted all the required security roles and privileges described in the *Attunity Replicate User Guide*.

Microsoft SQL Server Prerequisites

- A supported Microsoft SQL Server driver must be installed on the Attunity Replicate machine. See the database clients table in [Prerequisites](#) for details.

- Attunity Replicate accesses the Transaction Logs (TLOGS) to capture changes from the selected source Tables. To support this functionality, a full database backup must be completed and the Recovery Model must be set to “Full”.
 - MS-Replication must be enabled on the SQL Server. To enable SQL Server for MS-Replication, run the Configure Distribution wizard in Microsoft’s SQL Server Management Studio.
- Note:** Attunity Replicate cannot capture changes from Microsoft SQL Server tables that do not have a Primary Key.
- The User account being used to connect to the Microsoft SQL Server Database (in Attunity Replicate) must have the sysAdmin fixed server role permission.

MySQL Prerequisites

- A supported MySQL driver must be installed on the Attunity Replicate machine. See the database clients table in [Prerequisites](#) for details.
- A MySQL database with the tables that you want to replicate should be accessible in your network. The following MySQL editions are supported:
 - ♦ MySQL Community Edition
 - ♦ MySQL Standard Edition
 - ♦ MySQL Enterprise Edition
 - ♦ MySQL Cluster Carrier Grade Edition
- The user specified in the Attunity Replicate MySQL database settings, must have the Replication Admin role with the following permissions:
 - ♦ Replication Client
 - ♦ Replication Slave
 - ♦ Super - Note that this privilege is only required in versions prior to MySQL 5.6.6.
 - ♦ The Replicate user must also have SELECT privileges for the source tables designated for replication.
- Binary logging must be enabled. To enable binary logging, the following parameters must be configured in MySQL’s my.ini (Windows) or my.cnf (UNIX) files.

Parameter	Value
server_id	Any value from 1. Example: server_id=1
log-bin=<path>	Path to the binary log file (without an extension). Example: log-bin=E:\MySql_Logs\BinLog
binlog_format	Must be: binlog_format=row

expire_logs_days

To prevent disk space issues, it is strongly recommended not to use the default value (0).

Example:

expire_logs_days=5

binlog_checksum

Must be:

binlog_checksum=none

binlog_row_image

Must be:

binlog_row_image=full
