Setup SQL Server Transaction Replication from On-Premises to RDS

Steps from ChatGPT:

Setting up SQL Server Replication from an on-premises SQL Server to an AWS RDS SQL Server instance involves several steps. Here’s a detailed guide to help you through the process:

**Prerequisites**

1. **SQL Server Version**: Ensure that your on-premises SQL Server and AWS RDS SQL Server are compatible with replication.
2. **Network Connectivity**: Ensure network connectivity between your on-premises environment and the AWS RDS instance.
3. **Replication Types**: Decide on the type of replication you need - Snapshot, Transactional, or Merge replication.
4. **Permissions**: Ensure that you have the necessary permissions to configure replication on both the on-premises SQL Server and the AWS RDS instance.

**Steps to Set Up Replication**

**1. Configure the On-Premises SQL Server**

**Step 1: Enable Replication**

* Open SQL Server Management Studio (SSMS) and connect to your on-premises SQL Server.
* Right-click the server name in Object Explorer and select "Replication" -> "Configure Distribution".
* Follow the wizard to configure the server as a Distributor and create a Distribution database.

**Step 2: Create a Publication**

* In SSMS, expand the Replication folder and right-click "Local Publications" -> "New Publication".
* Follow the wizard to select the database and the type of replication (Snapshot or Transactional).
* Select the articles (tables, stored procedures, etc.) you want to replicate.
* Configure the publication settings and security options.

**2. Prepare the AWS RDS SQL Server**

**Step 3: Create an RDS Instance**

* Go to the AWS Management Console and navigate to RDS.
* Launch a new RDS instance and select SQL Server as the database engine.
* Configure the instance details, including security groups to allow inbound traffic from your on-premises IP.

**Step 4: Configure the RDS Instance for Replication**

* AWS RDS does not support acting as a Distributor but can act as a Subscriber.
* ~~Ensure the~~ **~~rds\_replication~~** ~~role is assigned to the user account used for replication.~~

**3. Set Up the Subscription**

**Step 5: Create a Subscription**

* ~~Subscriber can not use RDS endpoint to connect to . First find out Server name~~

~~SELECT @@SERVERNAME~~

~~Get the {DBServerName}~~

* First find out the IP address from the RDS endpoint

C:\>nslookup targetrdsname.cg66cbzpohi7.us-east-1.rds.amazonaws.com

* ~~On the on-premises Windows server, modify the host file to path C:\Windows\System32\drivers\etc\hosts.~~
* ~~Add IP address and servername~~

~~For example: 13.232.30.187 EC2AMA-9DIATT~~

* On the on-premises SQL Server, right-click "Local Subscriptions" -> "New Subscriptions".
* Follow the wizard to select the publication created earlier.
* For the Subscriber, specify the AWS RDS SQL Server instance.
  + Use the RDS endpoint as the Subscriber server.
  + Provide the credentials for the RDS SQL Server instance.
* Configure the distribution agent security and the synchronization schedule.

**Step 6: Initialize the Subscription**

* Initialize the subscription by specifying how the initial data will be delivered to the Subscriber (either via a snapshot or existing data).

**Post-Setup Verification**

1. **Monitor the Replication**: In SSMS, you can monitor the replication agents and view the status of the replication.
2. **Check Data Consistency**: Ensure that the data is being replicated correctly by running queries on both the on-premises and RDS SQL Server databases.
3. **Network and Performance Tuning**: Ensure that the network connection is reliable and optimize the performance settings if necessary.

**Troubleshooting Tips**

* **Firewall Rules**: Ensure that firewalls on both ends allow traffic on the required ports (usually TCP 1433 for SQL Server).
* **Permissions**: Verify that the replication agent accounts have the necessary permissions.
* **Latency**: Monitor the network latency and replication lag. Adjust the synchronization frequency if needed.

By following these steps, you should be able to set up SQL Server Replication from an on-premises server to an AWS RDS SQL Server instance. This setup will ensure that your data is consistently replicated and available across both environments.

Reference:

[Create Replication between EC2 and RDS (Amazon Article)](https://aws.amazon.com/blogs/database/configure-sql-server-replication-between-amazon-rds-custom-for-sql-server-and-amazon-rds-for-sql-server/)

[Create Replication (SQLShack)](https://www.sqlshack.com/configure-sql-server-replication-between-aws-rds-sql-server-and-on-premises-sql-server/)

[Create Replication (SQLCentral)](https://www.sqlservercentral.com/articles/configure-transactional-sql-replication-between-on-premises-sql-server-and-aws-rds-for-sql-server)

[Snapshot Agent Permission Error](https://login.microsoftonline.com/common/oauth2/authorize?resource=https%3A%2F%2Fmanagement.azure.com%2F&client_id=aba285d5-d9f3-427b-a994-e9deb4567639&response_type=code&haschrome=1&redirect_uri=https%3A%2F%2Flogin.microsoftonline.com%2Fcommon%2Foauth2%2Fnativeclient&client-request-id=a9ae5ea2-0b59-47a6-81f5-d8f7e5dd3f4c&prompt=refresh_session&x-client-SKU=PCL.Desktop&x-client-Ver=3.19.8.16603&x-client-CPU=x64&x-client-OS=Microsoft+Windows+NT+10.0.19045.0)