How to configure publication and distribution retention

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Purpose

This article shows you how you can configure the various retention periods for Transactional Replication.

Why is it necessary to define retention periods

Transactional Replication is accumulating a lot of metadata: first the configuration metadata for publications and subscriptions, then the replicated transactions and commands in the Distribution database. Over the time, the Distribution database will grow and might continue to do so until it takes up all storage space of the Managed Instance.

To avoid such metadata bloat, there are cleanup jobs that are keeping the size of the Distribution database under control. These cleanup jobs are removing metadata that is older than a cutoff datetime, which is calculated based on a retention period.

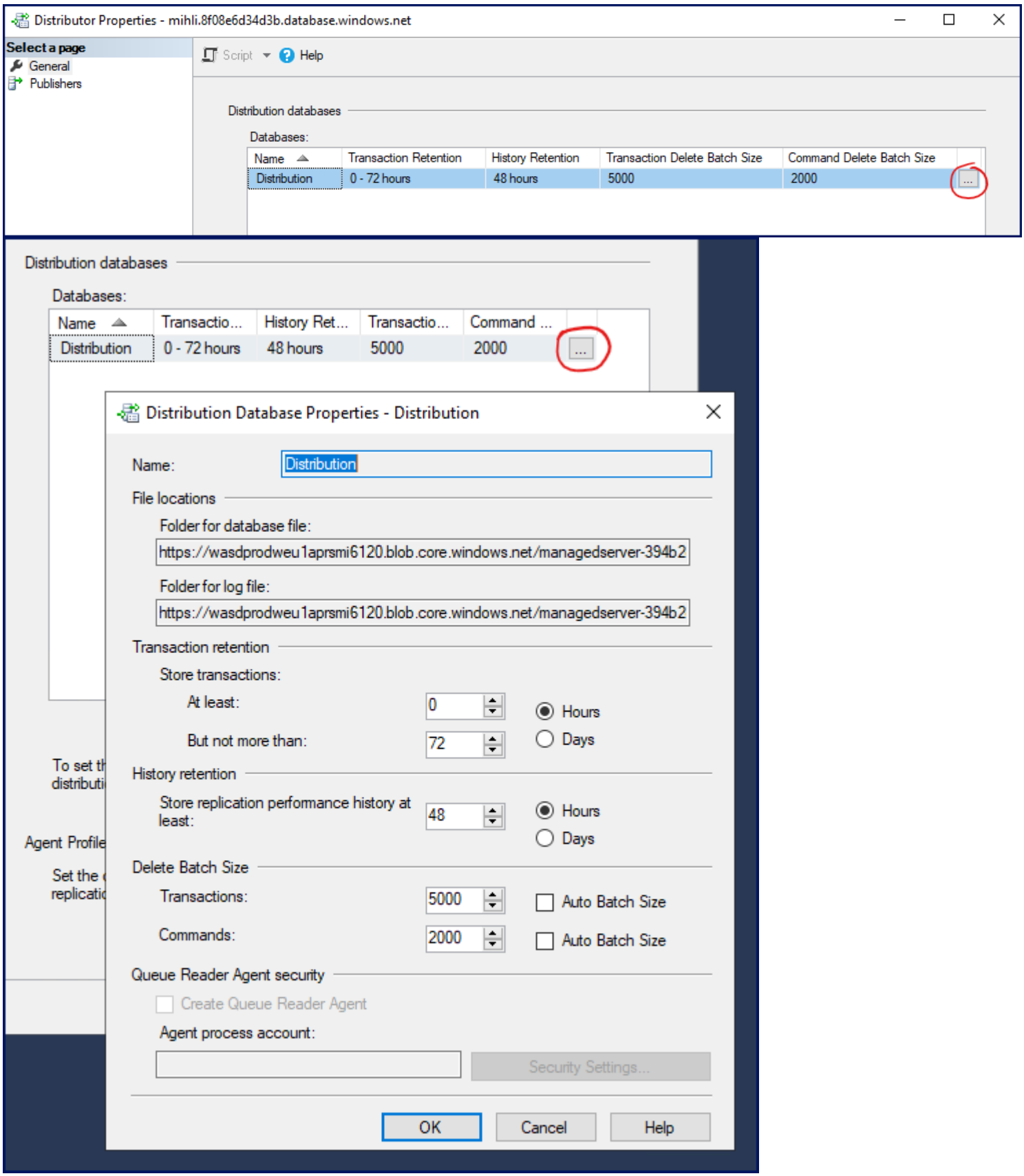
There are two types of retention periods that are important for Transactional Replication: publication retention and distribution retention.

Distribution Retention

These settings define how long replicated transactions and commands will be kept in the Distribution database.

Configure through SSMS

To view and configure these settings in SSMS, right-click on the Replication node and select "Distributor Properties":



There is the minimum distribution retention "At least" and the maximum distribution retention "But not more than":

- If the minimum is 0, then the transactions might be cleaned up immediately after all subscriptions have received the change. You may configure a higher value e.g. if you want to review commands after they

were replicated.

- The maximum defines how much time a subscription has to receive replicated changes.

Configure through Transact-SQL

Here is a sample script - see sp_changedistributiondb for further details:

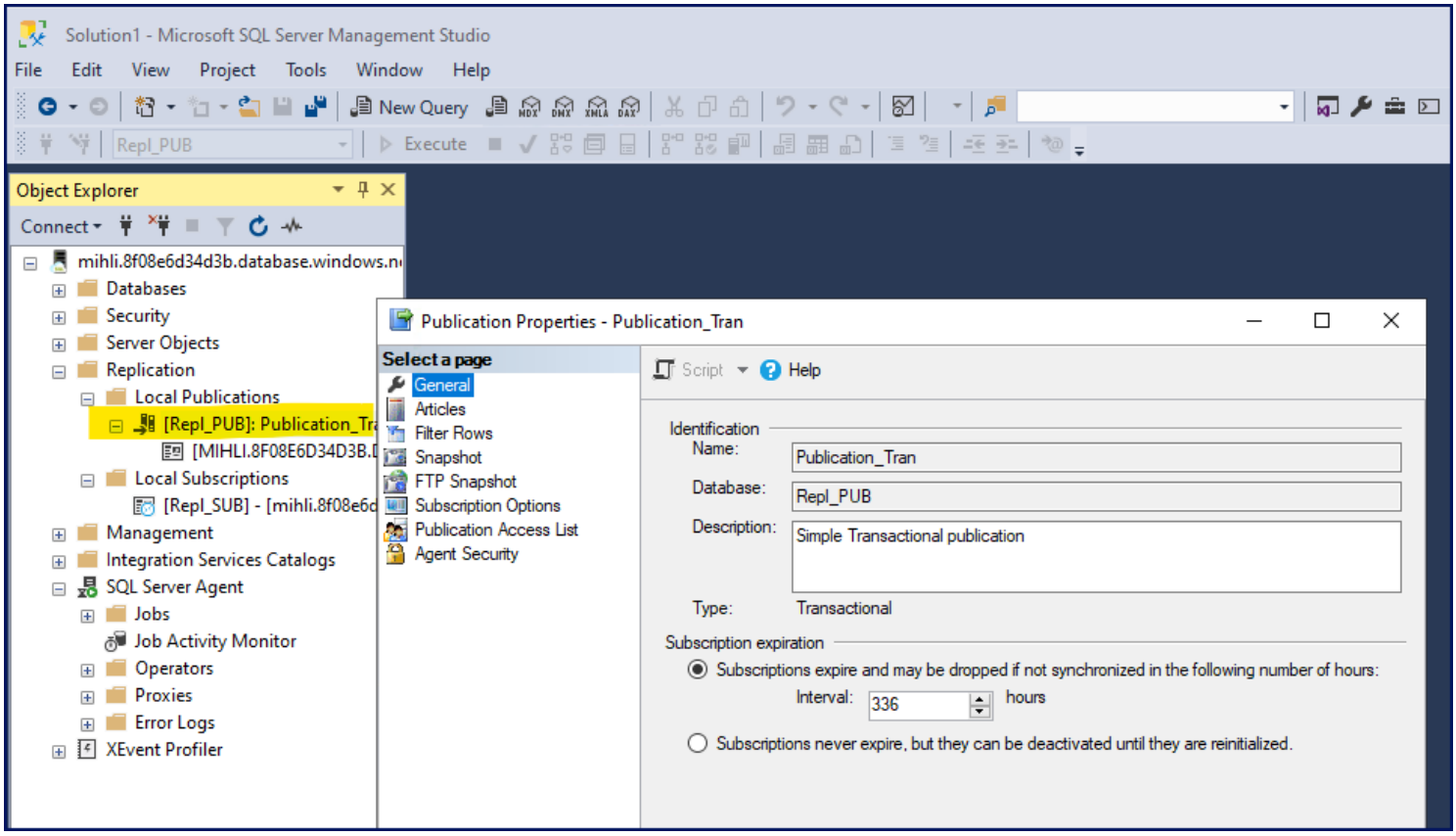
```
DECLARE @distributionDB AS sysname;
SET @distributionDB = N'distribution';

-- Set the distribution retention parameters to their default values
USE distribution
EXEC sp_changedistributiondb @distributionDB, N'min_distretention', 0
EXEC sp_changedistributiondb @distributionDB, N'max_distretention', 72
GO
```

Publication Retention

If the subscription has not synchronized within the publication retention, it will be removed by the cleanup agents. This is to avoid that "dead" subscriptions are accumulating on the system although they are no longer needed. If you still need the expired subscription, you have to recreate it and initialze it from a snapshot.

To view this setting in SSMS, navigate to Replication, click on "Local Publications", locate your publication, right-click on it and select "Properties". Go to the "Subscription expiration" section in the "General" page as shown in the screenshot below:



In this example, you can see the default publication retention period value of 336 hours = 14 days. The description on the options is self-explanatory, choose whatever is matching your requirements.

Recommendations

- Do not set the subscriptions to never expire (a value of 0 for @retention), because this would prevent any metadata cleanup. The Distribution database would grow until it takes up all the storage space of the Managed Instance.

- If the Publisher is very active, it might be necessary to have a much lower value for the maximum distribution retention. Larger Distribution databases might cause severe performance issues for the replication agents and the lower max retention helps with keeping the size of the Distribution database down. If the distribution retention is set to a low value like 3 hours, it implies that if a Subscriber does not synchronize within 3 hours, the cleanup agent will remove the older transactions commands from distribution and hence the subscription will be marked as deactivated. So the administrator needs to have good monitoring in place to identify any issues very early.

- The default maximum distribution retention of 72 hours = 3 days might be too low for not-so-busy publications. If the Distribution Agent starts failing on early Friday afternoon after the admin has left for the weekend, the 3 days are almost gone when the admin comes back on Monday morning. This does not give you a lot of time for any troubleshooting. If the publisher database is very large and has only very few changes, it might be feasible to increase the max retention to 5 days or more.

More information

The article Subscription Expiration and Deactivation explains the details behind this feature:

> Subscriptions can be deactivated or can expire if they are not synchronized within a specified retention period. The action that occurs depends on the type of replication and the retention period that is exceeded. To set retention periods, see Set the Expiration Period for Subscriptions, Set the Distribution Retention Period for Transactional Publications (SQL Server Management Studio), and Configure Publishing and Distribution.

> Transactional replication uses the maximum distribution retention period (the @max_distretention parameter of sp_adddistributiondb (Transact-SQL)) and the publication retention period (the @retention parameter of sp_addpublication (Transact-SQL)):
>
> - If a subscription is not synchronized within the maximum distribution retention period (default of 72 hours) and there are changes in the distribution database that have not been delivered to the Subscriber, the subscription will be marked deactivated by the Distribution clean up job that runs on the Distributor. The subscription must be reinitialized.
> - If a subscription is not synchronized within the publication retention period (default of 336 hours), the subscription will expire and be dropped by the Expired subscription clean up job that runs on the Publisher. The subscription must be recreated and synchronized.

Public Documentation Reference

Subscription Expiration and Deactivation

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