SQL REPLICATION

Digging in deeper

David Cobb
MCT, MCITP SQL Dev/DBA/Bi
david@davidcobb.net

Overview

- Scripting Replication Setup
- Monitoring
- Identifying Replication Errors
- Methods of Resolution

Why Script Replication?

- GUI is incredibly useful, but only as a starting point.
- Many scenarios require starting over (Schema or database changes, server failure, extended network outages)
- Script your replication!
  - Ensures consistency between deploys
  - Exposes all the settings, parameters and options you're using.
  - Can be versioned in source control for change management.

General Approach to Troubleshooting

- Monitor
- Identify Errors
  Then based on severity, you may:
  - Resolve and move forward
  - Re-initialize
  - Drop and recreate replication

Monitoring

- Replication Tables and Views
- SQL Error Log
- SQL Alerts
- Verbose Logging for Agents
- Performance Monitor
  SQLInstance: Replication * (LogReader, Dist)
- Of course, Replication Monitor

Identifying Errors

- Replication Monitor
- Replication Alerts
  http://technet.microsoft.com/en-us/library/ms152496.aspx
- Replication System Tables

  Most Useful: MSdistribution_history and MSlogreader_history, MSrepl_errors in distribution database

  - Replication System Views
    http://technet.microsoft.com/en-us/library/ms187369(v=sql.105)
- Books Online Reference
  http://technet.microsoft.com/en-us/library/bb677162(v=sql.105)

Ignore Errors

- If the business cost of halting replication outweighs the consequence of incomplete data replication, it makes sense to configure the log reader agent to ignore certain types of errors.

- Or you can also skip over them manually with sp_helpsubscriptionerrors and sp_setsubscriptionxactseqno http://technet.microsoft.com/en-us/library/ms151331(SQL.105).aspx

- Be cautious about using. DBA is responsible for manually resolving data sync issues that are caused by these errors. http://support.microsoft.com/kb/327817

- Use data comparison with a tool like TableDiff to be aware of differences in the tables and synchronize them manually.

Comparing Articles

- You can compare the tables on the publisher and subscriber, and generate a script to synchronize them.
- TableDiff
  http://technet.microsoft.com/en-us/library/ms162843(v=sql.105).aspx

Demo and Lab

- Set up Performance Monitor
- Configure Replication
- Set up db and tables
- Set up publication and subscription
- Configure verbose logging
- View Replication Setup Report
- Test publication
- Review logs and system tables, troubleshoot
- Introduce errors and resolve
  - Skip Manually
  - TableDiff
  - Configure Distribution Agent to Skip Errors
- Teardown Replication

When do I need to reinitialize?

- Reinitialization prepares snapshot files containing schema and data of published tables and database objects, stores the files in the snapshot folder. Can take a long time..
- Changing certain properties of a publication or article raises an error stating that re-initialization is required.
  - Adding an article
  - Changing a column in an article table.

Reinitialization Considerations

- Turn off @immediate_sync and @allow_anonymous before making the change. Have to initiate sync manually at subscribers.
  http://www.remotedbaexperts.com/Blog/2010/10/reinitializing-a-single-article-in-a-publication/

- Use sp_reinitsubscription to reinit an article of the publication, rather than whole publication

- Consider breaking up large publications into smaller ones, so the impact of reinitialization is reduced.

- Create replication setup and teardown scripts and keep them under source control, so change is easier to manage.

How to manually remove replication

- Drop Subscriptions

- Drop Articles (optional)

- Drop Publications

- Turn off Distributor

- http://support.microsoft.com/kb/324401

SQL Replication changes between versions

- 2012 – Support for replication in High Availability Groups http://msdn.microsoft.com/en-us/library/bb500342.aspx

- 2008 R2 – No changes from 2008

- 2008

  - Peer to Peer improvements

  - Replication Monitor improvements

  - Partitioned Table replication support

Questions / Discussion