Transactional Replication New Features for AlwaysOn AG in SQL 2017

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<table>
<thead>
<tr>
<th>Topics Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 300 level</td>
</tr>
<tr>
<td>• Overview - Transactional Replication</td>
</tr>
<tr>
<td>• Overview - How Transactional Replication works</td>
</tr>
<tr>
<td>• HA/DR solutions &amp; Transactional Replication</td>
</tr>
<tr>
<td>• How Transactional Replication works with AlwaysOn AG</td>
</tr>
<tr>
<td>• New feature in SQL 2017 CU6 – Distributor in AG</td>
</tr>
<tr>
<td>• Released - 4/20/2018</td>
</tr>
<tr>
<td>• Demo</td>
</tr>
</tbody>
</table>
Transactional Replication

• What is Transactional Replication?
  – Snapshot Agent
  – Logreader Agent (logread)
  – Distribution Agent (distrib)
  – within a publication, transactional consistency is guaranteed
  – Typically used in server-to-server environments

• Transactional replication is helpful when:
  – You want incremental changes to be propagated to Subscribers as they occur.
  – The application requires low latency between the time changes are made at the Publisher and the changes arrive at the Subscriber.
  – The application requires access to intermediate data states, not simply the net data change to the row
  – The Publisher has a very high volume of insert, update, and delete activity. The Publisher or Subscriber is a non-SQL Server database, such as Oracle.
  – Important: Each published article in Transactional replication must have a unique index.
**Publication Database:**
- Replication does not continue after a log shipping failover
- If a failback to the primary occurs, replication resumes
- If the primary is permanently lost, the secondary can be renamed so that replication can continue (with conditions)
  - `sync with backup` option

**Subscription Database/Distribution Database:**
- The same replication behavior as Publication Database above
TR + DB Mirroring

**Supported:**
- Publication database can be configured with DB mirroring
- Subscription databases supports DB mirroring with limitations:
  - Not support automatic failover subscription db
  - Not a practicable solution

**Not Supported:**
- Distribution database

**Requirements/Conditions:**
- The principal and mirror must share a Distributor
- Remote Distributor recommended
- Logins, Jobs, Linked Servers manually copy to the mirror
- PublisherFailoverPartner
Supported:

- Fully supported as standalone SQL Server instance for Publisher, Distributor and Subscribers
- Provide HA solution
- Single point failure on storage
SQL 2012 – 2017 CU5:

- Both Publisher and Subscriber database can be in AG
- **Distributor database doesn’t support AG**
- Remote Distributor recommended
- Listener is required
- Publisher redirection - `sp_redirect_publisher`
- `BypassPublisherValidation`
- Logins, jobs, linked servers need to copy over manually
- Support automatic failover for publisher and transactional subscribers
- TF1448
SQL 2017 + CU6 (4/20/2018):
• Distributor database supports AG
• Remote Distributor required
• Distribution database AG needs a listener
• Replication jobs use the distributor listener
• A new job created to monitor distributor AG state
• Synchronous mode is recommended and preferred

Limitations of the new feature:
• Transactional replication with immediate or queued updating subscriber is not supported
• P2P, Merge, Heterogeneous, Bi-directional TR not supported
• Configure by script only
• Must be new replication, existing distribution db not supported
Distributor in AlwaysOn AG (SQL2017 + CU6) - Example
DEMO
Special Thanks!!!
SQL Server Tiger team

Reference:
Set up replication distribution database in Always On availability group

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