Sql Server Mirroring Library

Automatic handling of mirroring in code and both check of need configuration and the setup of that. It is expected to be used from a host program or service that can load configuration, knows server state and run the library functions. The library handles multi-mirrored servers (servers that handles multiple mirrored databases for one application and all are needed for operation).

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# Vocabulary/Definitions

Documentation is tried kept in Microsoft Sql Server Mirroring vocabulary.

MirrorLib: Reference to the SQL Server Mirroring Library.

Database Server Instance: Named installation version of the SQL Server software. First installation typically have the default name SQLSERVER.

Principal Role: Database Role in mirroring which is the active server. This is the server that the external applications connect to and run queries. This is the database that is backed up to truncate the log and make recovery faster.

Mirror Role: Database Role in mirroring which is the mirroring server. The database is the one ready to fail over and is in restoring state to make additions faster.

Multi-mirror server: Server that has several mirrored databases that need to switch over at the same time.

Primary Role: Server Role where the server runs its mirrored databases in Principal Role. When the server shifts role from Primary to Secondary all the mirrored databases shift role from Principal to Mirrored.

Secondary Role: Server Role where the server runs its mirrored database in Mirror Role. When the server shifts role from Secondary to Primary all the mirrored databases shift role from Mirrored to Principal.

Library Host: The program or service that is running the library. It is required to be able to evaluate if the server runs in Primary Role or Secondary Role. The action in the library can be handled via scripting via the console test application (which is the running as an intermediary Library Host) or via direct use of the MirrorLib in code. The Library Host needs to be able to identify a server role and possible shifts and send that information to the MirrorLib.

Action: A task that handled by MirrorLib and communicated to the log so that in a debugging situation so it is possible to see what the server is doing. An action can consist of sub-actions if several things need to be done in an action.

Swith-over: The change of server role between primary/secondary.

Degraded state: State where the mirrored databases are not ready for operation. This state can be due to a switch-over or change in configuration.

# Limitations

1. Does not have its own monitoring service that can change the role of the server.
2. Tested on
   1. Sql Server 2014 Standard Edition
   2. Windows Server 2012 R2 Standard Edition
   3. AD User for running the mirroing that has rights to
      1. backup and restore databases.
      2. setting up mirroring which is access to the master database on each server.
      3. has the right to create endpoints on the database server instance \*.
      4. has the right to start services \*.
      5. creating needed directories \*.
      6. setting security for directories \*.
      7. creation of shares \*.
      8. setting security for shares \*.

\* This can be handled manually if the installer does not want to give the rights to the user. The state of each is tested on startup and startup fails if not configured.

# States of Sql Server Mirroring

## Startup State

Startup is different depending on Server Role.

### Primary Role

If a database from the configuration is identified as being not set up for mirroring then the Action Setup of Principal Role is called. If a database on the instance database is identified as being set up for mirroring but is not in the configuration

#### Action Setup of Principal Role

The action consist of several sub-actions

##### Action: Principal – Dir/Share Create

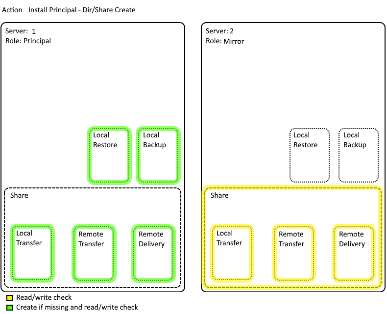


Figure 1: Action Install Principal - Dir/Share Create

### Secondary Role