

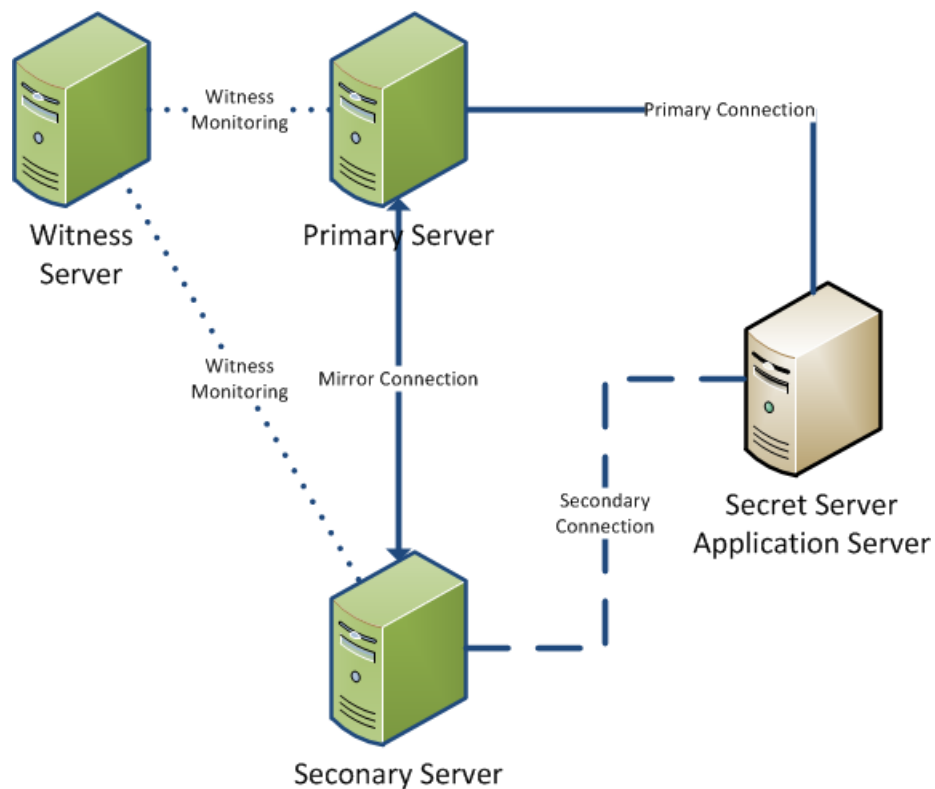
# How Mirroring Works

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## Overview

Secret Server can utilize SQL Server's build-in mirroring functionality. This allows for high-availability and disaster recovery scenarios where Secret Server must always be operational. Mirroring works by configuring three instances of SQL Server:

- **Primary:** The Primary is the SQL Server which will carry out the requests for data when Secret Server performs queries.
- **Secondary:** The Secondary is the "mirror". When data is changed in the primary, the exact same changes are carried out in the secondary.
- **Witness:** The Witness is a SQL Server instance that monitors the health of the **primary** server. If for whatever reason the primary were to go offline, the witness server will instruct the **secondary** to take over as the primary. When the original primary comes back online, it is now the secondary. A witness server is not required, however is highly recommended. Without a witness server, the failover will not take place automatically; instead a database administrator will be required to do the "flip".



Mirroring supports three different modes of functionality:

- **Synchronous – High Availability** is best for disaster recovery scenarios where information redundancy is more desirable. Synchronous means that whenever Secret Server changes information on the primary database, it is not committed and “kept” until the Secondary Server has agreed that it has recorded the information as well. This is best configured where all servers in the mirror group are located as close together as possible in terms of network topology (goes through the least NAT layers and device transitions).
- **Synchronous – High Protection:** High protection is similar to High Availability; however a witness server is not used. The witness server is responsible for that automatic failover. Without the witness, a database administrator will be required to perform the failover.
- **Asynchronous** operation is best for high-availability when Secret Server must always be accessible, but allow for very small amounts of data loss or where performance is critical, or if the mirror server is located on a different physical network. The primary server will accept and commit information immediately and let Secret Server continue operation without the guarantee that it has been replicated to the secondary mirror.

Secret Server will be doing all of its communication with the primary instance. When Secret Server writes information to the primary, the primary will then replicate that data to the secondary, either synchronously or asynchronously as described above.

When a failover takes place, the secondary server will notify Secret Server’s connection to the database that it has taken over as primary as instructed by the witness server.

Most, if not all of our customers, opt for the synchronous – high availability operation mode.

SQL Server Standard Edition is required for the synchronous operation modes. The Asynchronous operation mode requires Enterprise. However, the Witness Server can be a SQL Server Express instance.

## More Information

For more information about SQL Server and mirroring, please see the MSDN Article here:

<http://technet.microsoft.com/en-us/library/cc917680.aspx>

For more information about configuring Secret Server with mirroring, please see our configuration article.

<http://updates.thycotic.net/link.ashx?SQLServerMirroring>