

Automated Standby for SQL Servers

Introduction

Today's business critical applications and customer requirements demand high-availability of company data. Database Administrators (DBAs) are challenged to make the database systems available 24x7 and provide fast database response time. Utilizing a standby server provides a high level of data protection and fast recovery of data if the primary server goes down for whatever reason. A standby server can also be accessed as a read-only device for other purposes, such as report generation, thereby offloading the primary server. One must answer the following questions before choosing the most optimal high availability solution

1. How much availability do I need? Availability is defined as the ratio of time that the server is actually available to the time that the server should be available.
2. How much work can I afford to lose? Can I afford to re-create committed transactions that have already made it to the primary server?
3. How much downtime can I afford during the recovery phase?
4. How much money am I willing to spend on my solution?
5. How much resource do I need to maintain and manage the integrity and reliability of data?

Understanding and answering these questions is one of several steps in planning a high availability solution. Given the current market conditions and shrinking IT budgets, the last question plays a vital role. The following is an examination of the pros and cons of high-availability solutions most commonly used today.

Failover Clustering

Failover clustering provides the highest level of availability, in which the primary server automatically fails over to a secondary server when disaster strikes, transparent to the end user. But this is a very expensive solution, requiring special hardware, the highest-level Microsoft SQL Server license and a dedicated senior level SQL Server DBA. Hence, it is not a viable solution for small and medium-sized businesses. If Distance Clustering is not implemented, Failover Clustering requires that the servers are located in the same data center since it uses a shared disk subsystem. Also, if the disk subsystem fails then Failover Clustering cannot prevent the loss of data.

SQL Server Native Backups/Restores

Native SQL Server Backups are the simplest and least expensive option. But it leads us to compromise the performance and response time when the complete backups are active. Also restore/recovery time is significantly high during the

disaster recovery. DBAs spend most of their time in finding out the right backup files and the locations. This may actually take more time than the time it takes to do the restore operation. Also one wouldn't know if the backup files are restorable until the real need arises. This process will break down if the DBA wants to recover the data out of unauthorized or wrong updates to the database.

Sonasoftware Standby Solution

The Sonasoftware Standby Solution bridges the gap between a highly expensive Failover Clustering solution and time-consuming native SQL Server Backups. Sonasoftware provides a high-availability solution, protecting data from hardware/software failures and human errors. This procedure completely automates log shipping practices and ensures data integrity, enabling the standby system to take over instantly in the event of primary system failure. The standby system can be located on-site or at a remote site for protection against natural and man-made disasters. Because the Sonasoftware Standby Solution transfers only data that has changed since the last backup to the standby server, data transmission can be handled by a low-bandwidth T1 or a low-cost DSL line.

Although this capability can be achieved by using SQL Server's built-in log shipping feature, it requires the services of an experienced DBA, as well as a high degree of monitoring. Log shipping is required to perform fairly complex pre-configured tasks. Also switching the secondary server to the primary role after a disaster strikes is not a trivial task. In the case of a complete system crash, the log shipping configuration information may also be lost. It is extremely difficult to keep track of log files already restored, log files yet to be restored, and, then, apply the tail of the transaction.

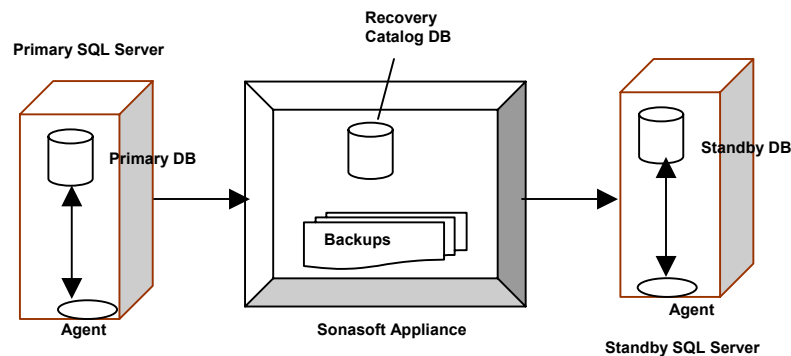
The Sonasoftware Standby Solution automates all of the critical steps involved, making the process completely transparent to the user. The solution is driven by self-explanatory screen wizards, armed with highly powerful monitoring capabilities at different levels. When disaster strikes, role switching is just one click away, as a series of complex database operations are performed in the background to switch the secondary server to the primary role.

The following summarizes the sequence of steps executed by the Sonasoftware Standby Solution behind the screens.

1. Takes the complete primary database backup to begin with.
2. Restores the complete backup to a standby server.
3. Transfers the Login and User information from the primary server to the standby server.
4. Establishes the transaction log backup and restore tasks, as well as the monitoring configurations for the tasks.
5. Maintains a continuous flawless backup/restore stream between the primary server and stand-by servers.

6. Raises the appropriate alarm messages to Administrators when something goes wrong. The solution is mostly self-healing, except for fatal errors.
7. During the disaster, backs up the tail of the transaction log on the primary server, applies all the pending transaction log backups, including the final one, and promotes the designated standby server to primary status. All this happens completely transparent to the user.

The following diagram represents a sample Sonasoft Standby Solution configuration.



About Sonasoft™

Sonasoft is a leading provider of disaster recovery and business continuance solutions that simplify and lower the cost for mission critical multi-server systems. Founded in San Jose, CA, in 2002, Sonasoft provides integrated hardware and software based solutions that simplify and automate the process of database backup and recovery, centralize the management of multiple servers, and cost-effectively provide a disaster recovery strategy to protect valuable data. SonaSafe™ is a plug'n'play appliance that is specifically designed for disk-to-disk backup and recovery. SonaSafe appliance reduces TCO and provides faster ROI compared to tape and other solutions available in the market. For more information, please visit www.sonasoft.com