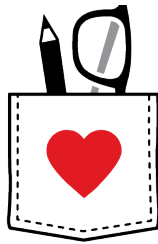# SQL Server AlwaysOn:
The Uneasy Button

BRENT OZAR

UNLIMITED

SQL Server AlwaysOn Availability Groups

If your databases need high performance and high availability, you've struggled with a patchwork of different features in the past. A combination of failover clustering, database mirroring, log shipping, and maybe even replication can all pull together to get the speed you need, but they're nowhere near easy to manage.

With SQL Server 2012, Microsoft introduced a pair of features to ease this pain. AlwaysOn Availability Groups and AlwaysOn Failover Clustering are touted as the easy way to get scale-out servers that stay up. These features combine a lot of moving parts to deliver a more powerful database solution that appears - at first glance - to be easier to set up and manage.

Brent Ozar Unlimited worked with high-profile clients to design, implement, and troubleshoot AlwaysOn solutions even before SQL Server 2012 went public. We've learned valuable - and painful - lessons, and we share those lessons with the community; we've presented sessions about AlwaysOn at national conferences like the PASS Summit and SQL Connections.

No expensive, complex shared storage was required.

Sample Customer: StackExchange.com

Millions of people rely on StackExchange.com, one of the world's biggest web site networks, to get their tech questions answered. StackExchange relies on Microsoft SQL Server 2012, and Brent Ozar Unlimited helped StackExchange build their infrastructure.

StackExchange's data needs are familiar to most businesses. They have some databases that are revenue-generating and mission-critical, and other databases that can be down for a period of time without affecting the business. StackExchange needed a database solution that could handle those different needs at different price points and different management overhead requirements.

With SQL Server 2008, this meant a combination of database mirroring and log shipping - two different technologies with different management techniques. Neither of them delivered the scale-out performance that StackExchange really wanted, and with increasing business demands for the data, the priority of scale-out reads was growing by the month.

How Brent Ozar Unlimited Designed a Solution

Brent Ozar Unlimited laid out a solution involving AlwaysOn Availability Groups so that:

- Disaster recovery could be achieved with both onsite and offsite replicas
- API requests and backups could be offloaded to replicas
- No expensive, complex shared storage was required
- Licensing costs were minimized with lower CPU requirements using careful tuning

The harder you push systems to the limit, the more issues you uncover.

StackExchange's system administrators were able to put together the hardware, Windows, clustering, and even SQL Server installations themselves - they just needed guidance on how SQL Server's AlwaysOn Availability Groups play into the solution, and how to do some of the more advanced configurations. Sometimes the client just needs architectural advice, and other times Brent Ozar Unlimited builds, tests, and goes live with the entire solution.

The Help Doesn't Stop After Going Live

Troubleshooting tools and techniques just aren't out yet for these types of cutting edge infrastructures, so personal guidance is crucial for success. For example, within weeks of continued production load demands, StackExchange encountered mysterious outages on the replicas. Brent Ozar Unlimited assisted with the troubleshooting, worked with Microsoft and the community to track down the root cause, and eventually the issue turned out to be a bug in the Windows Server 2008R2 clustering code. You just can't take anything for granted with high performance systems; the harder you push systems to the limit, the more issues you uncover.

As with any new technology, AlwaysOn Availability Groups have rewards that come with new risks and challenges. Database administrators struggle with AlwaysOn issues including monitoring, backups, failovers, and performance tuning.

To help educate the community, Brent Ozar Unlimited publishes a free AlwaysOn Setup Guide at http://BrentOzar.com/go/alwayson.

For even more guidance, contact help@brentozar.com to set up a free 30-minute consultation covering whether AlwaysOn Availability Groups are right for your business, what risks you might face, and how to avoid pitfalls.