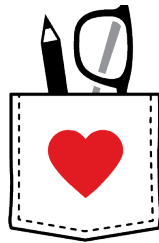


# Sizing Up Solid State Storage for SQL Server



**BRENT OZAR**  
UNLIMITED

# Solid State and SQL Server

Many of our clients ask, “Are SSDs right for me?”

These days you can buy over 3GB/second of read throughput for terabytes of data for under \$10K USD. But is it the best use of \$10K for your database?

Our hardware sizing process answers this question using your performance data and our expertise in sizing, implementing, and testing SSDs with SQL Server.

There are many choices available to take advantage of SSDs in a production environment, including SAN technologies that incorporate tiers of solid state into larger shared-storage solutions. But many of our clients want a cheaper or more targeted guarantee of fast storage response times. For these clients, using SSDs as local storage for some or all of their data meets their needs at the lowest cost.

## Do SSDs Resolve Your Pain Points?

Many clients who ask about solid-state storage simply don't need to spend money on SSDs. These clients are experiencing a real pain point regarding their SQL Server, but they aren't sure where the bottlenecks lie and they're guessing at solutions.

**You never buy  
just one SSD.**

We show clients how to resolve their pain points without a capital expense whenever possible using schema, configuration, and query changes. In some cases a purchase is necessary, but the problem can be resolved by investing in a cheaper hardware component than the storage subsystem. We also sometimes identify bottlenecks that SSDs wouldn't change in any way.

For these reasons, we first work with our clients in a Critical Care Session where we identify pain points, bottlenecks, and application patterns. At the end of that session we map out short, medium, and long-term steps to resolve the client's pain points, and we have data that will show whether SSDs may be a good fit.

## Hardware Sizing: Finding the Right SSDs

For clients who want to invest in new storage by itself or as part of a new hardware configuration, we take the data from their Critical Care Session and work through a dynamic hardware sizing process. When discussing a solid-state solution, we identify:

# Solid State and SQL Server

## Performance and Budget Requirements

We focus on current and projected hardware utilization rates and data sizes, the impact of other planned hardware purchases and changes, and the client's operational practices. We identify big-picture budget numbers available and map options for storage into the budget—there's no reason to talk about what it would be like to buy a jet if your budget doesn't go beyond business class.

## The Benefits and Risks of SSD Solutions

We start with the phrase, “You never buy just *one* SSD.” We cover the risks of buying different types of SSDs and the ways you can mitigate those risks.

Example: some SSDs can be configured in RAID 10 while some SSDs will only work with software RAID. There are pros and cons to each of these on performance, price, and reliability. Each type requires different types of response from system administrators when something goes wrong. We walk you through a matrix of the options and what they would each mean to you.

**All drives will fail.  
When SSDs fail, they  
fail spectacularly.**

## Operational and Support Requirements

All drives will fail. When SSDs fail they go down spectacularly and without warning. We walk you through available types of redundancy and how you can test to ensure continued performance of your SQL Server if a storage component fails.

## Potential Hidden Costs

Spare drives, secondary servers, and extra measures to ensure high availability may be needed to meet your business requirements. We scope out the requirements and the types of solutions that would meet those needs.

## Best Fit

Given all of these factors, we identify the best-fit storage solution for your budget, your team, and your pain points. We deliver recommendations along with a storage deck that summarizes the data we considered, what we ruled out and why, and what we recommend.

# Solid State and SQL Server

## Sharing Experiences

We have scoped, implemented, and tested many SSD solutions with clients. Solid-state technology is continuously evolving, and when implementing the hottest new drives you may encounter some sticky new problems. We've seen more than a few—everything from power management to problematic large sorts.

When sizing hardware we can share our experience about which parts of the process may be tricky and warn you where things are likely to go wrong. Want to map out a testing plan and the tools to break in and validate new storage *before* migrating your production system? Just ask.

## Learn More

<http://BrentOzar.com>