

SQL SERVER SIZING GUIDE

Abstract

This document can be used when configuring hardware for physical and virtual SQL servers. It should be used as a guideline, with actual configuration depending on size of databases, reports, and types of usage.

Physical Servers

Physical Servers should have redundant power supplies, at least two CPU sockets, and a standalone array controller with front write-back caching enabled and at least 256 MB of on-board memory and batteries, to ensure that transactions are not lost due to power failures or component failures.

Processing

For databases less than 50 GB, less than 1,000 queries/day, less than 40 simultaneous users, a single quad-core CPU would suffice. If the same server is used for both transactions and reporting, or if the total database size, transaction load, or users exceeds the above, use at least 2 quad-core or better CPUs.

Memory

Have at least 2 GB for the Operating System. For SQL Services transaction processing, use $20\% * \text{size of all databases} + 20\% * \text{size of the largest data set} + .25\% * \text{number of users}$. For reporting, use $.2 * \text{largest report data set} * \text{number of users}$. Round everything to the nearest whole number.

Storage

The following is the preferred storage configuration to provide optimal performance and redundancy: Operating System – RAID 1, Logs – RAID 1, Data – RAID 0. Use at least 10K hot-swappable SAS drives. This is the minimum baseline to ensure disaster resiliency for the databases. For business continuity, either an active or a passive failover cluster is recommended.

Networking

While a dedicated network card for SQL services is not required, it may be useful to isolate operating system/management traffic from SQL traffic.

Virtual Servers

Virtual SQL serves should reside on a clustered virtual infrastructure with shared storage to minimize the performance impact of the virtualization.

Processing

For databases less than 50 GB, less than 1000 queries/day, less than 40 simultaneous users, an equivalent of a single quad-core CPU would suffice. If the same server is used for both transactions and reporting, or if the total database size, transaction load, or users exceeds the above, use the equivalent of at least 2 quad-core or better CPUs. For example, in a Hyper-V R2 environment, this would result in 4 dual core virtual CPU's.

Memory

Have at least 2 GB for the Operating System. For SQL Services transaction processing, use $.2 * \text{size of all databases} + .2 * \text{size of the largest data set} + .25 * \text{number of users}$. For reporting, use $.2 * \text{largest report data set} * \text{number of users}$. Round everything to the nearest whole number.

Storage

Ensure that the SQL server operating system is residing on its own virtual disk/volume with a separate Logical Unit Number (LUN). In addition, use a pass-through or a raw disk for the data wherever possible to ensure the highest disk I/O.

Networking

While a dedicated network card for SQL services is not required, it may be useful to isolate operating system/management traffic from SQL traffic. In addition, it will ensure that there is no host/management traffic passing through the physical network cards dedicated to the virtual guest traffic.