

Advantage Database Server Hardware Requirements Planning Technical Brief

A whitepaper from Sybase iAnywhere

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This document was created as a general guideline for planning application hardware requirements for Advantage Database Server. Hardware requirements vary greatly based on functionality implemented by Advantage-enabled applications. These applications are developed by Independent Software Vendors, who typically bundle Advantage with their application. Only these vendors can accurately provide hardware requirements based on extensive testing with their application. End-users should default to their software vendor's recommendations for server hardware.

A SMALL FOOTPRINT

While many database servers seem to require greater and more costly hardware with every release, the Advantage Database Server has extremely low hardware requirements. Advantage will install on nearly all Windows, Linux, and NetWare server operating systems. Designed for Independent Software Vendors, the server's 8 MB installation can be easily integrated with an application install CD or downloaded over the web. For a typical 150-user installation, the program directory for Advantage is less than five MB and out-of-the-box static RAM requirements are less than 8 MB.

CPU REQUIREMENTS

Advantage performs extremely well on underpowered machines. For many applications, Advantage will operate on the minimum 133 MHz Pentium-compatible CPU that is required to run Windows 2000 Server. Nevertheless, a faster processor on the server will usually improve performance for applications with many concurrent users, or that use server-side filtering either directly or via Advantage SQL.

Unfortunately, there's not an exact formula for calculating process requirements. In most cases, servers should have at least a 500MHz CPU. Typically, a faster processor provides better performance, although applications that perform little filtering and have few users may not benefit from a processor upgrade.

Advantage Database Server supports multiple processors on Windows, Linux, and Netware (see the Advantage help file for additional details). Advantage Database Server is multi-threaded and will perform each user-requested database operation concurrently or in parallel if multiple processors are present.

RAM REQUIREMENTS

Compared to other database servers, Advantage requires very little RAM. SQL and transaction processing will drive the demand for RAM on the server. If your application uses numerous SQL statements or does a lot of transaction processing, 1 GB of RAM would be recommended, otherwise, at least 512 MB is enough for many applications.

Configuration settings, such as the number of connections, work areas, tables, indexes, data locks, and worker threads, use a static amount of RAM when the Advantage service starts. However, the amount is typically insignificant. To view the amount of static RAM used by the Advantage Database Server, use the Remote Server Info utility that is built into the Advantage Data Architect (ARC). In ARC, select Tools from the main menu and then select Remote Server Info. The Configuration Parameters tab will display memory usage.

HARD DISK SPACE

The database server files are a mere 5 MB. The server will also need space available for the application data files (table, memo, and index files). This will vary by application.

In addition, Advantage may need additional space for creating temporary files for queries. Although temporary files are deleted after the query is closed, these files can become large in certain situations. This space requirement also varies based on queries that are executed by client applications.

Advantage will create an error log (default size of 1 MB) and it may create transaction processing files, if transactions are implemented. Transaction processing files are typically small and are deleted after the transaction is complete.

PERFORMANCE TIPS

Before upgrading hardware to resolve performance issues, see the General Performance Factors in the Advantage help file. Additionally, the following tips have resolved many high CPU utilization issues:

- Use the query logging utility in Advantage 8.0 or analyze the application code to verify that all SQL statements and filters are optimized. Statements or filters are optimized if they are able to use existing indexes. If statements or filters are not optimized, the server requires additional processing, which can be very CPU intensive. Building the appropriate indexes resolves a majority of CPU utilization issues. Typically, end-users should contact their software vendor for index specifications.
- If using DBF files, pack the tables. This will remove deleted records and rebuild existing indexes.
- Upgrade to Advantage 8.0 or greater of the Advantage Database Server. Version 8.0 implements additional index caching, optimized query execution, faster transaction processing, and improved concurrent user query processing.

If CPU utilization is low, the network is typically the bottleneck for most application processes. Application developers should implement as much server-side processing as possible, including SQL processing, stored procedures, and triggers. As a troubleshooting step, the application can be run on the server to determine the network performance lag. If performance improvement is dramatic, administrators can start to isolate the network to identify faulty or slow network hardware.

CONCLUSION

Like most applications, Advantage Database Server performance improves with faster processors and more RAM. The improvement varies significantly based on the client application processes. Applications that perform server-side operations (filters and SQL) and have multiple concurrent users will benefit more from hardware upgrades.

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