



## Performance Tuning of SIMS Client / Server Networks

This document provides a basic guide to achieving optimal performance of SIMS multi-user databases. Any further questions on these issues should be addressed directly to SIMS technical personnel.

The performance of a multi-user SIMS system entails 6 major variables of an installation in the following rough order of significance:

- 1) The speed of the server computer (CPU, memory, and hard disks)
- 2) The speed of the network.
- 3) The condition of the SIMS datafile.
- 4) The settings of the SIMS Server application.
- 5) The speed of the SIMS Client computers (CPU and memory)
- 6) The settings of the SIMS Client application.

The following sections will address each of these issues and can be used to evaluate and optimize a particular site.

### **1) The speed of the server hardware (CPU, memory, and hard disks)**



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It shouldn't be much of a surprise that the faster the server hardware is and the more memory it has the faster SIMS should run. The server is the most important computer of the network. With computers and memory being as cheap as they are these days, it's a good idea to use some heavy metal for this job.

SIMS has a built in server performance evaluator. To use it, open a SIMS client and go to Utilities -> Special Purpose Tools -> Diagnostics. Pick the Server Test and hit the Go button. The utility should run for about 10 seconds and then report the number of iterations completed. As a standard, a 1GHz Athlon with 512 MB of RAM running a SIMS Server with 20% CPU allocation runs at a rate of about 19 million iterations per hour.

Below are the minimum hardware requirements and the recommended hardware for a SIMS server computer.

*SIMS Server Requirements*

	 <b>WINDOWS</b>	 <b>MACINTOSH</b>
<b>OPERATING SYSTEMS</b>	Windows NT 4.0, Windows Me, Windows 2000, XP	MacOS 7.x, 8.x, 9.x. Call SIMS concerning OSX.
<b>SERVER SYSTEM</b>	We require Windows NT 4.0, Windows 2000 or Windows XP on at least a Pentium II (a dual processor is even better) with 128 MB of RAM + 5 MB more RAM for each user over a count of 4 if the machine is dedicated to 4D Server. More RAM is required if the machine is used for other purposes or for multiple instances of SIMS Server. Contact SIMS Software for more detailed information on specific cases.	MacOS 7.x, 8.x, or 9.x. (Call SIMS concerning OSX) with 128 MB of RAM + 5 MB more RAM for each user over a count of 4 if the machine is dedicated to 4D Server. More RAM is if the machine is used for other purposes or for multiple instances of SIMS Server. Contact SIMS Software for more detailed information on specific cases.
<b>CLIENT/SERVER NETWORK</b>	The server and client machines need to be connected to the network. The server and client machines have to be able to use either IPX or TCP/IP network protocols to communicate with SIMS Server. Both IPX and TCP/IP are supplied with Windows 9x, Windows NT and Windows 2000.	The server and client machines need to be connected to the network. The server and client machines have to be able to use either AppleTalk or TCP/IP network protocols to communicate with SIMS Server. Both AppleTalk and TCP/IP are supplied with the MacOS.

**2) The speed of the network**

SIMS has a built in network performance evaluator. To use it, open a SIMS client and go to Utilities -> Special Purpose Tools -> Diagnostics. Pick the Network Test and hit the Go button. The utility should run for about 10 seconds and give a rating of the network performance. If you get a rating of Very Fast or Fast, then you're probably fine. If you get less than that, then you should look into improving this.

We have seen installations in which one SIMS client was literally seeing things happen at 40 to 50 times faster than another client *to the same server* purely because of a faster link between the

client and the SIMS Server machine. If you have 10 Base-T connections, then responses will take longer than for clients linked to the server via 100 Base-T links. However, if everything else is up to standard, 10 Base-T connections from a client to the SIMS Server should provide acceptable performance.

If a client link passes through routers to a SIMS Server on a different subnet, performance can be noticeably degraded.

### **3) The condition of the data file**

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If you open SIMS and go to the Utilities -> Special Purpose Tools -> NoCorruption and hit the Go button, SIMS will run through every field of every record of every main table and will filter out control characters that represent corruption of the datafile. This should be done once per year in most cases.

The SIMS datafile should be compacted and reindexed periodically, with the frequency being dependent on the volume of use. For a 10-client system with constant activity, once every month would be good. For a 2-client system with light activity, once per year would be sufficient.

If there are large number of record deletions, it is best to do a compaction immediately because performance can be affected directly by that.

If you're not familiar with these procedures, you should refer to the SIMS System Administrator's Guide.

Another way in which a datafile can be responsible for degraded performance is if key fields become deindexed. A quick way to find out about this is to go to Utilities -> Special Purpose Tools -> CheckIndexing. If the alert says "No Problem", then everything is fine. If SIMS reports a list of unindexed fields, this could be due to a customized indexing scheme. If you have any doubt on this, contact SIMS Software.

### **4) The settings of the server application**

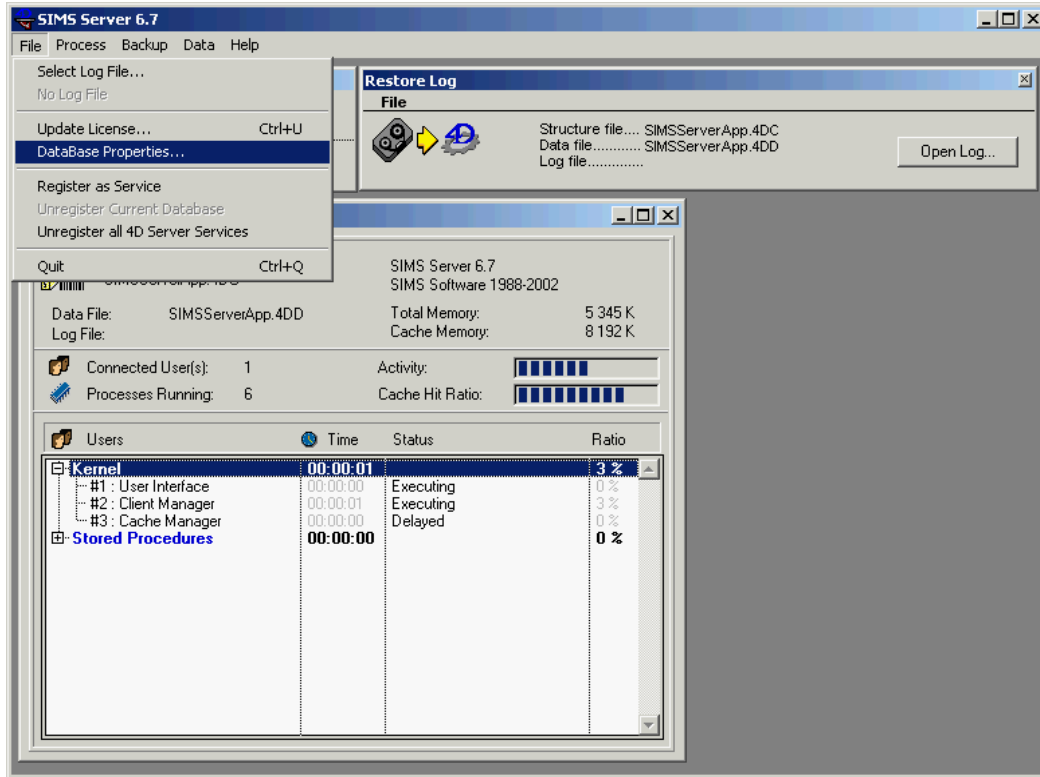
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The SIMS Server program can be fine-tuned to match a specific site. The following sections describe how to adjust the CPU & memory allocations of the SIMS Server for optimal performance.

#### *SIMS Server - Database Properties Window*

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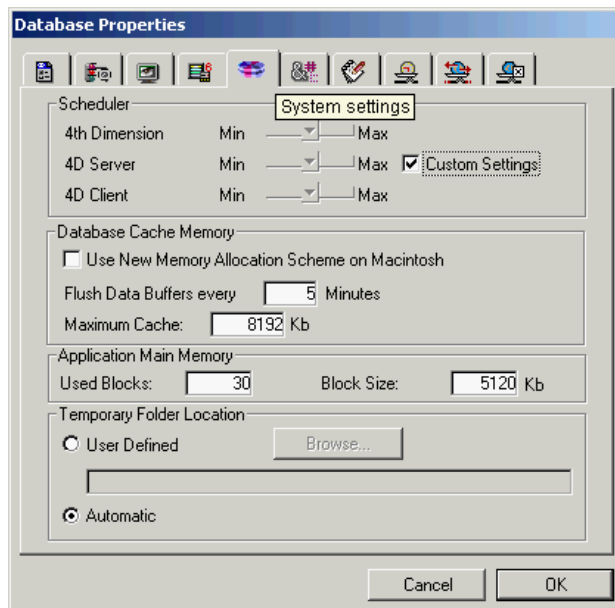
Click on the window titled "SIMS Server" to select it and then select "Database Properties" from the File pull-down menu as shown in the SIMS Server Window above.



The Main SIMS Server window looks similar to the above picture.

*RAM allocation and NT Resources*

Click on the 5th tab at the top of the Database Properties window. Here is where you can allocate RAM to SIMS Server and setup the amount of WinNT resources this instance of SIMS Server will use.



### *Database Cache Memory*

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As of 6.7.4, defaults to 16384 or 16MB. We recommend a minimum of 16MB.

### *Application Main Memory*

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Defaults to

Used blocks = 30 blocks

Block size = 5120, or 150MB.

The only number to change here is the Used Blocks, not the Block Size.

For Application Main Memory, we recommend the following:

64 MB for the OS

+ 30 MB for the basic 4D Server running memory

+ 6 MB per connected simultaneous user.

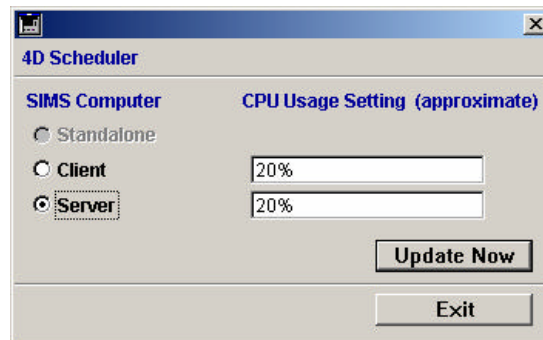
For a system with 20 users, we recommend  $64 + 30 + 6*20 = 214$  MB minimum physical RAM. This could be handled by setting the Used Blocks to 37 and leaving the Block Size at 5120.

All settings are on a per-application basis.

### *SIMS CPU Utilization*

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Login to a SIMS client. Select Utilities -> Special Purpose Tools -> Scheduler and click GO.



The Scheduler lets you configure the percentage of CPU utilization available to SIMS Standalone, Client or Server. You can select from pre-configured percentages of 20 (default), 40, 60 or 95 %. If you are using Terminal Server for the SIMS Client, you can pick a setting for "Terminal Server" to lower the percentage to approximately 5%.

## **5) The speed of the client machines (CPU and memory)**

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Client machines are a smaller factor in the performance of a multi-user SIMS database but a client that has insufficient physical memory can slow things down noticeably to the user.

SIMS has a built in Client performance evaluator. To use it, open a SIMS client and go to Utilities -> Special Purpose Tools -> Diagnostics -> Client Test -> Go. The utility should run for

about 10 seconds and then report the number of iterations completed. As a standard, a 1GHz Athlon running a SIMS Client runs at a rate of about 12 million iterations per hour.

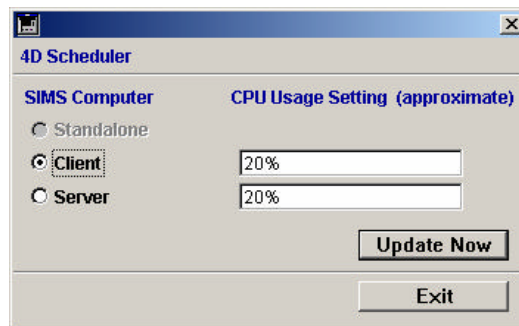
Below are the minimum and recommended hardware requirements for a SIMS client computer. The key element is the amount of physical memory, which should be at least 128 MB.

*Client Requirements*

	 WINDOWS	 MACINTOSH
<b>OPERATING SYSTEMS</b>	Windows 98, Windows NT 4.0 , Windows Me, Windows 2000, XP	MacOS 7.x, 8.x, 9.x. Call SIMS concerning OSX.
<b>CLIENT SYSTEM</b>	We recommend at least a Pentium II with 128 MB of RAM and a reliable network connection to the server (SIMS has built-in network testing capabilities). Protocols supported include TCP/IP and IPX.	A PowerMac (G3 or G4 recommended), with 128 MB of RAM and a reliable network connection to the server. (SIMS has built-in network testing capabilities). Protocols supported include TCP/IP and Appletalk.

**6) The settings of the client application**

If you open a SIMS client and go to the Utilities -> Special Purpose Tools -> Scheduler, you can adjust the percentage of CPU time that SIMS client is allowed.



You can select from pre-configured percentages of 20 (default), 40, 60 or 95 %. If you are using Terminal Server for the SIMS Client, you can pick a setting for "Terminal Server" to lower the percentage to approximately 5%.

***Please contact SIMS Software for any further questions on these issues.***