



StorFacts™ Report

IBM Benchmarks and Sizing

What are Benchmarks?

Simply stated, benchmarking refers to running a set of programs on various computer and network configurations and measuring the results. Specifically, a computer benchmark is a computer program that performs a strictly defined workload and returns some form of measurable result, describing how the system under test performed. Computer benchmark metrics usually measure speed (response time—how fast the workload completed) or throughput (workload transactions per unit time). Running the same computer benchmark on multiple computers allows a comparison to be made.

Why is Sizing Important?

Base IBM eServer prices can range from \$3,000 up to \$3,500,000. After adding memory, DASD, network adapters, software, tape drives and peripherals, a server can easily grow to in excess of \$10,000,000. Smart server sizing enables corporations to plan accordingly and avoid budget surprises.



For more information – <http://www.gstinc.com/store/IBM-C552.aspx>



StorFacts™ Report

Performance Benchmarks > AIX/5L and Linux

The rPerf benchmark was created in 2001 to replace IBM's previous benchmark, Relative Online Transaction Processing (ROLTP). rPerf was created as the metric for comparative performance of IBM eServer pSeries systems. The rPerf benchmark is derived and used by IBM and is an estimate of commercial processing performance (OLTP-type transactions) relative to other pSeries systems. It's derived from a proprietary IBM analytical model, which uses characteristics from IBM internal workloads, TPC and SPEC benchmarks. The model simulates some of the system operations such as CPU, cache and maximum memory allowable. However, the model doesn't simulate disk or network I/O interactions. Therefore, a generalization based on the aforementioned definitions would place the rPerf benchmark closer to a SPEC than a TPC benchmark.

rPerf estimates are calculated based on systems with maximum memory, the latest levels of the AIX and other pertinent software at the time of testing. IBM documentation specifies that actual performance will vary based on application and configuration details. IBM used the pSeries 640 as the baseline reference system, which has a value of 1.0. IBM documentation also specifies that although rPerf may be used to compare estimated IBM AIX commercial-processing performance, actual system performance may vary and is dependent on many factors, including system-hardware configuration, software design and configuration.

IBM documentation also points out that all performance estimates are provided "as is" with no warranties or guarantees either expressed or implied. Additionally, the documentation points out that buyers should consult other sources of information, including system benchmarks and application-sizing guides to evaluate the performance of a system under consideration of purchase.





StorFacts™ Report

Factors That Affect rPerf

Memory Subsystem

Benchmark results show that appropriately fitted memory subsystems are almost as important as the CPU to overall system performance. Key attributes of the memory subsystem include capacity, latency and bandwidth. Therefore, benchmark results tend to occur with the largest memory configurations possible.

I/O Subsystems

Some workloads require substantial I/O bandwidth or minimal I/O latency to reach CPU saturation. These workloads require the systems under test to be sufficiently configured with I/O drawers, adapters and disks, such that the I/O isn't the bottleneck. If sufficient I/O bandwidth can't be supplied on a system, measured performance will be limited by the transaction speed of the I/O subsystem.

AIX Levels

Like all operating systems, AIX is in a seemingly constant state of flux, with new versions and upgrades being developed continuously. One could classify the changes as the result of at least three categories: providing fixes, adding functionality and increasing performance.





StorFacts™ Report

Performance Benchmarks > i5/OS

With the advent of OS400 V5R2, customers now get to choose between Standard and Enterprise Edition models. The Standard Edition comes with zero 5250 On-line Transaction Processing (OLTP) capacity and 5250 OLTP workloads are not supported. The Enterprise Edition does not have limits relative to 5250 OLTP work.

When sizing performance requirements, customers must first determine how much processing power (CPW) is required. Within this CPW requirement both client/server and 5250 maximum processing needs must then be determined.

Commercial Processing Workload (CPW)

The performance capacity of all eServer i5 and iSeries servers is represented by a workload measurement called commercial processing workload. CPW values are given to all eServer i5 and iSeries processors. They are derived by performing various monitored and measured workloads on eServer i5 and iSeries servers. The results can be used to compare relative performance characteristics of processor features offered for eServer i5 and iSeries servers. The reported values for CPW do not represent a guaranteed level of capacity to perform a given workload. They can serve as a quick means to compare performance.

Client/Server CPW

Client/server describes the relationship between two computer programs in which one program, the client, makes a service request from another program, the server, which fulfills the request. This mode of operation is done within one server or a network of servers.

Because i5 and iSeries Standard Edition pricing is very attractive relative to Enterprise Editions, most ISV and application providers are developing or modifying their offerings to operate as client/server applications. As a result, i5/iSeries users should attempt to utilize only non-5250 applications.



StorFacts™ Report

5250 CPW

5250 CPW is an approximate value that represents the amount of processing power to be used to perform 5250 OLTP work. Jobs that utilize 5250 processing include the following:

- I. All 5250 sessions
- II. Any green screen interface
- III. Telnet or 5250 DSPT workstations
- IV. 5250/HTML workstation gateway
- V. PCs using 5250 emulation
- VI. Interactive program debugging
- VII. PC Support/400 work station function
- VIII. RUMBA/400
- IX. Screen scrapers
- X. Interactive subsystems
- XI. Twinax printer jobs
- XII. BSC 3270 emulation
- XIII. 5250 emulation





StorFacts™ Report

Server Sizing

To correctly size your eServer you should be prepared to answer the following questions:

1. Solutions objectives
2. Platform interest
3. Operating System requirements
4. Performance requirements
5. LPAR requirements
6. Disk preference
7. Disk capacity requirements
8. Memory requirements
9. Backup preference
10. Network topology
11. Ethernet adapter requirements
12. Fibre channel adapter requirements
13. Various purchasing considerations

A more detailed on-line version of this questionnaire can be found at: <http://www.gstinc.com/qualify/eserver.html>