Firebird and IBExpert White Paper

Firebird Performance comparison of Windows and Linux Operating Systems

A performance comparison in a multi-threaded environment

Fikret Hasovic, October 2021

In Part 2 of the Firebird Performance series of benchmarks, we are utilizing the free IBExpert Benchmark Tool (https://www.ibexpert.net/ibe/pmwiki.php?n=Main.Benchmark#FreeIBExpertBenchmark). The Benchmark tool is written as a multithread application and executes queries in 10 parallel running threads.

The IBExpert Benchmark tool is safe to run on your own system. The tool comes with its own Firebird engine so that there is no interference with your existing Firebird installation. Only the drive where the tool is installed will get tested.

How does it work?

Based on our demo database (https://www.ibexpert.net/ibe/pmwiki.php?n=Doc.IBEDemoDB), which is created automatically, the **standard** benchmark, which is also included in the free IBExpert Benchmark Tool, runs approximately 8 million operations (individual insert/update/delete/select statements) using 10 simultaneous processes in 2 runs on the demo database, created with different parameters to demonstrate the impact of the physical drive speed.

The **extended** benchmark, available in the full IBExpert Developer Studio customer version, uses 50 parallel processes simulating 50 concurrent users.

We have performed tests on both Linux and Windows on the same hardware, to see the influence of the OS on Firebird server performance.

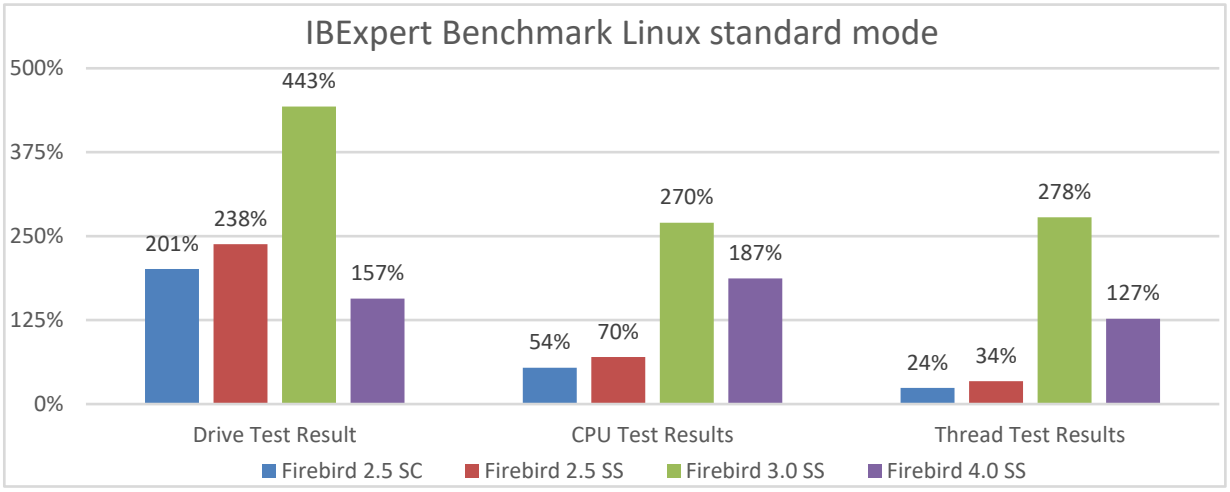
The reference value of 100% in each category is defined by a server running Firebird 2.1 on a Windows server delivered to customers back in 2011. Our current 2021 IFS Servers are rated between 280% and 600%.

For example, a value of 200% means that it took half of the time or it performed twice as fast as the reference machine 10 years ago.

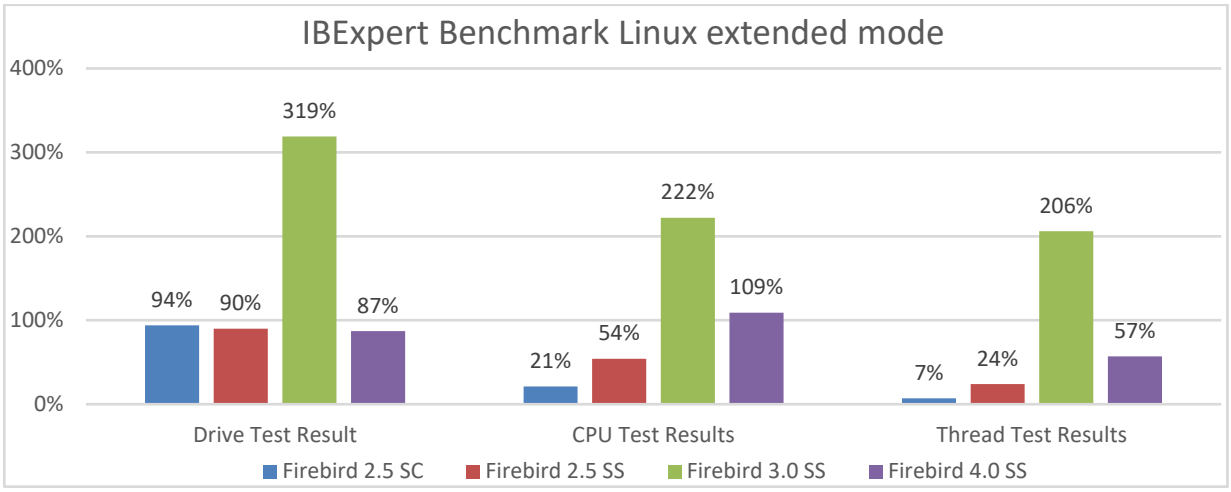
Note: higher % values are better.

The free IBExpert Benchmark Tool can only be used on Windows in standard mode. Linux tests and extended tests were performed using the IBExpert Developer Studio IDE full version, since it includes the Benchmark Tool without any limitations.

Linux IFS Server

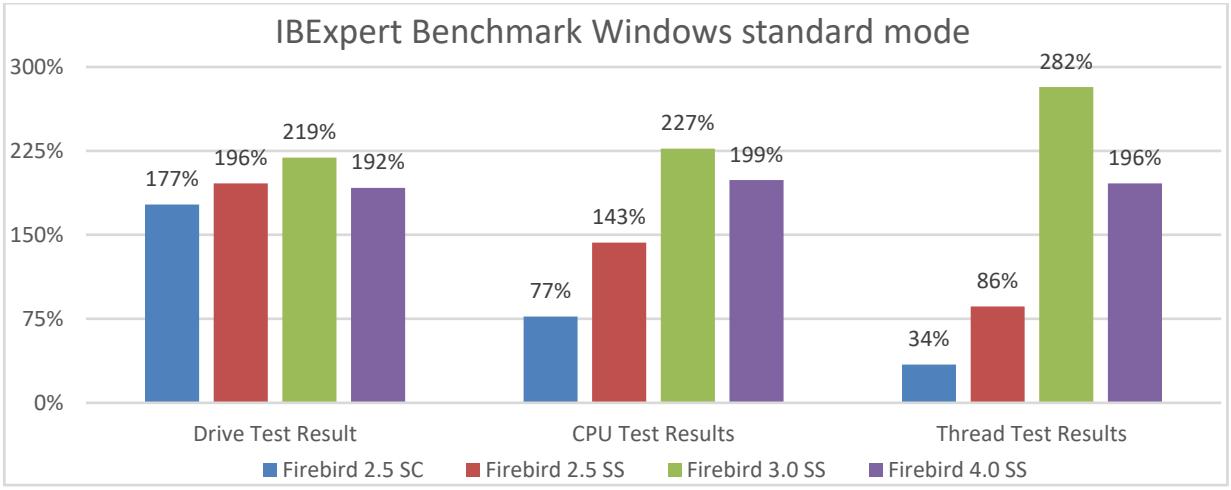


These are results of standard reference benchmark, based on our reference (see above).

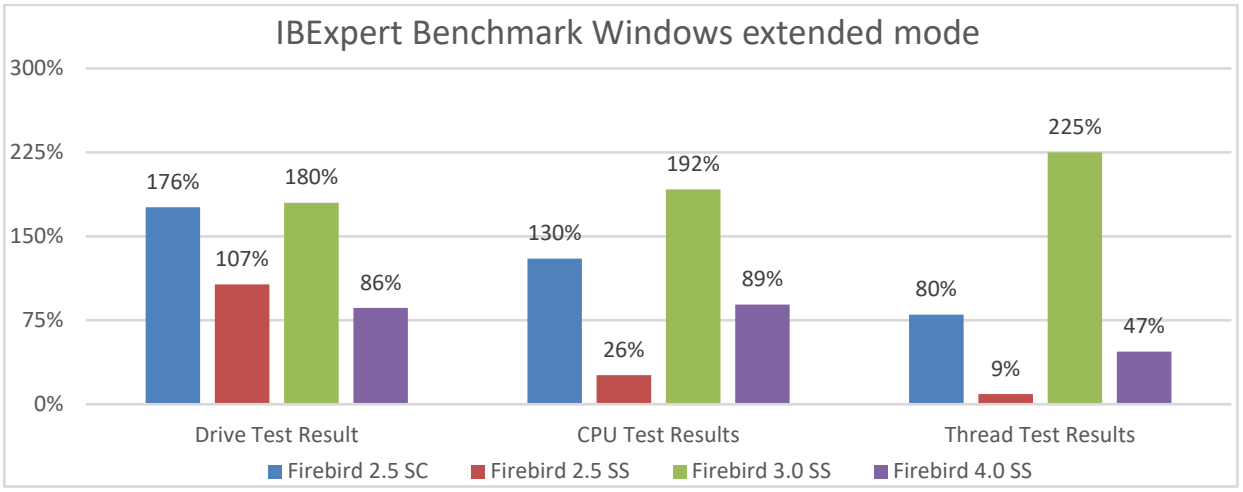


These are results of extended reference benchmark, based on our reference (see above).

Windows IFS Server

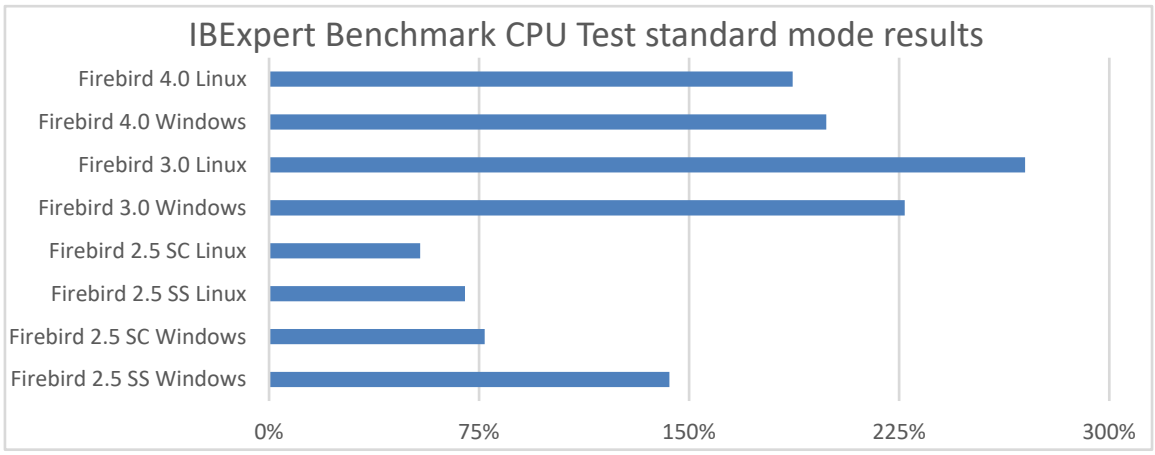


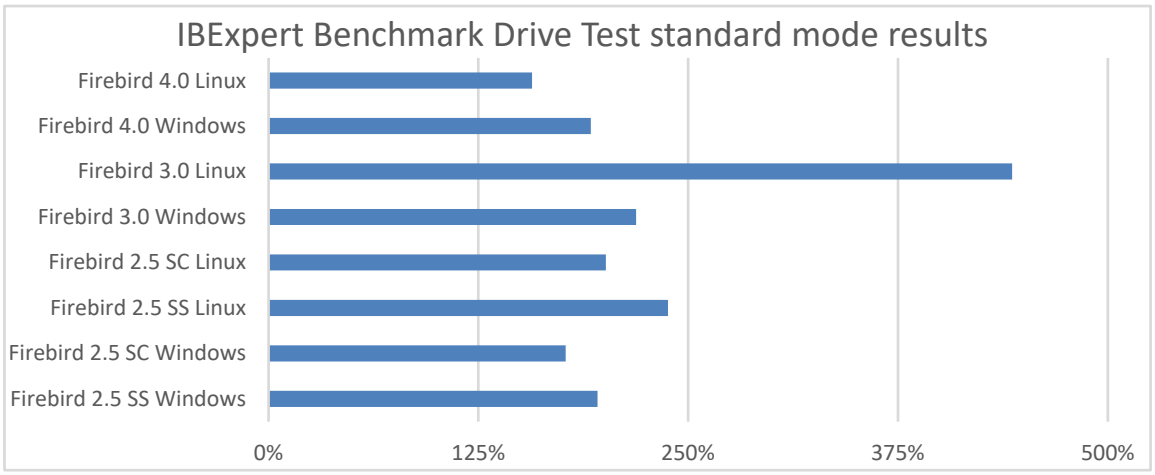
These are results of standard reference benchmark, based on our reference (see above).

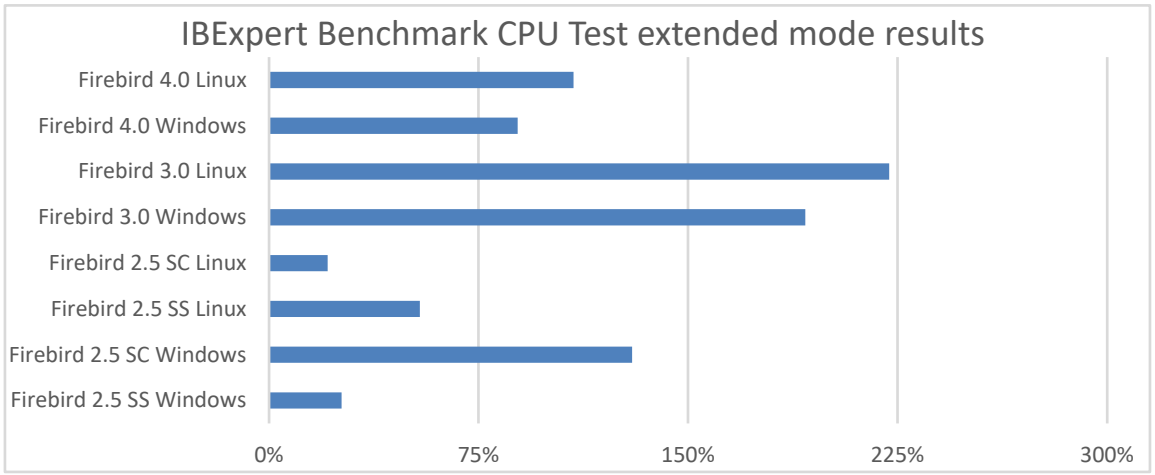


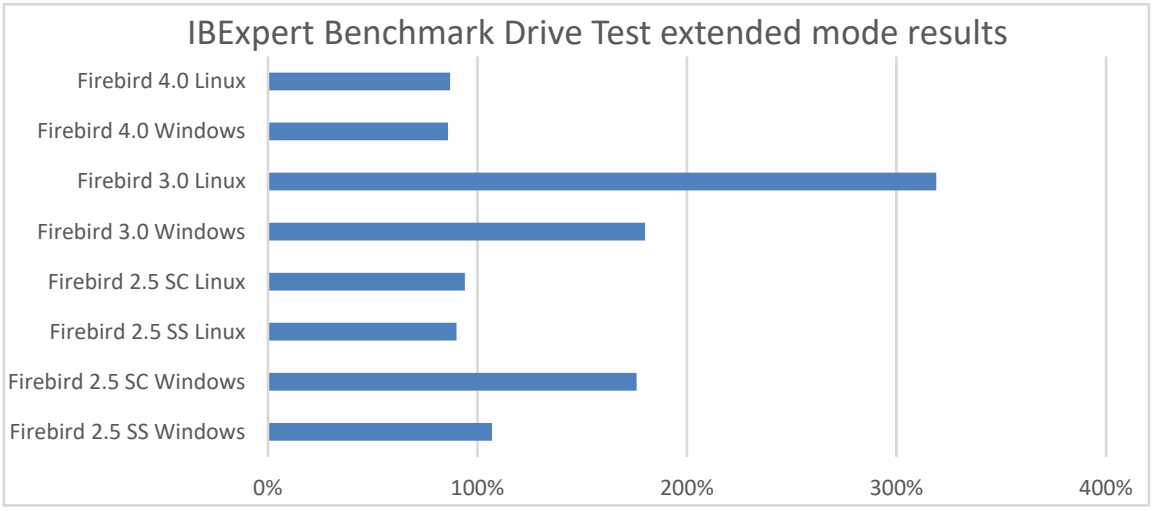
These are results of extended reference benchmark, based on our reference (see above).

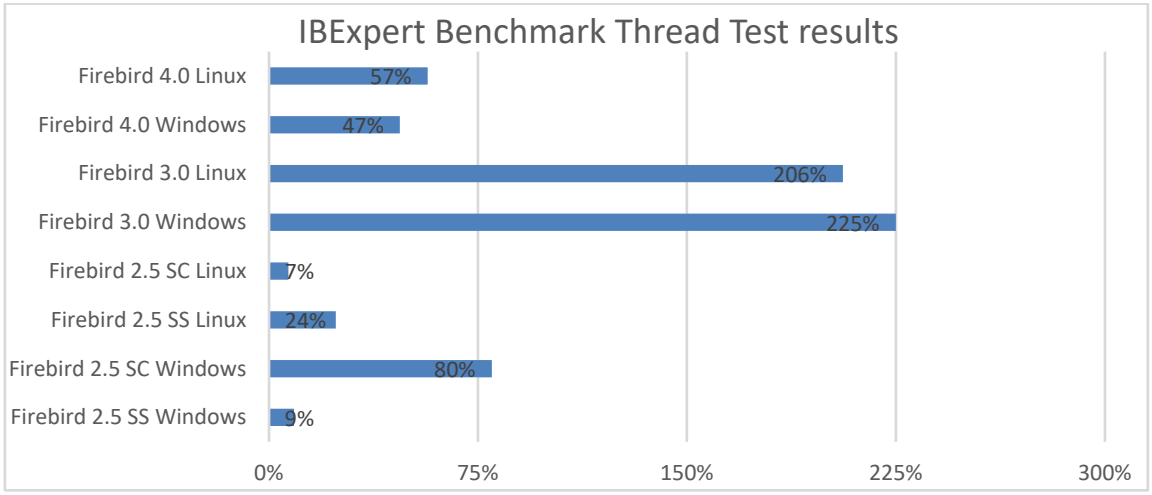
CPU and Drive test








IBExpert Benchmark Drive Test extended mode results
Firebird 4.0 Linux
Firebird 4.0 Windows
Firebird 3.0 Linux
Firebird 3.0 Windows
Firebird 2.5 SC Linux
Firebird 2.5 SS Linux
Firebird 2.5 SC Windows
Firebird 2.5 SS Windows
0%
100%
200%
300%
400%


IBExpert Benchmark Thread Test results
Firebird 4.0 Linux
57%
Firebird 4.0 Windows
47%
Firebird 3.0 Linux
206%
Firebird 3.0 Windows
225%
Firebird 2.5 SC Linux
7%
Firebird 2.5 SS Linux
24%
Firebird 2.5 SC Windows
80%
Firebird 2.5 SS Windows
9%
0%
75%
150%
225%
300%

Conclusion

All tests in this White Paper were performed on the same hardware, with a SATA SSD for the OS and an NVMe SSD for the database, which is the standard hardware we use in our Basic IFS Servers (https://www.ibexpert.net/ibe/pmwiki.php?n=Main.IFSServerML). Our high-end IFSLR servers (https://www.ibexpert.net/ibe/pmwiki.php?n=Main.IndestructibleFirebirdserver) offer rather better performance, but are only distributed with Linux OS, and were therefore not used for these comparison performance tests.

Our clear winner is Firebird 3 on Linux OS. Hands down.

Firebird 4 has some neat new features, but if multithreaded speed is the priority, then we have a new-old speed-king, and that is Firebird 3 Superserver running on the Linux operating system

If you would like to find out more about our high-performance dedicated Firebird servers, please contact ifs@ibexpert.biz.