



## Firebird White Paper

# Hardware recommendations

Holger Klemt, February 2017

We recommend the following components, which are available from most good IT wholesalers. The wholesale prices quoted have been taken from a well-known European wholesaler. These may of course differ, depending upon the country you are ordering from and the currency you use for payment.

The assembly is simple (fix the CPU using thermal paste and plug in the M.2 SSDs), so that even system vendors used to other brands should not encounter any problems.

For the basic configuration (operating system, Firebird, etc.), we recommend booking an IBExpert & Firebird Standard Hotline package of 120 minutes. This time is usually sufficient for our Hotline Team to optimally perform the installation remotely, providing all components were purchased exactly according to our specifications, and the hardware components incl. iKVM are preinstalled.

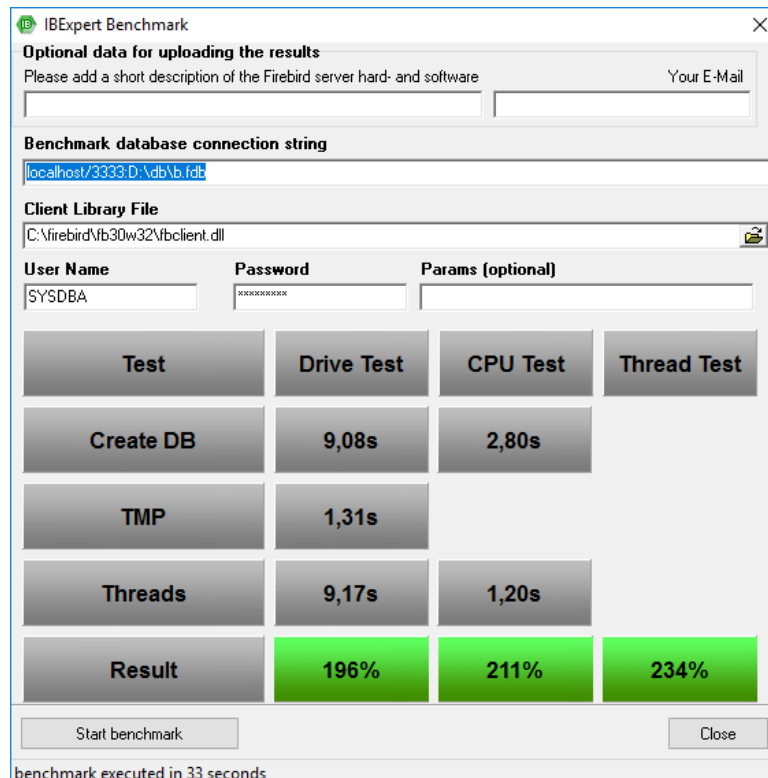


Image 1: Benchmark target value



## Basic components for all servers

### Basic server barebone with 19" 1HE chassis

<https://www.asus.com/Commercial-Servers-Workstations/RS300-E9-PS4/>

Asus order number 90SV038A-M02CE0

Current wholesale price: approx. 570 € excl. sales tax.

Delivery period approx. 14 days.



### Remote server management module Asus ASMB8

<https://www.asus.com/Commercial-Servers-Workstations/ASMB8iKVM/>

Asus order number 90SC04G0-M0UAY0

Current wholesale price: approx. 21 € excl. sales tax.

Delivery period approx. 14 days.

### SSD for operating system (occupies one of the 2 M.2 slots in the above barebone)

<http://www.samsung.com/semiconductor/products/flash-storage/client-ssd/MZVKW512HMJP>

Samsung SSD 961 512GB, M.2 (MZVKW512HMJP)

Current wholesale price: approx. 238 € excl. sales tax.

(Suitable for all Windows versions; if necessary, we can supply the required driver.)

### Operating system

Current version Windows Server Essentials 2016 Microsoft G3S-01047

Current wholesale price: approx. 310 € excl. sales tax.

Sufficient for up to 25 users or 50 devices (more users/devices require corresponding versions according to the Microsoft license terms).



## In addition: Select one of the 3 following alternatives according to the load

a) Additional configuration with a low DB load:

- No additional SSD required for the database because the DB can run on the same SSD as the operating system.
- RAM: 8GB ECC Ram DDR4 manufacturer e.g. Samsung  
Current wholesale price: approx. 82 € excl. sales tax
- CPU Intel Xeon E3-1220v5 boxed BX80662E31220V5  
Current wholesale price: approx. 186 € excl. sales tax

b) Additional configuration with a medium DB load:

- SSD database (occupies one of the 2 M.2 slots in the above barebone)
- Samsung SSD 961 512GB, M.2 (MZVKW512HMJP)  
Current wholesale price: approx. € 238 excl. sales tax
- RAM: 2 \* 8GB ECC Ram DDR4 manufacturer e.g. Samsung  
Current wholesale price: approx. 2 \* 82 € excl. sales tax
- CPU Intel Xeon E3-1240v5 boxed BX80662E31240V5  
Current wholesale price: approx. 259 € excl. sales tax

c) Additional configuration with a high DB load:

- SSD database (occupies one of 2 M.2 slots in the barebone)
- Samsung SSD 961 1TB, M.2 (MZVKW1T0HMLH)  
Current wholesale price: approx. € 400 € excl. sales tax
- RAM: 4 \* 8GB ECC Ram DDR4 manufacturer e.g. Samsung  
Current wholesale price: approx. 4 \* 82 € excl. sales tax
- CPU Intel Xeon E3-1240v5 boxed BX80662E31240V5  
Current wholesale price: approx. 259 € excl. sales tax

## Price summary:

Model type	Total wholesale purchase price
a) Low DB load	1,343 €
b) Medium DB load	1,827 €
c) High DB load	2,200 €

*Important:* IBExpert GmbH currently supplies the above hardware only as part of customer projects with at least 2 servers and a replication setup from around 10,000 € project volume.



## Optional: additional SSD for hot plug slot

SAMSUNG 850 PRO SSD 512GB internal SED 6.4cm 2.5 inch SATA 6Gb/s, MZ-7KE512BW

Current wholesale price: approx. 217 € excl. sales tax.

In our experience, when using our configuration with suitable RAM disk software, the Samsung SSDs recommended above have more than sufficient reliability for 2-3 years. When reaching 75% of the TBW limit (400 or 800 TB), the SSDs should be replaced with new ones.

Furthermore, it may be useful to run the Firebird databases as a shadow on a fast-exchangeable hot plug SSD.

For this we propose using a Samsung SATA SSD with 512 GB, which transactively executes all writes supported by the Firebird shadow technology. The internal M.2 SSD can still be used for read operations, which allows a significantly higher reading power.

As an alternative to the perpetual running shadow, this SATA SSD can also be used for an hourly shadow backup.

When using two identical servers, we can construct a secure configuration, so that in the event of a possible failure of the main server, only the SSD has to be transferred to the backup server and then switched on. All transactions are immediately available on this data carrier in the constantly running shadow and the employees can immediately get back to work.

A lengthy backup/restore operation is neither necessary nor up to date.

## Further information:

Contact us if you would like to learn more about our IBExpert Benchmark, hardware recommendations and replication solutions:

- USA/Canada: [contact@ibexpert.com](mailto:contact@ibexpert.com)
- Other: [sales@ibexpert.com](mailto:sales@ibexpert.com)

*\* All prices quoted are wholesale prices February 2017 in Euros and net of any statutory VAT/sales tax..*