

ZK Performance Test

ZK Community, Professional, Enterprise Edition

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Introduction

Since ZK 5 a new architecture named Server+Client fusion is introduced. The advances in architecture are transparent to the developer but boost performance using techniques such as “client render on demand” and “server creation deference” which will delay the rendering and creation of widgets until they are required.

With our change of architecture and three versions of ZK available to the user it makes sense to do a comparison so one can make an informed choice as to which ZK package is suitable for their purpose.

With this in mind there are 3 packages on test here:

- ZK Community edition
- ZK Professional edition
- ZK Enterprise edition

In this performance test we chose several commonly used components and push their limits to provide an accurate reflection of the performance of each package.

You can continue to view the results, or skip to the end to read how we measured the performance, such as response time and the environment used.

Terminology in testing

This section outlines the various terms used in this document and the related meanings.

Technology

Term	Meaning
Execution Time	This is the time it takes for the entire execution cycle to complete. For more information please see Testing methodology.

Products

Term	Meaning
ZK EE	ZK Enterprise Edition
ZK PE	ZK Professional Edition
ZK CE	ZK Community Edition

Version: ZK 6, ZK 5

Test Results

This section details the results of all the tests carried out. The following components were tested:

- The Grid
- The Tabbox
- The Combobox
- The Menu

The Grid

The Grid is naturally the first component to test as of all the components it is the most popular.

Testing Strategy

To test the Grid performance, we increased the number of rows in the Grid and measured the time it takes for the Grid to execute and then the memory usage.

The Grid supports two modes, paging and non-paging. Paging mode only provides the Grid with the number of rows which are visible to the user. These tests were done using paging and non paging mode. During the test the page size was set to 20.

ZK Enterprise VS ZK Community/Professional – execution time –no paging

The test tests the performance of ZK Enterprise Grid against ZK Community/Professional's Grid. In this case both Grids are in non paging mode.

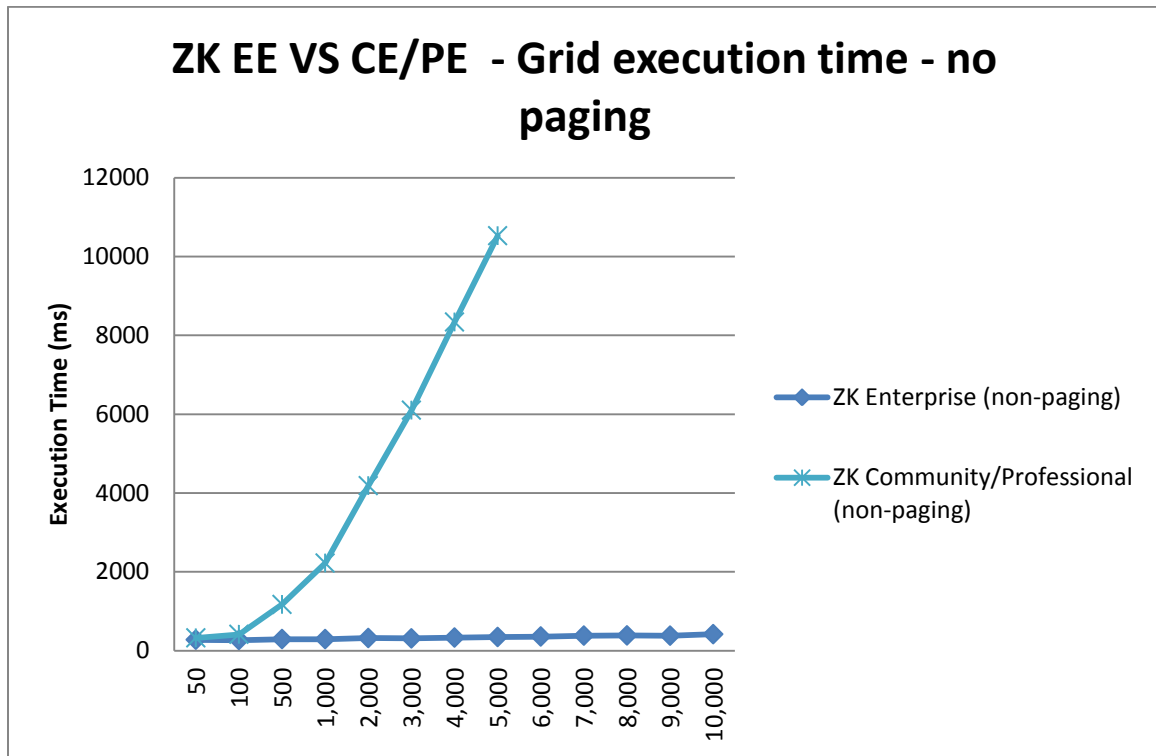


Figure 1. ZK EE VS ZK CE/PE - Grid execution time - no paging

In Figure 1 the lower the execution time the better and in the most extreme case ZK Enterprise is **30 times faster** than ZK Community and Professional editions.

ZK Enterprise VS ZK Community/Professional – execution time –paging

After testing the performance of the different ZK package Grids it makes sense to compare the performance of the Grids in paging mode. Here are the results.

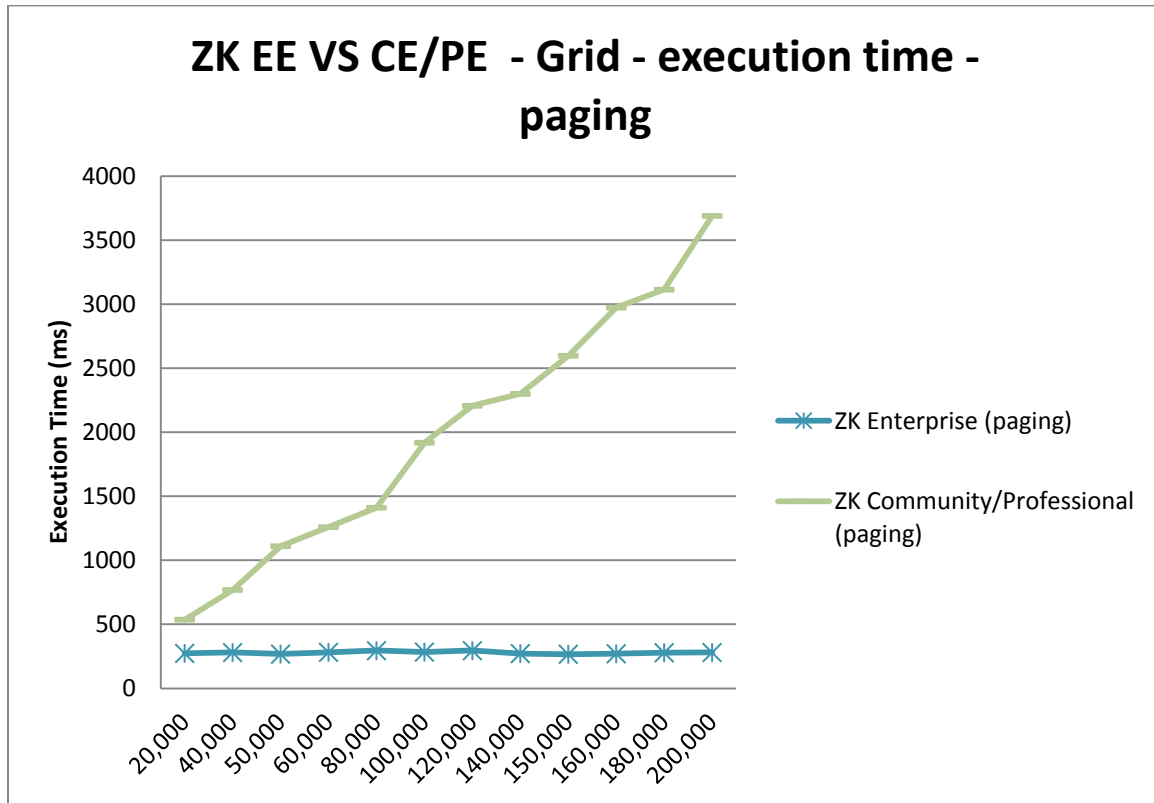


Figure 2. ZK EE VS ZK CE/PE - Grid - execution time - paging

In Figure 2 the lower the execution time the better and in the most extreme case ZK Enterprise is **13 times faster** than ZK Community and Professional editions.

ZK Enterprise VS ZK Community/Professional –memory usage–both paging modes

The final test was to compare the server-side memory usage of all the ZK packages in paging and non-paging modes.

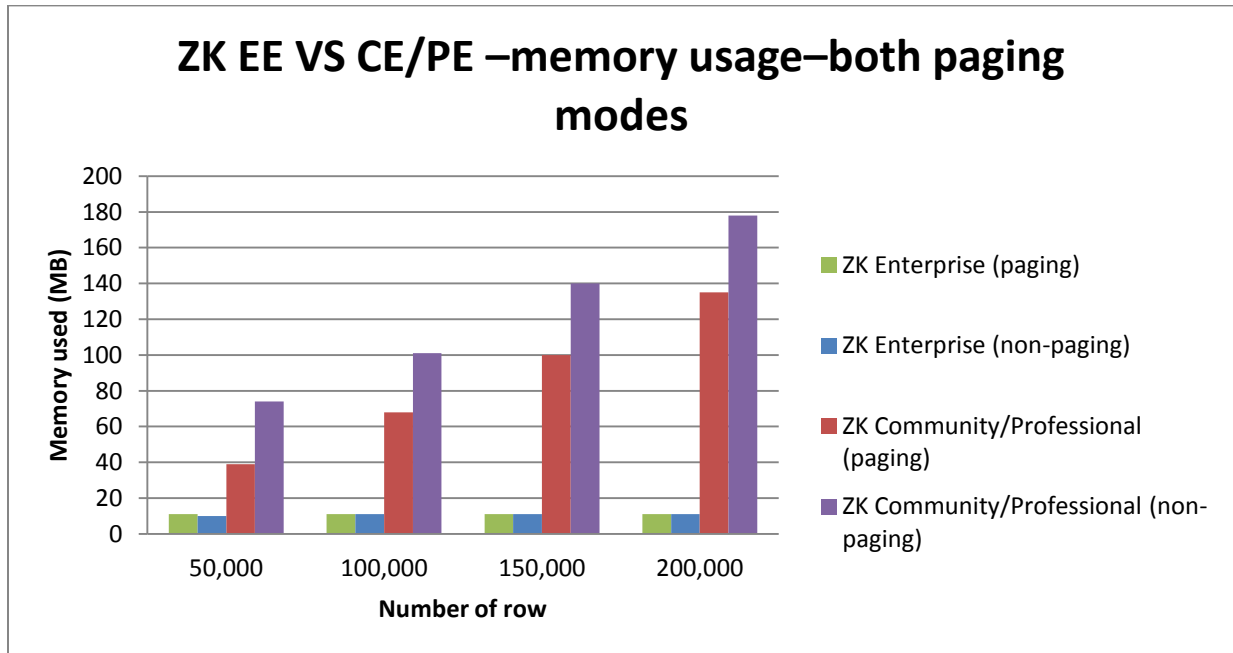


Figure 3. ZK EE VS ZK CE/PE - memory usage – both paging modes

In Figure 3 the less memory consumed the better. In this case we see that whether it be paging or non-paging the memory usage of ZK Enterprise is substantially lower than that of the Community and Professional versions. With reduced memory usage the server is therefore able to support more concurrent connections enabling applications to scale much better.

The Tabbox

The next item that was tested is the Tabbox, we first defined a testing strategy, compared the three ZK packages against each other.

Testing Strategy

To test the Tabbox performance we tested how long it would take for a page to execute a certain amount of Tabboxes. In this test, the number of Tabs within Tabs varied. For example if we had approximately 20x5 Tabs, this means there were 20 Tabs displayed on screen each containing a Tabbox with 5 Tabs.

ZK Enterprise VS ZK Community/Professional – execution time

Having established the speed of ZK Enterprise edition we tested the three ZK versions against each other. Here are the results.

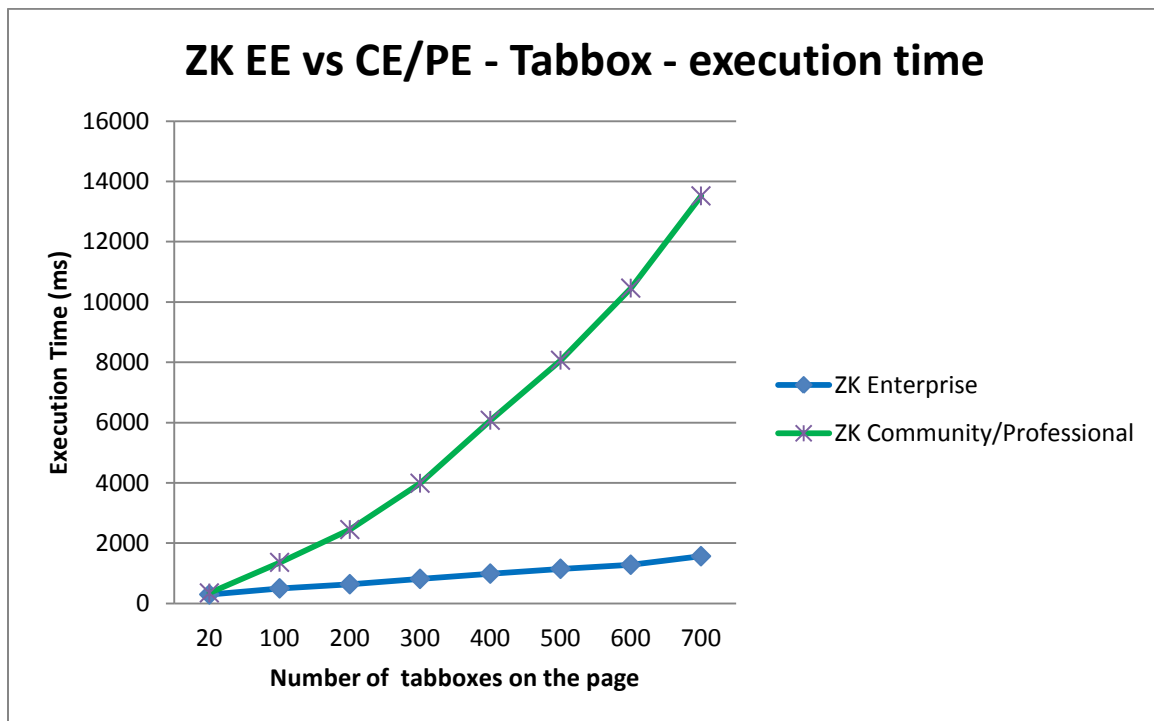


Figure 4. ZK EE VS ZK CE/PE - Tabbox execution time

In Figure 4, the lower the load time the better and in the most extreme case ZK Enterprise is **8 times faster** than ZK Community and Professional editions.

The Combobox

The next component to test is the Combobox which is very prevalent in today's data driven applications.

Testing Strategy

To test the Combobox performance we increased the number of items in the Combobox and measured the time it takes to execute.

ZK Enterprise VS ZK Community/Professional – execution time

We now need to analyze the performance of the different ZK packages.

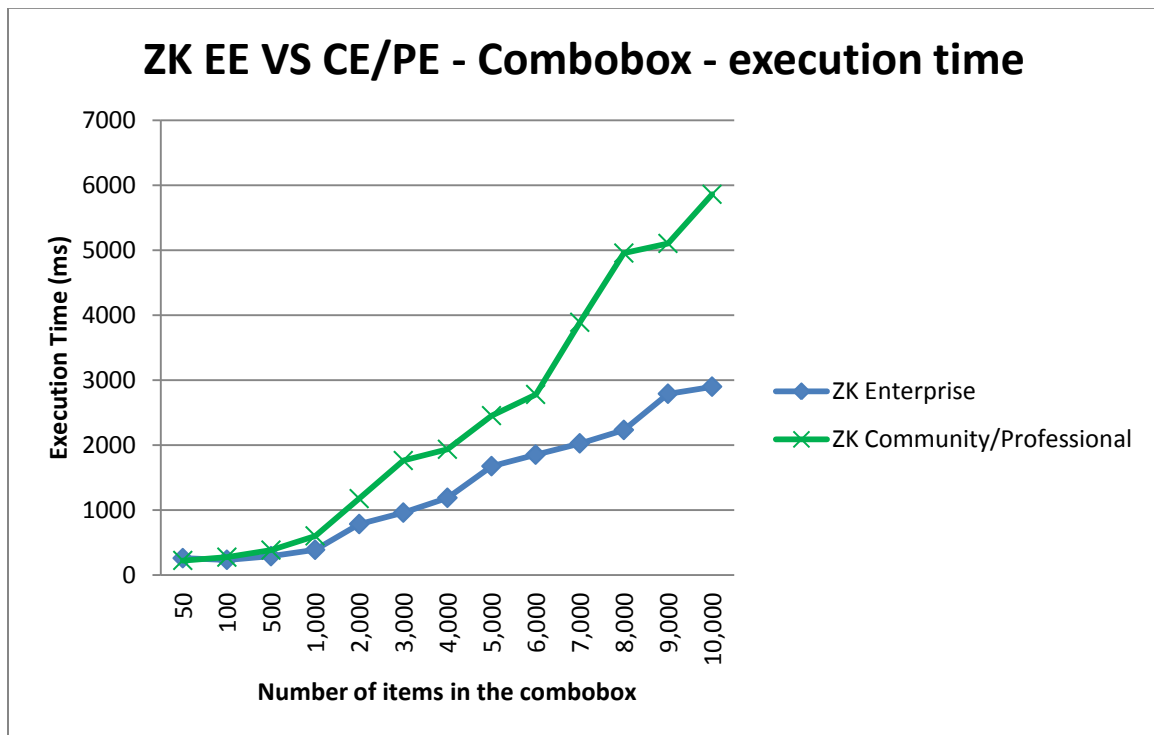


Figure 5. ZK EE VS ZK CE/PE - Combobox - execution time

In Figure 5 the lower the load time the better and in the most extreme case ZK Enterprise is **twice as fast** as ZK Community and Professional editions.

The Menu

The next item that was tested is the Menu. We first defined a testing strategy, compare the three ZK packages against each other.

Testing Strategy

To test the Menu's performance we tested how long it would take for a page to execute a certain amount of Menu's and MenuItem's.

ZK Enterprise VS ZK Community/Professional – execution time

We now need to analyze the performance of the different ZK packages.

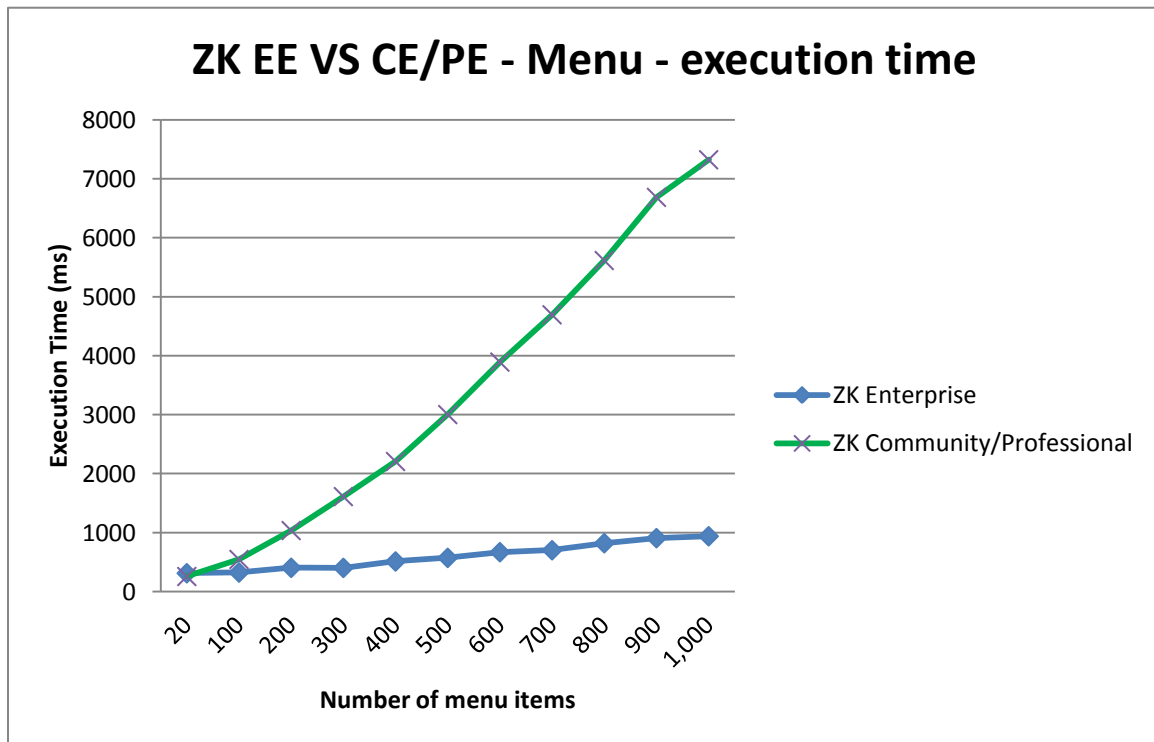


Figure 6. ZK EE VS ZK CE/PE - Menu - execution time

In Figure 6 the lower the load time the better and in the most extreme case ZK Enterprise is **7 times faster** than ZK Community and Professional editions.

Testing methodology

The testing methodology uses the time it takes on request to complete its journey from client to server and back again. This also includes the time taken for the rendering and size determination at the client.

Figure 7 is a graphical representation of a complete ZK request cycle.

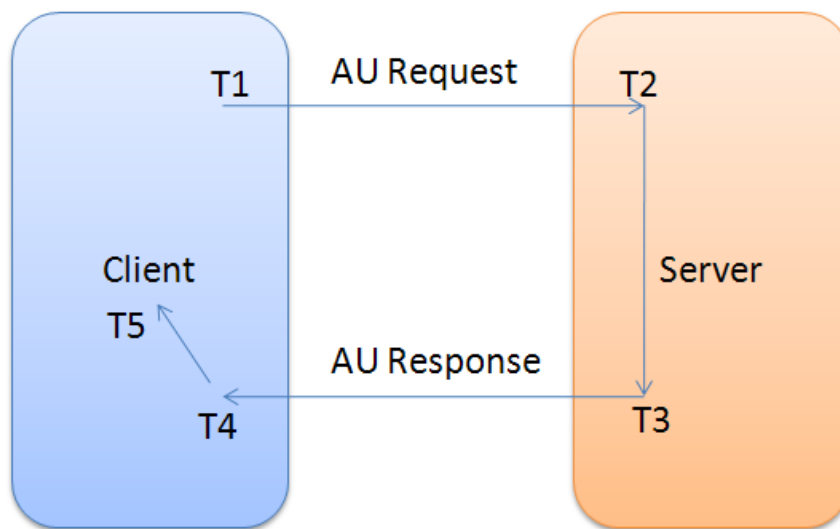


Figure 7. The lifecycle of a ZK request

The time it takes the request to complete its journey is effectively $T5 - T1$ from Figure 7 and is known as the **execution time**. However, in the case of this document the server and client were both running on local host, therefore $T1 \rightarrow T2$ and $T3 \rightarrow T4$ were too small to make any difference.

Test environments

The test environment was as follows:

Hardware

- AMD Dual Core Processor 4000+ 2.1 GHz
- Memory : 2GB
- Hard Disk : HDS72808 0PLA380 SCSI Disk

Software

- OS : WINDOW Vista Business
- JDK : SUN JDK 1.6.0
- Browser: IE8
- Server :
 - TOMCAT 6.0.20
 - Memory : 1593 MB

Network

- Network Adaptor : NVIDIA nForce Networking Controller
- Server and Client browser are running on the same machine

Conclusion

In conclusion, to choose which edition is entirely up to the user and developer. If one's application requires the highest level of server scalability and performance then ZK EE is well worth the investment.

While the performance indicated in these tests will depend on the type of applications that you are using, we can still use these tests as an excellent base to assess the performance of the ZK versions.

The results of these tests demonstrate that CE and PE still run very well, however, it is clear should the application be required to handle an extreme amount of data then ZK EE is the preferred option.