



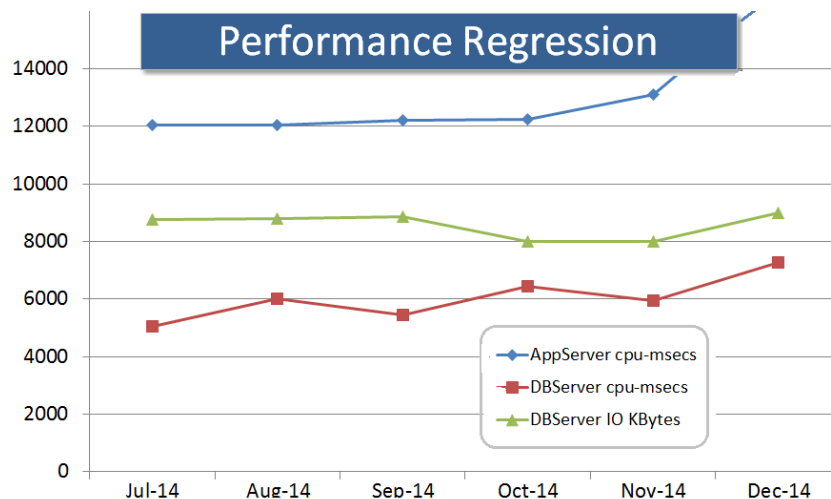
Automated Performance Regression using Modeling

When non-trivial changes are made to an application, organizations generally perform functional regression tests to ensure that everything is still working properly.

While performance testing is also desirable, running a traditional load test with each release is often too costly or too complicated.

Regression Based on Modeling

An alternate approach using modeling can accurately predict the performance impact of application changes and utilizes measurements of the system resources consumed during different parts of the functional tests



These can be compared to those obtained during previous tests to identify significant changes in the resources required and to predict the impact on the applications' capacity.

	App Server CPU	DB Server CPU	DBServer Disk Write	DBServer Disk Read
Release 15 - Jun 30	5013 cpu-msecs	1209 cpu-msecs	1447 kbytes	12 kbytes
Release 16 - Jul 05	5001 cpu-msecs	1187 cpu-msecs	1450 kbytes	19 kbytes
Release 17 - Jul 09	6532 cpu-msecs	1222 cpu-msecs	1572 kbytes	17 kbytes

The table above identifies the resource cost for a single business scenario and shows that for the release on July 9th there was a significant increase in the CPU cost for this scenario. Predictable impacts to production performance would be anticipated. The promotion of this release could be delayed till the performance issues are resolved and retested. (Generally this comparison would be completed on a number of key business scenarios and not just on a single scenario as illustrated here.)

Precision

For most metrics the precision of the test is between 2-3 percent relative standard deviation as shown in the table below:

Metric	Acquisition Technique*	Average	%RSD
AppServer.HeapUsed	Oracle JVM monitoring via JMX (accumulated positive heap change)	577 mbytes	13 %
AppServer.CpuSecs	Oracle JVM monitoring via JMX	54.9 cpu-secs	2.2 %
DBServer.ReadMBytes	Windows perf counter for DB task	5.5 mbytes	190 % **
DBServer.WriteMBytes	Windows perf counter for DB task	149.5 mbytes	3.7 %
DBServer.CpuSecs	Windows perf counter for DB task	106.4 cpu-secs	4.0 %

* Measured and analyzed with VDAB monitoring tools

** The test did not involve any database reads and this represents background noise

Projecting Capacity

While modelling tests can easily identify changes that will effect the ability of a system to handle load, applying this data to project the actual load capacity change should only be done carefully. If the change is primarily related to increases in the CPU used on the app server, it can generally be assumed that the capacity for these loads will decrease by about the same percentage as the increase in CPU used. Changes in database CPU can be impacted by more subtle changes in query efficiency and should be interpreted more carefully.