Assessment of Database Performance Degradation

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Introduction

The database examined is part of the integration platform of the SBB CUS project. The project operates a datahub for the swiss public transport, and delivers real-time traveler information, e.g. at railway stations or on trains, at bus stops or via internet services. The main usage of the integration environment is for functional and load tests for new releases, before they are deployed onto the production platforms. Upon a software upgrade in spring 2019, the database performance deteriorated considerably. In the meantime a number of patches have been applied to re-establish it to its pre-upgrade level.

The analysis goal is to assess the integration databases performance after the patching.

Method

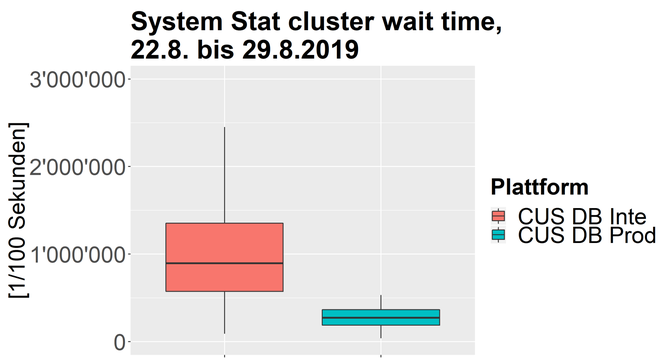
Comparision of the integration database with the production database, using performance statistics. Test are applied using the Wilcoxon rank sum test.

First step

Compare accumulated waiting times for the main waiting time classes, i.e. Application, Concurrency, Cluster and User I/O.

Result

The waiting times for Cluster-related operations of the integration database still show a degradation relative to the production database.



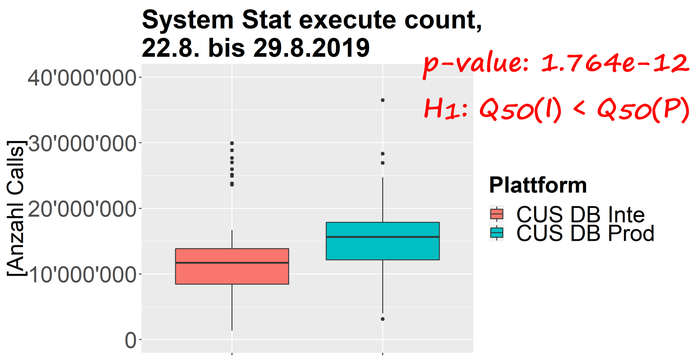
The cluster wait class includes wait events related to the clusters global cache, i.e. the provisioning of data currently held by one database instance of the cluster in its local cache, and requested by the other cluster database instance

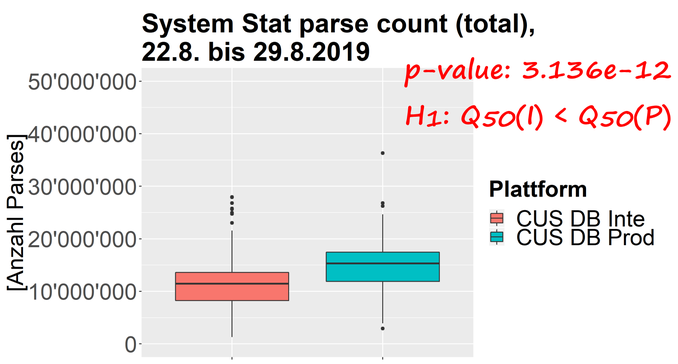
Database Load

Compare database loads of the two databases; shown are two of a few tens of DB Load statistics.

Result

The load of the production database is higher than on the integration database.





Global Cache Load

Match Global Cache activity with Global Cache waiting times. Shown below are two of a few tens of GC statistics.

Result

The Global Cache load (measured by the number of received blocks) is approx. the same.The receive time however is much worse on the integration database.