

Customer Case Study

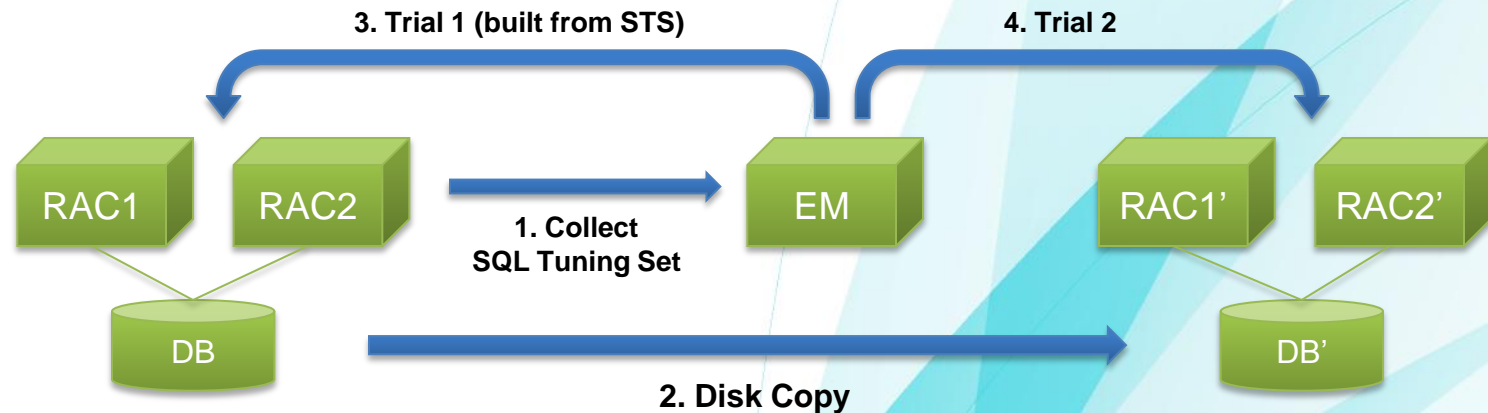
Real Application Testing Usage at NHN

NHN Challenges and Solution

- Need to upgrade major DBs in NHN from 10gR2 to 11gR2
 - Upgrade performed in both Naver and Hangame simultaneously in different projects
- Why choose to upgrade 11gR2?
 - Need read only standby for service → Oracle Active Data Guard provided best solution
 - Had new test infrastructure while all services were newly reorganized
 - Very good chance to test new system thoroughly
 - Minimize impact on production services due to 11g upgrade
- Upgrading to 11gR2 without full testing is very risky
 - Need thorough testing → Need very novel reliable and effective testing method
 - **Considered RAT for this thorough testing solution**

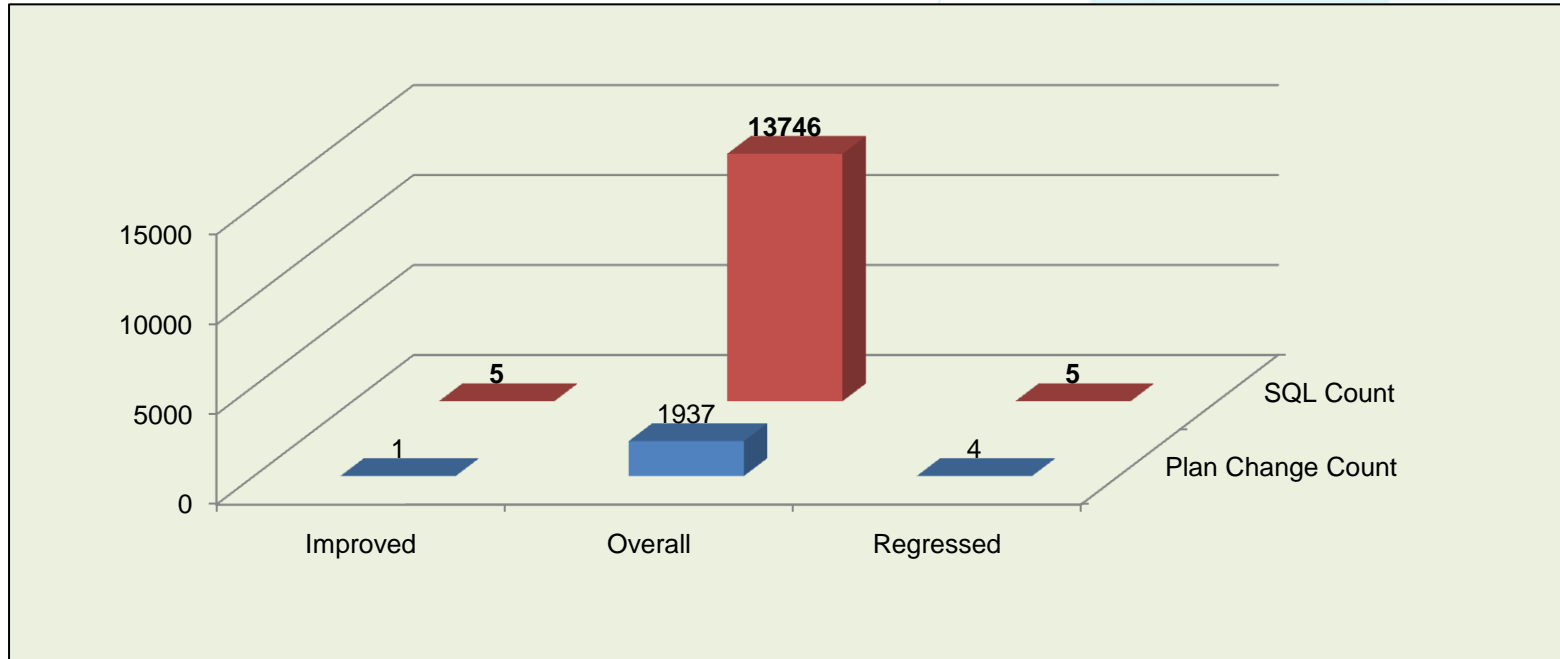
Tests for upgrading to 11gR2	Database Replay	SPA
Reliability test with real workload	Concurrency test using real workload	SQL-related issues, single user SQL response time test using production binds. Optimizer context
Reliability test of Active Data Guard	Yes	Test queries only, single user full DML testing also possible (11.2)
Performance test	System/Workload throughput test	SQL focused testing: SQL Plans changes, single user response time

SPA Workflow



- Database Replay was also used at NHN but for purposes of this session we limit discussion to SPA
- Collected 13.7K queries for 3 days → Those were all queries for that represented workload to be tested
- Test environment used the same types of machines as production system. Both used two nodes RAC and test DB were created through Disk Copy
- Each trial used 10min timeout and 10 executions and was compared with Buffer get.

SPA Results



- SPA Report showed very few query improvements(6) and regressions(9)
- Plan changes in both improvement and regression categories very negligible
- About 2000 queries changed plans but performance remained the same – good news...

SPA Results

- We tuned all 2000 queries because we thought that “Improved”/“Regressed” based on Buffer get was not meaningful
 - Because SPA found 2000 queries with changed plan, we were able to reduce the number of queries which might need tuning to 1/7 of total queries
 - Discussed with application development and manually tuned these statements
 - Staff has good performance tuning expertise
- We used SPA to test if each query was correctly executed as well as to check the performance of each query execution.
 - SPA executed actual query directly in target DB, just like in production
 - SPA helped detect and resolve on ORA-600 for which a fix was provided by Oracle
- Preferred PL/SQL to EM
 - Because report from PL/SQL provided more advanced functionality required for our detailed analysis than from EM
 - For basic reporting, EM reporting is sufficient

RAT - SPA at NHN: Summary

- Performance test with real workload
 - Not synthetic workload
 - Production binds, optimizer settings captured
 - Easier to create workload than Load Runner, captures plans, all relevant performance data easily and automatically
- Capturing workload on production database did not affect performance!
- We think if EM supports advanced reporting and finer level controls, applicability of RAT could be improved
 - In our environment, every plan change even with same performance was investigated to due criticality of application