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

<table>
<thead>
<tr>
<th>Tests for upgrading to 11gR2</th>
<th>Database Replay</th>
<th>SPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability test with real workload</td>
<td>Concurrency test using real workload</td>
<td>SQL-related issues, single user SQL response time test using production binds. Optimizer context</td>
</tr>
<tr>
<td>Reliability test of Active Data Guard</td>
<td>Yes</td>
<td>Test queries only, single user full DML testing also possible (11.2)</td>
</tr>
<tr>
<td>Performance test</td>
<td>System/Workload through put test</td>
<td>SQL focused testing: SQL Plans changes, single user response time</td>
</tr>
</tbody>
</table>
• 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 due to criticality of application