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Comparison of CERN workload on Oracle Linux kernel

Context for the investigation

- Oracle Linux and UEK release 2
- Integration (`oracle-rdbms-server-11gR2-preinstall`)
- Functionality: DTrace, Ksplice (*), etc
- What about performance?

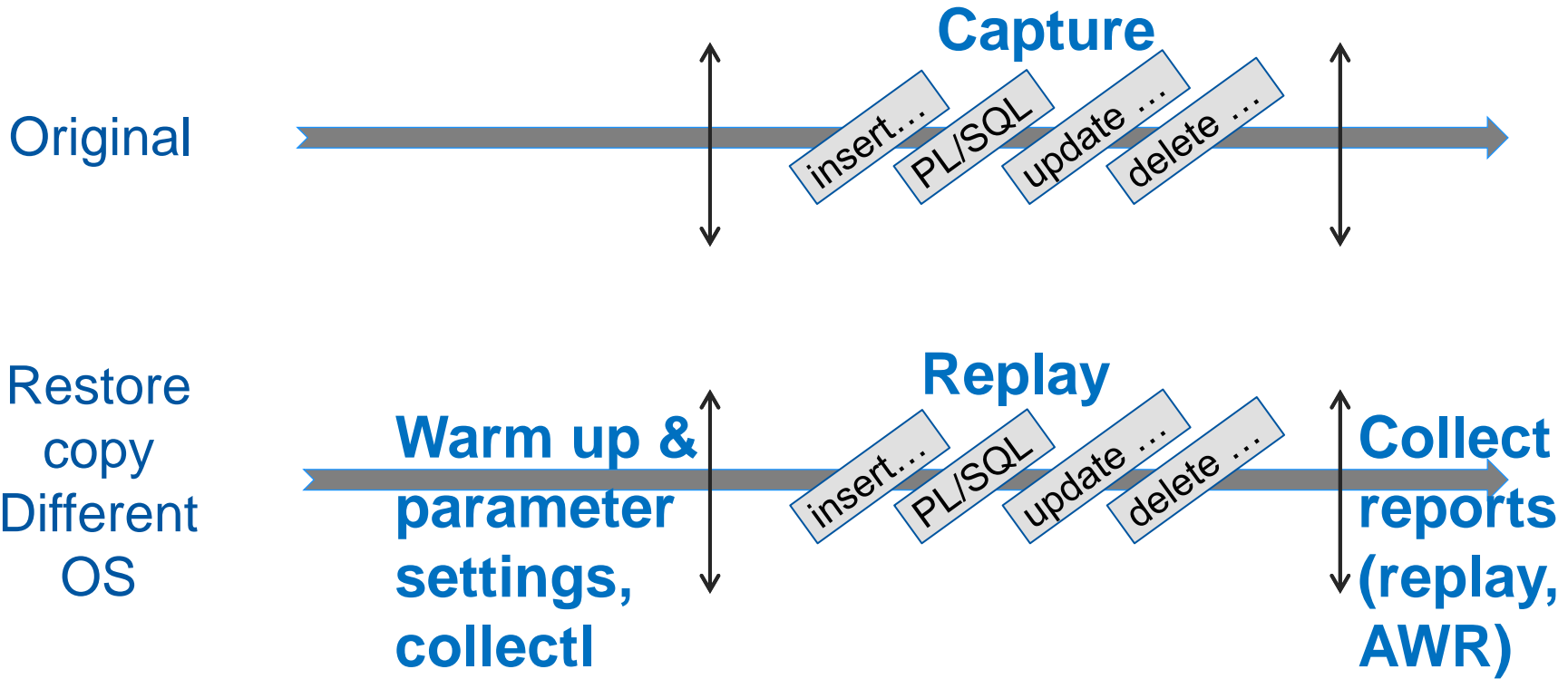
Database performance test

- On the application (usual benchmarks: not your application, not on your HW, super optimised)
- Real Application Testing / Capture and Replay to validate your application

Reproducible / relevant

- Cache(s) warm-up
- Disable “external” factors (statistics gathering, etc.)
- Same parameters as in production workload
- Measure (replay errors, time, iostat, collectl, AWR)

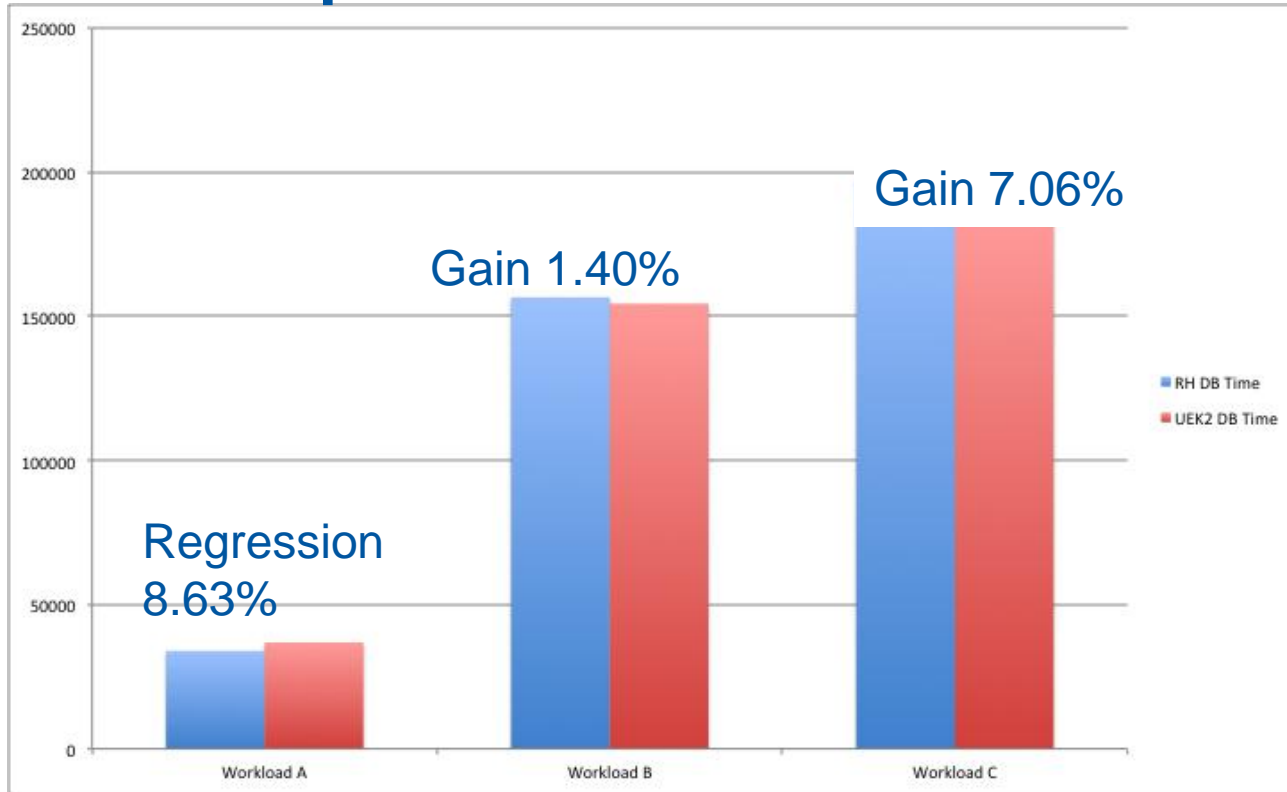
Real Application Testing: Capture & Replay



System

- DB 11.2.0.3 Linux x86_64
- Flash PCI Express
- 256 GB RAM
- 4 x Intel Xeon CPU E5-4650 (each 8 cores)

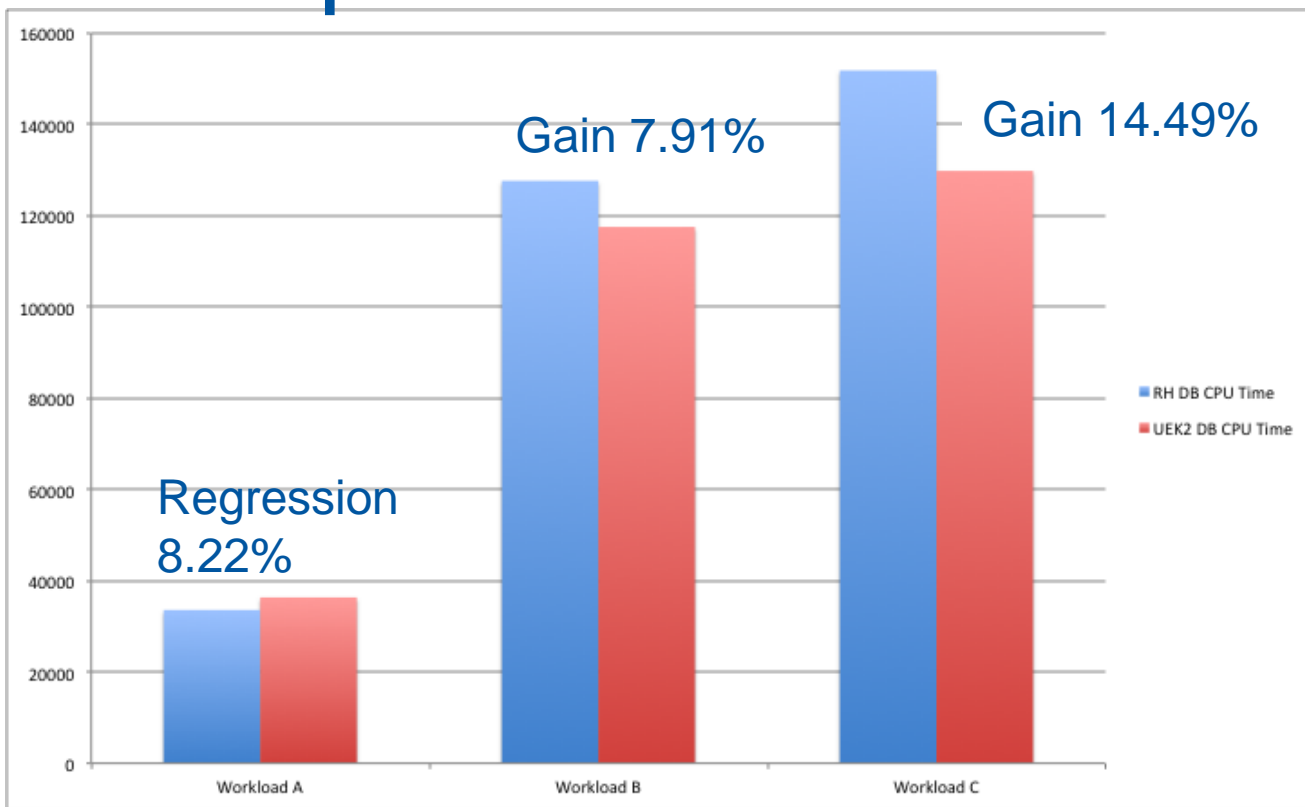
Comparison DB Time



RH kernel:
2.6.32-279.5.2

UEK2 kernel:
2.6.39-200.29.3

Comparison DB CPU Time



RH kernel:
2.6.32-279.5.2

UEK2 kernel:
2.6.39-200.29.3

Ksplice

- Updates the running Linux kernel in memory, while it is running, without a reboot
- Modifies the beginning of changed functions so that they instead point to updated versions and modifies data and structures
- Consolidation means little/no maintenance slot anymore
- Demo!

Conclusion

- Performance measurement with database your application
- Real Application Testing Capture and Replay
 - Trying to remove the external effects (cache warming)
- Four our workload, our configuration... gain with UEK R2 over RH kernel up to 14.49% (DB CPU Time), regression on small load being followed



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