Oracle for administrative, technical and Tier-0 mass storage services openlab Projects Status Review

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Work from

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Outline

- Achievements since last review
- openlab projects in the context of the service evolution
- Highlights 2007 Q2 & Q3

Contents

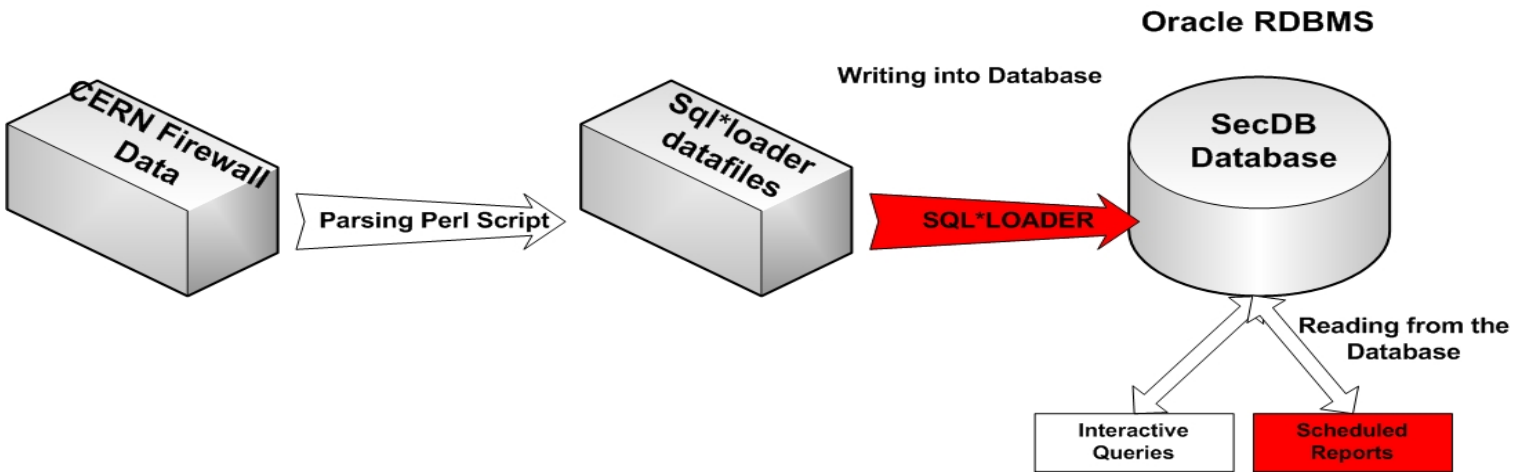
- [JST] Joint Software Testing Programme
- [OPT] Oracle Performance Testing
- [RAC] Oracle RAC virtualisation
- [OEM] Oracle monitoring project

[OPT] Oracle Performance Tests

- Oracle RDBMS performance comparison between:
  - Quad core dual CPU Clovertown (E5345, 2.33GHz / 1333MHz / 8MB)
  - Dual core dual CPU Woodcrest (5140, 2.33GHz / 1333 MHz / 4MB)
  - Identical other system parameters:
    - 160 GB NAS storage volume
    - RHEL4 (Nahant Update 4), x86_64
    - Oracle RDBMS 10.2.0.3, x86_64

[OPT] Tests Performed

- SecDB:
  - data loading with SQL*Loader
  - querying data with dbtop command

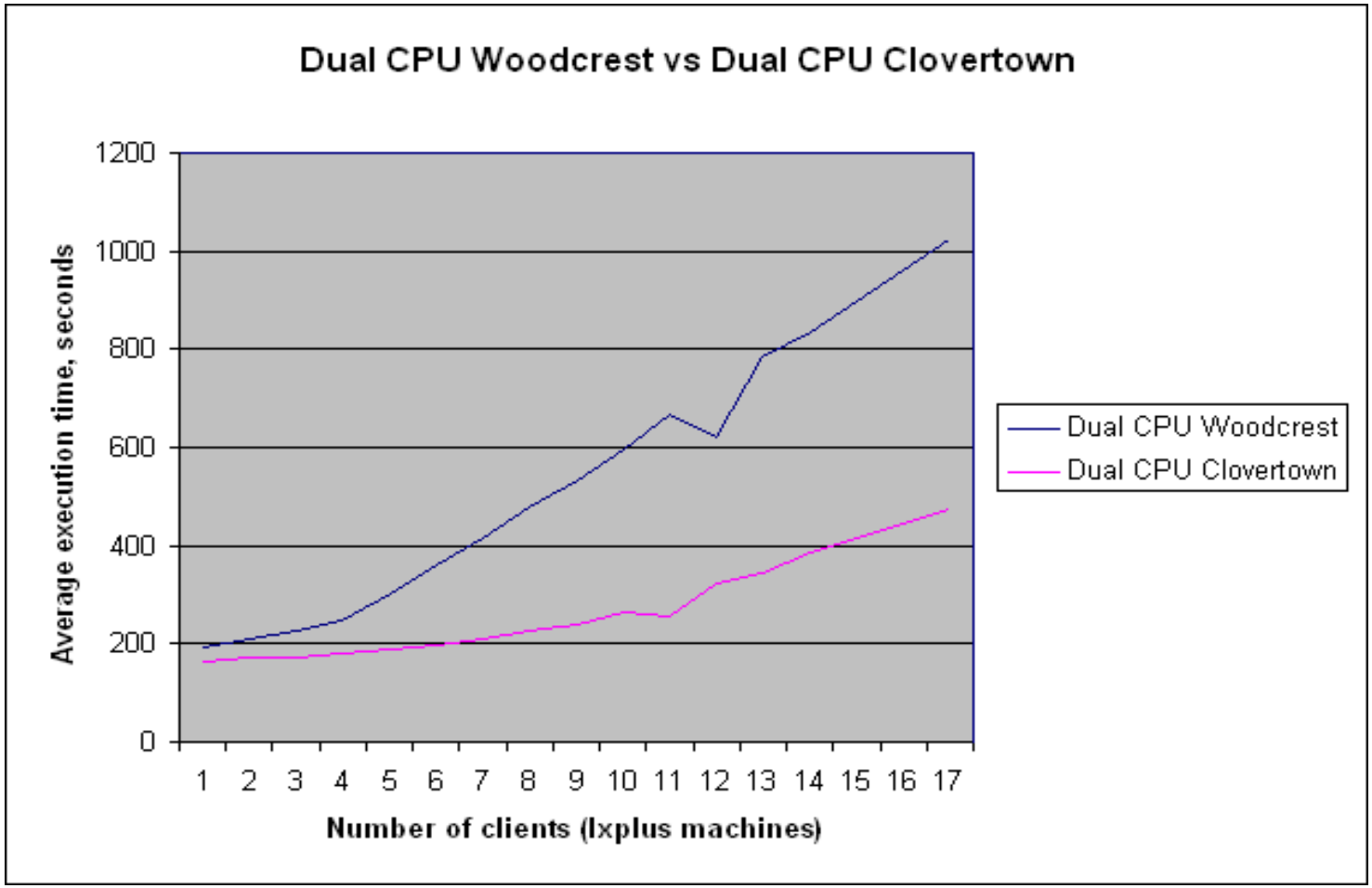


- Logical IO capacity measurements (LIOCM)

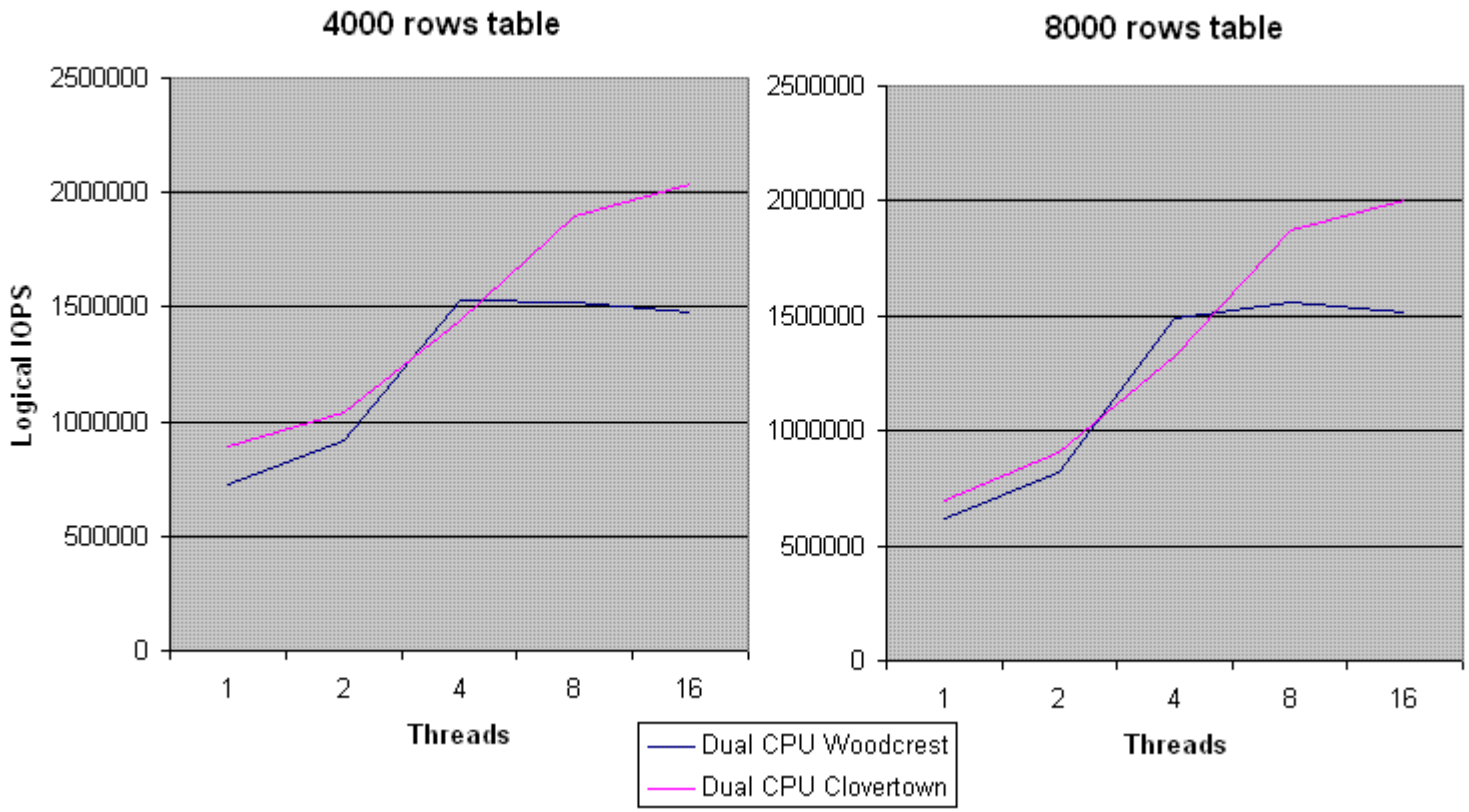
[OPT] Results and Conclusions

- Tests Conclusions
  - Both tests showed advantage of quad core Clovertown-based systems over dual core Woodcrest-based systems
  - Oracle utilize properly all available cores
  - In general Clovertown gets 1/3 better Logical IO capacity

[OPT] figure 1


Dual CPU Woodcrest vs Dual CPU Clovertown
Average execution time, seconds
0
200
400
600
800
1000
1200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Number of clients (lxplus machines)
Dual CPU Woodcrest
Dual CPU Clovertown

[OPT] figure 2 and 3



[RAC] Oracle Real Application Clusters Virtualization

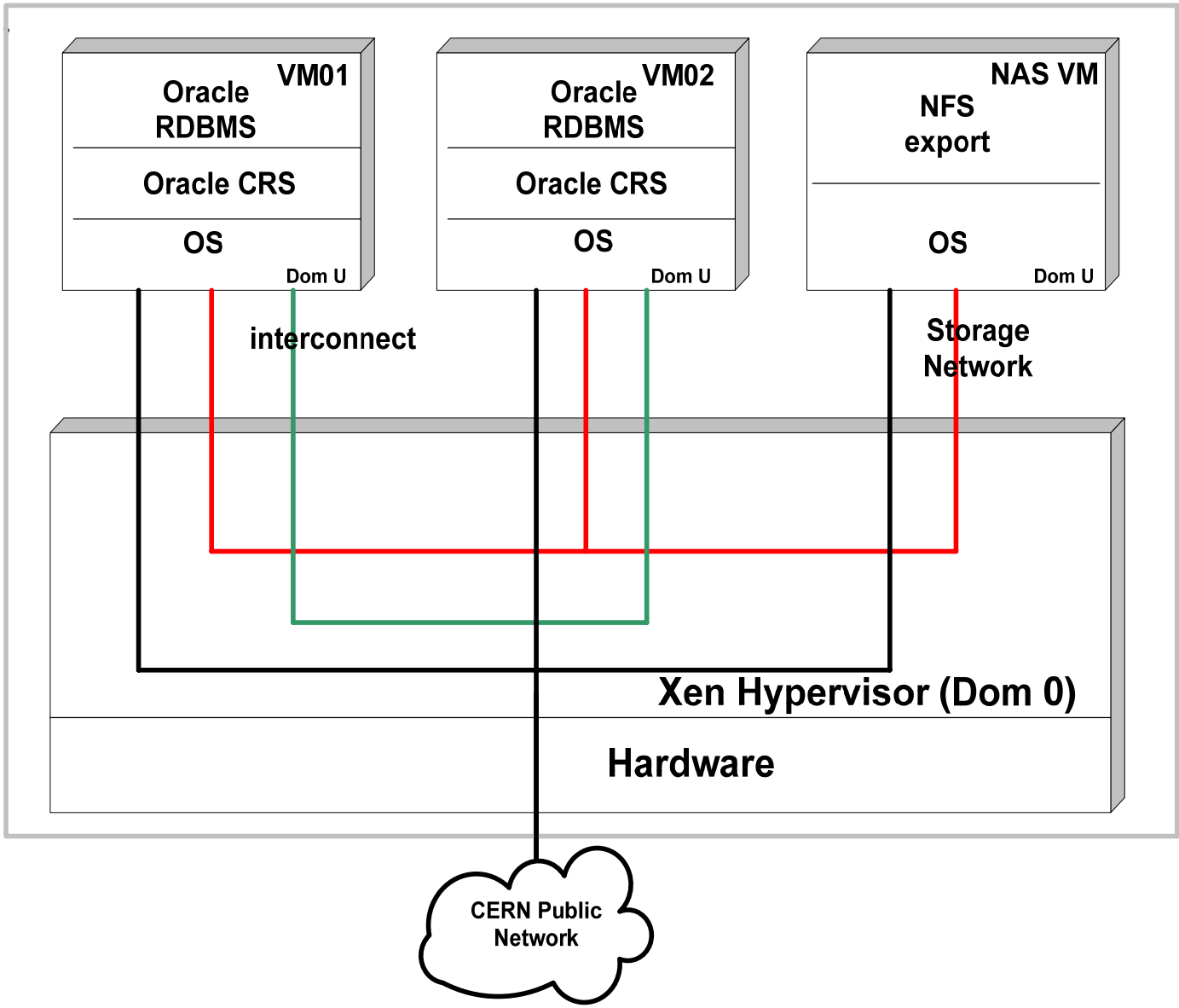
- openlab summer student project made by Maria Leitner
- Successor of previous summer student project, focused on single instance virtualization

- Main goals:
  - Implementing Oracle RAC in virtualized environment
  - Identify advantages and drawback of the setup
  - Make virtual environment closest possible to our NAS-based RACs
  - Document the implementation process

[RAC] Oracle RAC virtualization

Setup:

- SLC4 x86_64
- Xen 3.6
- Oracle 10.2.0.3
- 2-nodes RAC



[RAC] Why virtualize RAC?

- RAC is seen already as a virtual platform
- Benefits:
  - Independence from the hardware
  - Can be used for failover
  - Can be used for scalability
  - Can be used for better utilization of the resources (hardware / power), especially for testing/integration/development platforms

[RAC] Progress and future work

- Progress done:
  - Challenging Oracle Clusterware installation and configuration
  - 2- nodes RAC created and functionally tested
  - Bonding of networking interfaces not possible due to Xen limitation
  - NAS box for simplicity was represented by NFS exported storage from SLC4 VM.
- Being performed:
  - Performance tests
  - Data OnTAP virtualization

[OEM] Oracle Monitoring

- Based on Oracle Enterprise Manager / Grid Control
- Participated to the EM User group meeting in Zurich - gave a presentation on our architecture migration

[OEM] CERN setup

- Migrated repository database from single instance 10.2.0.2 on Solaris, to 2-node 10.2.0.2 RAC on Linux x86_64
- Migrated OMS to new machines - now using 2 OMSs with hardware load balancing
- Cloned repository and created test environment
- Upgraded to EM10g 10.2.0.3 + repository database to 10.2.0.3
- Secured Oracle Management Servers
- Agents being upgraded to 10.2.0.3 and secured
- Work done on automating agent install & upgrade - to be continued with RPM on Linux

[OEM] events and policies

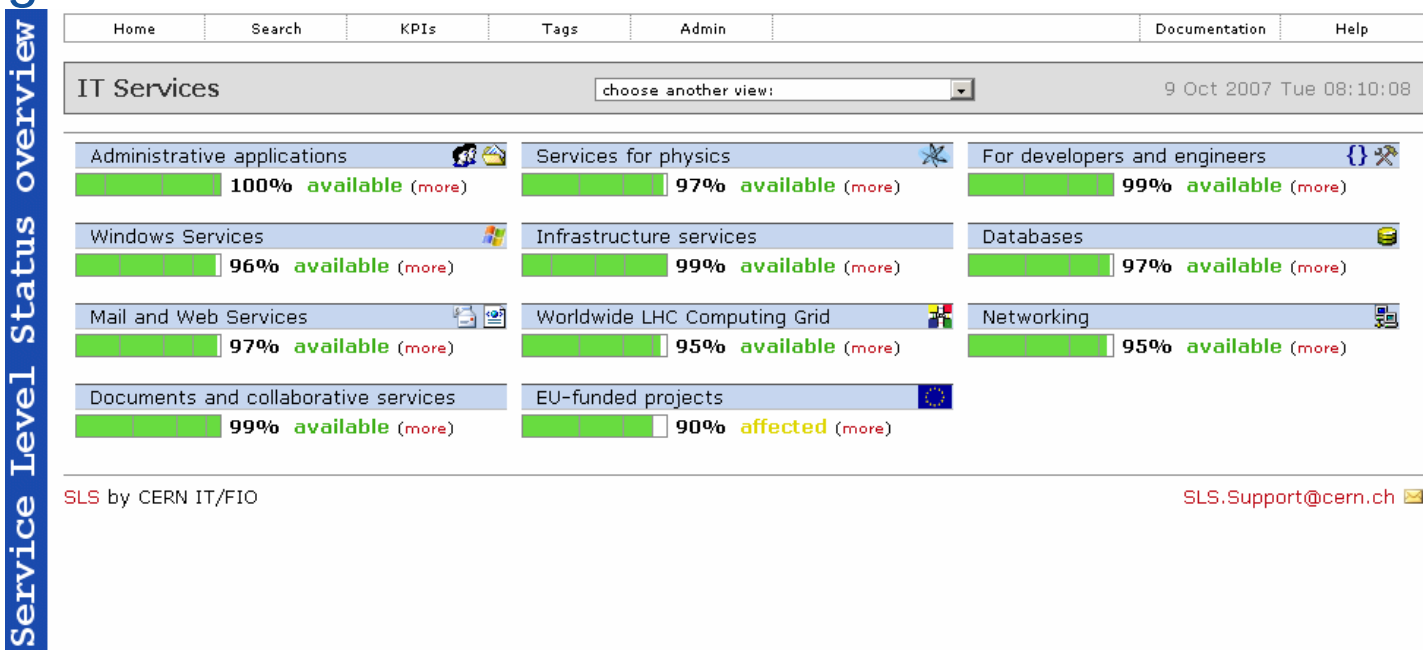
- Security policies evaluated and enabled/disabled. Monthly reports now sent to team leaders giving details of outstanding/overridden violations
- User defined metrics created to report if datafile/archived redo log backups are too old. Alerts us if a backup has failed silently.

Policy Violations

Severity	Current	Last 24 Hours		Distinct Rules Violated
		Cleared	New	
✖	0	0	0	0
⚠	2	0	0	2
ℹ	0	0	0	0
Total	2	0	0	2

[OEM] events and policies

- Preparations made to automatically apply metrics templates (security etc.) to databases/host nightly, using the emcli
- User defined database metric used to monitor our database availability test (from a central machine, connect to each database via SQL*Net, perform a read/write transaction). The result of this is fed into our high level IT Service Status Board.



Miscellaneous, recent and upcoming

- Oracle 11g launch at CERN with Ken Jacobs

- Oracle-CERN joint presentation at Oracle OpenWorld about monitoring
- CERN presentation at Oracle UK user group for RAC scalability (PVSS)
- CERN presentation at Oracle UK user group for the RAC automated deployment