Rdb & i4

A Customer's Experience

JCC Consulting, Inc.

Abstract

Kevin asked me to comment on using Rdb on i4. There is very little to say because there are no surprises. But, I have to say something so….

This is about the fastest computer I have ever worked on!

Who am I?

- Founder JCC Consulting, Inc., 1984
  - Consulting, training, testing, architectures, futures planning, systems health checks, performance tuning, problem resolution
- Outreach
  - DECUS sessions and seminars, US & Europe
  - DECUS VMS SIG, Symposia Committee Chair, Board
  - Oracle Open World
  - Jamaica Computer Society
  - Rdb Technical Forums, beginning - present
- Education
  - Fairfield University, BS
  - Virginia Polytechnic University, PhD
    Theoretical Nuclear Physics

Why Us?

- I started using VMS when VAXen arrived with version 1.0. (We had to type in one binary patch on install)
- I started using Rdb so early that I taught Rdb technologies to Digital internal developers and customers the two weeks after the product was announced.
- JCC Consulting has long done beta testing for VMS and Rdb development, among others.
- We have our own product to test and need to ensure that it is compatible with the latest versions of both VMS and Rdb and will run on the hardware platforms our customers use.
  - There is more on that testing later in the schedule.

Hardware Environment

- RX2800 – Not a blade – we wanted to drive a tape.
- 2 i4 CPUs
  - Itanium 9550 2.39 Ghz
  - 0.42 nsec cycle time
  - 4 core 32 MB cache
- 128GB Memory – 8 16GB PC3L-10600R-9 DIMM
  - (2 8GB DIMMS per 16GB set)
- 2 port 8Gb Fibre Channel HBA
- No local disks
  - Boots from fibre
- SAS controller for tape 2MGA0:
  - Ultrium 6 (LTO-6)

Memory Subsystem

- Memory chips are local to a CPU. Chips plus memory is called a Resource Affinity Domain (RAD)
- Two physical RADs
- Three logical RADs
  - Third RAD comprised of 16 GB of interleaved memory from physical RADs
    - Considered mostlyNUMA
    - Other configurations are possible (maxNUMA, Balanced, MaxUMA)
  - Where OpenVMS lives

I/O Subsystem

- 3PAR StoreServ 8200
- 4 shelves
- 32 1.2TB 10K disks
- 8 480GB SSDs
- Brocade 118.1 fibre switches (16 Gb)
  - Most attached devices are 4 or 8 GB, with a couple at 2 GB
- 3PAR presents 22 active disk drives to a cluster (plus other systems)
  - Most are RAID5 on magnetic drives
  - A few are RAID1 on flash drives, one per cluster host
  - We frequently see RAID1 drives running at 5,000 to 8,000 IOPS individually
    - Monitor SYSTEM shows much higher rates because of XFC caches
  - Workload is mostly write because we use generous memory to cache as much as possible.

Software

- VSI OpenVMS V8.4-2
- Oracle Rdb V7.3-2
- Oracle 11.2 (client only)
- JCC LogMiner Loader V3.4 and T3.5
- Other stuff such as a job scheduler

Problems?

- Problems installing software → ZERO
- Problems running software → ZERO
- Problems integrating into cluster → ZERO

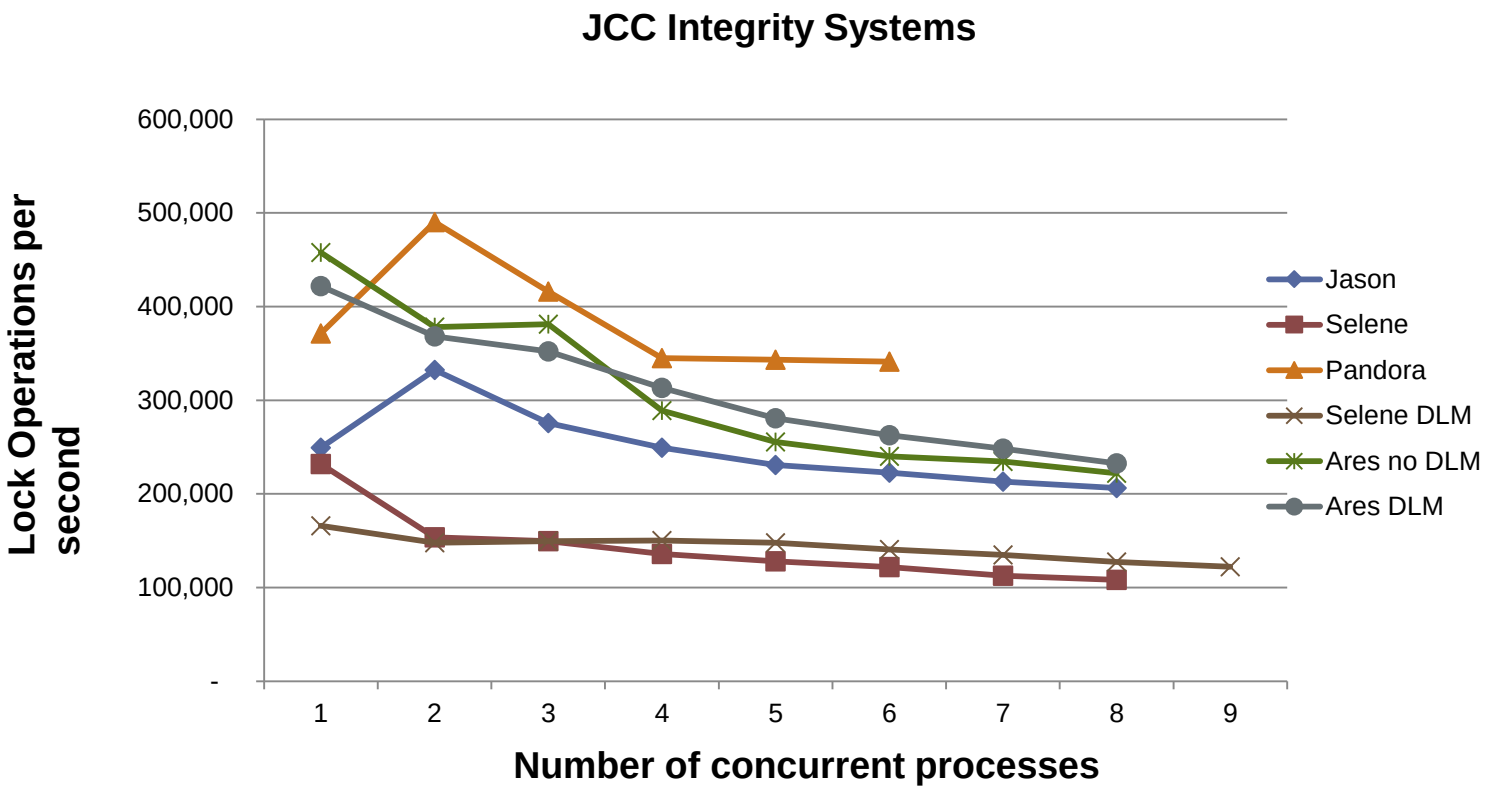
Performance Comparisons

- One regression cycle running
  - Two tests simultaneously
  - Rdb target
  - API target
  - Synchronized so both run simultaneously
- Nodes in same cluster
  - Allow to cycle over 100 times on each host to smooth randomness somewhat
    - Precision still not very high

Node Name	Hardware	Cache per Core (MB)	Average Duration (hours)	Relative to Ares
Jason	HP rx4640 (1.10GHz/4.0MB)- 8 cores 4 CPUs	2	0.48	2.0
Pandora	HP BL870c (1.59GHz/9.0MB) - 8 cores 4 CPUs	4.5	0.40	1.6
Selene	HP BL860c i2 (1.60GHz/5.0MB) - 8 cores 2 CPUs	2.5	0.33	1.4
Ares	RX2800 i4 (2.39GHz/32.0MB) - 8 cores 2 CPUs	8	0.24	1.0
Shorter duration is faster				

Some Performance Comparisons

- Performance on lock management test



Advantages

- Complete upward compatibility for all software
- Speed
- Excellent support from VSI → Immediate turnaround by seasoned support people.

Learning More

- The product that we have been testing is The JCC LogMiner Loader.
  - Read about it at http://www.jcc.com/products/jcc-logminer-loader-and-data-pump
- Contact us at Info@JCC.com
- Contact me at Jeff@JCC.com

Join the Conversation

Join the worldwide Rdb community. Send mail to OracleRdb-request@JCC.com.

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