

What is the real cost of User IO Wait?

Rob Bloemendal
Violin Memory
Netherlands

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Introduction

'Pepperl+Fuchs' have implemented Violin Memory's Flash Memory Arrays to run their Siebel CRM and Witron Supply Chain Management application based on Oracle RAC. In this presentation we will present why Pepperl+Fuchs selected Violin Memory. We will also talk about how this has improved the overall performance and response times of the database. Next phase was database consolidation. It's all about application acceleration, minimizing lost CPU time and IO consolidation.

The Application Journey

Pepperl+Fuchs, were running their applications and databases on legacy systems. Running on traditional storage subsystems and having performance problems. Their challenge was that they wanted to start from fresh with everything new, new servers, new storage and moving from Oracle 10 to Oracle 11. At the same time they wanted a vision, can I do more without falling into the same pitfall as we used to, scalability and performance. They wanted to accelerate the application performance, consolidating all the application and databases onto one storage platform, and VMware virtualisation without impacting the performance from one to another.

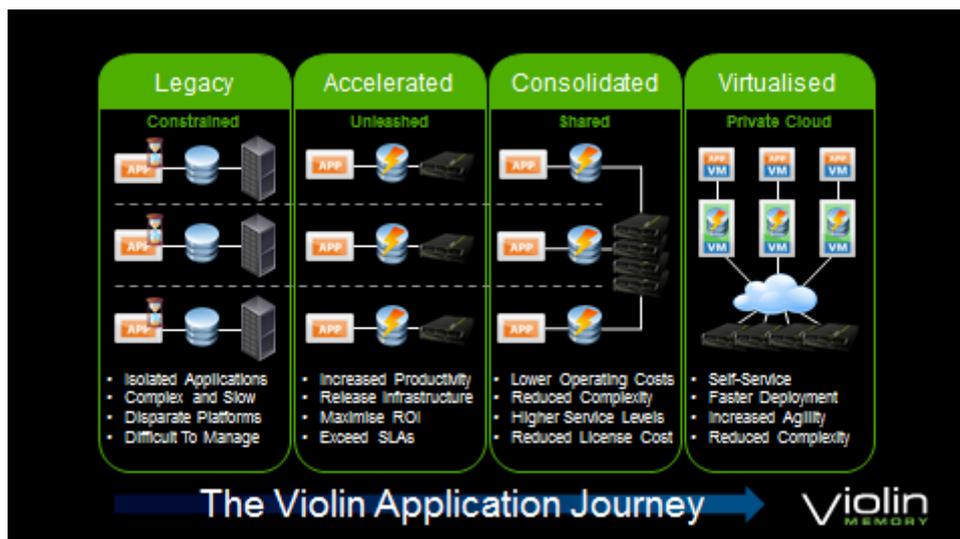


Illustration. 1: The Violin Application Journey

Application Acceleration

When a database process issues an I/O call, it has to wait for a response from the storage layer and this shows up in CPU statistics as a user "IOWAIT". In an Oracle database with I/O issues this can be a significant amount of "lost" CPU time which escalates to a reduced rate of transactions per second and an increase in the cost per transaction. Current disk media is made up of legacy technology with moving parts and spinning platters. It is unable to keep up with the demanding multi-tenanted workloads of today such as real-time content or analytics. This leads to slow response times (latency) and low throughput (IOPs) which are responsible for the poor application performance, lost productivity and lost business revenue.

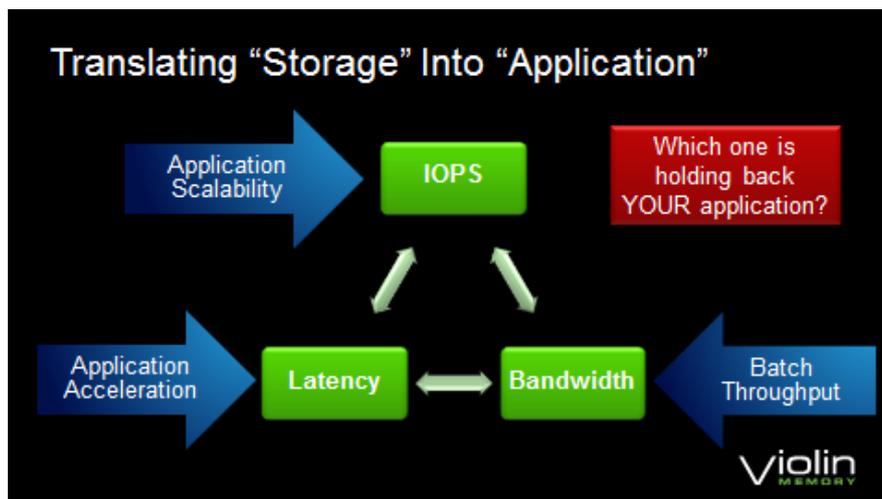


Illustration. 2: Translating Storage into Application Acceleration

Flash Memory arrays eliminate the I/O limitation from the application. Removing the IOWAIT time in the CPUs means better utilisation of processor cycles doing actual work - they free up the resources to do real work. This ultimately drives up the transactions per second and drives down the cost per transaction. By reading and writing data blocks within microsecond latency Violin's flash Memory Arrays accelerate applications to their full potential improving productivity. The combination of low latency, high IOPs and high throughput make Violin flash Memory Arrays a perfect fit for all workloads including the mixed performance requirements of a consolidated infrastructure. Consolidating applications which now perform efficiently helps bring down the infrastructure costs for a business.

Database Consolidation

The most important business drivers to consolidate databases are:

- Cost reduction
- Increased agility
- Reduced complexity

Database Consolidation

- Gartner reports 60% of IT departments are pursuing consolidation projects*
- Allows for cost savings due to reduction in physical server estate
- Estimated by Gartner to reduce operational costs by 10% – 25%†



* Gartner CIO Update: Server Consolidation Can Offer a Range of Benefits
http://www.gartner.com/IT_Infrastructure/18_866.html

† Gartner Recommends Key Cost-Cutting Tactics In Data Management and Integration
http://www.gartner.com/IT_Infrastructure/1909-1048

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Illustration. 3: Database Consolidation

The cost reduction piece seems obvious – a smaller number of servers cost less to buy and run than a larger number. But it's often misunderstood just how much of a cost saving can be made. Don't just think about the servers, think about the savings in data centre footprint, in power and cooling. The potential reduction in license costs is also a factor which needs to be counted for.

Increased agility is as important as cost reduction. The ability to automatically scale (up or down) in order to meet changing demand is a must. That scaling needs to be possible on two levels: at the individual database level to meet the developing requirements of each “customer” and at the macro level to expand the capability of your databases depending on overall demand.

It may not always seem like it at first, but the consolidation of your databases should result in reduced complexity. Why? Well because at the heart of any consolidation exercise there must be standardisation. Every large IT organisation has different databases running different versions on different operating systems. No matter how stringent your deployment procedures are, it's guaranteed that if your databases are built manually then each one will have a subtle difference. In a consolidated database environment every database is, at least outwardly, identical. This means that you don't have to worry about the way you treat them – what you can do with one database you can do with any of them. It's all about manageability.

For Pepperl+Fuchs all of the reasons described above made them change their database infrastructure landscape.

The Pepperl+Fuchs architecture of choice

Pepperl+Fuchs started to look at a new architecture in 2011 to optimize the application performance and updating their database to Oracle 11RG2. At first they looked at Exadata to see what the possibilities were. They were not impressed with the pricing for the Exadata environment and started to look for an alternative. The alternative became Violin Memory. Pepperl+Fuchs requested Christie Data Products to do a proof of concept with the Violin Memory flash Memory Array.

The same proof of concept was also conducted with Exadata. Violin Memory came out best in the price Vs performance ratio, without any database or application tuning.

The current application farm running on top of Violin Memory is: Siebel CRM and WITRON Supply Chain Management, and some other databases. The first Violin Memory system was put in place in September 2011. In February 2012 the system was upgraded and a second system was added to the infrastructure to enable more database consolidation and storage capacity.

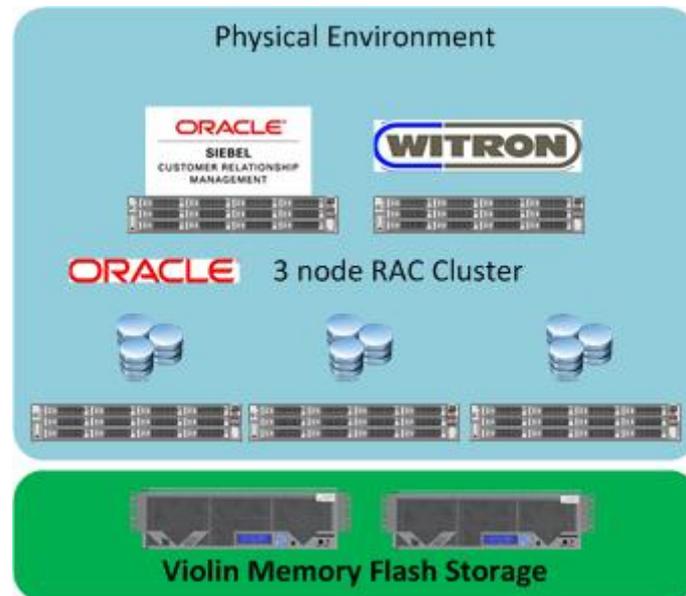


Illustration. 4: Pepperl+Fuchs, High Level Infrastructure

As Helmut Eckstein Manager Global IT/SIS, from Pepperl+Fuchs is very happy with the solution and states:

”This is a fast and stable system, we have been running it now for more than a year and we haven’t had any disruption or any break. The performance is still unbelievable.”

Contact address:

Rob Bloemendal

Violin Memory
Quatro House, Lyon Way
GU16 7ER, Camberley, UK

Phone: +44(0)1276 - 804620
Fax: +44(0)1276 - 804676
Email: rbloemendal@vmem.com
Internet: www.violin-memory.com