

NYI

Malou Madsen Flex 14:15  Legeplads	Aksel Pedersen Hentes 14:00  Legeplads
Malou Madsen Hjem 14:00  Biograf	Tilde Christensen Hentes 16:30  Systue
Anton Møller Flex 14:00  Kommet	Signe Pedersen Hentes 14:30  Kommet
Magnus Christensen Flex 14:15  Legeplads	Hjalte Olsen Hentes 14:00  Systue
Alberte Andersen Hjem 16:15  Legeplads	Victor Sørensen Hentes 15:00  Svømning



tabulex

IT solutions provider protects data
integrity while scaling performance

FUSION-iO®



Fusion-io Keeps Things Simple for Tabulex

IT solutions provider protects data integrity while scaling performance without implementing complex redundancy schemes.

The Challenge

Tabulex, a designer of IT solutions for Danish governmental school administration, has over twelve hundred users. During peak hours, all twelve hundred hit its single server, often causing serious performance degradation.

Data integrity concerns were a higher priority than performance, so Tabulex decided to store data directly to an eight-disk RAID5 array rather than use a RAM cache. Its budget was a hurdle to purchasing fully redundant RAM-based systems.

Consequently, whenever its database had greater than 1,000 concurrent users, an extremely common occurrence during peak hours—application response times increased from one or two seconds up to a minute. This tested Tabulex’s customers’ patience and elicited complaints.

Tabulex needed to find a way to make its existing customers happy, protect its data integrity, and scale to future performance needs.

Poul Dige, a Tabulex co-owner, researched a number of solutions on the Internet before deciding that Fusion-io would be a good option for the innovative IT company.



SUMMARY OF BENEFITS

- **Improved user experience** and customer satisfaction
- **Scalable database performance** that does not degrade under load
- **RAM-like performance** for the entire database without RAM volatility
- **Future-proofed** capital expenditures on database performance for the foreseeable future
- **Freed 75%** of its rack space

“The ioDrive really doesn’t seem to care about number of connections. With one thousand connections, it processed a query that used to take our disk array about a minute in just four seconds.”

*Poul Dige,
Tabulex co-owner*

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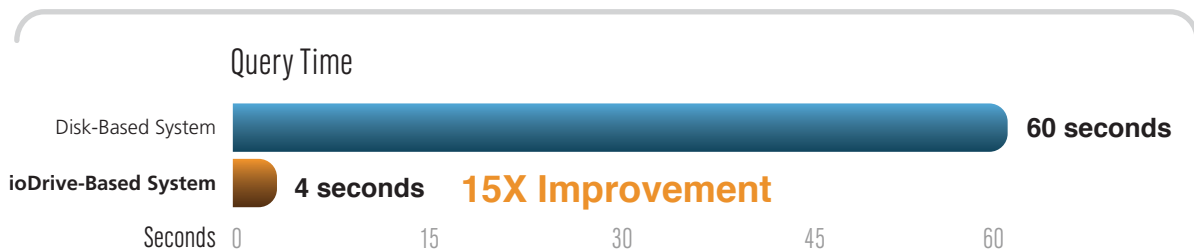


The Solution

Tabulex moved to Fusion-io easily. Poul simply replaced the 8-disk array on its production system with a single ioDrive 80GB and copied the database to the drive. He then ran some tests to see how the ioDrive would perform.

PERFORMANCE

Under normal loads, the ioDrive halved the time to process a complex query, from eight seconds to four seconds. But it was when the database came under peak load that the ioDrive shone, performing the query without any slowdown whatsoever. Poul told us, "The ioDrive really doesn't seem to care about number of connections. With one thousand connections, it processed a query that used to take our disk array about a minute in just four seconds."



SCALABILITY

Importantly, the ioDrive was nowhere near its performance limit, effectively future-proofing Tabulex from expenditures on database performance in the foreseeable future.

"We currently have around two thirds of Denmark's 1800 public schools as customers and so far the system is totally unaffected by the number of users," Poul said, "Of course there has to be a limit somewhere, but I would be surprised if we couldn't take the whole market before reaching it."

RELIABILITY

The ioDrive delivered on its promise of providing RAM-like speed for Tabulex's entire database. But importantly, it also did so while resolving its concerns about data integrity and RAM's volatility.

"Maybe we are paranoid, but we have never experienced and never wish to experience data corruption," Poul stated. "Fusion-io is non-volatile, so we don't have to worry about setting up a complex, redundant architecture scheme to protect the data."

PRICE

Another big plus for Tabulex was that Fusion-io had the best price to performance value of any solution they evaluated.

Poul told us, "We researched other vendors, but ended up with Fusion-io, as other vendors were not near the performance for a comparable price."

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Changes to the System

SYSTEM BEFORE

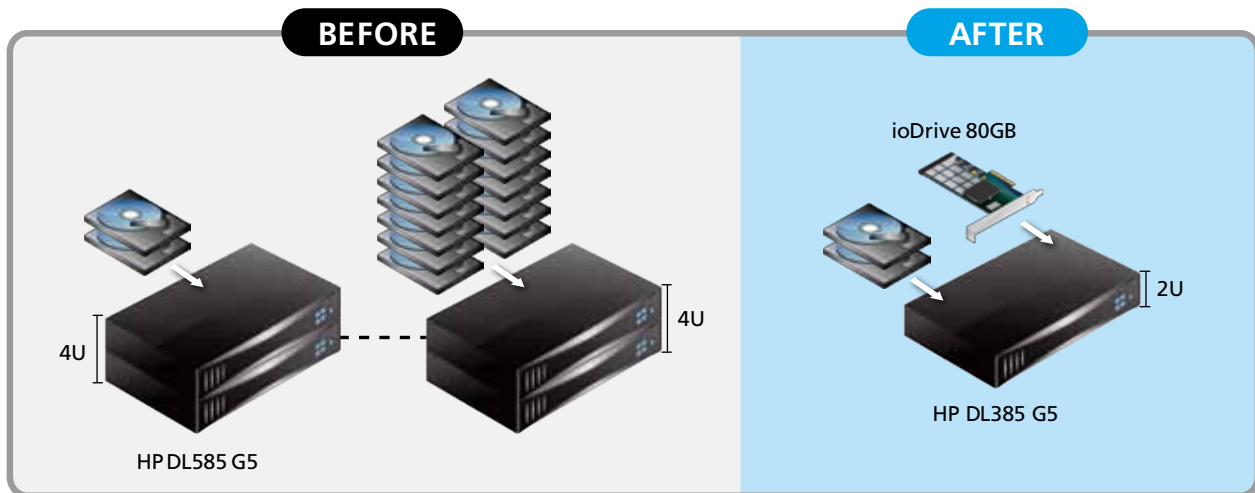
HP DL585, 4 x AMD Opteron 850 2.4 GHz with 16GB RAM

- OS: Windows Server 2003 enterprise x64 edition
- Server Software: Firebird SQL server v. 2.1
- Disks:
 - 14 disk SCSI 15,000 RPM in a RAID5 (8 used for the database)
 - 2 disk SCSI 15,000 RPM in a RAID 1+0 for the operating system

SYSTEM AFTER

HP DL385G5, 2 x quad core Opteron 2384 with 20GB RAM

- OS: Windows Server 2008 x64
- Server Software: Firebird SQL server v. 2.1
- Disks:
 - 2 disk 15,000 RPM in a RAID 1+0 for the operating system
 - ioDrive 80GB, configured for write-optimized mode



Performance per rack unit (density)

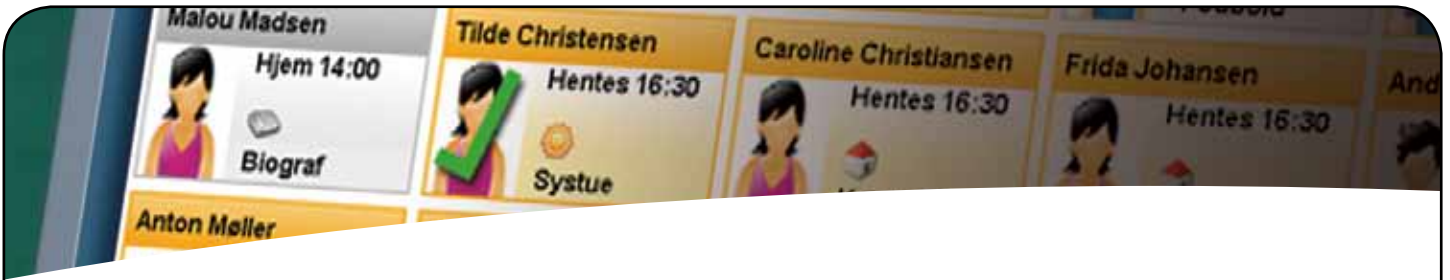
Without Fusion-io

With Fusion-io

60X Improvement

Consolidated servers from 8U to 2U = 4 times. Improved query processing from 60 seconds to 4 seconds = 15 times. $4 \times 15 = 60x$ greater performance density.

FUSION-IO



Summary

Implementing Fusion-io gave Tabulex the following benefits:

- **Improved user experience** and customer satisfaction
- **Scalable database performance** that does not degrade under load
- **RAM-like performance** for the entire database without RAM volatility
- **Future-proofed** capital expenditures on database performance for the foreseeable future
- **Freed 75%** of its rack space
- Offered a price/performance value that the competition couldn't match

Poul is extremely happy with the ioDrive purchase. "[Our customers] are all smiles now," he told us.

About the Customer

Tabulex is an innovator in IT solutions for school administration and a selected supplier by the governmental purchase organization (SKI). Its products include school administration solutions from the elementary grade school through high school in Denmark (age 6-16 years). They also provide homepage solutions and other web-based school products with SMS.

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