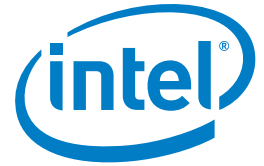


CASE STUDY

Intel® Xeon® processor 5500 and 7400 series

Performance: Data Intensive Computing

Virtualization: Dynamic Resource Management



New Servers Provide Opportunity for Change

Tetra Tech proves it's possible to successfully change its data center's location, hardware, and operating system in one giant step

As part of a move from earthquake-prone Southern California to a more seismically stable location in Allen, Texas, Tetra Tech migrated its IBM pSeries* AIX RISC servers to Dell PowerEdge* R900 low-cost/high-performance servers with four-socket, quad-core Intel® Xeon® processor 7400 series-based servers running Oracle Enterprise Linux* (OEL) operating system (OS). Changing location, hardware, and operating system all at once could have been a daunting task, but Tetra Tech decided to take it on. The result was reduced operating costs, lower total cost of ownership (TCO), and enhanced reliability, availability, and serviceability in their data center.



"By lowering our hardware and operating costs, our bottom line is better. Our budget didn't have to be as big because we didn't spend as much money on hardware because we're buying more powerful servers at a lower cost. Our CFO loves it."

– Aramazd Davidian
Director of Enterprise Database
and Linux Services
Tetra Tech

CHALLENGES

- **Relocation.** In conjunction with a move across several states, a migration to more powerful, less expensive servers and a new non-proprietary OS.
- **Maximizing performance.** With approximately 12,000 employees to support on internal enterprise resource planning (ERP) applications such as Oracle E-Business Suite* and internally developed Java* applications that interface with the Oracle* databases, servers must handle all of Tetra Tech's transactions seamlessly. Extreme performance is essential to keep processes running smoothly and uninterrupted.

SOLUTION

- **Dell* servers with Intel® Xeon® processors.** Tetra Tech chose Dell PowerEdge* R900 servers with four-socket, quad-core Intel Xeon processor 7400 series-based servers as the standard for its new data center. It also uses Intel® Xeon® processor 5500 series-based servers for its external Web servers.

IMPACT

- **Reduced costs.** With a virtualized environment, Tetra Tech saves by purchasing far fewer servers. Tetra Tech hosts up to 90 virtual servers, previously in individual physical servers. With the new deployment, a single server replaced up to 30 servers. Power, cooling, and maintenance costs are reduced significantly.
- **Improved performance.** New processors help internal processes run and finish faster. They also minimize system failures. IT managers are no longer receiving system failure emails, and new support tickets aren't being generated.
- **Data center staff efficiency, flexibility, and productivity.** The non-proprietary Linux* OS ensures flexibility and agility for data center staff, making it easier to train existing staff and recruit new talent.

Because of potential seismic activities, Tetra Tech's CIO and others in the company determined it was essential to move the data center out of earthquake-prone Southern California. After evaluating several locations, they decided to move the data center to Allen, Texas, the location of Tetra Tech's disaster recovery data center.

At the same time, Tetra Tech decided to migrate from IBM pSeries* AIX RISC servers to Dell PowerEdge R900 low-cost/high-performance servers with four-socket, quad-core, Intel Xeon processor 7400 series running the Red Hat Enterprise Linux* OS.



Tetra Tech's new data center reaps the benefits of the Intel® Xeon® processor 7400 series

Tired of being strapped to a proprietary operating system, Aramazd Davidian, Tetra Tech's director of enterprise database and Linux services, was a long-time advocate of running on Linux and was looking for an opportunity to demonstrate the power of running in a non-proprietary Linux environment. Frustrated with the status-quo solution of purchasing more of the same hardware to satisfy increasing performance demands, Davidian wanted to prove that Tetra Tech could achieve better results by moving to the right hardware and operating system, in this case four-socket, quad-core, Intel Xeon processor 7400 series-based servers running the Oracle Enterprise Linux OS.

Moving the data center provided the perfect opportunity for such a change. And while the change seemed complex, Tetra Tech wanted to do it all at once, rather than piecemeal over time. According to Davidian, "We were trying to get out of our Southern California data center, move geographically from the West Coast to the central U.S., and at the same time change from our IBM pSeries AIS RISC platform to Dell PowerEdge R900 servers with four-socket, quad-core, Intel Xeon processor 7400 series-based servers running the Oracle Enterprise Linux OS. We didn't just test one element of the transition, and then test the next element, and so on. We made the entire move—lock, stock, and barrel." All elements of the move, including converting all the data to the new platform, worked like a champ.

Virtualization Helps Reduce Costs

Using virtualization, a single server replaced up to 30 of the older servers. This meant a significant reduction in the number of servers in the data center, leading to extraordinary cost savings.

Having fewer servers brings other benefits as well. The servers use less power and produce less heat, which means less tonnage need to be added to the data center's air conditioning system.

Reliability

The current data center hardware is much more reliable. Previously, Tetra Tech experienced occasional hardware failures in its non-Intel-based environment. According to Davidian, "That has gone away. The way I quantify that is that I don't get emails or phone calls that the system is down, or requests for new hardware due to resources being oversubscribed. Support tickets aren't being generated because of hardware or OS failures." Tetra Tech's nightly processes also run faster and finish sooner.

Staffing Flexibility

Tetra Tech's IT staff became more agile as a result of the changes. Davidian says he was able to train internal staff to support the new systems because Linux staff members could install Linux on their laptops and become very comfortable with the environment, and then apply that knowledge

SPOTLIGHT ON TETRA TECH

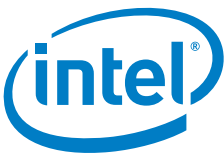
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to supporting the new servers. "Hiring someone with a Linux background is not as tough as people make it out to be," Davidian commented. "It's much tougher to hire somebody with, for example, an AIX background than it is with a Linux background." By moving away from a proprietary OS to a non-proprietary OS, staffing the data center became easier, more cost-effective, and more efficient.

Performance: Data Intensive Computing. Support the most demanding business data processing and computationally intense graphics.

Virtualization: Dynamic Resource Management. Optimize server utilization and increase agility through virtualization and dynamic policy-based resource management.

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