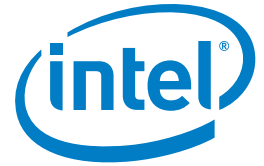


CASE STUDY

Intel® Xeon® processor 5000 and 7000 series
Data Center of the Future
Healthcare



A Healthy Change for Humana

Intel helps design and deploy a data center that packs 25 percent more servers into 56 percent of the space

For Humana, technology is vital for providing information and a full array of health benefit services to members. To replace an outdated facility, the company worked with Intel to design a state-of-the-art data center with a compact, energy-efficient infrastructure that could deliver flexibility and scalability. The new virtualized environment, which uses HP ProLiant* servers with Intel® Xeon® processors, was completed three months early and USD 2 million under budget. Packing 25 percent more servers into 56 percent of the space of the previous infrastructure, and using 16 percent less power, the data center is a sound investment that will accommodate long-term growth.



CHALLENGES

- **Enhance flexibility, scalability, and availability.** Replace an outdated data center with a state-of-the-art, flexible, and scalable infrastructure that can provide constant access to information.
- **Optimize power, cooling, and real estate.** Deploy a dense, energy-efficient infrastructure to minimize power consumption and cooling requirements.

SOLUTIONS

- **Intel expertise.** Intel engineers helped design and deploy a data center with a dense, energy-efficient infrastructure and optimized air flow.
- **HP ProLiant* servers with Intel® Xeon® processors.** The IT group selected VMware* virtualization software running on HP ProLiant servers equipped with the Intel Xeon processor 5000 and 7000 series.

IMPACT

- **Under budget.** By assisting with data center design and validation, the Intel team helped Humana complete the deployment three months early and USD 2 million under budget.
- **Flexibility for change, constant access to information.** The Intel processor-based virtualized environment helps IT deploy new services quickly and ensure high availability.
- **Less power, more room.** Humana added 25 percent more servers in 56 percent of the previous space while decreasing data center power consumption by 16 percent.
- **Sound investment.** Humana now has an infrastructure that can address immediate challenges and provide the scalability for continued long-term growth.

HUMANA
Guidance when you need it most

"Intel® Xeon® processors are the new standard for our data center. By using low-power, multi-core processors in multiple-socket servers, we can achieve outstanding performance without increasing power, real estate, or heat."

– Alan Ainsworth
Director, Data Center
Operations Administration,
Humana

Intel Helps Humana Redesign a Primary Data Center

In 2006, the Humana IT group began a data center design project to replace an outdated infrastructure. "We needed an infrastructure with better flexibility for change, scalability for growth, and availability for constant access to information," says Alan Ainsworth, director of data center operations administration at Humana. "We wanted a compact, energy-efficient design that would capitalize on the performance of a multi-core architecture while controlling power consumption and heat."

The IT group worked with Intel to augment in-house engineering resources. "The Intel team offered a wealth of real-world experience with high-density data centers," says Colin Maloney, data center operations project manager. "They also provided advanced computational fluid dynamics modeling tools that helped us thoroughly evaluate options."

The Intel team produced models for usage forecasts. "The models enabled us to validate ideas and rule out inefficient or expensive solutions," says Ainsworth. "The Intel team members were trusted advisors who helped eliminate the risk from data center design."



Intel® Xeon® Processors—The New Standard at Humana

Humana Creates a Virtualized Environment with HP Servers and Intel Xeon Processors

The new infrastructure includes a collection of HP ProLiant* blade and rack servers equipped with the Intel® Xeon® processor 5300, 5400, 5500, 7300, and 7400 series. "Intel Xeon processors are the new standard for our data center," says Ainsworth. "By using low-power, multi-core processors in multiple-socket servers, we can achieve outstanding performance without increasing power, real estate, or heat. And by standardizing on Intel, we can simplify management and continue to benefit from performance and energy-efficiency gains from future architectures without a major technology overhaul."

Using VMware* virtualization software, the Humana IT group virtualized three times more servers than in the old facility to address several goals at once. "Migrating physical servers to virtual machines allows us to run more applications in less space. We decreased rack space by 50 percent for x86 servers. We are reducing power consumption and still leaving room for growth," says Maloney. "Virtualization also makes it simpler to test new services and deploy new applications, so we can provide greater flexibility to the business."

"The ability to move virtual machines from one server to another helps improve system availability dramatically," says Ainsworth. "We can provide excellent service to our employees and our members even if hardware fails."

Intel® Virtualization Technology (VT) FlexMigration capabilities help Humana

protect its hardware investment by enabling the IT group to move virtual machines among different server generations. "With Intel VT FlexMigration, we can incorporate the latest-generation processing architectures while continuing to derive value from older hardware," says Ainsworth.

New Data Center Is Ready Three Months Early, USD 2 Million Under Budget

The extensive design and modeling work conducted by Intel enabled the project team to complete the deployment of the new data center three months early. "With help from Intel, we were able to get the deployment right the first time," says Ainsworth. "The new data center was fully operational ahead of schedule and under budget—we saved USD 2 million. But more importantly, we've made an excellent long-term investment in our business. We now have a flexible and scalable infrastructure that can meet our needs well into the future."

New Data Center Packs 25 Percent More Servers into 56 Percent of the Space

The IT group consolidated the physical footprint of the data center considerably. "We reduced the number of physical servers by 30 percent, but through virtualization, we increased the number of server images," says Ainsworth. "By using a high-density, Intel processor-based infrastructure, we have fit 25 percent more server images into 56 percent of the space of the old infrastructure. We now have a scalable infrastructure that can easily accommodate new services and new members."

SPOTLIGHT ON HUMANA

Headquartered in Louisville, Kentucky, Humana is a Fortune 500 company that provides health benefit consumer services to more than 14 million members across the United States. The company offers a diverse portfolio of products and services to employers, government agencies, and individuals.

Humana Reduces Power Consumption by 16 Percent

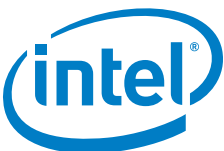
With energy-efficient servers, a dense, virtualized environment, and an advanced data center design that optimizes air flow, the IT group has significantly reduced power consumption. "By using HP servers with Intel Xeon processors, our new infrastructure is 30 percent more energy-efficient than before," says Maloney. "We have been able to decrease data center power consumption by 16 percent, even though we have increased the number of servers. We're saving money and helping to reduce the environmental impact of IT."

Humana Looks Ahead with Intel

Humana continues to refresh its infrastructure with more powerful, energy-efficient technologies. "We plan to integrate more blades and incorporate the latest Intel processing architectures," says Maloney. "The Intel Xeon processor 5500 series delivers the performance and memory bandwidth we need to virtualize applications that we couldn't in the past. This architecture will open new doors for us."

As the data center changes, Humana will continue to work with Intel engineers. "Intel is a valuable technology partner," says Ainsworth. "We will keep working with the Intel team to explore new ideas that can benefit the business and our members."

Find a business solution that is right for your company. Contact your Intel representative or visit the Reference Room at www.intel.com/references.



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