IBM

AISO.net generates big cost savings by harnessing the power of data center virtualization.

Overview

■ **Business Challenge**

While AISO.net had established itself as a leader among "Green" service providers, its rapid growth forced it to confront the challenges of rising costs and maxed-out capacity. The company needed to transform its infrastructure strategy to have more control of its resources and maintain its superior performance.

■ **Solution**

With the help of IBM Business Partner Sirius Computer Solutions, AISO.net achieved a massive consolidation of its data center resources through the use of advanced virtualization technologies deployed in an innovative fashion.

■ **Key Benefits**

• *60 percent reduction in power and cooling costs through virtualization-based data center consolidation*

• *Reduced need to invest in server hardware to accommodate customer growth*

• *99.9 percent availability through automated failover capabilities*

• *Estimated 50 percent increase in average server utilization levels*

California-based AISO.net has been a trusted name in environmentally friendly Web hosting since 1997. Using solar panels to power its data center and network, AISO.net is the first and only 100 percent completely solar-powered Web hosting company. It currently serves more than 12,000 customers worldwide. AISO.net is the first and only data center in the U.S. to be a member of the U.S. Green Building Council (USGBC).

While climate change may be a hot topic of debate, there's little doubt that companies have begun to consider environmental responsibility – along with profit and growth – one of their top priorities. Around the world, companies at the forefront of this trend have backed up their claims of environmental responsibility by adapting their business processes to make them more efficient and sustainable. Though small in number, this growing group has begun to demonstrate how environmental responsibility and profitability can walk hand-in-hand. Then there is the even rarer breed of companies that has made

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- Estimated 50 percent increase in average server utilization levels

- Incremental revenue through the ability to sell excess power generated by its solar panels back into the public power grid

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environmentally responsible practices the cornerstone of their business model. AISO.net (www.aiso.net), a provider of Web hosting services based in Romoland, California, is one such company.

The future is now

When AISO.net reinvented itself as an environment-friendly provider in 2001 – well before issues such as carbon emissions gained prominence – it was more than an expression of its founders' Green values. It also reflected what they saw as a large, untapped opportunity to provide clean computing capacity to the business community in the future, as the need to confront sustainability issues inevitably grew. To meet this opportunity, AISO.net built a 100 percent solar-powered data center in the sun-abundant California desert that employs a host of environmentally friendly practices. Today, with AISO.net serving over 12,000 customers from around the world, all evidence suggests that this future opportunity has arrived. Likewise, the fact that one of its largest customers has an image of a solar panel and the legend "Site hosted with 100 percent solar energy" at the bottom of its Web site reflects more than just cachet. It's a reflection of a meaningful shift in business values that AISO.net is optimally positioned to address.

But to get to where it is now, AISO.net never lost sight of the fact that the performance and reliability of its hosted services always matter most to its customers, regardless of how cleanly or responsibly they're delivered. While the company has always met or exceeded its customers' demands, its rapid growth was beginning to put pressure on its service delivery infrastructure. If it continued with the infrastructure strategy it had in place – built around the use of customized "white box" servers whose lack of resource-sharing capabilities made them harder to scale efficiently – AISO.net would need to build out its server capacity substantially, with a corresponding increase in its data center power and cooling requirements. This meant that to remain self-sustaining, the company would also need to invest in additional solar generation capacity, an investment that would enhance neither its bottom line nor its ability to provide better service to customers.

As Technology Manager Phil Nail explains, this calculus led AISO.net to fundamentally reappraise its infrastructure strategy. "If we stayed on the road we were on, we'd be looking at substantially higher costs but wouldn't do anything to address our most strategic issue – the ability to handle future growth, while maintaining high levels of performance," says Nail. "We decided to take a fresh look at our systems, and came to the conclusion that virtualization was a very promising path for our future infrastructure needs." After further exploration, AISO.net

identified VMware Infrastructure 3 application as the optimal virtualization software for its needs, and IBM System x™ servers – known for their standards support, ease of management and scalability – as the ideal hardware platform for the job. To develop the solution, AISO.net selected IBM Premier Business Partner Sirius Computer Solutions (www.siriuscom.com) based on its track record of creating advanced virtualization solutions using IBM hardware and VMware software.

A clean growth path

As designed by Sirius, the new solution's key attributes included a marked consolidation in hardware – with nearly 100 of its standalone servers replaced by four System x servers – as well as a major improvement in the infrastructure's overall flexibility and resiliency. What made this possible was VMware's VMotion® virtualization technology, which enabled Sirius to partition AISO.net's four physical servers into a series of linked virtual machines, across which resources can be allocated seamlessly and automatically. From an architecture standpoint, one of the key choices made by Sirius was the method by which the servers were linked to the storage area network (SAN) in the backend. While this function was typically performed by a fiber channel switch, Sirius saw an opportunity to significantly reduce the cost of the solution by instead creating a direct iSCSI-based connection, an important capability supported by the VMware platform. For the SAN itself, Sirius chose a clustered 10TB SAN solution from IBM Business Partner Network Appliance. One of the very first solution providers to follow this bleeding-edge approach, Sirius cut the storage portion of AISO.net's infrastructure costs in half.

By transforming its infrastructure, AISO.net experienced a quantum improvement in the factors it deemed essential to its long-term future success. First and foremost is a significant improvement in its redundancy and availability – a function of VMware's built-in failover capabilities – which ensures that AISO.net will continue to meet its customers' demanding performance requirements. Combined with its unmatched environmental credentials, AISO.net's 99.9 percent uptime will continue to fuel its rapid customer growth. With the new system in place, however, that growth promises to be far more profitable for the company.

Breaking the cycle

When AISO.net made the move to a virtualized data center solution, it broke a vicious cycle where customer growth spurred infrastructure growth, which in turn drove power and cooling requirements through the roof. Now, because its System x servers are partitioned by VMware, AISO.net has the flexibility to allocate computing resources in a way that optimizes hardware utilization across

Key Components

Software

• VMware Infrastructure 3 with VMotion®

Servers

• IBM System x3650 servers

Business Partners

• Sirius Computer Solutions

• VMware, Inc.

• Network Appliance, Inc.

Time frame

• Planning and vendor selection:
  four months

• Design and implementation:
  three months

Why it matters

The leading provider of environmentally responsible Web hosting services – powered 100 percent by the sun – AISO.net also set itself apart in the way it manages its technology. By consolidating and virtualizing its infrastructure, the company was able to reduce its cooling and power consumption needs by 60 percent. This not only headed off the need to invest in additional solar panels to sustain its rapid growth, it also enabled the company to sell its excess power back into the grid.

the entire infrastructure. This property – an inherent benefit of system virtual-ization – is the core reason AISO.net was able to sharply reduce its hardware requirements, which led to a 60 percent reduction in its power costs. An added benefit of AISO.net's reduced consumption has been its ability to sell the excess power it generates back into the grid, further enhancing the bottom line. Most important, it will enable the company to continue to reduce its power costs as a percent of revenue as the company grows, while at the same time minimizing the need to invest in solar power generation facilities.

In many ways, AISO.net has rewritten the book on providing mission-critical Web hosting services, and has shown the world that operational efficiency is a close cousin of environmental responsibility. AISO.net's Phil Nail also sees his company's success as an example of how IT transformation can alter the very foundations of a service provider's business model – and can radically change their prospects going forward. "We're better positioned than ever to translate our focus on environmental responsibility into rapid top-line growth," says Nail. "By incorporating the best virtualization technologies in the market into our infrastructure, we're guaranteed to handle that growth efficiently, reliably and profitably."

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