LABOR MOVEMENT

NTUC Takes A First Step Towards Utility Computing Future With VMware Virtual Infrastructure, Saves Millions While Enhancing Service

"We eventually want to move to a utility-computing model with computing power and services on tap. That way, we pay for what we use rather than being hampered with underused resources that rapidly depreciates in value. VMware virtual infrastructure is a key step to reaching that goal. VMware virtual infrastructure provides the foundation for next-generation systems infrastructure, which will put us in a good place for future growth."

— Martin Tsang, Chief Information Officer, NTUC

KEY HIGHLIGHTS

Results

- Achieved 2:1 server consolidation ratio
- Reduced data center operational costs by 20 percent
- Contained IT infrastructure and operational costs
- Simplified disaster-recovery platform
- Sped up disaster recovery from 48 hours to 4 hours

With VMware, Singapore's NTUC Estimates Savings of $1.23 Million Over 5 years and Improved Service Level Delivery

Federation of Trade Unions Implements VMware To Prepare For Next Generation Computing

The National Trades Union Congress (NTUC) is Singapore's largest a federation of trade unions, consisting of more than sixty unions, nine cooperatives, and six affiliated organizations.

NTUC's Administration and Research Unit (ARU) carries out the day-to-day work of the federation and has an IT department that not only manages its own needs, but also those of other unions and related organizations.

In 2000, ARU's IT department, which consisted of just 10 IT professionals, was responsible for 25 servers and 300 users from four different organizations. Over the next few years, however, the department began offering IT services to even more related unions and cooperatives under NTUC umbrella—such that those server and user numbers quickly increased.

By 2005, the IT department, which had not increased in team size, was responsible for 46 servers and more than 1,000 users from 29 organizations. The strain, as a result of the four-fold user increase, was considerable. To boot, NTUC's disaster-recovery setup needed improvement to shorten its recovery time.

"My vision is to eventually have a utility computing-type infrastructure for NTUC to service all our internal customers. It's about moving to the next generation of IT infrastructure that can cater for our needs for a flexible and scalable computing infrastructure," says Martin Tsang, chief information officer of NTUC.

"As such, we embarked to find a cost-effective IT infrastructure that was responsive, portable, and scalable to meet our growing demand for computing power, storage, performance, reliability, and enhancement and that enables us to fulfill our ultimate vision," says Martin Tsang, chief information officer of NTUC. "We also needed to improve our disaster-recovery times. "

With the utility computing vision in mind, initially, NTUC attempted a traditional server-consolidation approach of packing more applications onto a server. They moved five applications onto one server to try consolidating without using virtualization. This, unfortunately, only created new problems. Managing the server farm was still very taxing, and the number of servers continued to grow exponentially as new applications and organizations were introduced. Moreover, it took four to six weeks, from approval to delivery, simply to get a server.

Looking for a possible solution, NTUC turned to VMware. "We spoke to folks at VMware who shared their roadmap with us. We were reassured because we could see they had a clear plan for the future, as well as mature technology and a highly scalable solution," says Tsang.

To further investigate VMware, NTUC spoke to VMware customers in Singapore and did additional online research. "We became convinced that virtualization was the way to go and that VMware was the right company to go with," states Tsang. VMware's virtual infrastructure is the first step in Tsang's vision. As he explains, "We eventually want to move to a utility-computing model with computing power and services on demand for a highly scalable infrastructure. That way, we only pay for what we use rather than being hampered with underused resources that rapidly depreciate in value. VMware's virtual infrastructure is a key step to reaching that goal."

"In addition, by adoption virtualization, we were also able to consolidate new and existing servers into one powerful physical server. It also would allow us to integrate the disaster recovery into our infrastructure so that we could pull the resources together to obtain a more cost-effective and responsive system," says Tsang.

With its immediate and long-term needs in mind, NTUC sketched out plans in their request for proposal and invited two vendors to submit proposals. NTUC eventually decided to go with the proposal offered by Azure and IBM that, over a five-year period, would bring savings of S$1.23 million.

With budget approved, NTUC did a proof of concept with five non-critical servers in 2005. "We used VMware P2V Assistant to make a copy of five servers and then turn them into five VMware virtual machines. We next ran the five virtual machines on a VMware ESX Server for a month of stability testing," says Ngan Chee Kuan, the head of IT Infrastructure at NTUC. "Everything ran smoothly. We didn't have any problems. After the testing period, we moved all our production servers over to VMware in the course of two months."

According to Chee Kuan, the porting went extremely smoothly thanks in part to help from the expert team from Azure and IBM.

NTUC created a virtual infrastructure around VMware's core technologies: VMware ESX Server, VirtualCenter, and VMotion for managing servers centrally, provisioning new servers, and easily moving virtual machines to different physical servers as resource needs change. Currently, NTUC has seven ESX Servers with five in production that supports 42 virtual servers and two in disaster recovery. The ESX servers are used for application testing and staging, production staging, production deployment, server consolidation, disaster recovery, and remote office.

To date, NTUC has migrated almost 90 percent of its production servers to VMware. They now have 12 servers in production, down from 46. In disaster recovery, they have 4 servers, down from 10.

Virtualization Helps NTUC Contain Costs

After successfully completing the migration, NTUC achieved:

- **Faster disaster recovery and testing.**
  With the VMware virtual infrastructure in place, NTUC can recover from a disaster within four hours. Previously, recovery took 48 hours or more. "We can now run disaster-ecovery tests for new and upgraded applications anytime we want, instead of just once a year. And testing won't affect our production either," says Chee Kuan.

- **Reduced operational costs.**
  Using a virtual infrastructure, NTUC simplified its disaster-recovery system from 10 servers to just four. NTUC also moved its disaster-recovery systems back to its offices, as it requires much less space. Overall, NTUC estimated data center facility management manpower cost reduction to be about S$300,000. Disaster recovery cost savings was estimated at S$330,000 over five years.
- **Server consolidation.**
  NTUC has consolidated 46 servers to 12 servers. Over five years, NTUC estimates 26 percent savings, approximately S$420,000, in datacenter costs.
- **Savings in overhead.**
  With a VMware virtual infrastructure and a need for considerably fewer servers, NTUC is able to keep datacenter costs down, as well as rental, power, and air-conditioning costs. In terms of space alone, NTUC estimates space savings of S$180,000 because it won't need to increase the size of its datacenter to accommodate more servers.
- **Increased scalability.**
  It's much faster—it now only takes two hours—to set up a new application server. "Previously, it took six to eight weeks," says Chee Kuan. "By moving to VMware, we no longer need to undergo a costly, lengthy procurement cycle."
- **Simplified administration.**
  NTUC employs just two administrators to handle its physical servers. Thanks to VirtualCenter, management has been simplified so NTUC does not need to continually hire more administrators. "Using VirtualCenter, we can provision new virtual machines and monitor the performance of our physical servers and our virtual machines very easily," says Chee Kuan.
- **Increased availability.**
  "We use VMotion to help us increase uptime. When we see a server that appears to be having problems, we can just move the virtual machines from that server to another ESX Server. The users don't even know we're doing it," says Chee Kuan. "In addition, if a physical server does go down, we can quickly bring up another server because all we need to do is move the virtual machines to a new ESX Server. We now offer 99.5 percent availability and are looking to improve this even further."
- **Increased CPU utilization.**
  Most applications have a CPU utilization rate of 20 percent. By combining these applications on a single physical server, NTUC is able to increase overall CPU utilization rates.

"Thanks to VMware, our disaster-recovery time has improved tremendously. Not only do we enjoy cost savings but it has also resulted in a simpler, more responsive and faster disaster recovery. We now have a scalable infrastructure that allows us to expand quickly and easily. And we are able to keep hardware, manpower and overhead costs down because we need fewer physical machines," adds Chee Kuan. "We can support many more users now without having to increase the size of our team."

Towards an On-Demand Future

Now, with virtual infrastructure in place, Tsang feels he has strategically positioned NTUC for the future, “On the business front, the cost savings generated from the economies of scale reaped from VMware virtual infrastructure directly translates into lower chargeback fees for the business units. This contributes to helping NTUC achieve our goal of providing affordable, accessible, and top-quality services for the general Singapore populace, while ensuring that their information is kept safe and secure at all times.”

VMware, Inc. 3401 Hillview Avenue Palo Alto CA 94304 USA Tel 877-486-9273 Fax 650-427-5001 www.vmware.com