



## VMware Gears Up DENSO for High-Octane Growth, Cuts Costs With Server Consolidation

**DENSO Achieves 8:1 Server Consolidation, Smooth OS Migration and Increased CPU Utilization With VMware ESX Server**

### RESULTS

- Achieved 8:1 server consolidation ratio
- Built efficient test, development and production environments
- Cut server deployment time from 3 hours to 15 minutes
- Improved CPU utilization by 65 percent
- Built-in additional headroom for scaling and expansion
- Slashed server, switch and cabling expenses

### Rapid Growth Creates Urgent Need For Scalability

DENSO Malaysia Sdn Bhd (DENSO) is Malaysia's largest automotive components manufacturer and a major automotive components supplier to Malaysia's national car projects. It employs 1,200 people in production, administration and management. The 10-person IT department includes application developers and a network infrastructure team responsible for supporting more than 500 IT end users.

The company was experiencing growing pains, says Ng Sun Hock, DENSO's general manager of Information Systems. "Today, we support more than 500 end users, which is twice as many users as we had five years ago," Ng says. "As our business requirements grew, we found it increasingly challenging to manage our server numbers. Every new business application requires its own dedicated server. We expect IT requirements to double again in the near future as we roll out new applications to support our business."

The Information Systems department provides critical IT resources to support the smooth operation of both DENSO's manufacturing plant and its administrative staff. "With each new physical server, it meant more time and resources were required for monitoring and maintaining performance, availability and uptime," says Ng. As server resources were being rapidly consumed, Ng knew it was simply a matter of time before the strain on current server resources impacted the company's ability

to maintain a high service level. "We had to find an easy-to-maintain, cost-efficient and highly scalable solution quickly to maintain a high service level at all times."

### VMware Was the Clear Virtualization Choice

Ng says, "Virtualization is not a new concept to me as I used to work in an IBM mainframe environment. Being familiar with the benefits of virtualization, we wanted to find the best solution available in the marketplace that enable virtualization on an X86 platform.

After evaluating VMware ESX Server and other virtualization solutions, DENSO chose ESX Server for its proven reliability, functionality and interoperability. "VMware ESX server is the clear market leader in this space," Ng says. "It supported multiple operating systems including Linux and was a proven solution for datacenters."

Chin Kong Hoe, DENSO's senior IT executive, says VMware ESX Server had a clear edge in security — an important factor in DENSO's choice. "We found competitive solutions typically run in hosted environments that can compromise the security of the virtual machine if there is a virus attack," Chin says. "It meant constantly having to download patches to avoid security issues. With VMware software, we didn't have to worry about updating our patches or virtual machine security. It put VMware software one notch above the rest of the field."

**"From our experience, VMware software delivers on its promise and has met our expectation for server utilization and efficiency. We feel confident that we can successfully grow with VMware and leverage virtualization technologies fully for our maximum benefit."**

*Ng Sun Hock,  
General Manager of Information Systems, DENSO Malaysia Sdn Bhd*



#### VMWARE ESX SERVER AT WORK

- ESX Server, Virtual SMP, VMotion on IBM xSeries HS20 Blade 2-CPU server with 4 GB of RAM
- IBM TotalStorage DS4300 SAN connected to 700 GB of total storage
- Guest Operating Systems: Windows 2000 Server, Windows 2003 Standard Server, Windows 2003 Enterprise Server Cluster
- Production Applications include: DHCP Server, File and Printer Cluster, Lotus Domino SMTP Server, Web Server (IIS)
- Test Applications include: SQL 2000, IBM Tivoli, Oracle Database, DENSO Proprietary Applications and in-house proof-of-concept servers

Within only one month, DENSO had implemented VMware ESX Server. "Frankly, we were amazed by just how easy it was to migrate our three old production servers to our new VMware ESX server," says Chin. "Having virtual machines on demand streamlines the whole application development and server provisioning process. We can simply provision for new virtual servers on the fly and maximize server utilization levels."

DENSO first created a test virtual machine, which consisted of a cluster node for the file and print server. DENSO then created a Windows 2003 cluster that was configured on physical and virtual machine cluster nodes. This virtual machine cluster, which supported 400 GB of storage and 42 printers, worked so well that DENSO moved it into production and created additional virtual machines to support new applications.

Today, DENSO's virtual infrastructure hosts its file and print server in production, supporting Domino SMTP, Intranet Web Server and test servers for proof-of-concept applications in addition to the 42 printers.

#### VMware Lets DENSO Put IT on Autopilot and Grow With Ease

VMware ESX Server helped DENSO meet both its business and technical goals, providing benefits that include:

- **Server consolidation.** DENSO retired three physical servers and consolidated them onto one server. It created five additional virtual machines to support new and test applications. "VMware ESX Server generated cost savings" says Chin. "It freed up valuable resources and enabled us to invest the same dollars into improving other parts of our IT infrastructure."

- **Faster server provisioning and application testing improvements.** "We can provision for a server within 15 minutes compared to three hours in the past." VMware software also enables DENSO to create a safe environment to try out new applications prior to production launch.

- **Instant cost savings.** "With a single server to manage multiple virtual machines, we didn't have to invest in additional network points, switches and cabling for the additional servers created with VMware" Chin says. "That is a major benefit to us."

- **Better disaster recovery and business continuity.** Using backup software, DENSO currently backs up virtual machine images by making a copy on its SAN. DENSO can recover its servers quickly based on these images and promptly get them back online. Looking ahead, DENSO is in progress to implement new backup software that will allow direct backup of virtual machines using IBM Tivoli Software.

#### DENSO Plans to Do More

"The success we've had with VMware software has given us the confidence to push ahead and explore new ways to leverage virtualization for our business," Ng says. "We are looking forward to the launch of VMware ESX Server 3.0 and upgrading to the new version as soon as we can to take advantage of its new functionality in a bigger scale."

"From our experience, VMware software delivers on its promise and has far exceeded our expectation for server utilization and efficiency. We've achieved cost savings from server consolidation and gained scalability for our business growth. We feel confident that we can successfully grow with VMware and leverage virtualization technologies fully for our maximum benefit."

[www.vmware.com](http://www.vmware.com)

VMware, Inc. 3145 Porter Drive, Palo Alto, CA 94304 USA

Tel 650-475-5000 Fax 650-475-5001