SingHealth integrates its systems with SAP and IBM

Overview

■ The Challenge
Despite intense competition from private hospitals in Singapore and other South-East Asian healthcare providers, SingHealth aspires to deliver quality healthcare and be at the leading edge of medical excellence, while leveraging its status as Singapore’s largest integrated public healthcare group to improve services and reduce costs.

■ The Solution
SingHealth consulted IBM Global Business Services, which designed a solution based on a single outsourced data-centre running one instance of ERP software from SAP for the entire SingHealth group. IBM Global Technology Services implemented the solution on five IBM System p servers, with storage provided by several IBM TotalStorage Enterprise Storage Server systems. IBM Global Business Services is also providing Strategic Outsourcing and Application Management Services to manage the day-to-day running of data-centre.

■ The Benefits
Centralized systems allow patients to move easily from one facility to another, increasing flexibility while reducing administrative effort, speeding billing, and cutting the chance of error; single SAP solution enables enterprise-wide strategic planning; single outsourced data-centre reduces staffing costs, letting IT department concentrate on service improvement; standardized IT environment simplifies development and increases scalability.

■ Key Solution Components
Industry: Healthcare
Applications: SAP® R/3® 4.6C, SAP for Healthcare solution portfolio, including SAP Patient Management
Hardware: IBM System p™ servers, including models 690 and 670, IBM TotalStorage® Enterprise Storage Serve®, 3584 Tape Library
Software: AIX® 5L™, Tivoli® Storage Manager, HACMP, DB2® Optimised for SAP
Services: IBM Global Business Services, IBM Global Technology Services

The Singapore Health Services Pte Ltd (SingHealth) group of hospitals, speciality centres and primary healthcare clinics in the eastern part of Singapore attends to more than 3 million patients annually. The group is funded by both government subsidies and income from private patients, and looks to encourage international patients from South-East Asia and elsewhere to take advantage of the excellent medical services it provides. SingHealth employs almost 14,000 people and generates revenues of nearly US$ 1 billion.

As the largest healthcare group in Singapore, SingHealth can offer a wider range of medical services than smaller private hospitals. The group’s size also gives it an opportunity to exploit economies of scale by buying medical supplies in greater volumes, reducing operational expenses.

While most of its hospitals and clinics were using local instances of SAP software to manage their own supply chains, financial systems, human...
As each hospital and clinic ran its own data centre and its own combinations of hardware platform and software environment, the IT infrastructure was expensive to run and very difficult to scale effectively. SingHealth’s management had to make strategic decisions without the benefit of a standardized view of group-wide activities. Moreover, when a group-wide decision was taken, implementation could be a complex and expensive process, since each hospital would have to adapt its IT systems individually.

**End-to-end solution from IBM Services**

SingHealth commissioned IBM Global Business Services to come up with a solution that would consolidate and integrate its varied IT infrastructure into a single coherent platform for group-wide operations. IBM Global Business Services performed a number of cost-benefit analyses and requirements studies before designing a new architecture for SingHealth based around a single data centre running enterprise resource planning software and industry-specific healthcare applications from SAP on the IBM System p platform.

“We have worked with IBM Global Business Services since we first made the decision to implement SAP software several years ago,” says Lim Soo Tong. “Their project management and consulting services are excellent, and they really understand our business – both on its own terms and as part of the healthcare sector.”
The SAP for Healthcare software was implemented by IBM Global Technology Services, which deployed a number of IBM System p servers at a central datacentre. Three IBM p670s run all of SingHealth’s SAP applications using logical partition (LPAR) technology to provide separate servers for production instances as well as test, development and user acceptance testing environments; a fourth p670 handles disaster recovery.

The central DB2 database runs on an IBM p690, clustered with the p670 servers using IBM High Availability Cluster Micro-Processing (HACMP) software to provide high availability. HACMP takes measures to ensure that the applications remain available to client processes even if a component in a cluster fails. To ensure availability, in case of a component failure, HACMP moves the application (along with resources that ensure access to the application) to another node in the cluster.

The FlashCopy target disks are mounted to the TSM server and backed up using TSM, and FlashCopy is also used to copy data to another system for data warehouse data extraction, with zero impact on production systems. Should the database server fail, workload is automatically handled by the p670 servers while the primary server is recovered, and the data itself is stored on IBM TotalStorage Enterprise Storage Server (ESS) hardware. IBM FlashCopy and Tivoli Storage Manager (TSM) residing on the IBM ESS server handle production recovery, with an IBM 3854 Tape Library for backup and archive.

SingHealth also decided to outsource the application management of this central datacentre using IBM Global Business Services. “We decided that datacentre management was not a core part of SingHealth’s business, and that it would be better left to the experts,” explains Lim Soo Tong. “Furthermore, our cost-benefit analysis showed that outsourcing could help us realise significant savings, and IBM Global Business Services made a very attractive offer.”

**Group-wide grip on operations**

The SAP for Healthcare software gives SingHealth a much more flexible patient management system, whereby a patient who registers at one hospital can easily move to any other facility within the group without re-keying data.

“Using the SAP Patient Management application, if a patient comes to Changi General Hospital and is diagnosed with cancer, or a neurological or ophthalmic complaint, we can send the patient off to the relevant specialist centre without any duplication of registration or any chance of confusion,” explains Lim Soo Tong. “Medical staff at the specialist centre can then instantly access discharge notes made by the attending physician at the first hospital, ensuring that the patient will be treated rapidly, accurately and effectively.”

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Assistant Director of Infotech
SingHealth
With group-wide inventory management, SingHealth is able to take further advantage of its size by ordering supplies for the whole group, instead of on a hospital-by-hospital basis. Economies of scale help SingHealth keep operational costs low, increasing its competitiveness in Singapore and elsewhere.

In this way, the SingHealth cluster is able to act almost as a single super-hospital, offering a vast range of services at competitive prices – ultimately benefiting the patients.

Administrative efficiency for better service

By implementing a standardized SAP software infrastructure based around a small number of high-end IBM hardware platforms at a single outsourced data-centre, SingHealth has made considerable savings on IT maintenance and systems administration. The reduction in workload for its in-house IT staff enables them to spend more time on service improvement and system development.

The single data-centre has significantly reduced the window required for backups, and a better-planned disaster recovery strategy means that vital business data is more secure. A consolidated hardware platform helps reduce the cost of expanding processing and storage capacity as the business grows.

Standardizing the software environment also has its advantages – the group-wide deployment of new functionality is now possible without requiring each hospital’s IT team to perform a separate implementation; there is no longer any possibility that a solution that works on one hospital’s systems will not work on any of the others.

In the same way that it is now easier to put data into the system, it is also easier to retrieve it. Management decisions can now be based on accurate, real-time information about every hospital in the group; both overall trends and hospital-by-hospital analyses can be easily performed, enabling SingHealth to react more quickly to changing demands in the healthcare market.

“The consolidation, integration and standardization of our IT environment has cut costs and greatly simplified hospital management,” concludes Lim Soo Tong. “With IBM and SAP, SingHealth can offer its patients greater flexibility and better care, while reducing staff workload and keeping operational expenditure to a minimum.”

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