SK Energy improves resilience and boosts performance with SAP ERP on IBM Power Systems

Overview

■ ***The Challenge***

Oil business SK Energy found that its IT infrastructure was unable to keep up with response times demanded by business users. With the planned introduction of new business-critical SAP applications, SK Energy wanted to improve performance and implement a full disaster recovery solution. The challenge was to prepare this export-led business for future growth while minimizing the administrative costs.

■ ***The Solution***

Migrated to SAP ERP 6.0 and IBM DB2 9 running under IBM AIX on IBM Power Systems servers; implemented disaster recovery solution based on IBM System Storage DS8000 platform, using IBM FlashCopy to mirror data between two data centers.

■ ***The Benefits***

Database recovery time has been reduced to approximately 40 minutes; by using IBM FlashCopy, database backup times have shrunk from four hours to less than ten seconds – less than 1 percent of the former backup time; online response times are up to four times faster; a 90GB table reorganization now takes 2 hours and 40 minutes, a reduction of 80 percent. Improvement in system performance enables management reports to be generated and distributed more quickly; faster backups reduce downtime and ensure systems are available for productive use; full disaster recovery solution protects SK Energy from business risk.

■ ***Key Solution Components***

Industry: Oil and gas
Applications: SAP® ERP 6.0 with financial accounting, controlling, sales and distribution and materials management functionalities; SAP NetWeaver® Business Intelligence
Hardware: IBM Power Systems™ (models p5-595 and p5-570), IBM System Storage® DS8300, IBM System Storage SAN256B SAN switch
Software: IBM AIX®, IBM DB2® 9, IBM FlashCopy®
Services: IBM Global Technology Services

Based in Seoul, SK Energy is South Korea's leading oil producer, with daily crude oil production standing at 20,000 barrels. The four main business areas cover energy, petrochemicals, international development, and research. Annual sales are approximately 24 trillion won, or about US$18 billion. The company operates 25 oil fields in 14 countries, round the clock.

SK Energy has been using SAP applications to manage its business for several years. Within three or four years of first implementation, as the number of users and quantity of data grew, system performance started to suffer. It became increasingly difficult to complete backups within the overnight window, as operations conflicted with administrative tasks, exposing SK Energy to business risks.

In 2006 SK Energy started to consider replacing or upgrading its ERP and database management systems, as well as all related hardware, and set about revitalizing the SAP application landscape. The company wanted to

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Jung-Ho Yu, Assistant Manager of ERP Solution Consulting Team, SK Energy

reduce overnight system backup time, introduce a failover and disaster recovery solution, improve system performance and introduce new SAP applications.

SK Energy's SAP applications are a core part of its business infrastructure, comprising around 42 related systems together with 248 interfaces. It is one of the largest ERP systems in Korea, using specialized industry modules such as the SAP for Retail and SAP for Oil and Gas solutions, as well as accounting, purchasing, sales, inventory control and logistics functions.

The SAP applications connect directly with the point of sale systems in 800 SK gas stations, as well as independent OK mart and Speedmate outlets under SK Energy's direct management. For filling stations, the tax calculations and unit conversions are not the same as in standard retail outlets, adding to the complexity of the point of sale integration.

Director Jong-Pil Lim says, "As there were many varied businesses and data which needed to be connected between the new and old systems, integration was a real challenge. IBM was central to making this possible."

Leveraging IBM expertise

The company engaged IBM to review its infrastructure and implement a new solution. The program started by replacing old, expensive mainframe hardware with high performance IBM Power Systems servers, based on IBM POWER processors servers.

To reduce complexity and improve total performance, the existing mix of databases was replaced with IBM DB2 as standard, and business systems were migrated to a solution based around the SAP ERP application and the SAP NetWeaver Business Intelligence component.

To improve system resilience and introduce a disaster recovery plan, IBM recommended and implemented a twin data center approach. The Power Systems servers are configured as a cluster using IBM PowerHA, which provides high availability and rapid failover.

If a production server at either data center suffers an outage, workload is immediately taken up by other servers in the cluster. IBM FlashCopy ensures current data is shared between the two sites, allowing continuous operation with up-to-date information.

Improving response times

With the new IBM Power Systems servers in place, system response times have reduced by some 60 percent, and many batch processing jobs are running four times faster. The high availability cluster was expected to offer full recovery on a failover server within 40 minutes, yet the actual time is as low as four minutes, a reduction of 90 percent.

SK Energy has deployed IBM DB2 Deep Compression features, which have helped to reduce the total database size. With these reduced data volumes, database recovery time, originally expected to be around two hours, has in fact been reduced to approximately 40 minutes.

By using IBM FlashCopy, which transfers data automatically from the production to the backup data center, database backup times have shrunk from four hours to just ten seconds or less – less than 1 percent of the former backup time.

"DB2 is an excellent database platform and we are completely confident in its ability to support our demanding SAP application environment," comments Jung-Ho Yu, Assistant Manager of ERP Solution Consulting Team (SAP BASIS), in charge of SK Energy's database system.

"The new Deep Compression feature is a real leap forward in terms of storage efficiency and performance."

With the new IBM server and storage infrastructure, online response times are between 2.5 and four times faster, and in one case the system is almost six times quicker. Major batch jobs run twice as quickly. A 90GB table reorganization that had taken 12 hours now takes 2 hours and 40 minutes, a reduction of 80 percent. The peak server utilization is approximately 35 percent, offering SK Energy plenty of room for workload growth.

In particular, SK Energy emphasized the excellence of DB2 for use with SAP applications. The upgrade of the DB2 version played an important role in improving response time. Jung-Ho Yu remarks, "The fact that we can change configuration without downtime, because table isolation can be carried out during normal operations, is a powerful function for administrators."

Looking to the future

SK Energy plans to increase its export-led growth. To do so, it will capitalize on the expansion capabilities of the IBM Power Systems servers and DS8000 storage system, and take advantage of DB2 to reduce database sizes while increasing performance. Jong-Pil Lim expressed his satisfaction by saying, "All of the three goals set at the stage of reviewing the upgrade – minimizing downtime, a decrease in response time to less than one second on average and integrated management of system and increased manageability – were evaluated to have exceeded the targets."

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