Shanghai Center for Bioinformation Technology Promotes Innovation with R&D Platform

Shanghai Center for Bioinformation Technology
Shanghai, China
www.sgst.cn

Industry:
Public Sector

Annual Revenue:
1 Million to 10 Million

Employees:
80

Oracle Products & Services:

Oracle Database
Oracle Real Application Clusters
Oracle Partitioning
Oracle Grid Control
Oracle Application Server

Key Benefits:

- Improved information sharing by developing an integrated platform to share and distribute scientific data and resources
- Ensured 24/7 availability through the use of stable, high performing, and secure Oracle 10*g* technology
- Accommodated increasing data volumes and user numbers with scalable solution
- Catered for differing data types and users from different fields with easy to configure and integrate platform

"A grid computing infrastructure is ideal for the Shanghai R&D Public Service Platform. Oracle 10g technology offers the high levels of reliability, stability, and efficiency required for the smooth operation of the platform." Li Yixue, Director, Shanghai Center for Bioinformation Technology

The city of Shanghai on the banks of the Yangtze River Delta in eastern China was known as the Paris of the East in the early 20th century. It continues to serve as one of the most important cultural, commercial, industrial, and communications centers in China. Shanghai is often regarded as the hub of finance and trade in mainland China.

In July 2004, the Shanghai Municipal People's Government launched an initiative to encourage and enhance scientific and technological innovation in the city. As part of this initiative, the government developed and implemented the Shanghai R&D Public Service Platform.

The platform, developed using Oracle 10*g* technology and running on Red Hat Linux, is a collection and storage system for scientific and technical information and network resources. Centralizing data and applications ensures scientific organizations in Shanghai and the rest of China have easy, secure access to a repository of knowledge. Information can be shared and distributed, boosting scientific innovation in the country.

The Power of Grid Computing

The Shanghai Center for Bioinformation Technology was given the responsibility of constructing the platform. The initial design consisted of two databases of scientific and technical literature and an integrated network of scientific apparatus.

The biggest challenge facing the Center was finding a database and application platform that was highly reliable, secure, scalable, and capable of supporting a large user base and processing immense amounts of data and transactions. "Shanghai has developed the R&D public service platform to optimize the supply of professional services and reduce the costs

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and risks of innovation by capitalizing on improved security measures and integrating extensive scientific and technological resources," said Li Yixue, director of the Shanghai Center for Bioinformation Technology. "We decided that a grid computing infrastructure offered the best solution for the platform."

Grid computing offers limitless expansion, a robust framework for distributing resources, and high availability. This is especially important for scientific communities that work with vast amounts of complex data and applications, such as biological information and medical imaging systems.

In July 2004, the Shanghai R&D Public Service Platform was launched. It was the first such platform of its type in the Asia Pacific region to use Oracle 10*g* grid technology.

High Availability, Easy Scalability

The Shanghai R&D Public Service Platform is being used to share and distribute scientific and technological applications approved by the Chinese Ministry of Science and Technology. It presently offers a database of scientific literature, and the ability to share equipment and facilities, provision resources, and collaborate on projects. It provides information on a range of technical, testing, technology transfer, and start-up incubation services. There is also a support system to assist in management and decision-making.

Two leading hospitals in Shanghai are currently developing a medical imaging data sharing application to enable remote diagnosis. The application will make it possible for all patient data to be stored in a single repository. This will avoid wasting medical resources and ease the financial burden on patients. More importantly, community hospitals will be able to access the data for remote diagnoses.

Easy access and quick response times are crucial to support the large amount of users from different fields. "Reliability, stability, and efficiency are the biggest benefits of the Oracle system," said Li. "The Oracle technology ensures excellent performance even for applications with a large number of sequential data."

The diverse and fast-changing nature of scientific work means it is almost impossible to accurately predict user needs and the speed of data growth. However, the easy scalability of the Oracle 10*g* solution ensures the platform can expand easily to accommodate increases in information, resources, and applications.

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"By enhancing the way we share technical information and resources, we can keep pace with our counterparts in Europe, Japan, and the United States," said Li. "Our aim is to help China become a force in the scientific community.

"The Shanghai R&D Public Service Platform will help the Shanghai Municipal People's Government make informed decisions, undertake long-term strategic planning, and promote technological innovations, economic growth, social development, and national security," said Li.

Why Oracle?

In view of the large user base, vast amounts of concurrent processing required, and enormous quantity of data, the Shanghai Center for Bioinformation Technology set rigid requirements for the platform, including high availability, reliability, and stability, encrypted storage, and easy scalability.

Oracle 10*g* technology was considered the best infrastructure for the platform. The robust solution ensures the reliability of the various hardware, applications, database, and network components, supports comprehensive backup functions, and enables dynamic configurations, flexible integration, and effective system management.

"The Shanghai Center for Bioinformation Technology was responsible for developing, integrating, restructuring, and optimizing the R&D platform," said Li. We paid special attention to the ease of support and stability of potential solutions.

"Oracle's database and middleware products boast powerful performance, far exceeding its rivals' solutions," said Li. "They also provided solid support for a large number of users from different industries and fields and offered easy data integration."

Implementation Process

Oracle Database 10*g* and Oracle Real Application Clusters form the core of the R&D platform, which runs on Red Hat Linux. The size of the database currently exceeds 11 terabytes. The shared SAN disk storage array is connected via optical cables.

The Shanghai Municipal People's Government oversees the city of Shanghai. It launched an initiative to develop the scientific and technical capabilities of the city in July 2004.

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