

HOW ALL NIPPON AIRWAYS MAKES PROGRESS



BUILDING A "SMART DATABASE" TO IMPROVE CUSTOMER SATISFACTION



With deregulation, competition, and new carriers driving airfares downward in recent years, airlines have been forced to battle for their customers. And the competition is expected to intensify. The operation of All Nippon Airways Co., Ltd. ("ANA") has always been based on a principle that remains the goal of their business: customers come first. ANA believes that this represents the most powerful force in acquiring a superior market position and emerging victorious from the competition. Since its founding, ANA has continued to seek ways to implement a "customers come first" philosophy.

In the past, ANA used separate systems for reservations, airport services, and in-flight services to manage customer information. But difficulties in linking these disparate systems meant a lack of integrated customer information.

CHALLENGE

Provide personalized customer services

SOLUTION

Integrated customer data management using Progress® ObjectStore®

BENEFIT

Improved customer satisfaction by fully meeting requests and flexibly responding to special needs

“As we expanded routes and as our passenger numbers grew, we realized the difficulties we faced in providing personalized services. Information technology has advanced rapidly over the past several years, so we considered integrating individual customer data management to enable personalized service,” said Hajime Kaneko, Manager, IT Planning Group, Information Technology Services. “The single most important factor that led us to examine this possibility was the ANA Mileage Club, first established in 1997. The database that stored customer flight mileage information also contained basic customer information. This suggested the idea of integrating information managed by other systems with this database to provide better quality customer services.”

SUPER FLEXIBILITY AND HIGH SPEED

The project team began examining methods to integrate information from various locations into a Mileage Management database. The original design of the Mileage database had assumed that the system would be used by dedicated operators. However, given the goal of making the database accessible to general staff members, the project team realized that they needed to make radical changes in the design of the system interfaces. Furthermore, the existing design made it difficult to modify the system to allow instant retrieval of information or to process large transaction volumes. Upon recognizing these obstacles, the project team chose to develop a new system that was more suitable for data integration.

Since ANA’s core business systems ran on a mainframe, system development cycles of six months to a year had been considered normal. Another problem was that development and maintenance of relational databases proved a time-consuming task. ANA managed customer information through the multiple relational databases stored in each system. The resulting table structure’s complexity—converting various data items used by different ANA services into a single relational database—proved a major obstacle to integration. Thus, both development time and data complexity made it difficult to incorporate changes into ANA’s existing system.

“We’re especially impressed by our ability to adjust system response through tuning, without upgrading servers or CPUs. We also give high marks for the system’s stability and 24-hour, 365-day operational capabilities, which are essential for a backbone system.”

*Haruo Konishi
IT Planning Group, Information
Technology Services
All Nippon Airways*

“Although a one-year development timeframe is considered absurd today, it was a fact of life in many cases in those days. Technically speaking, engineers took the object-oriented approach and communicated based on the “object” concept, but they also had to map data into a two-dimensional table when organizing data into a database. This process was regarded to be nothing but a waste of time and money,” said Hajime Kaneko.

After numerous discussions and deliberations about possible solutions, a relational database and Progress® ObjectStore® remained candidates for a new integrated database solution. ANA chose to conduct trials in which they developed the same database in both environments and obtained benchmark results for a number of test cases. After careful examination, ANA gave high marks to ObjectStore because it did not require development of object-relational mapping code (a requirement that reduced the development efficiency of relational databases). Unlike the relational systems that use SQL, ObjectStore enabled ANA developers to perform data insertions, updates, queries, and deletions with programming language commands with which they were already familiar. By allowing data to be stored in a format accessible to applications, ObjectStore reduced development costs, improving productivity, and allowing developers to devote themselves to the business logic.

ObjectStore also incorporates a Cache-Forward™ Architecture (CFA), a patented technology that adds a data cache function to the application server. CFA enables memory-based data access from the cache, offering a significantly faster response than relational databases, which must concentrate processing loads on backend devices such as legacy and database servers.

Said Hajime Kaneko, “The results of the trial operations verified that ObjectStore responded significantly faster. Moreover, since ObjectStore can create a single customer information object that correlates different customer information, it can handle structures of growing complexity. It also met our requirements, including quick development time, to allow necessary data items to be added without interrupting existing services. For these reasons, we selected ObjectStore.”

DEVELOPING THE SOLUTION

The project was implemented in stages.

- > The first stage involved designing the database that forms the system foundation, gathering data from other applications.
- > The next stage called for correlation of the data to provide the customer information that was needed to support customer care requirements in each department. This effort achieved centralized management of customer attribute information, based on data that had been dispersed among different systems. At this point, full-scale use of the database began.
- > Currently underway, the final phase will provide detailed, personalized services and enhanced customer satisfaction through programs like the new ANA SKY WEB site.

SYSTEM CONFIGURATION: THE CACHE-FORWARD ADVANTAGE

ANA's new system incorporates ObjectStore at the center of a multi-tiered solution with hot standby redundancy achieved through deployment of two application servers and two database servers. The distributed architecture maximizes the advantages of the ObjectStore CFA. Since CFA retains frequently required information in the application server cache while ensuring data integrity, it eliminates the need for data calls to the database server each time data is requested by a client. The needed data is retrieved immediately from the application server cache.

Each data attribute is assigned a tag, and the ObjectStore Dynamic Data Modeling function can process a complete series of relationships associated with the tag. Such data modeling allows on-the-fly addition of new attributes and changes to existing attributes, facilitating the incorporation of new services. ANA terms this distributed, multi-tier system based upon ObjectStore a "Smart Database" and regards it as a crucial backbone for bolstering customer service. The Smart Database has transformed ANA's previous system—which was inflexible and required long development

cycles—into a system that easily incorporates changes with on-line modification to the data models.

EVALUATION OF THE NEW SYSTEM

“Some two years have passed since the new system began operating. During that time, the number of ANA Mileage Club members has doubled, but the new system continues to offer satisfactory response for smooth business operations,” said Haruo Konishi, IT Planning Group, Information Technology Services. “We’re especially impressed by our ability to adjust system response through tuning, without upgrading servers or CPUs. We also give high marks for the system’s stability and 24-hour, 365-day operational capabilities, which are essential for a backbone system.”

By operating the ObjectStore engine inside the application server, CFA has improved the responsiveness of the application’s clients. This has proven one of the great benefits achieved by ObjectStore. What it means in actual operation is that the new system allows staff members within various departments to flexibly respond to the specific needs of their customers.

“Our ultimate goal is to create customer delight that exceeds the conventional understanding of customer satisfaction. Simply put, we want to provide services that achieve both customer satisfaction and emotional fulfillment,” said Hajime Kaneko. “We can deliver satisfaction to customers by fully meeting their requests, but providing emotional fulfillment requires offering services that exceed expectations by a step or two. The goal of this new system is customer fulfillment. When we can share emotional fulfillment with our customers and create a delightful experience for them, we know that our services are superior to all others.”

To create services that deliver this kind of “emotional fulfillment,” ANA redesigned its official Web site, ANA SKY WEB. The ANA PASSPORT reservation service uses interactive Flash technology to offer both an enjoyable experience and easy flight booking. Such services are part and parcel of ANA’s commitment to its “customers come first” philosophy.

SUMMARY

Delivering effective customer care can be a critical differentiation in markets where the product or service is available from a number of competitors. In the highly competitive world of airline travel, ANA has fully embraced a customer care philosophy that goes beyond “satisfaction” to embrace “emotional fulfillment.” That high standard of commitment is being met with the aid of ObjectStore. By delivering a robust, flexible customer data management solution, ObjectStore has helped ANA create a truly Smart Database that assures its customers that they do indeed come first.

PROGRESS SOFTWARE

Progress Software Corporation (NASDAQ: PRGS) is a global software company that enables enterprises to be operationally responsive to changing conditions and customer interactions as they occur. Our goal is to enable our customers to capitalize on new opportunities, drive greater efficiencies, and reduce risk. Progress offers a comprehensive portfolio of best-in-class infrastructure software spanning event-driven visibility and real-time response, open integration, data access and integration, and application development and management—all supporting on-premises and SaaS/cloud deployments. Progress maximizes the benefits of operational responsiveness while minimizing IT complexity and total cost of ownership.

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