

**Rebuilding a Core System for an Entire Group Using SAP® R/3®
JP1 Automates Job Operation on a Massive Scale**

In October 2002, Japan Air Lines Co., Ltd. (JAL) and Japan Air System Co., Ltd. (JAS) merged to form a new JAL Group, Japan Airlines System Corporation. A project called "e-JAL," with the goal of "computerizing all aspects of the corporation," had been in progress since 2000. As part of this project, the group rebuilt its core system using SAP® R/3®, establishing a business infrastructure that supports the entire group. As the foundation for job operation, this system uses JP1, Hitachi's integrated system operation and management middleware. JP1 not only automates the execution of jobs in SAP® R/3®, but also establishes job linkage with a mainframe to create a highly flexible system foundation.

USER PROFILE

Company name:	Japan Air Lines Co., Ltd.
Headquarters:	JAL Building, 2-4-11 Higashi-Shinagawa, Shinagawa-ku, Tokyo
Established:	August 1951
Capital:	188.5503 billion yen
Number of Employees:	16,486 (as of the end of May 2002)
URL:	http://www.jal.co.jp/en/
Business overview:	In October 2002, Japan Airlines System Corporation was established through the merger of Japan Air Lines Co., Ltd. and Japan Air System Co., Ltd., to create the JAL Group. The JAL Group's corporate philosophy is: "We, the Japan Airlines Group, a global air transport enterprise, will act as a bridge to bring peoples, their cultures, and their hearts closer together, and thus contribute to world peace and prosperity." Under this corporate philosophy, the JAL Group strives to make even domestic travel more convenient while enhancing its international competitiveness.

**Toward Complete Business Computerization
Rebuilding the Business Infrastructure Using SAP® R/3®**

Large corporate groups want to optimize resource use. This is one of their most important management issues. As a corporate group grows larger, the total volume of available resources increases; but at the same time, the walls between individual corporations prevent information from flowing efficiently. Poor information flow can make it difficult to get a picture of the organization as a whole and creates the risk that resource use rate will decline, which could lower the competitiveness of the entire group.

To minimize that risk, JAL Group turned to Information Technology (IT). The group has been working on its e-JAL project since 2000, with the goal of "computerizing all aspects of the corporation."

The first step was to build a system called "e-Workstyle," which provides IT support for regular employees' work. The system offers e-mail capability, an employee directory, computerization and information sharing, Web-based e-learning, and a decision-process workflow.

At the same time, the core business systems, which had been separate for each individual company, were integrated into a single system for the entire group. The new system has been in full-scale operation since April 2002, and consists of a standard user interface and an integrated database implemented with ERP. JAL Group chose SAP® R/3® for the ERP package. Using modules such as Finance & Accounting (FI), Control Accounting (CO), Inventory/Procurement Management (MM), Human Resources Management (HR), Consolidation (ECCS), Electronic Procurement (EBP), and Data Warehouse (BW) means that a single instance can support multiple companies.

Additionally, a business application called "e-Office" is built on the core system, with e-CSM and e-CRM installed on the supply and customer sides, respectively. This application optimizes the entire process from procurement to customer service. It has broken down the barriers between corporations, and, at the same time, has succeeded in reducing the system maintenance load, which used to be the responsibility of the individual companies.

Because the SAP® R/3® business infrastructure supports the entire group's work, it must be extremely reliable. It is in continuous operation: 24 hours a day, 365 days a year. This is the same level needed by reservation systems and operation systems, functions that are vital to all airlines.

Using JP1 to Automate Job Operation The Mainframe Link is Key

Mr. Yasuhito Adachi, JAL IT Manager, says, "Achieving this service level naturally requires a very high caliber of system operation."

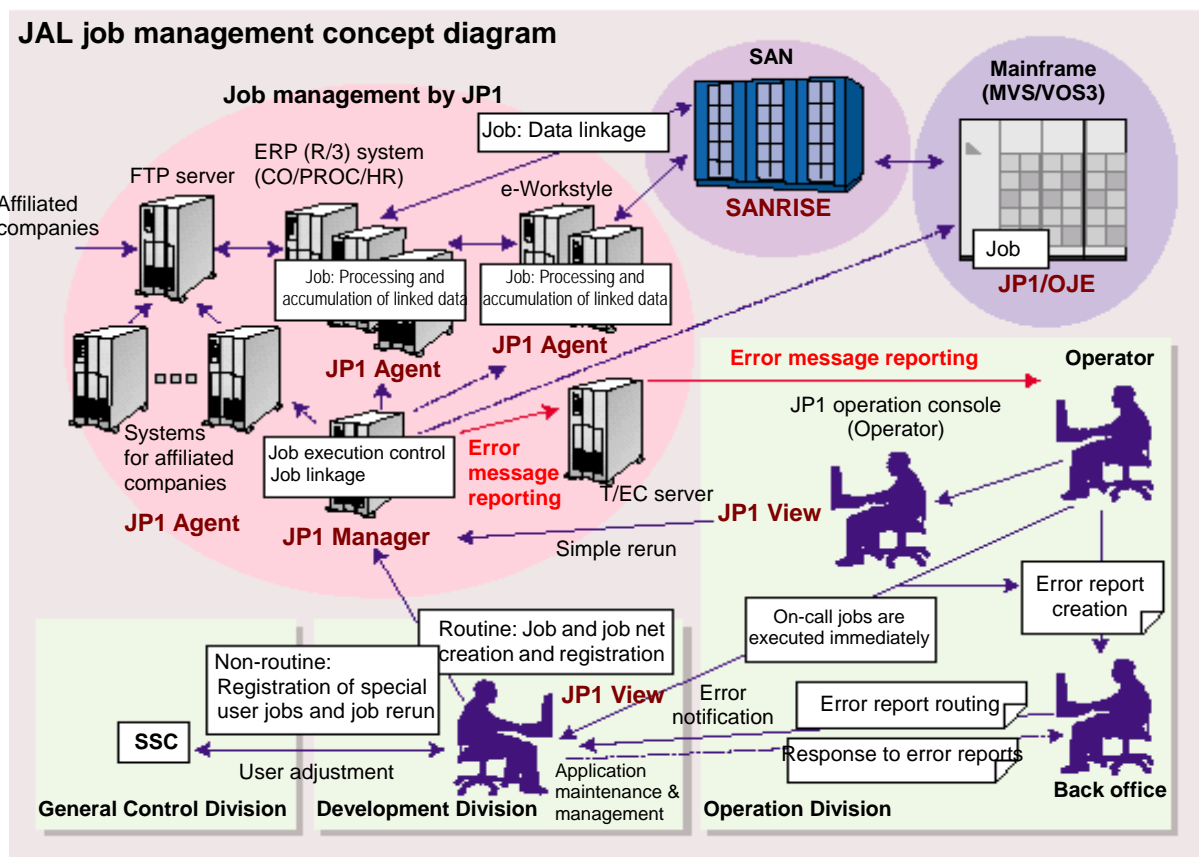
For example, facilities had to be installed in the same room as the mainframe, along with dedicated racks and redundant power supplies. Vendor's maintenance personnel had to be on-site permanently to monitor performance and manage modifications. Security and backup had to be automatic and reliable using integrated management tools.

How jobs are performed is a critical factor in achieving mainframe levels of performance. Running a core system continuously and efficiently requires execution of a massive number of batch processes. Trying to do this manually would cost too much and also would increase the risk of human error. Therefore, automation of job operation and a mechanism for monitoring operating conditions become essential.

JP1 is the perfect choice for these operational requirements. According to Mr. Adachi, one of the most important reasons the group chose JP1 was because it can easily implement the job operations that link SAP® R/3® with a mainframe. The JAL Group continued to use the mainframe, even after the core system based on SAP® R/3® was fully operational, meaning that job operations linking SAP® R/3® with the mainframe were essential.

In the JAL system, JP1 Agent was installed in the SAP® R/3® server and JP1/OJE* on the mainframe to forge a link between the two. Data is linked via SANRISE, the Hitachi disk array subsystem. Additionally, JP1 Agents were installed in systems intended for affiliated companies as well as in the e-Workstyle system to support employee information needs. Job linkage is also possible with these systems.

The job net, with jobs running on multiple systems, can also be viewed at a glance on a graphic screen. The group's IT professionals report that this had made it easier to design job linkage.



Powerful Scheduling Facility

Superior User Interface

Mr. Adachi also points out that JP1 has a more powerful scheduling facility and a better user interface than other job management products.

He adds, "JAL has been using JP1 for job management for a long time, and I have been very satisfied with its performance record. The fact that JP1 has become the de facto standard for job management products in Japan also gives us a sense of security."

Job management is centralized on JP1 View, so that new jobs can be initiated by specifying its start date/time, or after verifying completion of the preceding job, or after detecting an event such as file creation or update. Once a job is started, an information-level message is generated inside JP1, and a similar message is also generated when the job is successfully completed. The status of each job is recorded in each server's log.

The facility for monitoring system operation status is implemented using Tivoli; JP1's job management facility also works with Tivoli. If a job is not completed successfully, a message is sent to Tivoli. If the situation requires that an operator take immediate action, a "Critical"-level message is sent, and its content is also displayed on the console. In contrast, when job termination does not require immediate action, a "Warning"-level message is sent, and its content is not displayed on the console. If a job times out, either a Critical- or Warning-level message is sent to Tivoli, depending on the effect of the time-out.

Executing Massive Numbers of Jobs Reliably

Powerful Tool for Integrating JAS

There are over 18,000 jobs running throughout JAL Group's system. On average, 5,000 jobs must be executed concurrently, with the number rising to as many as 8,000 during peak periods. Despite this heavy load, the system runs in an extremely stable manner. This is possible because JP1 has a facility that controls the number of jobs that are executed at any one time.

JAL completed its management integration with JAS in October 2002, with system-wide integration continuing steadily. Integration of the accounting systems, the very foundation of business management, is planned for the spring of 2003. This will require an additional 8,000 computing jobs. As a result, the total number of jobs is expected to increase to nearly 27,000. However, because JP1 is highly stable, Mr. Adachi says that he is not concerned about this increase.

His comment: "I think that selecting JP1 as the system for supporting ERP operation was the right decision. With JP1, we established a foundation that can flexibly cope with the changes that occur in our business. From now on, I want to promote the effective use of management resources through smarter use of JP1."

*JP1/Open Job Entry

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