



# Japan Airlines: Building an e-business on IBM Technology

## An IDC e-business Case Study

### THE RESULTS

*"We have found the Internet to be an outstanding medium for establishing deeper connections with our customers...One of the outstanding characteristics of the Internet is speedy communication. We consider this ability to conduct speedy communication to be our most trusted weapon."*

### THE GOAL

NEAR-TERM:

To establish closer and stronger customer relationships.

LONG-TERM:

To increase customer retention rate and to stimulate travel volume.

### THE ORGANIZATION

VITALS:

The largest airline in Asia, JAL employs nearly 20,000 worldwide and operates in 109 airports in 30 countries. In 1999, JAL carried nearly 33 million passengers.

### THE SOLUTION

PROFILE:

Internet-based Reservation System

KEY ELEMENTS:

IBM WebSphere Application Server, IBM DB2 Universal Database, IBM RS/6000, IBM S/390

IMPLEMENTATION TEAM:

IBM Global Services and JAL IT Staff

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### The Solution

#### Software

- IBM WebSphere Application Server
- IBM DB2 Universal Database
- IBM MQSeries
- IBM Net.Data
- IBM TPF Operating System

#### Servers

- IBM RS/6000
- IBM S/390 Parallel Enterprise Server

#### Services

- IBM Global Services

#### The Benefits

- Higher customer satisfaction
- Increased customer retention rates
- Increased travel volume
- Faster and more efficient communication with customer base

After launching its Web site in 1995, JAL soon began exploring the opportunity to launch e-commerce services via the Web. Key business drivers of JAL's e-business strategy was the desire to position itself at the leading edge of e-commerce to gain first-mover advantage. A more specific goal was to use Web-based e-commerce as a means of further developing its domestic travel business. Its first initiative was to develop a Web-based ticket information and reservation system that allows customers to make, confirm and cancel reservations, as well as to view information on flight schedules, space availability, and arrival and departure information. Built almost entirely with IBM technology with major assistance from IBM Global Services, the solution has been continually augmented, adding such features as ticketless domestic reservations with credit-card payment capability.

In selecting IBM as the primary technology vendor for its advanced Web-based service deployments, JAL cites e-business experience and technology expertise as the key decision drivers. JAL sees the strength of its relationship with IBM as a function of both IBM's technology expertise and its strong knowledge of the airline business. Taken together, these two factors have allowed JAL and IBM to construct complex e-business solutions within a very short timeframe.

IBM's technology underpins nearly all of JAL's e-business service offerings, including its most recent e-business solutions. JAL's Web architecture employs IBM hardware, software, and middleware, all of which interact with IBM-based legacy systems. JAL sees IBM's most crucial role as facilitating the integration between the various Web servers running the reservation systems and the S/390 host, as well as optimizing the synchronization of data between the servers and the host through a realtime, seamless linkage.

JAL's Web-based services have been widely adopted by its customer base, with the number of customers making Internet-based reservations doubling every year. At present, JAL estimates that Internet-based reservations account for more than 10 percent of its total reservations. JAL has reaped a wide range of business results from its e-business initiatives, including an increase in both domestic and international revenues and substantially improved customer satisfaction.

### ► Business Drivers of JAL's e-business Evolution

In addition to being Asia's largest airline, Japan Airlines ("JAL") has also emerged as one of the leading e-business innovators in the Asia Pacific region. Employing nearly 20,000 worldwide and operating in 109 airports in 30 countries, JAL carried a total of nearly 33 million passengers in 1999, generating revenues of ¥1,167,681 million (US\$10.7 billion). The roots of JAL's e-business evolution extend back to 1995, when it first launched its home page on the Web ([www.jal.co.jp](http://www.jal.co.jp)). Like the vast majority of companies that established a Web presence at that time, JAL's home page served as a supplement to its advertising activities.

#### Key e-business Goals

##### Japan Airlines

"From the beginning, we have intended not simply to deliver information to our customers, but to be interactively connected with them. We see personalization technology and targeted communications as an important future tool in our attempts to attract customers and to strengthen our interaction with them."

—Tomohiro Nishihata, Director of e-Business, Product Planning, JAL

JAL's e-business strategy continued to center on information delivery until late 1995, when it began examining the opportunity to launch e-commerce services via the Web. JAL's initial movement toward e-commerce was driven by its own internal assessments that the Internet would before long assume a prominent role in the airline industry overall. The changing regulatory climate in Japan also played a factor in shaping JAL's e-commerce strategy. Specifically, in the wake of an airline industry deregulation program completed in February of 2000, JAL saw a means of maximizing profit opportunities in its domestic market by creating a Web-based ticket information and reservation system that would streamline its reservation cost structure.

The result was JAL's Internet Flights Reservation Service, which was first introduced in July 1996 and marked the first major stage of JAL's e-business evolution. In addition to making, confirming and canceling reservations, the JAL solution provides information on flight schedules, space availability, and arrival and departure information (for both domestic and international routes). Built almost entirely with IBM technology—with major assistance from IBM Global Services—the solution has been continually augmented, adding such features as ticketless domestic reservations with credit-card payment capability. More recently, JAL bolstered its reservation and travel information capabilities when it introduced its i-mode service, which enables customers to use JAL's Web services via a cellular telephone.

### ► Key Goals of JAL's e-business Evolution

In aggressively pursuing e-business opportunities, JAL seeks to solidify its customer relationships. As Tomohiro Nishihata, JAL's Director of e-Business, Product Planning explains, JAL's goal has been to engage its customers by stimulating interactivity. "From the beginning, we have intended not simply to deliver information to our customers, but to be interactively connected with them," says Nishihata. "We see personalization technology and targeted communications as an important future tool in our attempts to attract customers and to strengthen our interaction with them."

In addition to forging closer bonds with customers, e-business technology is also seen by JAL as a strategic marketing tool. Specifically, JAL sees a strong opportunity to leverage the information gained through its various Web programs as a means of attracting and keeping "high-value" customers. Nishihata views JAL's Cyberflash—an e-mail messaging service that targets JAL's frequent flyer program members—as an excellent example of this. "Ultimately, our goal is to increase the number and the quality of our JAL Mileage Bank membership base," says Nishihata. "We have been able to do this by using our messaging programs to promote new services." JAL has also leveraged its e-mail program to strengthen its service development effort by channeling customer suggestions into new services.

## Why JAL Selected IBM

### Key Decision Criteria

"If we had selected any other vendor—even one with comparable technologies—our feeling is that we would have had to spend much more time explaining our business processes. The shorter development time that IBM affords us is very important to us."

—Tomohiro Nishihata

In selecting IBM as the primary technology vendor for its advanced Web-based service deployments, JAL cites e-business experience and technology expertise as the key decision drivers. "The strength of our relationship with IBM is not only a function of its outstanding technology—but also their strong knowledge of the airline business," says Nishihata. "If we had selected any other vendor—even one with comparable technologies—our feeling is that we would have had to spend much more time explaining our business processes. The shorter development time that IBM affords us is very important to us."

Naoto Honda, JAL's Director of System Planning, Information Systems, agrees: "IBM has the technology and the technical ability. They will do or design whatever we need, and we know it will be reliable. IBM has the unique ability to transform the way key business processes are carried out by combining the Web and information technologies. The fact that the implementation went as smoothly as it did, despite the solution's complexity and the project's short cycle, was a testament to the strength of IBM."

Nishihata is also quick to point out the cost-side benefits of working with IBM relative to other technology vendors. "Our experience has shown that by working with IBM we have consistently held down our deployment costs for e-commerce solutions," says Nishihata. "We believe this reflects IBM's superior knowledge of the e-commerce domain as well as more fundamental skills such as planning and project management. In our experience working with IBM, we have received much more value for our investments."

## New Developments

### ► JAL's Recent and Current e-business Initiatives

JAL's most recent initiative, JAL Online, is a B2B e-commerce solution targeted to domestic businesses whose services extend beyond flight reservations to include hotel services and the ability to pay via a corporate credit card. Introduced in June 1999 and now on its second version, JAL Online has been adopted by more than 1,000 companies in Japan. According to Nishihata, JAL selected IBM to develop the solution because it trusted IBM to deliver a fast, reliable implementation. "The top priority for this project was speed," says Nishihata. "After discussions with several vendors, it became clear to us that IBM was the provider with whom we should partner."

In late 1999, JAL introduced its i-mode service, which allows customers to use a cellular telephone to make, confirm or cancel their reservations—or to buy tickets via a credit card. Nishihata views JAL's primary motivation in introducing its i-mode service as the desire to offer its customers higher levels of convenience. "Under one scenario, we see our customers mixing their mobile telephones with their home PC," says Nishihata. "For example, they may use i-mode to confirm or cancel the reservations they have made on their home PC." Nishihata reports that the number of customers buying tickets via i-mode has more than doubled in the first half of 2000, an adoption rate he calls "very significant."

**Figure 1:**  
**Implementation Timetable for JAL's e-business Solutions**

	1995	1996	1997	1999	2000
JAL Web site launched	■				
Introduction of Internet Flights Reservation Service (Domestic)		■			
Introduction of Internet Flights Reservation Service (International)			■		
Introduction of Internet Flights Ticketless Service (Domestic)			■		
Introduction of JAL Online and i-mode services				■	
Introduction of version 2 of JAL Online					■

Source: JAL and IDC



► **IBM Technology: the Bedrock of JAL's e-business Infrastructure**

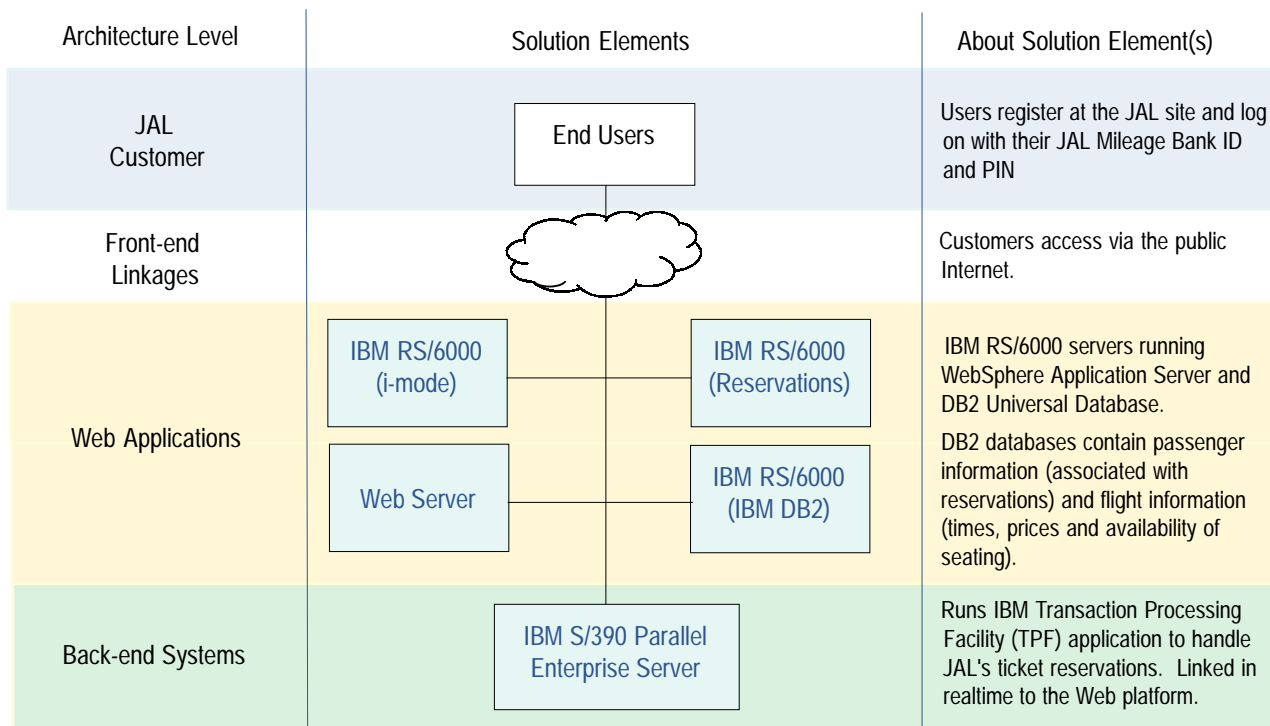
IBM's technology underpins nearly all of JAL's e-business service offerings, from its earliest flight reservation systems to the latest JAL Online and i-mode service offerings. The Web architecture of JAL's reservation platform was built using IBM hardware, software, and middleware, all of which operated on top of JAL's existing host-based IBM Transaction Processing Facility (TPF) application. An IBM operating system optimized for powering highly scalable, mission-critical computing platforms such as JAL's ticket reservations, TPF is used by more than 90 percent of the world's airlines.

Hardware for JAL's initial on-line reservation solution is comprised of an IBM RS/6000 Web server (running what is now called WebSphere Application Server) that is seamlessly integrated with an IBM S/390 Parallel Enterprise Server (running the TPF application discussed above). The RS/6000 also houses two separate IBM DB2 Universal Databases, within which are stored both passenger information (associated with reservations) and flight information (times, prices and availability of seating). Other key elements of the solution include IBM Net.Data, which converts customers' browser inputs into SQL statements that are directed at the database. The newer elements of JAL's Web solution, such as i-mode and JAL Online, also run on a series of IBM RS/6000s, each of which is integrated with the S/390 running TPF.

Nishihata sees IBM's most crucial role as facilitating the integration between the various Web servers and the S/390 host. It is at this point in the architecture—where the server updates the host with the most up-to-the-minute data—that IBM's development expertise was indispensable. "The most important functional requirement we have for our reservation system is synchronization of data between the reservation servers and the host, where we control our inventory of available capacity" says Nishihata. "IBM delivered on this key aspect of our solution by providing a realtime, seamless linkage. This integration created a win-win situation, in which our customers now benefit from the convenience of the Internet, while JAL benefits by successfully responding to changing business demands and speeding the delivery of new applications and services."

Nishihata also lauds the performance of the specific IBM technologies that have been the building blocks of JAL's solution. "We have always been very satisfied with the performance of our [IBM S/390 running TPF] host system, which has delivered the robustness and scalability that an operation like JAL requires," Nishihata says. "When we made the move toward a Web architecture, we demanded a similar level of performance and scalability—and the combination of RS/6000 servers, DB2 databases and MQSeries middleware has completely fulfilled our performance expectations."

**Figure 1:  
Basic Architecture of the JAL Solution**



Source: JAL and IDC



# Service Adoption and Business Results

## ► Usage of JAL's Web-based Services

Since their introduction in 1996, JAL's Web-based services have been widely adopted by its customer base, with the number of customers making Internet-based reservations doubling every year. "Based on what we've seen so far, we expect this rate of adoption to continue in 2000," says Nishihata. "At present, we estimate that Internet-based reservations account for more than 10 percent of our total reservations." He adds that when other usage of information services such as checking flight schedules and mileage are taken into account, the JAL site generally receives more than 500,000 hits daily.

In the year since JAL Online was introduced to the domestic business market, its adoption rate has been fairly rapid, with more than 1,000 companies using the system. Nishihata expects the adoption rate of JAL Online to continue to climb as new services are added to its core capabilities. In addition to hotel services, the recently released second version of JAL Online provides its users with discounts on various services, as well as the ability for companies to pay for JAL services with a corporate or individual credit card.

**Figure 3:**  
**Overview of the JAL's Business Results Achieved**

Business Process Area	Nature of Benefit	Description or Metric
Customer Service	Strengthened Relationship	Increased Customer Satisfaction Increased Customer Retention
Strategic Marketing	Increased Revenue	Increased domestic and international traffic
Customer Service	Improved Efficiency	More efficient, lower cost customer communications

*Source: JAL and IDC*



► **Business Results**

JAL reports a high degree of acceptance of its Web-based reservation solution, with over ten percent of its direct reservations (i.e., 5 percent of its overall reservation volume) made online. From April, 2000 to July, 2000, the number of online reservations increased 50 percent. As usage of JAL's Web-based reservation platform has grown, so has the resulting range of business results it has achieved. Among the most direct benefits derived from its Web-based reservation system is an increase in both domestic and international revenues. Nishihata expects the growth of JAL's Internet-based revenues to further accelerate as Internet usage and e-commerce becomes more widely accepted.

Nishihata also believes that JAL's online initiatives have strengthened its customer relationships. "We have found the Internet to be an outstanding medium for establishing deeper connections with our customers, most notably the 500,000 members of JAL Mileage Bank, our frequent flyer program." JAL has sought to deepen its customer relations by providing information and special programs such as discounts via its e-mail service. Nishihata notes that for JAL the Internet has greatly simplified the communications process in general, a factor on which it plans to capitalize. "At present, we send our JAL Mileage Bank members one or two e-mails per month and have delivered the information on new services," says Nishihata. "In the near

**Figure 4:**  
**Expected Contribution to JAL ROI by Value Chain Segment**

Cost Reduction or Cost Avoidance	Major Contribution	
Improved Productivity	Major Contribution	
Reduced Cycle Time	Moderate Contribution	Moderate Contribution
Strengthened Relationship/ Increased Satisfaction		Major Contribution
Enhanced Revenue Opportunity		Moderate Contribution
<b>Value-Chain Segment =&gt;</b>	<b>JAL Employees</b>	<b>JAL Customers</b>

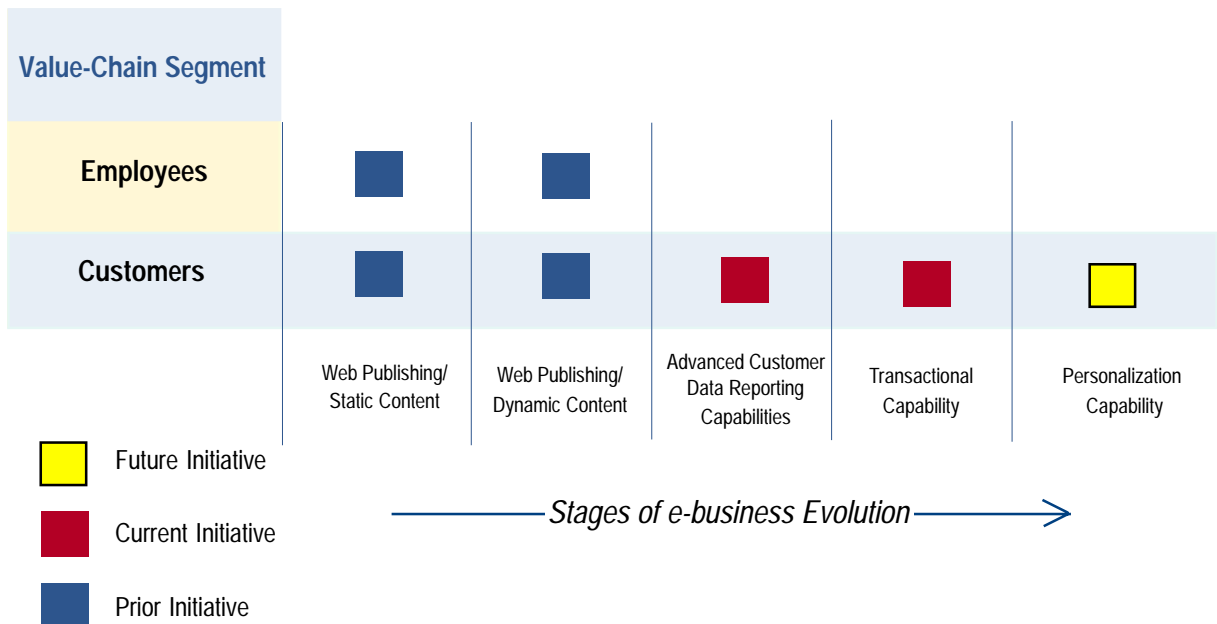
 Major Contribution  
 Moderate Contribution

Source: JAL and IDC

future, we plan on expanding this significantly. One of the outstanding characteristics of the Internet is speedy communication. We consider this ability to conduct speedy communication to be our most trusted weapon."

In addition to more frequent communication with its half-a-million JAL Mileage Bank members, JAL plans to provide more targeted information content. "We absolutely plan to add personalization to our customer communication capabilities," says Nishihata. "We are entering upon a new phase where we not only expand our channels and improve the quality of our content—but do so in a highly targeted way. By working with IBM, we hope to leverage its expertise in this and other areas at the leading edge of e-business technology."

**Figure 5:**  
**JAL's e-business Evolution and Value Chain Focus**



Source: JAL and IDC

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