Business challenge

Japan Airlines Co., Ltd. and JAL Information Technology Co., Ltd. (JAL INFOTEC) sought to become the world's most preferred and valued airline, but old and outdated IT systems prevented the business from responding to the digital shift.

Transformation

JAL Group, the parent company of Japan Airlines, has a vision: to serve as the world's most preferred and valued airline. However, an outdated IT infrastructure hindered digital transformation. To gain a flexible IT environment that evolves as business needs change, Japan Airlines and its core IT subsidiary, JAL INFOTEC, engaged IBM to build a hybrid cloud infrastructure on IBM Cloud®.

Results

Establishes an evolving hybrid cloud environment
by releasing new services every six months

Enables switching between two environments
without stopping virtual machines

Provides choice of infrastructure
depending on quality, cost or delivery that developers need

Japan Airlines Co., Ltd.

Building a hybrid cloud infrastructure to support and realize JAL's vision

Headquartered in Shinagawa, Tokyo, and part of the JAL Group of companies, Japan Airlines is a domestic and international air transport carrier of passengers and cargo through five consolidated subsidiaries and one affiliated company. Since featuring the theme of "Challenge, Leading to Growth" in its 2017 - 2020 management plan, JAL Group has developed a solution to realize the JAL Vision. JAL INFOTEC was established by Japan Airlines in 1978. As an information and communications technology (ICT) integrator and core company of the JAL Group, JAL INFOTEC provides safety, security and comfortable air transportation service solutions.

"It's great progress to provide a choice of infrastructure. It allows developers to choose depending on the quality, cost or delivery they need."

—Masashi Oshima, Hybrid Cloud Infrastructure Program Manager, Japan Airlines Co., Ltd.

Share this

An inflexible IT infrastructure

JAL Group's vision is to be the world's most preferred and valued airline. To realize this vision, the company is guided by three core principles: transform JAL into a truly global airline; create new value one step ahead of competitors; and achieve sustainable growth.

Japan Airlines and JAL INFOTEC, the company's core information and communications technology integrator, are responsible for promoting JAL Group's IT strategy and supporting the JAL Vision.

Masashi Oshima, Hybrid Cloud Infrastructure Program Manager at Japan Airlines elaborates: "JAL currently operates about 1,000 flights on 182 routes daily, with 40 million customers using those flights each year. We provide IT to support safe and on-time flights. With advanced technologies, we develop IT solutions that can respond promptly to the changes in the business environment and create new value."

However, when Japan Airlines first began planning the JAL Vision in 2016, IT fell behind in responding to the company's call for a digital shift.

"The IT role has changed with the advance of digital technology," explains Hideaki Yaze, Hybrid Cloud Infrastructure Architect at JAL INFOTEC. "But we couldn't keep up

with the change because of the infrastructure's old legacy system architecture."

Japan Airlines and JAL INFOTEC had many discussions about which applications would best contribute to the business and what kind of infrastructure would provide reliable and timely IT services. Ultimately, they decided to shift to a hybrid and multicloud environment. To this end, the company began building a hybrid cloud infrastructure called CIEL, which means "sky" in French.

Clouds with virtualization architecture

Japan Airline's CIEL cloud consists of four infrastructures:

- CIEL/J, a private cloud infrastructure based on the VMware vSphere platform, built in the existing data center

- CIEL/D, a public cloud infrastructure provided by a dedicated infrastructure as a service (IaaS) and integrated with the private cloud infrastructure

- CIEL/S, a public cloud infrastructure provided by a shared IaaS and platform as a service (PaaS)

- CIEL/manager, a hybrid cloud management infrastructure to integrally manage the operations of CIEL/J, CIEL/D and CIEL/S clouds

The CIEL cloud provides all of the infrastructures necessary to support the various services and applications JAL Group deploys to realize the JAL

"IBM assigned engineers who had knowledge and experience on both the VMware NSX and the Cisco ACI. They successfully built the virtual network just as we had pictured for CIEL and made it possible to maintain the challenging consistency between the two SDNs, which allowed us to accelerate the network automation with confidence."

—Takahiro Oguma, Vice President, Hybrid Cloud Service & Strategy, JAL INFOTEC

Vision. To build the CIEL/J, CIEL/D and CIEL/manager infrastructures, Japan Airlines and JAL INFOTEC chose IBM as a project partner and collaborated with IBM Services®.

"We gathered the requirements and asked some vendors to propose, and IBM proposed the most advanced solution at that time," says Mr. Yaze.

From the start, Japan Airlines and JAL INFOTEC planned to implement the same virtualization architecture both on-premises and on the public cloud. This strategy would allow the company to seamlessly switch between the two environments without stopping the virtual

machines. It also provides more flexibility and control over the balance of quality, cost and speed.

Under the agreement, IBM Services implemented a software-defined data center (SDDC) environment on IBM Cloud interconnected with the on-premises cloud by extending the Layer 2 (L2) network using the Cross-vCenter NSX environment. The SDDC architecture is based on VMware vSphere hypervisor, and consists of VMware vSAN for software-defined storage (SDS) and VMware NSX Data Center (VMware NSX) for software-defined network (SDN) technologies.

However, more was needed to satisfy requirements for CIEL to become the new enterprise infrastructure.

"We requested IBM to demonstrate each function through testing—not by theory—to ensure that the new environment delivered the system reliability and with the quality we needed," says Takahiro Oguma, Vice President, Hybrid Cloud Service & Strategy at JAL INFOTEC. "We put a heavy burden on IBM engineers because we did not compromise on the quality even during a tight schedule. But they accomplished their mission with success."

For the CIEL/J infrastructure, IBM deployed network virtualization to accelerate the network speed, building the network environment using two SDNs: Cisco Application Centric Infrastructure (ACI)

technology and the VMware NSX platform. Implementing the two SDNs and performing their respective functions required a high level of skill for both solutions.

"IBM assigned engineers who had knowledge and experience on both the VMware NSX and the Cisco ACI," adds Mr. Oguma. "They successfully built the virtual network just as we had pictured for CIEL and made it possible to maintain the challenging consistency between the two SDNs, which allowed us to accelerate the network automation with confidence."

The CIEL/manager cloud enhances workflows and automates routine tasks and processes using the IT Service Management and IT Operation Management applications of the ServiceNow platform.

IBM contributed greatly to the infrastructure implementation. "IBM understood our goal and supported us by proposing and implementing the best solution for JAL. IBM is our trusted partner that we can rely on," says Mr. Yaze.

Looking back on the infrastructure implementation period, Mr. Oshima appreciates the support from IBM. "We needed to combine a wide range of new technologies for the implementation, but we overcame these difficulties by building a team that cut across traditional organizations and roles. As a system integrator, IBM closely cooperated with us in a complex multi-vendor

project, flexibly addressed multi-discipline issues, and completed the project with responsibility. We expect IBM's continuous support for the operation phase."

A cloud that evolves with business needs

The CIEL cloud went operational in December 2018. Since then, Japan Airlines has upgraded the service twice a year. Previously, releasing a new service and implementing all of its requirements took a long time.

Today, the CIEL cloud reflects the company's changing business needs in half-yearly cycles.

Masahiko Obata, Hybrid Cloud Infrastructure Project Manager at JAL INFOTEC, says, "Embracing the concept of a hybrid cloud infrastructure that evolves every half year is the foremost achievement for realizing the digital transformation of the entire JAL Group."

The level of operations automation on the CIEL/manager cloud has also improved steadily. Mr. Obata describes its positive effects:

"Engineers have largely reduced their time spent on user meetings and typical operations and have focused on their primary work such as design and development.

Mr. Oguma agrees. "While the problem of an IT resource shortage is getting more serious across the industry, we are ahead in promoting a self-service and automated infrastructure. The foundation is ready for shifting the IT engineers to upstream processes such as planning and envisioning."

Mr. Oshima concludes: "It is too early to judge the quantitative effect of CIEL. But it shows great progress to provide a choice of infrastructures to users. It allows new services and applications for developers to choose the infrastructure according to quality, cost or delivery that they need."

In the future, JAL Group plans to establish a Cloud Center of Excellence to accelerate the use of multicloud in every field, including business, human resources, governance, security as well as system infrastructure. With that, CIEL will closely support service and application development on the business side to support the realization of the JAL Vision.

"Engineers have largely reduced their time spent on user meetings and typical operations and have focused on their primary work such as design and development."

—Masahiko Obata, Hybrid Cloud Infrastructure Project Manager, JAL INFOTEC

Solution components

- IBM Cloud®
- IBM Services®
- IBM Cisco Alliance

Take the next step

To learn more about the IBM solutions featured in this story, please contact your IBM representative or IBM Business Partner.

Please Recycle

IBM