Hewlett Packard Enterprise

Accelerating digital innovation

JCB becomes nimbler in adapting to change, helping it better compete and grow its business globally

Credit card company JCB has accelerated its digital transformation after recently completing a refresh of its platform for developing and verifying container applications. Together with Advisory and Professional Services from HPE Pointnext Services, JCB revamped its container orchestration environment using Kubernetes, making it more flexible and agile. It has made great progress in automating its development, verification, and deployment processes, supporting its business transformation.

Supporting innovative service development

In a fast-changing payments industry, success comes to those who are quick to adapt. And credit card company JCB Co., Ltd. has been rapidly innovating and anticipating change, enabling it to expand its global business.

Also known as Samurai cards, JCB cards have been winning a global following as the only Japan-based international brand of credit card. JCB card members have reached 140 million as of September 2020, with an annual transaction volume of more than 16 trillion yen. Much of JCB's global business comes from Asia, and recently, smartphone payment services such as QUICPay have been driving the company's growth.

"Cashless transactions have become firmly established in our daily lives, and we have come to use different payment methods, from cards to mobile payments, depending on our needs," says Mr. Ryo Kadota, senior vice president of strategic group at JCB's system planning department and system headquarters.

"JCB offers all types of payment services including prepaid, immediate, and post-paid payments. We're working at a great speed to create new value for our customers and stakeholders," adds Mr. Kadota.

Anticipating further changes in the payments market, the company has been moving quickly to adapt. It recently established an innovation management department to quickly realize its strategic business initiatives. In 2017, the company also created a strategic technology group within its System Planning Department to support these measures.

JCB

Industry: Financial services

Country: Japan

Vision

Accelerate business innovation using cloud-native technology

Strategy

Refresh its cloud-native development and verification environment using Kubernetes

Outcomes

- Enhances flexibility and agility by expanding container orchestration functions
- Advances the automation of development, verification, and deployment processes
- Enables the future deployment of hybrid cloud and multicloud with a standardized orchestration environment

"In 2020, with the support of Hewlett Packard Japan, we built a system called JCB Innovation Platform or JIP, which specializes in the development and verification of container applications," says Mr. Kanetaka Matsuya, Vice President of Strategic Group at JCB's System Planning Department and System Headquarters. "While we were advancing new developments such as mobile payments, AI, predictive analytics, and OpenAPI, we were able to get a solid understanding of the usefulness of cloud-native technology and container orchestration."

For container orchestration, JIP deployed the Mesosphere data center operating system (DC/OS) and HPE Synergy—a composable infrastructure that is capable of code control—as a platform. Together, the solution enabled JCB to meet its target results.

"JIP has achieved the same speed in allocating infrastructure resources as it has in deploying containerized applications," says Mr. Matsuya. "It's now easy to use the platform in a secure on-premises environment, which is close to a public cloud, and the style of developing applications has also changed greatly with DevOps in mind."

Enjoying the benefits of rapidly evolving Kubernetes

In 2020, JCB refreshed its innovation platform using Kubernetes as the container orchestrator. It turned JIP into a more flexible and agile environment while kicking off the automation of its development, verification, and deployment processes.

So, what drove the company to revamp the platform and adopt Kubernetes? According to Mr. Matsuya, the speed of how open-source software (OSS) is changing was JCB's main motivation.

"JIP uses a variety of OSS and each is evolving at a breakneck pace. Kubernetes, which came about in 2014, is like a representation of this trend and major cloud operators have adopted it in succession. As a result, the container orchestrator has gained a decisive position as the industry standard," says Mr. Matsuya.

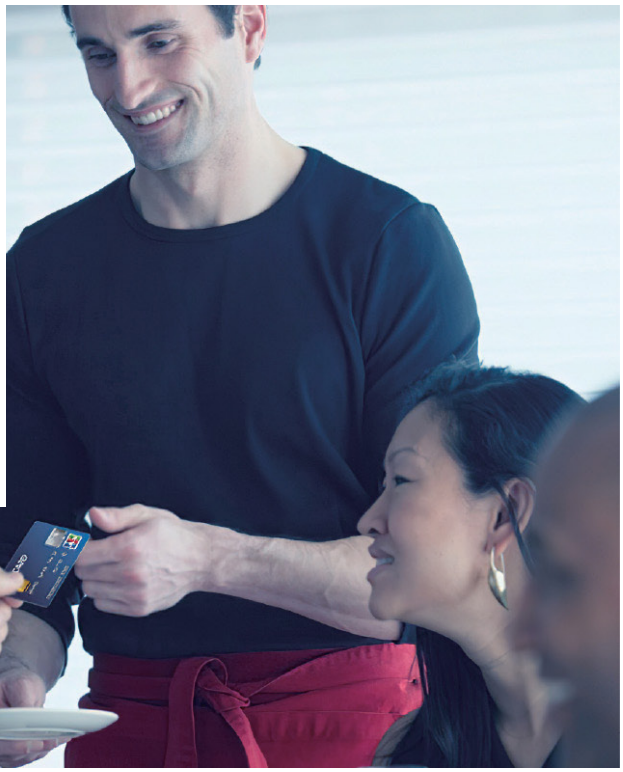
"We believe Kubernetes is essential to quickly taking advantage of ever-evolving OSS and to speeding up our development of applications to help us transform our business," he adds.

Developed by the Cloud Native Computing Foundation, Kubernetes has attracted many software and cloud vendors and is updated every three months. There are various options to introduce Kubernetes, such as commercial distributions and managed services by OpenShift. But what criteria did JCB use in selecting a Kubernetes platform?

Mr. Shogo Soejima, from HPE Pointnext Services, supported JCB's deployment of a Kubernetes platform. According to him, his team proposed Canonical's Charmed Kubernetes as the best distribution solution for JCB's second-generation JIP.

"One of the advantages of using Canonical's solution is that the client can use the system monitoring and other functions built into the first-generation JIP. It's also simple, lightweight, and cost-effective," says Mr. Soejima. "After the development and verification of the second-generation JIP, we also proposed to consider preparing the system and hybrid multicloud for demonstration experiments, production, and full-scale operation."

> "The development of innovation projects on the second-generation JIP is moving at a speed that's different from that of conventional projects. We're able to use this speed as a means to quickly realize our strategic business initiatives."
>
> – **Mr. Ryo Kadota**, Senior Vice President, System Planning Department, JCB Co., Ltd.



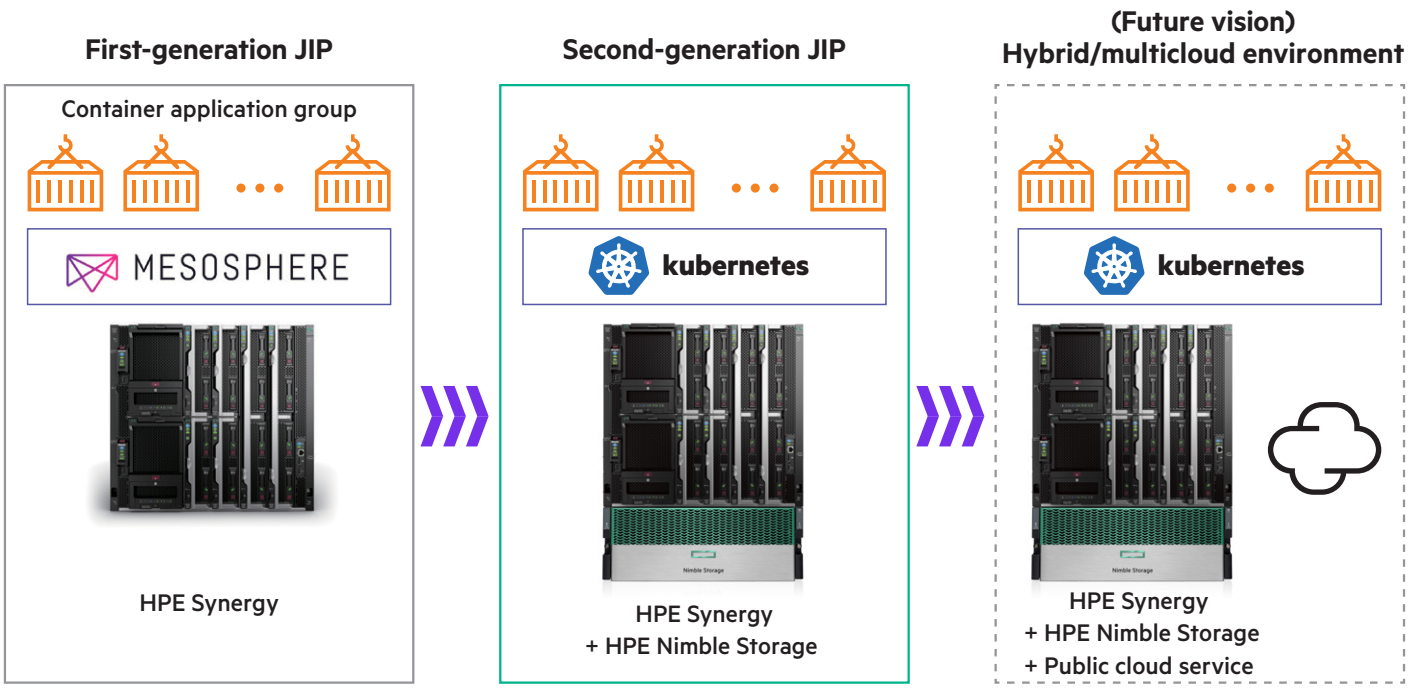


Figure 1. Transitioning to second-generation JIP and future hybrid cloud environment

Mr. Soejima's team tapped into HPE Pointnext Services' wealth of experience in building enterprise Kubernetes clusters with various distributions such as OpenShift, Tanzu, and Canonical from a vendor-neutral standpoint. HPE Pointnext Services provides complete support for the digital transformation of companies and other organizations. It has more than 22,000 IT professionals in 80 countries who offer advisory, solution development, operational, and maintenance services backed by deep expertise and diverse experiences.

"Our goal is to provide new value to our customers, and for that purpose, we develop services that use the latest technology," says Mr. Matsuya. "We need to verify uncertainties and repeat trial and error. For this reason, we believe there's a big merit in building a platform that utilizes cloud-native technology on-premises. It's important that Kubernetes is commonly provided so we can migrate and operate in the production environment right after passing through a proof of concept."

Transitioning to second-generation JIP while using existing assets and know-how

JCB had created various microservice-based container applications and unique services on its first-generation JIP—and is making the most of them now. For example, it developed an environment for communicating with customers using LINE and has multiple demonstration experiments that are still ongoing.

"Data utilization is one of the important themes of digital transformation," says Mr. Matsuya. "A data analytics environment equipped with a predictive analytics function by AI is practically used in this field. In particular, we have achieved good results in our analysis of credit card fraud detection and collection risk."

The HPE Pointnext Services team successfully migrated all container applications to JCB's second-generation JIP, along with the major OSS solutions. Notably, it diverted the existing HPE Synergy platform without any change to its configuration and performance.

The team completed the migration of approximately 50 microservices—or four systems—in six weeks.

"As we spent a lot of time to prepare in advance, the actual work took about two weeks," says Mr. Tomotake Koike, a cloud-native environment expert from HPE Pointnext Services.

"Cloud-native technology manages programs, configuration files, and libraries as image files for excellent portability and reproducibility. However, since Kubernetes and Mesosphere DC/OS have different methods for managing workloads despite being imagined as the same container, we provided an HPE solution that absorbs the difference when migrating to the second-generation JIP," adds Mr. Koike.

"We aimed to create an environment that optimizes the unique features of Kubernetes, such as deployment, resource management, scaling, and self-healing."

Mr. Ryo Kadota, Senior Vice President, System Planning Department, JCB Co., Ltd.; **Mr. Kanetaka Matsuya**, Vice President, System Planning Department, JCB Co., Ltd.; **Mr. Shogo Soejima**, FSI & Public, Account Services, HPE Pointnext Services, Hewlett Packard Enterprise, Japan; **Mr. Tomotake Koike**, Lead Architect, Hybrid Cloud COE, Hewlett Packard Enterprise

To this end, the HPE Pointnext Services team came up with a way to increase the practicality of the container by using it in combination with a virtual machine (VM). Deploying containers on VMs has many benefits, including the ability to expand the Kubernetes host for each VM and easily back up and restore data.

"The VM environment is also effective for migrating without stopping development and while running Mesosphere DC/OS and Kubernetes at the same time," says Mr. Koike.

"We have also implemented a new mechanism to optimally allocate GPU resources from Kubernetes to support AI development," he adds. "This way, we aimed for a cloud-native platform that can support the development of pipelines and the evolution of future deployments. And based on the application development team's requests, we completed the platform in a way that's easier to use, even in actual operations."

Solution

Hardware

- HPE Synergy
- HPE Nimble Storage

Software

- Charmed Kubernetes (Canonical)

HPE Pointnext Services

- CI/CD solution services
- Advisory and Professional Services

Explore more

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