

Optimizing container-based development and VM provisioning

MIZUHO Mizuho Securities

Headquarters

Tokyo, Japan

Industry

Financial Services

Size

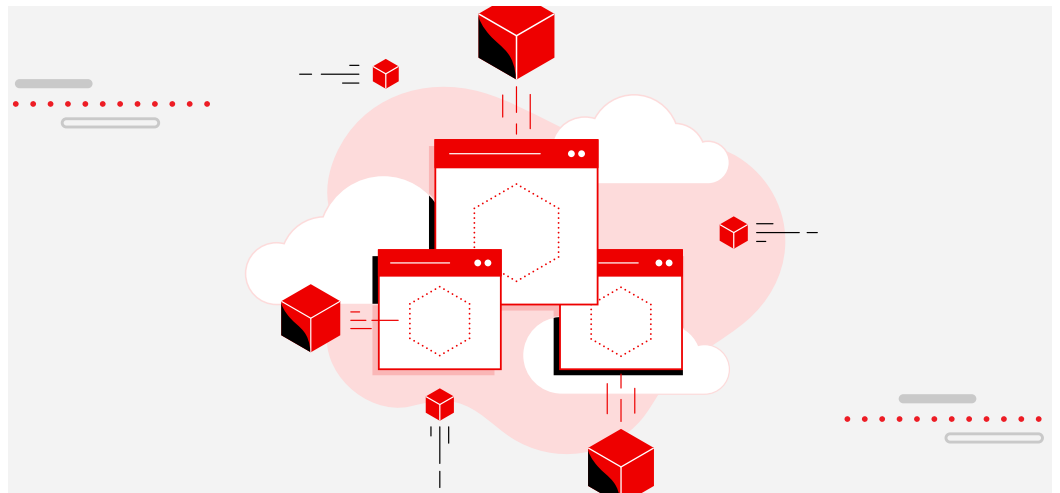
6,593 (as of 31st
December 2024)

"We go through a cycle of sprint planning for Playbook development every week, putting all tasks into the schedule and then implementing them."

Takanori Ishimura

Director, IT Service Platform Department
IT/Systems Group
Mizuho Securities Co., Ltd

Mizuho Securities' IT Service Platform Department has been working on infrastructure automation since 2017. Using Red Hat Ansible Automation Platform, Mizuho has achieved significant results, including automating over 90% of virtual server provisioning tasks and reducing average lead times to fewer than three days. It now continues to expand the automation of IT service workflows, and with the growing adoption of container-based development using Podman, included with Red Hat Enterprise Linux, Mizuho has also embarked on a process of streamlining management efficiency.



Software and services

Red Hat® Ansible® Automation Platform
Red Hat Enterprise Linux®
Red Hat Consulting

Benefits

- ▶ Achieved Automation 2.0 in VM provisioning and expanded automation
- ▶ Streamlined application development with Podman
- ▶ Automated deployment of containers and container engines

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"We believe that automation will lead to cost benefits, and we're convinced that expanding automation is a crucial theme for implementing a CI/CD environment."

Takanori Ishimura

Director, IT Service
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Automating provisioning with Ansible Automation Platform

Since 2017, the IT Infrastructure Management Department of Mizuho Securities' IT/Systems Group has achieved significant results by automating key workflows.

"Automation has enabled us to supply a wide range of IT infrastructures quickly and stably, while also reducing lead times," said Takanori Ishimura, Director, IT Service Platform Department, Mizuho Securities. "This has led to improved satisfaction among internal users and reduced workloads for the infrastructure team."

Previously, the provisioning of Red Hat Enterprise Linux (RHEL) and Windows machines was handled manually. This has now been replaced with efficient, automated workflows handled by Ansible Automation Platform, including the installation of monitoring agents and databases. More than 90% of Mizuho's provisioning work is now automated.

"Ansible Automation Platform is the core of Mizuho's automation engine," said Ishimura. "The main advantage of Ansible Automation Platform is that we can automate workflows using the Playbook feature, which can be written in YAML, a human-readable data serialization language often used for configuration files, regardless of the object."

Mizuho now has a user-friendly and capable product to promote automation. It has also expanded its unique automation by integrating various tools, such as managing source code with Git and setting up seamless notification functions with Microsoft Teams, with everything based around Ansible Automation Platform.

Over 200% year-on-year increase in successful automation job executions

Since Mizuho began its infrastructure automation initiative, the results have been remarkable. Automation jobs initiated in 2018 have consistently achieved over 200% annual growth in execution numbers, surpassing 10,000 executions in the first half of 2024 alone. The success rate for major automation jobs, such as those for VMs and database clients, has reached 82.3%, while the lead time for Linux ID applications has been reduced by an average of around 10 days over the past four years.

"The improvement cycle has firmly taken root at Mizuho," said Ishimura. "Collaboration between teams has visibly improved, and the success in various automated workflows has become a significant confidence booster for the team and other stakeholders. This has translated into proactive action to tackle the next workflow automation. Our goal is to steadily expand automation while fostering this positive cycle."

Staff members who were initially hesitant have also come to appreciate the convenience of infrastructure automation. "We have established an automated workflow for requesting Unix and Linux ID permissions, and automated applications now outnumber manual ones by more than 300%, flipping the ratio in just four years," said Ishimura. "You can feel how automation is gradually becoming ingrained in the department."

Streamlining with Podman to expand application development

Achieved Automation 2.0 in VM provisioning and expanded automation

Ishimura and the IT Service Platform Department have transformed the automation team from Automation 1.0 to Automation 2.0 in stages. "First, we changed the organization in charge of automation development," said Ishimura.

“Second, we refined the process for studying and discussing automation. We then altered our approach to automation development, before focusing on making results as visible as possible.”

On the process of studying, discussing, and implementing the organization and automation, Ishimura said: “Automation that can only be used in specific ways by experts familiar with servers and networks is Automation 1.0, and its effectiveness is limited. We’re looking for workflow automation, Automation 2.0, predicated on stakeholders being able to use automation in the same way, making the entire workflow the target of automation and transcending sectional barriers. When advancing workflow automation, we strive to ensure that all stakeholders share a common understanding.”

Automation development is carried out using scrum development. “We conduct sprint planning for Playbook development on a weekly cycle, schedule all tasks, and execute them as a team in a continuous cycle,” said Ishimura. “We then quantify and visualize the results of workflow automation. Establishing this series of improvement cycles in the team has increased its autonomy.”

As the team standardized automation methods and improved development efficiency, it turned its attention to containerization as the next automation target. “There was growing momentum for productivity improvement, so we decided that containers would be the next key technology in advancing modern development styles, such as continuous integration and continuous delivery (CI/CD),” said Ishimura.

Streamlined application development efficiency with Podman

A cross-organizational team comprising the infrastructure and application development departments handled everything from planning to standardization in promoting containerization. After extensive studies and discussions on what products to choose for the container execution platform, Mizuho ultimately selected Podman for container management, as a stepping stone for future Kubernetes use and CI/CD practices.

“In aiming for the ultimate goal of container orchestration, we considered container management tools that we could adopt right away and were easy to use, leading to the adoption of Podman,” said Ishimura. “Podman simplifies the management of complex applications and offers solid compatibility with Kubernetes. Additionally, it reduces security risks and system load as it doesn’t require a daemon to run.”

Podman also supports the concept of pods, allowing multiple containers to be managed together and making it possible to share networks and storage. “Podman has a short release cycle, frequently improving performance and adding features, so we can use it with confidence,” said Ishimura. “We customize the container environment to meet our needs using the Podman desktop GUI.”

Automated deployment of containers and container engines

Having achieved significant results by automating VM applications with the Ansible Automation Platform, Mizuho’s IT Service Platform Department has begun to automate the provisioning of Podman and necessary components using Ansible Automation Platform.

“When users apply for Linux machine provisioning and select the ‘use container engine’ option, a Linux machine with Podman installed is automatically provisioned,” said Ishimura. “Podman can manage the entire container lifecycle, including container image management, container execution, networking, checkpoint configuration, and deletion. We now plan to explore various new ways of using it.”

Establishing standardized automation and moving to orchestration

Mizuho Securities’ IT Service Platform Department has continued to explore automation possibilities, establishing an autonomous improvement cycle.

“Our immediate goal is full automation of development environment provisioning using Podman,” said Ishimura. “In the medium to long term, we are focusing on three key challenges: automating middleware provisioning, expanding IT service automation for users, developers, and end-users, and automating IT infrastructure operations, all with an eye towards container orchestration.”

While the automation team’s improvement cycle is firmly in place and future DevOps expansion is on the horizon, the fundamental approach remains unchanged. “First, it’s necessary to accurately assess the ‘as is’ situation, as I always remind our automation team members,” said Ishimura. “After that, it’s crucial to envision the ‘to be’ state, considering carefully how and who benefits when we automate a particular workflow.”

Ishimura also believes in the importance of having a range of available options when progressing automation. “When adopting Podman, if we were ever unsure about the specifications of a product or trying to decide on a best practice, we turned to Red Hat Consulting,” he said. “Together, we were always able to resolve issues quickly. Tackling each problem individually would have taken considerably more time.”

Mizuho’s challenges and practices in automation have delivered numerous benefits, including improved productivity and service quality, and transformation of development methods. Red Hat will continue to provide support to offer best practices for automation.

“We believe that automation will lead to cost benefits, and we’re convinced that expanding automation is a crucial theme for implementing a CI/CD environment,” said Ishimura.

About Mizuho Securities Co., Ltd

Mizuho Securities Co., Ltd. is a member of the Mizuho Financial Group, providing one-stop advanced financial services in collaboration with other group companies. As one of Japan’s leading securities companies, Mizuho has domestic and international locations that offer a wide range of services, from retail business to investment banking. In recent years, Mizuho has led the Japanese sustainable finance market, continuously securing the highest share in domestic SDG bond underwriting.



About Red Hat

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