

Square Enix simplifies management of online gaming infrastructure

SQUARE ENIX

Software and services

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

Square Enix has supported a consistently high number of players of Dragon Quest X Online, a massively multiplayer online role-playing game (MMORPG), since its launch in 2012. To simplify management of the IT infrastructure behind this engaging player experience, Square Enix's IT Division worked with Red Hat Consulting to replace its CentOS Linux operating system (OS) with Red Hat Enterprise Linux. Backed by Red Hat's technology experts and enhanced with Linux management and automation solutions from Red Hat, this new infrastructure has helped Square Enix resolve vulnerabilities faster, centralize server management, and create a foundation for future container adoption.



Entertainment

3,713 employees

Benefits

- ▶ Simplified operational management
- ▶ Improved IT security with built-in management capabilities
- ▶ Established technology foundation for future container adoption

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Yasutaka Nakata

Manager,
 IT Infrastructure/Business Online Infrastructure System,
 Information Technology Division,
 Square Enix Co., Ltd.



*Pictured from left:
Taro Shimada, Yasutaka Nakata,
and Yuki Miyamoto*

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Yuki Miyamoto

IT Infrastructure/Business Online
Infrastructure System,
Information Technology Division,
Square Enix Co., Ltd.

Supporting online gaming with scalable, reliable IT infrastructure

Dragon Quest X Online is the 10th installment of Square Enix’s highly popular Dragon Quest main series and the first numbered massively multiplayer online role-playing game (MMORPG) title of the series. To support a huge number of cross-platform players since the game’s launch in 2012, Square Enix’s online game infrastructure team works closely with the development team to assess operating system, server, and network performance and respond in real time to changing demand. For example, Dragon Quest X online’s unique experience structure lets players move freely between multiple virtual worlds—and continue gameplay, even midgame, while they change worlds.

“The Dragon Quest series attracts a lot of attention. Any problems have a big impact, particularly for online titles with users playing in real time,” said Yasutaka Nakata, Manager, IT Infrastructure/Business Online Infrastructure System, Information Technology Division, Square Enix. “We complete repeat testing based on predicted numerical values, but there are outliers such as unexpected response to additional specifications. With the continuous addition of online titles and version upgrades, system configuration continues to evolve—and so does the load on the OS, network, storage and database.”

To maintain the high performance expected by Dragon Quest X Online players, the online game infrastructure team sought to improve operational efficiency and support faster, on-demand resource scaling. The team also aimed to expand their Linux skills to complete complex troubleshooting and resolve system issues faster.

Adopting a new Linux foundation with enterprise expertise from Red Hat

In 2015, Square Enix’s IT Division decided to work with Red Hat Consulting to find enterprise open source technology solutions to its infrastructure performance challenges. After a seminar with the consulting team, Square Enix decided to migrate the operating system foundation for Dragon Quest X Online from CentOS Linux to Red Hat Enterprise Linux.

“Red Hat’s consultants understood our situation precisely and made recommendations based on their deep problem-solving experience with other customers facing similar challenges,” said Yuki Miyamoto, IT Infrastructure/Business Online Infrastructure System, Information Technology Division, Square Enix.

Red Hat Enterprise Linux combines the latest Linux innovation from a worldwide community with the expert support, robust security, and stable performance enterprises need for modern business demands. Square Enix also adopted Red Hat Satellite, a management solution that automates and simplifies system provisioning, configuration, and updating of its new Linux environment. Red Hat Ansible Automation Platform supports further process efficiency with repeatable, human-readable automation scripts.

Improving IT system performance and management to support engaging player experiences

Simplified operational management with professional guidance

During and after implementation of its new platform and management technology, Square Enix’s IT Division teams worked closely with Red Hat consultants to troubleshoot any issues with the Linux environment and continuously adjust related processes in alignment with strategic goals.

“Red Hat Consulting ventures beyond limited, high-level solutions,” said Mr. Nakata. “Rather than only addressing specific tasks like initial construction or introductory support, Red Hat Consulting presented an optimal solution after investigating and researching our operations. Their approach aims for overall optimization right through to implementation. This level of consulting is rare.”

In Japan’s unique IT engineering market, highly skilled in-house talent is essential to success—and recruitment can be challenging and time-consuming. Hands-on collaboration with Red Hat helped Square Enix’s existing IT staff quickly expand their Linux skills with insight into best practices and new perspectives. “We take pride in our ability to solve problems on our own, but our involvement with Red Hat has accelerated the speed at which we improve the quality of our work to continue delivering a positive player experience,” said Mr. Miyamoto.

Improved IT security with built-in management capabilities

During more than 10 years of development and operation, Dragon Quest X Online has experienced several problems affecting the Linux kernel and libraries. When issues arose, the skilled staff responsible for day-to-day system operations would analyze the source code and perform time-consuming troubleshooting.

Square Enix’s IT Division has used the new Linux management capabilities provided by its Red Hat software to simplify code debugging and security management, helping teams focus on more valuable work. Red Hat Satellite tracks and manages server status centrally, helping teams quickly prioritize and resolve high-impact vulnerabilities and performance issues. Ansible Automation Platform also helps mitigate potential human errors in device configuration that could create vulnerability or other security risks.

“Since switching to Red Hat Enterprise Linux, we can more quickly discover and investigate bugs and vulnerabilities than in the Linux distribution we were previously using,” said Mr. Miyamoto.

Established foundation for application scalability with containers

To continue improving the scalability and responsiveness of the systems supporting Dragon Quest X Online, Square Enix’s IT Division team worked with Red Hat Consulting to plan adoption of a container-based service architecture.

“Although it’s possible to create your own containers, you have to consider that often you’re planning and developing long-term operations,” said Mr. Nakata. “That’s why it’s valuable to have guidance from consultants like Red Hat’s, who have experience with container adoption journeys for enterprises and their existing architectures supporting critical services and systems.”

Although Docker is a well-known application execution environment for containers, the team decided to use [Podman](#), an open source tool developed by Red Hat engineers with the larger community, to gain additional capabilities for developing, managing, and running Linux containers.

“The combination of Red Hat Enterprise Linux, Ansible Automation Platform, and Podman technologies gives us unprecedented flexibility and control when scaling servers and deploying applications,” said Mr. Miyamoto. “Introducing container technology to a 10-year-old system seemed daunting, but Red Hat consultants provided invaluable insights into the underlying technologies and how to deploy them. This guidance boosted our confidence that we had selected the correct solution for our needs.”

Bringing new life to existing system architecture with planned modernization

Adoption of container technology is just one of the ways Square Enix is considering modernizing the systems that have supported Dragon Quest X Online in the decade since its launch. For example, the company plans to use its Red Hat Enterprise Linux foundation to continue strengthening the game's back-end operations and ensure an engaging experience for its vast player base.

"It's not easy to combine a decade-old architecture with the latest technologies and achieve problem-free system operations, but Red Hat has made it possible," said Taro Shimada, IT Infrastructure/Business Online Infrastructure System, Information Technology Division, Square Enix Co., Ltd. "Our newfound adaptability has proven invaluable to our plans to balance gradual modernization with ongoing use of the old system."

About Square Enix Co., Ltd.

Square Enix Co., Ltd. is one of Japan's leading entertainment companies. It plans, develops, sells, and operates digital entertainment content centered on games, and is also involved in amusement and publishing businesses. As a major publisher, the company is a driving force in the game industry, delivering high-quality content, services and products to customers across the world. Square Enix's corporate philosophy is to contribute to people's happiness around the world by providing unparalleled stories.



About Red Hat Innovators in the Open

Innovation is the core of open source. Red Hat customers use open source technologies to change not only their own organizations, but also entire industries and markets. Red Hat Innovators in the Open proudly showcases how our customers use enterprise open source solutions to solve their toughest business challenges. Want to share your story? [Learn more.](#)



About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. [A trusted adviser to the Fortune 500](#), Red Hat provides [award-winning](#) support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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