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Building cloud infrastructure for the 5G era with VMware Cloud Foundation on VxRail Promoting zero-touch operations

NTT Docomo, a major mobile network operator, built a new cloud infrastructure that supports services like Docomo Open Innovation Cloud®. At its core, it uses VMware Cloud Foundation on VxRail to ensure high performance, reliability and flexible scalability. The company also planned to make use of it in “zero-touch operationalization” in their operations and management.



Telecommunications

Tokyo, Japan

Business issues

As Japan's leading mobile network operator, NTT Docomo deploys a variety of ICT services. In May 2020, the company also began offering a new service for the 5G era: the Docomo Open Innovation Cloud®. However, one issue it faced was how to build the service infrastructure for it. The time available before going live was limited, and building with conventional methods appeared to be difficult. Another big challenge was integrating the various service infrastructures operating within the company to create a more flexible and agile infrastructure. And so, NTT Docomo embarked on the deployment of a new cloud infrastructure that would support business in the future.

Solutions

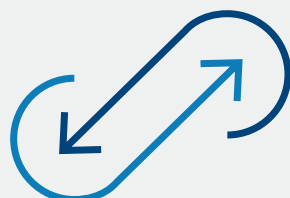
- Hardware
Dell EMC VxRail
- Support
Dell ProSupport Plus

Effects of the deployment

- Established a cloud infrastructure that supports new businesses of the 5G era
- Achievement of zero-touch operations through superior operational manageability on the horizon
- Shortened the period from equipment delivery to going live by more than 50%
- Leveraged Secure Remote Support to achieve rapid failure response

ZERO

Achievement of zero-touch operations through superior operational manageability on the horizon



More than 50%

Shortened the period from equipment delivery to going live by more than 50%





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Under the brand slogan “The new of today, the norm of tomorrow”, NTT Docomo deploys a multifaceted approach to create a new world and culture of communications, and is also actively pursuing initiatives for the 5G era.

NTT Docomo has now built part of its new cloud infrastructure, which supports services such as the Docomo Open Innovation Cloud®, with VMware Cloud Foundation on VxRail (“VCF on VxRail” below). While ensuring the high performance, reliability and scalability that are indispensable for a carrier service, VCF on VxRail also contributes greatly to the zero-touch operationalization of operational management that the company is aiming for.

Docomo Open Innovation Cloud® creates new businesses for the 5G era

In addition to telecommunications businesses such as cell phones and optical fiber broadband services, NTT Docomo is developing smart life businesses such as video and music distribution, e-books, finance and settlements, and shopping services. An initiative the company has been putting a great deal of effort into is new services using the next-generation mobile standard 5G. “Of course we have services for individual customers,” says Kazunori Iida, Director of Infrastructure Systems in the Service Design Department, “but looking ahead to our 5G business, the question of how much we are enhancing and expanding our solutions for companies is becoming an important one. While pursuing the quality only a carrier can provide, we want to join forces with our partner companies and open up a new world.”

Docomo Open Innovation Cloud®, which the company started to offer in May 2020, is one of those solutions. “Docomo Open Innovation Cloud® is a cloud service for companies with the features of MEC (Multi-access Edge Computing) such as low latency and high security,” explains Kotoko Yamada, Systems Engineer in the Service Design Department. “The cloud infrastructure is installed within

Docomo’s network, allowing for low latency and safe communication through a closed network. That’s why it can be used safely even for services that handle highly confidential data.” The company leverages these benefits to provide an environment that is optimized for services that demand low latency and high security, such as video streaming, image and facial recognition, remote operation, gaming, augmented and virtual reality, and nursing and caregiving. The idea is to stand solidly behind the creation of partner companies and new business.

The challenge of building a service infrastructure with high reliability in a short period of time

However, Docomo faced a variety of challenges before launching Docomo Open Innovation Cloud®. Mr. Iida recalls, “The biggest problem was the build period. Building a large-scale service infrastructure like this usually takes one to two years. But in this case, we needed to prepare the environment before the 5G pre-service launch, so we had to do the build in a period of several months. Building the infrastructure for a new service for the 5G era was a huge challenge on its own, but “There were several other infrastructures within the company for the services we were already providing,” continues Mr. Iida. “If we were going to make the effort to create a new infrastructure, we wanted to aim for a further reduction in costs by integrating these siloed infrastructures as well. In addition, going forward, we wanted to create an environment that would become the standard architecture for operating applications that support the new businesses that will surely continue to increase.”

It was against this backdrop that NTT Docomo embarked on building a new cloud infrastructure. For this reason, they had their eyes on VMware’s hybrid cloud infrastructure product VMware Cloud Foundation™ (“VCF” below). VCF is offered in a package that includes main components such as VMware vSphere®, VMware vSAN™ and VMware NSX®, as well as the VMware Cloud

Foundation™ SDDC Manager™ that offers integrated management of product life cycles. Rather than starting from zero and building the environment by themselves, they were able to build a high-quality infrastructure in much less time. What's more, they would also be able to greatly improve the automation and efficiency of operational management after deployment.

"In order to provide our customers with optimal service, we always have to update the environment by applying the latest patches," says Seiya Kawasaki, Senior Manager in the Service Design Department. "That takes a lot of time and work-hours, and we were no longer able to put any effort into higher value-added services. NTT Docomo is working towards zero-touch operationalization of operational management in order to avoid that situation." There were high expectations of VCF as a leader in achieving zero-touch operationalization.

Achieving integrated management of the entire infrastructure by newly adopting VCF on VxRail

NTT Docomo next looked into hardware products for running VCF. The result was the deployment of the VCF and Dell Technologies hyper-converged infrastructure ("HCI" below) product Dell EMC VxRail ("VxRail" below) with VCF on VxRail. Masanobu Yamagiwa, Systems Engineer in the Service Design Department, explains the reasons for adopting VCF on VxRail. "One of the challenges we had faced was maintaining the compatibility of all firmware, such as servers, storage and switches, and the upgrading work was extremely tough," he says. "As you would expect with a lot of hardware, the work of constantly upgrading it was sometimes overwhelming. That's why we wanted to choose an HCI that would simplify the infrastructure, and we decided to adopt VCF on VxRail, which had the highest affinity with VCF."

Of course, VCF itself can also run on other companies' HCIs. However, in this case, the management of the hardware and the virtual environment was separate for each. To deal with this, VCF on VxRail links the abovementioned SDDC Manager and VxRail management tool VxRail Manager, enabling the comprehensive management of the entire infrastructure environment. "We had the idea that we wanted to somehow reduce the operations needed for operational management, so not having to manage software and hardware separately was extremely attractive," says Mr. Kawasaki. Mr. Iida continues, "carrier services demand a high degree of reliability and safety, so we had traditionally built environments that carefully inspected each infrastructure product separately. However, this way of doing things means that we wouldn't be able to keep up with changes to the environments down the line. The deployment of VCF on VxRail, which enabled us to introduce a new service infrastructure on a large scale in such a short time, was a major

turning point for us. We also felt that it was the only option from the standpoint of achieving our goal of zero-touch operations."

Shortened the period to going live by more than 50% Significantly reduced the effort of update work

In this way, the benefits of deploying VCF on VxRail rapidly became clear. Just eight months after delivery of the equipment, NTT Docomo succeeded in achieving full operation of the service infrastructure for Docomo Open Innovation Cloud®. "With conventional methods this would probably have taken about a year and a half, so this shortened the total lead time until going live to less than half," stresses Mr. Kawasaki. "This period included the development of the portal screen for customers, so just the work around VCF on VxRail took less than a month. As a result, we were able to make it in time for the 5G pre-service."

The company also expected big contributions towards achieving their goal of zero-touch operationalization. "When building an infrastructure combining individual products, about a month is needed for all the checks to ensure that there will be no problems in combining the respective versions of the products," says Mr. Yamagiwa. But VCF on VxRail comes with all components, including hardware, already verified, so going forward we won't have to worry about bothering with that anymore. We can also do most of the actual update work with very little effort. If we had built the infrastructure with VCF and another company's HCI, that definitely would not be the case." Ms. Yamada continues, "The biggest obstacle in developing services is infrastructural problems. With the deployment of VCF on VxRail, we set up an environment that made it possible to launch new services in a timely manner."

NTT Docomo adopted the All-Flash model of VxRail, which greatly improved infrastructure performance. In addition, by using the "Secure Remote Support" remote monitoring and maintenance service, they will be able to respond promptly and proactively in the unlikely event of a malfunction. "When it comes to support, Dell Technologies, including VMware, proactively works as a team, so the sense of security is very high," says Mr. Kawasaki. "In the future, I hope there will be environments that enable simple migration by just replacing an old version of VxRail with a new one. If that happens, we will be liberated from the 'migration hell' that traditionally accompanies data migration."

"At our company, we will continue to develop services for the 5G era at a rapid pace. That's why we want to establish a cloud infrastructure that combines carrier-grade reliability and stability with the agility to adapt to business changes," says Mr. Iida hopefully. Dell Technologies will stand solidly behind NTT Docomo when they undertake that initiative.

In accelerating 5G business for companies, an infrastructure that combines high reliability and flexibility with agility is essential. By adopting VCF on VxRail, we have been able to establish a cloud infrastructure that can rapidly deploy services, including Docomo Open Innovation Cloud®.

NTT Docomo, Inc.
Service Design Department / Infrastructure Systems / Director
Kazunori Iida

The migration of various infrastructure products without having to do it one by one is a huge benefit. Updating hardware and software has also become effortless.

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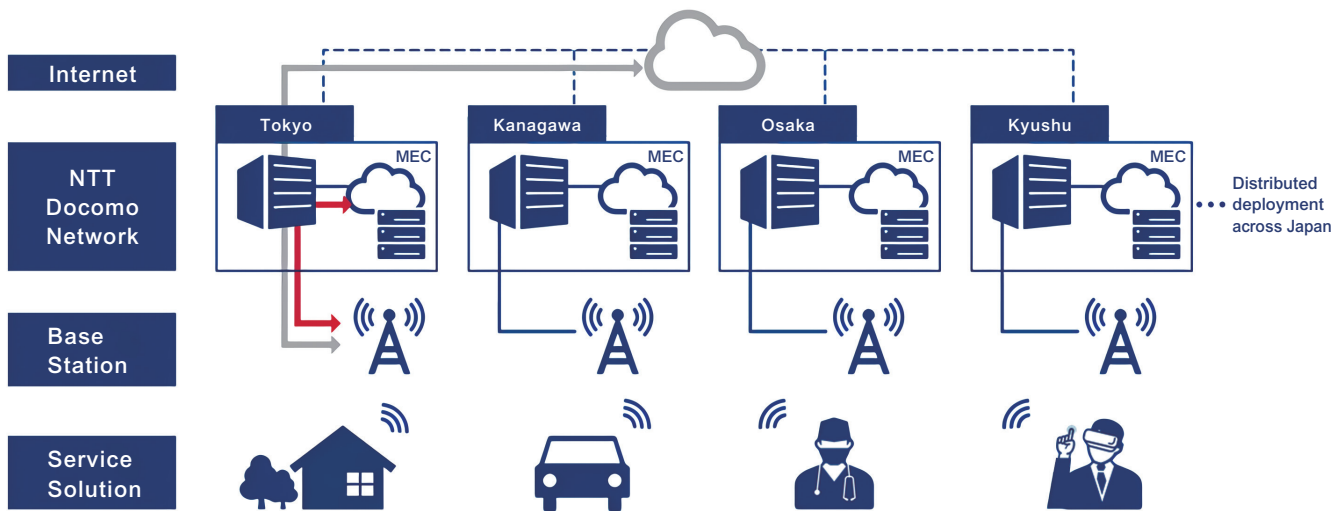
VCF on VxRail has demonstrated the desired results, including shortening the period to going live to less than half of what it was. With the centralization of software and hardware management, we anticipate a big boost in the “zero-touch operations” initiative that we are promoting.

NTT Docomo, Inc.
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Docomo Open Innovation Cloud® has many MEC features, including low latency and high security. We hope it will be widely used as a platform to support the 5G business of our customers.

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System Configuration



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