MITSUBISHI MOTORS ENGINEERING IT DEPARTMENT TRANSFORMS ITS WORKSTATION ENVIRONMENT WITH VIRTUAL GPUs

NVIDIA Quadro Virtual Data Center Workstation deployment reduced IT management functions from two weeks to two hours.

Image courtesy of Mitsubishi Motors Corporation

NVIDIA.

Mitsubishi Motors adopted NVIDIA Quadro Virtual Data Center Workstation for its compatibility with over 200 design-related applications.

INTRODUCTION

Mitsubishi Motors manufactured Japan's first mass-produced passenger car, the Mitsubishi Model A, in 1917. The company went on to produce hit models such as the Colt series in the 1960s and the Pajero and Delica in the 1980s. Since the 2000s, the company has expanded its lineup of crossover SUVs and other products. Mitsubishi Motors continues to create trend-setting cars for drivers who want to expand their horizons and take on new challenges.

With "Drive your Ambition" as its brand message, Mitsubishi Motors boldly creates era-defining products for an automotive market that is constantly evolving. To provide unique products and services, the engineering IT department of the Global IT Division introduced NVIDIA virtual GPU (vGPU) technology into the automotive development and production technology departments. By virtualizing the design environment where tools such as Dassault Systèmes CATIA, a high-end 3D CAD software used on high-performance workstations, the department experienced a dramatic transformation in terms of flexible work styles and operational management.

CUSTOMER PROFILE

Organization	**Industry**	**Location**	**Founded**	**Website**
Mitsubishi Motors Corporation	Manufacturing	Japan (as well as overseas factories and group companies)	April 22, 1970	www.mitsubishi-motors.com

Yoshinori Higashimura   Noriyuki Hiratsuka   Seiya Kawabe

CHALLENGE STATEMENT

Managing Thousands of High-Performance Workstations Became a Heavy Burden

Mitsubishi Motors annually sells 1,127,000 vehicles (FY 2019) globally. The technical center and plant in Okazaki—a vast site that is 22 times the size of the Tokyo Dome (10,871,549 square feet)—develops all Mitsubishi vehicles and manufactures the popular models Eclipse Cross, Outlander, and Outlander PHEV, among others. The design department, located in the technical center, digitally designs appealing vehicles by utilizing over 200 applications, including the high-end 3D CAD software CATIA.

To meet the needs of these designers and provide an environment where they can use high-end design applications, the company's engineering IT department has always deployed high-performance workstations. The department manages thousands of these workstations, and supports the research and development department's digital development with its own dedicated infrastructure that is separate from IT's infrastructure. Yoshinori Higashimura, manager of the engineering IT department, explains the role of the department:

"Our department is responsible for the operation of CAD and CAE and supports vehicle manufacturing at Mitsubishi Motors through IT. For this reason, we deploy high-performance workstations in departments such as development, production technology, and design and provide dedicated support."

With such outstanding support from the department, engineers working at the Okazaki plant enjoy a comfortable design environment. However, the operational burden was also increasing. Assistant manager Noriyuki Hiratsuka looks back on this issue:

Image courtesy of Mitsubishi Motors Corporation

"In order to prepare high-specification workstations for each engineer, we had to set up different combinations of hardware and software depending on the user and department. Therefore, it took about two weeks to prepare one workstation. In addition, when the layout of the company was changed or a department was moved, the relocation work alone was a burden on our operational management. In fact, about half of the workstations were relocated each year. In addition, about 70 percent of the workstations operated each day."

With this background, the engineering IT department determined that consolidation using a virtual environment would be worthwhile. They started investigating the possibility of using virtual desktop infrastructure (VDI)-based CAD and CAE 2 years ago.

SOLUTION STATEMENT

NVIDIA Quadro vDWS for Application Compatibility

The engineering IT department began considering VDI in 2015. Seiya Kawabe, staff of engineering IT department, describes the background of the initiative: "In considering implementation, we needed to verify compatibility with the 200 applications used in departments such as design, analysis, and production engineering. Of course, it was difficult for us to verify this on our own, so we consulted with external partners with expertise in VDI. As a result, we determined that using NVIDIA Quadro vDWS in a virtual environment with VMware Horizon was the optimal combination."

In 2017, Mitsubishi Motors rolled out VDI using NVIDIA Quadro vDWS powered by NVIDIA M60 GPUs in three steps. First, VDI was introduced for use in remote locations. Next, the Okazaki plant was scheduled to

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Yoshinori Higashimura,
Manager of Engineering IT, Global IT Division

complete construction of a new research and development office building in October 2018, so IT introduced VDI with NVIDIA P40 GPUs to minimize the burden of relocating workstations. Finally, the department increased the GPU consolidation rate and migrated to VDI without purchasing new servers, reducing the number of workstations to about half of the previous number.

RESULTS

The target was to reduce the number of CCUs by 30% relative to the number of workstations

Mitsubishi Motors realized a new work style by using eVDI in its CAD/CAE environment. Within this, the production technology departments in Kyoto and Mizushima highly praised the new system.

Hiratsuka says, "When accessing a file server in Okazaki from Kyoto or Mizushima, it previously took more than an hour to download large CAD files in some cases. With eVDI, waiting times have been dramatically reduced and working from remote locations has become more efficient. It is a major advantage that engineers can now use CAD, which was previously limited to their desk, in meetings and on business trips. It's like the transition from landline phones to smartphones."

In addition, the work style in the engineering IT department has changed too. Kawabe says, "Since we have been freed from managing individual workstations, the man-hours required for relocation and other operations following organizational changes have been greatly reduced. Even when a new employee is hired, it is only necessary to allocate resources from NVIDIA Quadro vDWS once without setting up a physical workstation, and then consider expanding the server side as needed later. This means it is easy to make introduction plans. New workstation deployments that previously took about two weeks can now be completed in two hours."

To ensure that VMware Horizon users do not forget to log off, the engineering IT department has developed an original eVDI portal site to increase convenience and security. By installing eVDI using NVIDIA Quadro vDWS, the mission of the department has evolved from building infrastructure to providing services.

The engineering IT department will continue to promote the use of eVDI for physical workstations. Regarding that progression, Higashimura expresses his wishes, "In the end, the goal is to make all workstations run on VDI. The introduction of NVIDIA Quadro vDWS entails a certain amount of cost. However, I think it is a worthwhile investment, given that we have been able

to reduce the operational burden in our department, provide flexible work styles to on-site engineers, and improve the ease of future expansions and relocations.

In addition, we have been able to consolidate our servers by using eVDI, and we intend to work on robust operation such as BCP measures in the future."

Seiya Kawabe,	Noriyuki Hiratsuka,	Yoshinori Higashimura,
Staff of Engineering	Assistant Manager of Engineering	Manager of Engineering
IT Department	IT Department	IT Department

For more information about NVIDIA
Quadro vDWS, visit

www.nvidia.com/quadro-vdws