

Toyota Motor Deploys Nutanix Cloud Platform to Build 3D CAD Software Design Environment on VDI

Driving Workstyle Reform and Improving Work Efficiency for Design Engineers

INDUSTRY

Automotive manufacturing

CHALLENGES

- Preparing the high-performance environment required for 3D CAD software
- Promoting workstyle reform in Engineering Design Group
- Eliminating the workload and procurement costs required to maintain and operate workstations

APPLICATIONS

- 3D CAD software CATIA
- VMware Horizon View

SOLUTIONS

Nutanix Cloud Platform

- Nutanix AOS
- Nutanix Prism

Nutanix Technical Account Manager Service (TAM)

BENEFITS

- Realizing a new way of working and improving work efficiency using 3D CAD software on VDI
- Reducing the number of workstations and costs through migration to VDI
- Flexibility and scalability that enables prompt response to growing demands and changes in the business environment



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–Masanobu Takahisa, DX Promotion Division,
Toyota Motor Corporation

CHALLENGES

Toyota Motor Corporation, an automobile manufacturer with approximately 360,000 employees worldwide, has long attracted attention not only for its outstanding R&D, production, and sales strategies, but also for its HR policies.

In 2016, TOYOTA announced its commitment to workstyle reform, and has expanded its work-from-home program to about 13,000 employees. There were widely varying degrees of understanding and penetration of the work-from-home program among different departments.

“Implementation of the program differed considerably, with some departments aiming for 30% implementation, while others achieved less than 5%,” said Jun Shinohara of the Human Resources Division. “There were people who said that the program is effective in improving productivity and balancing work with childcare/nursing care, but quite a few had preconceived notions that working from home was not suitable for their work in the first place.”

In particular, the Engineering Design Group that the high-performance workstations in their office were indispensable, as they used 3D CAD software for their design projects. Operating 3D CAD software at a practical level requires a GPU that enables high-speed drawing of 3D graphics as well as a high-performance CPU and large-capacity memory, and it was such requirements that became an obstacle for the Engineering Design Group in working from home.

Engineers working in the Engineering Design Group had doubts about the constraints of a work style that tied them physically to their workstations. Masami Uehata of the ZEV B&D Lab started participating in TOYOTA's work-from-home program in 2016, for parenting after giving birth. "At the time, there was no environment where I could use 3D CAD at home, so I was fairly limited in what I could do workwise at home," she said. DX Promotion Division responsible for managing the company's IT equipment were also facing challenges such as workstation maintenance and procurement costs.

SOLUTIONS

To resolve these issues, TOYOTA began looking into deploying a virtual desktop infrastructure (VDI) in 2016. "HCI was attractive to us for its simple structure compared to the traditional three-tier architecture, as well as the potential to improve operational efficiency," said the DX Promotion Division's Masanobu Takahisa, on running 3D CAD software on VDI. "We also highly valued the fact that it enabled us to start small, expand flexibly, and respond promptly to changes in the business environment; as a result, we decided to adopt the Nutanix Cloud Platform."

Takahisa said that the reason his company chose Nutanix was because "Nutanix is a pioneer in the field of HCI, and its HCI solution was unrivaled in terms of functions, stability, and overall track record." TOYOTA needed to be able to use a function called vGPU, which is required to render 3D graphics on HCI virtual environments. TOYOTA chose Nutanix Cloud Platform as there were few products that supported vGPU on HCI other than Nutanix at that time. To quickly establish stable operations and monitoring systems, TOYOTA also adopted Nutanix's dedicated operation support service (Technical Account Manager), making operational improvements on a monthly basis.

CUSTOMER OUTCOME

In deploying the Nutanix Cloud Platform, TOYOTA was able to build physical workstations on VDI that can run 3D CAD software for the Engineering Design Group. Employees welcomed the move, saying that it enabled a new way of working.

"Due to the COVID-19 pandemic, the elementary school that my child attends was closed in March 2020, and I was also forced to work from home," said Naomi Tsuji of the Advanced Body Technology Development Division. "With the 3D CAD environment on VDI, I have been able to perform design work at home without any inconvenience."

"When we would go to manufacturing sites for meetings, we had no choice but to present our designs using paper drawings," said Yugo Ichida of the Commercial ZEV Fundamental Development Division. "I always thought, 'Communication would be smoother if I could use 3D CAD'. Now, we can have deeper and better discussions while looking at the 3D CAD models together."

About the improved work efficiency, Masami Uehata of the ZEV B&D Lab added, "Before deploying Nutanix, paper drawings had to be printed and taken outside the office. With Nutanix, we can now communicate with our clients and other departments while showing the 3D CAD screen during meetings. Being able to make decisions on the spot has allowed us to work more efficiently and reduced the amount of work we have to take home."

When the COVID-19 pandemic struck in 2020, TOYOTA expanded its work-from-home program significantly, and was forced to hastily scale up its VDI environment to accommodate its Engineering Design Group. The company succeeded in building approximately 1,000 virtual desktops to the VDI environment in just two months, far ahead of their initial schedule to expand its VDI environment by the following year. "It made us appreciate the way HCI enables building such an environment so quickly," said the DX Promotion Division's Takahisa.

NEXT STEPS

TOYOTA will continue to migrate shared and underutilized workstations to VDI, with the aim of eventually reducing the number of workstations to approximately half and greatly reducing costs.

"Moving forward, our plan is to roll out similar systems not only to Toyota Motor but also to TOYOTA group companies," said Takahisa. "We have been able to use 3D CAD on VDI, but not Computer Aided Engineering (CAE) software due to its extremely high processing loads. In the future, we hope to also support the CAE software on VDI, and continue to promote work style reform in the Engineering Design Group."



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