



Automotive

Accelerating the adoption of remote working in automotive design

Toyota

How Toyota used a hyperconverged infrastructure from Lenovo and Nutanix to empower design engineers to work from anywhere with a virtual desktop infrastructure for 3D CAD applications.

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NUTANIX

Lenovo

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Who is Toyota?

Toyota Motor Corporation is renowned both in Japan and internationally as one of the world's largest automobile manufacturers. With sites around the world, the Toyota Group employs around 360,000 people, and is regarded as a leader not only for its excellent design development, production, and sales strategies, but also for its progressive and innovative human resources policies.

Over the past five years, Toyota has committed to embracing a more flexible way of working, which has involved rolling out telecommuting capabilities that enable 13,000 employees to balance work with childcare and other family responsibilities.

In delivering these capabilities, Toyota has overcome significant technical challenges—for example, enabling its Engineering Design Group to work from anywhere, even if they don't have physical access to a workstation capable of running their 3D computer-aided design (CAD) applications.

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The Challenge

Toyota's Engineering Design Group relies on powerful 3D CAD software, which can only run effectively on a PC with a high-performance CPU, large-capacity memory, and a GPU that can draw 3D graphics at high speed. Ordinary desktop and laptop PCs cannot provide the level of performance required, which meant that all design work had to be done using the powerful workstations installed at Toyota's offices.

As a result, it was difficult for design engineers to be productive when working from home, or to discuss design ideas with colleagues in other teams. Mr. Yugo Ichida of the Commercial ZEV Fundamental Development Division comments: "When I went to a manufacturing site, I didn't have access to my workstation, so I had to explain using paper diagrams instead. I always thought that if I could explain using 3D CAD, I would be able to communicate more smoothly."

Maintaining the 3D CAD workstations was also a challenge for Toyota's IT team—the cost of procuring and installing new terminals was high, and updating the operating system and software for these devices was time-consuming.

Why **Lenovo**?

Toyota realized that a virtual desktop infrastructure (VDI) solution could solve the problem of how to free the Engineering Design Group from their reliance on office-based workstations. The company's IT team began researching how to architect a VDI solution that would enable design engineers to use a standard PC or laptop to access 3D CAD applications running on a central server.

The key breakthrough was when the team decided to adopt a hyperconverged infrastructure (HCI), as Mr. Masanobu Takahisa of the DX Promotion Division explains: "HCI is simpler than a conventional three-tier architecture, so it improves operational efficiency. It's also easier to expand and scale flexibly when business needs change, which was a key factor in our evaluation."

As a basis for the VDI solution, Toyota selected Lenovo ThinkAgile HX Series solutions, which combine Lenovo's powerful server hardware with HCI software from Nutanix. Critically, at the time of Toyota's evaluation, Nutanix was one of the only vendors that could support NVIDIA Virtual GPU (vGPU) technology, which was critical to make the solution viable.



From concept to production

Toyota began the implementation with a proof-of-concept based on three Lenovo ThinkAgile HX3320 appliances, with GPUs installed in each server. After seeing good results from the proof-of-concept, the company went ahead with remote working based on the new VDI solution.

When the coronavirus pandemic hit Japan in early 2020, Toyota faced an urgent need to accelerate the rollout of remote working capabilities across all divisions and consulted Lenovo for advice on how to scale out the VDI solution. With help from the Lenovo team, the company was able to launch an additional 1,000 VDIs within just two months.

Hardware

Lenovo ThinkAgile HX3320

Software

Nutanix Cloud Platform

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“The merit of HCI is that we can build an environment in a very short period of time, and the pandemic truly demonstrated that. Lenovo also made significant efforts to procure and deliver the hardware quickly, which was really helpful.”

Mr. Masanobu Takahisa

DX Promotion Division, Toyota

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Results

With the Lenovo VDI solution in place, Toyota's design engineers can now work productively and effectively, whether they are in the office, at home, or in the field. As Mr. Ichida explains: "I can now have in-depth discussions while looking at the 3D CAD model together with colleagues at the manufacturing site, which means we can all work more efficiently."

Similarly, Ms. Naomi Tsuji, who works in the Advanced Body Technology Development Division, appreciates the flexibility of being able to balance work with childcare: "Due to the coronavirus pandemic, my children's elementary school was closed from March 2020, and I had to work from home. Thanks to the VDI environment, it's now almost as convenient for me to do design work at home as it is to work in the office."

Toyota plans to continue its rollout of this solution, embracing remote working with VDI.



Improved work/life balance by empowering design engineers to work from home



Simplified collaboration between divisions with easy access to 3D CAD applications



Enabled a rapid response to the pandemic by scaling up VDI capabilities in weeks

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“In the future, we plan to develop a similar VDI system for the whole Toyota Group. We would like to make computer-aided engineering (CAE) applications available via VDI too, and further increase our flexible working capabilities in the Engineering Design Group.”

Mr. Masanobu Takahisa

DX Promotion Division, Toyota

How do you enable employees to work from anywhere?

Boosting employee flexibility and productivity with Lenovo and Nutanix technology.

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