ACCELERATING THE DESIGN OF WORLD-CLASS HELICOPTERS

Image courtesy of **Bell Textron Inc.**

nVIDIA.

NVIDIA RTX VIRTUAL WORKSTATIONS SPEED UP 3D DESIGN APPS FOR REMOTE USERS WHILE ALSO CONSOLIDATING THE DATA CENTER

Image courtesy of **Bell Textron Inc.**

SUMMARY

> Bell Textron is a global manufacturer of commercial and military helicopters.

> After five years, its mature data center needed an update.

> New IT infrastructure was installed with NVIDIA data center GPUs.

> NVIDIA data center GPUs were virtualized with NVIDIA RTX™ Virtual Workstation software to accelerate performance and increase user density.

> NVIDIA vGPU-enabled VMs are now widely used by engineers working from home, and IT costs are significantly reduced.

INTRODUCTION

Bell Textron is an aerospace company that specializes in the manufacture of military and commercial helicopters. Headquartered in Fort Worth, Texas, the company has teams across North America, Canada, Europe, and Asia.

Several years ago, Bell Textron deployed NVIDIA GPU-powered virtual workstations to speed up graphics-intensive applications for remote teams. Recently, it upgraded its matured IT infrastructure with more powerful NVIDIA GPU technology to improve performance and reduce costs.

CUSTOMER PROFILE

	Company	**Industry**	**Headquarters**	**Employees**	**Website**
	Bell Textron Inc.	Aerospace	Fort Worth, Texas	9,000	www.bellflight.com

Image courtesy of **Bell Textron Inc.**

SOFTWARE

Hypervisor: Citrix Hypervisor

Graphics Acceleration: NVIDIA RTX Virtual Workstation (RTX vWS)

HARDWARE

Server: Dell PowerEdge R740

GPU: NVIDIA V100 Tensor Core

REASONS FOR NVIDIA RTX vWS

> High-end workstation performance

> Increased user adoption

> Improved data center efficiency

> Reduced IT costs

CHALLENGE

Bell Textron deployed NVIDIA GPU-accelerated virtualized infrastructure in 2015, using Lenovo NX 360 M4 servers equipped with NVIDIA GRID® K2 cards. At the time, its biggest IT challenges were data security and poor performance of 3D applications at remote locations. Five years later its successful virtual desktop infrastructure (VDI) began showing its age. Data center space was running low, and performance was lagging. So the IT team planned an upgrade.

By boosting performance, the IT team expected to improve adoption and increase productivity. Over the past five years, adoption had been uneven. Engineering teams in Europe and Asia frequently used virtual workstations to work on 3D models, which reside in the company's data center in Fort Worth. However, U.S.-based engineers only used it sporadically. "Many of our engineers are old school. They don't want to give up their physical workstations," said Bill Smith, senior infrastructure analyst at Bell Textron.

Bell Textron hoped that greater adoption would help reduce IT costs. "If virtual workstations stop delivering great performance for 3D applications, like 3DEXPERIENCE CATIA and ANSYS, then engineers won't use them," said Smith. "By getting better performance out of our hardware, we could put engineers on VDI instead of buying new physical workstations." Additionally, consolidating the data center would further reduce IT costs. "Improved density would help lower our power consumption. And, by fitting more users on each server, we could trim the total cost per user," said Smith. To achieve these goals, the IT team knew that NVIDIA vGPUs would be a critical component of their data center's next iteration.

Image courtesy of **Bell Textron Inc.**

"With NVIDIA RTX vWS, our virtual workstations simply perform better. Plus, they help us get a higher user count on each server."

Bill Smith, Senior
Infrastructure Analyst,
Bell Textron Inc.

SOLUTION

Bell Textron's data center upgrade kicked off in late 2019. In the first phase, the IT team purchased about a dozen Dell PowerEdge R740 servers equipped with two NVIDIA V100 cards each for testing. "We chose Dell servers because of their impressive performance," said Smith. This setup was rolled out to a small group of power users who provided positive feedback. "The uptick in speed was dramatic," said Smith.

In total, Bell Textron acquired 50 Dell servers equipped with two NVIDIA V100 cards per server. To virtualize the GPUs, it purchased NVIDIA RTX Virtual Workstation (RTX vWS) software licenses to accommodate 300 concurrent users. "One of our missteps in 2015 was assuming that our 900 users would start each day by logging into the VDI and then stay logged in all day," said Smith. "Instead, users jump in and out of the system for a few hours, so our old NVIDIA RTX vWS licenses were underutilized."

The IT team set up three user profiles. Engineers with high graphics requirements using 3D EXPERIENCE CATIA and ANSYS were assigned an 8Q profile. At this profile size, 12 users fit on each server. Analysts were assigned a 4Q profile (16 users per server), and designers a 2Q profile (32 users per server). Because all of the users weren't active at once, IT could select a flexible NVIDIA virtual GPU scheduling option to accommodate more users per server.

> "NVIDIA is always there to help us.... We've been very impressed with their dedication and professionalism. It has been a great partnership."

Bill Smith, Senior
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RESULTS

Bell Textron's data center update was pushed into high gear in the spring of 2020 by Covid-19. "We knew that we needed to meet the increased demand of everyone working from home," said Smith. "So my team scrambled to rack and stack the servers to alleviate some bandwidth off the VPN. We spread the word internally, and pretty soon we had a couple hundred users. This really jump started adoption."

The biggest benefits of the new data center are increased performance and efficiency. "With NVIDIA vGPUs, our virtual workstations simply perform better," said Smith. "Plus, they help us get a higher user count on each server. In the past, I had to buy a new $10,000 physical workstation for every new engineer. Now, I can buy a $50,000 server equipped with NVIDIA GPUs and fit six engineers on it. That savings adds up." Data center consolidation also reduces IT costs because the data center runs more efficiently. "Higher density reduces power consumption, so our data center runs cooler. We're spending a lot less money on power and cooling."

Another benefit is that the IT team saves time on maintenance for its Dassault Systèmes CATIA application. "Our last data center was not certified to run 3DEXPERIENCE CATIA in a virtualized environment, so anytime users had a problem we had to try and duplicate the problem on a physical desktop," said Smith. "This time, Dell actually built a server for our use case, sent it to Dassault Systèmes, and worked with them to get it certified. Now when we bring in consultants to help with CATIA software upgrades, they actually recognize and allow us to use the virtual workstation solution. We can also use virtual desktops for all kinds of troubleshooting and upgrade testing."

Beyond the benefits of upgraded NVIDIA GPU technology, the IT team really appreciated NVIDIA's hands-on involvement and advice. "NVIDIA is always there to help us—even if it's a pretty basic question. And the one or two times we've really needed help, they've gone out of their way to come visit us and make sure everything's okay. We've been very impressed with their dedication and professionalism. It has been a great partnership."

To learn more about NVIDIA virtual GPU solutions, visit:
www.nvidia.com/virtualgpu
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