# CANNONDESIGN UNIFIES ITS GLOBAL WORKFORCE THROUGH VIRTUALIZATION ON NVIDIA GRID



Image courtesy of CannonDesign

# SIXTEEN OFFICES WORLDWIDE NOW COLLABORATE SEAMLESSLY

## ABOUT CANNONDESIGN



### KEY CHALLENGES

> Geographically dispersed teams needing to collaborate real-time on files and resources
> Poor end-user experience on existing VDI solution
> Increased hardware costs, concerns around data security, backup and control

### SOLUTION

> Deployed a 1,000-person virtual environment with 166 Cisco UCS blade servers and NVIDIA GRID™ software with NVIDIA® Tesla® M6 GPU cards for 100% virtualization.

### BENEFITS

> Higher user density at 2x performance
> 13X improvement in 3D software performance benchmark scores
> 13.5 hours per week in employee time saved, equating to approximately $2,500 per week in billable hours
> 85% reduction in server space
> Agile IT response to new business requirements, add new users on the fly

CannonDesign is a 100-year-old integrated, global design firm with a dynamic team of more than 900 architects, engineers, and industry specialists in 16 offices worldwide. In 2017, Fast Company named the firm one of the most innovative architecture practices in the world. Key to the firm's success is its early adoption of a Single-Firm, Multi-Office (SFMO) approach to design, which allows its project teams to tap into the firm's broad expertise located around the world. This paradigm shift enables the firm to be more flexible, nimble, responsive, and better positioned to win more work. From sports venues and university buildings to academic medical centers, commercial office spaces and research centers, CannonDesign's projects are consistently recognized for design excellence and innovation.

## CHALLENGE

CannonDesign is a noted name in the agency world, vaunted for its breadth and depth of work in a variety of industries, from healthcare to technology to education. Its broad spectrum of projects in 16 offices worldwide are all tied back into one central data center from which multiple teams share projects and work on the same files. Because of this, CannonDesign was an early adopter of virtualization technology and has experimented with and implemented a variety of solutions ever since.

### CUSTOMER PROFILE

**CANNONDESIGN**

| **Organization:** | **Industry:** | **Location:** | **Employees:** |
|---|---|---|---|
| CannonDesign | AEC | Chicago, IL | 1,000 |

Image courtesy of CannonDesign

> "A balance of collaboration, performance, flexibility, and cost proved the true value for us. That is only made possible by a virtualized environment running on NVIDIA GRID."
>
> Andrew Schilling, Chief Information Officer, CannonDesign

Says Andrew Schilling, Chief Infrastructure Officer, "Virtualization is not very common in the agency industry, primarily due to the graphics-intensive tools that we use on a regular basis. But one of the main reasons we adopted it initially was collaboration, to strengthen the concept we maintain firm-wide of SFMO (Single Firm Multi-Office). We wanted a single project team—which is likely comprised of people from multiple offices in different locations—to be able to work together in the same files at the same time."

CannonDesign's primary design tool is Revit, in which team members work together in a single central file. "If you're in distributable locations," said Schilling, "there is no other possible way of doing that besides virtualization."

The virtual environment the company initially set up—standard VDI on racked in-house servers—allowed for collaboration but at the cost of the end-user experience. Simple tasks they performed regularly, such as panning or orbiting around a model and navigating through folders in the browser window, were not optimized. "Their work flow was hindered and when that happens over and over again throughout the course of the day, it gets pretty frustrating," adds Schilling. Collaboration wasn't the only challenge CannonDesign wanted to overcome in upgrading its virtual environment. Reduced hardware costs, data security, control over permissions and restrictions, unified backup and recovery, and remote IT support were all sought-after benefits.

After extensive testing of various platforms and tools, Andrew and his team turned to the cream of the crop in virtualization: Cisco, VMware, and NVIDIA GRID™.

Image courtesy of CannonDesign

## PRODUCTS

**Hypervisor:** VMware Horizon

**Graphics Acceleration:**
NVIDIA GRID

**Server:** Cisco UCS blade
servers

**GPU:** NVIDIA Tesla M6

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Andrew Schilling, Chief
Information Officer,
CannonDesign

# SOLUTION AND BENEFITS

"We wanted to bring the people to the data, coalescing the best minds on every project" said Schilling. The answer lay in secure, digital workspaces built on VMware Horizon, powered by Cisco UCS with NVIDIA GRID software and the NVIDIA® Tesla® M6 GPU.

In order to build a GPU-enabled environment that served the needs of all employees—and therefore maximized ROI—Schilling and his team split end users into three tiers: knowledge workers, designers, and renderers.

"Our knowledge workers are people who are not typically using design tools; they're your average office worker using an office suite and standard tool set. However, we made sure to design the machine so that they are capable of using some of the design tools as needed. On occasion, some of those folks will open up a model and perform some simple tasks in it. You want to make sure they can do that as efficiently as possible."

"Our designer level is the mid-tier and geared towards the majority of our firm, specifically toward users of Revit, our core design tool. And as with knowledge workers, we wanted them to be able to dabble in the higher end programs for rendering and such. Then our last tier is the renderers working in the really high-end apps."

Schilling and his team deployed a 1,000-person virtual environment with 166 Cisco UCS blade servers and NVIDIA GRID software with the Tesla M6 GPU cards for 100% virtualization. The knowledge workers are on 8 GB of RAM, 2 cores, and 1/16th of an M6. Designers are on 5 cores, a 4th of an M6, and 48 GB of RAM, and renderers on 64 GB of RAM, 1/2 of an M6, and one dedicated processor.

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> Andrew Schilling, Chief Information Officer, CannonDesign

Using NVIDIA GRID enabled higher user density at twice the performance. CannonDesign has about 60% of its users on VDI at any given time, with the max connect around 600-650.

"The NVIDIA GRID implementation has allowed us to give our end users virtual machines that are as good, if not better than physical workstations sitting underneath their desk," said Schilling. "It's also enabled us to leverage users on the fly. Traditionally, if you had a user who was working on a smaller project but needed to bump up to something bigger, you had to swap out a physical machine or upgrade internally. It was incredibly cumbersome. Now it's a matter of two clicks and they're on a machine sized perfectly for them. We can also now use the NVIDIA GRID solution to keep that GPU stable and not bounce between virtual machines, physical machines, laptops or desktops."

Renderers saw their processing rates skyrocket in the CineBench application, from 60 to over 800. And Revit performance for model creation and export, rendering, and user experience saw drastic reductions in time spent across the board.

The combination of desktop and application virtualization built on VMware Horizon, Cisco UCS, super-charged by NVIDIA GRID and Tesla GPUs is enabling the CannonDesign team to deliver fully virtual, digital workspaces that rival physical. The biggest payoff has been savings of 13.5 hours per week in employee time, equating to approximately $2,500 per week in billable hours. The company has also seen an 85% reduction in server space.

Schilling continued, "We tried a wide variety of solutions to get to where we are now. The cheapest options weren't good enough but the highest price doesn't necessarily mean the highest performance—not to mention the significant amount of rack space. A balance of collaboration, performance, flexibility, and cost proved the true value for us. That is only made possible by a virtualized environment running on NVIDIA GRID."

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