EMPOWERING PROJECT TEAMS WITH NVIDIA QUADRO vDWS
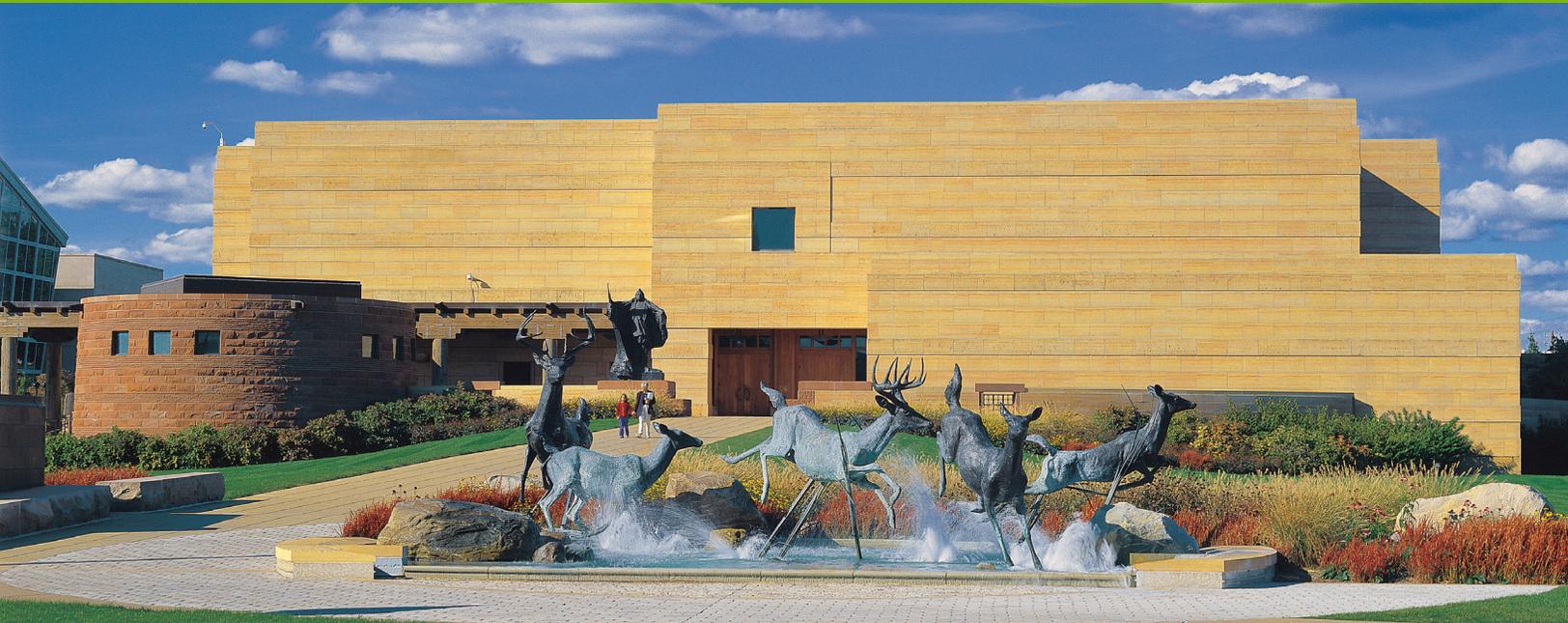
Image courtesy of BDMD

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Browning Day Mullins Dierdorf delivers high-quality, 3D virtual workstations accessible anytime, anywhere with NVIDIA Quadro vDWS.

STREAMLINING FASTER VIRTUAL WORKSTATIONS

REASONS FOR NVIDIA QUADRO vDWS

> Delivers high-quality, 3D virtual workstations that employees can access anywhere, anytime

> Improves productivity, as employees can work remotely or collaborate within the office without downloading large files or experiencing desktop lag

> Provides management and monitoring tools that result in a consistent user experience, optimized resource allocation, and reduced help-desk tickets

> Eliminates model version control problems and keeps files secure in the data center

> Gives IT staff the power to create one desktop environment that can be managed across all machines from one location

Founded in 1967, Browning Day Mullins Dierdorf (BDMD) is an Indianapolis-based architecture firm that has both regional and national prominence. They have had a hand in many of the city's most important and iconic projects, from a streetscape for Monument Circle and the construction of the RCA Dome and Lucas Oil Stadium to the master plans for the Indianapolis Museum of Art and the Indianapolis Motor Speedway. The firm works across many sectors, including residential, healthcare, cultural, civic, and corporate architecture.

CUSTOMER PROFILE

| BROWNING DAY MULLINS DIERDORF LEADERSHIP + DESIGN® | **Organization** Browning Day Mullins Dierdorf | **Industry** Architecture, Engineering, and Construction | **Location** Headquartered in Indianapolis, IN | **Founded** 1967 | **Employees** 55 | **Website** www. bdmd.com |

Image courtesy of BDMD

SUMMARY

> BDMD relies on collaboration to deliver projects on time and under budget.

> Aging, underpowered workstations kept users chained to their desks and coping with poor performance.

> Initial virtual desktop infrastructure (VDI) deployment using NVIDIA GRID® K2 enabled improved collaboration and mobility, but it was in need of an upgrade.

> Upgrading to NVIDIA® Tesla® P4 and NVIDIA Quadro® Virtual Data Center Workstation (Quadro vDWS) enabled an even better user experience, streamlined management, and improved efficiency.

PRODUCTS

Graphics Acceleration:
NVIDIA Quadro vDWS

GPU: NVIDIA Tesla P4

Hypervisor: Citrix XenDesktop on XenServer

Server: Dell R740

OUTDATED WORKSTATIONS WERE STIFLING PRODUCTIVITY.

To keep extended teams working effectively and to deliver on projects like the 500-acre landscape design for the Indianapolis International Airport Midfield Terminal, BDMD relies on quick and efficient collaboration. Jeremy Stroebel, IT director at BDMD, must keep pace with the demands for collaboration and efficiency while ensuring the firm's engineers and designers have access to the tools they need to be productive. About 80-percent of their employees are using graphically demanding design apps, including Autodesk Revit, SketchUp, and Adobe Creative Suite. When working between these applications, CPUs and graphics hardware are taxed by the large file sizes and complex models with millions of polygons and often hundreds of layers. In order to deliver the high-quality products that BDMD is known for, and do it on time and under budget, compute power and efficiency is key.

The firm was using large, expensive workstations that had reached the end of their useful life and were providing a poor user experience. These workstations also kept architects, designers, and engineers chained to their desks. BDMD's designers and architects wanted to be able to make changes on the fly in meetings or walk to each other's desks to easily collaborate on models.

Image courtesy of BDMD

NVIDIA QUADRO vDWS AND CITRIX XENSERVER ENABLES COST-EFFECTIVE VIRTUAL WORKSTATIONS.

Before investing in new physical workstations, BDMD did a proof-of-concept to determine whether they could overcome the performance issues of their aging workstations with VDI. They quickly realized that a virtual workstation environment, powered by the first-generation NVIDIA GRID K2 cards and Citrix XenServer, provided a consistent user experience and enabled mobility and improved collaboration. The NVIDIA GRID and Citrix virtual workstation environment worked well when it was initially adopted in 2015. But over time, as applications became more sophisticated and models larger, the user experience began to diminish. In addition, the firm's architects are not designing 100-percent of the time and often use other applications such as email or word processing, leaving available capacity. However, during peak usage times, when many people were using graphics-heavy applications, there were performance problems. Because of this, IT often had to overprovision servers, which impacted user density.

Stroebel realized that, by upgrading his VDI environment to NVIDIA Tesla P4 GPUs powered by NVIDIA Quadro vDWS software, he could improve user density, gain access to new virtual GPU (vGPU) management and monitoring features, and provide an even better user experience. In the new VDI implementation, users can access their 3D design applications on inexpensive Dell laptops with 15-inch screens. The VDI solution runs on Dell R740 servers, each equipped with dual 18-core processors with high single-core clock speed, four NVIDIA Tesla P4 cards per host, and a mix of solid-state drives (SSD) and 10K disks tiered for storage.

The impact of the solution can clearly be seen in user adoption. "We had a project in the office that required collaboration with another firm across town. Our users were using Autodesk Revit on virtual desktops without GPUs. The experience was beyond horrendous, almost unworkable," said Stroebel. "The people who worked on that project would have rather sketched on a piece of paper than use VDI. Once we implemented the GPU-powered VDI environment, they were blown away, as the experience was light years better."

"VDI wasn't an option for us until NVIDIA virtual GPU technology came along. With our 3D design apps, in my mind, VDI without GPU acceleration was pointless," said Stroebel.

IMPROVED USER EXPERIENCE ENABLES BETTER COLLABORATION AND EASIER MAINTENANCE.

"Honestly, we were hesitant when we first learned we would need to pay for a Quadro vDWS software license when we upgraded from GRID K2 to Tesla P4 GPUs. However, the added value we get from NVIDIA Quadro vDWS software has made it worth the investment. We can see the value with every release. Every iteration has given either greater manageability or a much-improved user experience. We were skeptical early on, and we've been pleasantly surprised," Stroebel said.

The new VDI setup with Quadro vDWS has improved both user experience and IT management. The team at BDMD now has NVIDIA® CUDA® functionality in all profiles, which has improved the performance of CUDA-enabled apps.The upgraded VDI environment has also boosted performance for apps like Adobe Photoshop, Illustrator, and InDesign Their rendering capabilities have also improved.

Additionally, because users are on virtual workstations, they can move around the office to collaborate. And because they can work in a full 3D-modeling environment, they don't have to leave their work at their desk when they go to a meeting. This mobility allows users to work from home more easily, improving productivity and quality of life, as they don't have to stay late at the office to get work done. The virtual workstation environment has also helped efficiency, as users now avoid waiting long periods of time for large files to download to local machines. In addition, it facilitated better version control since users no longer have to upload the files they work on back to the server. The solution has changed the way employees work and improved collaboration. For instance, in the past, a landscape architect had to take notes during a meeting, update the model, and iterate through a long back-and-forth process. Now they can just work directly with the engineer, taking their laptop to the engineer's desk and making the changes together. Additionally, with VDI, the files remain

securely in the data center, reducing the risk that critical intellectual property is lost or stolen.

Access to management and monitoring tools allows the team to track frame-buffer usage, make sizing decisions, and optimize user experience. Initially, P4-1Q profiles were used, but after using NVIDIA's monitoring tools, Stroebel saw that they were running low on frame buffer and switched to P4-2Q profiles to maintain a consistent user experience. "The management and monitoring features we can access with NVIDIA Quadro vDWS software are a great value. Without them, we might have to run a subpar user experience without knowing. A good user experience leads to better productivity, happy users, translating to fewer help-desk tickets. Having data to make user experience quantifiable is invaluable," Stroebel said.

Deploying new desktops and rolling out upgrades is much easier in the new system: The non-persistent environment allows IT staff to make changes, run patches, and address hardware issues once, and then update all machines on the network at once. NVIDIA Quadro vDWS has also allowed the team to solve app and hardware requirement issues dynamically by provisioning more resources on the fly, instead of overbuying desktop hardware and having it go unused. "My goal was to have an environment where I can solve problems for the business as they come up, and I see VDI with NVIDIA GPU as a solution that enables exactly that," said Stroebel.

As for the future, the firm is planning to move all users to Windows 10, and they have no concerns about their GPU-powered VDI environment meeting the needs of the most graphics-intensive operating system Microsoft has released to date. And improvements won't stop there. "I'm most excited about the availability of Citrix XenMotion support for NVIDIA virtual GPUs. That will enable me to do maintenance, run patches, and address any sort of hardware issues without disrupting my users. The features NVIDIA has delivered around manageability have been extremely exciting. More apps are requiring GPU, so the need will just increase," Stroebel added.

When Dell released the Meltdown and Spectre BIOS updates for the R740 server, Stroebel took advantage of Citrix XenMotion for NVIDIA vGPU

technology to implement them without disrupting his VDI environment. "Citrix XenMotion for NVIDIA vGPU made this a simple, during-the-workday, BIOS update. Previously this would have been a 10:00–11:00 p.m. task on my own time," said Stroebel.

"Before live migration with NVIDIA vGPU we required everyone to be out of their Citrix desktops in order to run XenServer updates, requiring reboots, updating NVIDIA drivers, or running BIOS updates on the underlying hardware. Normally, that means late nights to minimize the disruption. Now those can be run much easier by moving whoever is still active to one host and patching, and then patching the other host. From a management standpoint, it's a game changer," Stroebel said.

To learn more about NVIDIA
virtual GPU solutions, visit:
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