Engineering Firm Virtualizes Workstations for 3D Applications

The engineering firm EBM has virtualized 16 workstations for graphics-intensive 3D building models. If performance requirements increase in the future, the solution can be scaled quickly and easily.

The Challenge

3D building models require huge graphics and computing capacity. That’s why German engineering firm EBM Ingenieurgesellschaft was looking for a high-performance, easily scalable virtualization solution for its workstations. The latency had to be as low as possible despite the demanding workloads.

The Solutions

• Dell EMC PowerEdge server R740 with Intel® Xeon® Gold 6146 processors
• Nvidia Tesla P40 graphics cards
• VMware virtualization software stack
• VMware Horizon View 7

The Outcomes

• Faster scaling of virtualized workstations as performance requirements increase
• Efficient use of hardware resources via virtualization
• Low latency despite demanding 3D workloads
• More cost effective in the long term than local workstations for every employee

Faster Scaling
for improved performance

Low Latency
despite high workloads
EBM Reduces Latency and Costs

With Dell Technologies virtualized workstations, EBM Ingenieurgesellschaft will be able to handle any future performance requirements efficiently and reduce operating costs for the long term.

EBM Ingenieurgesellschaft is a construction planning and technical building management company. It has a broad portfolio of services, including, for example, architectural planning for industrial and trade buildings, residential estate planning and technical management of heating, ventilation, and cooling systems for businesses. Engineers and architects work daily with CAD construction plans and 3D building data models that require high graphics performance from its IT systems.

"Performance requirements will increase even more in the future," states Ingo Weckermann, CIO at EBM. Based on this prediction, Weckermann and his team were looking for a virtualization solution for workstations that can be scaled easily so that the company can also handle future workloads efficiently. Virtualized workstations meet these requirements most cost-effectively, as physical computers at each individual workstation have to be completely replaced when they are no longer able to handle future workloads. In contrast, the resources in a virtualized system can easily be upgraded to improve the performance of the entire system. As virtualization also balances workloads automatically, the system operates with the utmost of efficiency.

"We tested solutions from all the major manufacturers and only Dell Technologies produced results that were satisfactory."

Ingo Weckermann
CIO at EBM
A Crucial Factor:
High-Speed CPUs

Weckermann spent several years looking for a suitable solution; he reviewed products from a wide range of manufacturers, but was never satisfied with the results. The latencies were too high, making it impossible to work productively. Even custom, high-performance graphics cards had no significant effect on reducing latency. The breakthrough happened at the Dell Technologies Customer Solution Center in Frankfurt am Main, Germany—it was a game-changing experience for Weckermann.

The first task for the specialists at Dell Technologies was to work with the company to conduct a detailed inventory analysis so that they could ascertain the requirements for the prospective system. The solution was then created by combining Dell EMC PowerEdge servers and VMware virtualization software. The powerful Nvidia graphics card and high-speed Intel CPUs with high computing capacity were the key solutions to achieving low latency. According to experts at Dell Technologies, the computing power of the CPU is often underestimated when it comes to graphics-intensive applications.

"We now have a virtualization solution for our workstations that allows us to work very productively," says Weckermann. Following the workshop, Dell Technologies provided a demo system to test the environment under real-world conditions. "In the CAD sector, it is not uncommon to test over long periods of time because the cost of such a system should not be underestimated," says Michael Ascher, Account Manager at Kramer & Crew, the Dell Technologies partner that oversaw the project. "When a company signs a purchase agreement of this magnitude, it wants a solution that not only works but delivers very good results in all practical scenarios," says Ascher.

Virtualization is More Cost Effective in the Long Term

There are currently 16 virtualized workstations running on the two PowerEdge servers belonging to EBM, which members access via Thin Clients. The solution can be scaled up to operate on 24 virtual workstations as needed. If this performance capacity proves insufficient in the long term, EBM can simply add more hardware. The initial investment was higher than purchasing a local physical workstation for each employee, Weckermann reveals. "However, the solution is much more cost effective in the long term due to how well it can be scaled," he stresses.

Dell EMC PowerEdge R740 (source: Dell Technologies)
In addition to building planning and project management, EBM Ingenieurgesellschaft also runs an emergency service for the ventilation and heating systems of over 300 buildings across Germany. "That's one of the reasons why we, as an engineering firm, can afford two data centers of our own," says Weckermann. "The services must be available at all times in order to ensure the continuous and most economical operation of the heating and ventilation systems."

We can already see today that demands on IT will continue to increase in the future. 3D building data models include accurate names and data points for all room elements such as doors, keys, flooring and more. This is another reason why the models place such high demands on IT system performance. "With these models, we can view how the technology in the property operates," says Weckermann. "Planning, operation and management are seamlessly intertwined. This trend will continue to grow in importance" say civil engineers, speaking about Building Information Modeling (BIM). Germany still has some catching up to do in this market in comparison to other countries, says Weckermann.

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CIO at EBM