



ONEWORK SELECTS SUPERMICRO WORKSTATIONS TO CREATE DIGITAL TWIN SIMULATIONS



Onework Simulates Advanced Data Center Liquid Cooling with Supernano Workstation

INDUSTRY

Construction/Data Center Design

Building Information Management

CHALLENGES

- Create Interactive Collaborative Environment
- Graphics Responses with Low Latencies
- Including more data to determine optimal results



Supernano SuperWorkstation SYS-531A-I

Introduction

Digital simulation of real-world environments has the potential to save significant amounts of money and will aid in troubleshooting when problems or issues arise. While a digital twin can be as simple as a single mechanical part, complex geometries and assembly line workflows can be incredibly useful for manufacturing companies. The material flow, assembly lines, and manufacturing processes can be modeled in a virtual world and adjusted before the physical buildout. When designing a new data center, planning how the systems will be cooled is critical to successfully implementing and running a modern data center.

Building Information Management (BIM) Systems are critical to understanding how a building operates and where the systems can become more efficient. A digital twin for an existing or planned facility, whether small offices, large skyscrapers, or manufacturing facilities, can improve efficiency, reduce environmental effects, and save money with more optimized processes.

One example of using a digital twin for a manufacturing building is to model and understand an entire data center, whether the data center is air cooled or liquid cooled. When there is a large number of servers in a data center, the layout, air, or water flow can be very complicated, prone to mistakes, and sub-optimal.

Challenges

Onework is a leader in building information management systems and is looking to expand its offerings by developing expertise and applications to assist customers to understand complex building designs before construction starts. Onework decided to use NVIDIA Omniverse to model a future complete data center that would be using immersive liquid cooling for hundreds of servers. This project required a new generation of a high-speed workstation to keep up with the graphics demands of modeling and viewing an entire data center. With NVIDIA Omniverse, multiple people can collaborate on a design and independently view the results in real time. In addition, physics

SOLUTION

Supermicro SYS-531I-A Workstation

- Intel® Xeon® W7-2475X
- 20C/40T at 2.6 GHz Base Frequency
- 64GB Memory per workstation
- 1TB Local Storage
- NVIDIA RTX A5500 GPU

can be added to geometries, creating a very realistic simulation, in this case, of how the liquid would flow from the immersion tanks to be cooled in another part of the data center or external to the data center. For BIM (Building Information Management) applications, digital twin simulation to render physical phenomena (i.e., light, liquid) is a critical challenge that requires high-performance GPUs and CPUs.

Solution

Onework, after a series of demanding tests to understand the performance of how a workstation would work under the expected graphics loads, chose the [Supermicro SYS-531A-I](#) workstation. The workstation contains a single 4th Gen Intel Xeon Scalable processor (Intel Xeon W-2475X) and two double wide GPU cards. In addition, Onework determined that the NVIDIA RTX A5500 GPU, which supports a high-resolution display, was ideal for the digital twin system they were building.

The workstation that Onework decided to prototype this system with included 64GB of memory and a 1TB SSD for local storage. Specifically, the workstation included:

Supermicro SYS-531A-I	
CPU	Intel® Xeon® W7-2475X
Memory	64GB
Local Storage	1TB
GPU	NVIDIA RTX A5500

BENEFITS

- Faster Interactivity
- Larger Models
- Greater Collaboration

For the software system, Onework decided to purchase licenses for Unreal Engine 5, 3DSMax, Photoshop, and Blender.

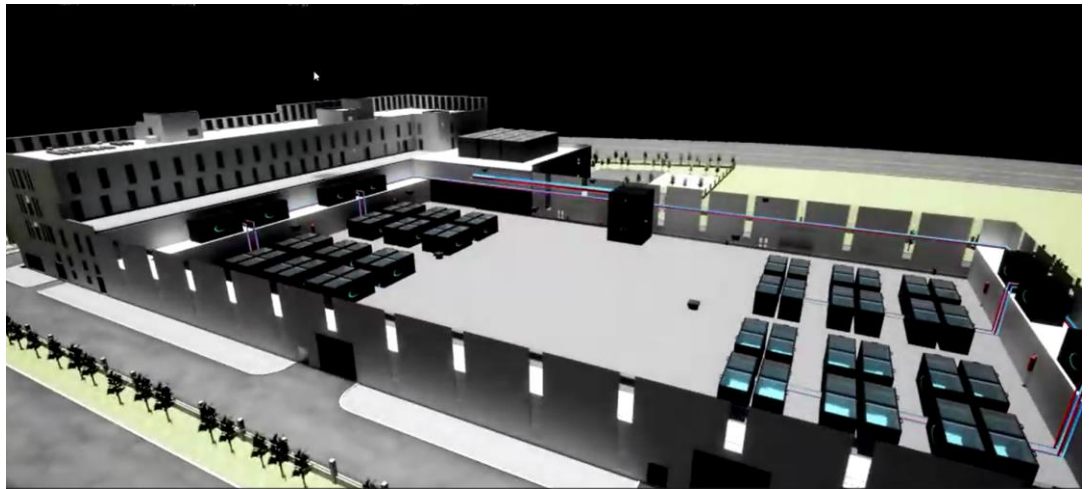


Figure 1 - Example of Data Center Liquid Cooling Design

Benefits

Onework immediately saw an increase in graphics performance with the new Supermicro workstation. Designers were quickly able to design a new data center, considering the complexities of an entire liquid cooling solution. Designers did not have to wait for renderings and could interact with the large scale models without any latency issues. The Supermicro

workstation has plenty of computing power and graphics performance for the models that Onework works with.

"Onework is extremely pleased with the new workstation from Supermicro. The performance exceeds our expectations and enables our engineers and designers to collaborate with other teams to design more efficient data centers. In addition, the ability of NVIDIA Omniverse to have different experts work together, and use the Supermicro workstation reduces latencies and increases productivity." Carl Yu, CEO at ONEWORK.

For more information, please visit: <https://www.supermicro.com/en/products/superworkstation>

SUPERMICRO

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ONEWORK

Onework is a provider of SaaS-based solutions for building information management. The cloud platform enables users to create 3D designs, analyze, and collaborate with other systems. The solution enables users to plan tasks, create documents, integrate with CAD/CAM solutions, track project timelines, and more. It also offers a solution called AssetHub which uses spatial information & data to track assets/building performance.

For more information, visit <https://onework.io/main/>