

SUCCESS STORY | HOSPITAL GROUP TWENTE

HOSPITAL GROUP TWENTE HELPS RADIOLOGISTS DO THEIR BEST WORK WITH NVIDIA VIRTUAL GPU



HOSPITAL GROUP TWENTE (ZGT) IS DEDICATED TO PROVIDING THE BEST POSSIBLE HEALTHCARE TO THE INHABITANTS OF THE PROVINCE OF OVERIJSSSEL, THE NETHERLANDS.

SUMMARY:

- > Hospital Group Twente (ZGT) is a conglomerate of hospitals with over 3,420 staff and around 182,000 patients every year.
- > ZGT sought to virtualize their radiology department, which performs nearly 250,000 radiographic examinations per year, and enable the flexibility of remote diagnosis
- > By leveraging VMware and NVIDIA virtual GPUs, ZGT was able to meet the performance and quality needs of the radiologist, while adhering to strict international healthcare quality standards and security regulations

With two hospitals in Almelo and Hengelo, as well as five outpatient clinics in the region, ZGT cares for around 182,000 patients every year in the form of prevention, diagnostics, treatment and nursing. Around 220 medical specialists and 3,200 staff members are employed by ZGT, who strive to continuously improve the care they provide.

CHALLENGE

ZGT provides innovative and first-class healthcare and wanted to ensure that their expert staff can work in an environment which fosters professionalism, cooperation, and state of the art research. Facing the end of life for the 27 workstations which were being used by the Radiology department of ZGT, the IT team began to explore the newest technical developments.

The new solution would need to serve approximately 40 radiologists, who check and diagnose MRIs, CT scans, X-Rays and ultrasounds for specialists in ZGT, as well as medical images from other centers in the surrounding area. In total, the Radiology staff of ZGT perform nearly 250,000 radiographic examinations each year.

These Radiologists work with complex Picture Archiving and Communication Systems (PACS), comprising of a network of dedicated storage, servers, and software. PACS workstations require at least two medical grade monitors, which display a greater range of greyscale than normal monitors. They

CUSTOMER PROFILE

Organization:
Hospital Group
Twente (ZGT)

Industry:
Healthcare

Location:
Overijssel, the
Netherlands

Employees:
3,420 employees

SOLUTION:

Hypervisor: VMware vSphere

Desktop and Remoting: VMware Horizon

Graphics Acceleration: NVIDIA Virtual GPU products for virtual workstation

Servers: Dell rack mounted tower model T630

also include speech systems for the easy transferal of data, comprising of six to seven devices such as microphone, USBs, pointers etc, which were extremely difficult to virtualize.

With regular requests from Radiologists to be able to work at home or from other locations, rather than being fixed to their workstations, the IT department knew that they needed to consider virtualizing. This need also stemmed from the fact that if traditional workstations broke and needed repair, it could be extremely damaging to patient care as the workstation, and the programs installed on it, would be unavailable for long periods of time.

Jeroen Geerdink, Project Leader Medical Imaging at ZGT, said “The desire to work locally independently has existed for years, but was technically and practically not yet achievable. Radiologists are more effective when they can interpret images at different locations, or watch with colleagues, without necessarily requiring heavy workstations. The flexibility and scalability that virtualization offers is indispensable.”

SOLUTION

The group had tried to virtualize the PACS workstations used by the Radiology department before but had been hindered by the lack of graphical acceleration available. This time, they collaborated with VMware Partner Client ICT Groep and developed a proof of concept based on VMware Horizon and NVIDIA virtual GPUs.

The proof of concept which was built with Client ICT Groep, needed to comply with strict medical standards, provide stability, security and accuracy, all whilst being flexible and easy to manage.

Geerdink added that “Virtualization of these types of workplaces is a challenge for various reasons. For example, a workplace has four screens that must comply with heavy graphical requirements and rules. That requires a lot of connectivity and a huge scalability of the graphics cards. In addition, the necessary compression of data should not lead to quality loss or imbalance of the images. The availability of NVIDIA’s new vGPU technology contributed to the solution.”

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Jeroen Geerdink,
Project Leader Medical
Imaging at ZGT

4 REASONS FOR NVIDIA VIRTUAL GPU:

- > Enable radiologists to work from different dedicated endpoints in the hospital, or through secure remote endpoints supplied by the hospital
- > Support remote viewing and editing of large, complex images without suffering quality loss
- > Extend accessibility to images secured in the data center, while adhering to strict healthcare security and quality standards
- > Eliminate heavy workstations, and improve collaboration with colleagues situated in different physical locations

“Since deploying the NVIDIA virtual GPU and VMware solution, the Radiology department of ZGT have seen a marked improvement in productivity. This means that analyses and diagnoses can be made more efficiently from their virtual desktop, and patients can receive the care they need, faster.”

Hans Kraaijeveld,
Senior Project Engineer at
Client ICT Groep

BENEFIT

Having developed the proof of concept, the project members, consisting of the multidisciplinary project group comprised of radiologists, application administrators and ICT personnel from the hospital, together with Client ICT Groep, turned to the Radiologists themselves to enquire whether the solution met their needs. The team confirmed through rigorous testing that the solution was at least as fast as the previous workstation-based solution and in some respect, faster. Hans Kraaijeveld, Senior Project Engineer at Client ICT Groep, stated “Since deploying the NVIDIA virtual GPU and VMware solution, the Radiology department of ZGT have seen a marked improvement in productivity. This means that analyses and diagnoses can be made more efficiently from their virtual desktop, and patients can receive the care they need, faster.” With NVIDIA virtual GPU, improved latency from CPU offloading enables radiologists to complete readings of radiographic images much quicker, enabling them to achieve just-in-time diagnostics and expand the scope of work.

Since virtualizing the PACS workstations, the Radiologists themselves can also enjoy a greater level of freedom and flexibility in their work. Provided they have the right hardware, they can now work from home or collaborate with their colleagues across the hospital. This was particularly important as ZGT seeks to expand their environment. Many of their radiologists are subcontractors of the hospital and they are now able to increase the number of radiologists who work remotely.

Without the addition of NVIDIA virtual GPU, the performance and quality would not have met the needs of the remote radiologist. NVIDIA virtual GPU enabled ZGT to adhere to strict international standards as they needed to display the same amount of grayscale that a medical grade monitor could in a physical environment. ZGT did some comparison testing with their medical physicists and they found that the virtualized instance displayed the same amount of grayscale as the physical instance.

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Hans Kraaijeveld,
Senior Project Engineer at
Client ICT Groep

With strict regulations in the healthcare industry around security patient data, NVIDIA virtual GPU enabled ZGT to expand extended the possibilities of VDI, enabling radiologists to operate much more flexibly without impacting production. In the past they needed to transfer data from datacenter to physical PC, but now data never leaves the datacenter anymore, and radiologists have the ability to securely connect from home and perform diagnosis remotely.

For the IT department of ZGT, virtualizing the PACS workstations has also been a huge improvement. They now can manage everything centrally and zero clients are much easier to manage than the traditional workstations. Another key benefit for the team is that they can now easily scale their systems and also run tests without hindering the work of the radiologists. Before virtualizing, any testing would mean removing a workstation from the system completely, whereas now the team can replicate a desktop virtually and run all tests in this environment, with no disruption to the radiology team. Kraaijeveld said that “Without NVIDIA virtual GPU to accelerate the high intensity graphics workload, this virtualization project would not have been possible.

To learn more about NVIDIA
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