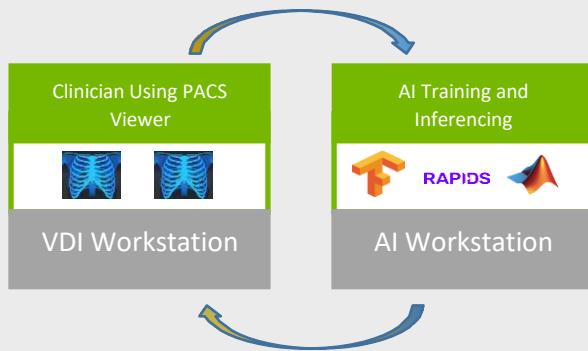


Dell Technologies Validated Designs for GPU-accelerated VDI

Utilizing hyperconverged systems for GPU resource sharing for VDI and AI workloads in healthcare ([Full paper here](#))

Challenges to running parallel mixed workloads



Healthcare has increasingly begun utilizing machine learning systems to improve countless aspects of the value chain, from improved image categorization and storage to AI assisted cancer screenings.

Traditional large-scale means of deploying AI pose challenges for many in the healthcare industry:

- Insufficient scale to deploy dedicated VDI and AI environments
- Irregular workloads lead to inability to optimize GPU utilization
- Latency challenges in moving large data files over network in relevant time frames
- Cost barriers in embracing AI within compliance constraints of healthcare data

Benefits of optimizing workload consolidation

There is no doubt that many industries have benefited significantly from embracing virtual desktop infrastructure (VDI) given all the benefits to data control, security, mobility and more. GPU-accelerated VDI has been heavily adopted specifically in areas with large design or image processing needs. Healthcare is one such industry due to the need for high performance image processing in departments such as radiology, cardiology, and digital pathology.

At the same time, many companies have begun to benefit a great deal from GPU-accelerate artificial intelligence initiatives. These programs, while clearly beneficial to the long-term outcome for the company, are often difficult to commit to and to deploy at scale. IT administrators face barriers such as:

- Insufficient scale to fully utilize GPU
- Difficulty sizing AI deployment to match user input
- Systems complexity in transferring large image files
- Cost barriers in deploying new AI environments

These challenges are not uncommon for new private AI initiatives that struggle to find the right balance of utilization and scale. It can be difficult to justify sizing out large GPU farms for AI workloads until there are known users feeding data into that platform, and it can be challenging to uncover how users will feed data into the platform until they see the benefits and have it made available to them. This 'chicken-egg' problem is common in most AI projects and the typical solutions of outsourcing AI compute resources to the public cloud or sizing very small in a proof of concept like manner, both present challenges to in the form of data security and compliance issues in the public cloud, and in cost structures and GPU utilization on premises. The key to balancing these problems lie in tying AI workloads and the VDI workloads to a common platform. By doing so, healthcare institutions can increase the GPU utilization of existing cards running in their VDI environments, improve system performance and responsiveness, and easily right size AI workloads by matching them to the platforms that need them.

But while most IT owners schedule these workloads at different times of the day or week, we believe there is a strong case for an alternative strategy.

Beyond “VDI by day, compute by night”

Of course, using existing platforms for AI and ML initiatives is nothing new. Due to the nature of VDI, IT administrators have often used common compute platforms for VDI implementations during working hours and repurposing that infrastructure for training AI models or other batch data processing workloads. This schema is not simple to implement but can be helpful in maximizing utilization of existing infrastructure that would otherwise be sitting idle. However, this relationship presumes the VDI environment itself is capable of maintaining high utilization during the day and the AI workloads doing the same at night. This assumption may not hold up in healthcare, where image processing requires significant amount of GPU’s for short periods of time.

That’s why we’ve architected and tested a shared VDI and AI infrastructure for healthcare where VDI and AI are run as dual workloads simultaneously on the same platform. By running these workloads together, you can achieve improved mobility and consistency of performance for your users, while utilizing the power of artificial intelligence, all on the same common platform. Our guidance helps you to size and deploy this setup with confidence, knowing our engineers have tested these configurations with the most popular AI frameworks and VDI best practices.

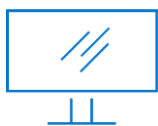
By taking advantage of our free best practices guide, you can right size your AI deployments for your operations. Our guidance helps you plan and manage this transition yourself through our [best practices guide](#) or we can help manage this for you with our turnkey deployment services, simplified lifecycle management and single vendor support experience from Dell Technologies. We are committed to helping customers run their workloads how they work best for you and this guidance will help you make those choices in your business.

The Dell Technologies Difference

Dell Technologies has a deep expertise in both VDI and AI systems and can help you deliver on all your IT initiatives. With strong partnerships with NVIDIA, Intel, and many leading AI frameworks to ensure our customers can get the best performance and support for all their GPU deployments. We believe that by implementing a shared common platform for VDI and AI workloads, organizations can increase their GPU utilization, lower their TCO, improve the mobilities of their employees, and experience high system performance for both VDI graphics and AI training and inferencing, thereby increasing the overall efficiency of their day-to-day operating environment.

Modern IT platforms from Dell Technologies help run the next generation of medical imaging applications by delivering critical solutions that give healthcare organizations the ability to balance clinical requirements with the ability to deliver unified image solutions. As healthcare organizations shift from disconnected PACS to interoperable medical imaging solutions, organizations will gain the ability to analyze medical imagery in real time with powerful AI systems, retain only the images allowed for compliance, and easily transfer and share data with patients and partners, creating better outcomes for everyone.

To answer the challenge of unlocking the power of artificial intelligence in the healthcare industry and do so as seamlessly as possible, Dell Technologies Validated Designs help provide a proven path that delivers outcomes that fit your business.



Learn More about
[Dell EMC Solutions for VDI](#)
and
[Dell Technologies VDI
InfoHub](#)



[Contact](#) a Dell EMC Expert