

Act On Your AI Initiatives

Configure the right solution for your AI workload with Dell PowerEdge and VMware.



Dell Technologies offers Validated Designs for AI workloads across industries, including:

- Healthcare
- Financial services
- Government
- Media and entertainment
- Energy
- Transportation
- Manufacturing
- Retail

AI comes of age.

While artificial intelligence (AI) has been around — in theory — since the 1950s, only recently has it shifted from science fiction to the realm of reality. In fact, today 35–42% of organizations have begun implementing AI to some degree.¹

Key factors contributing to this shift include:

- The continuous rise in data volumes — and technologies able to consolidate and unify that data
- Algorithmic breakthroughs
- Advancements in compute and storage technology that have risen to meet the demands of AI

As more businesses put AI into practice, demand increases. The global AI market is valued at roughly USD \$40 billion¹ and growing, which is no surprise given the limitless use cases and advantages that AI, machine learning (ML), deep learning (DL) and other models bring to organizations across industries.

But AI is also complex. On one hand, it requires tremendous compute power. On the other, with so many different types of AI applications, trying to find the right use case and the right configuration of servers, software, and accelerators for that use case can be daunting.

The good news is that you don't have to figure it out on your own. Dell Technologies and VMware have you covered with over 20 years of joint innovation, including a strong portfolio of Dell PowerEdge servers that support AI — and Validated Designs for VMware® environments.

¹ Dell Technologies technical paper, [The Buzz of Artificial Intelligence — AI Now and in the Future](#), January 2022.

Different AI approaches



Narrow AI is basic AI that replicates human intelligence to perform singular tasks in one area.



General AI is strong AI that performs like a human being to apply intelligence and solve problems.



Super AI exceeds human intelligence with more sophistication than any other AI or human brain in any field.



What is AI?

In simple terms, AI is a support tool that processes and analyzes vast amounts of data for learning insights and actions. Machines powered by AI specialize in precise, repetitive tasks such as basic analysis, subtle judgements, data management and problem solving.

Part of what makes AI complex are the different models associated with it, including ML, DL and neural networks. The intelligence programmed into machines is varied. Some models do what they're told, while others are trained to think for themselves and learn over time. In addition to various models and subdomains (such as computer vision, robotics, and natural language processing), there are also different approaches to AI (narrow, general, and super) — all contributing to its complexity.

AI is an incredibly vast subject. But because of that, it offers unlimited use cases and possibilities. For example, organizations use AI to aid cybersecurity, accurately diagnose diseases, improve education, reduce job hazards at the workplace, predict natural disasters, and preserve environmental resources — and this is just the beginning.

How can AI benefit your organization?

Whether you operate in retail or healthcare, manufacturing or educational research, implementing AI within your organization can deliver incredible advantages in terms of improved operations, better decision-making, optimized distribution of resources, and more. AI workloads are highly efficient, executing at incredible speeds. And with zero scope for error, they enable better forecasting. Your organization can only benefit:

- **Saving time and money**, automating routine processes and tasks
- **Increasing revenue** by identifying and maximizing sales opportunities
- **Making faster decisions** based on cognitive technology outputs

Make AI work for your organization with Validated Designs from Dell Technologies with VMware.

If it sounds amazing, it is. But where do you begin? First, you must understand what you want to get out of your AI implementation. This will provide a starting point for determining the ideal configuration of compute, software and accelerator resources. When processing vast amounts of data very quickly in most AI applications, bottlenecks are always a concern, which is why accelerator technology is typically — but not always — part of your AI foundation, whether it's at the core, edge, on-premises, as-a-Service, or multicloud.

Dell Technologies offers a range of PowerEdge servers with accelerators for AI, including NVIDIA® and AMD®. GPUs are fast becoming optimal solutions to boost AI performance. Our servers are also designed to accommodate from one to dozens of single-width or double-width GPUs, providing further flexibility to address your particular configuration needs, from training to inferencing to other diverse AI workloads (e.g., customer support chatbots, financial services, telecom).



We also offer integrated systems designed with VMware, for VMware, and to enhance VMware-enabled organizations through intelligent lifecycle management. Specifically, we have Validated Designs for AI that include everything your organization needs to accelerate your AI initiatives with engineering-designed and -validated hardware and software stacks that speed your time to solution.

Designed for today's mission-critical workloads, these Validated Designs have multiple compute, memory, storage, network and graphics options to cover a wide variety of applications, including AI and ML. In a VMware environment, AI can be easily managed with the same VMware flexibility as other applications, making it easier than ever to develop, deploy and manage diverse workloads anywhere.

Confidently run AI workloads in a virtualized environment.

Traditionally, AI implementations have been deployed on bare metal, but that is changing as more organizations operating VMware environments want to run AI workloads on their VMs or VMware Tanzu™ containers. Bare metal was thought to deliver better AI performance compared to virtualized environments, but third-party testing on AI workloads using Dell PowerEdge servers and VMware software now shows that not necessarily to be the case.

A Principled Technologies study reveals that image classification testing, using a virtual configuration of the PowerEdge R7525 Server with AMD EPYC™ processors in NVIDIA-Certified Systems™ configurations, achieved up to 97.5% of bare-metal performance on the same server.² What this ultimately means is that your organization can achieve all the benefits of virtualization, including flexibility, reliability and ease of management, without incurring a significant performance hit.

Further unlock the power of AI in VMware virtualized environments with NVIDIA AI Enterprise. This end-to-end, cloud-native suite of AI, ML and data analytics software is optimized, certified and supported by NVIDIA to run on VMware vSphere® with NVIDIA-Certified Systems such as Dell VxRail hyperconverged infrastructure (HCI).

²Principled Technologies report, [Achieve near-bare-metal inference throughput for image classification workloads with the Dell PowerEdge R7525 server using virtual GPUs](#), July 2022.



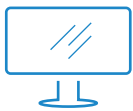
In performance testing, configurations using Dell Technologies and VMware achieved up to 97.5% of bare-metal performance on the same server.²

Dell Technologies and VMware — better together for you

AI doesn't need to be complex, and you don't have to go it alone, especially when you rely on the technology expertise of two industry leaders who are ready to power your AI initiatives. As AI use cases continue to expand and become more commonplace in virtualized environments, look to joint innovation from Dell Technologies and VMware to support your efforts.

Working together and with leading accelerator vendors, we have the proven technology, the relationships, expertise and global reach to configure technology solutions that power AI on your terms and without sacrifice.

Build your AI foundation on proven, secure PowerEdge servers. Enjoy deployment flexibility with our broad portfolio, seamlessly integrate with VMware, and gain access to cutting edge accelerator technology. Together we deliver the best of all worlds — providing the best possible start to your AI journey.



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