

Altair HyperWorks on Dell Infrastructure

Tap into the power of HPC to speed
computer-aided engineering

Customer results

100k data points

per second at McLaren¹

4.5X

faster simulations at PING²

15,000

CAT iterations over a weekend³

The engineering sector has been one of the earliest adopters of high performance computing (HPC), using powerful clusters to run compute-intensive design, modeling and simulation workloads. As artificial intelligence (AI) gains traction and converges with HPC, engineering teams continue to lead the way in the application of advanced computing. In particular, HPC-powered analytics and AI are revolutionizing computer-aided engineering (CAE), helping speed time to market with higher-quality products.

Dell Technologies is pushing the boundaries of performance for manufacturing workloads with scalable, flexible Validated Designs for HPC Digital Manufacturing. These designs are comprised of standardized building blocks to simplify and speed configuration of clusters that have been rigorously tested for CAE applications. The modular designs include servers, storage, networking, software and services in preconfigured yet customizable configurations to deliver faster deployment, better performance and easier scaling while reducing risk.

Dell Technologies is expanding its Validated Designs for HPC Digital Manufacturing with Altair® HyperWorks®. HyperWorks software enables CAE ranging from model-based systems design and early geometry ideation to detailed multiphysics simulation and optimization. These Dell engineering-Validated Designs are configured, tested and optimized specifically with and for Altair HyperWorks. This solution uses a flexible building block approach to system design, so individual building blocks can be combined to build or scale systems optimized for Altair HyperWorks workloads and use cases.

Validated Design and performance benchmarking

The Validated Designs for Altair outline the performance of various Altair HyperWorks solutions, including Altair OptiStruct®, Altair RADIOSS™, Altair AcuSolve® and Altair Feko™, with benchmarking workload management by Altair PBS Professional®. The performance benchmarking shows the solution design and system performance with Altair HyperWorks software.

Designs also outline the system building blocks for Altair HyperWorks systems including Dell servers, networking and storage, available with a single point of contact for software and hardware support. Workload management and job scheduling can be handled efficiently with Altair PBS Professional, part of the Altair PBS Works™ suite.

Dell Technologies and Altair engineering teams work together to develop optimized architectures, tune customer solutions and provide collaborative support.

¹ Dell Technologies Case Study, "[Data-driven innovation starts at racing's edge to improve race car aerodynamics — and speed.](#)" April, 2021.

² Dell Technologies Case Study, "[Driving golf forward with iron-clad digital tools.](#)" June 2021.

³ Dell Technologies Video Case Study, "[High Performance Computing Drives Cummins' Industry Leading Engine Design and Development.](#)" accessed October 2021.

Because the optimum solution configuration will depend on the specific mix of applications and types of simulations being performed, a table of recommended options are provided, along with relevant criteria to consider when making these selections. As always, Dell Technologies HPC and AI experts are available to assist you with designing a solution for your specific needs. And [Dell Technologies Services](#) — ranging from consulting and education to deployment and support — are available when and where you need them. Dell Technologies also offers a broad range of financial options, including flexible consumption models to evolve with you over time.

Infrastructure servers	Compute building blocks	Operational storage	System networking	Storage	Software
<ul style="list-style-type: none">• PowerEdge R650	<ul style="list-style-type: none">• PowerEdge C6520, R650, R750	<ul style="list-style-type: none">• PowerEdge R740xd Server	<ul style="list-style-type: none">• PowerSwitch N3248TE-ON Ethernet switch• NVIDIA® QM8790 HDR InfiniBand	<ul style="list-style-type: none">• PowerScale A200 scale-out NAS or• Validated Design for HPC BeeGFS High Performance, or PixStor Storage	<ul style="list-style-type: none">• Altair HyperWorks• Altair PBS Professional

Resources

- See [Validated Design](#).
- Get performance testing information on the [Dell InfoHub](#).
- Explore the [Dell Technologies HPC & AI Innovation Lab](#).
- Join the Dell Technologies HPC Community at [dellhpc.org](#).

Learn more

[Dell Technologies InfoHub](#)
[delltechnologies.com/hpc](#)

Altair and Dell Technologies

Altair is a leading provider of enterprise-class engineering software, enabling innovation, reduced development times and lower costs through the entire product lifecycle from concept design to in-service operation. Altair's simulation-driven approach to innovation is powered by an integrated suite of software that optimizes design performance across multiple disciplines encompassing structures, motion, fluids, thermal management, electromagnetics, system modeling and embedded systems, while also providing data analytics and true-to-life visualization and rendering.

Dell Technologies helps organizations and individuals build their digital future and transform how they work, live and play. The company provides customers with the industry's broadest and most innovative technology and services portfolio for the data era.

