

MAKING THE CASE FOR

Mobile Engineering Workstations



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Digital Engineering

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Engineering on the Go: The Case for Mobile Workstations

The way products are designed, made and used is undergoing a revolutionary transformation. Competitive and regulatory pressures are mounting, and time-to-market windows have become much narrower. As a result, engineers are expected to create new, innovative parts and products more rapidly, and to explore more design iterations in a faster time frame.



Design workflows have shifted from CAD-centric activities supported by siloed engineering and rendering departments, to more holistic environments where designers are called up to perform frequent simulation tasks, as well as real-time rendering and visualization. These new workflows require powerful workstations to support increasing demand for compute resources.

At the same time, engineers find themselves working away from their desks more frequently because of travel, remote work/ work-from-home scenarios, and the need to work from actual job sites or client offices. The recent COVID-19 pandemic – which abruptly forced many firms into work-from-home situations they were ill-equipped to support – also highlighted the need for engineers to be able to take their work with them on a moment's notice.

New, powerful mobile workstations make it possible for engineers to tackle the most challenging design workflows on the go. In conjunction with remote access software, cloud-based applications, and other innovations, these workstations make it possible for engineers to do their work anywhere, any time.

The Lenovo ThinkPad P Series of mobile workstations provides professional-grade performance in a portable form factor, including the robust graphics and multi-core processing that engineers need for collaborative, simulation-driven design.

Why Choose the Lenovo ThinkPad P Series?

Product design has become much more complex. Whether you are creating an electronic device, an automotive component, a medical device, white goods or a consumer product, these designs increasingly incorporate a mix of mechanical, electrical, sensor, and software components that require cross-disciplinary collaboration across teams performing CAD, CAM, visualization and CAE tasks. Integrating these workflows together allows product designers and engineers to experience their concepts virtually – iterating on ideas earlier in the design process, reducing costly physical prototypes and ultimately getting to market more quickly. Modern engineering workflows now include such scenarios as:

- Work may involve creating very large, complex models that reflect mechanical and electrical systems, and require large amounts of compute resources to manipulate

- A designer may need to develop a ‘digital twin’ to run multiple simulations of a design during the early development stages to verify design choices, or may leverage simulation-driven, generative design techniques that rely on complex

analysis

- Designers may be required to generate highly detailed renders of their designs for review throughout the design process; in some cases, this may even involve the use of virtual reality tools
- Many manufacturers now fabricate product components, requiring powerful CAM and tooling workflows for digital fabrication
- The design process may also require multitasking – run-

productively manage these compute-intensive tasks is easily addressed with a professional desktop workstation. In the past, the mobile environment has proven more challenging.

However, technology advancements have made it possible to create mobile workstations with the right combination of multi-core CPUs, powerful GPUs, and sufficient memory for engineers to take their work with them. Lenovo offers powerful, reliable mobile worksta-



ning analysis in the background while working in CAD, or showing a simulation or rendering to a client via a Zoom or Microsoft Teams link.

The workstation hardware required to successfully and

tions in its ThinkPad P Series that are made with high-quality standards and with the right mix of computing capabilities to allow designers to work with models, run simulations, and render their designs on the go.



The ThinkPad P Series offers a number of advantages for mobile computing, including the use of high-performance processors and advanced design features and specifications. Those include:

Powerful Intel Processors

At the heart of the ThinkPad P Series are the latest Intel Core processors, including up to 12th-Gen Alder Lake chips. The Intel processors offer optimal single-threaded for solid modeling workflows and multithreaded performance for simulation, analysis and CAM workloads. The mix of Performance Cores and Efficient Cores provide improved multi-tasking, and the Intel ThreadDirector assigns the right tasks to the right cores. Error Correcting Code (ECC) memory protects data integrity and system reliability. The Intel vPro platform offers hardware-enhanced security features to keep the devices safe against cyber attacks, along with enterprise-grade device management capabilities.

Thanks to the advanced thermal management utilized in the design of the ThinkPad mobile workstations, Lenovo is also able to leverage the maximum performance of both the CPU and GPU, enabling businesses to get the highest possible value out of their investment.

High-Capacity Storage and Memory

Many engineering applications require large amounts of memory to efficiently perform advanced operations, and the ThinkPad P Series offers units with memory from 8GB up to

128GB of DDR4 RAM. Models are also available with up to 4TB of storage, which is necessary for managing large files and data sets.

Professional Displays

With designers generating more frequent renderings and visualizations, high-quality displays are a critical component of a mobile workstation. The ThinkPad P Series workstations also feature Pantone factory color calibration with professional Minolta colorimeters, and the X-Rite application is pre-installed to manage color spaces.

Improved Thermal Design

More powerful computers generate more heat, so the latest ThinkPad P Series workstations feature improved heat management, including greater air flow, a larger CPU heat sink, larger vents, and a thermal mesh that helps dissipate heat quickly.

Lenovo ThinkPads also benefit from low-temperature solder manufacturing. This method has not only improved the products' long-term reliability, but also minimized the power consumption caused by higher temperatures in the soldering process and reduced greenhouse gas emissions during production.

Professional Graphics

Modern design workflows require advanced graphics performance, and Lenovo offers a range of leading graphics processing units (GPUs) with its mobile workstations. In addition, many engineering software applications now take advantage of the large number of compute cores available via GPU acceleration for rendering and simulation.

Built to Last

All Lenovo ThinkPads are Torture Tested to ensure they can withstand use in the field as well as in the office. Mobile workstations are no exception and are exposed to shock, vibration, and environmental hazards (like dust and liquids) that can quickly render a consumer-grade laptop inoperable. For engineers to be able to continue working at client sites, in the field or at home, they need to be able to rely on the workstation, even in less-than-optimal environments.

Lenovo is dedicated to quality which means its workstations are tested against the MIL-STD 810H standard for durability and reliability. This includes exposing the workstations to multiple shocks and drops, humidity, extreme cold and heat, solar radiation, high altitudes, dust, liquids, vibration, wireless interference and other conditions.

Mobile workflows also require flexibility

on when to dial up performance and when to conserve battery, by utilizing the Windows Power Slider, the Lenovo ThinkPad P Series offers the best of both worlds, depending on the task at hand.

Certified to Work with Engineering Applications

Lenovo offers certified workstations for use with a variety of products from independent software vendors (ISVs). Thanks to Lenovo's relationship with ISVs, the workstations in the ThinkPad P Series are certified to work with all leading design and engineering software, including applications from Autodesk, Siemens, Ansys, PTC, Dassault Systèmes, and others. That level of reliability and capability, specific to the applications that engineers use every day, is not available in consumer-grade laptops and notebooks.

Flexible Configurations

The Lenovo ThinkPad P Series includes a wide range of mobile workstations to address most engineering roles and workflows, from general-purpose CAD work to more analysis- and visualization-heavy applications. From thin-and-light for highly-mobile power users to ultra-premium blends of power and design, through to heavy-duty performance on-the-go, the portfolio offers the full spectrum of solutions.

The Bottom Line



Engineers and designers need more compute power than ever before – at their desk-top, at home, and in the field – to use the design, simulation, and rendering tools required for new and emerging design workflows. Remote and work-from-home environments, in particular, will require powerful and reliable mobile workstations that can meet these demanding standards.

Lenovo offers a wide range of mobile workstations in its ThinkPad P Series that are built to address these workflows. Meeting Lenovo's stringent quality and performance standards, the ThinkPad P Series offers:

- Powerful, multi-core Intel processors
- Professional-grade graphics cards
- Flexible configurations to meet application and budget requirements
- Tested, durable design that meets MilSpec standards
- Color-calibrated displays
- Certification with leading engineering/design software

To learn more about the benefits of the Lenovo ThinkPad P Series workstations, contact Lenovo at:

www.lenovo.com/workstations

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