Lenovo ThinkPad P16

The new ThinkPad P16 packs the high-end performance of a 17-inch mobile workstation into a compact 16-inch form factor, powered by new 12th Generation Intel Core HX processors

SCREEN IMAGE COURTESY OF ENSCAPE

The ThinkPad P16 is one of the most ambitious mobile workstations to come out of Lenovo in recent years. It marks the convergence of two different form factors – the 15-inch and 17-inch – into an innovative high performance 16-inch chassis.

But it's not just its size that's different. With a brand new industrial design, the ThinkPad P16 brings Lenovo's legendary mobile workstation family bang up to date with a sleek, modern aesthetic and premium materials, including an anodized aluminum 'storm grey' cover. With a 16:10 aspect ratio on the display, which includes a 4K OLED option, and thin bezels on each edge, the chassis is equivalent in size to a more traditional 15.6-inch laptop.

Optimized performance

The high-end mobile workstation is designed for the most demanding professionals, including product designers, architects, engineers, and visualization specialists.

Performance is up front and centre. Powered by the new 12th Generation Intel Core HX processors, the ThinkPad P16 delivers processing performance that can rival desktop workstations.

With up to eight 'Performance' cores and eight 'Efficient' cores, for a total of 16 physical cores and 24 threads, the processor excels in both single-threaded workflows, such as CAD and Building Information Modeling (BIM), and multi-threaded workflows, such as engineering simulation, ray trace rendering and reality modeling.

In addition, the ThinkPad P16 offers a choice of high-performance professional GPUs up to and including the NVIDIA RTX A5500 (16 GB) for the most demanding real-time visualization and VR workflows.

Other specs include up to 128 GB of DDR5 memory, up to two high performance NVMe SSDs and the very latest in wireless connectivity including Intel WiFi 6E AX211 and 4G.

Cool operator

Despite offering similar core specifications, not all mobile workstations are the same. Due to cooling constraints, processors can be fed different levels of power and can sometimes be 'throttled' to stop them getting too hot. This is not the case with the ThinkPad P16. Thanks to its innovative dual vapor chamber, the powerful mobile workstation excels in its thermal design, delivering exceptional performance while running cool under heavy loads.

Learn how the ThinkPad P16 was designed *tinyurl.com/ThinkPadP16*

ThinkPad P16 - tech highlights

With a brand new industrial design, the ThinkPad P16 delivers exceptional performance in a stylish, strong and durable 16-inch form factor

FHD camera

The FHD (1,920 x 1,080) camera delivers a higher resolution for better video conferencing and comes with hardware noise reduction. There's also a ThinkPad Webcam Privacy Shutter and an IR option for Windows Hello support

16-inch pro display

With a 16:10 aspect ratio, the 16-inch display has 11% more pixels and a significantly greater viewable working space. It also creates a 'deeper' system which allows for thinner bezels and an improved screen-to-body ratio.

Resolutions go up to WQUXGA (3,840 x 2,400). There are IPS or OLED options for exceptional color saturation and dark blacks, up to 600-nit peak brightness, 100% Adobe RGB color gamut, X-Rite color calibration, and low-blue light for reduced eye strain

SCREEN IMAGE COURTESY OF ENSCAPE

ThinkPad keyboard

The ThinkPad keyboard has been enhanced with a 'soft landing' design that provides more shock absorption for smoother and more responsive typing. The keyboard is backlit, spill resistant and also aids cooling, by drawing in air between the keys to increase air flow through the fans

Touchpad & TrackPoint

For improved control, the 115mm wide touchpad is 15% wider than before, while a new 'glass like' mylar surface decreases friction for a more premium experience. The TrackPoint cap has also been improved to deliver 'more certain and precise movement' and decrease wear

Strength and style

The palm rest is crafted from ABS plastic and polycarbonate. To echo the aesthetic of the anodized aluminum 'A Cover', it is coated with advanced anti fingerprint paint. Meanwhile, a solid magnesium sub frame or 'roll cage' gives the laptop its renowned ThinkPad strength and rigidity

Power and security

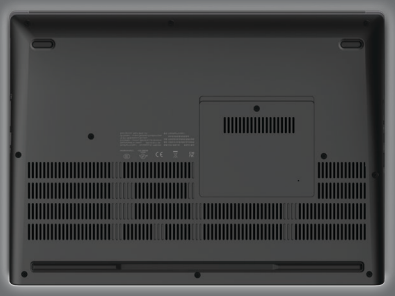
The power button features an integrated on chip fingerprint reader for enhanced security and a cleaner, less cluttered design. Engineering simulation was used to optimize the shape and spring force of the button

Antenna performance

The ThinkPad P16 comes with a range of options for wireless connectivity, including Intel WiFi 6E AX211 and 4G. To optimize the performance of the antennas, a window is cut out of the anodized aluminum 'A Cover'

Serviceability

To minimise downtime in the rare event of a failure, or to extend product life through easy upgrades, the ThinkPad P16 was built with serviceability in mind. A service hatch with a single screw gives easy access to one of two NVMe drives and two (out of four) memory slots, while the second NVMe drive, Wi-Fi and 4G modules can be accessed by opening the entire bottom cover



Premium frame

For strength and rigidity the 'A Cover' features a magnesium subframe, finished in anodized aluminum for a premium look and feel, with a 'storm grey' finish

Tough cookie

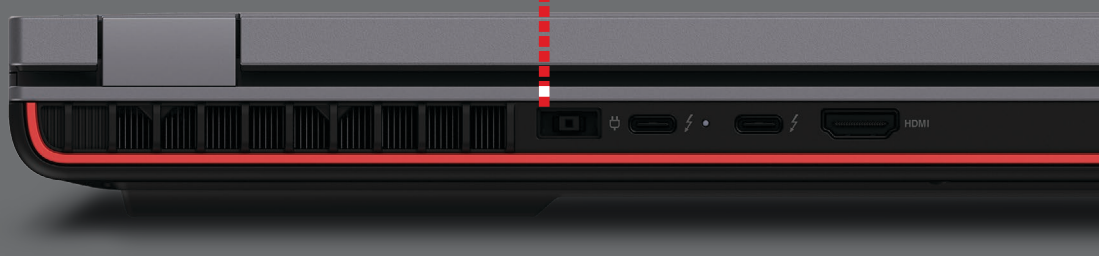
To help ensure long term durability, the ThinkPad P16 goes through a rigorous process of in-house 'torture tests', including thousands of open-close cycles for the zinc alloy hinges. To demonstrate its toughness, the ThinkPad P16 is also put through the US Department of Defense's MIL-STD 810G standards, which include tests for mechanical shock, humidity, cold, heat, sand & dust, vibration and more

Sustainability

The ThinkPad P16 follows Lenovo's commitment to environmental sustainability, utilizing 30% post-consumer recycled plastic material (PCC) in the speaker enclosure and 97% PCC in the batter pack frame and FSC certified materials used in the carton and accessory box. Lenovo has also launched a CO_2 Carbon Offset Service based on 'realistic' five year product emissions covering production, shipment and typical usage

Rear connectivity

Many of the ThinkPad P16's ports, including HDMi, power and Intel Thunderbolt 4, are located to the rear of the machine for a clutter free desk



Thermal exhaust

The ThinkPad P16 features an advanced thermal design to keep the system running fast and cool. Cool air is drawn in from the bottom and through the keyboard, then expelled at the rear, rather than the side, so it does not heat up the user's hands

Game changing performance

With a new hybrid architecture, the Intel 'Alder Lake' HX series of mobile processors, at the heart of the ThinkPad P16, give a phenomenal performance uplift in multi-threaded workflows like ray trace rendering

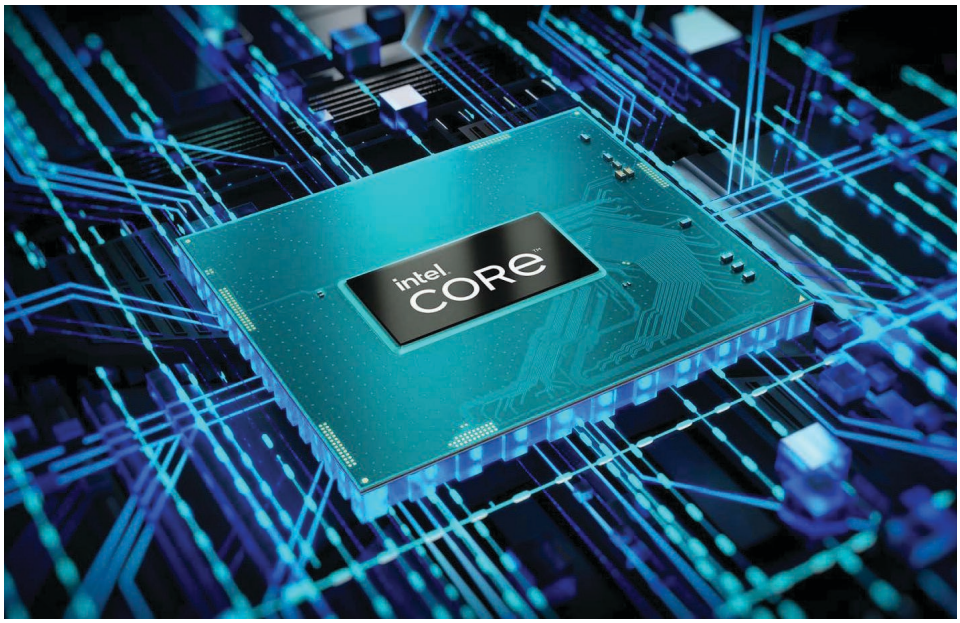
New 12th Generation Intel Core processors are different to all previous Intel processors. They are the first to feature a hybrid architecture with two different types of cores: Performance (P) cores for primary tasks and Efficient (E) cores, which are heavily focused on maximizing performance per watt. Intel calls this its biggest architectural shift in a decade.

The idea behind Intel's hybrid architecture is that critical software, including your current active application, runs on the P-cores, while tasks that are not so urgent run on the E-cores. This could be background operations such as Windows updates, anti-virus scans, or hidden tabs on a web browser. No processing power is ever wasted. If the software is highly multi threaded then it will run on both sets of cores.

P-cores are not only faster than E-cores, but they also support hyperthreading, Intel's virtual core technology. This means every P-core can run two threads at the same time, which can help boost performance in certain multi-threaded workflows, such as ray trace rendering.

12th Gen Intel Core HX

The Lenovo ThinkPad P16 features 12th Generation Intel Core HX processors. Specifically designed for high-end laptops and mobile workstations, they offer more cores than the 12th Generation Intel Core H processors, found in the super slim Lenovo ThinkPad P1 Gen 5.



With 8 P-cores and 8 E-cores, for a total of 16 physical cores and 24 threads, 12th Generation Intel Core HX processors are designed to take performance to new levels.

They offer a significant performance uplift compared to 11th Generation Intel Core processors, which maxed out at 8 cores and 16 threads.

The performance benefits are likely to be felt most strongly in highly multi-threaded workflows such as ray trace rendering. Here, applications such as Luxion KeyShot and Chaos V-Ray should be able to harness the full processing capabilities of both sets of cores.

That's not to say 12th Gen Intel Core HX processors won't deliver improvements in single threaded workflows. With a higher Instruction Per Clock (IPC) than 11th Gen Intel Core processors, the ThinkPad P16 should also deliver a significant uplift in Computer Aided Design (CAD) and Building Information Modeling (BIM) software, in applications including Solidworks, Inventor, AutoCAD and Revit.

Optimized cooling, optimized performance

The ThinkPad P16 features an advanced thermal design to help it run cool and quiet and maintain exceptionally high levels of performance over extended periods.

The system is built around a dual vapor chamber cooling solution that balances the thermal load between the CPU and GPU. So, if you have a workflow that stresses the CPU, such as ray trace rendering, but hardly uses the GPU, the system can automatically borrow some of the GPU's thermal budget so more power can be delivered to the CPU.

In the ThinkPad P16, each processor has its own fan and vapor chamber, which are connected to one another by a copper plate and a shared heat pipe. This effectively creates one very large cooling assembly which can spread heat very quickly.

According to Lenovo, using this vapor chamber design can increase the total Thermal Design Power (TDP) capability of the system by 10W to 20W, leading to a 6% to 12% improvement in thermal performance.

In other words, it can pump more power into the CPU and GPU as and when required, to increase frequencies for faster processing. In fact, it can deliver up to 55 watts to the CPU and up to 125 watts to the GPU, the kind of power traditionally associated with a larger 17-inch mobile workstation and way above that of a typical 15-inch model.