

IN THE THINKSTATION[®] WORKSTATION.

Lenovo's ThinkStation line continues to introduce innovations that meet changing industry demands and provide industry-leading reliability.

Introduction

This is an innovation story. It's a story that sees Lenovo's ThinkStation line of workstations rising up to deliver solutions that are cooler, stronger and more reliable.

ThinkStations are regarded as the go-to systems for customers who demand the most reliable solutions. ThinkStations feature industry-leading technologies for processing and graphics. However, superior reliability is the reason why ThinkStation customers are able to DO more, with less down time for repairs.

The new 30 and 31 series, for example, utilize innovations such as multi-channel cooling, tool-less memory coolers, large diameter fans and a unique drive tray design. These utilities are designed to help workstations run cooler than ever before, which helps reduce the risk of failure. In fact, across the entire line, Lenovo engineers have made conscious design decisions that will allow for maximum airflow over key components, which ultimately increases reliability. As a result, Lenovo's ThinkStation line has been rewarded with 13 patents (6 are patent-pending).

Furthermore, a recent workstation repair rate study from Technology Business Research (TBR) proved just how uncompromising and reliable ThinkStation workstations really are. Results indicated that Lenovo averaged significantly lower repair rates than the competition over three years.* Plus ThinkStations are now more environmentally responsible than ever, as they're made with up to 65 percent post consumer recycled plastics and achieve up to 92 percent power efficiency.

Architects, engineers, scientists, researchers and designers who look to Lenovo ThinkStations to get it done will discover reliable and innovative workstations that improve usability and maximize uptime.





*Average warranty repairs over first three years.

THINKSTATION[®] INNOVATION

SMARTER HARDWARE

ThinkStations, like other Think-branded products, maintain a legacy of being leaders in reliability and performance. Each ThinkStation series evolution yields systems with the latest generation of multi-core processing and graphics capabilities from Intel® and NVIDIA®, enabling applications to run faster and empowering designers to fully realize their visions. Also, every ThinkStation is ISV-certified, ensuring applications are tested to maximize performance. When it comes to reliability and performance, Lenovo takes a bold step forward.

RELIABILITY

The ThinkStation's reliability comes in part from its focus on keeping the interior components cool and secure. Keeping the critical components cool makes them less likely to fail. The C series ThinkStation utilizes multi-channel cooling that enables the systems to operate cooler, which was proven in a workstation repair rate report published by TBR.

ThinkStation engineers also focus on how to keep components from being damaged in transport or by sudden movements. For example, rubber shock absorbers on the hard-drive and system fans reduce noise, vibration and disk errors.

HEX HONEYCOMB DESIGN

Here's yet another example of ThinkStation engineering and reliability at work. As opposed to a standard circular exterior design, the Think design team drew inspiration from nature to develop a hex-like pattern allowing more cool air to enter the system while maintaining superior structural integrity. Once again, more cool air equals more reliability.

COMPACT DESIGN

The ThinkStation team accomplished what competitors said could not be

done — create a compact workstation without compromising on speed and productivity. The C series dual-processor workstation system is a perfect example of how to achieve maximum performance in tight spaces. ThinkStation engineers made innovative changes such as placing the optical drive vertically and suspending it over the motherboard. This design approach resulted in the C series being 25 percent smaller than the traditional dual-processor workstation.

UNCOMPROMISING PERFORMANCE

Lenovo is also the expert at creating compact workstations that never sacrifice performance or reliability. Lenovo maximizes reliability by utilizing an ultra-high performance heat sink to cool the CPU to the same specs as noncompact workstations. Lenovo's airflow control feature on the heat sink directs extra air to critical components on the board for added reliability in high power CPU applications.

ACOUSTICS

How can we to balance cooler components with whisper-quiet acoustics? Well, in the ThinkStation C series, Lenovo took revolutionary approach that used the power supply fan to cool the hard drives directly. To accomplish this while keeping the acoustic signature as low as possible was no easy task. Lenovo engineers worked to specify the right balance of thermal and acoustic performance. Lenovo used a high performance, specially designed fan as well as a fan control algorithm to ensure that both the hard drives (including SAS drives) and the power supply would operate well within Lenovo's stringent thermal and reliability requirements. Innovations such as these keep ThinkStations whisper-quiet, at a mere 25 db in idle mode.

EFFICIENT POWER

ThinkStations manage to keep their performance big and their footprint small. Made with up to 65 percent post consumer recycled plastics, they deliver up to 92 percent efficient power supply making them one of the most eco-friendly workstations on the market. Energy Star compliant, plus 80 Plus Gold (80 Plus Platinum for E31 SFF) and EPEAT Goldcertified on 100 percent of platforms, Lenovo ThinkStations are greener and more powerful than ever.



Lenovo ThinkStations are some of the most eco-friendly workstations.

GRAPHICS PERFORMANCE

Across its entire line, Lenovo ThinkStations give designers, animators, architects and creators the tools they need to DO more. Partnering with Intel and NVIDIA, ThinkStations are optimized to enable more effective 2D and 3D content creation. In fact, the new NVIDIA Maximus solution, which combines NVIDIA Quadro® and NVIDIA Tesla® graphics cards, facilitates a workflow where designers can design, render and simulate in parallel, saving countless hours. "On the ThinkStation D30, a tool-less interior lets you maintain and upgrade key components easily, while an 1120W power supply provides all the power you'll need. The whole machine is quiet, with a maximum operating noise level of 24 decibels."

- PC MAGAZINE





Tri-channel layout allows for more effective and efficient cooling with large diameter fans designed to remove heat quietly and efficiently. HexPerf Honeycomb Design allows for increased air while maintaining structural integrity of system.

The ThinkStation® C30, interior shot (L), front shot (R).

NOTABLE INNOVATIONS IN 30/31 SERIES

Lenovo's new 30 and 31 series of workstations have been designed to meet the day-to-day demands of product designers, financial traders, architects and software developers everywhere. Here are just a few of the patentpending innovations that will provide increased power, productivity and unprecedented value.

MINI-SATA (MSATA) SUPPORT

The 30 series now includes mSATA support, allowing customers to utilize smaller, lower capacity storage devices. Customers in industries such as finance using server-based storage may only need a lower capacity, lower-cost local storage device. Other customers may also want to include a fast OS drive along with three data drives available on systems such as the C30.

MEMORY COOLERS ON THINKSTATION® S30 AND D30

How can we cool critical components of the DIMM while also promoting adequate airflow within the system? Lenovo's Think engineers developed a unique cooling solution that utilizes plastic housing with a fan. The new cooler is designed to move the air to where it needs to go, reducing fan speeds and acoustics and ensuring maximum reliability on the DIMMs. What's more, the coolers snap right over standard DIMM



Memory Cooling Module Installed

sockets without any tools required. This eliminates the need for holes in the motherboard, which increases wirability.

IMPROVED CABLE MANAGEMENT

On the C30, Think engineers were tasked with redesigning the interior space to accommodate a larger motherboard while maintaining the compact exterior dimensions of the C20. Given that the new power connector would be located adjacent to a video card, the engineers also needed a way to route the cables so that they wouldn't get into the video card's fan input. The team came up with a way to have the cables exit the power supply in a specified order and flattened like a ribbon.

Additionally, they were able to route the cables over and around the hard drive cage, increasing airflow through the HDDs — all while maintaining the 3U form factor and physical dimensions of the award-winning C20.

COMBINED FANS ON THE THINKSTATION® C30 AND D30 WORKSTATIONS

The Lenovo design team devised a revolutionary way to reduce the number of controllers on the motherboard by enabling two fans to be driven by a single control line. Both fans are driven at the same speed and use the same algorithm. Ultimately, the new wiring frees up valuable motherboard space.

CUSTOMIZABLE THERMAL CONTROL

Think engineers developed systemcooling algorithms that easily adapt to real world workstation applications. System fans can be sped up in situations where noise isn't a factor — providing optimum reliability. Or, when noise matters, those same systems can be turned down to minimize noise output.

EZ GLIDE FEET ON THE S30

The new feet on the S30 have evolved from soft durometer high friction material to high durometer low friction material. The front feet remain the same high friction found on the S20. The difference in friction provides greater flexibility for end users. Sliding the system into place under a desk is easier than ever. Simply lift the front handle and push the system to the exact spot you want it and once there, the front feet will keep it locked in place.



EZ Glide Feet (Illustration demonstrating moving a machine and close-up view of one EZ Glide Foot)



Combined fans driven by a single control line free up valuable motherboard space.

"The Lenovo ThinkStation C30 is the most compact of the new workstations, designed with financial services, CAD and digital content creation in mind. The ThinkStation C30 also gets faster data transfer with USB 3.0, and stays extra cool with Lenovo's tri-channel cooling technology."

- PC MAGAZINE



Unobstructed airflow through HDD/PSU area as a result of improved cable management innovation.

CONTINUED INNOVATION

Tool-less hard disk drive (HDD) adapter trays. Custom thermal control independent of BIOS. Enhanced storage via mSATA. Plus many more features that will reduce operational costs, improve reliability and usability, achieve greater energy efficiency and more.

From small yet powerful machines designed for space-constrained environments to powerful, rock-solid workhorses designed to handle any task, the ThinkStation 30 and 31 series launch finds Lenovo at its most innovative.

THINKSTATION® PRODUCT LINE

THINKSTATION® E31

BIG PERFORMANCE. SMALL SIZE AND PRICE.

This workstation further solidifies Lenovo's leadership in the compact arena. First, Lenovo introduced the world's smallest dual-processor workstation, the C series ThinkStation[®]. Now Lenovo has released a small form factor single-processor solution, the E31 SFF, that meets day-to-day performance demands of multiple industries while fitting seamlessly into ever shrinking workspaces. Applications run fast as they're powered by the latest Intel[®] Xeon[®] E3 processors. At 1600 MHz, it features faster memory performance, which helps boost productivity.

THINKSTATION® S30

HIGH-PERFORMANCE. ADVANCED GRAPHICS. ULTRA-RELIABLE.

On the mid-range ThinkStation[®] S30, memory has been boosted to 128 GB up from 48 GB in the S20. It's more energy efficient and also features USB 3.0 support (2 onboard and a PCI ecard) for faster transfer rates. The latest Intel[®] Xeon[®] processor technology optimizes performance for top ISV-certified applications while supporting discrete graphic solutions from NVIDIA[®], including Maximus with Quadro[®] and Tesla[®] configurations.

THINKSTATION® C30

UNPARALLELED PERFORMANCE. UNPRECEDENTED SIZE.

The C2O's award-winning design legacy continues on the C3O with additional system-wide improvements — faster memory performance, tri-channel cooling, improved reliability and more. It remains the world's smallest dual-CPU workstation while accommodating additional memory and USB 3.0 support. Its patented design and cooling technology deliver more power in less space.

THINKSTATION® D30

EXTREME SPEED. POWERFUL GRAPHICS. COOL AND QUIET.

The D30 was conceived to help companies tackle the biggest challenges they face. Up to eight core Intel® Xeon® processors help tasks get done faster. Discrete Quadro® and Tesla® graphics from NVIDIA® facilitate 3D product design and allow concept to become reality. Supporting up to 256 GB (16 DIMMs) and 1600 MHz of memory performance as well as USB 3.0 support.









