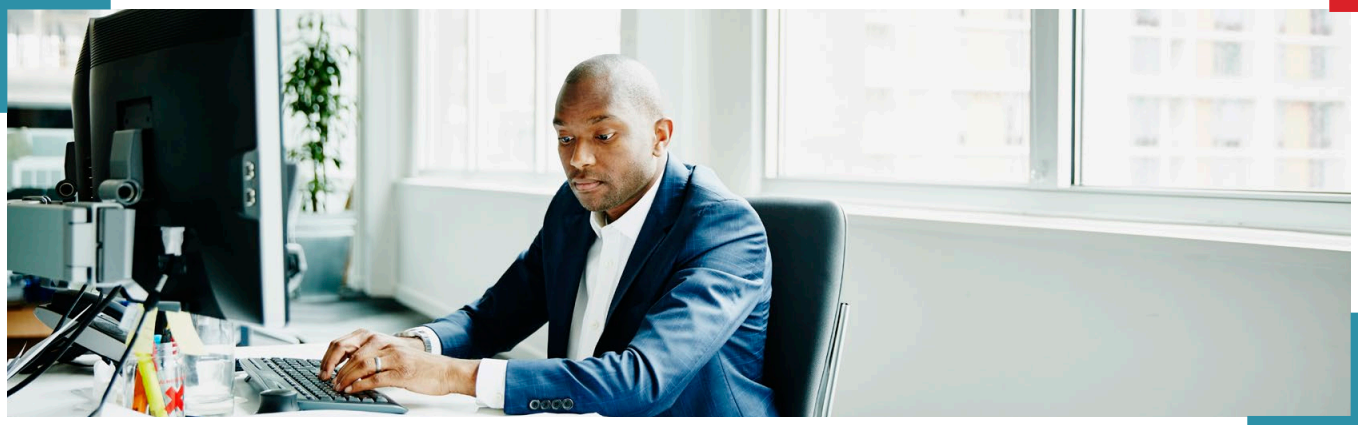


Business desktop users can get increased performance and value with a Dell Precision 3640 Tower

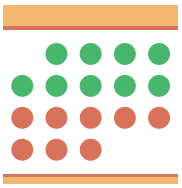
vs. Dell OptiPlex 7080 Tower

If your business is currently evaluating which Performance Desktop to purchase, consider making the jump to more powerful workstations, which can deliver better performance and greater overall value.

At Principled Technologies, we compared the Dell Precision™ 3640 Tower workstation to the Dell OptiPlex™ 7080 Tower. Across three levels of configurations to reflect different use cases, the Dell Precision 3640 Tower outperformed the Dell OptiPlex 7080 Tower in the majority of the benchmark workloads, achieving those productivity wins with improved or comparable thermal and acoustic measurements.

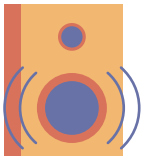
The Dell Precision 3640 Tower improved performance on high-intensity office software and workstation applications at a slightly higher cost—with the Intel Core i9-10900K processor-based configuration priced at around US $27 more than its Dell OptiPlex 7080 Tower counterpart. This shows that business users requiring systems that deliver high-end performance can get better performance and value by forgoing a traditional desktop and investing in the power of the Dell Precision 3640 Tower.

Boost performance
for as little as
US $27 extra*



potentially recoup
that in under
9 days

Up to
11.1% better
CPU performance on
Cinebench R20



Stays cool
and runs up to
3.2dB quieter
under GPU-heavy loads

*Pricing may vary.

Our comparison

We compared configurations of the following systems:

- Dell Precision 3640 Tower workstation
- Dell OptiPlex 7080 Tower

each with the same memory and storage and the following processors:

- Intel® Core™ i7-10700
- Intel Core i9-10900
- Intel Core i9-10900K

We compared the six systems in the following areas:

- Performance benchmarks
  - BapCo® SYSmark® 2018
  - Cinebench® R20
  - SPECworkstation® 3
  - SPECviewperf® 13
- Thermals and acoustics
- Price, performance/dollar, and ROI

We chose performance benchmarks stressing CPU and GPU with various types of workloads to replicate several performance-intensive application scenarios. The Precision 3640 Tower systems featured NVIDIA Quadro GPUs and OptiPlex 7080 Tower systems had NVIDIA GeForce GPUs. Learn more about our testing, including specific system configurations, in the science behind the report.

About the Dell Precision 3640 Tower workstation

For organizations with users who could benefit from workstation-level performance, the Dell Precision 3640 Tower offers multiple 10th Generation Intel Core and Intel Xeon® processor options with advanced features such as RMT Pro, professional graphics, AI-powered Dell Optimizer, and larger PSUs and additional cooling. Users can choose up to NVIDIA Quadro RTX5000 graphics and up to 128GB RAM. The Precision 3640 Tower features up to 6TB total PCIe SSD capacity and Win 10 Pro for Workstations and Ubuntu 18.04 OS options to deliver the experience that users desire.

To learn more about the Dell Precision 3640 Tower workstation, visit https://www.dell.com/en-us/work/shop/workstations-isv-certified/new-precision-3640-tower-workstation/spd/precision-3640-workstation.

About the Dell OptiPlex 7080 Tower

For organizations with users who could benefit from premium-level day-to-day desktop performance, the Dell OptiPlex 7080 Tower is built with 10th Generation Intel Core processors, offering the flexibility to select up to 4TB total SSD capacity and features up to Win 10 Pro and Ubuntu 18.04. Users with graphics content consumption can have a multiple graphics card options up to NVIDIA RTX 2070 Super and up to 128GB RAM. The OptiPlex Tower also supports Intel Optane technology and PowerShare enabled, Gen 2 type USB Ports for faster data transfer.

To learn more about the Dell OptiPlex 7080 Tower, visit https://www.dell.com/en-us/work/shop/desktops-n-workstations/new-7080/spd/optiplex-7080-desktop.

The Dell Precision 3640 Tower workstation (left) and the Dell OptiPlex 7080 Tower (right).

Stronger performance stepping up to the Dell Precision 3640 Tower

Providing employees with more powerful workstations instead of high-end desktops can help them be more productive throughout the workday. To highlight potential benefits, we assessed the performance of the Dell Precision 3640 Tower with three different processors compared to the Dell OptiPlex 7080 Tower with the same processors, we ran four productivity benchmarks. We ran each benchmark three times and report the median of each run.

The SYSmark 2018 benchmark uses business applications to deliver an Overall Rating based on scores in three categories: Productivity, Creativity, and Responsiveness. In SYSmark 2018 tests, the Dell Precision 3640 Tower provided a better performance rating vs. the Dell OptiPlex 7080 Tower with the Intel Core i7-10700 and Intel Core i9-10900 processor configurations, and a comparable rating with the Intel Core i9-10900K configuration (see Figure 1).

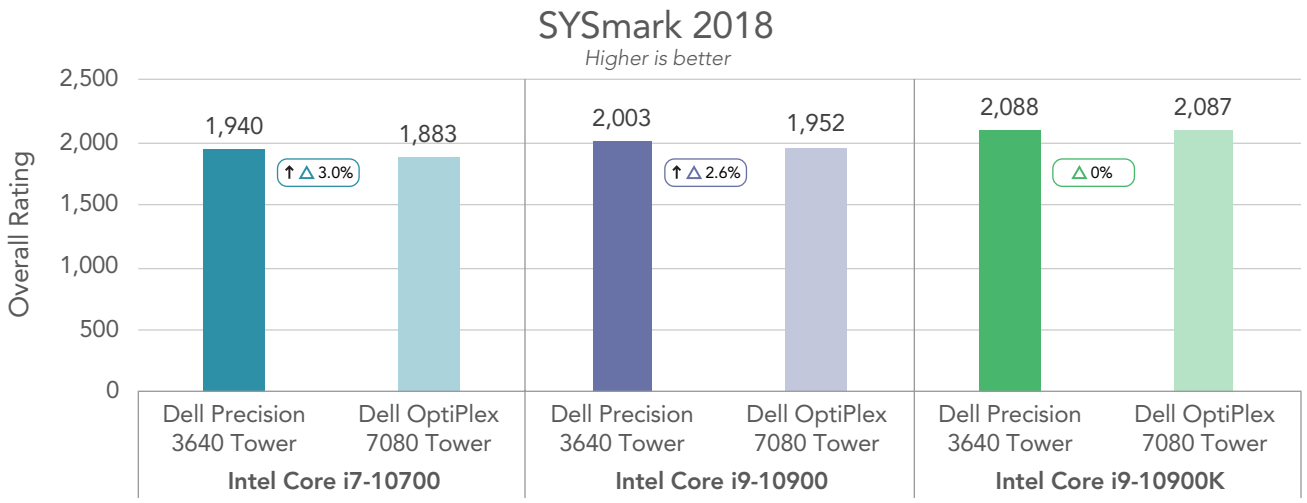


Figure 1: SYSmark 2018 Overall Rating scores for the test systems. Higher is better. Source: Principled Technologies.

Cinebench R20 is another standard benchmark that assesses computer hardware, completing 3D renderings to tax the processor. In Cinebench R20 tests, the Dell Precision 3640 Tower provided up to an 11.1 percent higher overall rating vs. the Dell OptiPlex 7080 Tower (see Figure 2).

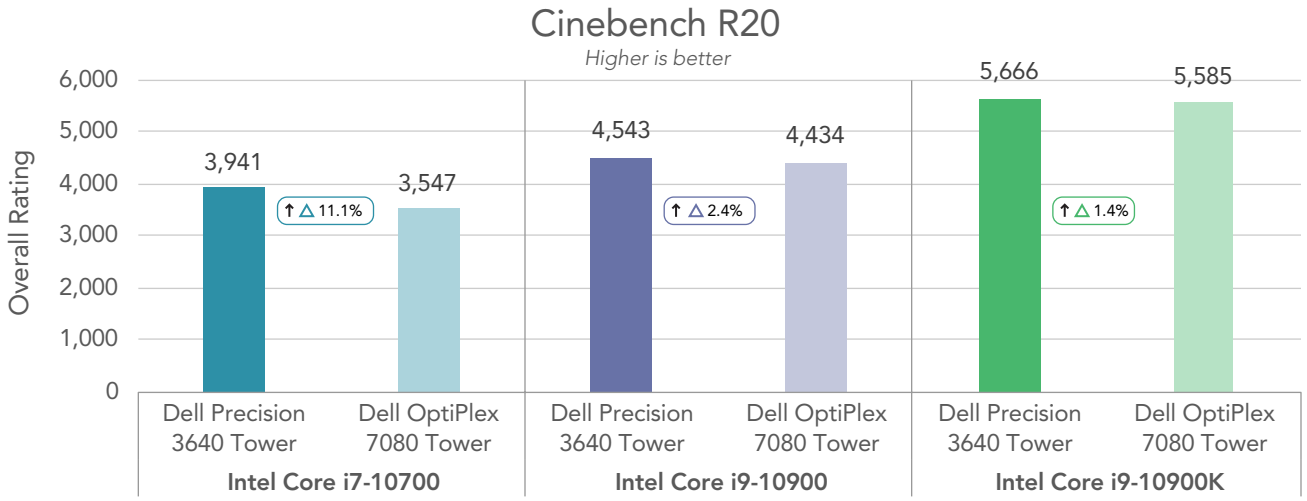


Figure 2: Cinebench R20 Overall Rating scores for the test systems. Higher is better. Source: Principled Technologies.

SPECworkstation 3 evaluates system performance using typical tasks in seven key areas (Media and Entertainment, Product Development, Life Sciences, Financial Services, Energy, General Operations, and GPU Compute). In SPECworkstation 3 tests, the Dell Precision 3640 Tower provided consistently better performance than the Dell OptiPlex 7080 Tower (see Figures 3 and 4). For complete SPECworkstation 3 results, see the science behind the report.

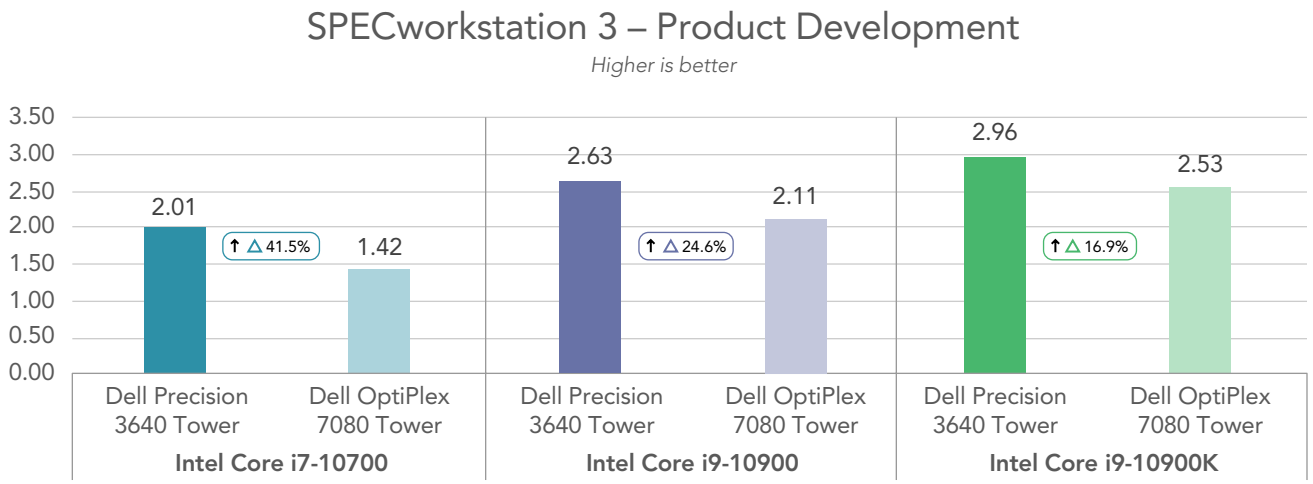


Figure 3: SPECworkstation 3 Product Development workload scores for the test systems. Higher is better.
Source: Principled Technologies.

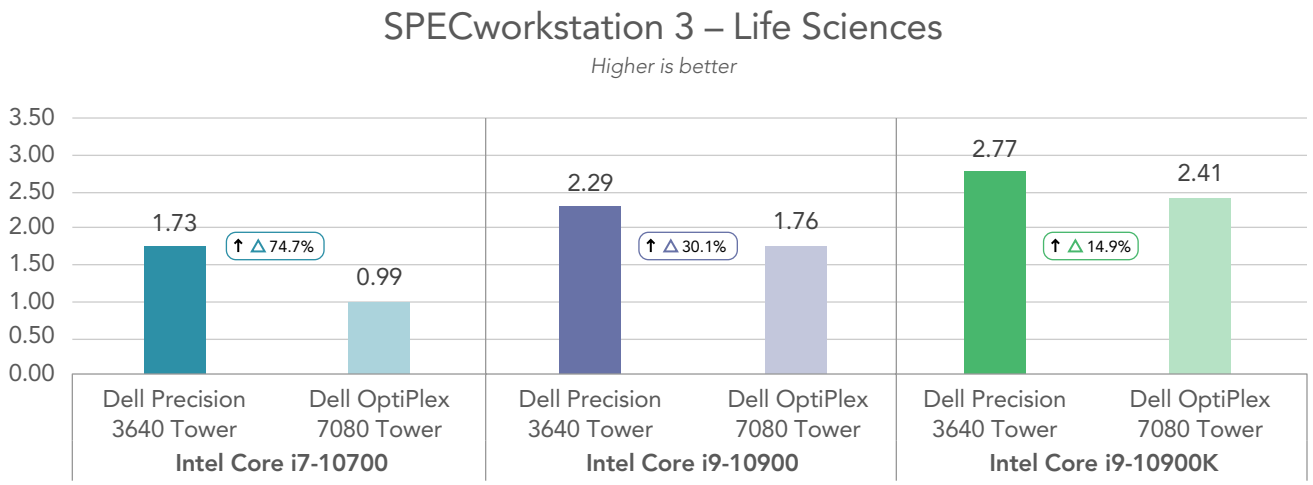


Figure 4: SPECworkstation 3 Life Sciences workload scores for the test systems. Higher is better.
Source: Principled Technologies.

SPECviewperf 13 measures 3D graphics performance using professional applications. In SPECviewperf 13 tests using nine renders, the Dell Precision 3640 Tower outperformed the Dell OptiPlex 7080 Tower on all nine renders with the Intel Core i7-10700 configuration, six renders with the Intel Core i9-10900 configuration, and six renders with the Intel Core i9-10900K configuration. This shows that the Dell Precision 3640 Tower generally offers better 3D graphics performance than does the Dell OptiPlex 7080 Tower. To see the SPECviewperf 13 results in detail, see the science behind the report.

Comparing thermals and acoustics

Systems with more processing and graphics power can also increase heat and noise—two things most users would like to diminish. Towers that produce significant levels of heat without an efficient thermal management system can slow performance or even experience unwanted shutdowns during peak performance times. The Dell Precision 3640 Tower ran just slightly hotter despite largely outperforming the Dell OptiPlex 7080 Tower in benchmark tests, suggesting a more efficient thermal solution at work (see Figure 5).

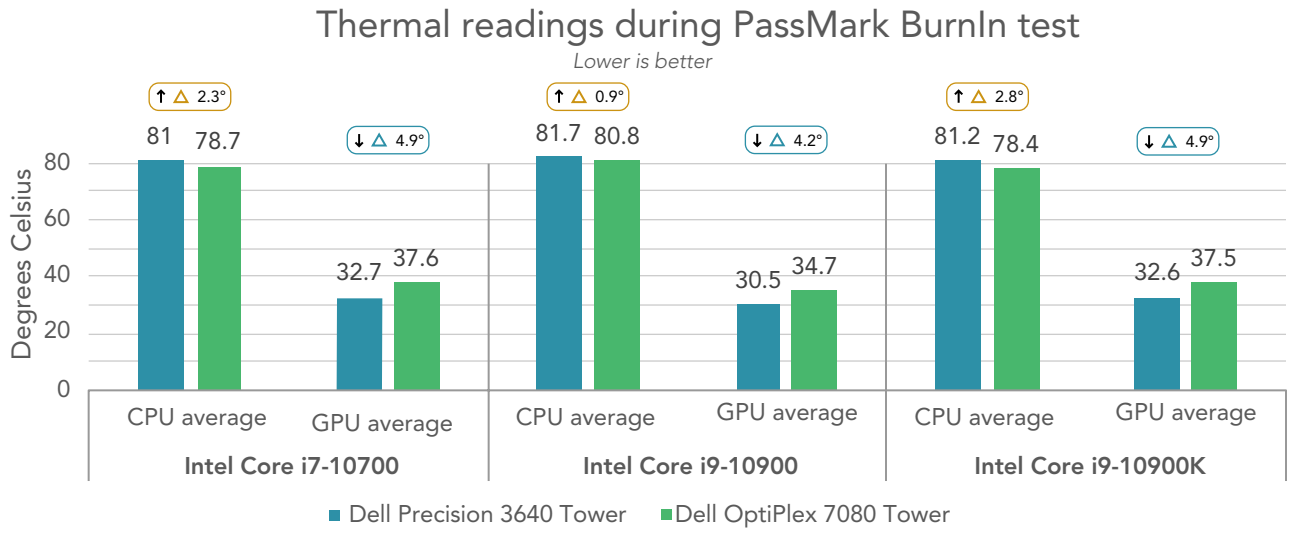


Figure 5: Thermal readings during PassMark test in degrees Celsius. Lower is better.
Source: Principled Technologies.

Too much noise can create problems in open-office floorplans, work-from-home setups, small offices, or service desks. Our tests showed that both the Dell Precision 3640 Tower and Dell OptiPlex 7080 Tower ran quietly—with the more powerful Dell Precision 3640 Tower running up to 2 percent louder than the Dell OptiPlex 7080 Tower in a few of the tests.

At its loudest—during Unigine Heaven tests, which stresses system graphics—the Dell Precision 3640 Tower with Intel Core i9-10900K processor still sounded quiet for an office or home office setup, falling within the range of rustling leaves, quiet rural areas, and the ambient noise of a library, according to comparative examples from IAC acoustics.[1] (See Figure 6.) This shows that the Dell Precision 3640 Tower can deliver stronger performance without creating uncomfortable or prohibitive noise for users. To see the results of our thermal and acoustics tests, see the science behind the report.

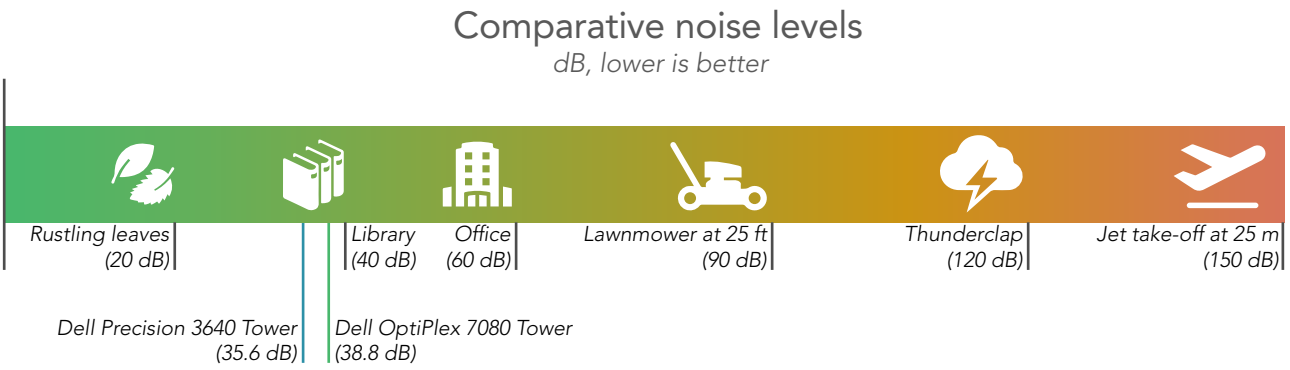


Figure 6: Comparative noise levels in dB. Lower is better. Source: Principled Technologies.

Step up to a Dell Precision 3640 Tower workstation for little added cost

The price jump of going from a desktop to a more powerful workstation may not be as steep as you might expect. In fact, the Dell Precision 3640 Tower workstation costs marginally more than the Dell OptiPlex 7080 Tower; the Dell Precision 3640 Tower with Intel Core i9-10900K processor costs approximately US $27 extra compared to the Dell OptiPlex 7080 Tower with the same processor. Similarly, the Intel Core i7-10700 processor-powered configuration costs US $45 more, and the Intel Core i9-10900 processor-powered configuration costs US $265 more. As Figure 7 shows, when you factor in the performance improvements of the Dell Precision 3640, it provides greater overall performance/USD value than the Dell OptiPlex 7080 Tower configurations we tested. We selected Cinebench results for this calculation because the benchmark assesses processor-intensive tasks.

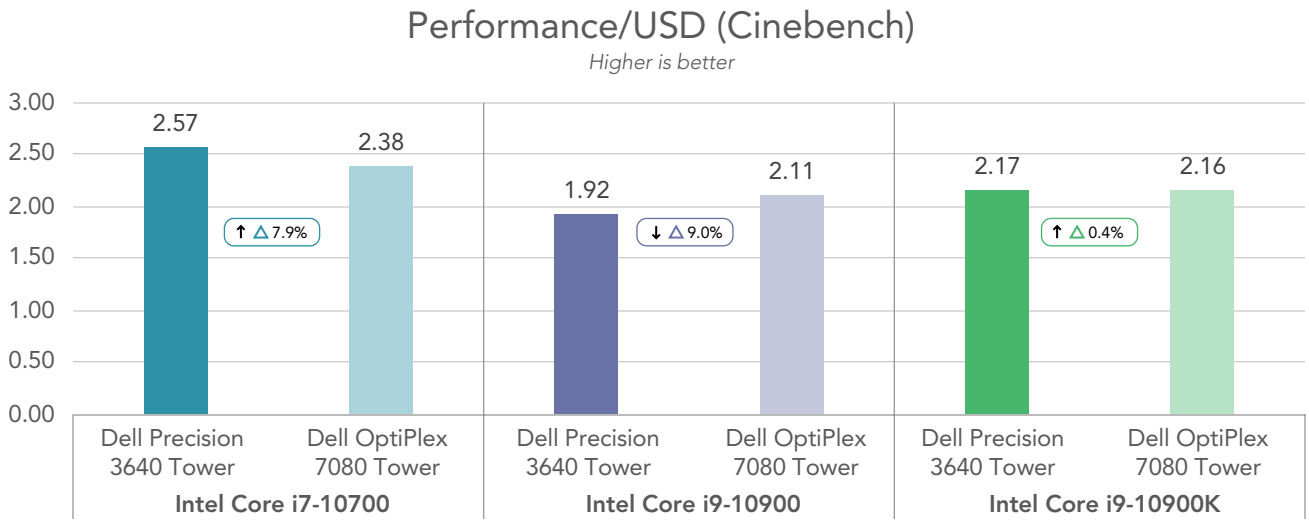


Figure 7: Performance per dollar (USD) for the systems using Cinebench test results and pricing information from the Dell website on November 16, 2020. Higher is better. Source: Principled Technologies.

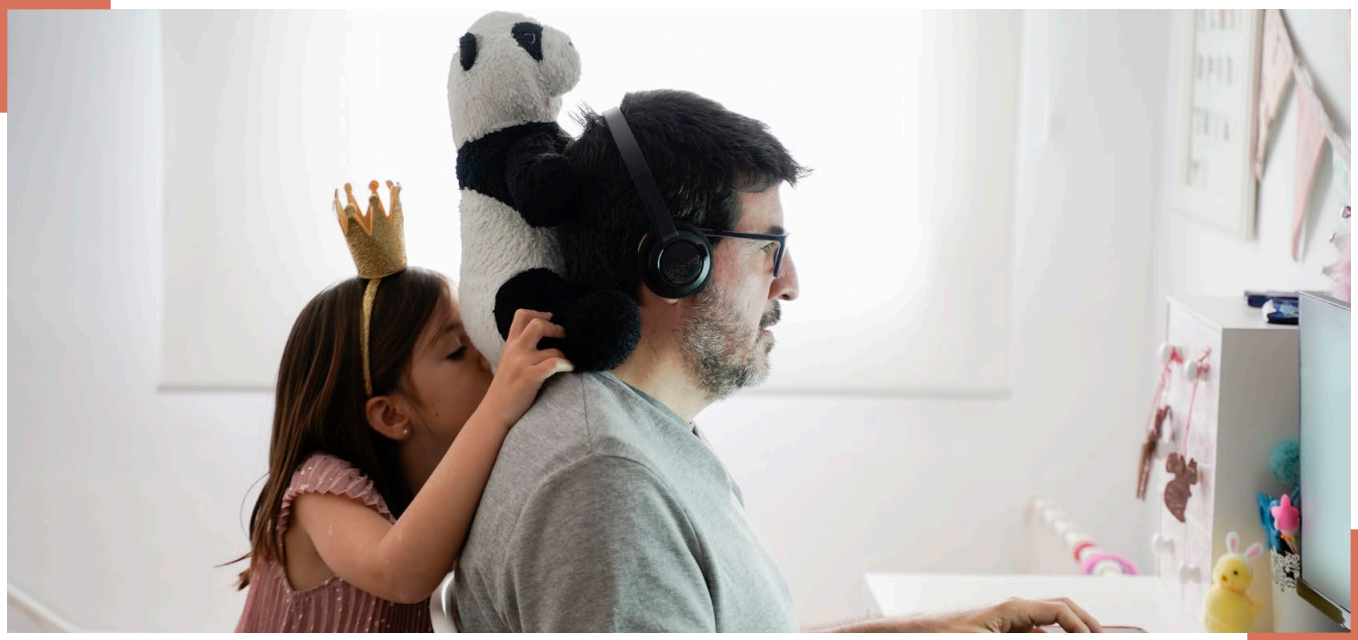
The Dell Precision 3640 Tower workstation.

Quick payback on your added investment

How long could it take to recoup the modest cost increase for selecting the Dell Precision 3640 Tower? Here, we explore a sample value analysis—though there are many ways to analyze value, and your results will vary depending on employee work habits and more. We estimate that the performance increase that the Dell Precision 3640 Tower provides could offset its additional cost over the Dell OptiPlex 7080 Tower in as little as nine workdays for a Intel Core i9-10900K processor configuration, assuming a user works at the system for two hours per workday. Using the same approach, we estimate that an Intel Core i9-10900 processor-based configuration could repay its additional cost in 143 days, while the Intel Core i7-10700 processor-based configuration could pay back its added cost in 22 days.

To conduct this analysis, we used pricing data from the Dell website (on November 16, 2020) for each configuration and factored in the most relevant performance numbers from our testing, based on what types of tasks typical users of each configuration likely spend their time on. For the entry- and mid-level Intel Core i7-10700 and i9-10900 processor configurations, we used SYSmark Overall Rating scores that reflect general office tasks. For the higher-end Intel Core i9-10900K processor configurations, we used average SPECworkstation 3 scores, because users that choose more powerful processors are more likely to use a more diverse range of applications.

To determine the time to pay back the extra investment, we calculated and hourly rate of US $36 from the average total compensation for private industry workers as reported by the U.S. Bureau of Labor Statistics for June 2020.[2] Then, we determined the cost of each work hour to show how long it would take the added performance of each Dell Precision 3640 Tower workstation to justify the extra investment over a similarly configured Dell OptiPlex 7080 Tower. If your employees spend more time on intense business tasks and applications than the conservative two hours per day we used in our estimate, the Dell Precision 3640 Tower could improve productivity enough to justify its cost in even fewer workdays than we outline here. Plus, after recouping the cost of the systems, performance improvements will continue to save money in additional productivity benefits.



Conclusion

Business users looking for performance desktops weigh performance, thermals, acoustics, and overall value when choosing a new system. The different configurations of Dell Precision 3640 Tower and Dell OptiPlex 7080 Tower we tested all performed well—but the Dell Precision 3640 Tower offered the highest levels of performance and value.

We found that an organization choosing the Dell Precision 3640 Tower workstation over the Dell OptiPlex 7080 Tower could pay as little as US $27 extra per system to reap productivity benefits it could provide. The Dell Precision 3640 Tower using any of three processor configurations generally scored higher across several industry-standard benchmarks without significantly expanding heat thresholds or adding to ambient noise. If your organization is on the fence about choosing a high-end performance desktop or making the leap to more powerful workstations, these results show that selecting the Dell Precision 3640 Tower workstation could be worth the investment.

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1 IAC Acoustics, "Comparative Examples of Noise Levels," accessed November 16, 2020, https://www.iacacoustics.com/blog-full/comparative-examples-of-noise-levels.html.

2 U.S. Bureau of Labor Statistics, "Average total compensation of private industry workers - June 2020," accessed November 23, 2020, https://www.bls.gov/news.release/ecec.t04.htm.

Read the science behind this report at http://facts.pt/fI2VZF5 ►

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