Boost productivity with a more powerful laptop

Based on up to 92% higher Cinebench R23 overall scores

Work unplugged without jeopardizing system performance

based on no change to Cinebench R23 overall scores plugged in vs. unplugged compared to a 27% decrease for the Latitude 7440

Enjoy a better user experience with a cooler and quieter laptop

based on lower hot-spot temp and acoustic readings under load

The HP EliteBook 845 G10 Notebook PC: Work from anywhere without worry with superior unplugged performance and a cool and quiet experience

Comparing the HP EliteBook 845 G10 to the Dell Latitude 7440 laptop

If your workforce is mobile, and you've selected high-performing devices for employees based on benchmark scores, you may be surprised if they aren't seeing the performance you would expect based on plugged-in performance test results. Laptops running on battery power can sometimes sacrifice performance for battery life, but that doesn't have to be the case. By assessing performance both plugged in and running on battery power, you can ensure that employees have the high-performing devices they need no matter where or how they work.

At Principled Technologies (PT), we used industry-standard benchmarks to compare system performance of an HP EliteBook 845 G10 Notebook PC powered by an AMD Ryzen™ 7 PRO 7840U processor and a Dell™ Latitude™ 7440 laptop powered by an Intel® Core™ i7-1365U vPro processor. To determine potential performance decline while unplugged, we ran these benchmarks twice—once while the devices were plugged in and again when they were unplugged. In addition, we examined how loud and how hot each laptop became in certain spots while running a CPU-intensive workload. We found that on most tests, the HP EliteBook 845 G10 Notebook PC powered by an AMD Ryzen™ 7 PRO 7840U processor outperformed the Dell Latitude 7440 laptop powered by an Intel Core i7-1365U processor.

This project was commissioned by HP and AMD.

What we tested

Before we started testing, we set both 14-inch business laptops to "best performance" power mode. Other than making and verifying those changes, we used out-of-box OEM performance settings.

HP EliteBook 845 G10 Notebook PC

AMD Ryzen™ 7 PRO 7840U processor (3.3 – 5.1 GHz) with AMD Radeon™ graphics

8 cores with 16 threads

32 GB of dual-channel DDR5 memory

512 GB of PCIe® NVMe® SSD storage

51WHr battery

Dell Latitude 7440 laptop

Intel® Core™ i7-1365U vPro processor (1.8 – 5.2 GHz) with Iris Xe graphics

10 cores with 12 threads

32 GB of dual-channel DDR5 memory

512 GB of PCIe NVMe SSD storage

57WHr battery

We ran the following performance-based benchmark tests twice—once with the laptops plugged in and again with them unplugged:

- PassMark PerformanceTest 11
- Cinebench R23
- 3DMark® Fire Strike
- 3DMark Time Spy

For our surface temperature tests, we ran a sustained CPU-intensive Cinebench R23 workload for 50 minutes, taking keyboard and bottom hot spot temperature readings every 10 minutes. We then ran the CPU-intensive Cinebench R23 workload again for 20 minutes to record how much noise each device's fan produced under load. The benchmark, thermal, and noise results we report reflect the specific configurations we tested. Any difference in configurations, as well as screen brightness, network traffic, and software additions, can affect these results. For a deeper dive into our testing parameters and procedures, see the science behind the report.

About the HP EliteBook 845 G10 Notebook PC

This 14-inch HP laptop is purpose-built for enterprise use. According to HP, this customizable model includes conferencing features, enterprise-ready security, and AMD PRO technologies so remote and hybrid teams can collaborate with confidence.[1]

To learn more about the HP EliteBook 845 G10 Notebook PC, visit the HP website: hp.com/amd.

About the AMD Ryzen™ 7 PRO 7840U processor

This high-end laptop processor is built on Zen 4 architecture. The PRO designation provides access to additional enterprise-level security, manageability, and reliability features for employees, professional users, and workstation environments.[2] The Ryzen™ 7 PRO 7840U model has eight cores with 16 threads and includes integrated AMD Radeon™ graphics, PCIe 4.0 connectivity, and AMD Enhanced Virus Protection (NX Bit).[3]

Productivity benchmarks: Work equally well when you're unplugged

Whether employees mostly stick to one application or program to complete their work, or if they need to complete many kinds of tasks, system performance is critical to getting things done. If your employees are on the go—moving around the house, the office, or traveling—performance needn't suffer just because they aren't able to plug in.

On a variety of industry-standard performance benchmarks we tested, the HP EliteBook 845 G10 with AMD Ryzen™ 7 PRO 7840U processor achieved higher test scores than the Dell Latitude 7440 with Intel Core i7-1365U vPro processor.

Key takeaways

- The HP EliteBook 845 G10 achieved higher benchmark scores, including up to 92 percent better performance on Cinebench R23 Multi-Core while unplugged.
- HP EliteBook 845 G10 performance barely changed when we unplugged the system: on Cinebench R23 and 3DMark, the EliteBook experienced 0 to 1 percent difference in performance, while the performance of the Dell Latitude 7440 dropped significantly on these benchmarks when we unplugged the system.

Stronger-performing systems deliver better productivity on the go

A popular industry-standard productivity benchmark, PassMark PerformanceTest 11.0 combines CPU, disk, memory, and 2D/3D graphics performance metrics into an Overall PassMark rating. Higher PassMark rating numbers indicate a faster system.[6]

Figure 1 compares the PassMark PerformanceTest ratings of the systems, both while plugged in and unplugged. Unplugged, the HP EliteBook 845 G10 with AMD Ryzen™ 7 PRO 7840U processor achieved a 75 percent higher score than the Dell Latitude 7440 with Intel Core i7-1365U vPro processor. The performance of the HP EliteBook 845 G10 dropped only 17 percent after we unplugged it, while the performance of the Dell Latitude 7440 dropped by 26 percent.

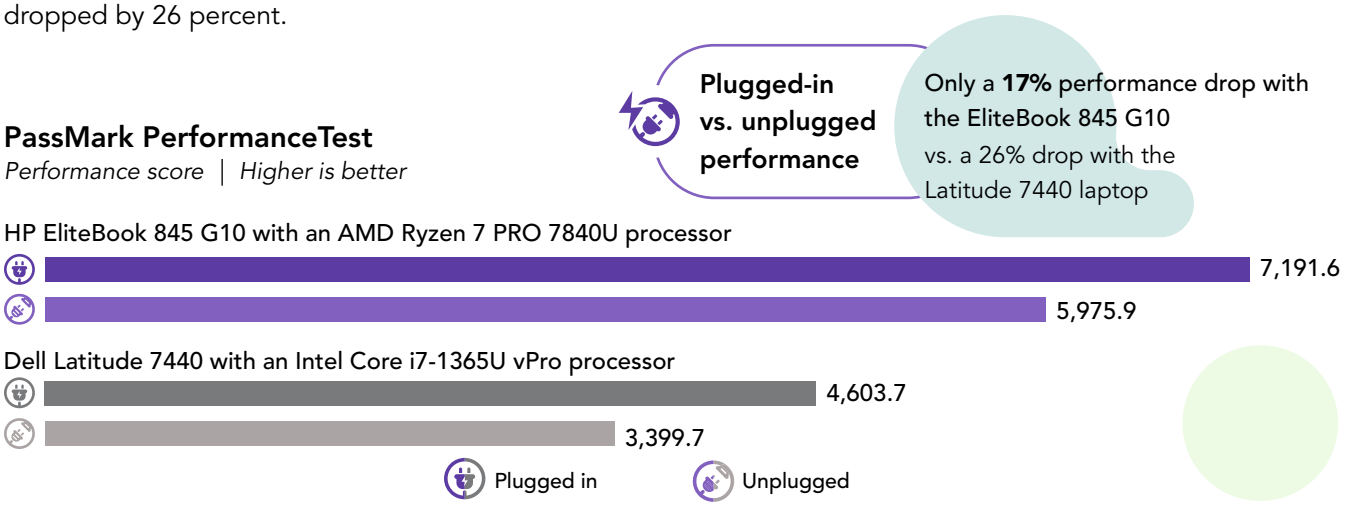

Figure 1: PassMark Performance Test 11.0 Overall Rating comparison for the HP EliteBook 845 G10 and Dell Latitude 7440, plugged in and unplugged. Higher numbers are better. Source: Principled Technologies.

Strong general system performance plugged in or not

The Cinebench R23 benchmark measures general hardware performance by completing common Cinema 4D tasks that tax multiple CPU cores and modern processor features.[7]

As Figure 2 shows, the HP EliteBook 845 G10 with AMD Ryzen™ 7 PRO 7840U processor achieved a 40 percent higher Cinebench score plugged in and a 92 percent higher score unplugged compared to the Dell Latitude 7440. The difference in unplugged performance is stark because the HP EliteBook 845 G10 experienced **no** drop in performance when we unplugged it—while the Dell Latitude 7440 performance dropped 27 percent.

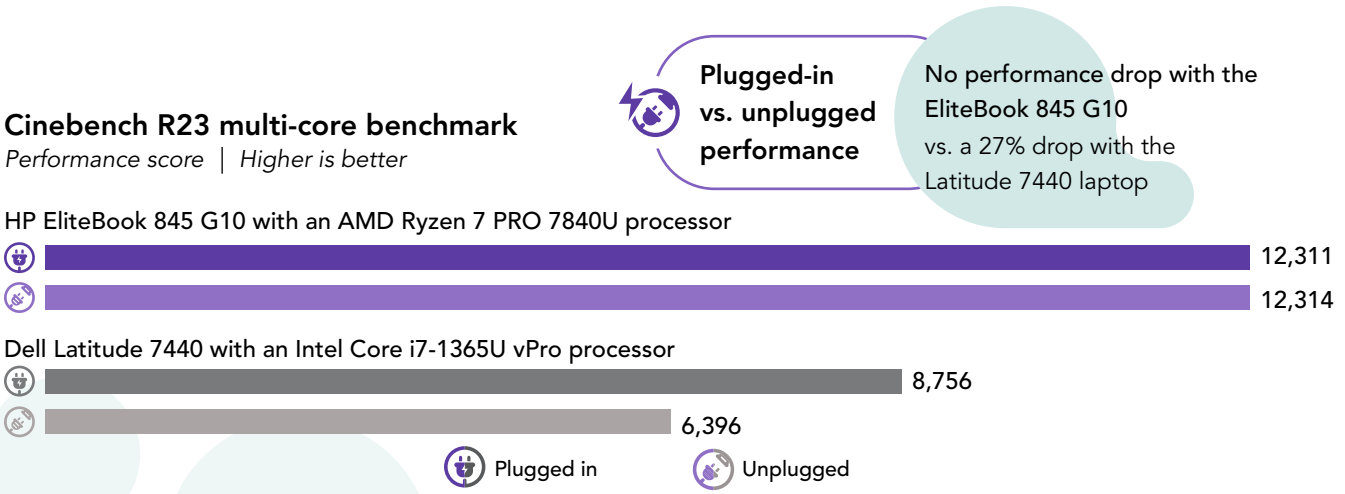

Figure 2: Cinebench R23 (multi-core) benchmark comparison for the HP EliteBook 845 G10 and Dell Latitude 7440, plugged in and unplugged. Higher is better. Source: Principled Technologies.

Comparing graphics- and CPU-heavy performance with 3DMark

An industry-standard benchmark that focuses on 3D graphic rendering and heavy CPU performance, 3DMark is nicknamed "The Gamer's Benchmark." It includes the following tests that we ran on our systems:

- 3DMark Fire Strike: A DirectX 11 benchmark that "… includes two graphics tests, a physics test and a combined test that stresses the CPU and GPU."[4]
- 3DMark Time Spy: A DirectX 12 test "that supports new API features like asynchronous compute, explicit multi-adapter, and multi-threading, Time Spy is the ideal test for benchmarking the latest graphics cards."[5]

As Figures 3 and 4 show, the HP EliteBook 845 G10 outperformed the Dell Latitude 7440 by as much as 76 percent on these 3DMark tests. Plus, the EliteBook 845 G10 maintained strong performance while unplugged, dropping just 1 percent, while the performance of the Dell Latitude 7440 dropped by 14 and 15 percent.

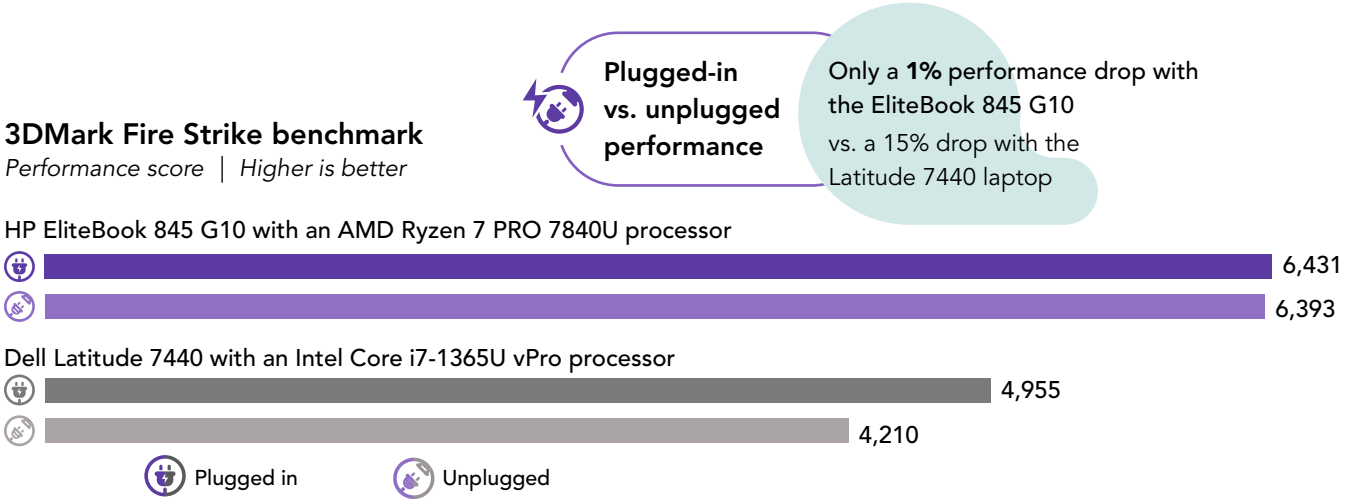

Figure 3: 3DMark benchmark result comparison for the HP EliteBook 845 G10 and Dell Latitude 7440, on Fire Strike tests, while plugged in and unplugged. Higher numbers are better. Source: Principled Technologies.

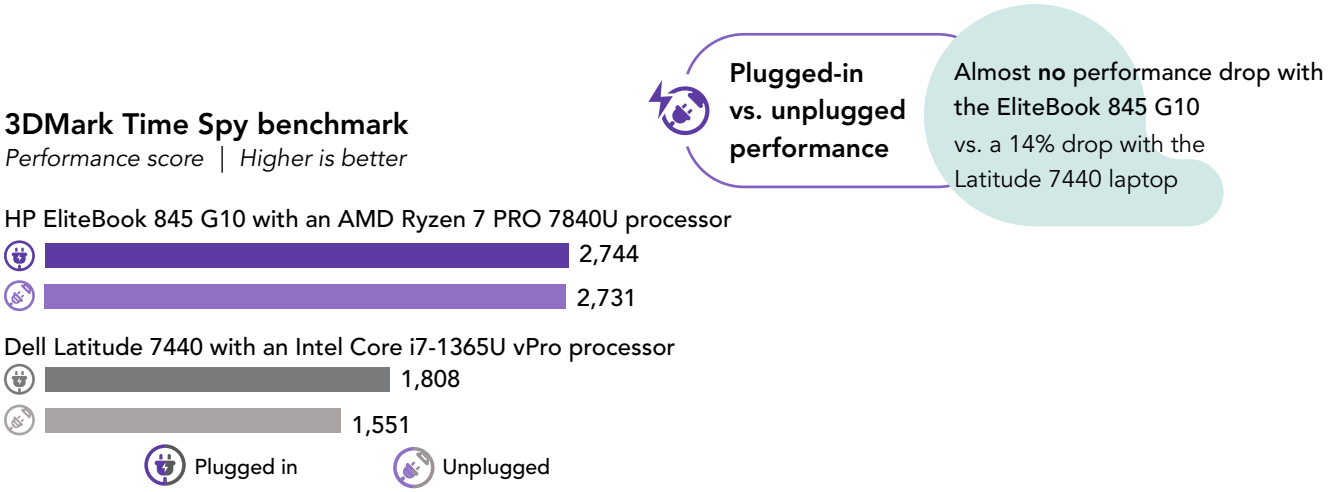

Figure 4: 3DMark benchmark result comparison for the HP EliteBook 845 G10 and Dell Latitude 7440, on Time Spy tests, while plugged in and unplugged. Higher numbers are better. Source: Principled Technologies.

Thermal testing: Cooler temperatures mean better user comfort

When you hold your system on your lap while working from the couch or while plugged in at the gate waiting for your plane to board, the heat your laptop gives off can affect your comfort level. The cooler a laptop is while running a workload, the more comfortable you are.

Key takeaways

- At both the keyboard deck and the underside of the laptop, the HP EliteBook 845 G10 was cooler to the touch than the Dell Latitude 7440 while both systems ran a workload.
- The HP EliteBook 845 G10 was on average 1 decibel quieter than the Dell Latitude 7440 laptop while under load.

During our thermal testing, both systems were plugged in and ran the Cinebench R23 Sustained performance workload. As Figure 5 shows, the HP EliteBook 845 G10 achieved a higher performance score while remaining cooler than the Dell Latitude 7440. At the keyboard deck, which users touch with their fingertips, the HP EliteBook 845 G10 was over 3 degrees Fahrenheit cooler (123.3°F/50.7°C vs. 126.5°F/52.5°C) than the Dell Latitude 7440. At the undersides of the laptops, which often rest on users' laps, the HP EliteBook 845 G10 was 18 degrees Fahrenheit cooler (108.5°F/42.5°C vs. 126.5°F/52.5°C) than the Dell Latitude 7440.

Thermal testing during a Cinebench R23 sustained performance workload

Higher is better

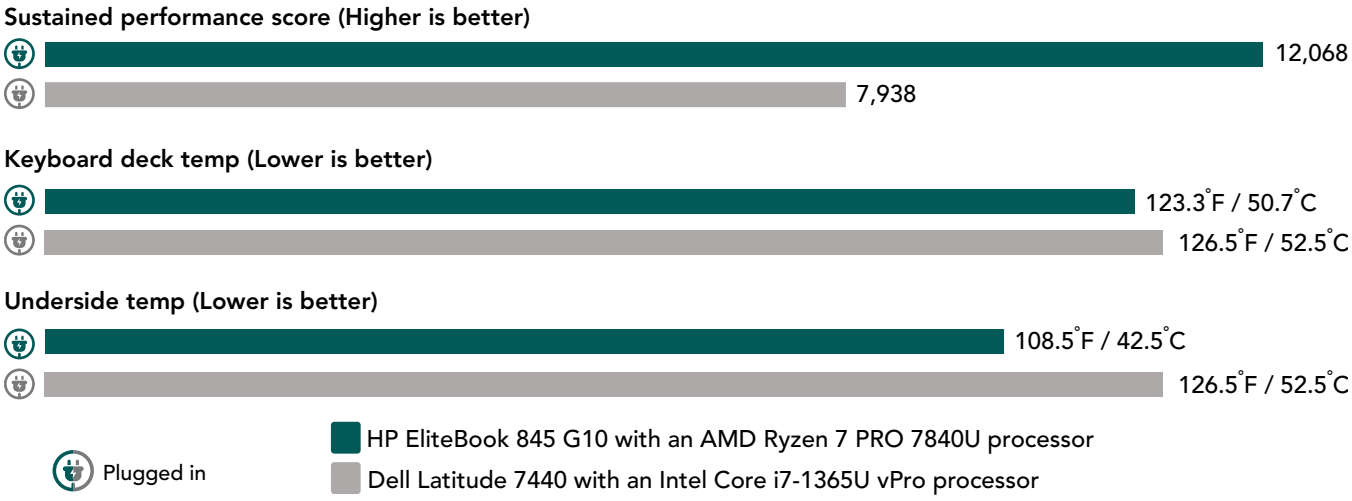

Figure 5: Thermal testing results while plugged in, in average temperature, for the HP EliteBook 845 G10 and Dell Latitude 7440. Lower numbers are better. Source: Principled Technologies.

Acoustics testing: Keeping quiet under pressure

When you're plugged in and working from your favorite coffee shop, you have enough noisy distractions that affect your work. There's no reason your laptop needs to add to the din. When we measured the noise levels of each plugged-in device while running a Cinebench R23 multi-core workload, we found that the HP EliteBook 845 G10 Notebook PC with AMD Ryzen™ 7 PRO 7840U processor was on average 1 decibel quieter than the Dell Latitude 7440 laptop over the course of the test (see Figure 6).

Acoustic performance during a sustained Cinebench R23 workload

System idle (dBA) average • System under Cinebench R23 load | Lower is better

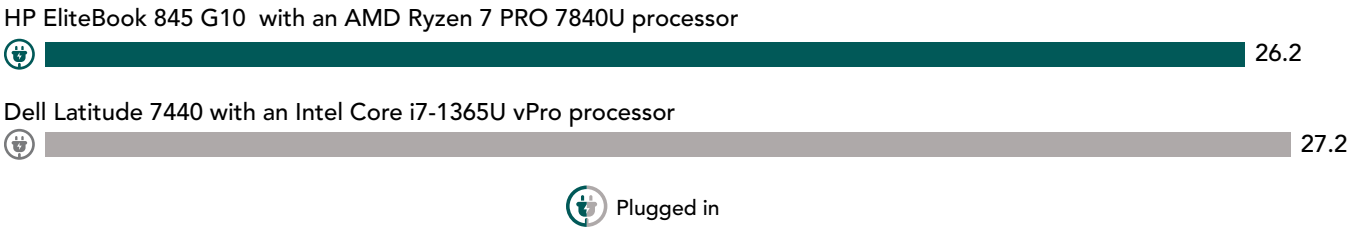

Figure 6: Acoustics testing results, in average decibels, for the HP EliteBook 845 G10 and Dell Latitude 7440. Lower numbers are better. Source: Principled Technologies.

Conclusion

Balancing the mobile productivity needs of employees with different workflows and different routines can be tricky for any organization. Selecting devices that offer strong system performance that doesn't suffer when employees are mobile can help your workforce maintain productivity wherever they like to log in. In our hands-on comparison of two laptops—the HP EliteBook 845 G10 with AMD Ryzen™ 7 PRO 7840U processor and the Dell Latitude 7440 with Intel Core i7-1365U vPro processor—we found that the HP EliteBook 845 G10 offered stronger, more consistent benchmark performance while plugged in and unplugged. The HP EliteBook 845 G10 Notebook PC also ran with cooler under-chassis and keyboard temperatures and less noise than the Dell Latitude 7440—both factors that could contribute to a positive user experience.

1. HP, "EliteBook 845 G10 Notebook PC," accessed August 2, 2023, https://www.hp.com/us-en/shop/pdp/hp-elitebook-845-g10-notebook-pc-customizable-70a37av-mb.
2. Notebookcheck, "AMD Ryzen™ 7 PRO 7840U," accessed August 2, 2023, https://www.notebookcheck.net/AMD-Ryzen-7-PRO-7840U-Processor-Benchmarks-and-Specs.725652.0.html.
3. AMD, "AMD Ryzen™ 7 PRO 7840U," accessed August 2, 2023, https://www.amd.com/en/product/13481.
4. 3DMark, "Fire Strike," accessed September 12, 2023, https://benchmarks.ul.com/3dmark.
5. 3DMark, "Time Spy," accessed September 12, 2023, https://benchmarks.ul.com/3dmark.
6. PassMark Software, "PerformanceTest FAQ – What Do All These Numbers Mean?" accessed September 13, 2023, https://www.passmark.com/support/performancetest_faq/understanding-results.php.
7. Maxon, "Cinebench R23," accessed September 12, 2023, https://www.maxon.net/en/cinebench.

Read the science behind this report at https://facts.pt/21u5VBA ►

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