



Durable:

Survived 10,000 hinge cycles with no damage

Serviceable:

Easy-to-replace batteries make life easier for IT staff

Supportable:

Multiple support options to meet your needs



Dell Chromebooks: Durable, easy to deploy, and easy to service

In hands-on tests, we found that three Dell Chromebook models survived 10,000 hinge cycles and offered quick battery replacement

Factors like portability, durability, affordability, and easy fleet management make Chromebooks attractive to school districts, healthcare organizations, and enterprises that send sales or support teams out into the field. Budget-conscious customers need to make sure their investment pays off by selecting devices that can last before the next refresh and reduce IT management-related costs through easy serviceability.

We compared 12 Chromebook models from four vendors to see how they differed in deployment, laptop hinge durability, and serviceability for battery replacement. The three Dell™ Chromebook models we tested—the Dell Chromebook 3110, Dell Latitude™ 5430 Chromebook, and Dell Latitude 3445 Chromebook—were easy to deploy, passed our durability hinge testing, and made battery replacement simple for IT staff tasked with fleet repairs. Plus, by meeting a military standard for device durability and offering multiple levels of professional support services, Dell Chromebooks make the grade for offering robust devices designed to take a beating in the classroom or on the road.





Dell Chromebook 3110¹

This model features rubberized edges, rounded corners, and spill-resistant keyboard to help it withstand the rigors of school and work.

Featuring an Intel® Celeron™ N4500 processor, up to 4GB memory, and 32 GB of storage, the Dell Chromebook 3110 offers WiFi 6 and LTE connectivity for maximum portability.



Dell Latitude 5430 Chromebook²

This model features a 16:10 FHD+ display for a high-quality front-of-screen experience and 7% more viewing area compared to a 16:9 panel."⁴

Featuring a 12th Gen Intel Core™ i5-1235U processor, 8GB memory, and 256 GB of storage, the Latitude 5430 meets sustainability standards including EPEAT Silver, Energy Star, and TCO 9 in Europe.⁵



Dell Latitude 3445 Chromebook³

This model offers fast response times and performance with up to 16GB LPDDR5 memory.

Featuring an AMD® Athlon™ Silver 7120X processor, 4GB memory, and 32 GB of storage, the Latitude 3445 is "MIL-STD 810H and Education spec-tested for durability, pressure, temperature, humidity, shock, and vibration, offering the reliability to endure all kinds of use cases."⁶

Spend your budget wisely by choosing Dell Chromebooks that last

In the fall of 2023, Google announced that "all Chromebook platforms will get regular automatic updates for 10 years,"⁷ which makes durability and in-house serviceability of Chromebook devices more important than ever. By choosing devices that last, school districts and other organizations can free up budget for other initiatives.

To see how the current Chromebook marketplace stacks up, we compared 12 Chromebook devices from Dell, Lenovo®, Acer, and HP to see how they compare in deployment, durability, and serviceability.

Table 1: Devices we tested. Source: Principled Technologies.

Vendor	Devices		
Dell ✨	Dell Chromebook 3110 ✨	Dell Latitude 5430 Chromebook ✨	Dell Latitude 3445 Chromebook ✨
Lenovo	Lenovo 100e Chromebook Gen 3	Lenovo ThinkPad C14 Gen 1 Chromebook	Lenovo Chromebook 14e
Acer	Acer Chromebook Vero 514	Acer Chromebook Spin 514	Acer Chromebook C734
HP	HP Chromebook 11 G9 EE	HP Chromebook x360	HP Elite c645 G2 Chromebook Enterprise

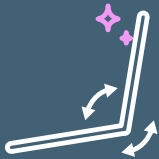
To see our detailed test methodology and more about the devices, read the [science behind the report](#).



Deploying numerous Dell Chromebooks? No problem.

One of the features of Chromebook devices that help them meet large management challenges is how easy they are to get up and running in users' hands. They're cloud-centric, which means IT staff don't need to deploy software or install operating systems on the devices before they go to students or sales team. Users simply log in and can access the applications that they need to complete schoolwork or start their workday.

We ran through the setup and deployment process for all 12 Chromebooks and verified that the Dell Chromebook 3110, Dell Latitude 5430 Chromebook, and Dell Latitude 3445 Chromebook were no exception to easy deployment. The three Dell Chromebooks were simple to set up and deploy, which lets your IT staff spend time on other management or maintenance tasks, while users can power up their devices in no time. For details on how we deployed the systems, read the [science behind this report](#).



Durable Dell Chromebooks: It all hinges on this

Open, close. Open, close. Open, close. Students move from one class to the next and use their devices for only parts of class time. Physician assistants, nurses, and other healthcare personnel move from patient to patient day in and day out. Field sales or support teams spend their days visiting multiple locations. All these scenarios necessitate a lot of opening and closing of Chromebooks, which need to last for several years and may go through multiple users.

To simulate this level of wear and tear on Chromebook hinges we used a special machine—the Design & Assembly Concepts HiCym-1002—to complete hinge cycles testing on all 12 devices. First, we used the machine to complete open/close hinge cycles 1,000 times. We then paused to inspect any defects or noticeable wear. We repeated this process nine times for a total of 10,000 hinge cycles per device.

We found that the Dell Chromebook 3110, Dell Latitude 5430 Chromebook, and Dell Latitude 3445 Chromebook along with seven competitors made it through hinge testing without any significant wear or notable defects. Two devices had notable issues after hinge testing, though they continued to function without impediment. The Lenovo Chromebook 14e developed a light creaking/popping noise when pressing on plastic hinge cover and the Lenovo 100e developed a clacking/creaking noise while opening or closing the lid. The Dell devices showed no such wear to their hinges.





Easy-to-service Dell devices make battery replacement a snap

Devices that no longer hold a charge to last the school day or extended office hours can make technology burdensome instead of empowering. One of the reasons Chromebooks appeal to large organizations is how easy it can be for IT staff to make standard repairs such as battery replacement. Chromebooks generally allow in-house staff to open the battery compartment and make simple swaps, extending battery life as devices age.

As Figure 1 shows, the amount of time and number of steps it took to disassemble each device and replace the battery were similar across the devices. The notable exceptions to this were the HP Chromebook 11 G9 EE and HP Chromebook x360, which required additional steps to carefully and safely disassemble adhesive screw covers to prevent lasting damage. Additionally, the shell of the Lenovo 100e Chromebook Gen 3 was harder to open, which is why it took longer to replace its battery.

Replacing the battery on the three Dell Chromebook models presented no unexpected challenges, each taking just 10 steps and four to five minutes. Ensuring that battery replacement is simple and quick minimizes the time IT staff must spend maintaining devices, which lets them spend more time improving the overall technology experience in your school, medical practice, or enterprise.

Time and steps to replace Chromebook batteries

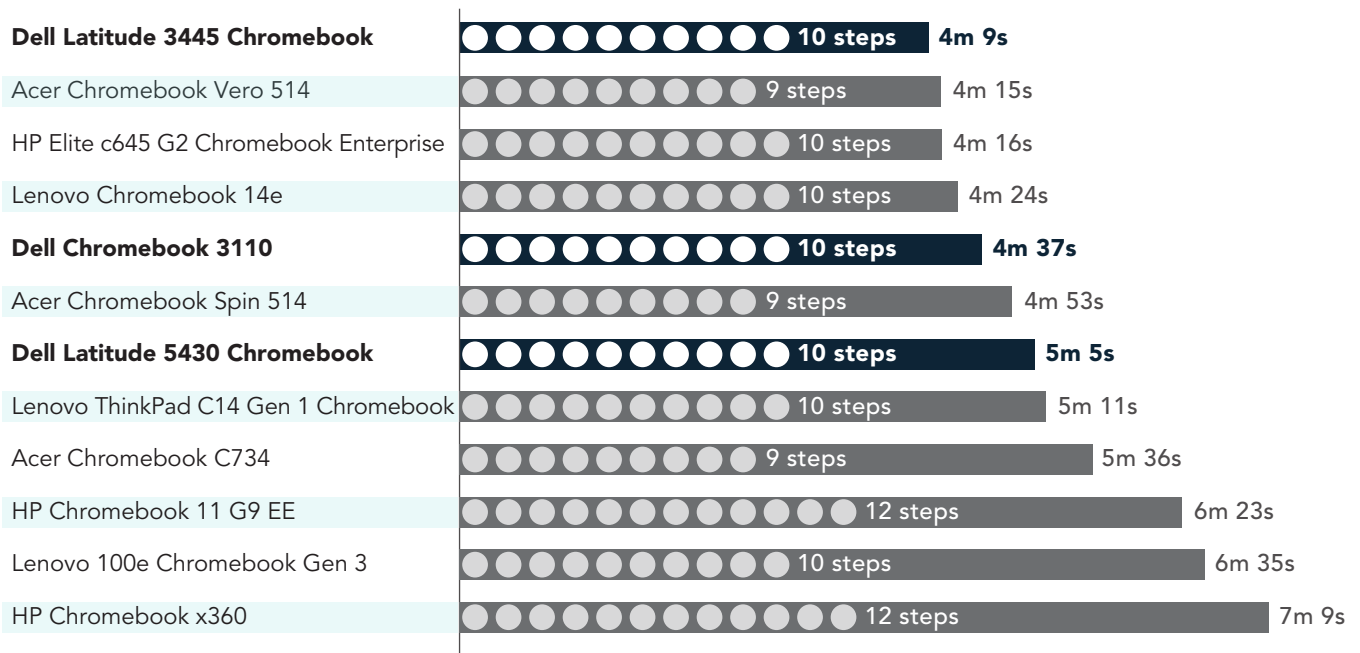


Figure 1: Time and steps to replace Chromebook batteries in our tests. Lower numbers are better. Source: Principled Technologies.

What level of Dell support do you need for your Chromebook fleet?

Even the best in-house IT departments need assistance for certain issues, so it's always prudent to have help available when you need it. Dell offers different levels of support to keep your Chromebook fleet in operation.

Standard Dell Product Support

includes things such as drivers, manuals, diagnostic tools, and replacement parts. For full lifecycle service, Dell also offers Dell ProSupport and Dell ProSupport Plus.

Dell ProSupport offers "24x7 proactive, automated support and onsite service when you need it," along with crisis monitoring and accidental damage protection.¹²

Dell ProSupport Plus builds on the protection of ProSupport and offers predictive support that alerts IT admins to imminent failures for certain parts (hard drives and batteries) and offers automated virus/malware removal.¹³

To learn more about Dell Support Services, visit <https://www.dell.com/en-us/dt/services/support-services/index.htm>.

Dell Chromebooks: Built tough enough for kids to do their worst

Students are tough on their devices. They lug them around in backpacks that they fling to the ground without a care when they get home from school each day. The solution? Choose devices that you know can withstand damage over time to get the most value from your purchase.

The military standard MIL-STD-810 H is the "test standard most commonly used to determine if a product can withstand the effects of difficult environmental conditions."⁸ While there are 28 different MIL-STD-810H test standards, generally most products go through the most relevant-to-consumer tests, such as temperature and durability testing.⁹

The Dell Chromebook 3110 laptop has been certified to have passed 17 different MIL-STD-810 H tests,¹⁰ and the Dell Latitude 3445 Chromebook has been "MIL-STD 810H and Education spec-tested for durability, pressure, temperature, humidity, shock, and vibration, offering the reliability to endure all kinds of use cases."¹¹

By selecting devices built to stringent military standards, your Dell Chromebooks can last longer in the harshest environment known to man: K-12 schools.



Conclusion

Whether you're choosing Chromebook devices for your K-12 school district, hospital, or field sales team, you need devices that are easy to deploy and service and that can withstand what students, patients, and varying conditions at potentially rugged sites will throw at them.

Our testing of 12 different devices showed that the Dell Chromebook 3110, Dell Latitude 5430 Chromebook, and Dell Latitude 3445 Chromebook check all these boxes and more. These devices were easy to deploy, withstood 10,000 hinge cycles with no noticeable wear, and offered simple and quick battery replacements to ease the maintenance burden on in-house IT staff.

Because they offer easy deployment and serviceability, strong durability, plus multiple robust support options, choosing any of these Dell Chromebook models for your organization can help ensure you're putting your technology budget to good use.



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2. Dell, "Latitude 5430 Chromebook," accessed January 7, 2024, <https://www.dell.com/en-us/shop/dell-laptops/latitude-5430-chromebook/spd/latitude-14-5430-chrome-laptop/s002lc5430usvp>.
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5. Dell, "Latitude 5430 Chromebook," accessed January 7, 2024.
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7. Prajakta Gudadhe and Ashwini Varma, "The Keyword: Chromebooks will get 10 years of automatic updates," accessed January 7, 2024, <https://blog.google/outreach-initiatives/education/automatic-update-extension-chromebook/>.
8. Keystone Compliance, "MIL-STD-810 H Environmental Engineering Considerations and Laboratory Tests," accessed January 4, 2024, <https://keystonecompliance.com/mil-std-810-h/#:~:text=MIL%2DSTD%2D810H%20testing%20is,products%20are%20tested%20for%20it>.
9. Keystone Compliance, "MIL-STD-810 H Environmental Engineering Considerations and Laboratory Tests."
10. Dell, "3110 Chromebook Laptop," accessed January 4, 2024, <https://www.dell.com/en-us/shop/dell-laptops/chromebook-3110-laptop/spd/chromebook-11-3110-laptop>.
11. Dell, "Latitude 3445 Chromebook," accessed January 4, 2024.
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13. Dell, "Latitude 5430 Chromebook – Lifecycle Services," accessed January 7, 2024.

Read the science behind this report at <https://facts.pt/DHnU7pd> ►



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