



## Invest in a support package for business devices that can predict hard drive failures before they result in data loss

### A predictive tool for Dell ProSupport Plus automatically detected a failing hard drive on a Dell laptop

Business-tier support services from at least three companies claim to be able to automatically predict hardware failures. These services include HP Device as a Service (HP DaaS) with HP TechPulse analytics, Lenovo Device Intelligence, and Dell ProSupport Plus. To test these services, we installed a failing hard drive onto the following machines:

- Dell™ Inspiron™ 13 5368 laptop
- HP ProBook 640 G5
- Lenovo® ThinkPad® L15

In our tests, we could only confirm that the predictive software on the Dell laptop correctly identified the failing hard drive. HP TechPulse did not detect the hard drive even after running the HP ProBook 640 laptop for a full week. We encountered issues with acquiring Lenovo Device Intelligence that prevented us from testing that service on the Lenovo ThinkPad L15—even though a Lenovo salesperson assured us over the phone that we had indeed purchased the service.

## How we tested

We tested a hard disk drive in a near-failure state. Near-failure in this case means we observed degraded performance (slower than expected loading times) and unexpected scratching/clicking noises during normal operation. Crucially, this type of failure cannot be repaired. We put the same hard drive in three different systems to determine whether each vendor's software would detect the pre-failure state.\*



### Dell ProSupport Plus on a Dell Inspiron 13 5368 laptop

SupportAssist, the predictive software that powers Dell support services such as ProSupport Plus, automatically detected the failing drive on the Dell laptop. We inserted the drive, booted, ran updates, and launched the predictive tool. Within an hour, the Dell software recognized the drive was in a near-fail state. Note that when we did this testing, we had paid for ProSupport Plus but we had not yet enrolled the device—meaning we had not yet activated our support subscription. (We took this approach because we were testing only the service's ability to detect the failing drive, not the steps that would come after detection.)

According to Dell, if we had enrolled the device in ProSupport Plus, the software would have automatically created a report about the failing drive and started a support ticket with Dell. We did not test the feature for this study, though we have previously verified the claim. In our 2020 report on Dell ProSupport Plus, the predictive software automatically created a support ticket for a failing hard drive. For more information, read the full report at <https://www.principledtechnologies.com/Dell/ProSupport-Plus-comparison-0620.pdf>.

### HP TechPulse on an HP ProBook 640 G5

HP TechPulse did not detect the hard drive was in a near-failure state. We installed the drive, booted the system, and ran system updates. We then enrolled the solution in HP TechPulse, which automates daily scans of the system's hardware and reports its findings to the HP DaaS platform. After running the system for one week, the HP DaaS console showed no hard drive alert. Thus, we determined that the service had not detected a failed drive.

### Lenovo Device Intelligence on a Lenovo ThinkPad L15

Lenovo claims that its Device Intelligence software can proactively predict hardware issues such as drive failures. We attempted to acquire Lenovo Device Intelligence software; however, the Lenovo sales teams we spoke to had little knowledge of the software or how to obtain it. We were eventually told that Lenovo Device Intelligence is available only to enterprise customers with a larger, enterprise-level order of around 1,000 systems. Therefore, we were not able to test the hard-disk failure-detection capabilities of Lenovo Device Intelligence.

Every Lenovo device comes with Lenovo Vantage software, which purports to be able to run device diagnostics. We ran a Lenovo Vantage hardware scan to determine whether this software would detect the failing hard drive. The hardware scan failed during the targeted disk-read test, and Vantage recommended the action "repair bad sectors." We ran the sector repair tool, and the error disappeared; however, this did not actually resolve the disk issue, leaving the hard drive in its irreparable near-failure state.

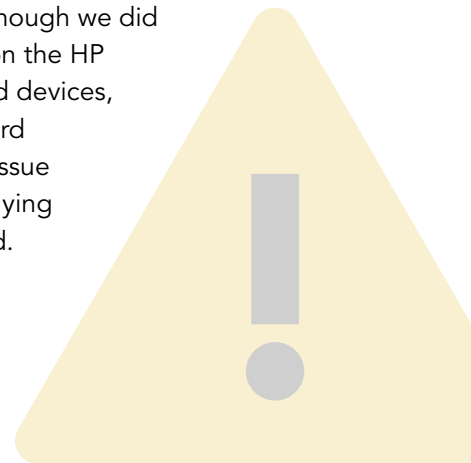
\*Note: We tested only one drive with a specific failure. The drive we used may not be representative of all physical hard drive failures.

## Conclusion

Technology isn't perfect, and when devices fail, businesses are at the mercy of the hardware vendor to resolve the issue quickly and effectively. Several vendors claim that their support software can automatically detect hardware issues such as a failing hard drive, but in our tests comparing services from Dell, HP, and Lenovo, we were only able to confirm that this is true for Dell ProSupport Plus using SupportAssist.\*

Dell ProSupport Plus with SupportAssist automatically detected a failing hard drive on a Dell laptop, alerted us, and provided instructions for how to file a claim with Dell. We know from previous testing that ProSupport Plus has the ability to automatically open a support ticket with Dell, though we did not test this feature for this study. HP TechPulse did not detect the failing hard drive on the HP device, and because Lenovo Device Intelligence requires a minimum of 1,000 enrolled devices, we were unable to test the equivalent Lenovo service on a Lenovo laptop. The standard diagnostic software that ships with each Lenovo device claimed to have detected an issue with the hard drive, but suggested an action that was insufficient to resolve the underlying issue, and after taking that action, it incorrectly claimed that the problem was resolved.

\*Note that there are many types of hardware issues that can affect business devices, and we tested only one possible scenario. Experiences may vary with different services and hardware issues.



We concluded our hands-on testing on February 13, 2021. Dell provided the near-failing hard drive we used for testing. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on January 4, 2021 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

## Our results

To learn more about how we have calculated the wins in this report, go to <http://facts.pt/calculating-and-highlighting-wins>. Unless we state otherwise, we have followed the rules and principles we outline in that document.

Table 1: Results of our testing

Model	Support solution	Detected failing hard drive and alerted user?
Dell Inspiron 13 5368	Dell ProSupport Plus with SupportAssist	Yes
HP ProBook 640 G5	HP DaaS powered with HP TechPulse analytics	No
Lenovo® ThinkPad® L15	Lenovo Device Intelligence	Unable to test

## System configuration information

Table 2: Detailed information on the systems we tested.

System configuration information	Dell Inspiron 13 5368	HP Probook 640 G5	Lenovo ThinkPad L15 Gen 1
Processor			
Vendor	Intel®	Intel	Intel
Model number	Core™ i5-8250U	Core i5-8365U	Core i5-10210U
Core frequency (GHz)	1.6 - 3.4	1.6 - 4.1	1.6 - 4.2
Cache (MB)	6	6	6
Memory			
Amount (GB)	8	4	8
Type	DDR4	DDR4	DDR4
Speed (MHz)	2,400	2,666	2,666
Graphics			
Vendor	Intel	Intel	Intel
Model number	UHD Graphics	UHD Graphics	UHD Graphics
Storage			
Vendor	Western Digital	Western Digital	Western Digital
Model Number	WD20SPZX	WD20SPZX	WD20SPZX
Amount (TB)	1	1	1.8
Type	5,400 spindle	5,400 spindle	5,400 spindle

# How we tested

## Testing Dell ProSupport Plus with SupportAssist

Before completing the following steps, we ensured that the Dell Inspiron 13 5368 laptop was entitled with ProSupport Plus, and installed the failing drive. We ran Windows Update and made sure all driver downloads were successful. We set Windows power settings to never Turn off the display and never put the computer to sleep.

### Installing SupportAssist

1. Download the SupportAssist software from <https://www.DellTechnologies.com/SupportAssistInstaller.exe>.
2. Run the SupportAssist executable.
3. In the installation Wizard, click Run.
4. Launch SupportAssist.
5. Close SupportAssist
6. Restart the system.

### Testing SupportAssist

Within 30 minutes, Dell SupportAssist displayed an alert in Windows Notifications indicating that it had detected an issue with the hard drive. We then verified that the alert was also present in the Service Intelligence troubleshooting screen.

## Testing HP Device as a Service (HP DaaS) powered by TechPulse

Before completing the following steps, we installed the failing hard drive within the HP ProBook 640 G5 laptop. We ran Windows Updates and made sure all drivers were up to date. We set Windows power settings to never Turn off the display and never put the computer to sleep.

### Configuring HP TechPulse

After purchasing the HP DaaS with TechPulse software with the appropriate number of seats we received an email with a welcome link. After clicking the welcome link, complete the following process to setup your account.

1. On the Company Information screen, enter the information for the company, and click Next.
2. On the IT Administrator screen, enter the information for the IT administrator, and click Next.
3. On the Add Users screen, add your users' emails. We added none, and clicked Skip.
4. On the Channel Partner screen, enter the information for your Channel Partner. We added none, and clicked Skip.
5. On the Secure your device screen, enter your HP DaaS Proactive Security subscription key, and click Next.
6. The Account Setup Completed screen confirms that your account setup is complete.

### Acquiring the Company PIN

1. Log into <https://www.hpdaas.com/> with your credentials.
2. Under Settings→Preferences→ Company Wide PIN, copy your Company PIN.

### Downloading, installing, and enrolling our laptop in HP DaaS

1. Download the HP TechPulse Windows Application setup.exe file from <https://www.hpdaas.com/software>.
2. Run the setup.exe file on the local system.
3. At the Welcome screen, click Next.
4. On the License agreement screen, check the box to agree to terms and conditions, and click Install. Wait for the installer to complete. It will install the Microsoft Visual C++ 2015 Redistributable (x86) package, if this is not already installed.
5. After installation, click Close. The system will automatically open the Enroll screen.
6. On the Enroll screen, select Company as the device owner, and click Next.
7. Enter the companywide PIN, and click Enroll. You can find the companywide PIN from the HP DaaS console.
8. Restart the system.

## Testing the predictive drive failure feature

Verify that the system icon for HP TechPulse is viewable in the taskbar. From the HPDaaS device list, verify that your system is enrolled and detected. We generated test alerts for high memory utilization and OS Unexpected Crash/Reboot to verify that alerts functioned as expected. We allowed the device to idle for one day. Then we ran a small mixed IO workload using IOMeter on the device for one week. Over that week, HP DaaS never generated an alert for the failing hard drive.

## Attempting to test Lenovo Device Intelligence

We intended to test Lenovo Device Intelligence on a Lenovo ThinkPad L15 system; however, we were ultimately unable to. We pursued multiple avenues to try to purchase Lenovo Device Intelligence (LDI). Most Lenovo representatives we spoke to had little information on the service or how to purchase it. We did eventually speak with a salesperson who knew about LDI. We purchased a Lenovo system, and the salesperson told us that our purchase included LDI; however, we later learned that LDI is only available for customers with 1,000 systems or more. Thus, we were unable to test LDI on our device.

This project was commissioned by Dell Technologies.



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