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SECURITY REPORT 2021

The future of remote device management in higher education

ThinkShield

It's time for devices to help secure themselves

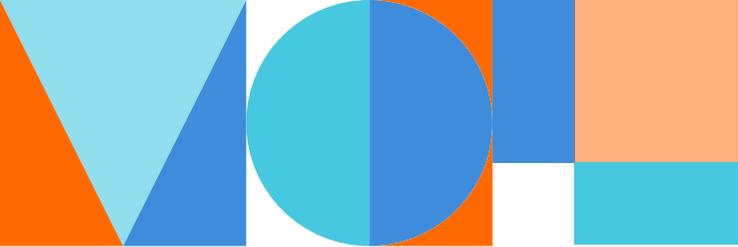
While colleges and universities across the country work toward reopening classrooms, the majority of institutions are also expecting to support borderless campuses for both on-campus and online education.¹

This shift to hybrid learning environments represents an entirely new set of challenges for the IT leaders charged with securing devices and data.

To meet the challenges, critical advances at the **silicon**, **firmware**, and **software** levels are ushering in a new baseline in device security. Designed for the future of higher education, the newest and most advanced technology features, like those available on the unrivaled business and classroom solution Intel vPro® platform, are optimized to work together. They protect devices against the most sophisticated threats with a unified, multilayered system of defense — woven seamlessly from CPU to OEM to OS.

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Silicon-level protections

Because 63% of institutions experienced a hardware- or silicon-level security breach within the last 12 months,² processor security forms the first protective layer in a simple, secure device with built-in security.

Security-first CPUs are designed to validate code during the boot-up process, protecting the integrity of the Windows operating system and ensuring a smooth handshake from silicon to BIOS to OS. Look for processors that support root-of-trust secure boot.

Advanced features enable reliable hardware-based endpoint management, lock the BIOS against malicious firmware updates, and provide hardware-level backup to ensure device and OS integrity.



The Intel vPro[®] platform provides silicon-level support for layers of security on Lenovo Think[®] devices.



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OEM security

Firmware attacks have increased 750% since 2016,³ but advances in OEM security and the Intel vPro® platform is fending them off with features that not only detect and block threats but can even repair devices autonomously.

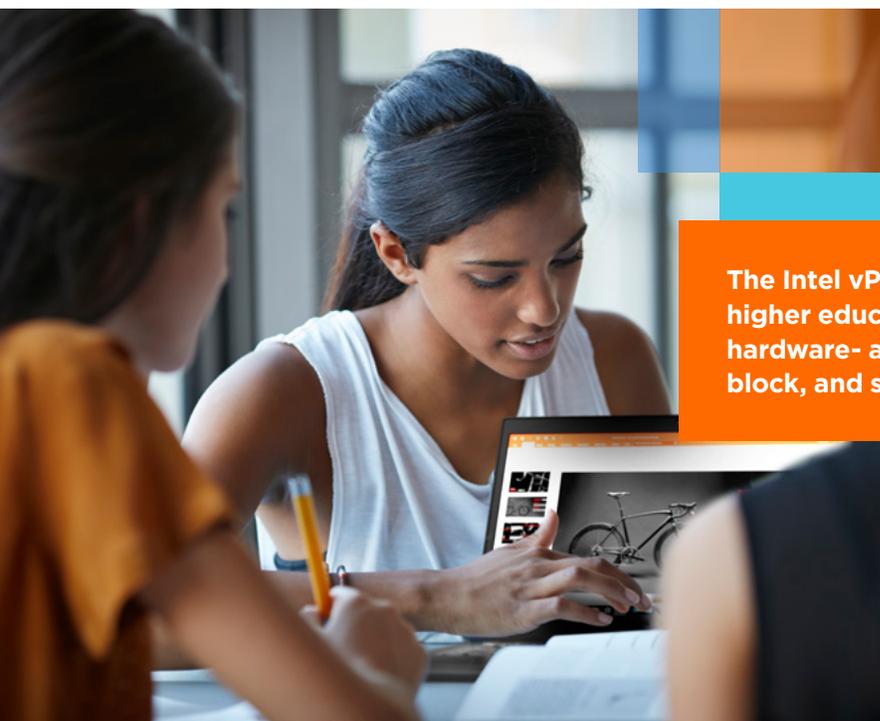
Self-healing BIOS automatically restores endpoint devices to a clean, pre-breach known good state. It helps mitigate attacks aimed at the BIOS and stops “bricking” if a BIOS update is interrupted or fails.

New advances also separate firmware-level security from the software layer, completely isolating critical security functions from a potential breach.

Device-based security features form a suit of armor, protecting access points if a device is lost or stolen.

They include:

- A tamper switch that notifies IT admins when the back cover of a device is opened
- Smart USB protection to block unknown storage devices and prohibit the unauthorized transfer of data
- Fingerprint readers and IR cameras for easy biometric authentication



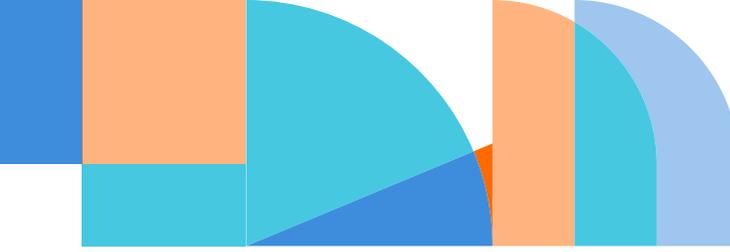
The Intel vPro® platform delivers a validated business and higher education PC platform that integrates with Lenovo hardware- and firmware-level protections to detect, block, and self-heal from malware threats or device theft.



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Software-level security

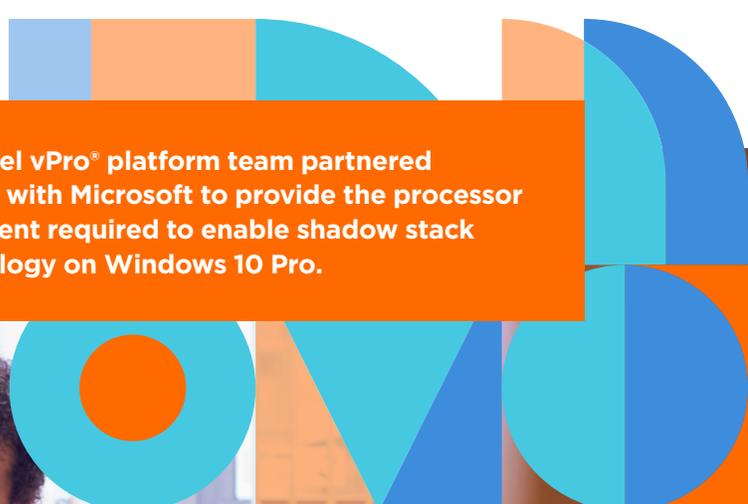
Defending the vulnerable software layer requires deep integration and alignment with both silicon and OEM security.

Due out this year, shadow stack security technology will block return-oriented programming (ROP), which hackers use to exploit a device's legitimate software code. The new technology creates a "shadow" stack stored on the processor to verify against the call stack in memory and confirm it hasn't been tampered with.

Secured-core PCs guard against attacks aimed below the operating system, keeping malicious code out of the BIOS and away from the network. Deep integration with the

hardware and firmware leverage root-of-trust boot processes to validate code before execution. Boot-up is aborted if any movements deviate from the norm.

AI and ActiveEDR are being tapped to predict, prevent, and stop zero-day attacks. AI-powered protection alerts the network and rolls devices back to a clean pre-breach state. Full forensics and global intel are subsequently available to the network. Endpoint detection and response (EDR)-based solutions are more advanced than legacy antivirus software and much more effective at catching evasive attacks, which target the computer firmware and below-OS components.



The Intel vPro® platform team partnered closely with Microsoft to provide the processor alignment required to enable shadow stack technology on Windows 10 Pro.



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The power of multilayered protection

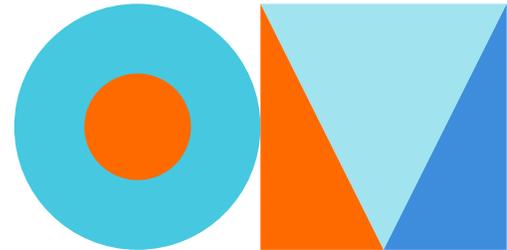
With a unified, multilayered system of defense, devices help protect themselves and empower the future of higher education. IT leaders should expect technology features to be optimized to work together, from CPU to OEM to OS.

Using both static and behavioral AI, SentinelOne makes autonomous decisions and executes automatic, instant responses.

Evolve and thrive with ThinkShield security

ThinkShield is Lenovo's security portfolio of hardware, software, services, and processes — fully customizable solutions to secure your students, faculty, and staff both on and off campus. Get the most comprehensive protection with a modern Windows 10 Pro device powered by the Intel vPro® platform.

Learn more at www.lenovo.com/Education.



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Sources

- 1 Kathe Pelletier, et al., "2021 EDUCAUSE Horizon Report, Teaching and Learning Edition"
- 2 Josh Fruhlinger, "Top cybersecurity facts, figures and statistics," CSO report, csoonline.com, March 2020
- 3 "Five questions to evaluate and improve your firmware security posture," Eclipsium *Assessing Enterprise Firmware Security Risk* blog, eclipsium.com, January 2020



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