

Solution Brief

Health and Life Sciences
Intel-powered AI PCs



Solve Healthcare Business Challenges with Intel-powered AI PCs

As healthcare organizations strive for cost efficiency, better patient outcomes, and enhanced clinician experience, Intel-powered AI PCs offer opportunities for increased performance, power efficiency, security, and productivity.

Solution Benefits

Intel-powered AI PCs offer the following advantages:

- Three integrated AI engines for the right balance of performance and power efficiency
- Low latency for better clinician user experience, enhanced administrative and clinical workflow productivity, and accelerated patient care
- Fewer data privacy and cost concerns since data stays on-premises
- Long battery life enabled by next-gen power management capabilities
- Strengthened information security

Executive summary

AI can potentially improve patient outcomes by 30-40% while reducing the cost of treatment by as much as 50%.¹ AI can also automate administrative tasks, accelerate diagnosis, improve patient and clinician experiences, and reduce cybercrime vulnerabilities. Traditionally, AI inference algorithms have required expensive discrete graphics cards, driving up AI infrastructure complexity and cost. Intel-powered AI PCs change all that.

To help make AI more accessible and affordable and bring to life creative AI inference algorithms at the edge, Intel has introduced the Intel-powered AI PC. These new devices feature the Intel® Core™ Ultra processor, which delivers three integrated AI acceleration engines: a CPU plus a built-in, integrated graphics processing unit (GPU) and a built-in, integrated neural processing unit (NPU). Intel-powered AI PCs help unlock the power of AI and enable high-performance, low-power processing. Running AI at the edge can be faster than sending data to the cloud and helps protect sensitive data by keeping it on-premises.

Healthcare organizations that are pursuing digital transformation will find that the Intel-powered AI PC can help them turn the tide on challenges such as rising costs, increased staff burn-out, an overwhelming amount of data, and ever-present cyber threats.

The Healthcare Dilemma



Figure 1: The healthcare industry faces numerous challenges.

Advantages of using Intel-powered AI PCs in the hospital and clinic environment include the following:

- Improving clinician experience with fast application response time
- Automating clinical documentation using generative AI (GenAI)
- Enhancing collaboration and virtual care/telehealth through long device battery life
- Reducing the cost and power consumption of digital pathology
- Strengthening security and regulatory compliance with the Intel vPro® platform.

Business challenge: A perfect storm of troublesome trends

The World Health Organization (WHO) paints a stark view of the healthcare industry, projecting a shortfall of 10 million health workers by 2030.² But behind this impersonal statistic are real-life tragedies. Burned-out nurses lose their joy and verve. Bleary-eyed medical imaging technicians struggle to keep up with their patient load. Physicians are caught between a desire to spend more time listening to patients and the administration's need for them to see more patients per hour. In fact, the healthcare industry faces a perfect storm of a shrinking workforce and increasing demand for healthcare from a quickly aging world population.

As if the workforce challenges were not enough, additional daunting challenges for healthcare organizations include the following (see Figure 1):

- **Data deluge.** The healthcare industry generates nearly 30% more data than other industries.³ Yet healthcare organizations report that, on average, only 53% of their data is used to make business decisions.⁴
- **Soaring care costs.** An 8% year-on-year U.S. medical cost trend is projected in 2025—the highest level in 13 years.⁵
- **Security concerns.** Healthcare organizations are a prime target for hackers, phishing attacks, and other cybercrimes.

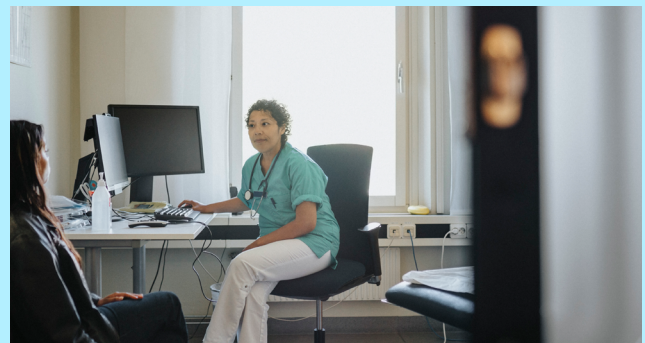
To meet these challenges head-on, the ongoing digital transformation of the healthcare industry is a crucial investment. Hospitals and clinics need a way to run AI at the edge to drive automation, cost efficiency, higher quality of care, and enhanced cybersecurity.

Intel-powered AI PC definition

An Intel-powered AI PC is a client/edge device that uses AI technologies to elevate productivity, security, and more. AI PCs can take many form factors, including laptops, companion compute edge devices, embedded form factors, and even desktops and workstations.

AI PCs are unique among client devices because they include three "AI acceleration engines" that together help optimize power consumption while accelerating AI-powered applications directly on the device.

- **CPU:** a high-performance Intel® central processor for fast response and low-latency, lightweight AI tasks
- **GPU:** a built-in Intel® graphics processing unit for high throughput and performance parallelism
- **NPU:** a built-in, power-efficient Intel® neural processing unit for sustained AI workloads and AI offload



AI PCs may seem like science fiction currently, but like the transition from flip phones to smartphones, they are expected to become the norm. Industry research organizations see strong growth in AI PCs, with some forecasting that they will account for up to 80% of total PC shipments by 2028.⁸

What can AI at the edge do for your healthcare organization?

Intel-powered AI PCs are client and edge devices that make a smart, scalable edge possible. Consider the following scenarios, which merely scratch the surface of how AI PCs can transform healthcare operations:

- **Improve clinician experience.** When AI happens locally on the PC, it lowers AI compute latency, which can improve clinician user experience. Here are some examples:
 - [Samsung Medison](#) achieved a 22% and 25% increase in performance throughput for its NerveTrack™ and Live HeartAssist™ real-time ultrasound imaging applications, respectively, compared to a previous-generation Intel® Core™ processor paired with a competitive discrete GPU. Samsung Medison attributes these results in part to the built-in Intel® Arc GPU.⁹



22-25% increase⁹

- Office productivity suites also run faster on Intel-powered AI PCs—up to 47% faster compared to a three-year-old PC.¹⁰



47% faster¹⁰

- **Automate clinical documentation.** At least 30% of a nurse’s non-direct care tasks can be automated using generative AI (GenAI), freeing time for direct care and lowering nurse stress and burnout.¹¹ Intel-powered AI PCs can help automate tasks like scheduling, data entry, and documenting Subjective, Objective, Assessment, and Plan (SOAP) notes in the electronic health record (EHR).
- **Benefit from long battery life.** Telehealth and healthcare team collaboration are often performed on mobile devices. Intel-powered AI PCs’ low power consumption can help increase battery life and improve patient relations and team collaboration. Many collaboration solution vendors, such as Microsoft Teams, Webex, and Zoom, are seeing the benefits of running their applications on PCs equipped with Intel Core Ultra processors, which provide up to 36% processor power reduction gen-over-gen for video conferencing and up to 21% lower processor power vs. AMD on video conferencing applications.¹²



up to 36% processor power reduction¹²



up to 21% lower processor power¹²

- **Enable fast, affordable, and low-power digital pathology.** Software developer, [JelloX Biotech Inc.](#), develops AI-driven diagnostic tools. The company has worked with Intel to develop AI solutions that are more accessible and cost-effective using a small form factor AI PC. The device delivers exceptional performance—without needing a discrete GPU—at 90% less power consumption than a discrete GPU.¹³



up to 90% less power consumption¹³

- **Strengthen security and regulatory compliance.** All Intel-powered AI PCs are Intel vPro® eligible. Deploying Intel-powered AI PCs with Intel vPro technology can strengthen security and regulatory compliance. For example, SE Labs’ recent tests showed that Intel® Threat Detection Technology (Intel® TDT) detected 93% of the top ransomware attacks.¹⁴ Many security software vendors, including [CrowdStrike](#), [Microsoft Defender for Endpoint](#), [ESET](#), [Bufferzone](#), [Checkpoint](#), and [Trend Micro](#), are incorporating Intel TDT into their solutions. Intel leads the silicon industry in product security assurance—in 2023, Intel’s closest competitor had 3x more platform firmware vulnerabilities than Intel.¹⁵

Solution value: AI at everyone’s fingertips

Deploying AI PCs throughout a hospital or clinic can boost productivity, improve operational efficiency, and enhance cybersecurity. Benefits accrue to physicians, nurses, and technicians; IT departments; and patients themselves. By deploying Intel-powered AI PCs, healthcare organizations can meet their current AI needs and future-proof their edge infrastructure for the next generation of AI.

Set your staff free to focus on the patient

A 2020 report states that nurses spend only about 21% of their time providing direct patient care; the rest is spent on administrative tasks and clinical documentation.¹⁶ An Intel-powered AI PC supports both conventional and GenAI applications. Using GenAI can help automate documentation and meeting summary tasks. AI-assisted medical imaging can find health issues quickly and accurately, accelerating patient care. The bottom line is that bringing AI to the edge can improve the patient and the clinician experience.

Take operational efficiency to the next level

With the combination of three AI acceleration engines, Intel-powered AI PCs deliver the right balance of performance and power. Intel Core Ultra processors enable a new level of power-efficient AI acceleration directly on the PC, with 2.5x AI

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inference performance per watt compared to previous-generation devices.¹⁷ For healthcare workers who rely on mobile devices, the Intel Core Ultra processor's 40% lower processor power means longer battery life for AI-enhanced collaboration.¹⁸

 **2.5x** AI inference performance per watt¹⁷

 **40%** lower processor power¹⁸

Protect your patients' data and privacy

With cybercrime on the rise, hospitals and clinics seek security solutions that block data breaches and ransomware attacks. With an Intel-powered AI PC equipped with the Intel vPro platform, you can harness advanced AI-powered security capabilities that proactively detect and help mitigate threats. These features provide an additional layer of protection at the hardware level before adversaries can cause harm.

Intel vPro® Platform with Intel® Core™ Ultra



Figure 2: Intel vPro® Platform with Intel® Core™ Ultra delivers productivity, security, manageability and stability

Solution architecture: PC with three AI acceleration engines

As shown in Figure 3, the Intel-powered AI PC consists of an Intel Core Ultra processor with a built-in GPU and NPU. The Intel Core Ultra processor is the biggest architecture update in 40 years.²² Through the [AI PC Acceleration Program](#), Intel engages with more than 100 independent software vendors (ISVs) to accelerate their applications by optimizing them for the Intel-powered AI PC.

Besides featuring the Intel Core Ultra processor, Intel powered AI PCs also support the Intel vPro platform. Healthcare organizations can choose to deploy Intel vPro technology on their Intel-powered AI PCs to enhance cybersecurity.²³

For example, Intel® Hardware Shield is a collection of security technologies that helps defend against modern threats at each layer: hardware, BIOS/firmware, hypervisor, VMs, OS, and applications. Intel Hardware Shield includes Intel® TDT, which augments endpoint security software with AI that uses Intel® CPU telemetry to uncover cyberattacks that evade traditional detection methods. Intel TDT helps deliver a performant user experience by offloading AI and memory scanning from the CPU to the integrated GPU and NPU.

Together, the AI acceleration engines and Intel vPro technology make the Intel-powered AI PC a powerful tool for augmenting healthcare teams, reducing operational total cost of ownership, and enhancing the security of sensitive healthcare data.

Single use of Intel vPro® to support a PC remotely can save carbon emissions equal to **2 years** of use of that PC ²⁴

Three AI Engines

with Intel® Core™ Ultra Processor

Heterogenous execution of AI workloads embraces the best practices in AI software design

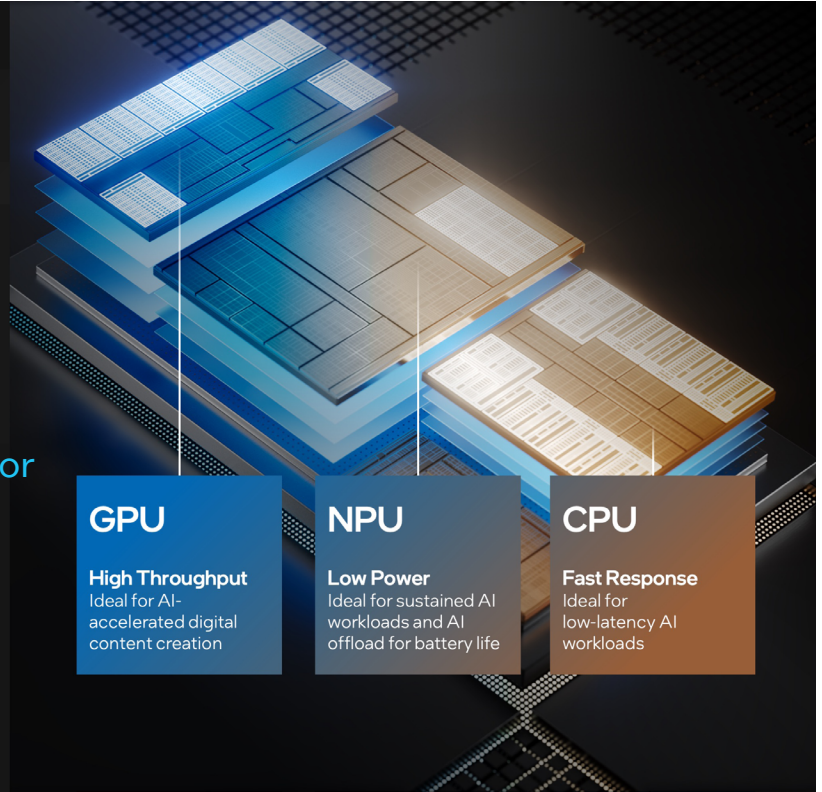


Figure 3: Intel-powered AI PCs with Intel vPro® platform provide the right balance of power and performance for AI, combined with enhanced cybersecurity features.²⁵

Better together: Intel-powered AI PCs and Intel® Distribution of OpenVINO™ toolkit

Many software suppliers have used the [Intel® Distribution of OpenVINO™](#) toolkit to optimize their AI applications for the Intel-powered AI PC's CPU, integrated GPU, and integrated NPU. The OpenVINO toolkit is an open-source toolkit that accelerates AI inference with lower latency and higher throughput while maintaining accuracy, reducing model footprint, and optimizing hardware use. Optimized models running on an Intel-powered AI PC can accelerate and improve healthcare activities such as documentation automation, digital pathology, and medical imaging.



Conclusion

From automating administrative tasks to accelerating medical imaging results to collaborating across hospital teams, Intel-powered AI PCs can help healthcare organizations cut costs, decrease staff burnout, and accelerate patient care. The built-in AI accelerator engines, combined with the Intel vPro platform's advanced cybersecurity features, make the Intel-powered AI PC a win-win for caregivers and IT alike. Intel's strong relationships with the healthcare community and application developers means healthcare organizations can rely on a strong ecosystem of support. Deploying Intel-powered AI PCs across the organization is the next logical step in healthcare digital transformation, leading to affordable, high-quality care and enhanced operational efficiency.

Find the solution that is right for your organization. Visit Intel's [Healthcare and Life Sciences Technology Solutions](#) website.

Learn more

You may find the following resources helpful:

- [Intel-powered AI PCs](#)
- [Intel vPro® Technology](#)
- [Intel® Core™ Ultra Processors Family](#)
- [Healthcare and Life Sciences Technology](#)

¹ WiFitTalents, April 2024, "AI In Healthcare Statistics: Latest Data & Summary."

² World Health Organization, "Health Workforce."

³ PR Newswire, August 2023, "Report: Only 57% of Healthcare Organizations' Data is Used to Make Decisions."

⁴ Arcadia, 2024, "The current state of healthcare analytics platforms."

⁵ PwC, July 2024, "Medical cost trend: Behind the numbers 2025."

⁶ U.S. Department of Health and Human Services, December 2023, "Healthcare Sector Cybersecurity."

⁷ HIPAA Journal, July 2024, "Healthcare Data Breach Statistics."

⁸ io Fund, June 2024, "AI PC Stocks: Emerging 2024 And 2025 Story."

⁹ Source: <https://www.intel.com/content/www/us/en/products/details/embedded-processors/core-ultra.html?wapkw=intel%20core%20ultra%20processors%20for%20the%20edge>

¹⁰ Source: <https://www.intel.com/content/www/us/en/content-details/817154/intel-vpro-with-intel-core-ultra-processors-press-deck.html?wapkw=817154&DocID=817154, slide 5 and 36>

¹¹ Nurse Journal, October 2023, "The Future of Nursing: AI Can Handle A Third of Nurse Administrative Tasks, Study Finds."

¹² Source: <https://edc.intel.com/content/www/us/en/products/performance/benchmarks/mobile/>

¹³ Source: <https://www.intel.com/content/www/us/en/content-details/830388/jellox-pathology-ai-video.html>

¹⁴ Source: <https://community.intel.com/t5/Blogs/Tech-Innovation/Artificial-Intelligence-AI/Protect-Your-Business-with-AI-based-Security/post/1576521>

¹⁵ Source: <https://www.intel.com/content/dam/www/central-libraries/us/en/documents/2024-01/intel-2023-product-security-report.pdf>

¹⁶ Nursing Management, March 2020, "How much time do nurses spend using electronic devices at work?"

¹⁷ Intel Corporation. "Benchmarks Overview." As measured by UL Procyon AI Inference Benchmark (int8 model) Intel Core Ultra 7 165H NPU vs. Intel Core i7-1370P GPU.

¹⁸ As measured by SoC package power using Xsplit VCam for background removal, auto framing, enhanced lighting, chair removal using Intel® Core™ Ultra 7 165H vs. Intel Core i7-1370P. Source: Intel-powered AI PC Advantage Guide Infographic.

¹⁹ Performance results are based on testing as of February 2024. Full Configurations: Processor: Intel Core Ultra 9 185H processor (MTL-H) PL1=45W, 16 Cores; tested in MSI Summit E16; Memory: 32GB DDR5-6400MHz; Storage: Samsung SSD 990 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 23H2 22631.3085; Graphics card: Integrated Intel Arc graphics, Graphics Driver: Preproduction driver; NPU Driver: 31.0.100.1688; BIOS: Preproduction BIOS; Power Plan set to Balanced, Power Mode set to "Best performance" Processor: Intel® Core™ i9-13900H processor, 14 Cores; tested in MSI Summit E16; PL1=45W, 14 Cores; MSI; Memory DDR5-5200MHz 2x16GB, Dual Rank; Storage: Samsung 990 Pro NVMe 1TB; Display Resolution: 1920x1080; OS: Windows 11 22631.3085; Graphics card: Integrated Iris Xe Graphics; Graphics Driver: 31.0.101.5186; BIOS: E1592IMS.70A; Power Plan set to Balanced, Power Mode set to "Best Performance".

²⁰ Based on "The Total Economic Impact™ of the Intel vPro Platform," an Intel-commissioned study by Forrester Consulting, January 2024, which surveyed 500 ITDMs at enterprises across the world using Intel vPro®, including US, Canada, France, Germany, UK, Australia, China, India, and Japan. For the study's findings, Forrester aggregated the data and experiences from the interviewees into a composite organization with an assumed revenue of \$1 billion per year and 10,000 employees. The estimated equivalent fuel needed to dispatch a technician, ship an asset, or have the user visit an office. Please visit www.intel.com/Performance-vPro for more information. Results may vary.

²¹ Based on IOActive's "Intel vPro 13th Gen Attack Surface Study" published March 2023 (commissioned by Intel), which evaluates Intel vPro devices powered by 13th Gen Intel Core processors against four-year-old Intel-based PCs, given similar or potentially improved features and capabilities of Intel vPro systems powered by Intel® Core™ Ultra processors.

²² Source: <https://www.intel.com/content/www/us/en/content-details/817154/intel-vpro-with-intel-core-ultra-processors-press-deck.html?wapkw=817154&DocID=817154>

²³ Select SKUs of Intel-powered AI PCs also offer remote manageability capabilities.

²⁴ As measured by 2023 internal Intel study analyzing common emissions data that factors the estimated energy required to use Intel® AMT remote manageability features as compared with the estimated equivalent fuel needed to dispatch a technician, ship an asset, or have the user visit an office. Please visit www.intel.com/Performance-vPro for more information. Results may vary.

²⁵ See www.intel.com/PerformanceIndex for workloads and configurations. Results may vary.



Intel technologies may require enabled hardware, software, or service activation.

No product or component can be absolutely secure.

Your costs and results may vary.

All versions of the Intel vPro® platform require an eligible Intel processor, a supported operating system, Intel® LAN and/or WLAN silicon, firmware enhancements, and other hardware and software necessary to deliver the manageability use cases, security features, system performance, and stability that define the platform. See intel.com/performance-vpro for details.

AI features may require software purchase, subscription or enablement by a software or platform provider, or may have specific configuration or compatibility requirements. Details at www.intel.com/PerformanceIndex. Results may vary.

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