

Accelerating Security and Privacy in the Data Center



With Intel you can achieve rigorous security, identity, privacy and compliance management.

Global organizations across all industries are rapidly mobilizing to adopt more secure, sustainable digital technologies to modernize and stimulate breakthrough innovations and advance their business objectives. Much of the modernization is being driven by cloud, edge and mobile adoption, with many discrete projects requiring a rigorous approach to cybersecurity. In fact, the seriousness of cyber risks to organizations has become central to business risk as a whole, making it a board-level issue.

Cybersecurity has become more tightly integrated into business objectives globally, to ensure that the technologies being implemented to address business priorities are secure. Organizations need to accelerate business insights and decision intelligence more securely as they optimize the hardware-software stack.

It's now more critical than ever for technology to deliver sustained business value as organizations look to scale, drive down costs and deliver new services. Instead of customizing systems for new applications, which adds complexity and can heighten security vulnerability, enterprises can achieve the performance needed to meet a wide variety of deployments — both today and in the future — with a secure, scalable platform.

63% SUFFERED
A CYBER
BREACH¹
of organizations

37 days and **\$2.4M**
AVERAGE TO RECOVER FROM BREACH¹

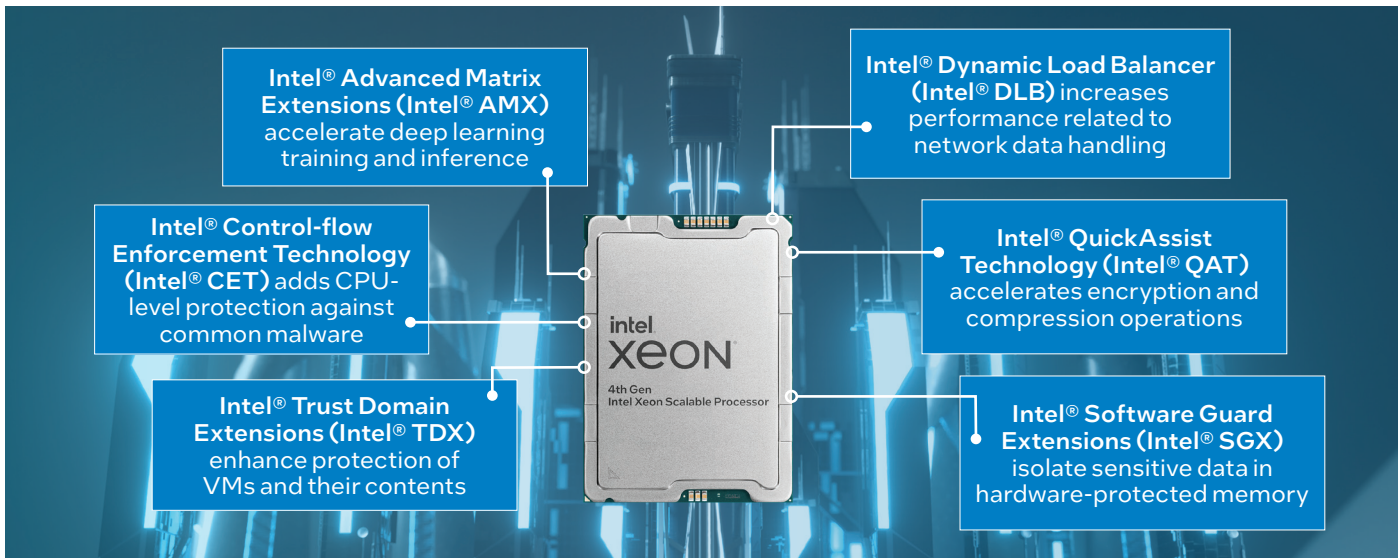
88% SEE CYBERSECURITY
AS A BUSINESS
PRIORITY²
of boards

Accelerate your security approach with Intel technologies

Help protect your business and innovate with confidence. Whether businesses are deploying on-premises or in the cloud, it is increasingly critical to protect data and remain compliant. Data centers equipped with [4th Gen Intel® Xeon® Scalable processors](#) have proven advanced security technologies that help protect data in an ever-changing landscape of threats while unlocking new opportunities for business collaboration and insights — even with sensitive or regulated data.

Accelerate performance across the fastest-growing workload types in AI, analytics, networking, storage and HPC with the latest built-in accelerators.





Key security use cases

Data protection

Across industries — whether in manufacturing where securing data-processing is critical for automation functions delivering precise, high-speed production, or in healthcare where securing data is vital in protecting patient’s electronic health records — it’s paramount to protect your and your customer’s data.

PERFORMANCE PROOFPOINT

UP TO FEWER **95%** CORES AND UP TO HIGHER LEVEL 1 **2X** COMPRESSION THROUGHPUT

with 4th Gen Intel Xeon Platinum 8490H using integrated Intel QAT versus prior generation³

THE NEED:

As organizations modernize, they need to consolidate compute, networking and storage infrastructures, deploying and managing them with cohesive, automated, efficient management. Data must be protected at all stages in this consolidated infrastructure — at rest, in flight and in use — without loss of performance for critical workloads. Hyperconverged Infrastructure (HCI) is typically used for this modernized infrastructure on-premises and at the edge, as part of a larger hybrid cloud deployment, to support a broad range of workloads including databases, analytics, Enterprise Resource Management (ERP) or Customer Relationship Management (CRM) software, Virtual Desktop (VDI) or productivity and collaboration apps.

THE ANSWER:

Intel QuickAssist Technology (Intel QAT) is an encryption and compression engine that’s directly integrated into the CPU for the first time in the 4th Gen Intel Xeon Scalable processor. Using Intel QAT as an offload engine provides a significant throughput improvement for compression, compared to the same algorithm run on processor cores. At the same time, offload frees up processor cores for business-critical applications running on the hyperconverged infrastructure.

Organizations can compress and encrypt, then decrypt and decompress on the fly, keeping data secure in motion and at rest. Intel crypto accelerators and integrated Intel QAT coupled with innovations up and down the stack deliver breakthrough performance. For example, the crypto accelerators and integrated Intel QAT stitch together two algorithms that typically run sequentially, allowing them to execute simultaneously for faster results.

PERFORMANCE PROOFPOINT

UP TO HIGHER **2.5X** THROUGHPUT (RPS)

UP TO LOWER P99 **74%** LATENCY

UP TO LOWER CPU **12%** UTILIZATION

on 4th Gen Intel Xeon Platinum 8480+ processors with two Intel QAT devices compared to solution with no acceleration⁴

Secure business objectives with confidential computing

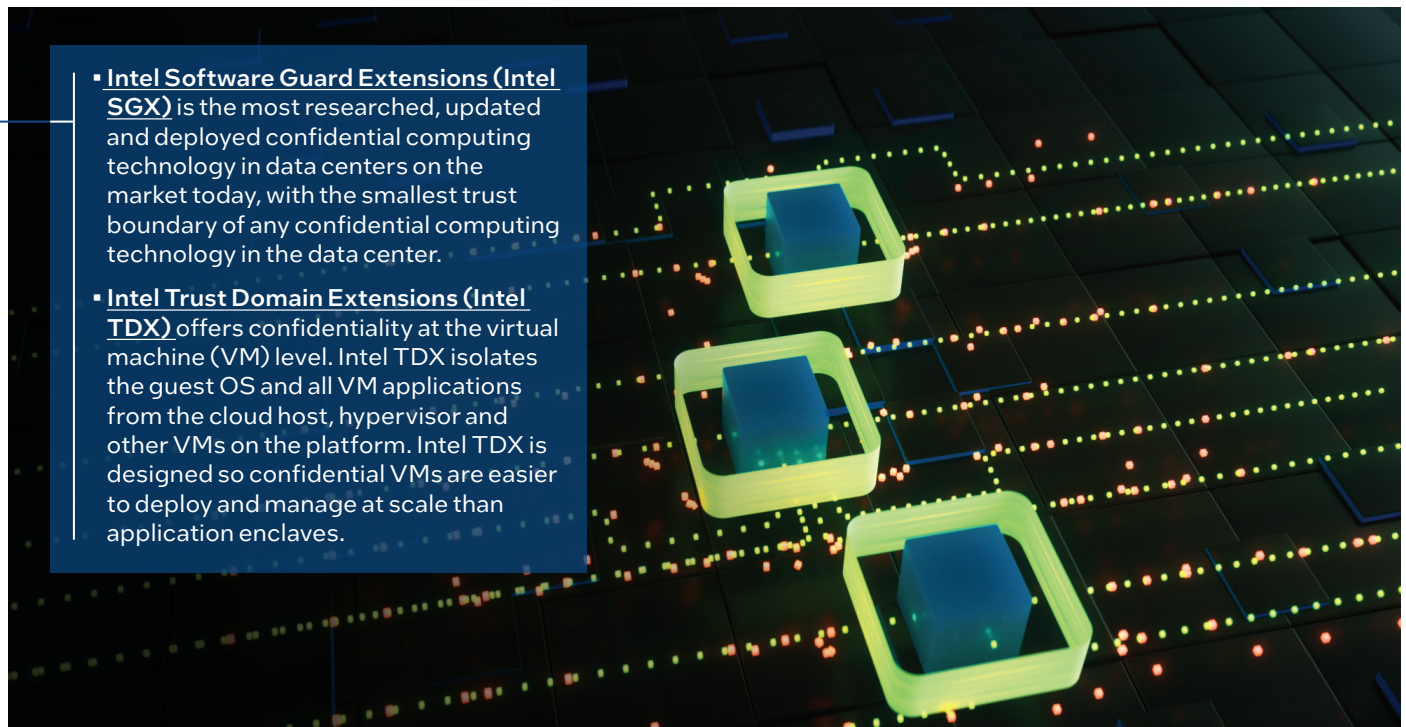
Organizations are focusing on rigorous data privacy, identity and compliance management as part of their security strategies. Confidential computing can ensure data privacy, security and compliance across many business objectives, including keeping government data safe or protecting the transaction data of finance or banking customers.

THE NEED:

Confidential computing improves the isolation of sensitive data with hardware-based memory protections. Organizations need to share sensitive or regulated data in the cloud while helping to keep it better protected inside an access-restricted enclave. Data is the fuel of innovation and progress. Businesses are putting their data to work to accomplish everything from detecting fraud and developing more responsive supply chains to training breakthrough AI models. Therefore, the need to accelerate the pace of innovative solutions, automate processes and deliver delightful customer experiences, while establishing data privacy and compliance rigor, is one of the top priorities of organizations as they modernize their technologies.

THE ANSWER:

Unlike traditional encryption for data at rest or in transit, confidential computing is designed for enhanced protection and privacy of data in use. These privacy protections are critical in order to provide continuous protection of workloads with regulated or other sensitive data in distributed networks, taking advantage of the cost, scalability and agility benefits of cloud. With Intel SGX and Intel TDX, Intel's broad portfolio of confidential computing technologies will allow businesses to choose the level of security they need to meet their business needs and regulatory requirements.



Additionally, **Intel Control Flow Enforcement Technology (Intel CET)** extends threat protection capabilities for software running outside the enclave. It helps to protect against the misuse of legitimate code through control-flow hijacking attacks — a widely used technique in malware.

Network management and the network security appliance

New digital and automated experiences in the future of work require security, collaboration and community environments operating anytime, anywhere and on any device. Employees, suppliers, partners and customers are requiring “total experience” platforms with tools that are secure, flexible, powerful and designed to be adaptive and to deliver technology and data efficiently so they can meet their objectives. That helps overall well-being on the job.

THE NEED:

With the need for more secure, remote access to networks and data comes the need for increased connectivity and secure technologies. These capabilities help organizations manage services securely and efficiently from anywhere, getting up-to-date reporting as needed. Deployment and management can be easier, and compatibility with virtually every network-connected device is possible, to help achieve performance, security and scalability goals.

PERFORMANCE PROOFPOINT

5.7X TO 10X HIGHER PYTORCH REAL-TIME INFERENCE PERFORMANCE⁵ **3.5X TO 10X HIGHER PYTORCH TRAINING PERFORMANCE⁶**
with built-in Intel AMX (BF16) versus the prior generation (FP32)

THE ANSWER:

Help protect network and application security of your network security appliance; quickly process encrypted traffic and adopt AI-driven approaches to network analytics, content inspection and malware detection. 4th Gen Intel Xeon Scalable processors deliver high performance and throughput with new instructions, faster DDR5 memory and PCIe Gen 5 bandwidth. New built-in accelerators speed up AI, encryption and load balancing to optimize performance while freeing up CPU core resources.

- **Intel Advanced Matrix Extensions (Intel AMX)** accelerates AI capabilities on 4th Generation Intel Xeon Scalable processors, speeding up training and inference without additional hardware. This accelerator is ideal for workloads such as natural language processing, recommendation systems and image recognition. Intel AMX is ideal for delivering total experience productivity and collaboration solutions.
- **Intel Dynamic Load Balancer (Intel DLB)** improves system performance related to handling network data on 4th Gen Intel Xeon Scalable processors. Intel DLB enables the efficient distribution of network processing across multiple CPU cores/threads and dynamically distributes network data across multiple CPU cores for processing as the system load varies. Intel DLB also restores the order of networking data packets processed simultaneously on CPU cores.

Do more

Add Intel Optane™ Persistent Memory to affordably increase memory capacity as data sets grow, allowing more VMs at a similar system cost.⁷ To further boost networking, storage and compute performance while improving CPU utilization, offload heavy tasks to an Intel Infrastructure Processing Unit (Intel IPU).

Ease of integration with existing infrastructure

Intel continues to innovate, build on a secure foundation and deliver security solutions at data and infrastructure layers that work with identity, access and compliance management. When ready to deploy, receive sound consultation, guidance and tangible steps to help you quickly and responsibly modernize. Through the [Intel Partner Alliance](#), access exclusive resources for AI, cloud, high performance computing and other solution areas to help plan, build and deliver more value to your customers. With extensive partner relationships, solutions and experience, Intel can help you accomplish secure, sustainable business priority solutions using our technologies and extensive partner relationships (CSPs, ISVs, SIs, OEMs and more) in the global ecosystem that transform your vision and innovations into reality.

SUPPORTING STAT

Get the most choice with Intel's **OVER 50,000** unique instance types, sizes and regions. **6X GREATER THAN** the competition.⁸

Leadership's top business priorities in the digital transformation journey

Investments in digital transformation by organization leaders (tech and business alike) are expected to total \$6.3 trillion between 2022 and 2024, accounting for as much as 55% of all IT spending by 2024.⁹ This business brief is part of a series that illuminates the top business priorities leaders are focused on to achieve their business success in this transformative future, and how Intel hardware, software and services, including the 4th Gen Intel Xeon processor, help achieve these priorities:



- **Security (this brief):** Achieve rigorous security, identity, privacy and compliance management.
- **AI:** Adopt data analytics and AI to drive critical outcomes
- **Cloud:** Activate strategies across hybrid, multi-cloud and the intelligent edge
- **Redefined worker experiences:** Embrace boundaryless interactive worker experiences
- **ESG:** Foster equitable outcomes and responsibility in environment | social | governance (ESG)

Learn More

www.intel.com/xeon/scalable

www.intel.com/security



¹ Accenture, November 19 2019. "AI: Built to Scale." <https://www.accenture.com/us-en/insights/artificial-intelligence/ai-investments>.

² Based on Intel market modeling of the worldwide installed base of data center servers running AI Inference workloads as of December 2021.

³ See [N16] at intel.com/processorclaims: 4th Gen Intel Xeon Scalable processors. Results may vary.

⁴ See [W5] at intel.com/processorclaims: 4th Gen Intel Xeon Scalable processors. Results may vary.

⁵ See [A17] at intel.com/processorclaims: 4th Gen Intel Xeon Scalable processors. Results may vary.

⁶ See [A16] at intel.com/processorclaims: 4th Gen Intel Xeon Scalable processors. Results may vary.

⁷ 3rd Gen Intel Xeon Scalable Processor vs. AMD EPYC. See configuration details [126-130] at www.intel.com/3gen-xeon-config.

⁸ Source: Historical Liftr Insights Component tracker data + Intel internal preliminary analysis as of 09/02/22.

⁹ IDC, October 2021. "IDC FutureScape: Worldwide Digital Transformation 2022 Predictions." <https://www.idc.com/getdoc.jsp?containerId=US47115521>.

Performance varies by use, configuration, and other factors. Learn more at <http://www.intel.com/PerformanceIndex>.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See configuration disclosure for configuration details. No product or component can be absolutely secure.

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