intel.

11th Gen Intel® Core™ vPro® processors for business-class desktops

The world's best business processor powers the latest Intel vPro® desktop platform[1]

PROCESSOR BRIEF

Empowering enterprises to meet evolving business needs

The landscape of modern business is growing more connected — and more complex — every year. In response, more businesses are adopting flexible working models to support the shift toward in-office and remote environments.

The trusted Intel vPro® platform continues to offer tools and technologies that business leaders, IT, and end users at businesses of all sizes can count on to help them collaborate securely, stay connected, and conduct business no matter where they work. With their latest innovations, 11th Gen Intel® Core™ vPro® processors deliver the world's best productivity for business,[2] and 11th Gen Intel® Core™ vPro® processors deliver the world's best business collaboration.[3]

Enable your workforce to tackle any workload — from everyday business computing to resource-intensive data analysis, content creation, and more — with business-class performance. Help IT simplify workloads, lower total cost of ownership, and provide better support with comprehensive hardware-based security features and enhanced cloud-based manageability. With desktops powered by the 11th Gen Intel vPro® processors, you can set a new standard for performance, security, and powerful user experiences with the unrivaled PC platform for business.
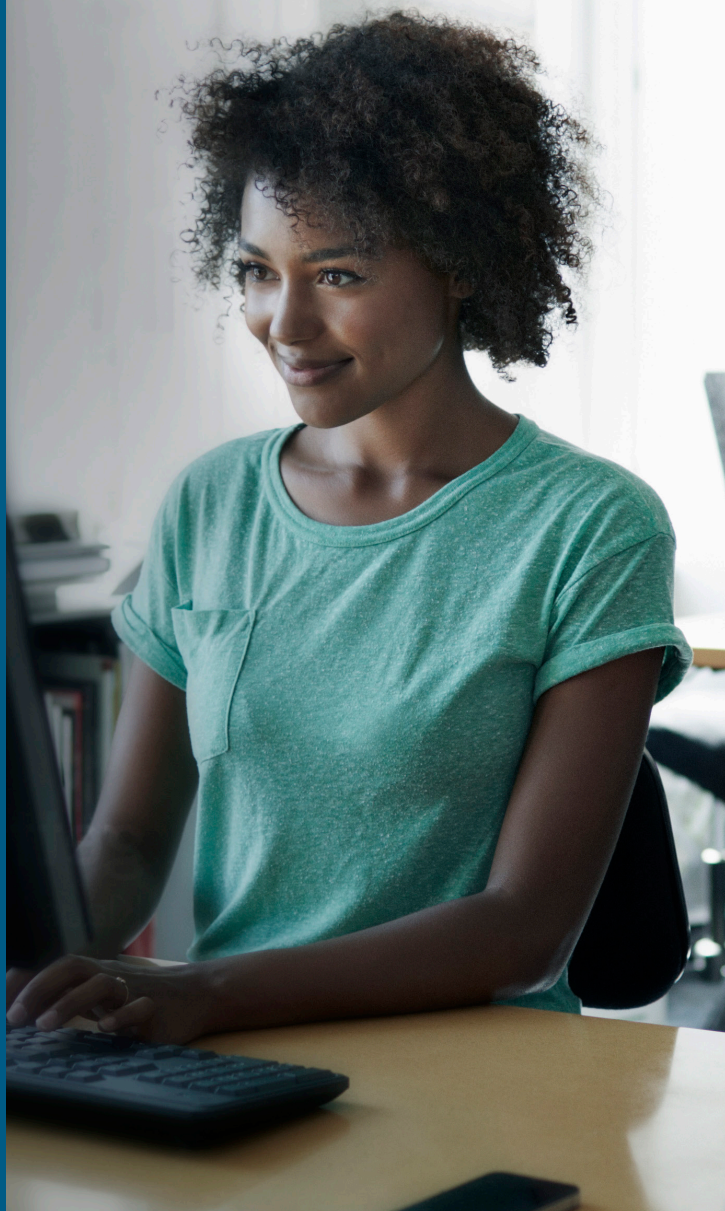
A scalable processor portfolio

11th Gen Intel® Core™ vPro® processors for business-class desktops are built on a new architecture that utilizes hardware and software more efficiently. This new architecture gives businesses the flexibility to build fully customizable PCs to meet a wide variety of performance and price point requirements across their organization.

11th Gen Intel® Core™ vPro® S-Series processors deliver high performance, flexibility, and comprehensive hardware-based security features for business-class desktops across three Intel® Core™ processor brands: i5, i7, and i9. Processors with the i5 feature 6 cores, 12 threads, and a 12 MB cache. Processors with the i7 support 8 cores, 16 threads, and a 16 MB cache. Processors with the i9 support 8 cores, 16 threads, and a 16 MB cache. For i5, i7, and i9 processors, the thermal design power offers choices of 35W, 65W, and 125W (which can be configured down to 95W).

[2] In Windows-based Desktop devices, based on unique features and performance testing (as of April 7, 2021) on industry benchmarks and Representative Usage Guides of Intel® Core™ vPro® i9-11900, including in comparison to AMD Ryzen 7 Pro 4750G. Visit www.intel.com/11thgenvPro for details. Results may vary.

[3] In Windows-based Desktop devices, based on unique features and performance testing (as of March 31, 2021) on industry benchmarks and Representative Usage Guides of Intel® Core™ vPro® i9-11900, including in comparison to AMD Ryzen 7 Pro 4750G. Visit www.intel.com/11thgenvPro for details. Results may vary.

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

Designed for IT and end users

Today's agile and highly capable IT management teams are often tasked with a wide range of maintenance and support tasks, but their most time-consuming challenge is handling day-to-day tactical activities: performing maintenance, running diagnostics, repairing systems, and rebooting for users working on-site or remotely. 11th Gen Intel® Core™ vPro® processors for business-class desktops are designed to help managed and unmanaged service providers, in-house IT teams — even a small-but-mighty IT team of one — streamline their PC management activities, support your employees, and better secure your organization.

IT teams can also leverage 11th Gen Intel® Core™ vPro® processors to make the most of your IT investment. Inherently flexible and scalable, business-class desktops can be optimized on a per-user basis to support extra computing power, additional memory options, and peripherals. In addition to the benefits of balancing cost and performance, your employees — each with their own unique computing needs and workloads — will appreciate the ability to stay productive while working from various locations with a business PC that is purpose-built to fit their specialized role.

Unmatched PCs for business

The Intel vPro® platform delivers business-class performance, comprehensive hardware-based security features, modern manageability, and platform stability for powerful employee experiences. By leveraging the unrivaled Intel vPro® platform, these business PCs give organizations of all sizes the tools they need to meet the demands of today's dynamic business environment.

Computing systems based on the Intel vPro® platform that incorporate the eligible processor SKUs shown in the table on page 7 and meet the Intel vPro® brand requirements are optimized for corporate environments and an increasingly remote workforce. These systems also require either the Microsoft Windows 10 Pro or Windows 10 Enterprise OS.

Groundbreaking performance and amazing collaboration for business

The 11th Gen Intel® Core™ vPro® i9 processor is the world's best desktop processor.[1] With an impressive leap in CPU performance, powerful new integrated graphics that bring new levels of 3D and media performance, AI acceleration, and next-gen connectivity and responsiveness, 11th Gen Intel® Core™ vPro® processors allow your workforce to get more work done together from anywhere.

Advanced performance and collaboration features

- ✅ **New processor core architecture** transforms hardware and software efficiency, delivering significant gains in real-world performance that lets your workforce do more work, wherever work happens.

- ✅ **Intel® Xᵉ graphics architecture** creates more immersive work experiences with improved device performance, rich media and intelligent graphics capabilities, and built-in support for multiple high-resolution monitors.

- ✅ **Discrete Intel Thunderbolt™ 4 technology** helps employees stay in their productivity zone, allowing them to quickly charge their devices, or connect to any display or data device through one universal computer port.

- ✅ **Integrated Intel® Wi-Fi 6 / Discrete Intel® Wi-Fi 6E (Gig+)** helps users collaborate seamlessly with ultra-fast Gigabit speed, ultra-low latency, and ultra-reliable connectivity made possible by the greatest leap in Wi-Fi technology in 20 years.[4]

- ✅ **Intel® Optane™ memory H20 with SSD** helps employees stay more productive while multitasking thanks to significant gen-over-gen improvements to responsiveness, performance, power consumption, and storage capacity options.

- ✅ **Intel® Deep Learning Boost** delivers up to 80% better gen-over-gen AI performance for more improved bandwidth, increased productivity, and more intelligent, personalized business PC experiences.[5]

[1] In Windows-based Desktop devices, based on unique features and performance testing (as of April 7, 2021) on industry benchmarks and Representative Usage Guides across 3 key usages: productivity, creation, and collaboration of Intel® Core™ vPro® i9-11900, including in comparison to AMD Ryzen 7 Pro 4750G. Visit www.intel.com/11thgenvPro for details. Results may vary.

[5] As measured by MLPerf v0.7 Inference, Mobile Notebooks, Closed Division with Offline Scenario using OpenVINO 2021.1 Pre framework on Mobilenet Edge model int8 CPU (Batch=4) on 11th Gen Intel® Core™ i9-11900 Processor vs highest attainable MLPerf v0.7 Inference, Mobile Notebooks, Closed Division with Offline Scenario using OpenVINO 2021.1 Pre framework on Mobilenet Edge model int8 CPU (Batch=4) on 10th Gen Intel® Core™ vPro® i9-10900 processor.

Not all features are available on all SKUs. Performance varies by use, configuration and other factors. Learn more at www.intel.com/PerformanceIndex. Please check with your OEM for availability. See "Notices and disclaimers" for full configuration details.

Comprehensive security that businesses depend on yesterday, today, and tomorrow

Intel® Hardware Shield, available exclusively on the Intel vPro® platform, provides comprehensive hardware-based security for business. Managed and unmanaged IT teams at any size organization can experience greater peace of mind knowing their entire PC fleet — and end user productivity — is more secure thanks to advanced threat detection*, application and data protection*, below-the-OS security, and other integrated hardware-based security features.

Advanced security features

Whether an IT team is managing PCs in a single location or spread across multiple locations, the Intel vPro® platform features help IT remotely and securely manage all devices in the entire fleet.

- **Intel® Active Management Technology** with **Intel® Endpoint Management Assistant**** enhances your IT team's ability to remotely and securely access, repair, and maintain your PC fleet. Intel® Active Management Technology is the only solution with remote remediation to return your PCs to a known good state, no matter where your employees are working — even when the OS is down.[6]

- **Intel® Threat Detection Technology**, part of Intel® Hardware Shield, provides IT teams with near real-time insights about end user devices. With the industry's first silicon-enabled AI threat detection, provided only by Intel, this enhanced security feature takes full advantage of the advanced telemetry capabilities of Intel® Hardware Shield by augmenting ISV solutions to help stop ransomware and cryptomining attacks.[7]

*Intel® Control-Flow Enforcement Technology (Intel® CET) and Intel® Total Memory Encryption (Intel® TME) are not included with Intel® Hardware Shield on 11th Gen Intel® Core™ vPro® S-series processors.

**Intel® AMT requires a network connection; must be a known network for Wi-Fi out-of-band management. Learn more at www.intel.com/11thgenvPro. Results may vary.

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

Powerful user experiences across the entire organization

From mainstream users with multi-monitor home office setups to professional multitaskers who need to run multiple programs at once, to "power users" with resource-intensive data analysis, engineering, finance, visual effects production, or content creation workloads — today's workforce expects a lot out of their business PCs. The latest generation of Intel® processor technology provides flexibility, device stability, and enhanced capabilities that make powerful user experiences available to your employees.

Why desktops?

While much of the modern workforce grows increasingly mobile, there's still a strong case for businesses across many industries to continue investing in stationary PCs. Business-class desktops powered by 11th Gen Intel® Core™ vPro® processors allow you to:

- ✔ **Equip your workforce with scalable technology** — 11th Gen Intel® Core™ vPro® S-series processors have the flexibility to support heavy workloads, as well as additional memory, storage, peripherals, and multi-monitor options.

- ✔ **Optimize your IT spend** — IT decision makers can specify and customize desktop devices according to specific usage requirements, allowing businesses to deliver powerful device functionality and stability without sacrificing performance.

- ✔ **Help secure business data** — A desktop PC's stationary nature comes with inherent device security benefits, and enhanced cloud-based remote manageability features provide additional protection for your PC fleet.

Reliable stability

Intel® Stable IT Platform Program (Intel® SIPP) is an integrated validation platform that helps IT manage computer lifecycle complexities with confidence. Intel® SIPP ensures optimal device stability and reliability for all users, aiming for zero hardware changes for at least 15 months or until the next generational release.

The Intel vPro® platform includes full platform validation support for additional (post-Time to Market) Windows 10 Enterprise SAC releases, including up to two previous OS releases. The capabilities listed in the "Platform Security, Manageability, and Stability Features" table on page 9 are designed to enable, accelerate, or complement features and services within the Windows 10 Pro and Windows 10 Enterprise operating systems.
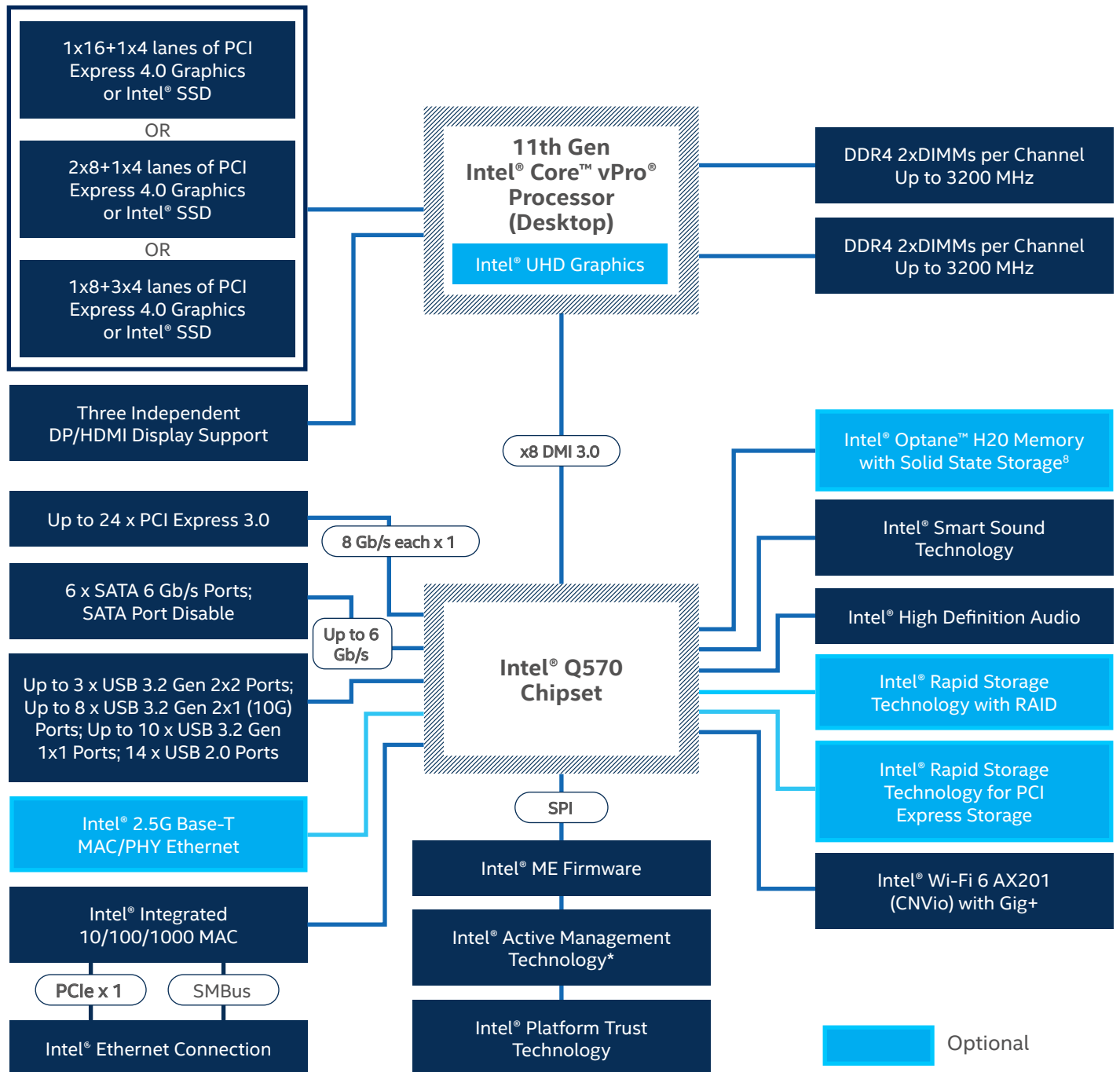
The 11th Gen Intel® Core™ vPro® desktop processor family

S-series desktop processors

Processor Name	i9-11900K	i9-11900	i9-11900T	i7-11700K	i7-11700	i7-11700T	i5-11600K	i5-11600	i5-11600T	i5-11500	i5-11500T
Base Frequency (GHz)	3.5	2.5	1.5	3.6	2.5	1.4	3.9	2.8	1.7	2.7	1.5
Intel® Smart Cache (MB)	16	16	16	16	16	16	12	12	12	12	12
Cores/Threads	8/16	8/16	8/16	8/16	8/16	8/16	6/12	6/12	6/12	6/12	6/12
Intel® single core turbo frequency (GHz)	5.1	5	4.8	4.9	4.8	4.5	4.9	4.8	4.1	4.6	3.9
Intel® Turbo Boost Max Technology 3.0 turbo frequency (GHz)	5.2	5.1	4.9	5.0	4.9	4.6	N/A	N/A	N/A	N/A	N/A
Intel® Thermal Velocity Boost Technology single/all core turbo frequency (GHz)	5.3 / 4.8	5.2 / 4.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Intel® all core turbo frequency (GHz)	4.7	4.6	3.7	4.6	4.4	3.6	4.6	4.3	3.5	4.2	3.4
Unlocked	Yes			Yes			Yes				
Processor Graphics	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750	Intel® UHD Graphics 750
PCIe Lanes 4.0	20	20	20	20	20	20	20	20	20	20	20
Memory Speed	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933	DDR4-3200 DDR4-2933
Memory Channels	2	2	2	2	2	2	2	2	2	2	2
Maximum Memory Capacity (GB)	128	128	128	128	128	128	128	128	128	128	128
Thermal Design Power (W)	125	65	35	125	65	35	125	65	35	65	35

Not all features are available on all SKUs. Performance varies by use, configuration and other factors.
Learn more at www.intel.com/PerformanceIndex. Please check with your OEM for availability.

The 11th Gen Intel® Core™ vPro® desktop processor family

11th Gen Intel® Core™ vPro® S-series processor block diagram

Block	Description
1x16+1x4 lanes of PCI Express 4.0 Graphics or Intel® SSD	
OR	
2x8+1x4 lanes of PCI Express 4.0 Graphics or Intel® SSD	
OR	
1x8+3x4 lanes of PCI Express 4.0 Graphics or Intel® SSD	

11th Gen Intel® Core™ vPro® Processor (Desktop)

Intel® UHD Graphics

DDR4 2xDIMMs per Channel Up to 3200 MHz

DDR4 2xDIMMs per Channel Up to 3200 MHz

Three Independent DP/HDMI Display Support

x8 DMI 3.0

Intel® Optane™ H20 Memory with Solid State Storage[8]

Up to 24 x PCI Express 3.0

8 Gb/s each x 1

Intel® Smart Sound Technology

6 x SATA 6 Gb/s Ports; SATA Port Disable

Up to 6 Gb/s

Intel® High Definition Audio

Intel® Q570 Chipset

Up to 3 x USB 3.2 Gen 2x2 Ports; Up to 8 x USB 3.2 Gen 2x1 (10G) Ports; Up to 10 x USB 3.2 Gen 1x1 Ports; 14 x USB 2.0 Ports

Intel® Rapid Storage Technology with RAID

Intel® Rapid Storage Technology for PCI Express Storage

Intel® 2.5G Base-T MAC/PHY Ethernet

SPI

Intel® Wi-Fi 6 AX201 (CNVio) with Gig+

Intel® Integrated 10/100/1000 MAC

Intel® ME Firmware

PCIe x 1   SMBus

Intel® Active Management Technology*

Intel® Ethernet Connection

Intel® Platform Trust Technology

Optional

*Intel® AMT requires a network connection; must be a known network for Wi-Fi out-of-band management. Learn more at www.intel.com/11thgenvPro. Results may vary.

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11th Gen Intel® Core™ vPro® S-series processors

Features at a glance

Platform security, manageability, and stability features	Benefits
Intel® Active Management Technology (Intel® AMT)*	Remote out-of-band management for efficient proactive and reactive system maintenance
Intel® Endpoint Management Assistant	Remotely and securely manage devices beyond the firewall from the cloud
Intel® Remote Secure Erase	Allows IT administrators to remotely wipe the data from Intel and third-party SSDs via Intel® AMT
Intel® Stable IT Platform Program	Delivers integrated hardware validation that helps IT teams ensure long-term device reliability and compatibility
Intel® Hardware Shield	A set of built-in, hardware-enabled platform protection technologies
Intel® Threat Detection Technology	Delivers advanced threat detection and enhanced security
Intel® Runtime BIOS Resilience	Intel® Hardware Shield technology that helps protect system firmware
Intel® Trusted Execution Technology	Intel® Hardware Shield technology providing hardware root-of-trust for critical software
Intel® System Security Report	Communicates the current Intel® Hardware Shield configuration to the OS
Intel® System Resource Defense	Helps prevent malicious software injection by locking down system critical resources
Intel® Virtualization Technology	Provides hardware assist to the virtualization software, helping to reduce size, cost, and complexity
Intel® Transparent Supply Chain	Mechanism for confirming authenticity of system components

* Intel® AMT requires a network connection; must be a known network for Wi-Fi out-of-band management. Learn more at www.intel.com/11thgenvpro. Results may vary.

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11th Gen Intel® Core™ vPro® S-series processors

Features at a glance

Business productivity and technologies	Benefits
Intel® X^e graphics architecture	Rich media and intelligent graphics capabilities offer built-in support for multiple high-resolution monitors and improved device performance
Discrete Intel Thunderbolt™ 4 technology	Provides simple and reliable connectivity, charging, and peripheral usage through just one universal computer port
Intel® Optane™ memory H20 with SSD*	Delivers significant gen-over-gen performance gains and large storage capacity options
Integrated Intel® Wi-Fi 6 / Discrete Intel® Wi-Fi 6E (Gig+)	Offers fast speeds, ultra reliable connectivity, and great wireless experiences
Intel® Deep Learning Boost	Accelerates AI inference, vastly improving performance for iterative deep learning workloads;[9] Extends Intel® AVX-512 to accelerate AI/machine learning inference
Intel® Dynamic Tuning Technology	Intelligently adapt power and performance based on usage mode and system temperature
Intel® Hyper-Threading Technology	Delivers two processing threads per core, allowing applications to handle greater workloads for more efficient multitasking
Intel® Smart Cache Technology	Dynamically allocates shared cache to each processor core based on workload
Intel® Smart Sound Technology	An integrated audio DSP (Digital Signal Processor) that enables quick responses to voice commands and offers high fidelity audio without impacting system performance
Intel® Gaussian Neural Accelerator 2.0 (GNA 2.0)	Delivers a dedicated engine for background workloads such as voice processing and noise suppression
Intel® Turbo Boost Technology 2.0[10]	Dynamically increases the processor's frequency, as needed, by taking advantage of thermal and power headroom when operating below specified limits

* Intel® Optane™ memory H20 with SSD is optional.

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11th Gen Intel® Core™ vPro® S-series processors

Features at a glance

Business Productivity & Technologies	Benefits
Intel® Speed Shift Technology with Energy-Performance Preference	Improves responsiveness for single-threaded transient workloads by allowing the processor to more quickly select its best operating frequency and voltage for optimal performance and power efficiency
Per-core P-states	Allows the monitoring of voltage-frequency control states for each processor core
Intel® Thermal Velocity Boost[11]	Increases clock frequency in select processors based on specific operating conditions
Integrated Memory Controller	Improves memory read/write performance through efficient pre-fetching algorithms, lower latency, and higher memory bandwidth (DDR4 up to 3200)
PCI Express (PCIe) Gen4 Interface	Offers up to 20 CPU PCIe 4.0 lanes for fast access to peripheral devices and networking
Universal Serial Bus (USB) 4	Supports enhanced performance with a design data rate of up to 10 Gb/s
Intel® Rapid Storage Technology	Offers excellent levels of performance for SATA/PCIe storage components and optional Intel® Optane™ memory H20 with SSD
Serial ATA (SATA)	High speed storage interface supporting up to 6 Gb/s transfer rates for optimal data access (up to 6 SATA ports)

Not all features are available on all SKUs. Performance varies by use, configuration and other factors. Learn more at www.intel.com/PerformanceIndex. Please check with your OEM for availability.

Better business-class desktop experiences start here

with the unrivaled Intel vPro® platform

Learn more at www.intel.com/11thgenvPro

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