PRODUCT BRIEF

9th Gen Intel® Core™ vPro™ Processors

Powering New Business Computing Experiences

9th Gen Intel® Core™ vPro™ processors help workers conquer the demanding workloads of today and tomorrow

For decades, Intel has consistently delivered a family of processors designed to address a wide range of business computing needs. As workloads grow in complexity, many content creators require a rich computing experience for 3D modeling, product design, media editing, and countless other tasks. Knowledge workers may also engage in data visualization, manipulation of high density files, or executing compute-intensive business applications. 9th Gen Intel® Core® vPro™ processors address these types of computing needs while also providing stability, manageability and security features valued across industries.

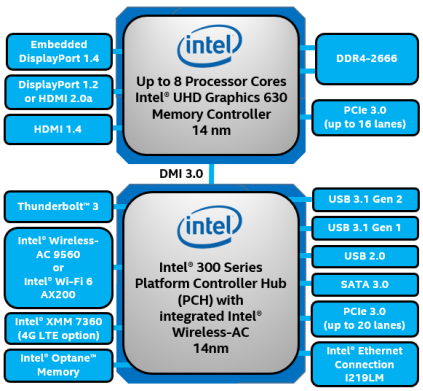

Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

A Scalable Processor Portfolio

To meet a variety of performance and form factor needs, 9th Gen Intel Core vPro processors are offered in the S series for desktop computing and H series for high end mobile systems. Both the S and the H series are further segmented into performance tiers identified by the i5, i7, and now i9 processor designators.

As shown in Figure 1, 9th Gen Intel Core vPro processors feature up to 8 processor cores, Gen 9 Intel® UHD Graphics, a two-channel DDR4 memory controller, and the new Intel® 300 Series Platform Controller Hub (PCH). Alternatively, the Intel® vPro™ platform specification allows for manufacturers building mobile workstations to use the Intel® CM246 PCH for expanded storage and I/O connectivity options.

Enabling Productive Workspaces

9th Gen Intel Core vPro processors (S series) are offered at thermal design power (TDP) options of 35, 65 and 95 watts, enabling elegant small form factor desktops, traditional towers, and modern all-in-one touchscreen systems. 9th Gen Core vPro processors with the i5 designator feature 6 single-threaded cores and a 9 MB cache, while processors with the i7 designator support 8 single-threaded cores and larger 12 MB cache. At the top of the stack, processors with the i9 designator deliver 8 cores, 16 threads, and a 16 MB cache. All performance/power options support the robust set of connectivity options of the Intel Q370 PCH, including integrated 802.11ac wireless. The improved performance and ubiquity of Wi-Fi allows desktops to be placed at any location independently of Ethernet cabling concerns.

Desktop-Caliber Performance for Mobile Workers

9th Gen Intel Core vPro processors (H series) are offered in 3 versions for high-end mobile systems, all with a 45 watt TDP. Processors with the i5 designator feature 4 cores, 8 threads, and an 8 MB cache, while processors with the i7 designator support 6 cores, 12 threads, and a 12 MB cache. The 9th Gen Core i9 vPro processor features 8 cores, 16 threads, a 16 MB cache, as well as Intel® Thermal Velocity Boost[3] which increases clock frequency under specific operating conditions. The Intel QM370 PCH supports integrated 802.11ac as well as Wi-Fi 6 and 4G LTE via discrete components. Finally, Thunderbolt™ 3 enables a versatile computing experience with single-cable docking solutions for easily connecting notebooks to peripheral-rich, stationary computing environments.

Built for Business

Computing systems that incorporate the eligible processor SKUs shown on Figure 2 and meet the Intel® vPro™ brand requirements are optimized for corporate environments. Technology decision makers may deploy 9th Gen Intel Core vPro processors in a wide variety of mobile and desktop form factors and manage these endpoints with a consistent set of security and maintenance policies. Systems based on the Intel vPro platform require either the Microsoft Windows* 10 Pro or Windows 10 Enterprise OS.

Platform Stability

The Intel® Stable Image Platform Program enables predictable transitions for businesses that test devices within their computing environment for performance, compatibility, and compliance. In combination with extensive validation by Intel and system vendors of multiple versions of the Windows 10 OS, businesses can avoid problems that may arise when deploying less stable devices not optimized for corporate buying cycles or for enterprise system validation procedures.

Manageability and Security Features

The Intel vPro platform provides businesses with the tools to efficiently manage and help secure computing endpoints. For instance, Intel® Hardware Shield provides an evolving set of technologies to help reduce each platform's attack surface, while reporting the current security configuration to the operating system. The capabilities listed on Figure 3 are designed to enable, accelerate, or complement features and services within the Windows 10 Pro and Windows 10 Enterprise operating systems.

Optimized for Demanding Workflows

9th Gen Intel Core vPro processors offer a suite of power, performance and connectivity technologies that can equip workers to deal with the most demanding computing workloads [Figure 4]. Businesses that upgrade their computing fleets to the latest technology may reap the benefits of a more productive work force. To learn more about the Intel vPro platform, please visit intel.com/vpro.

Intel® vPro™ Platform Processor	Eligible SKU	Base/Max Freq. (GHz)	Cores/ Threads	Cache	TDP
S-Series Desktop Processors					
9th Gen Intel® Core™ i9 vPro™ Processor	i9-9900K	3.6/5.0	8C/16T	16 MB	95 W
	i9-9900	3.1/5.0	8C/16T	16 MB	65 W
	i9-9900T	2.1/4.4	8C/16T	16 MB	35 W
9th Gen Intel® Core™ i7 vPro™ Processor	i7-9700K	3.6/4.9	8C/8T	12 MB	95 W
	i7-9700	3.0/4.7	8C/8T	12 MB	65 W
	i7-9700T	2.0/4.3	8C/8T	12 MB	35 W
9th Gen Intel® Core™ i5 vPro™ Processor	i5-9600K	3.7/4.6	6C/6T	9 MB	95 W
	i5-9600	3.1/4.6	6C/6T	9 MB	65 W
	i5-9500	3.0/4.4	6C/6T	9 MB	65 W
	i5-9600T	2.3/3.9	6C/6T	9 MB	35 W
	i5-9500T	2.2/3.7	6C/6T	9 MB	35 W
H-Series Mobile Processors					
9th Gen Intel® Core™ i9 vPro™ Processor	i9-9880H	2.3/4.8[3]	8C/16T	16 MB	45 W
9th Gen Intel® Core™ i7 vPro™ Processor	i7-9850H	2.6/4.6	6C/12T	12 MB	45 W
9th Gen Intel® Core™ i5 vPro™ Processor	i5-9400H	2.5/4.3	4C/8T	8 MB	45 W

Figure 2: 9th Gen Intel® Core™ vPro™ Processor Family

Platform Feature [partial list]	Brief Description
Intel® Active Management Technology	Remote out-of-band management for efficient proactive and reactive system maintenance
Intel® Hardware Shield	A set of configurable platform protection technologies
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® Authenticate Technology	Enables enforceable PC login policy requiring multiple proof points of identity
Transparent Supply Chain	Mechanism for confirming authenticity of system components
Intel® Virtualization Technology	Enables a variety of OS security services
Intel® Software Guard Extensions	Helps protect select code and data through the use of hardware enclaves

Figure 3: Intel® vPro™ Platform Security and Manageability Features

Feature [1]	Brief Description
Intel® UHD Graphics	Gen 9 Intel graphics with up to 24 Execution Units
Intel® Hyperthreading Technology	Delivers two processing threads per core so threaded applications can get more work done in parallel
Intel® Smart Cache Technology	Dynamically allocates shared cache to each processor core based on workload
Intel® Turbo Boost Technology 2.0 [2]	Dynamically increases the processor's frequency, as needed, by taking advantage of thermal and power headroom when operating below specified limits
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
Intel® Thermal Velocity Boost [3]	Increases clock frequency in H series processors with i9 designator based on specific operating conditions

Feature [1]	Brief Description
Integrated Memory Controller	Improves memory read/write performance through efficient pre-fetching algorithms, lower latency, and higher memory bandwidth (DDR4 up to 2666)
Serial ATA (SATA)	High speed storage interface supporting up to 6 Gb/s transfer rates for optimal data access (up to 3 SATA ports)
PCI Express (PCIe) 3.0 interface	Offers up to 8 GT/s for fast access to peripheral devices and networking
Intel® Rapid Storage Technology	Offers excellent levels of performance for SATA/PCIe storage components and Intel® Optane Memory
Universal Serial Bus (USB) 3.1	Integrated USB Gen 1 and Gen 2 supports enhanced performance with a design data rate of up to 10 Gb/s
Thunderbolt™ 3 controller support	Support for Intel Thunderbolt 3 controllers (up to 40 Gb/s transfer rates) and advanced single-cable docking solutions
Integrated 10/100/1000 MAC	Support for the Intel® Ethernet Connection I219LM
Integrated Wireless	Integrated 802.11ac Wi-Fi and Bluetooth* 5.0

Figure 4: Business Productivity Features and Technologies

1 Not a complete list. Based on 9th Gen Intel® Core™ vPro™ processor with Intel® 300 Series PCH [Q370 or QM370].

2 Intel® Turbo Boost Technology requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. For more information, see http://www.intel.com/technology/turboboost

3 Intel® Thermal Velocity Boost opportunistically and automatically increases clock frequency above single-core and multi-core Intel Turbo Boost Technology frequencies based on how much the processor is operating below its maximum temperature and whether turbo power budget is available. The frequency gain and duration is dependent on the workload, capabilities of the processor, and the processor cooling solution.