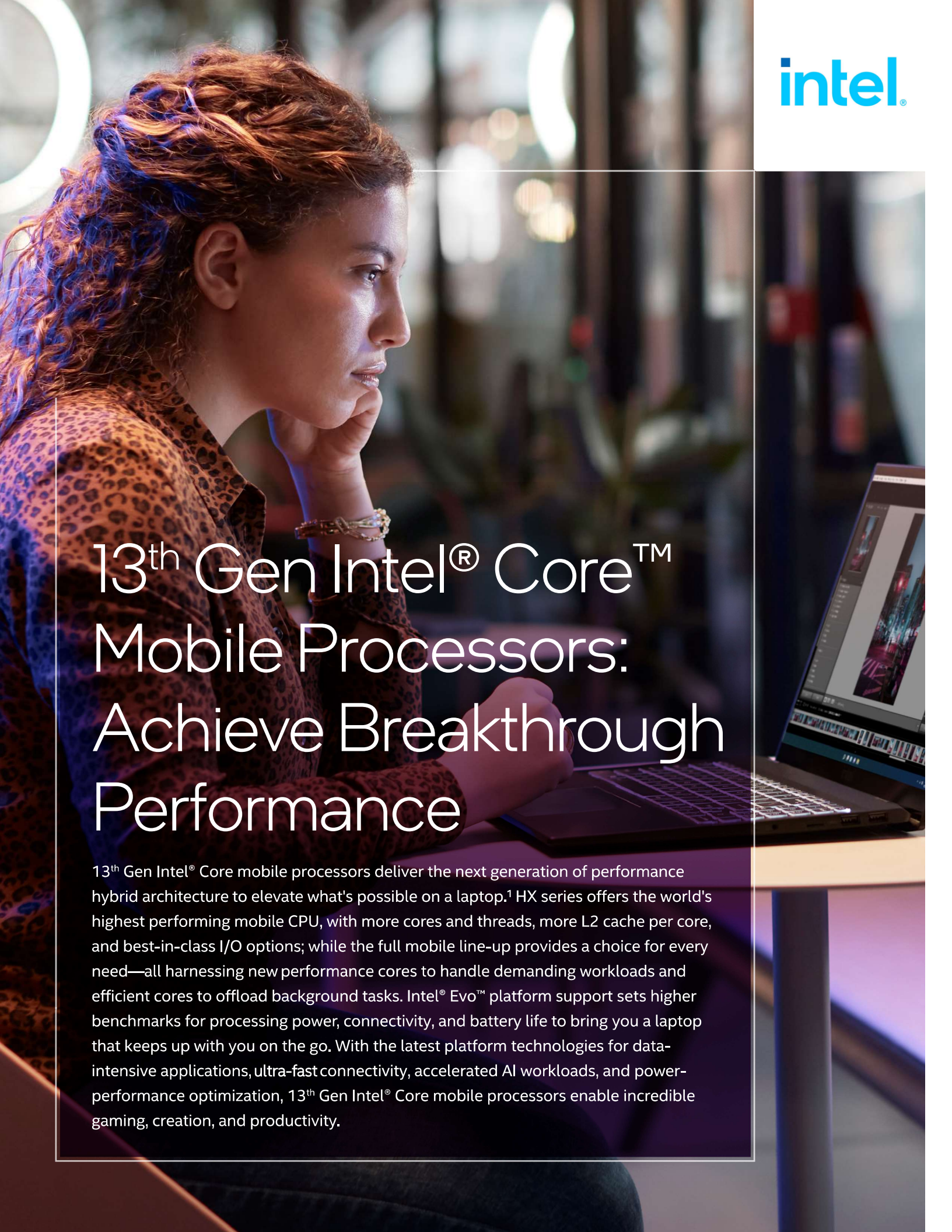
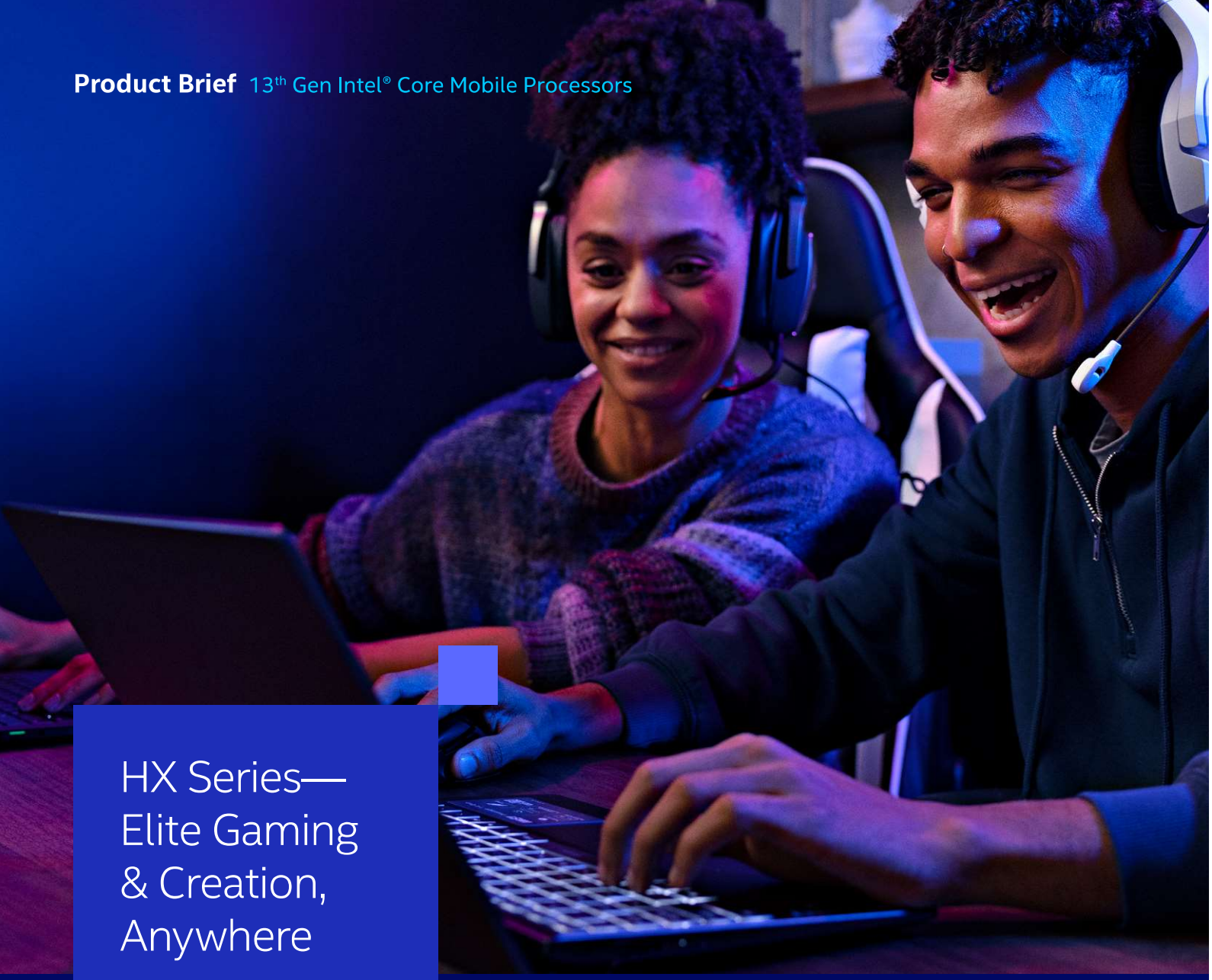


13th Gen Intel® Core™ Mobile Processors: Achieve Breakthrough Performance

13th Gen Intel® Core mobile processors deliver the next generation of performance hybrid architecture to elevate what's possible on a laptop.[1] HX series offers the world's highest performing mobile CPU, with more cores and threads, more L2 cache per core, and best-in-class I/O options; while the full mobile line-up provides a choice for every need—all harnessing new performance cores to handle demanding workloads and efficient cores to offload background tasks. Intel® Evo™ platform support sets higher benchmarks for processing power, connectivity, and battery life to bring you a laptop that keeps up with you on the go. With the latest platform technologies for data-intensive applications, ultra-fast connectivity, accelerated AI workloads, and power-performance optimization, 13th Gen Intel® Core mobile processors enable incredible gaming, creation, and productivity.



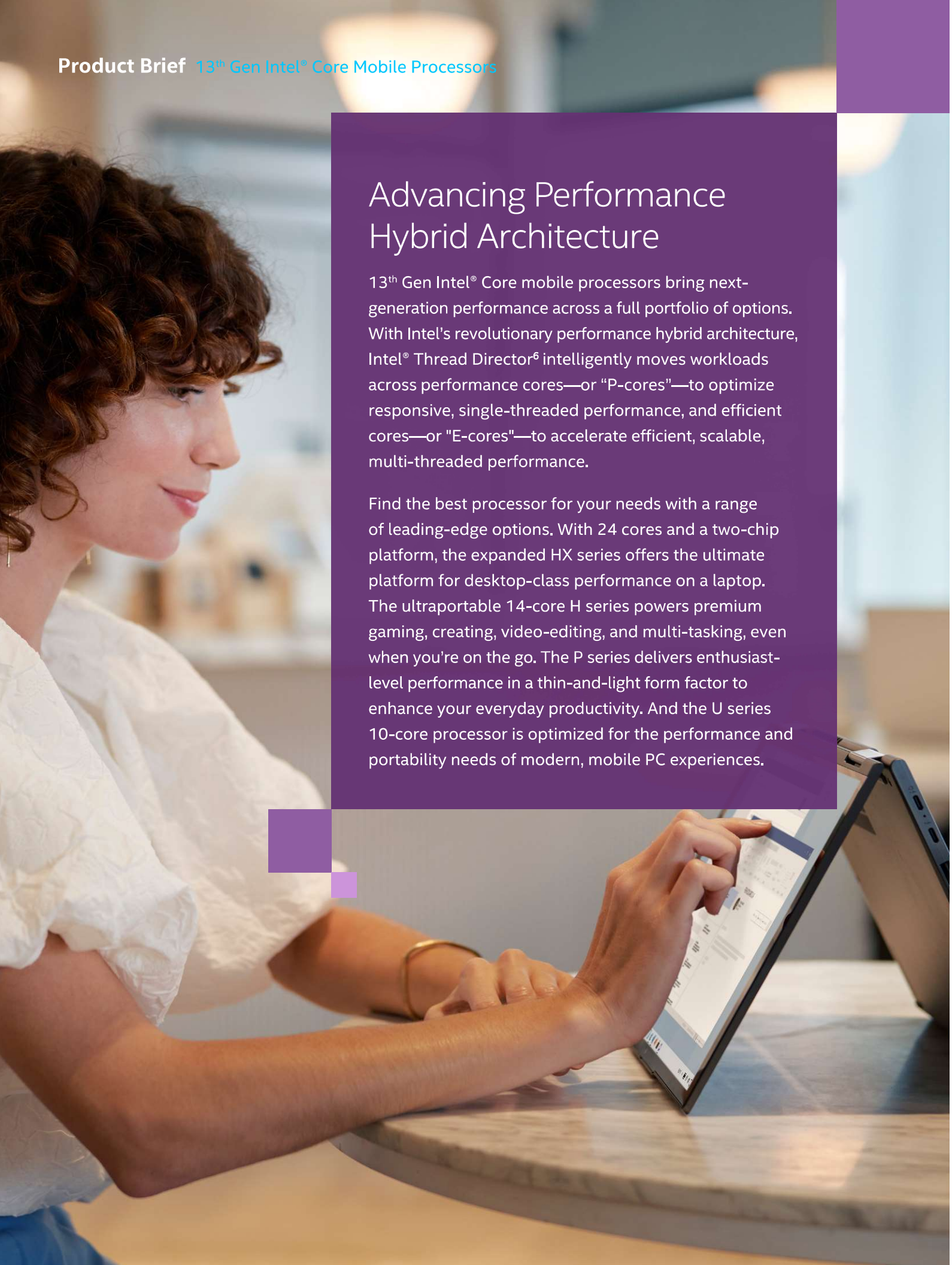
HX Series—Elite Gaming & Creation, Anywhere

The expanded HX series drives breakthroughs for intense workloads, offering desktop-class performance in a just ~20mm-thin mobile form factor. With the maximum available core count—8 performance cores and 16 efficient cores—and the highest I/O and memory available, HX series supercharges elite gaming, 3D content creation and rendering, large file manipulations, and other heavy-duty tasks. The two-chip platform, with discrete Platform Controller Hub, brings greater L2 cache per core and up to 128 GB of RAM, two DIMMs per DDR5 channel, PCIe 5.0 (16 lanes) support,[2] Intel® Dynamic Power Share,[3] and a range of other advanced technologies. Competitive gamers, dynamic creators, and high-powered professionals now have the performance to achieve more, anywhere.

Boundary-Pushing Technologies

13th Gen Intel® Core mobile processors feature a suite of innovative platform technologies to enrich every aspect of laptop experiences. Capably handle large data sets and data-intensive apps with support for up to 16 lanes of PCIe 5.0,[2] DDR5 memory, and up to four Thunderbolt™ 4 ports. Support for Intel® Wi-Fi 6/6E (Gig+) unlocks ultra-fast connectivity, with nearly 3X faster (Gig+) Wi-Fi speeds,[4] while Intel® Bluetooth® 5.2 technology enhances wireless device connectivity, with speeds up to 2X faster than Bluetooth® 4.2.[4] The new Intel® Dynamic Power Share intuitively shifts power between the CPU and 3rd party discrete GPUs to maximize performance.[3] And next-generation AI capabilities, including Intel® Gaussian & Neural Accelerator (GNA) and the option for a new discrete VPU AI accelerator,[5] enable seamless video conferencing for today's hybrid work environment.

Elevate gaming and streaming with advanced technologies built for your needs. Features available on Intel® Arc™ graphics products are now available on Iris® Xe Graphics, such as Xe Super Sampling (XeSS) and Arc Control. Also new for Intel® Iris® Xe Graphics is Endurance Gaming, which extends your gameplay on battery.



Advancing Performance Hybrid Architecture

13th Gen Intel® Core mobile processors bring next-generation performance across a full portfolio of options. With Intel's revolutionary performance hybrid architecture, Intel® Thread Director[6] intelligently moves workloads across performance cores—or "P-cores"—to optimize responsive, single-threaded performance, and efficient cores—or "E-cores"—to accelerate efficient, scalable, multi-threaded performance.

Find the best processor for your needs with a range of leading-edge options. With 24 cores and a two-chip platform, the expanded HX series offers the ultimate platform for desktop-class performance on a laptop. The ultraportable 14-core H series powers premium gaming, creating, video-editing, and multi-tasking, even when you're on the go. The P series delivers enthusiast-level performance in a thin-and-light form factor to enhance your everyday productivity. And the U series 10-core processor is optimized for the performance and portability needs of modern, mobile PC experiences.

13TH GEN INTEL® CORE MOBILE PROCESSORS: FEATURES AT A GLANCE

FEATURE	BENEFIT
Performance Hybrid Architecture[1]	Integrates two core microarchitectures into a single die, prioritizing and distributing workloads to optimize performance.
Intel® Thread Director[6]	Optimizes workloads by helping the OS scheduler intelligently distribute workloads to the optimal cores.
Support for up to DDR5 5600 MT/s	This industry first memory technology that supports fast frequencies and high bandwidth and throughput, leading to enhanced workflow and productivity.
Support for up to DDR4 3200 MT/s	Supports faster frequencies and higher bandwidth and throughput, leading to enhanced workflow and productivity.
Up to 16 CPU PCIe 5.0 lanes[2]	Latest generation PCIe lanes deliver greater performance efficiency, smooth gameplay and increased workflow productivity.
Up to 4 CPU PCIe 4.0 lanes	Offers up to 16 GT/s for fast access to storage and peripheral devices with up to 4 PCI Express 4.0 lanes.
Intel® Dynamic Power Share[3]	Dynamically shifts power between Intel CPU and 3rd party discrete GPU to optimize platform thermals and unleash the best performance and end user experience.
Intel® Deep Learning Boost (VNNI)	Accelerates AI inference—vastly improving performance for deep learning workloads.
Intel® Gaussian & Neural Accelerator 3.0 (GNA 3.0)	Runs AI workloads on accelerator to more efficiently blur video background and suppress background noise.
Intel® Wi-Fi 6E (Gig+)	Intel® Wi-Fi 6E is nearly 3 times faster and with 40% higher peak data rates compared to the standard 902.22ac 2x2 and dual spatial stream 802.11ac, respectively, for high-speed file sharing, smooth 4K streaming, and ultra-responsive surfing and gaming.[4]
6 GHz Spectrum for Wi-Fi	The first new band since 2003, it more than doubles the contiguous clean spectrum from 480 MHz to 1200 MHz and increases Gigabit Wi-Fi options from 2 160 MHzz channels to 7, with no legacy Wi-Fi interference.
Intel® Connectivity Performance Suite	Intelligent optimization of Wi-Fi performance for up to 66% lower latency for voice/video calls, 4X better video streaming resolution, and 30% faster network speeds.[4]
Intel® Bluetooth® 5.2 Technology	Enhances PC-to-device connectivity for one-click device pairing and easier file sharing, up to 20% less audio power consumption compared to standard Bluetooth® on select models, and 2X faster speeds than Bluetooth® 4.2.[4]
Up to 4 Thunderbolt 4 Ports	Thunderbolt 4 port is the best-in-class USB-C. With 40Gb/s bandwidth and stringent testing for interoperability, it offers the simplest, most reliable and fastest cable connection for power, data, and display over a single cable.
Overclockable[7]	All SKUs of HX will support overclockability (full/partial), allowing users to access higher CPU speeds.

13TH GEN INTEL® CORE MOBILE PROCESSORS SKU COMPARISON—HX SERIES[8]

		i9-13980HX	i9-13950HX	i9-13900HX	i7-13850HX	i7-13700HX	i7-13650HX	i5-13600HX	i5-13500HX	i5-13450HX
Processor Cores		24	24	24	20	16	14	14	14	10
Number of P-cores		8	8	8	8	8	6	6	6	6
Number of E-cores		16	16	16	12	8	8	8	8	4
Total Processor Threads		32	32	32	28	24	20	20	20	16
Intel® Smart Cache (L3)		36MB	36MB	36MB	30MB	30MB	24MB	24MB	24MB	20MB
Max Turbo Frequency (GHz)[9]	P-core	5.6	5.5	5.4	5.3	5.0	4.9	4.7	4.6	4.5
	E-core	4.0	4.0	3.9	3.8	3.6	3.6	3.6	3.5	3.4
Processor Base Frequency (GHz)	P-core	2.2	2.2	2.2	2.1	2.1	2.6	2.6	2.5	2.4
	E-core	1.6	1.6	1.6	1.5	1.5	1.9	1.9	1.8	1.8
Max Graphics Frequency (GHz)		1.65	1.65	1.65	1.60	1.55	1.55	1.50	1.50	1.45
Processor Graphics		32EU	32EU	32EU	32EU	32EU	16EU	32EU	16EU	16EU
DDR5 Frequency		5600	5600	5600	5600	4800	4800	4800	4800	4800
Processor Base Power (W)		55								
Maximum Turbo Power (W)		157								
Intel vPro® Eligible		-	Enterprise	-	Enterprise	-	-	Enterprise	-	-

13TH GEN INTEL® CORE™ MOBILE PROCESSORS SKU COMPARISON—H SERIES

		i9-13900HK[10]	i9-13905H[11]	i9-13900H	i7-13800H	i7-13705H[11]	i7-13700H	i7-13620H	i5-13600H	i5-13505H[11]	i5-13500H	i5-13420H
Processor Cores		14	14	14	14	14	14	10	12	12	12	8
Number of P-cores		6	6	6	6	6	6	6	4	4	4	4
Number of E-cores		8	8	8	8	8	8	4	8	8	8	4
Total Processor Threads		20	20	20	20	20	20	16	16	16	16	12
Intel® Smart Cache (L3)		24MB	24MB	24MB	24MB	24MB	24MB	24MB	18MB	18MB	18MB	12MB
Max Turbo Frequency (GHz)[12]	P-core	5.4	5.4	5.4	5.2	5.0	5.0	4.9	4.8	4.7	4.7	4.6
	E-core	4.1	4.1	4.1	4.0	3.7	3.7	3.6	3.6	3.5	3.5	3.4
Processor Base Frequency (GHz)	P-core	2.6	2.6	2.6	2.5	2.4	2.4	2.4	2.8	2.6	2.6	2.1
	E-core	1.9	1.9	1.9	1.8	1.8	1.8	1.8	2.1	1.9	1.9	1.5
Max Graphics Frequency (GHz)		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.45	1.45	1.40
Processor Graphics		96EU	96EU	96EU	96EU	96EU	96EU	64EU	80EU	80EU	80EU	48EU
LPDDR5 Frequency[13]		6400	6400	6400	6400	6400	6400	5200	6400	6400	6400	5200
Processor Base Power (W)		45										
Maximum Turbo Power (W)		115							95			
Intel vPro® Eligible		Essentials	-	Enterprise	Enterprise	-	Essentials	-	Enterprise		Essentials	-

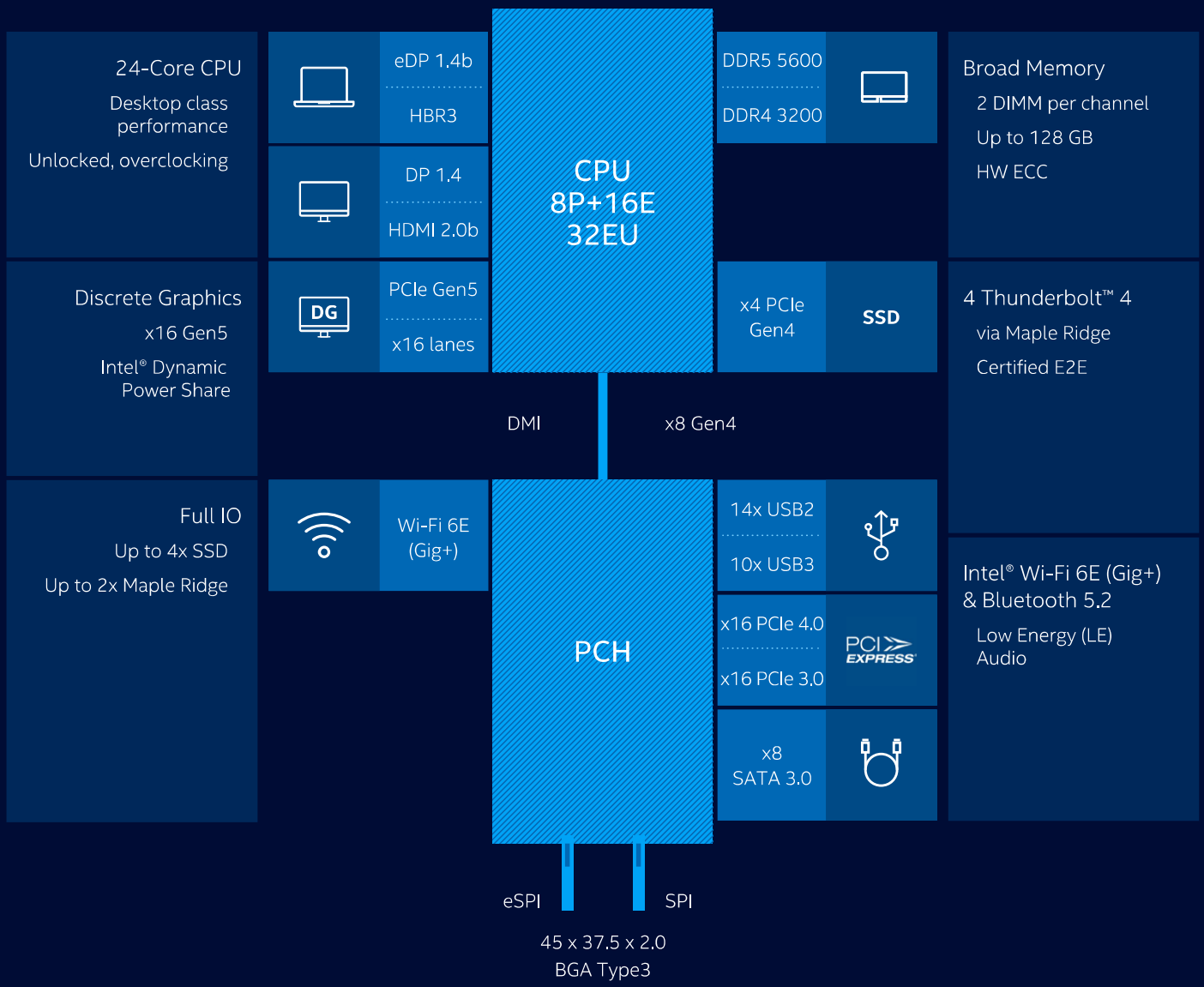
13TH GEN INTEL® CORE MOBILE PROCESSORS SKU COMPARISON—P SERIES[14]

		i7-1370P	i7-1360P	i5-1350P	i5-1340P
Processor Cores		14	12	12	12
Number of P-cores		6	4	4	4
Number of E-cores		8	8	8	8
Total Processor Threads		20	16	16	16
Intel® Smart Cache (L3)		24MB	18MB	12MB	12MB
Max Turbo Frequency (GHz)[12]	P-core	5.2	5.0	4.7	4.6
	E-core	3.9	3.7	3.5	3.4
Processor Base Frequency (GHz)	P-core	1.9	2.2	1.9	1.9
	E-core	1.4	1.6	1.4	1.4
Max Graphics Frequency (GHz)		1.50	1.50	1.50	1.45
Processor Graphics		96EU	96EU	80EU	80EU
Processor Base Power (W)		28			
Maximum Turbo Power (W)		64			
Intel vPro® Eligible		Enterprise	Essentials	Enterprise	Essentials

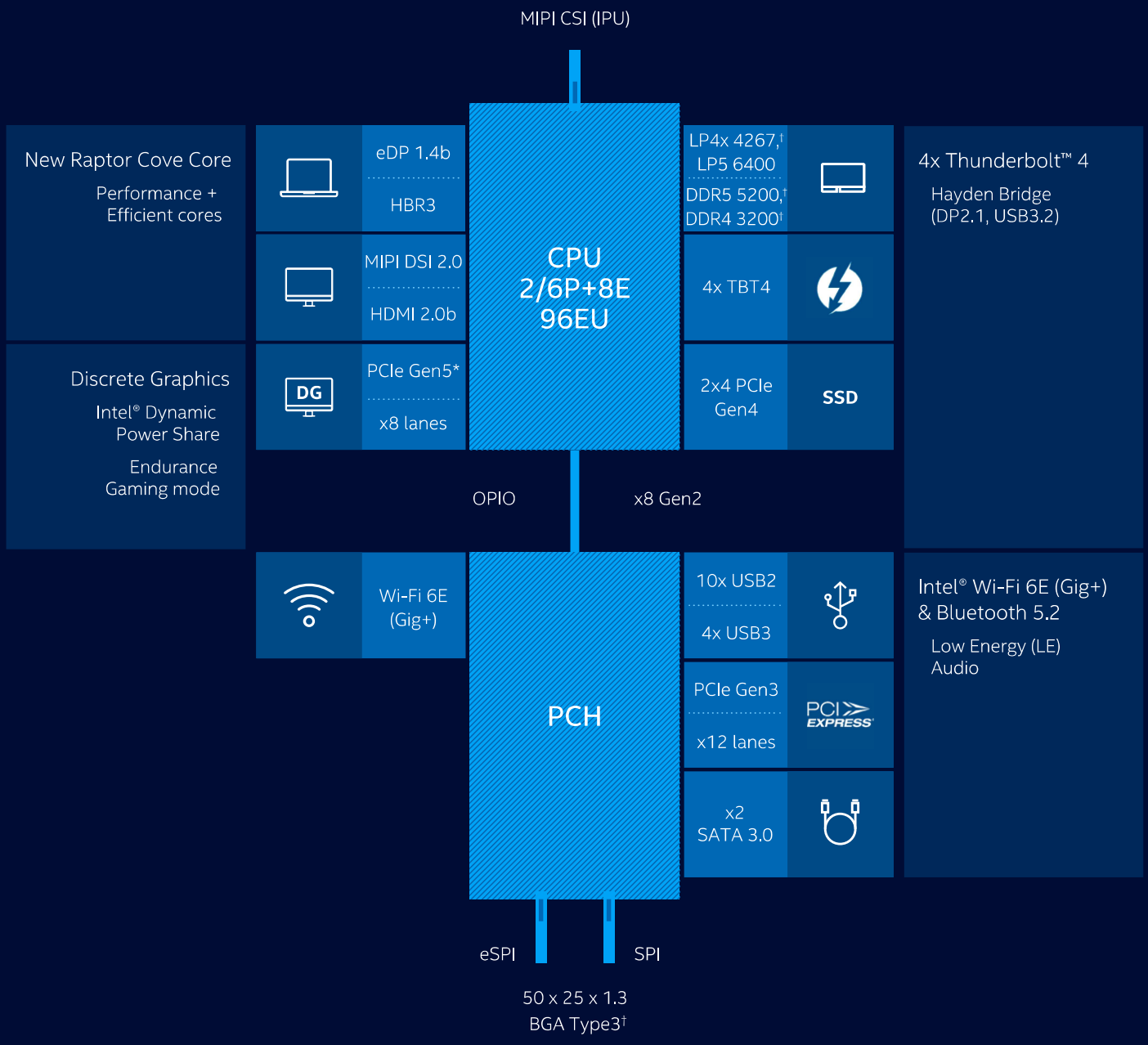
13TH GEN INTEL® CORE MOBILE PROCESSORS SKU COMPARISON—U SERIES[15]

		i7-1365U	i7-1355U	i5-1345U	i5-1335U	i5-1334U	i3-1315U	i3-1305U	Intel® Processor U300
Processor Cores		10	10	10	10	10	6	5	5
Number of P-cores		2	2	2	2	2	2	1	1
Number of E-cores		8	8	8	8	8	4	4	4
Total Processor Threads		12	12	12	12	12	8	6	6
Intel® Smart Cache (L3)		12MB	12MB	12MB	12MB	12MB	10MB	10MB	8MB
Max Turbo Frequency (GHz)	P-core	5.2	5.0	4.7	4.6	4.6	4.5	4.5	4.4
	E-core	3.9	3.7	3.5	3.4	3.4	3.3	3.3	3.3
Processor Base Frequency (GHz)	P-core	1.8	1.7	1.6	1.3	1.3	1.2	1.6	1.2
	E-core	1.3	1.2	1.2	0.9	0.9	0.9	1.2	0.9
Max Graphics Frequency (GHz)		1.30	1.30	1.25	1.25	1.25	1.25	1.25	1.10
Processor Graphics		96EU	96EU	80EU	80EU	80EU	64EU	64EU	48EU
LPDDR5 Frequency[13]		6400	6400	6400	6400	5200	5200	5200	5200
Processor Base Power (W)		15							
Maximum Turbo Power (W)		55							
Intel vPro® Eligible		Enterprise	Essentials	Enterprise	Essentials	Essentials	-	-	-

13th Gen Intel Core Mobile Block Diagram HX Series



13th Gen Intel Core Mobile Block Diagram H-Series, P-Series, and U-Series



*Only available on the H-series

†Certain SKUs available in optional type 4 form factor-optimized package of 40x25x1.25mm, with up to 3xThunderbolt™ 4, PCIe Gen4 and only LPDDR5/ LPDDR5x memory support

Notices & Disclaimers

Complete and latest CPU spec information can be found in the EDS or at http://ark.intel.com

For more complete information on configurations and workloads, visit www.Intel.com/PerformanceIndex.

Intel technologies may require enabled hardware, software or service activation. No product or component can be absolutely secure.

Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

All Intel® Evo branded designs must meet demanding thresholds for key mobile user experiences like responsiveness and battery life; individual device performance may vary. Details at www.intel.com/performance-evo.

All versions of the Intel® vPro® platform require an eligible Intel® Core 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.

The frequency of cores and core types varies by workload, power consumption and other factors. Visit www.intel.com/content/www/us/en/architecture-and-technology/turbo-boost/intel-turbo-boost-technology.html?wapkw=turbo%20boost%20technology for more information.

All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards). All processors support Intel® Virtualization Technology (Intel® VT-x, VT-d).

See ark.intel.com for more specification details

Your costs and results may vary.

1. Performance hybrid architecture combines two core microarchitectures, Performance-cores (P-cores) and Efficient-cores (E-cores), on a single processor die first introduced on 12th Gen Intel® Core processors. Select 12th and 13th Gen Intel® Core processors do not have performance hybrid architecture, only P-cores, and have same cache size as prior generation; see ark.intel.com for SKU details.

2. PCIe 5.0 only available on HX and H Series.

3. Please work through Intel's Customer Engineering and Account teams to explore enabling options. Contact your Intel representative.

4. See intel.com/performance-wireless for details. Results may vary.

5. For select designs only. See ark.intel.com for details.

6. Built into the hardware, Intel® Thread Director is provided only in performance hybrid architecture configurations of 12th Gen or newer Intel® Core processors; OS enablement is required. Available features and functionality vary by OS.

7. Available only on 13th Gen Intel® Core HX Series SKUs.

8. All SKUs support CPU, GPU, and memory overclocking.

9. Max Turbo Frequency for P-cores may include Intel® Turbo Boost Max 3.0 and Thermal Velocity Boost.

10. i9-13900HK supports CPU Overclocking. Memory Ratio override is not supported.

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11.All H-series type 4 SKUs only support LPDDR5/X (6400MT/S). See ark.intel.com for more specification details.

12.Max Turbo Frequency for P-cores may include Intel® Turbo Boost Max 3.0; Intel® Thermal Velocity Boost not supported on 13th Gen mobile processors.

13.All SKUs support up to DDR5 (5200 MT/S)/DDR4 (3200 MT/S)/LPDDR4 (4267 MT/S) memory (LPDDR5 frequencies are listed).

14.All SKUs support up to DDR5 (5200 MT/S)/DDR4 (3200 MT/S)/LPDDR5 (6400 MT/S)/LPDDR4 (4267 MT/S) memory.

15.Intel® Thermal Velocity Boost not supported on 13th Gen mobile processors.

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