OCTOBER 5, 2023

Intel® Core™ 14th Gen S-series Processors

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Intel Core 14th Gen Processor Family Overview

Roger Chandler

VP and General Manager,
Enthusiast PC and Workstation
Client Computing Group (CCG)

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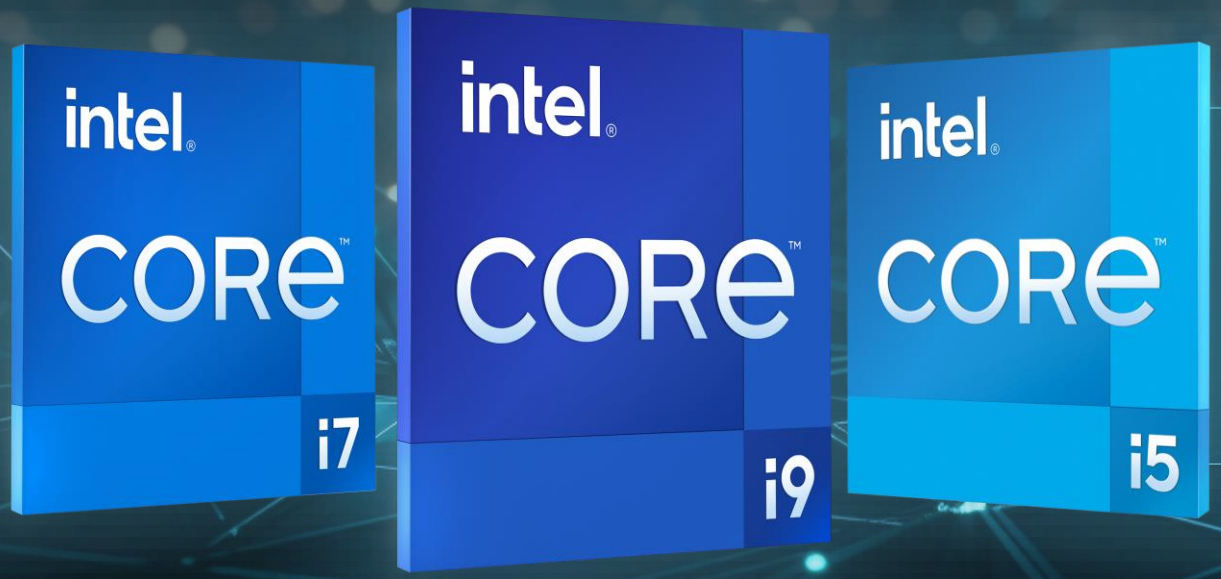
INTRODUCING

NEW Intel® Core™ 14th Gen Processor Family



Desktop S-series

14900K/14700K/14600K

intel

World’s Fastest Desktop Processor

World's Best Desktop Experience for Enthusiasts

Faster cores for amazing multi-tasking; gaming, streaming and recording
Up to 6 GHz

Unmatched Overclocking

The best experience for everyone, from experts to beginners
New Intel XTU Features for even more performance

A Leap in Creator Performance

Increased cores, threads and cache to keep people in the creative flow
Up to 18% better multi-threaded performance

World’s Fastest Desktop Processor As of October 2023: Based on the 6GHz Max Turbo Frequency of Intel® Core® 14th Gen i9-14900K, which is the fastest client processor at volume.
World’s Best Experience for Desktop Enthusiasts based on performance and unique features of Intel® Core® 14th Gen Desktop Processors, including in comparison to 13th Gen Intel® Core®, AMD Ryzen 9 7950X and AMD Ryzen 9 7950X3D.
Multi-threaded performance on Autodesk 3ds Max Toon Shader Arnold Render workload of Intel® Core® 14th Gen i7-14700K vs prior generation.
See www.intel.com/performanceindex for details. Results may vary.

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Intel® Core™ Desktop Processors (14th gen)

Unleashing the Ultimate Gaming Platform

- Improved frequencies
- Up to 24 cores
- More E-cores[1] & greater L3 cache On Intel Core i7
- NEW Intel® Application Optimization

- Intel 7 Process Technology
- Support for PCIe Gen 5.0[2] & Gen 4.0
- 2-Ch support for DDR5[3] & DDR4
- Intel® XTU with "AI Assist"

Intel 600 & Intel 700
Series Chipset

Discrete Intel® Wi-Fi 7
5 Gig support

Integrated USB 3.2
Gen 2x2 20Gbps

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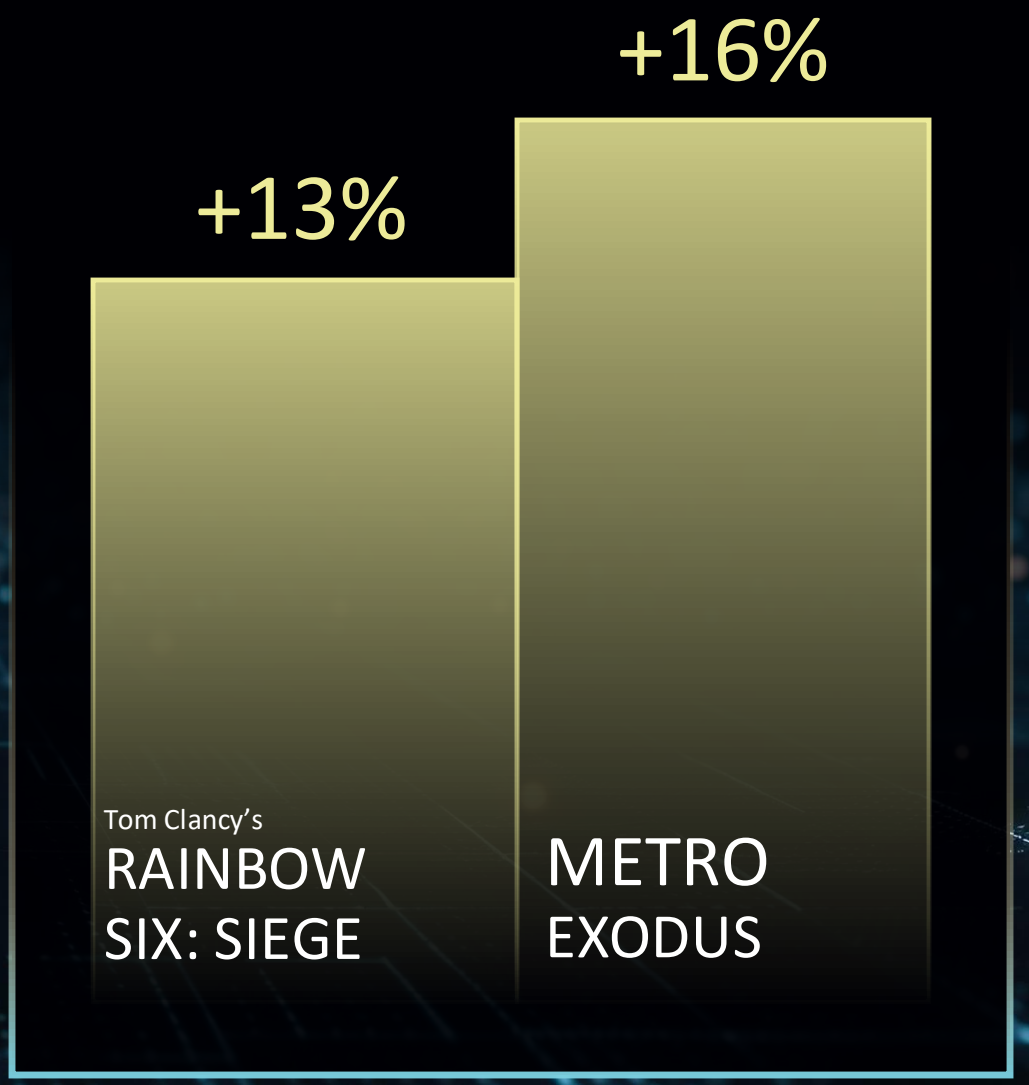
Intel® Application Optimization is a policy within Intel® Dynamic Tuning Technology that optimizes performance on select games, with the required configurations on select Intel® Core™ 14th Gen processors.
As of October 2023 AI Assist is supported on certain Intel® Core™ 14th gen unlocked SKUs. For more details on SKU support, see Intel® XTU download page.

Intel® Application Optimization

Intel® Application Optimization

Intel Application Optimization is a new policy within Intel Dynamic Tuning Technology framework that determines and directs application resources in real-time:

- Supported on select Intel Core 14th Gen S-series processors.
- Software optimizations focused on gaming applications.



Intel® Application Optimization is a policy within Intel® Dynamic Tuning Technology that optimizes performance on select games, with the required configurations on select Intel® Core™ 14th Gen processors. See www.intel.com/PerformanceIndex Results may vary.

Platform Features

Best in Class Wireless Connectivity

intel KiLLER

intel Wi-Fi 6E Gig+

Integrated Support for
Wi-Fi 6/6E (Gig+)
Bluetooth 5.3

intel Wi-Fi 7 5 Gig

Discrete Option Support for
Wi-Fi 7
Bluetooth 5.4

WI-FI 7 FEATURES

- Accelerated Connectivity
- Wired-like Responsiveness
- Rock-Solid Stability
- Enhanced Privacy

Best in Class Wired Connectivity

THUNDERBOLT™

Thunderbolt™4 continues to provide the simplest, most reliable, highest performance single cable solution

Thunderbolt 4	▪ Discrete Solution offering 40Gbps bandwidth
Coming Soon! Thunderbolt 5	▪ Discrete Solution offering 80Gbps bandwidth ▪ Up to 120Gbps for best display experiences ▪ Compatible with Thunderbolt cables and devices

Versatile platform for Enthusiasts

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

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Intel® Core™ 14th Gen

Delivers the world's best overclocking experience

- Increased OC frequencies for P-cores and E-cores
- Higher DDR5 XMP speeds: beyond 8,000 MT/s
- New per-core thermal throttle for improved OC perf.
- New 3rd party OC tool, based on Intel's XTU SDK: FoundationTK.com

New Overclocking World Records Incoming!

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Based on enhanced overclocking ability enabled by Intel's comprehensive tools and unique architectural tuning capabilities. Your results may vary. Overclocking may void warranty or affect system health. For details see intel.com/overclocking.

Intel® Extreme Tuning Utility with AI Assist

AI meets Overclocking – Preview Now

- New preview feature within Intel® XTU
- Utilizes AI model trained by Intel
- Characterizes individual systems and recommends customized overclocked settings
- Simple step-by-step UI: no experience required
- Offered for i9-14900K/KF processors

Preview now available for download on intel.com

intel.

As of October 2023 AI Assist is supported on certain Intel® Core™ 14th gen unlocked SKUs. For more details on SKU support, see Intel® XTU download page.

The CPU's Role in Gaming

The CPU Drives the Gaming Experience

Game physics	Driving I/O and Peripherals
Dynamic audio processing	Intelligent Matchmaking
NPC/Bot Behavior	Multi-instance Synchronization
Procedurally Generated Content	Multi-threaded Engine Performance

Increased & Consistent Framerate

INTEL'S Investments for Gaming

+ Generational performance gains
+ Platform-wide innovation
+ Memory optimizations
+ Industry leading thread management (Intel Thread Director[5])
+ Advanced power management
+ Game software optimizations

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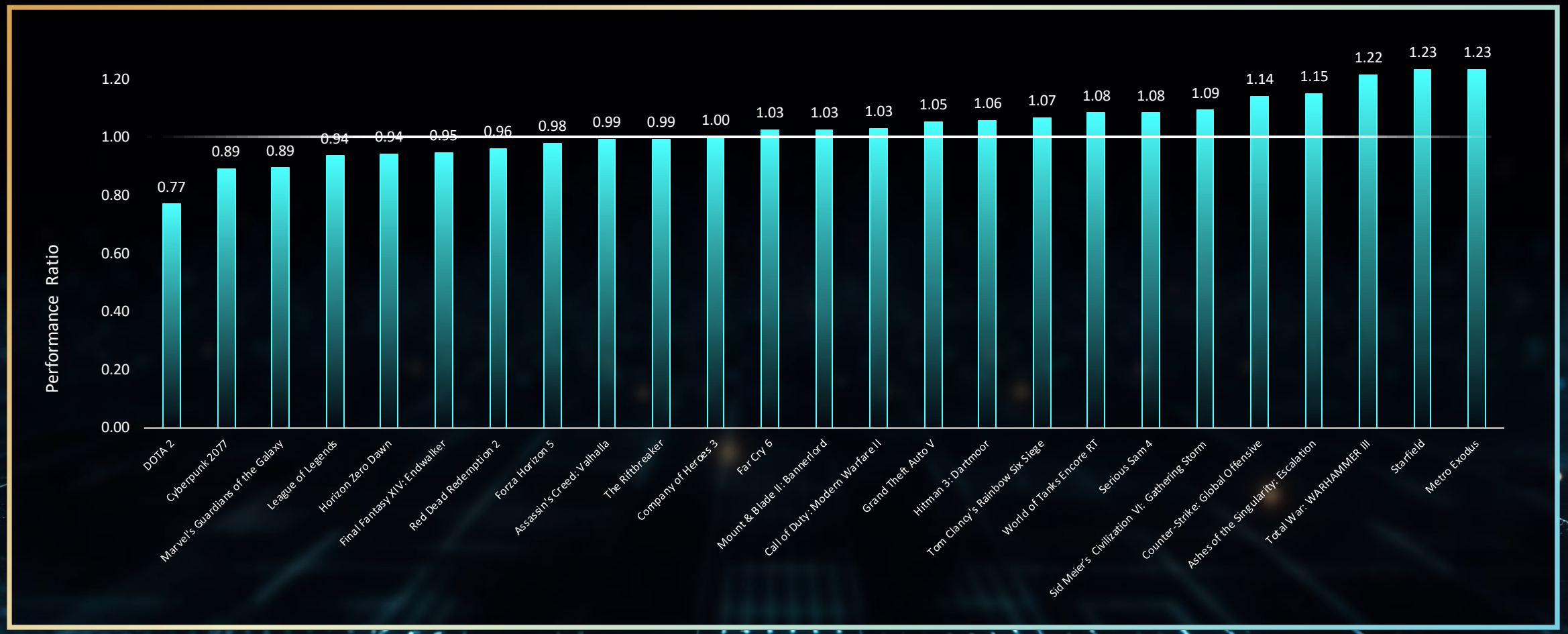
Gaming Performance – 1080p High

Intel® Core™ 14th Gen i9-14900K vs AMD Ryzen 9 7950X3D



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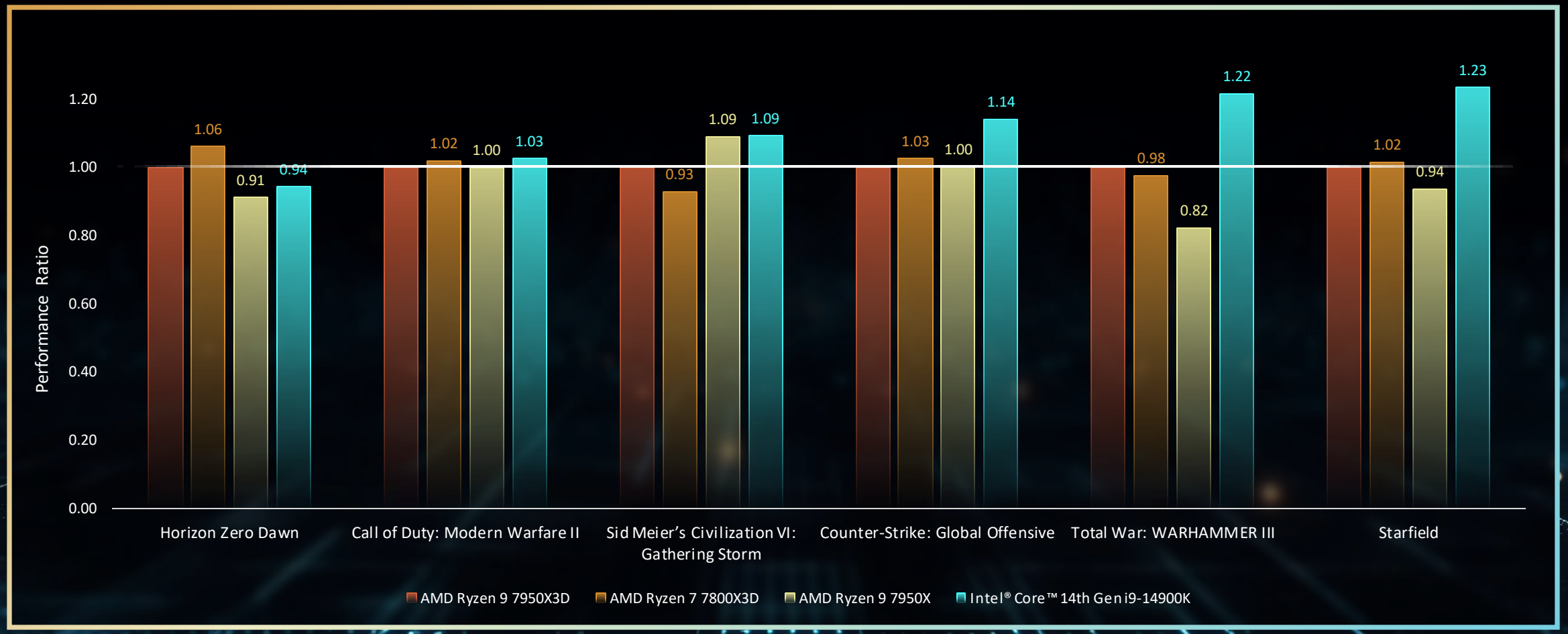
For all workload and configuration see www.intel.com/PerformanceIndex. Results may vary.

Excellent Gaming Performance

Intel® Core™ 14th Gen i9-14900K | AMD Ryzen 9 7950X3D | AMD Ryzen 9 7950X | AMD Ryzen 7 7800X3D

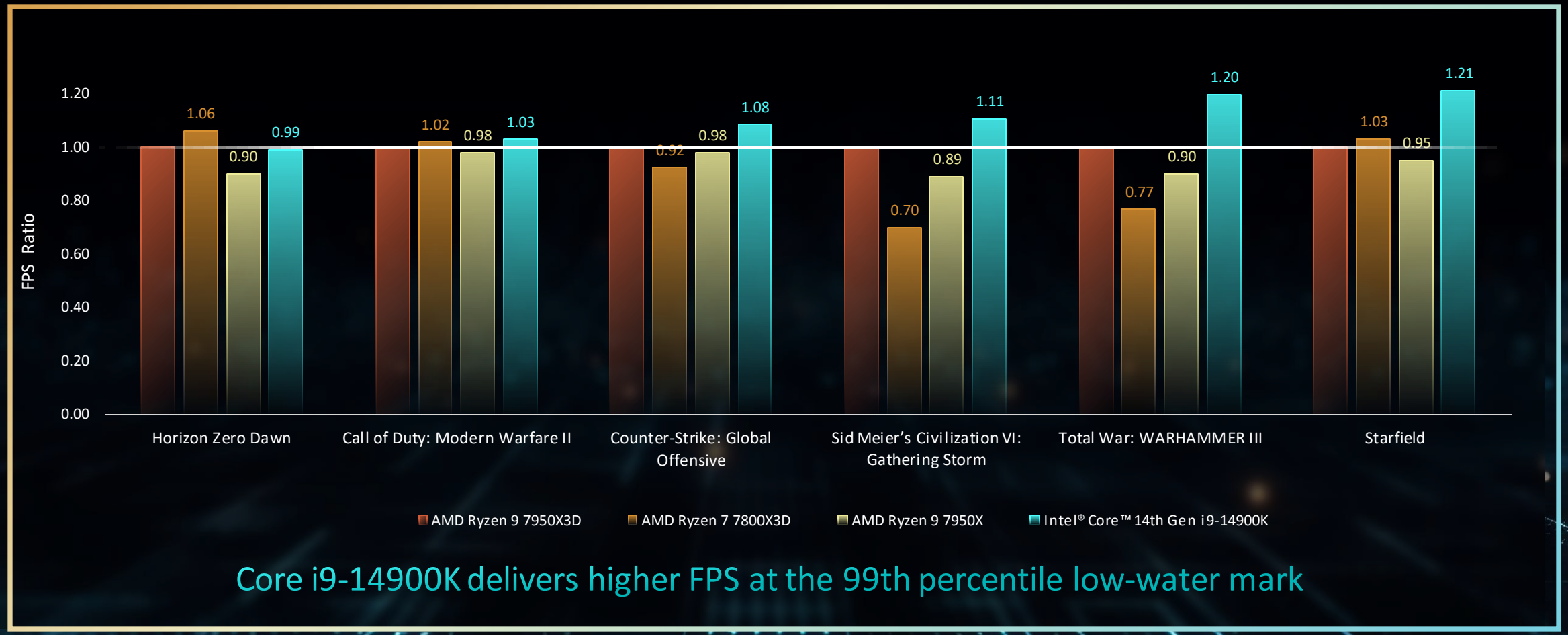


intel

For all workload and configuration see www.intel.com/PerformanceIndex. Results may vary.

Excellent In-Game Frame Consistency

Intel® Core™ 14th Gen i9-14900K | AMD Ryzen 9 7950X3D | AMD Ryzen 9 7950X | AMD Ryzen 7 7800X3D



Core i9-14900K delivers higher FPS at the 99th percentile low-water mark

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For all workload and configuration see www.intel.com/PerformanceIndex. Results may vary.

Intel Core 14th Gen Desktop Processors

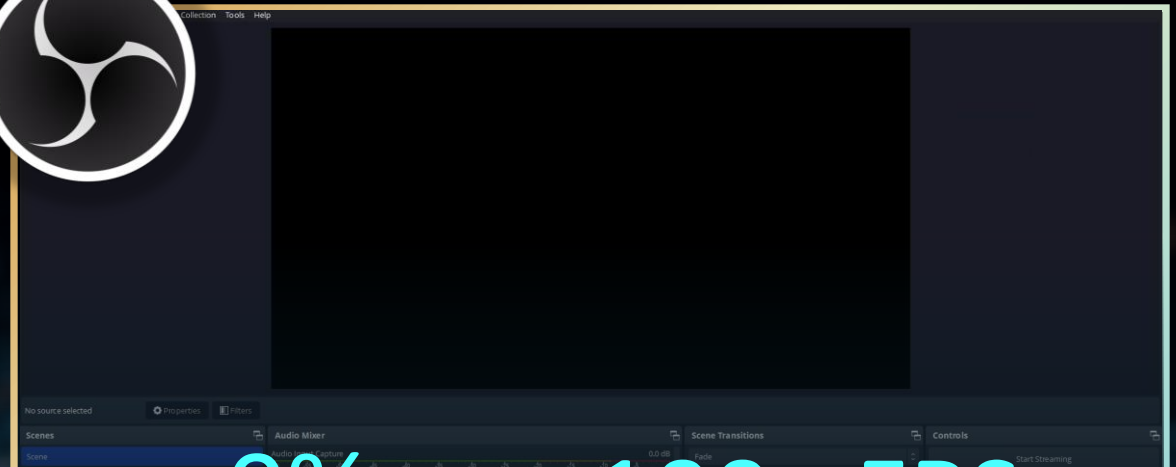
Game Stream Record Workflow

Game | Stream | Record

Total War: Warhammer III @ 1080p Ultra

Foreground Task	Game streamer plays Total War: Warhammer III at 1080p, Ultra graphics settings at 100+ FPS.

Intel Core i9-14900K



0%

Skipped Frames due to Encoding Lag

100+ FPS

High Frame Rate Gameplay while Streaming and Recording

Background Task	Open Broadcaster Software (OBS) allows the user to stream AND record content simultaneously. The Streamer utilizes the CPU x264 "Slow" preset, providing a high-quality stream and recording in the background.

Intel Core i9-14900K

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Based on performance of the Intel Core 14th Gen i9-14900K.
For all workload and configuration see www.intel.com/PerformanceIndex. Results may vary.

"Intel has been an amazing and trusted partner helping to deliver the HITMAN experience on their CPUs generation over generation. We are excited about Intel's new 14th Gen Core CPUs and creating new experiences for our community of PC gamers."

Jonathan Lacaille – IO Interactive Studio Brand Director

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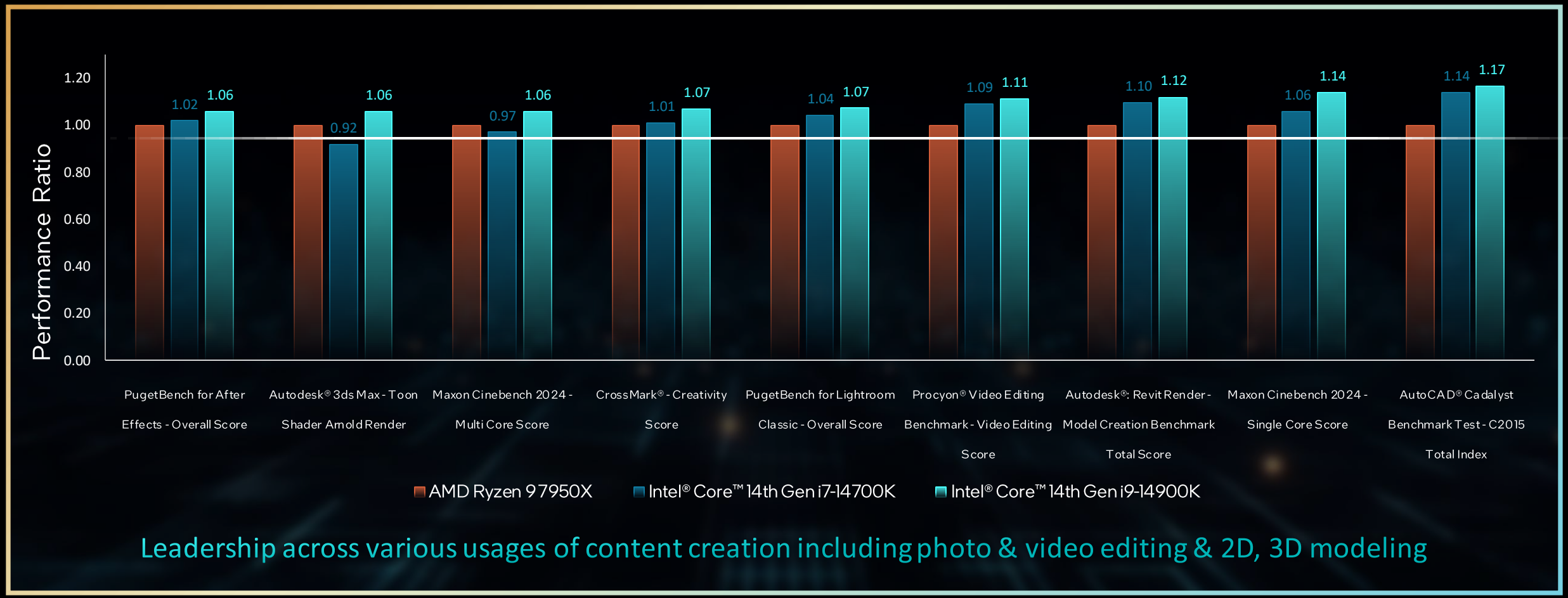
Performance for Content Creators

AMD Comparison



Leadership across various usages of content creation including photo & video editing & 2D, 3D modeling

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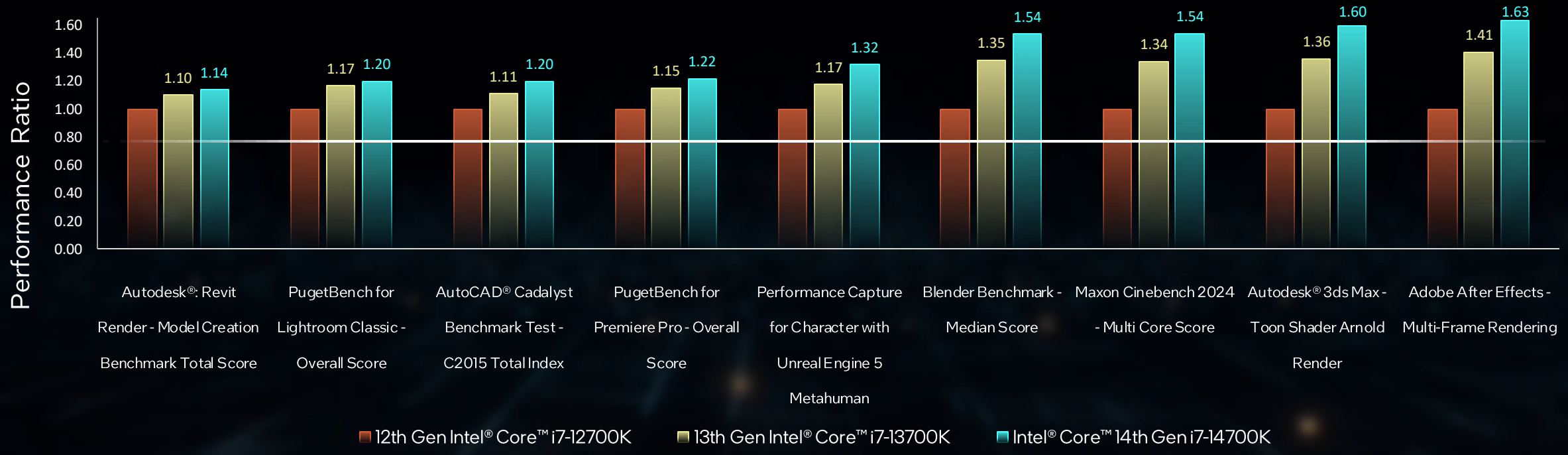
For all workload and configuration see www.intel.com/PerformanceIndex. Results may vary.

Intel Core i7 Generational Performance

Intel® Core™ 14th Gen i7-14700K | 13th Gen Intel® Core™ i7-13700K | 12th Gen Intel® Core™ i7-12700K



A Leap In Creator Performance. Excellent Performance Across Broad Usages in Content Creation

intel

For all workload and configuration see www.intel.com/PerformanceIndex. Results may vary.

Intel® Open Ecosystem for AI

Intel CPU AI Capabilities & Tools

VNNI INSTRUCTIONS

oneAPI

DL Boost

OpenVINO™

Intel Graphics AI Capabilities & Tools

DP4a INSTRUCTIONS

oneAPI

DL Boost

OpenVINO™

Streaming & Collaboration

Video Background Blur or Replacement
Noise Cancelling Audio
Face Identity & Tracking

Gaming

Procedural Worlds
Intelligent NPCs
Cephable (formerly Enabled Play)

Creator and Developer

Neural Photo & Video Filters
Accelerated Video Editing
Super Resolution Upscaling

Intel® Arc™ or other 3rd Party Graphics AI

Extending AI Functionality to Intel Arc and 3rd party hardware Utilities and Capabilities

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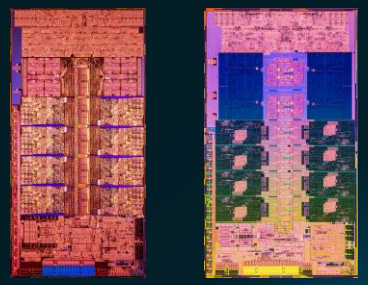
Unmatched Ecosystem Breadth & Collaboration

12th Gen 13th Gen



Intel® Core™
Processor Family

acer ASUS ALIENWARE DELL GIGABYTE hp CYBERPOWERPC
newegg ORIGIN DIGITALSTORM msi Microsoft BEST BUY THIRDWAVE
MAINGEAR SCAN iBUYPOWER Lenovo JD.COM amazon XIDAX ASRock

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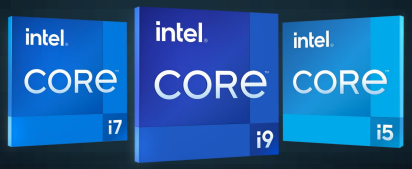
Intel® Core™ 14th Gen Unlocked Desktop Processors



Processor Number	Processor Cores (P+E)	Processor Threads	Intel® Smart Cache (L3)	Total L2 Cache	Intel® Thermal Velocity Boost Frequency (GHz)	Intel® Turbo Boost Max Technology 3.0 Frequency (GHz)	P-core Max Turbo Frequency (GHz)	E-core Max Turbo Frequency (GHz)	P-core Base Frequency (GHz)	E-core Base Frequency (GHz)	Unlocked	Processor Graphics	Total CPU PCIe Lanes	Max Memory Speed (MT/S)	Memory Capacity	Processor Base Power (W)	Max Turbo Power (W)	RCP (USD)
i9-14900K	24 (8+16)	32	36MB	32MB	Up to 6.0	Up to 5.8	Up to 5.6	Up to 4.4	3.2	2.4	√	Intel® UHD Graphics 770	20	DDR5 5600 DDR4 3200	192GB	125	253	$589
i9-14900KF	24 (8+16)	32	36MB	32MB	Up to 6.0	Up to 5.8	Up to 5.6	Up to 4.4	3.2	2.4	√	n/a	20	DDR5 5600 DDR4 3200	192GB	125	253	$564
i7-14700K	20 (8+12)	28	33MB	28MB	n/a	Up to 5.6	Up to 5.5	Up to 4.3	3.4	2.5	√	Intel® UHD Graphics 770	20	DDR5 5600 DDR4 3200	192GB	125	253	$409
i7-14700KF	20 (8+12)	28	33MB	28MB	n/a	Up to 5.6	Up to 5.5	Up to 4.3	3.4	2.5	√	n/a	20	DDR5 5600 DDR4 3200	192GB	125	253	$384
i5-14600K	14 (6+8)	20	24MB	20MB	n/a	n/a	Up to 5.3	Up to 4.0	3.5	2.6	√	Intel® UHD Graphics 770	20	DDR5 5600 DDR4 3200	192GB	125	181	$319
i5-14600KF	14 (6+8)	20	24MB	20MB	n/a	n/a	Up to 5.3	Up to 4.0	3.5	2.6	√	n/a	20	DDR5 5600 DDR4 3200	192GB	125	181	$294

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Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. The frequency of cores and core types varies by workload, power consumption and other factors. Visit https://www.intel.com/content/www/us/en/architecture-and-technology/turbo-boost/turbo-boost-technology.html for more information. Max Turbo Frequency for P-cores may include Intel® Thermal Velocity Boost and/or Intel Turbo Boost Max 3.0. All SKUs listed above support up to DDR5 (5600 MT/S)/DDR4 (3200 MT/S) memory. See ark.intel.com for more specification details

The World's Best Desktop Experience for Enthusiasts

Up to
6 GHz
Out of the Box

Up to
23% Better
Gaming
Performance[1]

Up to
54% Faster
Creator
Workflow[2]

Intel® Core™ 14th Gen Desktop Processors

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World's Best Experience for Desktop Enthusiasts based on performance and unique features of Intel® Core® 14th Gen Desktop Processors, including in comparison to 13th Gen Intel Core, AMD Ryzen 9 7950X and AMD Ryzen 9 7950X3D. Performance claims based on 14th Gen i9-14900K performance measured by (1) 23% higher average FPS vs. the AMD 7950X3D and (2) 54% Faster Creator Workflow featuring Adobe After Effects and Premiere Pro vs. AMD 7950X. See www.intel.com/performanceindex for details. Results may vary.

Notice and Disclaimers

Performance varies by use, configuration and other factors. Learn more at 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 www.Intel.com/PerformanceIndex for configuration details.
For additional Intel® Core™ 14th Gen processor family details learn more at www.intel.com

No product or component can be absolutely secure.

Your costs and results may vary.

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

6 GHz Wi-Fi 6E operation requires use of Intel® Wi-Fi 6E (Gig+) products in conjunction with operating systems and routers/APs/Gateways that support Wi-Fi 6E, together with regional spectrum allocation & required regulatory certifications. Visit www.intel.com/PerformanceIndex (connectivity) for details. Wi-Fi 7 operation requires use of Intel® Wi-Fi 7 (5 Gig) products in conjunction with operating systems and routers/APs/Gateways that support Wi-Fi 7.

Altering clock frequency or voltage may void any product warranties and reduce stability, security, performance, and life of the processor and other components. Check with system and component manufacturers for details.

Results that are based on systems and components as well as results that have been estimated or simulated using an Intel Reference Platform (an internal example new system), internal Intel analysis or architecture simulation or modeling are provided to you for informational purposes only. Results may vary based on future changes to any systems, components, specifications or configurations.

All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest information.

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 Gen and newer Intel® Core™ processors do not have performance hybrid architecture, only P-cores or E-cores, and may have the same cache size. See ark.intel.com for SKU details, including cache size and core frequency."
2. CPU PCIe 5.0 lanes are only validated for discrete graphics (x16) and PCIe storage (1x4). 1x16 bifurcation to 2x8 supported on select Intel® 600 and 700 Series chipsets
3. DDR5 Memory speeds are associated with 1DPC configurations. For additional 2DPC configuration details refer to the Alder Lake Processor External Design Specification (EDS), Doc ID 619501.
4. Discrete Intel® Thunderbolt™ 4 (Maple Ridge) is only validated and supported from Intel® 600 and 700 Series Chipset PCIe lanes.
5. 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
6. CPU PCIe 5.0 lanes are only validated for discrete graphics (x16) and PCIe storage (1x4). 1x16 bifurcated to 2x8 provides discrete graphics (x8) + additional storage configuration support (1x8).

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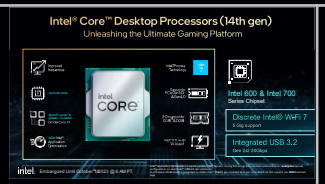
Subject to Embargo Lift – Oct 16th, 2023 @ 6:00 AM PT

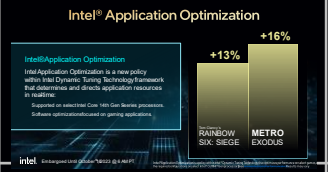
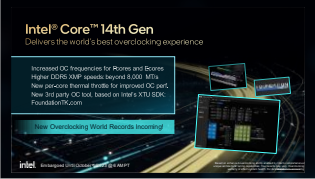
Performance Appendix for: Intel® Core™ 14th Gen Desktop Processors (Code Name: Raptor Lake-S Refresh)

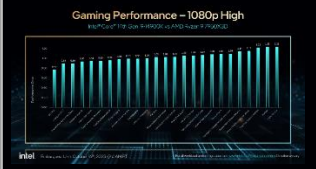
Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex.

Claim # Statements	Slide # Title/Details
	**4. World's Fastest Desktop Processor**
1. World's Fastest Desktop Processor	At 6.0 GHz Max Turbo Frequency, Intel Core 14th Gen i9-14900K is the fastest desktop processor at volume Testing as of: October 2023
2. Unmatched Overclocking	Based on enhanced overclocking ability enabled by Intel's comprehensive tools and unique architectural tuning capabilities of unlocked Intel Core 14th Gen processors. Overclocking may void warranty or affect system health. Learn more at www.intel.com/overclocking. Results may vary. For details see intel.com/overclocking
3. World's Best Desktop Experience for Enthusiasts	Based on the performance (as of October 2023) and other attributes of Intel® Core™ 14th Gen processors that combine to form the best overall desktop experience. These include: Fast speeds: up to Max Turbo Frequency of 6GHz – the highest for any desktop processor at volume. See ark.intel.com for details. Strong processor performance across a collection of benchmarks and real-world Gaming, Productivity, & Content Creation workloads, including in relation to prior generation (13th Gen Intel Core) and AMD Ryzen 9 7950X and AMD Ryzen 9 7950X3D processors. New and improved tuning and optimization features. Broad memory support for both DDR4 and DDR5 memory modules. Support for best in class wired and wireless connectivity, including discrete Intel® Wi-Fi 7 (5 Gig) support. Intel's unparalleled approach to security like security assurance programs founded on security by design principles, transparency and disclosure of vulnerabilities and a robust Intel Platform Update process, an esteemed bug bounty program as well as internal research through red teams and more Breadth of price and performance options available in Intel® Core™ 14th Gen family Extensive open ecosystem enablement (e.g., OEMs, ODMs, OSs, ISVs, etc.) Testing as of: October 1, 2023
4. Up to 18% better multi-threaded performance	**As measured by Autodesk® 3ds Max – Toon Shader Workload on** Intel® Core™ 14th Gen i7-14700K processor vs 13th Gen Intel® Core™ i7-13700K processor
Up to 18% better multi-threaded performance Full Configuration:	Processor: Intel® Core™ 14th Gen i7-14700K processor PL1 set to 253W TDP, 20C28T (8P + 12E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: 13th Gen Intel® Core™ i7-13700K processor PL1 set to 253W TDP, 16C24T (8P + 8E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 2834-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Testing as of: October 1, 2023

	**5. Intel® Core™ Desktop Processors (14th gen)** **Unleashing the Ultimate Gaming Platform**
5. More E-cores	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 Gen and newer Intel® Core™ processors do not have performance hybrid architecture, only P-cores or E-cores, and may have the same cache size. See ark.intel.com for SKU details, including cache size and core frequency."
6. Intel® Application Optimization	Intel® Application Optimization is a policy within Intel® Dynamic Tuning Technology that optimizes performance on select games, with the required configurations on select Intel® Core™ 14th Gen processors.
7. Support for PCIe Gen 5.0	CPU PCIe 5.0 lanes are only validated for discrete graphics (x16) and PCIe storage (1x4). 1x16 bifurcation to 2x8 supported on select Intel® 600 and 700 Series chipsets
8. 2-Ch support for DDR5	DDR5 Memory speeds are associated with 1DPC configurations. For additional 2DPC configuration details refer to the Alder Lake Processor External Design Specification (EDS), Doc ID 619501
9. Intel® XTU with AI Assist	As of October 2023 AI Assist is supported on certain Intel® Core™ 14th gen unlocked SKUs. For more details on SKU support, see Intel® XTU download page.
	**6. Platform Features**
10. Best in Class Wireless Connectivity	6 GHz Wi-Fi 6E operation requires use of Intel® Wi-Fi 6E (Gig+) products in conjunction with operating systems and routers/APs/Gateways that support Wi-Fi 6E, together with regional spectrum allocation & required regulatory certifications. Visit www.intel.com/PerformanceIndex (connectivity) for details. Wi-Fi 7 operation requires use of Intel® Wi-Fi 7 (5 Gig) products in conjunction with operating systems and routers/APs/Gateways that support Wi-Fi 7.
11. Thunderbolt	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

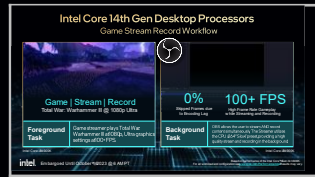
Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex.

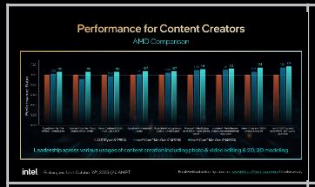
	**7. Intel Application Performance Optimization**
12. Intel Application Performance Optimization	See Claim 6.
13. Tom Clancy's RAINBOW SIX: SIEGE +13%	As measured by Tom Clancy's Rainbow Six: Siege on Intel® Core™ 14th Gen i9-14900K processor with Intel® Application Optimization vs Intel® Core™ 14th Gen i9-14900K processor without Intel® Application Optimization
14. METRO EXODUS +16%	As measured by Metro Exodus on Intel® Core™ 14th Gen i9-14900K processor with Intel® Application Optimization vs Intel® Core™ 14th Gen i9-14900K processor without Intel® Application Optimization
Tom Clancy's RAINBOW SIX: SIEGE +13% METRO EXODUS +16% **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1401; Power Scheme: High Performance Testing as of: October 1, 2023
	**8. Intel® Core™ 14th Gen** **Delivers the world's best overclocking experience**
15. Delivers the world's best overclocking experience	See Claim 2
	**9. Intel® Extreme Tuning Utility with AI Assist**
16. Intel® Extreme Tuning Utility with AI Assist	See Claim 7
	**10. The CPU's Role in Gaming**
17. Industry leading thread management (Intel Thread Director5)	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

	**11. Gaming Performance – 1080p High**
18. You can see the full range of results with up to 23% more FPS gain vs comp	As measured by Starfield on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
You can see the full range of results with up to 23% more FPS gain vs comp **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: AMD Ryzen™ 9 7950X3D processor 120W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: Balanced Testing as of: October 1, 2023 **Games Tested:** Horizon Zero Dawn - 1.11.2 Call of Duty: Modern Warfare II - 15833622 Sid Meier's Civilization VI: Gathering Storm - 1.0.12.53 (936293) Counter-Strike: Global Offensive - 1.38.7.9 Total War: WARHAMMER III - 4.0.2 Starfield - v1.7.29.0 Metro Exodus - v1.0.0.8 Tom Clancy's Rainbow Six: Siege - 60683101 Ashes of the Singularity: Escalation - 3.20.495800 Forza Horizon 5 - 1.607.493.0.HV Final Fantasy XIV: Endwalker - 538050324 DOTA 2 - 7.34B Cyberpunk 2077 - 2 Red Dead Redemption 2 - Build 1491.18 Assassin's Creed: Valhalla - 1.7.0 The Riftbreaker - 881 Company of Heroes 3 - 1.2.5.17366 Far Cry 6 - 1.7.0 Mount & Blade II: Bannerlord - v1.1.5.21456 Hitman 3: Dartmoor - 3.160.0 World of Tanks Encore RT - V0.2 Serious Sam 4 – 616154 Marvel's Guardians of the Galaxy – 2984448 League of Legends - v13.18.530.4653 Grand Theft Auto V – 1.67

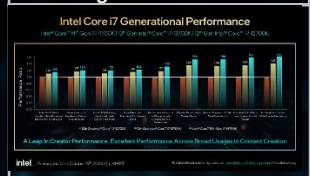
	**12. Excellent Gaming Performance**
19. Up to 23% more FPS on Starfield	As measured by Starfield on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
20. Up to 22% more FPS on Total War: WARHAMMER III	As measured by Total War: WARHAMMER III on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
21. Up to 14% more FPS on Counter-Strike: Global Offensive	As measured by Counter-Strike: Global Offensive on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
22. Up to 9% more FPS on Sid Meier's Civilization VI: Gathering Storm	As measured by Sid Meier's Civilization VI: Gathering Storm on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
23. Up to 3% more FPS on Call of Duty: Modern Warfare II	As measured by Call of Duty: Modern Warfare II on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
Up to 23% more FPS on Starfield **Up to 22% more FPS on Total War: WARHAMMER III** **Up to 14% more FPS on Counter-Strike: Global Offensive** **Up to 9% more FPS on Sid Meier's Civilization VI: Gathering Storm** **Up to 3% more FPS on Call of Duty: Modern Warfare II** **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: AMD Ryzen™ 9 7950X3D processor 120W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: Balanced Processor: AMD Ryzen™ 9 7950X processor 105W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: High Performance Processor: AMD Ryzen™ 7 7800X3D processor 120W TDP, 8C16T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: Balanced Testing as of: October 1, 2023 **Games Tested:** Horizon Zero Dawn - 1.11.2 Call of Duty: Modern Warfare II - 15833622 Sid Meier's Civilization VI: Gathering Storm - 1.0.12.53 (936293) Counter-Strike: Global Offensive - 1.38.7.9 Total War: WARHAMMER III - 4.0.2 Starfield - v1.7.29.0

	**13. Excellent In-Game Frame Consistency**
24. Up to 21% better frame consistency on Starfield	As measured by Starfield on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
25. Up to 20% better frame consistency on Total War: WARHAMMER III	As measured by Total War: WARHAMMER III on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
26. Up to 8% better frame consistency on Counter-Strike: Global Offensive	As measured by Counter-Strike: Global Offensive on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
27. Up to 11% better frame consistency on Sid Meier's Civilization VI: Gathering Storm	As measured by Sid Meier's Civilization VI: Gathering Storm on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
28. Up to 3% better frame consistency on Call of Duty: Modern Warfare II	As measured by Call of Duty: Modern Warfare II on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
Up to 21% better frame consistency on Starfield **Up to 20% better frame consistency on Total War: WARHAMMER III** **Up to 8% better frame consistency on Counter-Strike: Global Offensive** **Up to 11% better frame consistency on Sid Meier's Civilization VI: Gathering Storm** **Up to 3% better frame consistency on Call of Duty: Modern Warfare II** **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: AMD Ryzen™ 9 7950X3D processor 120W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: Balanced Processor: AMD Ryzen™ 9 7950X processor 105W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: High Performance Processor: AMD Ryzen™ 7 7800X3D processor 120W TDP, 8C16T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: Balanced Testing as of: October 1, 2023 **Games Tested:** Horizon Zero Dawn - 1.11.2 Call of Duty: Modern Warfare II - 15833622 Sid Meier's Civilization VI: Gathering Storm - 1.0.12.53 (936293) Counter-Strike: Global Offensive - 1.38.7.9 Total War: WARHAMMER III - 4.0.2 Starfield - v1.7.29.0

	**14. Intel Core 14th Gen Desktop Processors** **Game Stream Record Workflow**
29. Up to 100+FPS gameplay while streaming and recording	As measured by Game, Stream, Record workflow with Total War: WARHAMMER III and Open Broadcaster Software on Intel® Core™ 14th Gen i9-14900K processors
Up to 100+FPS gameplay while streaming and recording **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Testing as of: October 1, 2023 Total War: WARHAMMER III - 4.0.2 Open Broadcaster Software (OBS) - V:29.1.3 Workflow description for the above performance claim: As measured by the Intel® Core™ 14th Gen i9- 14900K 1. Setup and configure OBS Stream + Record to run in the background, leveraging CPU x2645 "Slow" preset to encode for both the stream and recording at 1080p 60fps. 2. Initiate the Stream and Recording within OBS. 3. Launch the game title of choice (Total War: WARHAMMER III) and navigate to the "Settings" menu to ensure game settings are correctly configured (Ultra preset, 1080p). 4. Launch the Total War: WARHAMMER III in-game benchmark titled "Mirror of Madness" and capture the benchmark stated average FPS (Frames Per Second) once the benchmark is complete. 5. Stop the Stream and Recording within OBS. 6. Navigate to the OBS log file to capture the "Frames missed due to rendering lag" and "Skipped frames due to encoding lag" values, measured in percentage of total frames.

	**16. Performance for Content Creators**
30. Up to 6% better performance when adding visual effects to videos	As measured by PugetBench for After Effects - Overall Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
31. Up to 2% better performance when adding visual effects to videos	As measured by PugetBench for After Effects - Overall Score on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor
32. Up to 6% faster Toon Shader Arnold Render performance	As measured by Autodesk® 3ds Max – Toon Shader Workload on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
33. Up to 7% faster performance when applying photo effects	As measured by PugetBench for Lightroom Classic – Overall Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
34. Up to 4% faster performance when applying photo effects	As measured by PugetBench for Lightroom Classic – Overall Score on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor
35. Up to 11% faster video editing performance	As measured by Procyon® Video Editing Benchmark - Video Editing Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
36. Up to 9% faster video editing performance	As measured by Procyon® Video Editing Benchmark - Video Editing Score on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor
37. Up to 12% faster Model creation performance	As measured by Autodesk®: Revit Render – Model Creation Benchmark Total Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
38. Up to 10% faster Model creation performance	As measured by Autodesk®: Revit Render – Model Creation Benchmark Total Score on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor
39. Up to 6% better Cinebench 2024 multi core performance	As measured by Maxon Cinebench 2024 – Multi Core Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
40. Up to 14% better Cinebench 2024 single core performance	As measured by Maxon Cinebench 2024 – Single Core Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
41. Up to 6% better Cinebench 2024 single core performance	As measured by Maxon Cinebench 2024 – Single Core Score on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor
42. Up to 17% faster Computer Aided Design (CAD) performance	As measured by AutoCAD® Cadalyst Benchmark Test – C2015 Total Index on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
43. Up to 14% faster Computer Aided Design (CAD) performance	As measured by AutoCAD® Cadalyst Benchmark Test – C2015 Total Index on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor
44. Up to 7% faster mainstream creator application performance	As measured by CrossMark® – Creativity Score on Intel® Core™ 14th Gen i9-14900K processor vs AMD Ryzen 9 7950X processor
45. Up to 1% faster mainstream creator application performance	As measured by CrossMark® – Creativity Score on Intel® Core™ 14th Gen i7-14700K processor vs AMD Ryzen 9 7950X processor

	16. Performance for Content Creators (cont.)
Up to 6% better performance when adding visual effects to videos **Up to 2% better performance when adding visual effects to videos** **Up to 6% faster Toon Shader Arnold Render performance** **Up to 7% faster performance when applying photo effects** **Up to 4% faster performance when applying photo effects** **Up to 11% faster video editing performance** **Up to 9% faster video editing performance** **Up to 12% faster Model creation performance** **Up to 10% faster Model creation performance** **Up to 6% better Cinebench 2024 multi core performance**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: Intel® Core™ 14th Gen i7-14700K processor PL1 set to 253W TDP, 20C28T (8P + 12E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: AMD Ryzen™ 9 7950X processor 105W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: High Performance Testing as of: October 01, 2023 **Applications Tested:** **PugetBench for After Effects - Overall Score** Adobe After Effects: 23.4 Pugetbench After Effect: 0.95.6 Visual effects for video performance measurement benchmark developed by Puget Systems and is a part of Content creation benchmark suite. The benchmark can be accessed from: www.pugetsystems.com/labs/articles/pugetbench-for-after-effects-1287/ **Autodesk® 3ds Max Toon Shader with Arnold Render Workload** Autodesk® 3ds Max 2024 - 26.0.0.940 This workflow measures how long it takes in seconds to 'Render Production' of Toon Shader stylized scene in 3ds Max using the Arnold renderer. The render is in 'Production Rendering Mode'. The renderer is Arnold. The output size dimensions are 3840X2160. **PugetBench for Lightroom Classic - Overall Score** Adobe Lightroom Classic: 12.5 PugetBench version: 0.94 The Lightroom Classic benchmark looks at performance with three sets of images for both "active" and "passive" tasks. The benchmark can be accessed from: www.pugetsystems.com/labs/articles/pugetbench-for-lightroom-classic-1571/ **Procyon® Video Editing Benchmark – Video Editing Score** Adobe Premiere Pro: 23.6 Procyon Application: 2.6.848 Video Editing Benchmark: 1.1.391 UL Procyon benchmarks use real applications to test performance whenever possible. The UL Procyon Video Editing Benchmark uses Adobe Premiere Pro in a typical video editing workflow. The benchmark can be accessed from: benchmarks.ul.com/procyon/video-editing-benchmark **Autodesk®: Revit Render - Model Creation Benchmark Total Score** Revit 2024.1 24.1.11.26 20230911_1230(64x) RFOBenchmark_v3.3_2024 The Revit benchmark tool is a Revit Journal file that automates the generation of a Revit model and performs various variety of tasks. Not only is the system information recoded, but the time taken to perform various tasks is evaluated

	16. Performance for Content Creators (cont.)
Up to 14% better Cinebench 2024 single core performance **Up to 6% better Cinebench 2024 single core performance** **Up to 17% faster Computer Aided Design (CAD) performance** **Up to 14% faster Computer Aided Design (CAD) performance** **Up to 7% faster mainstream creator application performance** **Up to 1% faster mainstream creator application performance** **Full Configurations**	**Maxon Cinebench 2024 – Multi Core Score / Single Core Score** R24 Maxon Cinebench is an industry-standard benchmarking software based on the cutting-edge technology that makes Maxon One the preferred choice of professionals. The benchmark can be accessed from: www.maxon.net/en/downloads/cinebench-2024-downloads **AutoCAD® Cadalyst Benchmark Test - C2015 Total Index** Cadalyst 2015 v5.5 AutoCAD® 2024 The Cadalyst Systems Benchmark 2015 (C2015 v5.5b) can be used to test and compare the performance of systems running AutoCAD® v2022 and earlier. The benchmark can be accessed from: www.cadalyst.com/benchmark-test **CrossMark® - Creativity Score** 1.0.1.88 CrossMark® is a benchmark from the BAPCo* consortium that is an easy to run native cross-platform benchmark that measures the overall system performance and system responsiveness using models of real-world applications. The benchmark can be accessed from: bapco.com/products/crossmark/
	**17. Intel Core i7 Generational Performance**
46. Up to 14% faster model creation performance	As measured by Autodesk®: Revit Render – Model Creation Benchmark Total Score on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
47. Up to 20% faster performance when applying photo effects	As measured by PugetBench for Lightroom Classic - Overall Score on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
48. Up to 20% faster Computer aided Design (CAD) performance	As measured by AutoCAD® Cadalyst Benchmark Test – C2015 Total Index on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
49. Up to 22% faster video editing performance	As measured by PugetBench for Premiere Pro Overall Score on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
50. Up to 32% faster virtual production performance	As measured by Performance Capture for Character with Unreal Engine 5 Metahuman Workflow on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
51. Up to 54% faster CPU cycles rendering performance	As measured by Blender Benchmark – Median Score on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
52. Up to 54% better Cinebench 2024 multi core performance	As measured by Maxon Cinebench 2024 – Multi Core Score on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
53. Up to 60% faster Toon Shader Arnold Render performance	As measured by Autodesk® 3ds Max – Toon Shader Workload on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor
54. Up to 63% better multi-frame rendering performance	As measured by Adobe After Effects Multi-Frame Rendering Workload on Intel® Core™ 14th Gen i7-14700K processor vs 12th Gen Intel® Core™ i7-12700K processor

	17. Intel Core i7 Generational Performance (cont.)
	Processor: Intel® Core™ 14th Gen i7-14700K processor PL1 set to 253W TDP, 20C28T (8P + 12E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: 13th Gen Intel® Core™ i7-13700K processor PL1 set to 253W TDP, 20C28T (8P + 12E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: 12th Gen Intel® Core™ i7-12700K processor PL1 set to 250W TDP, 12C20T (8P + 4E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-4800MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Testing as of: October 1, 2023 **Applications Tested:**
Up to 14% faster model creation performance **Up to 20% faster performance when applying photo effects** **Up to 20% faster Computer aided Design(CAD) performance** **Up to 22% faster video editing performance** **Up to 32% faster virtual production performance** **Full Configurations:**	**Autodesk®: Revit Render - Model Creation Benchmark Total Score** Revit 2024.1 24.1.11.26 20230911_1230(64x) RFOBenchmark_v3.3_2024 The Revit benchmark tool is a Revit Journal file that automates the generation of a Revit model and performs various variety of tasks. Not only is the system information recoded, but the time taken to perform various tasks is evaluated **PugetBench for Lightroom Classic - Overall Score** Adobe Lightroom Classic: 12.5 PugetBench version: 0.94 The Lightroom Classic benchmark looks at performance with three sets of images for both “active” and “passive” tasks. The benchmark can be accessed from: www.pugetsystems.com/labs/articles/pugetbench-for-lightroom-classic-1571/ **AutoCAD® Cadalyst Benchmark Test - C2015 Total Index** Cadalyst 2015 v5.5 AutoCAD® 2024 The Cadalyst Systems Benchmark is designed to help evaluate and compare the performance of PCs running AutoCAD®. The Cadalyst Systems Benchmark reports a total index score and four component index scores keyed to specific performance areas, as well as individual numbers for each subroutine of the test. Note: the index numbers are simply a ratio of the base time for an operation compared to the current test time for an operation. Larger index numbers indicate better performance. The benchmark can be accessed from: www.cadalyst.com/benchmark-test **PugetBench for Premiere Pro – Overall Score** Adobe Premiere Pro: 23.6 PugetBench Premiere Pro: 0.98 Video editing performance measurement benchmark developed by Puget Systems and is a part of Content creation benchmark suite. The benchmark can be accessed from: www.pugetsystems.com/labs/articles/PugetBench-for-Premiere-Pro-1519/ **Performance Capture for Character with Unreal Engine 5 Metahuman Workflow** Unreal Engine 5.2.1 This virtual production workflow featuring Unreal Engine 5 Metahuman measures the following in seconds: 1. The time it takes to fit the Template Skeletal Mesh to the volume of the sample video’s Neutral Pose using the Metahuman Identity Solve function. 2. The time it takes to submit the Template Mesh to the MH backend and create an auto-rigged Skeletal Mesh and a custom Metahuman. 3. The time it takes to train the Skeletal Mesh for the animation using the Prepare Performance function. 4. The time it takes to produce keyframes for facial animation using the Process function.

	17. Intel Core i7 Generational Performance (cont.)
Up to 54% faster CPU cycles rendering performance **Up to 54% better Cinebench 2024 multi core performance** **Up to 60% faster Toon Shader Arnold Render performance** **Up to 63% better multi-frame rendering performance** **Full Configurations:**	**Blender Benchmark** Blender 3.5 This benchmark measures CPU cycles rendering performance through several production files. The benchmark can be accessed from: opendata.blender.org/ **Maxon Cinebench 2024 – Multi Core Score / Single Core Score** R24 Maxon Cinebench is an industry-standard benchmarking software based on the cutting-edge technology that makes Maxon One the preferred choice of professionals. The benchmark can be accessed from: www.maxon.net/en/downloads/cinebench-2024-downloads **Autodesk® 3ds Max Toon Shader with Arnold Render Workload** Autodesk® 3DS Max 2024 - 26.0.0.940 This workflow measures how long it takes in seconds to 'Render Production' of Toon Shader stylized scene in 3ds Max using the Arnold renderer. The render is in 'Production Rendering Mode'. The renderer is Arnold. The output size dimensions are 3840X2160. **Adobe After Effects Multi-Frame Rendering Workload** Adobe After Effects - 22.3.0 This workload measures the time in seconds that it takes Adobe After Effects to render a project with multi-frame rendering enabled. The workload is from Adobe and is named "AEPulseBenchmark."

	**21. The World's Best Desktop Experience for Enthusiasts**
55. The World's Best Desktop Experience for Enthusiasts	See Claim 3
56. Up to 23% better gaming performance	As measured by Starfield on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X3D processor
Up to 23% better gaming performance **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Z790 Apex; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Motherboard BIOS version: 1203; Power Scheme: High Performance Processor: AMD Ryzen™ 9 7950X3D processor 120W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13 Motherboard BIOS version: 1602; Power Scheme: Balanced Testing as of: October 1, 2023
57. Up to 54% Faster Creator Workflow	As measured by Multitasking content creation workflow on Intel® Core™ 14th Gen i9-14900K processor vs. AMD Ryzen 9 7950X processor **Multitasking Creator Workflow:** Workflow description for the above performance claim: As measured by Comparing the Intel® Core™ 14th Gen i9- 14900K processor against the AMD Ryzen 9 7950X processor using the following operations: 1. In the foreground, the creator leverages Adobe After Effects' Detail-preserving Upscale effect on 4K video to upscale to 8K and then pre-renders this video at high quality. The time to complete this pre-render will later be measured in seconds. The creator then moves Adobe After Effects to the background, allocating this task to the Efficient cores. 2. Adobe Premiere Pro is then brought to the foreground, which features 8K 4:2:2 10-bit 29.97fps video in the timeline sequence. 3. For the foreground task, the creator completes a 16:9 "Fast Motion" Auto Reframe on the timeline sequence, with the time to complete the Auto Reframe measured in seconds. 4. During the Auto Reframe task, Intel® UHD Graphics 770 completes the decode of the timeline sequence, a software enablement which competition does not have. Because competition does not have this software enablement, decode is executed on the CPU and dGPU throughout the workflow. 5. The resulting 16:9 timeline sequence is then played back at full resolution – upon confirming Auto Reframe functionality, the creator then shifts focus to the background task, bringing Adobe After Effects into the foreground. 6. The pre-rendering of the upscaled video is then completed, with the time to complete measured in seconds.
Up to 54% Faster Creator Workflow **Full Configurations:**	Processor: Intel® Core™ 14th Gen i9-14900K processor PL1 set to 253W TDP, 24C32T (8P + 16E); Motherboard: ROG Maximus Hero Z790; Memory: G.Skill DDR5 CL 28-34-34-89, 2X 16GB DDR5-5600MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Integrated graphics: Intel® UHD Graphics 770; Graphics driver: 101.4676; Motherboard BIOS version: 1303; Power Scheme: High Performance Processor: AMD Ryzen™ 9 7950X processor 105W TDP, 16C32T, Motherboard: ROG Crosshair x670E Hero; Memory: G. Skill Non-Expo DDR5 CL 28-34-34-89, 2X 16GB DDR5-5200 MT/s; Storage: Samsung 980 Pro 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2215; Graphics card: NVIDIA RTX 4090; Graphics driver: 537.13; Integrated graphics: AMD Radeon™ Graphics; Graphics driver: 31.0.22011.4008; Motherboard BIOS version: 1602; Power Scheme: High Performance Testing as of October 01, 2023

Demos	Descriptions
Overclocking	Preview of a new feature built into the Intel(r) Extreme Tuning Utility (XTU) called AI Assist. The program will characterize system performance and power metrics to recommend the most optimal settings for overclocking the processor. AI Assist will display recommendations of settings to tune after about 35 seconds of characterization, which uses machine learning and is trained on hundreds of processors for the model. On the demo system, it recommended up to 200Mhz of frequency for the All-Core-Turbo speed. With just one click, the settings are applied.
Game, Stream, Record	Ultimate gaming/streaming experience without interruption. Do more with Intel 14th gen. Game, stream and record without compromise. Experience Total War: Warhammer 3 Mirrors of Madness at Ultra fidelity 1080p graphics without dropping a single frame of streaming OBS in the background to Twitch or YouTube.
Metahuman animator and Inworld AI Character Creation	Bring your digital character to life with the Metahuman animation tool. This feature in Epic's Unreal Engine 5 allows for sophisticated facial animations without the need of a full studio to animate. With captured video interview of a person with depth data (iPhone 12 Pro, Samsung Galaxy S22 Ultra or similar), Unreal Engine will generate realistic animations based off the video to use in various digital content. Once your Metahuman is finish with animation, we've paired with In World AI to bring the digital creation to life. You can fully interact with your Metahuman, in this case we brought one of our colleagues Chris into Unreal Engine. We can even ask how much Chris likes this demo.

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Unless otherwise noted, testing as of dates shown in the configurations and may not reflect all publicly available updates. See above for configuration details. No product or component can be absolutely secure.

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Your costs and results may vary.

Intel contributes to the development of benchmarks by participating in, sponsoring, and/or contributing technical support to various benchmarking groups, including the BenchmarkXPRT Development Community administered by Principled Technologies.

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