Notices and Disclaimers

Performance varies by use, configuration and other factors. Learn more at intel.com/performanceindex.
Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.
Your costs and results may vary.
Intel technologies may require enabled hardware, software or service activation.

Some images may have been altered or simulated for illustrative purposes

AI features may require software purchase, subscription or enablement by a software or platform provider, or may have specific configuration or compatibility requirements. Data latency, cost, and privacy advantages refer to non-cloud-based AI apps. Learn more at intel.com/AIPC.

AI playground is only compatible with select Intel Arc GPUs that meet minimum graphics memory requirements. Learn more about AI playground at intel.com/ai-playground

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Intel Arc B-Series Launch Briefing

Tom Petersen Intel Fellow, Client Graphics

Under embargo until December 3, 2024, at 6:00 AM Pacific Time

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The Modern Gaming Experience for Millions of Gamers

GPUs for Graphics Cards

GPUs for Laptops

GPUs for Gaming Handhelds

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intel ARC B-Series

Modern Gaming Features

Best-in-Class Performance per Dollar

AI Acceleration

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As of November 2024 among discrete graphics priced under $300 USD, based gaming performance averaged over 40+ games

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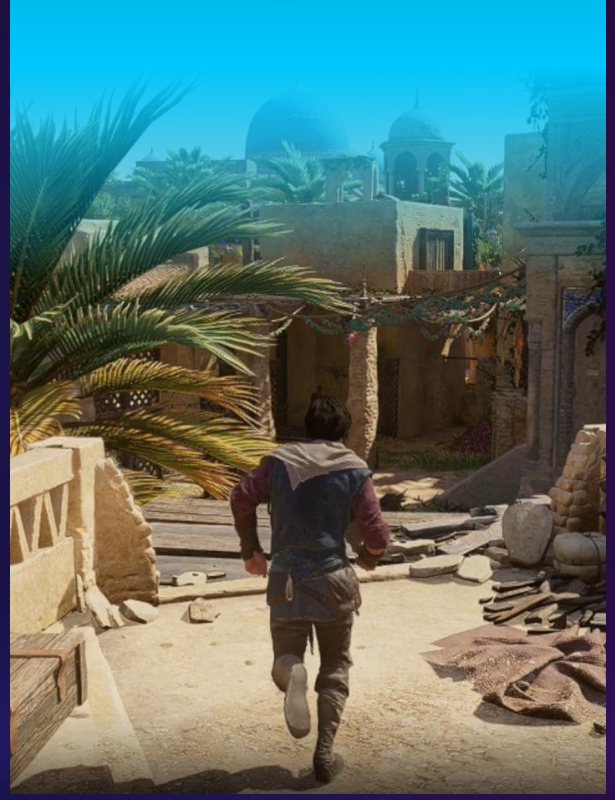
Performance varies by use, configuration, and other factors. See backup for details.

The Modern Gaming Experience

More Realistic Lighting

Highly Detailed Graphics



1440p Ultra Gaming

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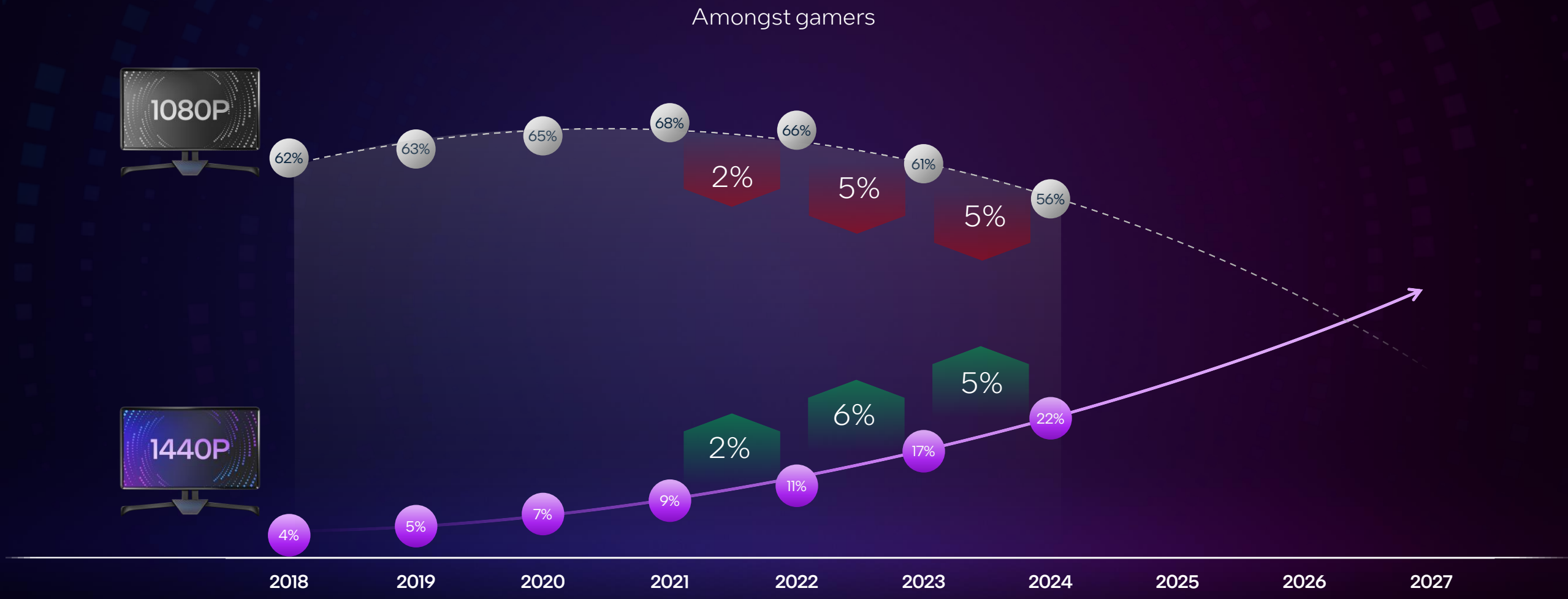
1440p fastest growing resolution



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Steam Hardware Survey Data as of Sept 2024

Xe2 and BMG-G21 SoC Architecture

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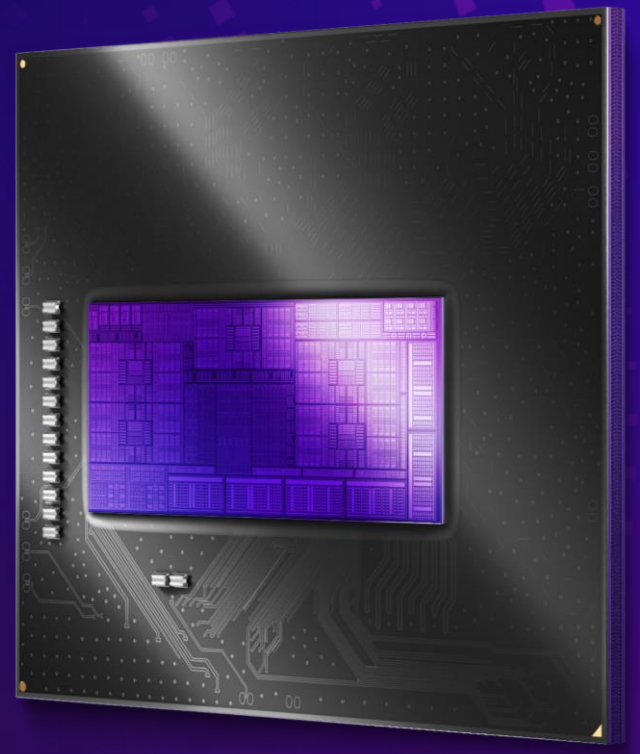
Xe2



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Xe

- First time scaling the engine
- Building the software stack

Efficiency

Xe2

- Higher utilization
- Improved work distribution
- Less SW Overhead

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Continuous Software Improvements

50+

Drivers since Launch

120+

New Games Supported with Day-0 Drivers

2.5x

Game Coverage

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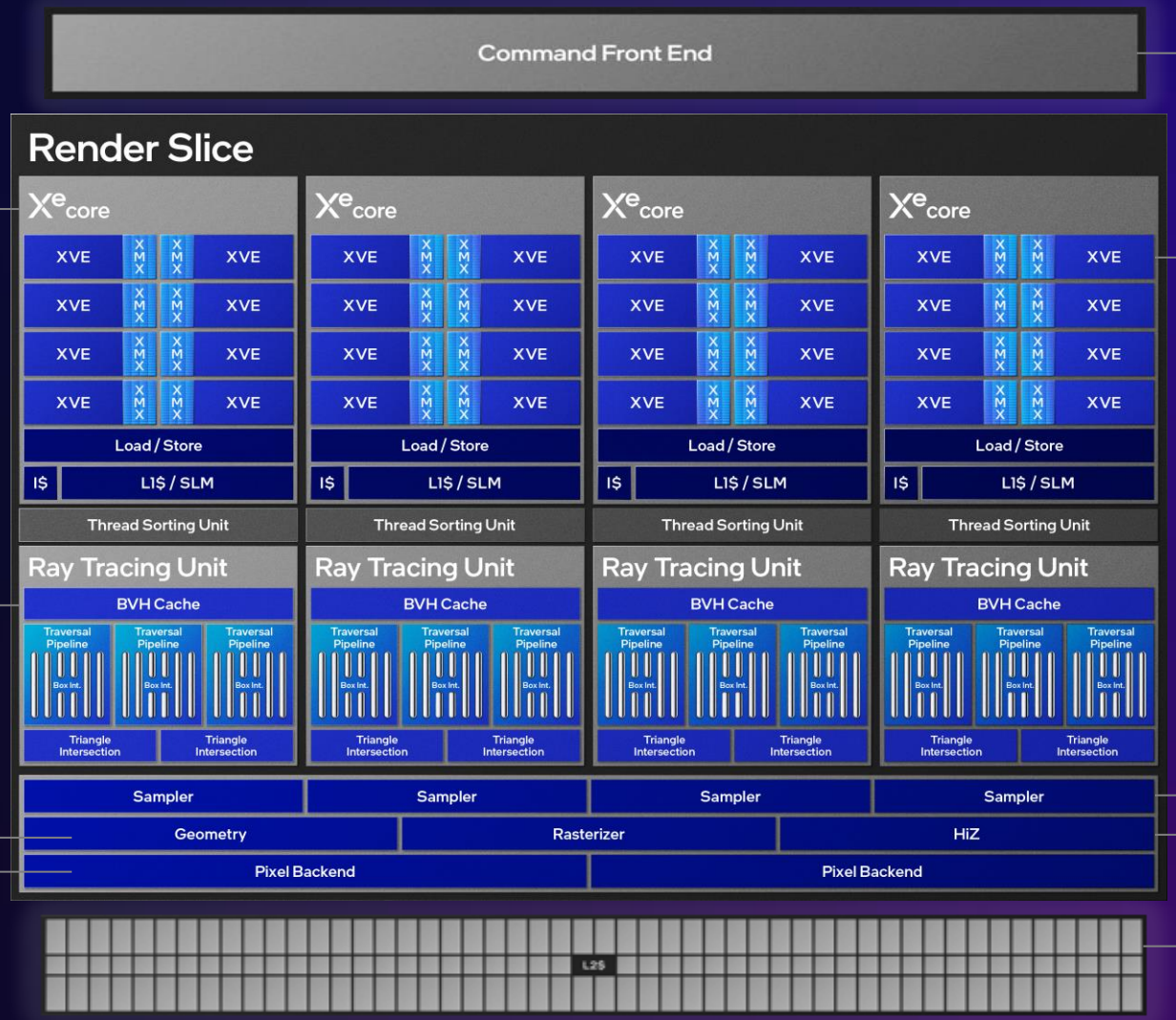
Xe2 Render Slice

Deep micro and macro **analysis** of all graphics acceleration functions

Optimized to reduce latency, remove stalls and improve HW/SW handshake



Native Support for Execute Indirect

Native SIMD16 ALUs
4-deep XMX

Out of Order Sampling
2x Throughput without Filtering
Programmable Offsets

50% more HiZ/Z/Stencil cache
Earlier HiZ Culling for small primitives

8:N Compression
Fast Clear for sub-resources

Significant increased in Performance per core

3 Traversal Pipelines
18 Box Intersections
2 Triangle Intersection

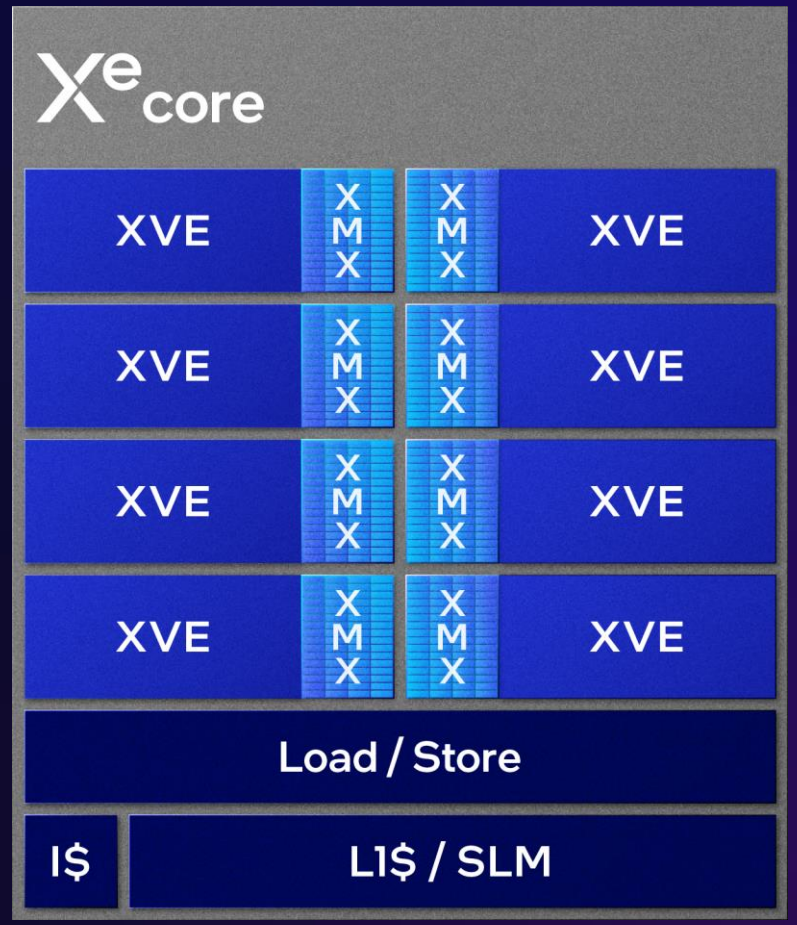
3x Vertex Fetch Throughput
3x Mesh Shading Performance

Up to 2x Blending Throughput
33% more Pixel Color Cache
Render Target Prefetch

2nd GEN

Xe core

Compute resources repartitioned in native SIMD16 engines for increased efficiency



- **8** 512-bit Vector Engines
- **8** 2048-bit XMX Engines
- **64b atomic ops** support
- **256KB** Shared L1$ / SLM — **New**

New

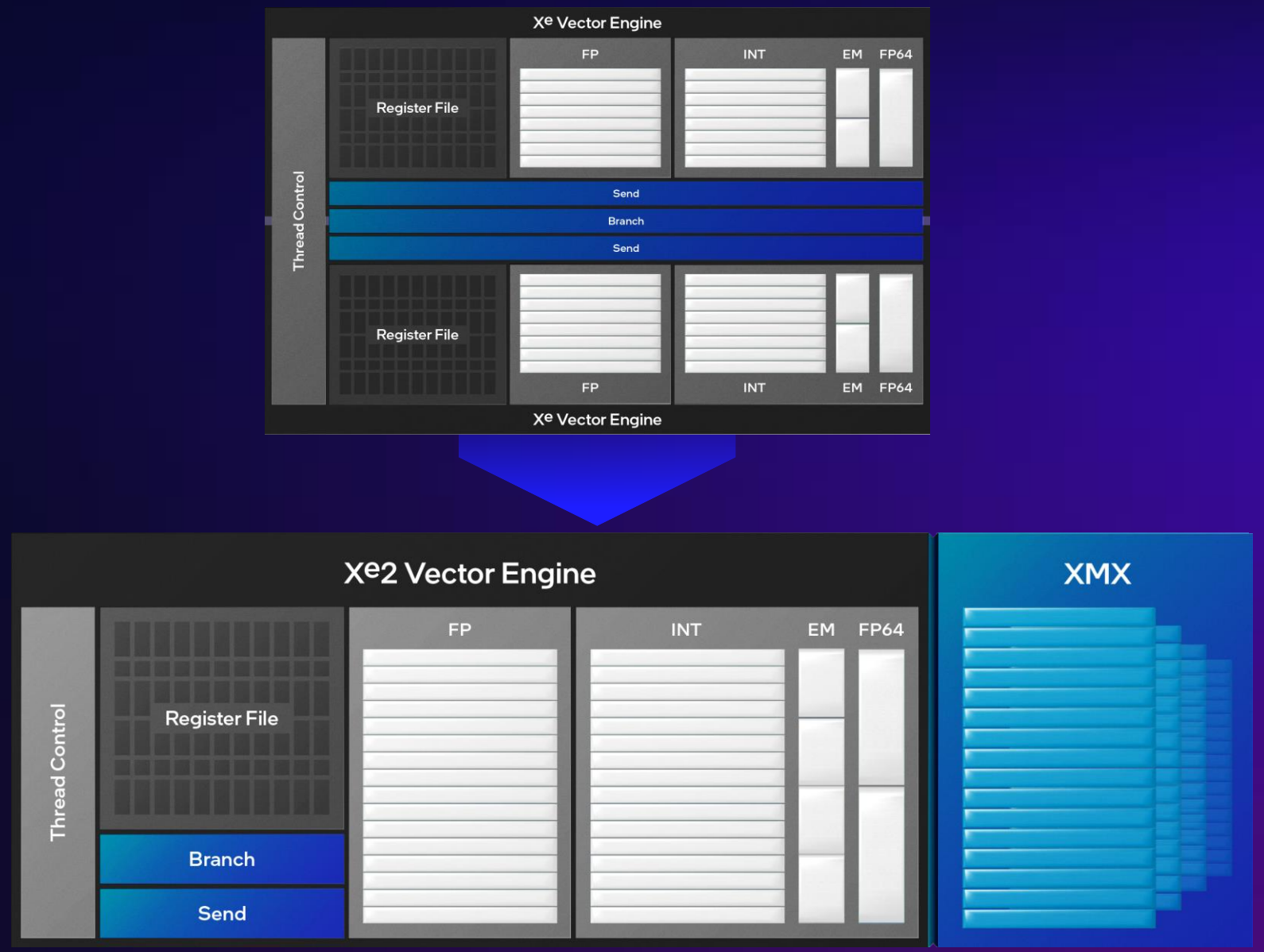
Vector Engine

SIMD16 native ALUs
Support for SIMD16 and SIMD32 ops

Xe matrix extensions
Support for INT2, INT4, INT8, FP16, BF16, TF32

Extended Math and FP64
Transcendentals: SIN, COS, LOG, EXP...

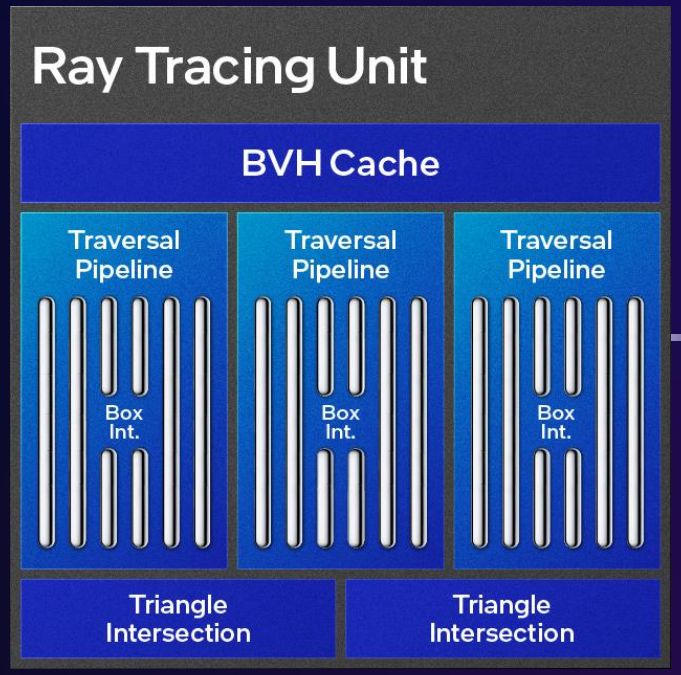
3-way co-issue
FP + INT/EM + XMX



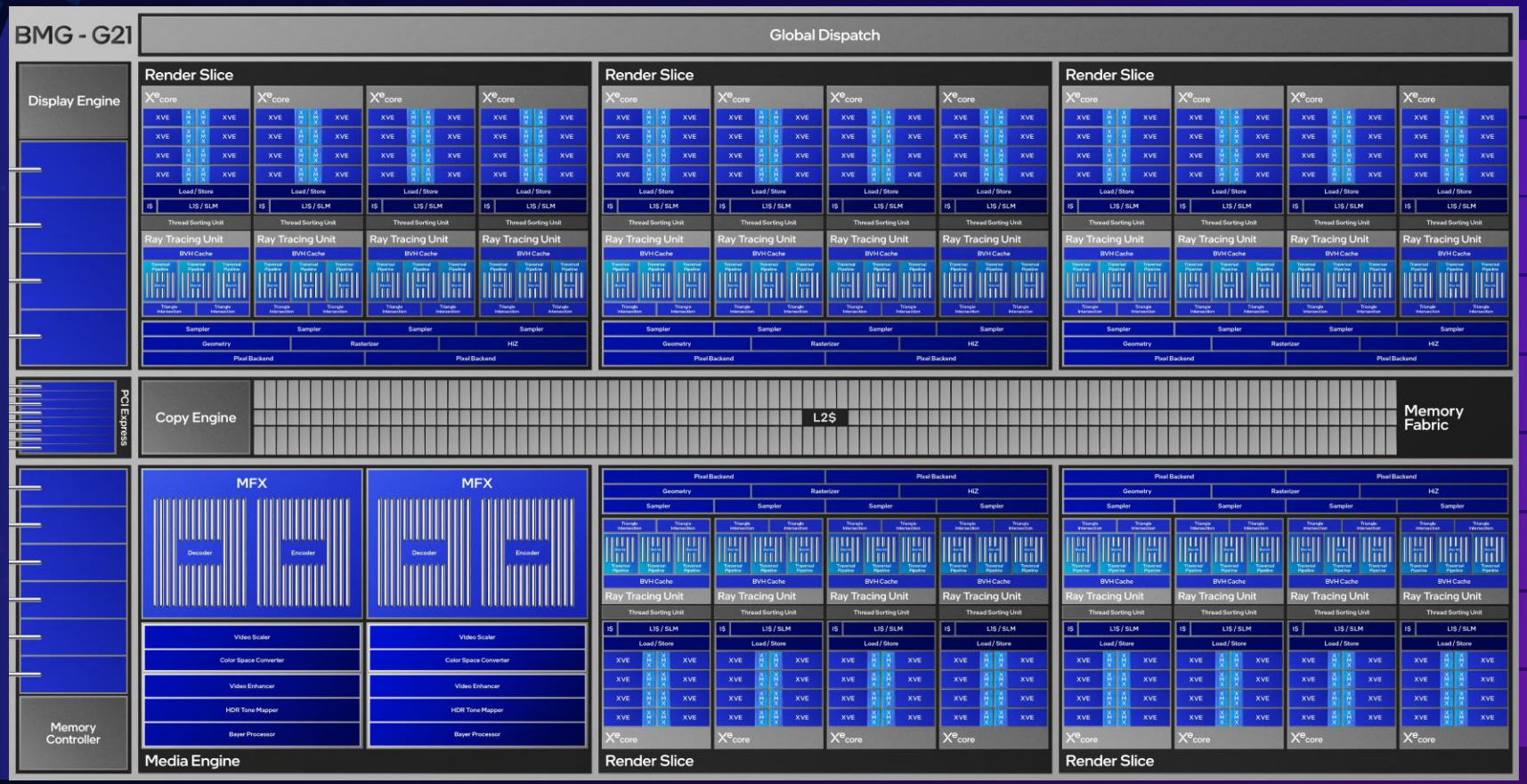
New

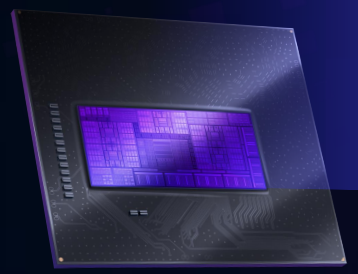
Ray Tracing Unit

3	Traversal pipelines	1.5x
18	Box intersections	1.5x
2	Triangle intersections	2x
16	KB BVH cache	2x



Introducing BMG-G21





- **5** Render Slices
- **20** Xe-cores
- **160** XMX Engines
- **20** Ray Tracing Units
- **20** Texture Samplers
- **10** Pixel Backends
- **18 MB** L2 Cache
- **192**-bit GDDR6
- **2** Multi-Format X-coders

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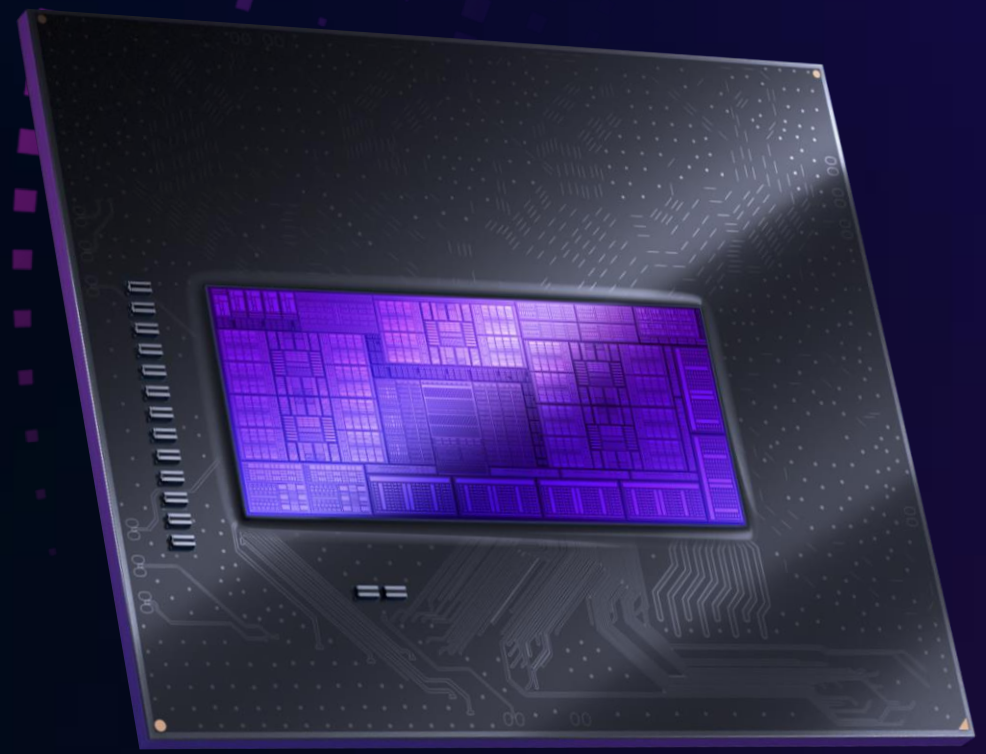

BMG-G21 dGPU with Xe2 architecture

Redesigned for Higher Efficiency

+70%
Performance/ Xe-core

+50%
Performance/ Watt

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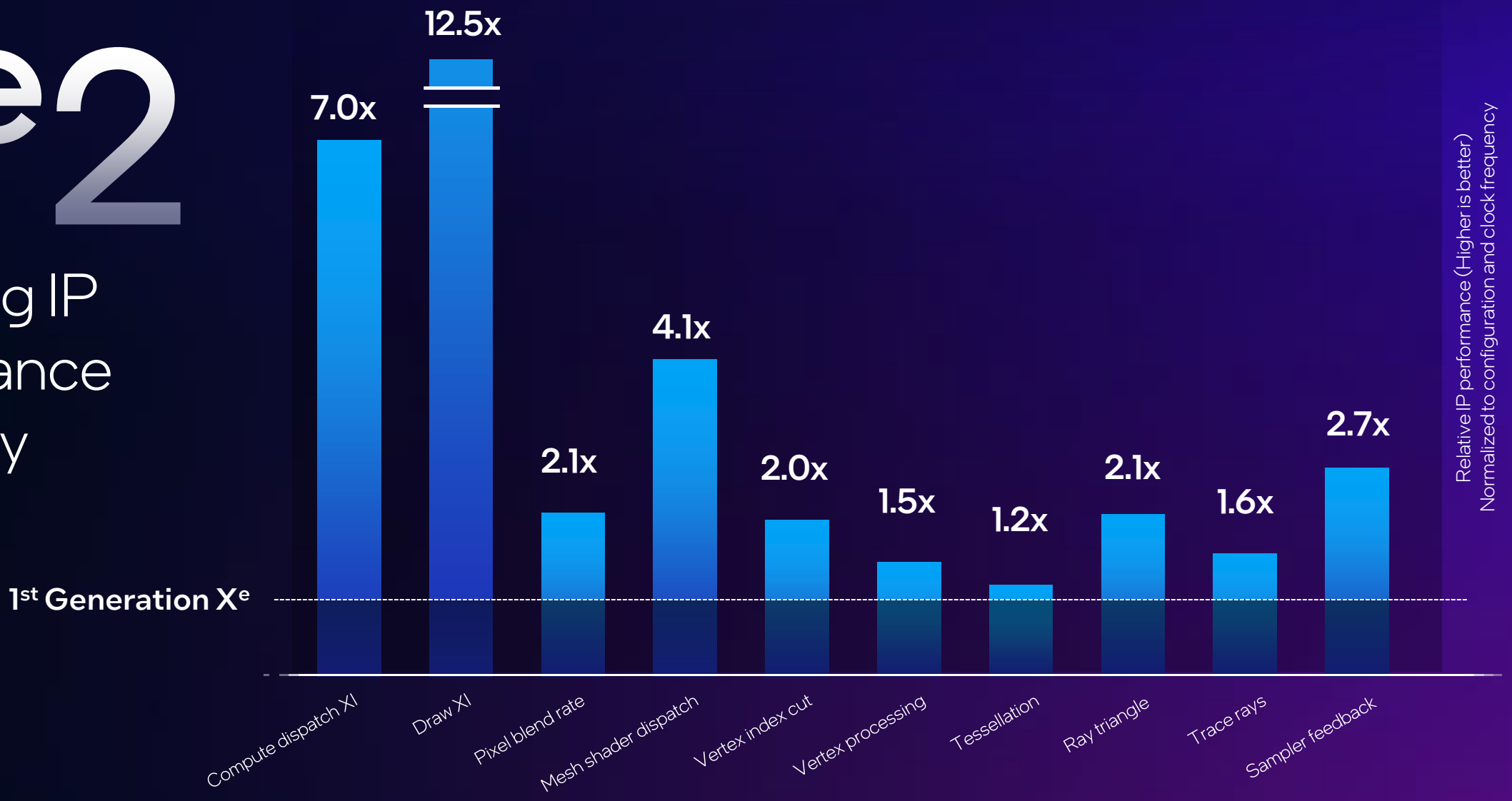
Based on measured performance across 37 games versus prior generation. See backup for workloads and configurations. Results may vary.

Xe2

Improving IP Performance Efficiency

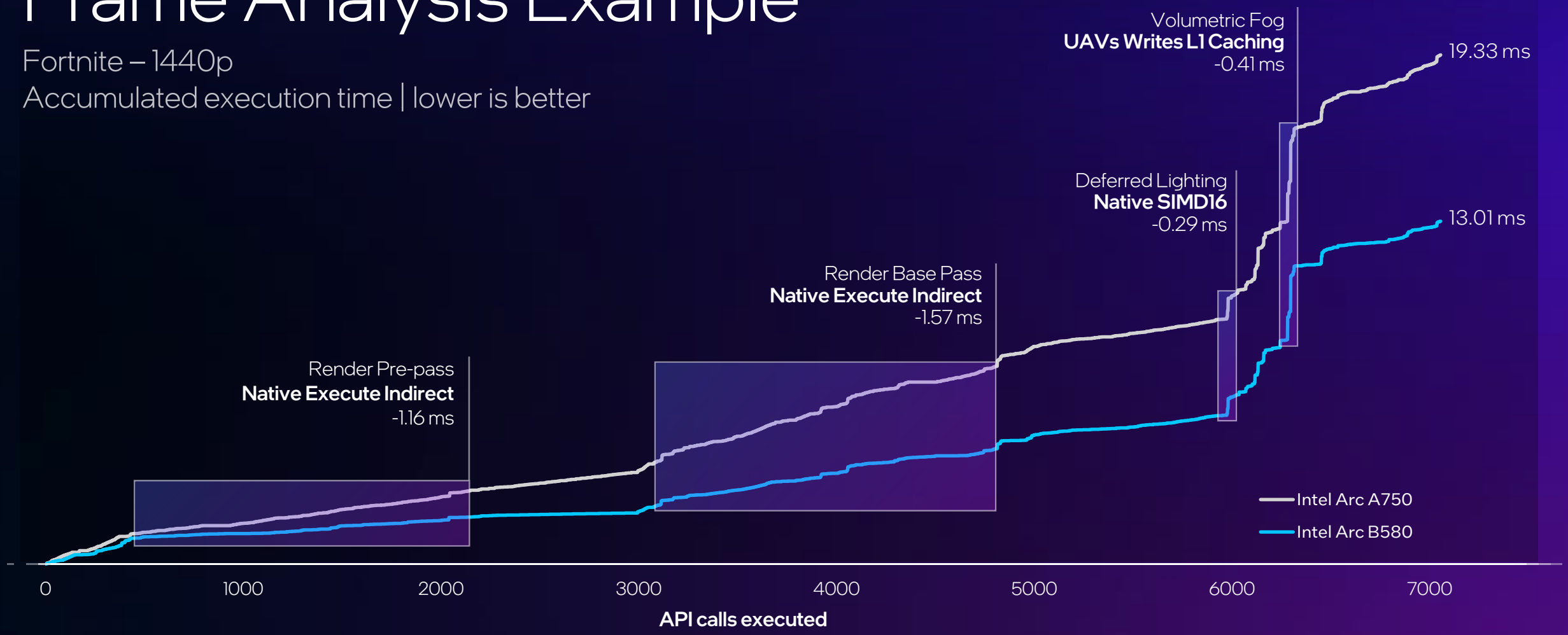


See backup for workloads and configurations. Results may vary.

Xe2 IP Improvements Frame Analysis Example

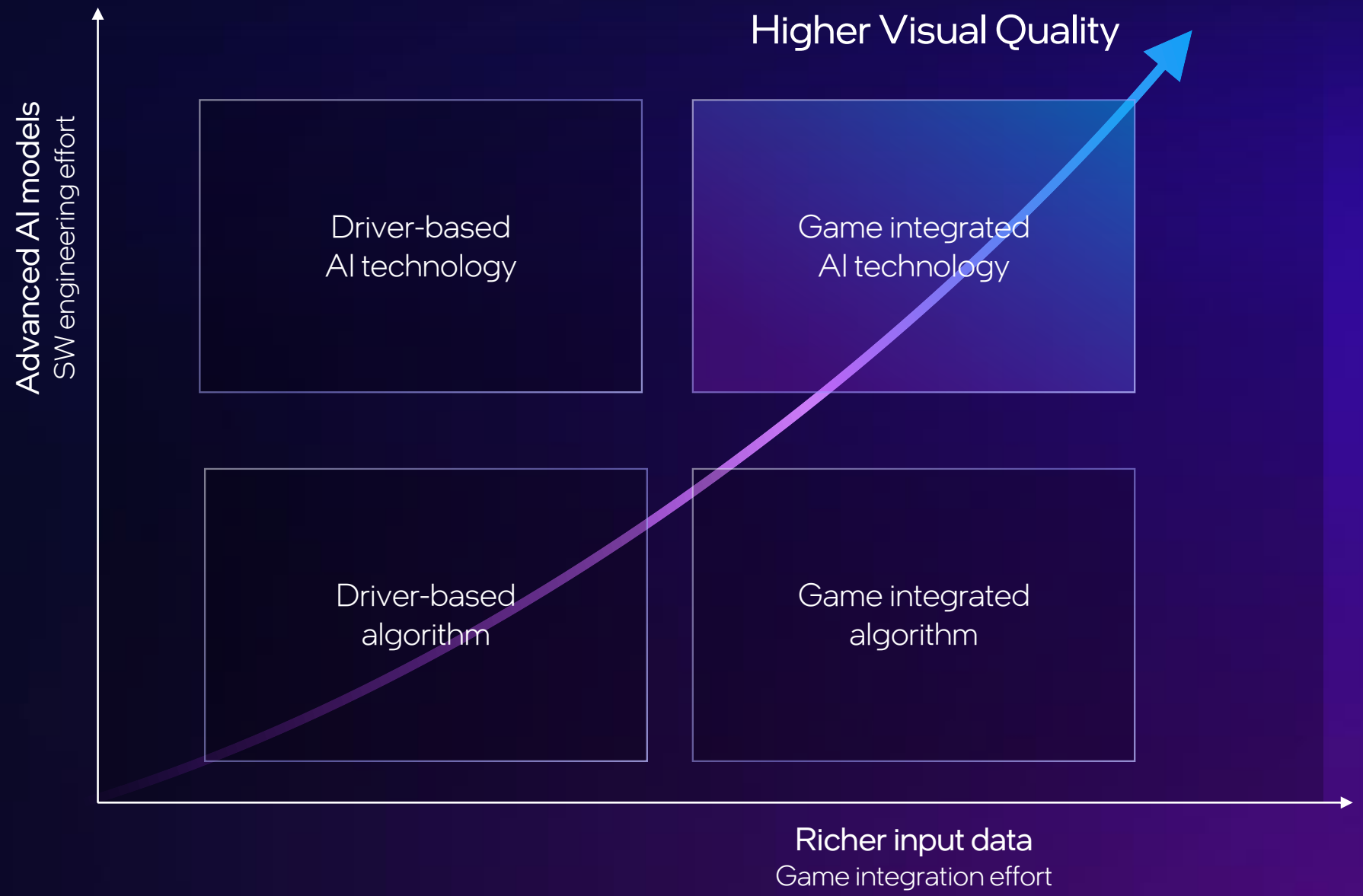
Fortnite – 1440p

Accumulated execution time | lower is better



Modern Rendering for Games

Render Less,
Generate More




XeSS
Intel Xe Super Sampling
Technology
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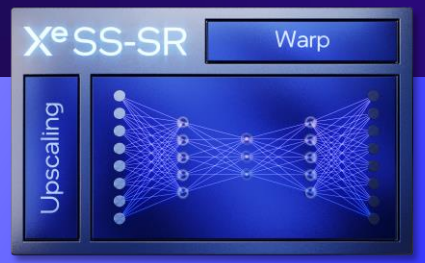
Performance



XeSS
Super Resolution

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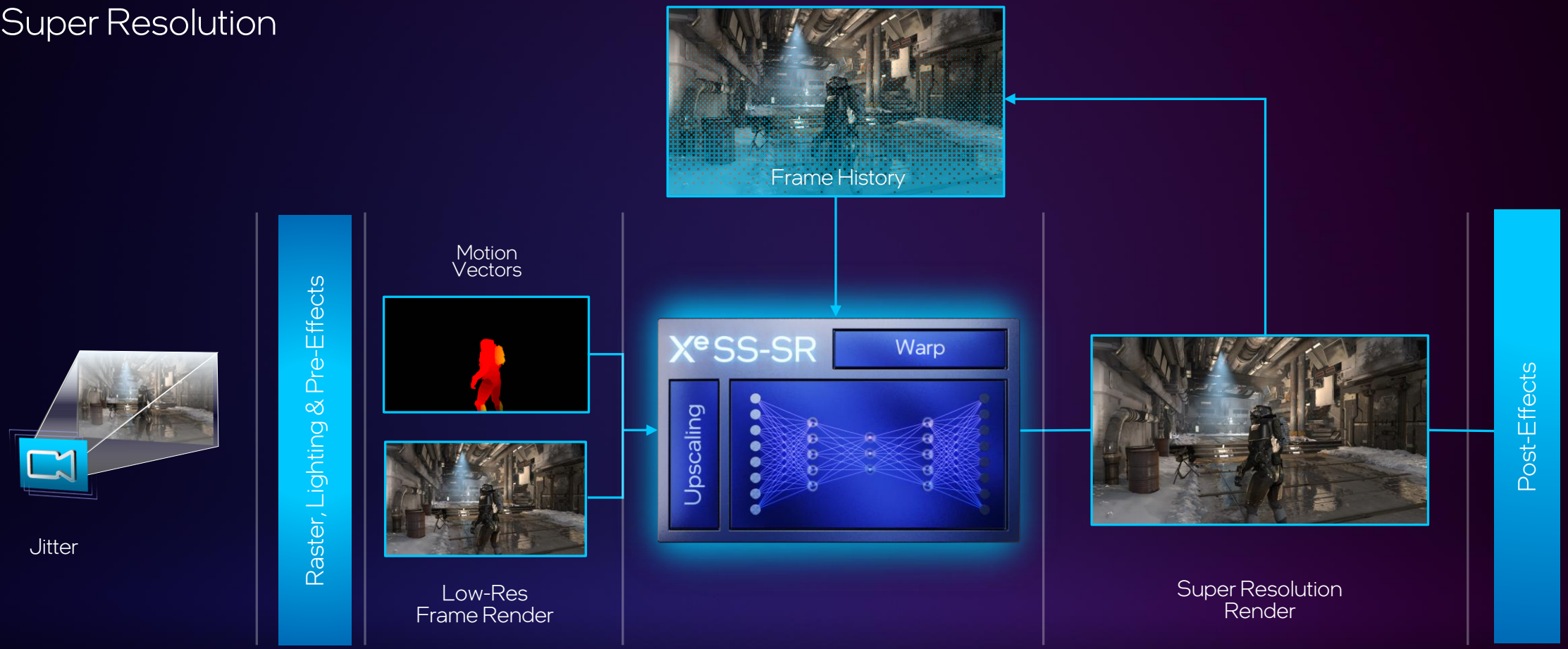
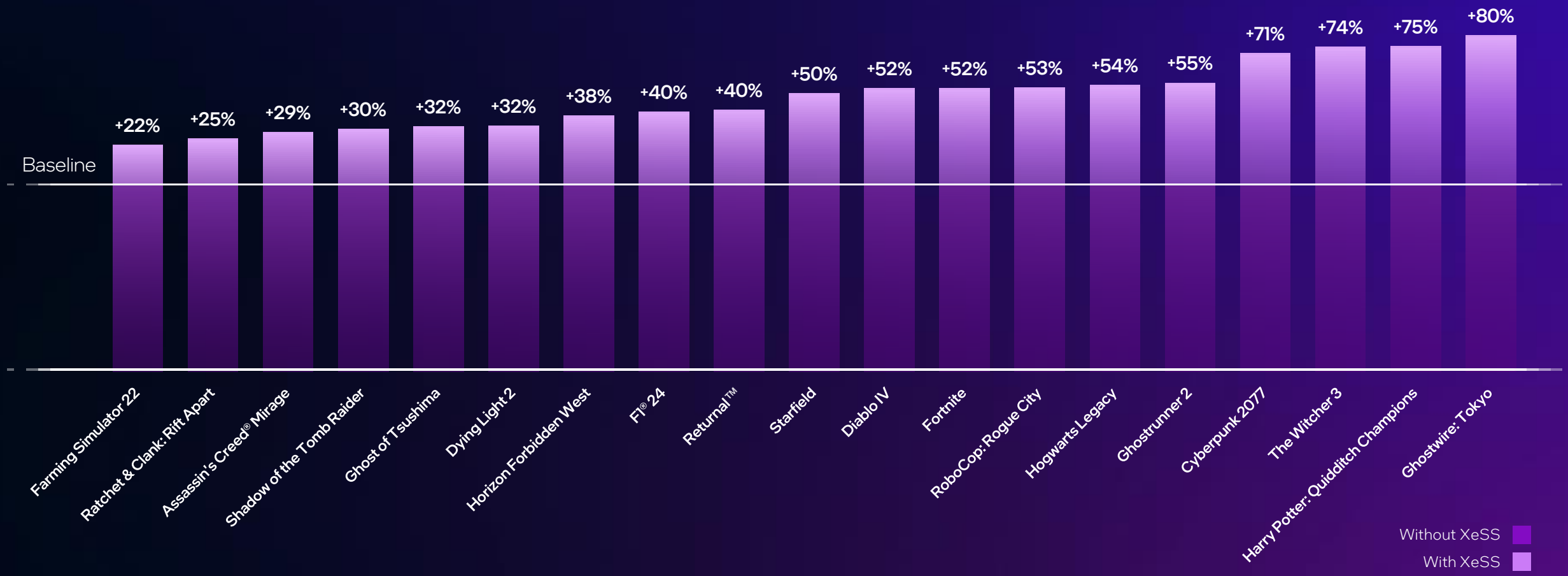
XeSS-SR

Super Resolution



+47% Average Performance with XeSS

Intel® Arc™ B580 Graphics Card | 1440p Ultra | XeSS Performance Mode
FPS | Higher is Better



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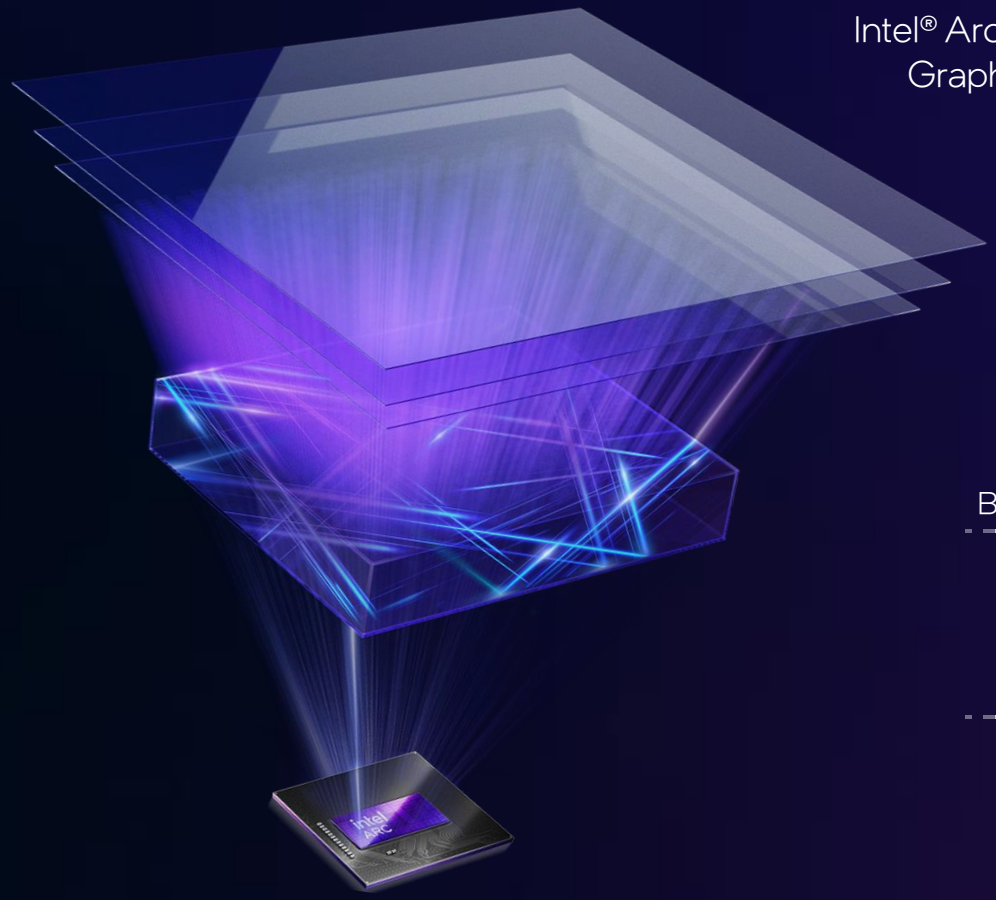
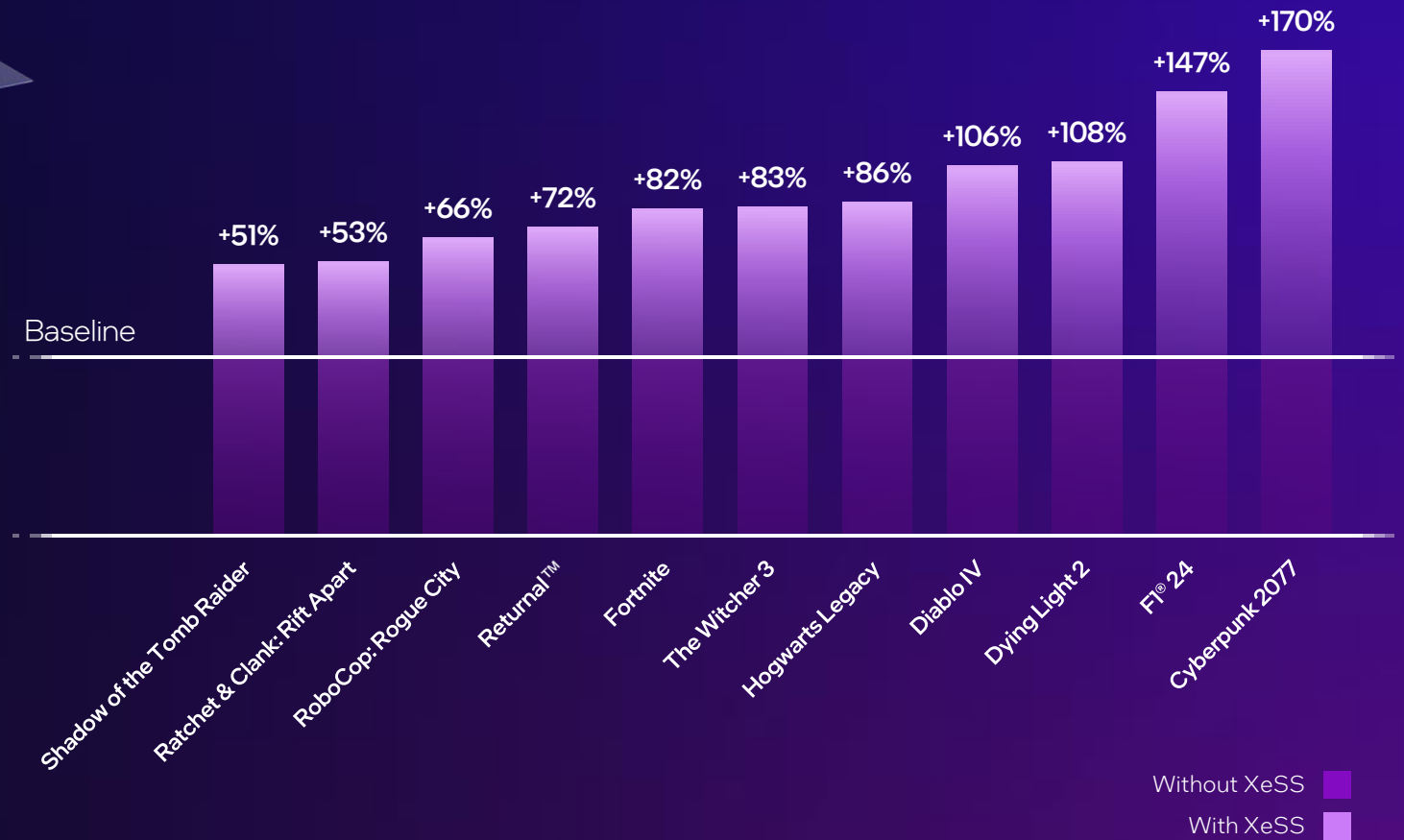
Performance varies by use, configuration, and other factors. See backup for details.

Unlock Ray Tracing with XeSS



Intel® Arc™ B580 Graphics Card | 1440p Ultra | RT Enabled | XeSS Performance Mode
FPS | Higher is Better



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Performance varies by use, configuration, and other factors. See backup for details.

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XeSS Super Resolution Update

Game Engine

XeSS-SR SDK

Application Interface

new

Compute Dispatcher Backend

DirectX® 11 Interface | DirectX® 12 Interface | Vulkan Interface

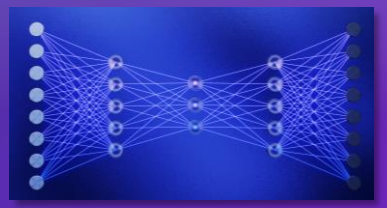
Intel Kernels (Intel® Explicit SIMD)

Discrete GPU XMX | Built-in GPU XMX | Built-in GPU DP4a

Cross-Vendor Compatibility

HLSL SM6.4

XeSS Super Resolution Model



XeSS Super Resolution Lite Model

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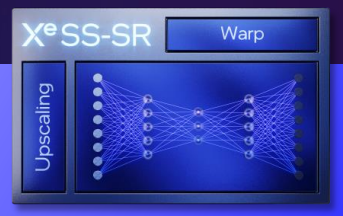
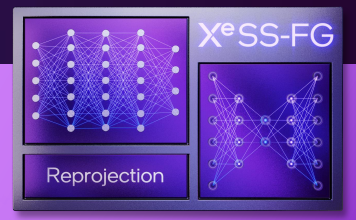
XeSS2

Performance	Smoothness	Responsiveness
		
XeSS Super Resolution	**XeSS** Frame Generation	**Xe** Low Latency

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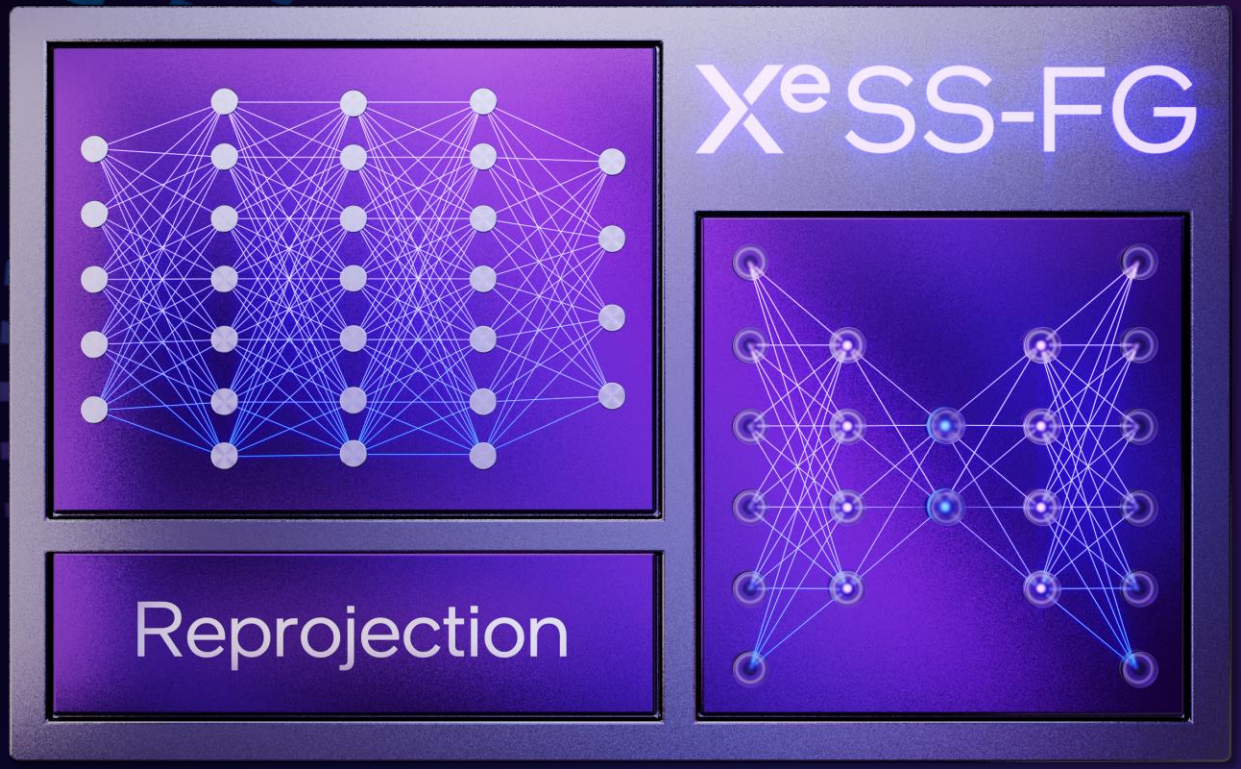


XeSS

Frame Generation

XeSS-FG

Frame Generation

Render & Super Resolution

Full Resolution Frame Renders

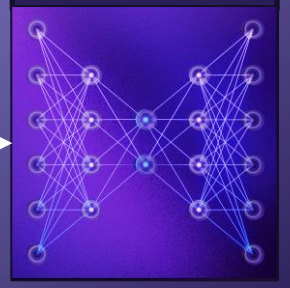
Motion Vectors

Depth

Optical Flow Reprojection

Motion Vector Reprojection

Blend



Interpolated Frame

UI

XeSS-SR

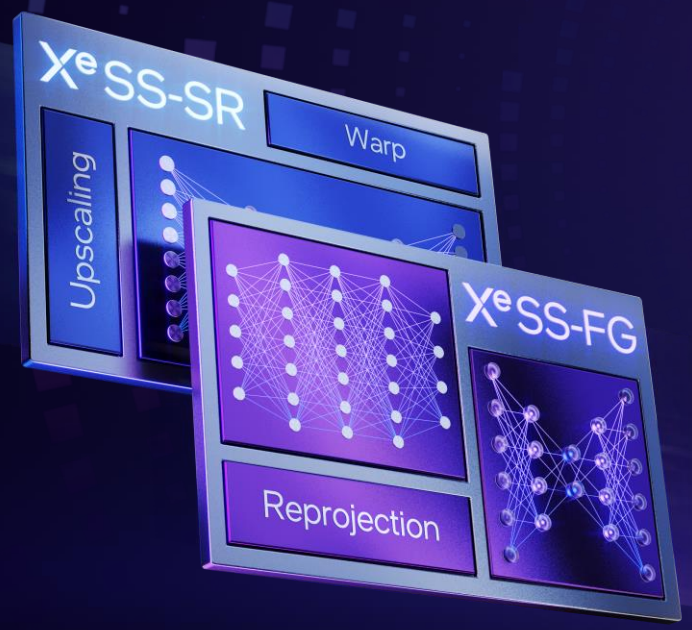
Super Resolution

XeSS-FG

Frame Generation

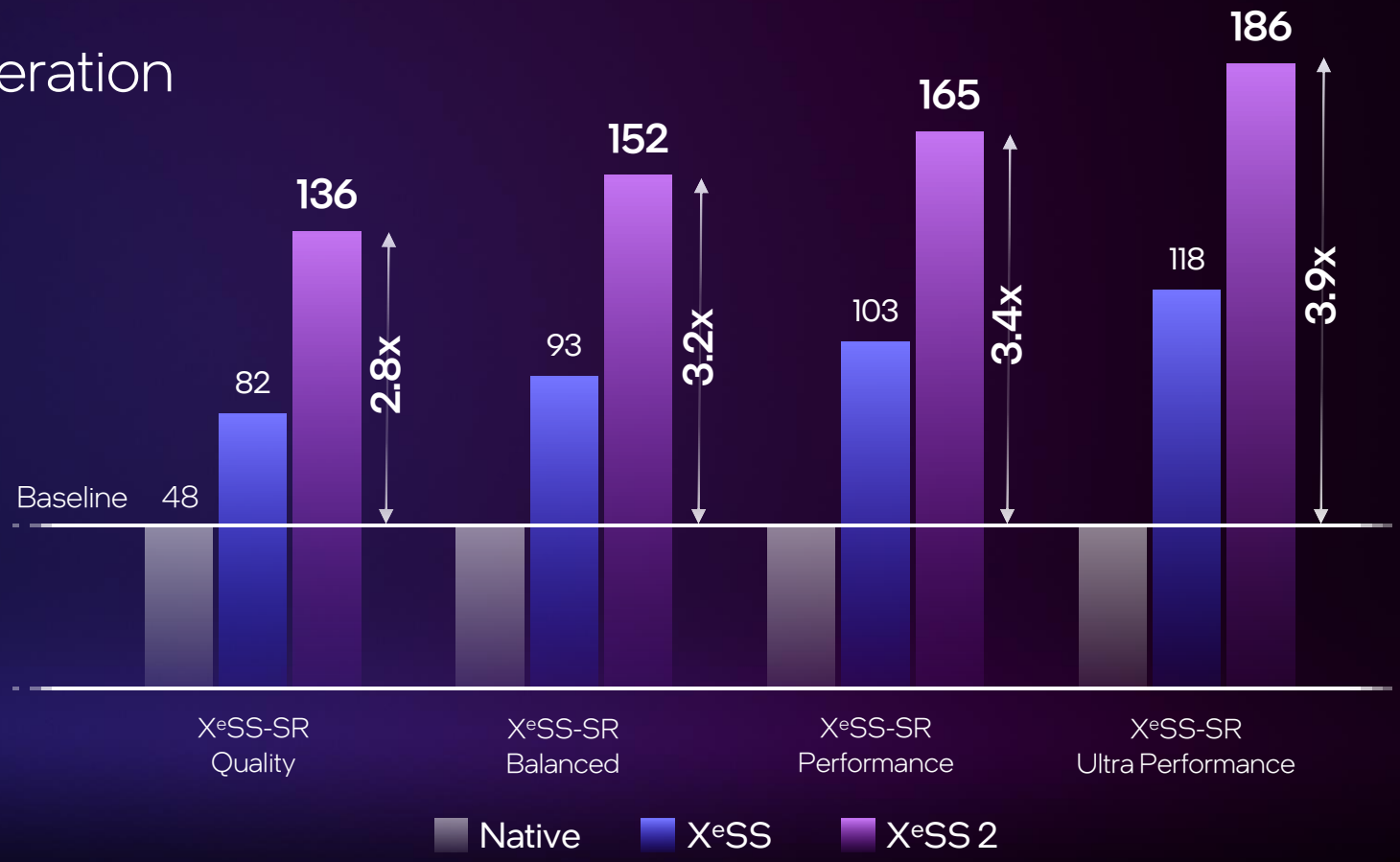
XeSS2

Super Resolution + Frame Generation



F1® 24 Gaming Performance

Intel® Arc™ B-580 Graphics Card | FPS | Higher is Better | 1440p Ultra



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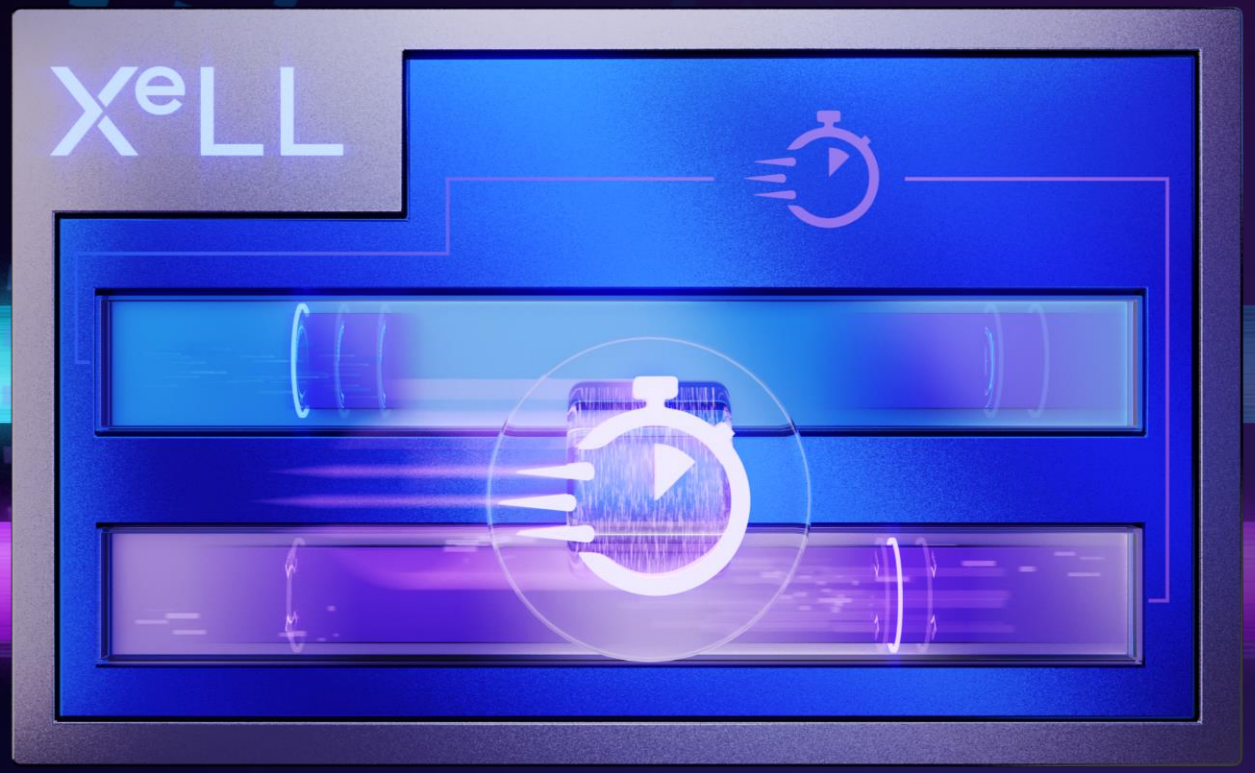
Performance varies by use, configuration, and other factors. See backup for details.



XeLL

Low Latency

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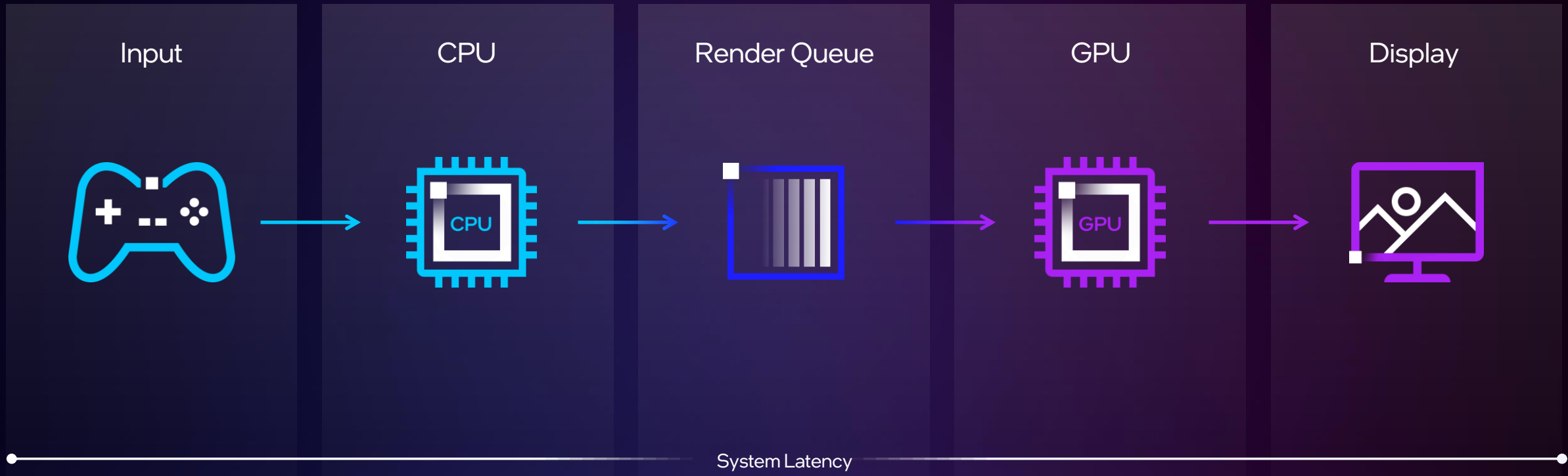
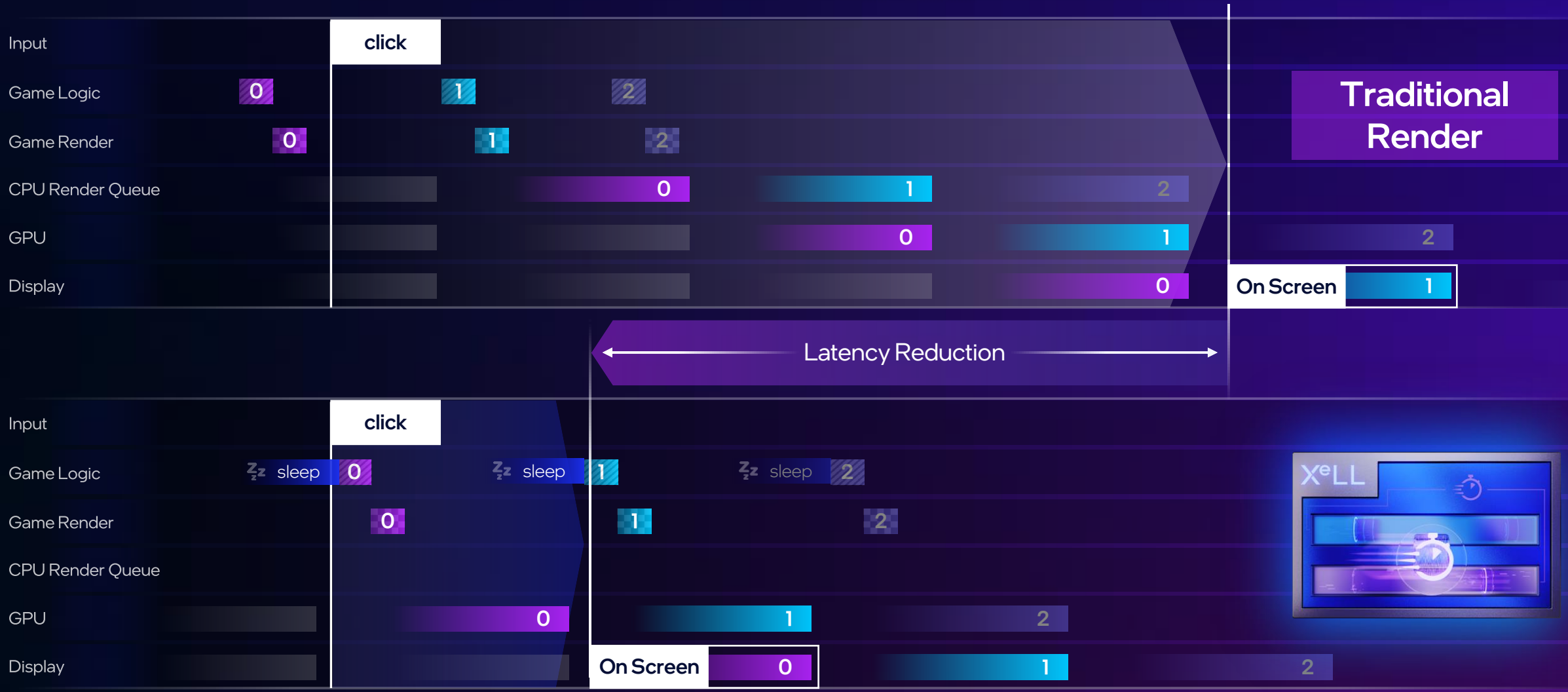
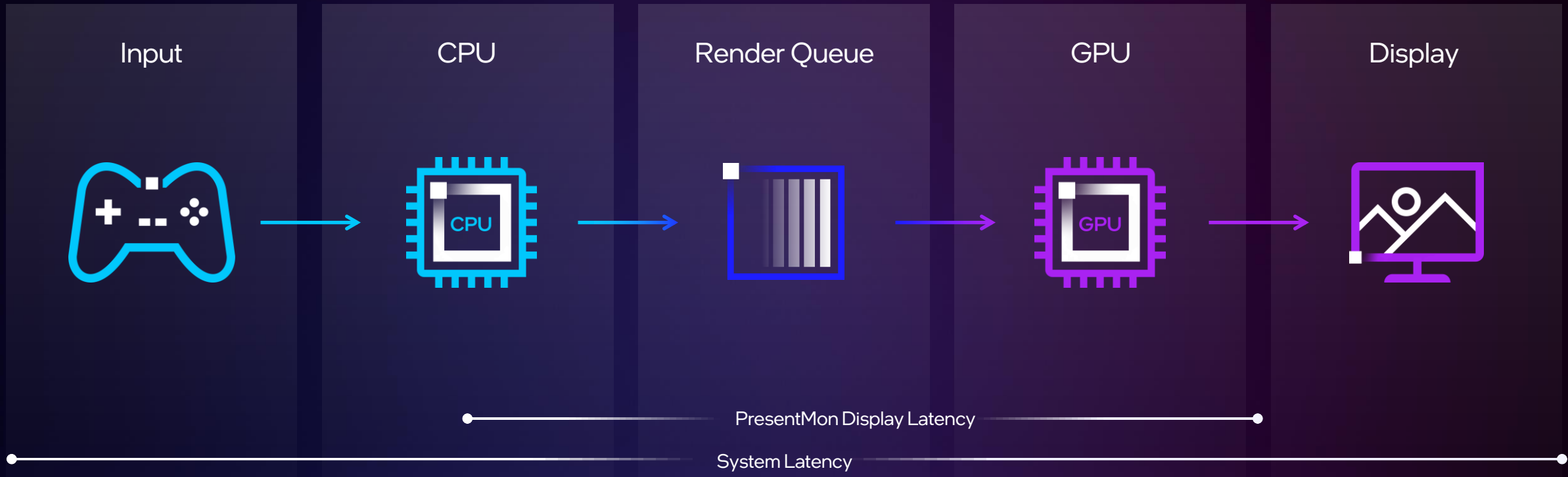
Gaming Latency



Xe Low Latency



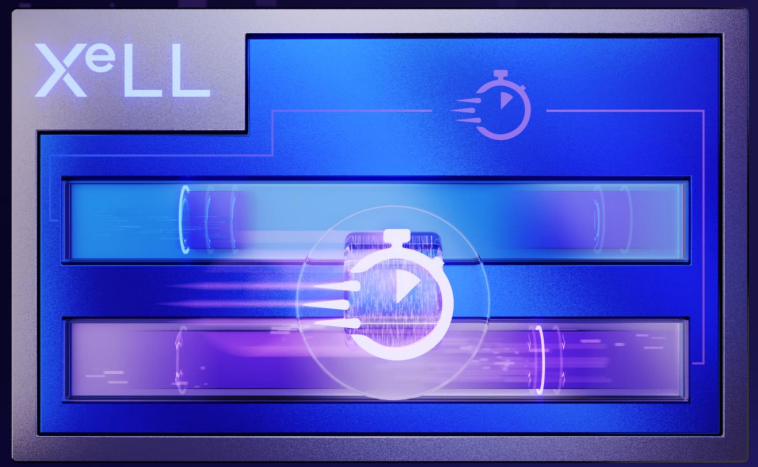
Gaming Latency



Latency Measurement Tool (LMT)

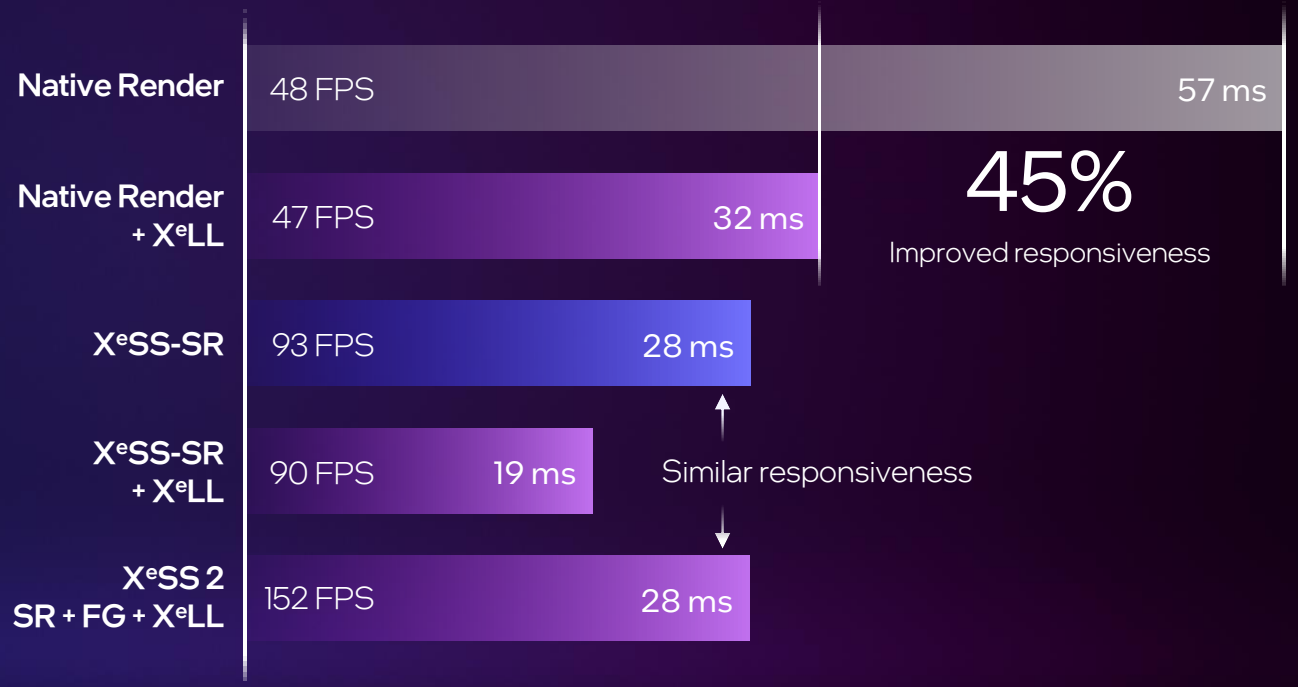
XeLL

Near Instant Reaction

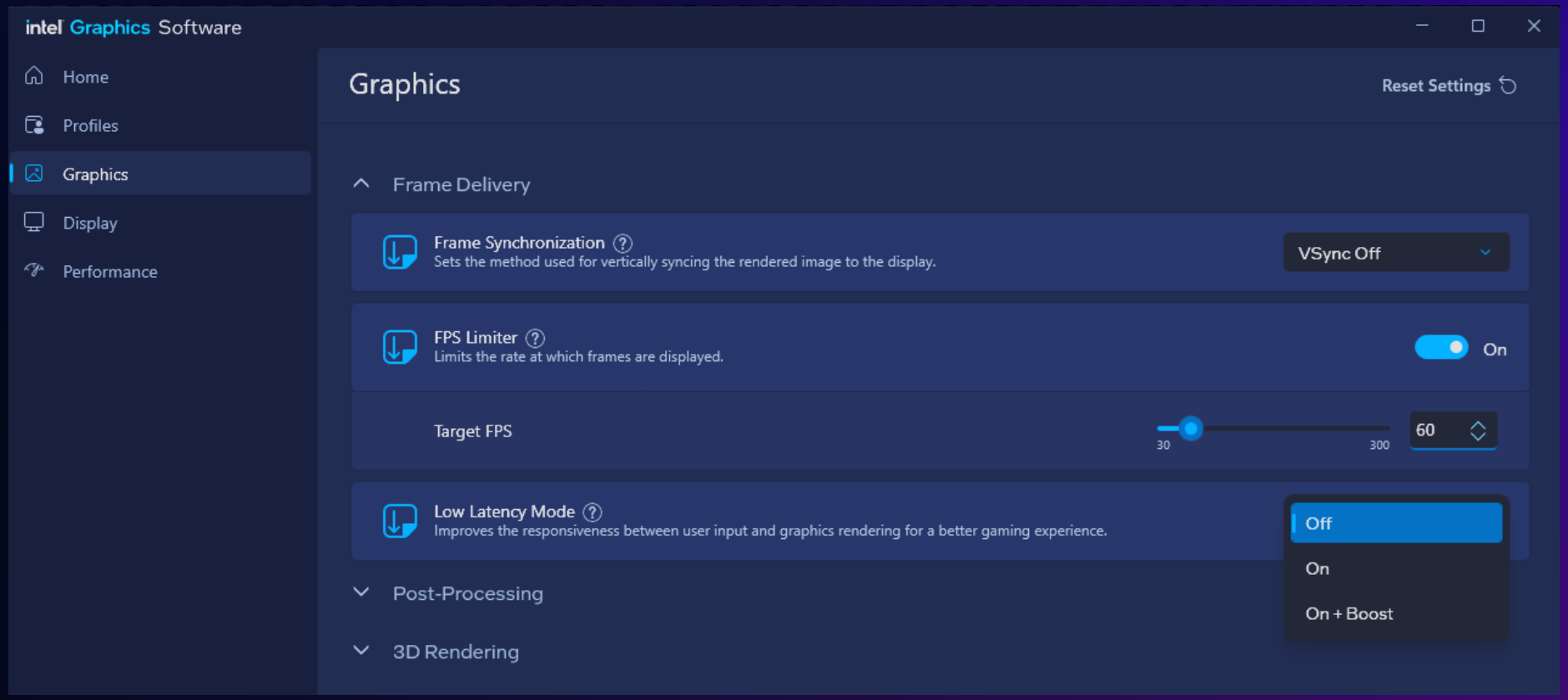


F1® 24 Gaming Responsiveness

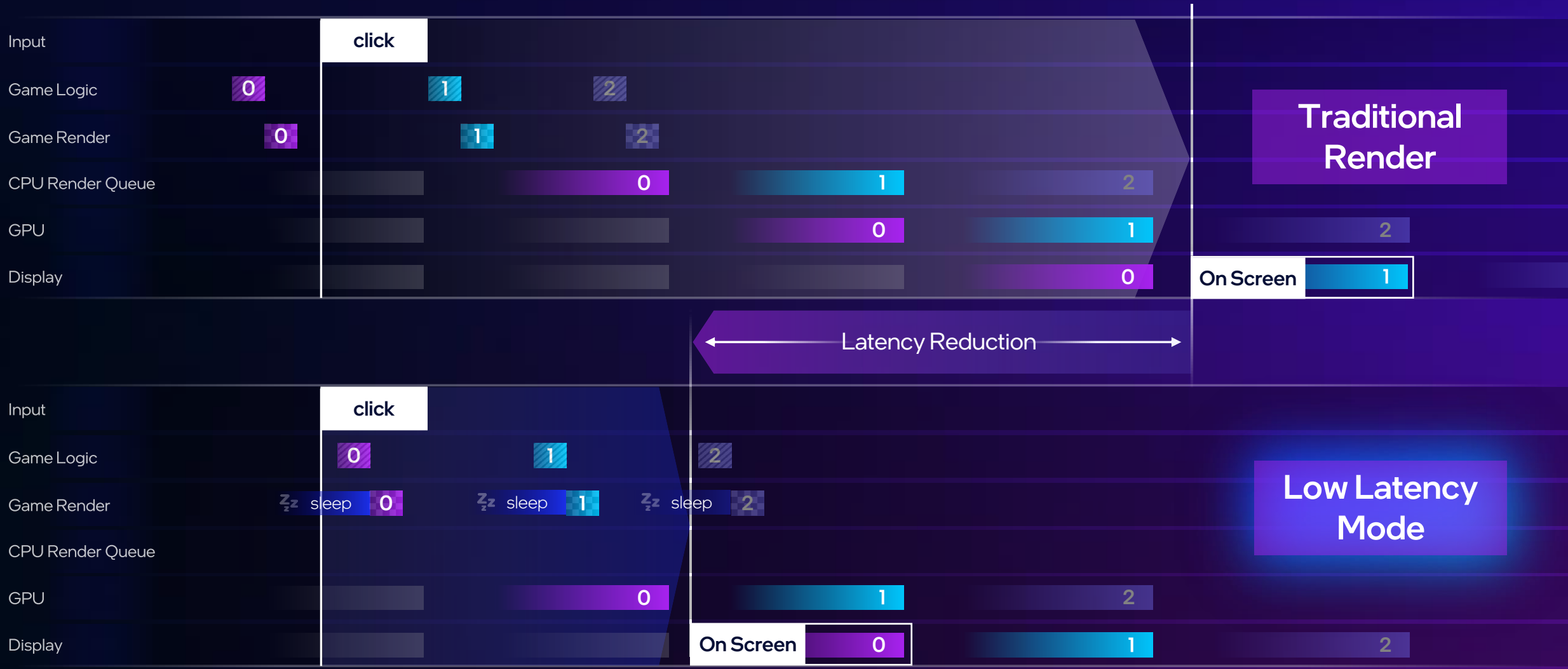
Intel® Arc™ B580 Graphics Card | Display latency | Lower is better
1440p Ultra



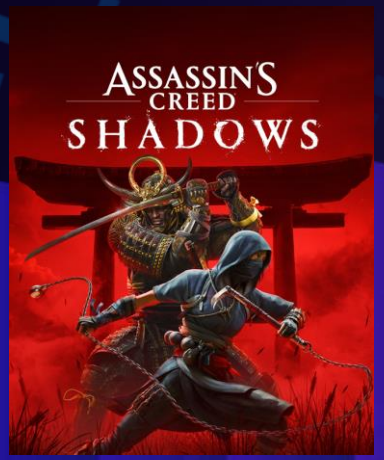
Driver-based Low Latency Mode

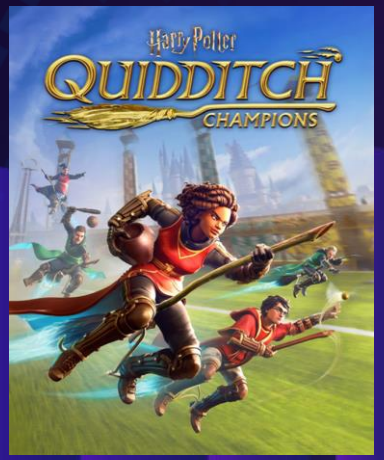


Driver Low Latency Mode



XeSS2





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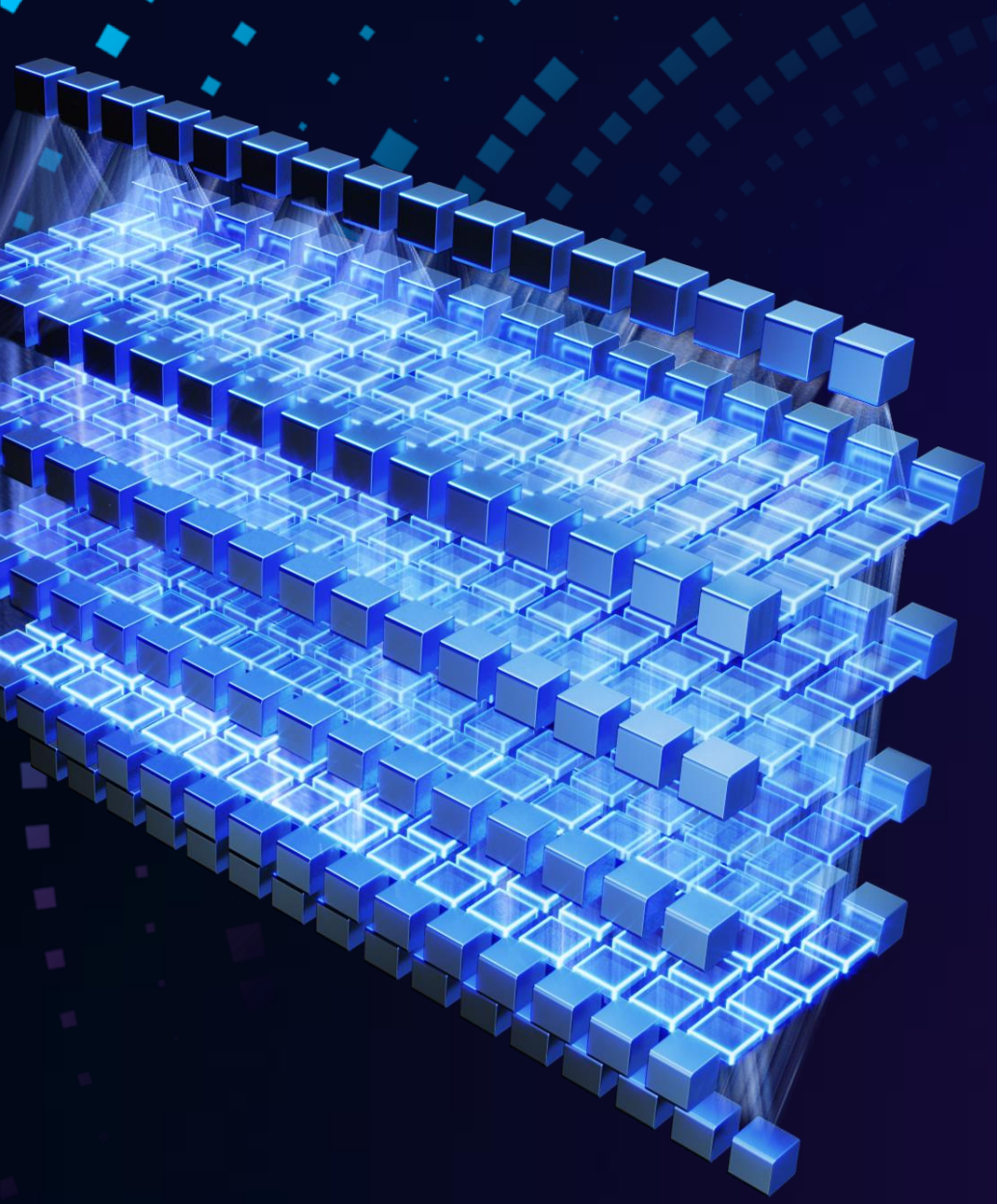

Xe Matrix Extensions

XMX

AI engines

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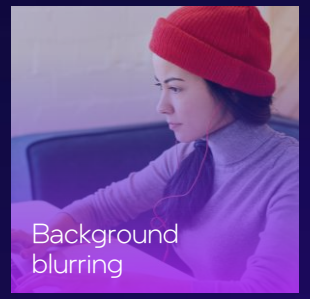
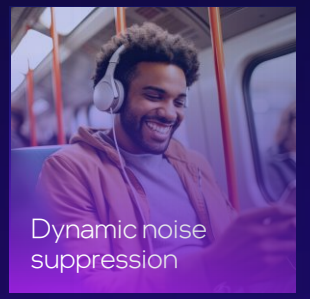
AI Client Workload Trends

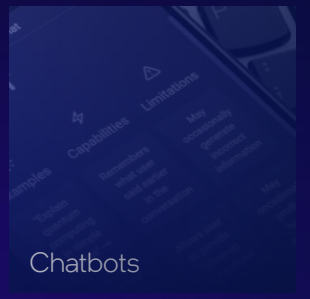
Growing in diversity
From background blurring to gen AI

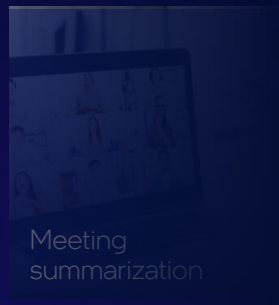
App & OS integration
from features in apps to OS co-pilots

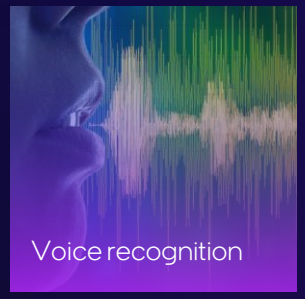
Multi Modal
Transformers and diffusion

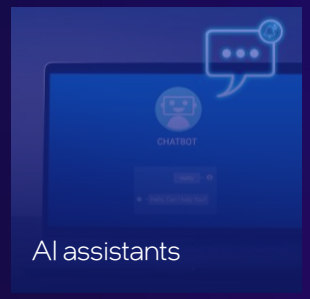


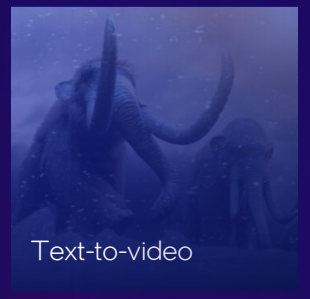


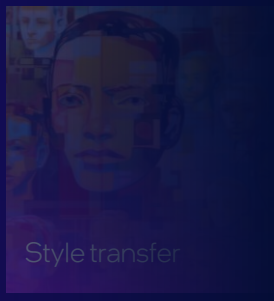


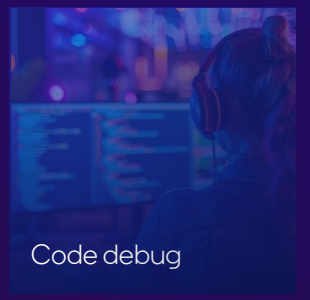


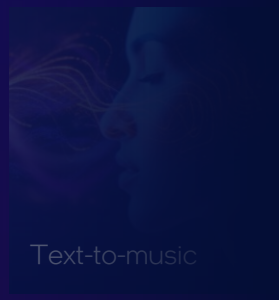


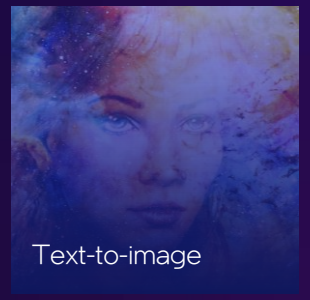


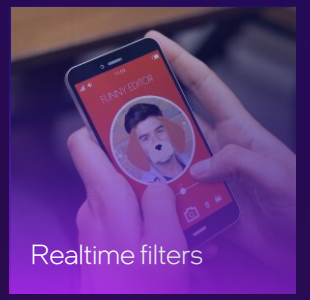


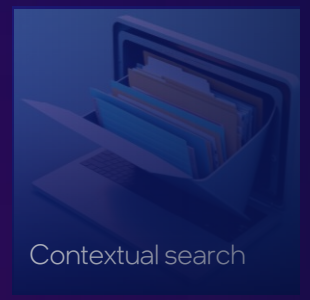


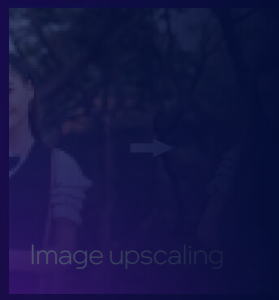












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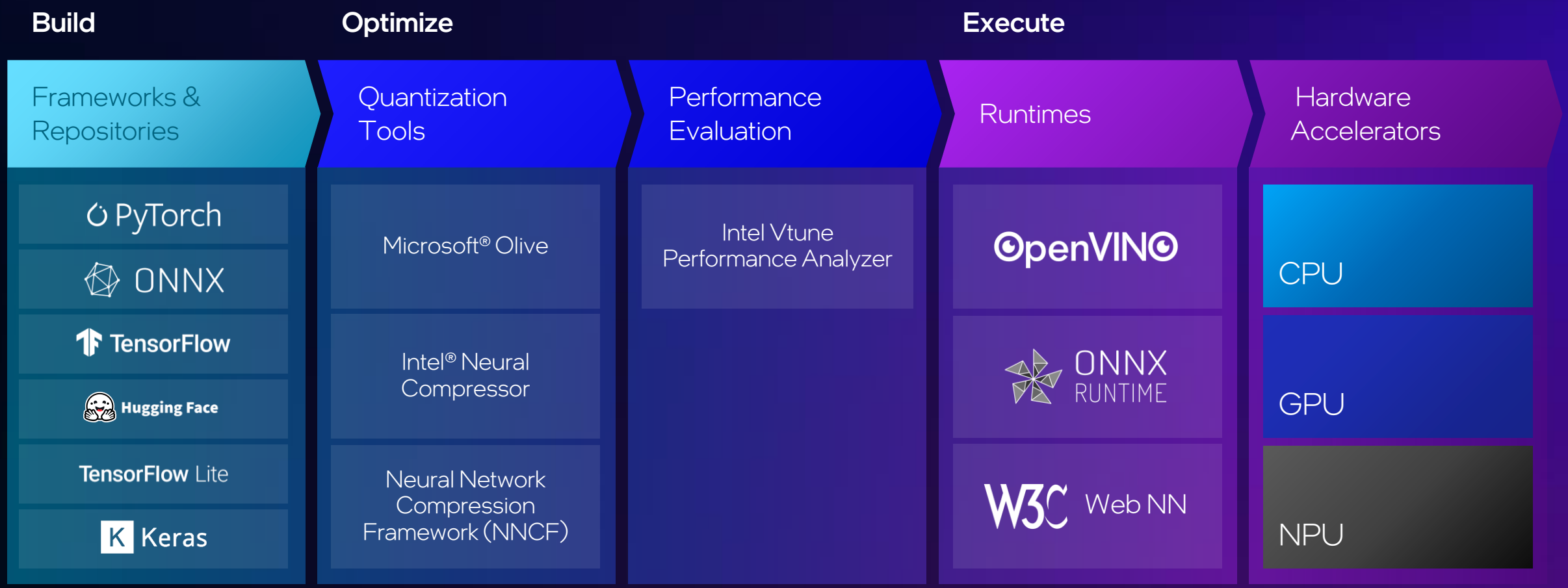
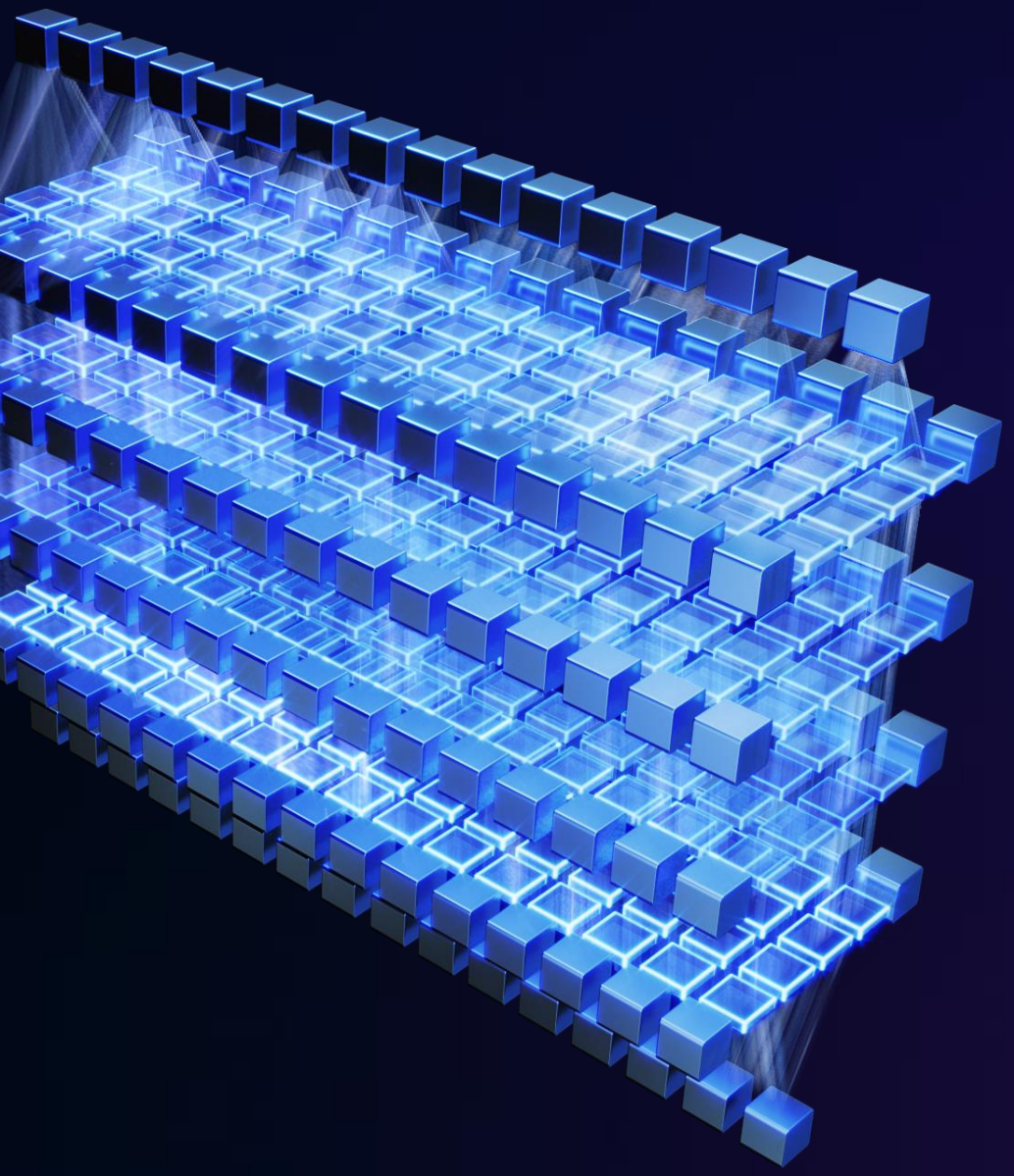
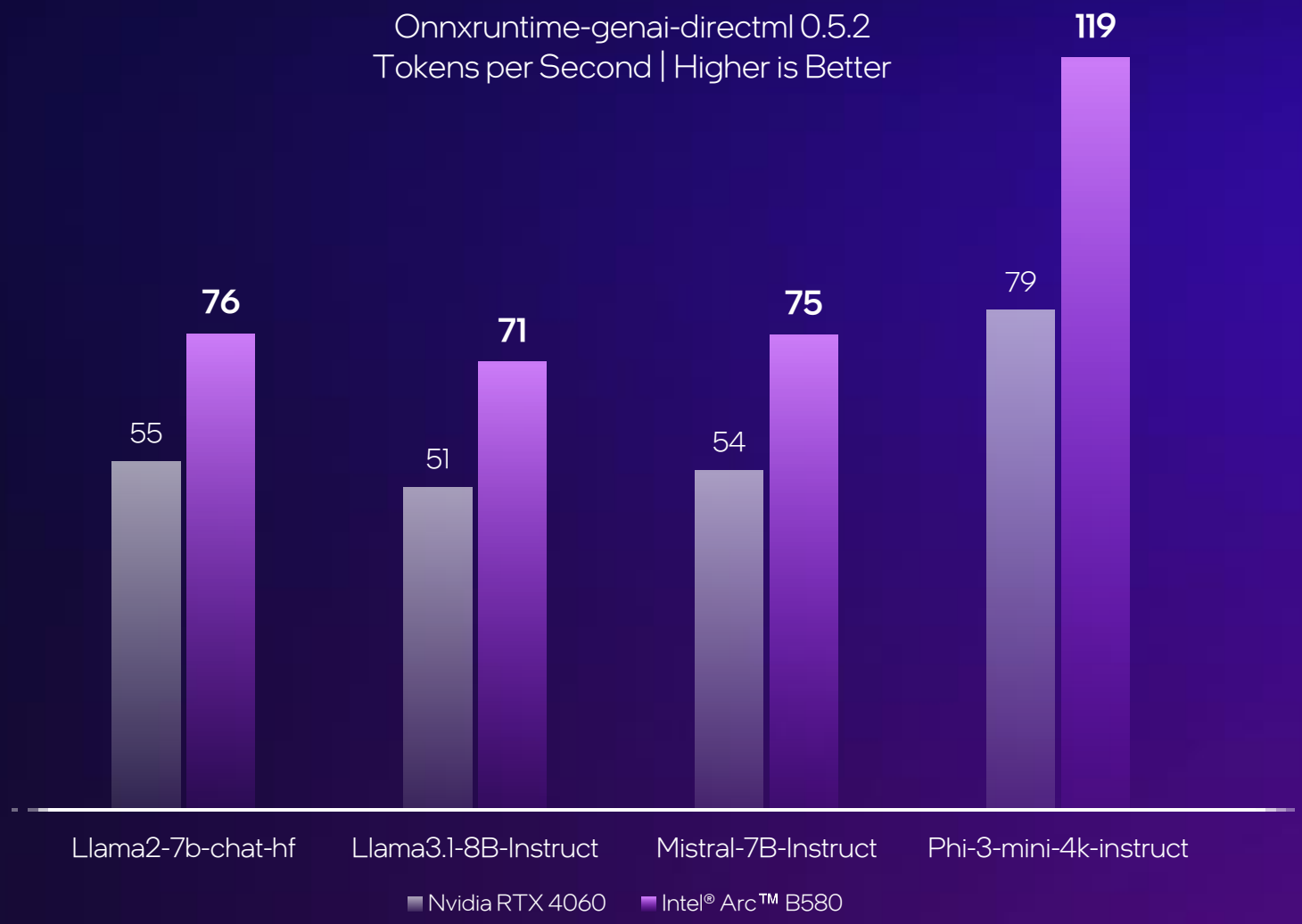
AI Enablement Flow





LLM Performance

Onnxruntime-genai-directml 0.5.2
Tokens per Second | Higher is Better



intel ARC

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Performance varies by use, configuration, and other factors. See backup for details.

intel ARC

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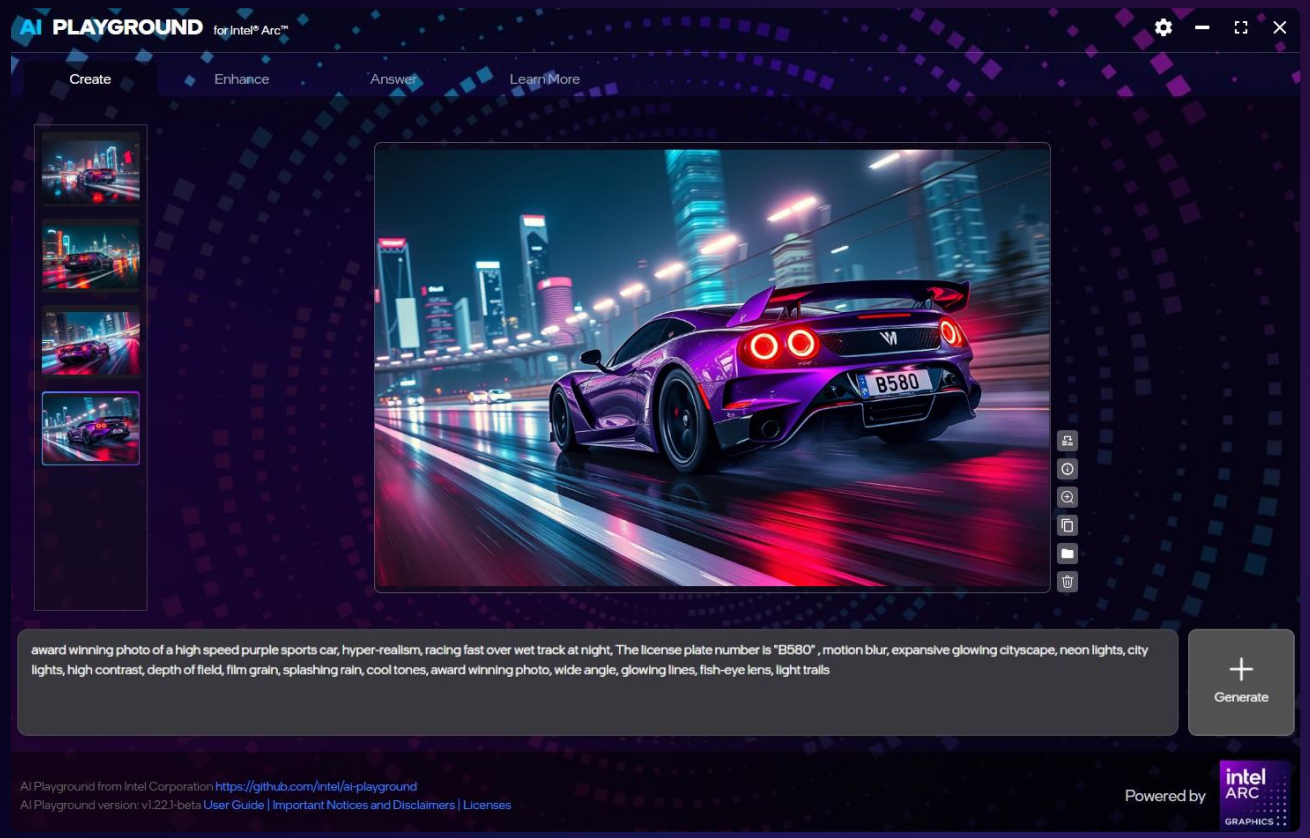

AI PLAYGROUND 2.0

Local and accessible Gen AI for Intel Arc GPUs

Create
Stable Diffusion Image Generation

Enhance
Upscale, Stylize, Inpaint/Outpaint

Answer
AI Chat w RAG & History Context

Top Models
Flux.1, SDXL, Phi3, etc..

HW Optimized
XMX Engines

Simple UI & Install
No CMD Lines

Workflow Mode
ComfyUI Integration

Open Source
free and open tool

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Intel® Arc™ Graphics Software

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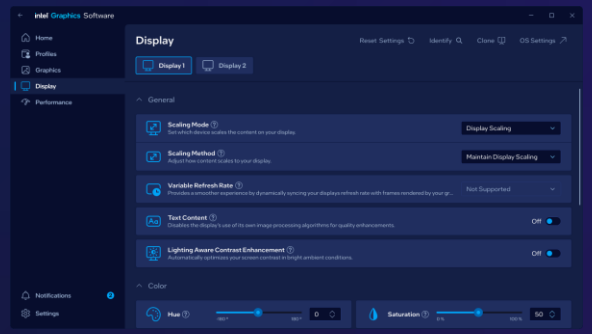
New Intel Graphics Software

Intel Specific Display Settings



KEY FEATURES

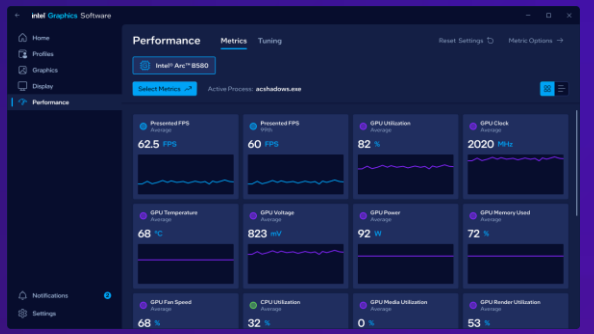
- Scaling Model — TOP REQUEST
- Scaling Method — TOP REQUEST
- Quantization Range — TOP REQUEST

Intel 3D Graphics Settings

KEY FEATURES

- FPS Limiter
- Low Latency Mode

Performance Overclocking & Controls



KEY FEATURES

- FPS Metric — TOP REQUEST
- PresentMon Metrics
- GPU Limit Indicator
- Power Limit
- Voltage Limit
- Frequency Offset
- Memory Speed
- VF Curve

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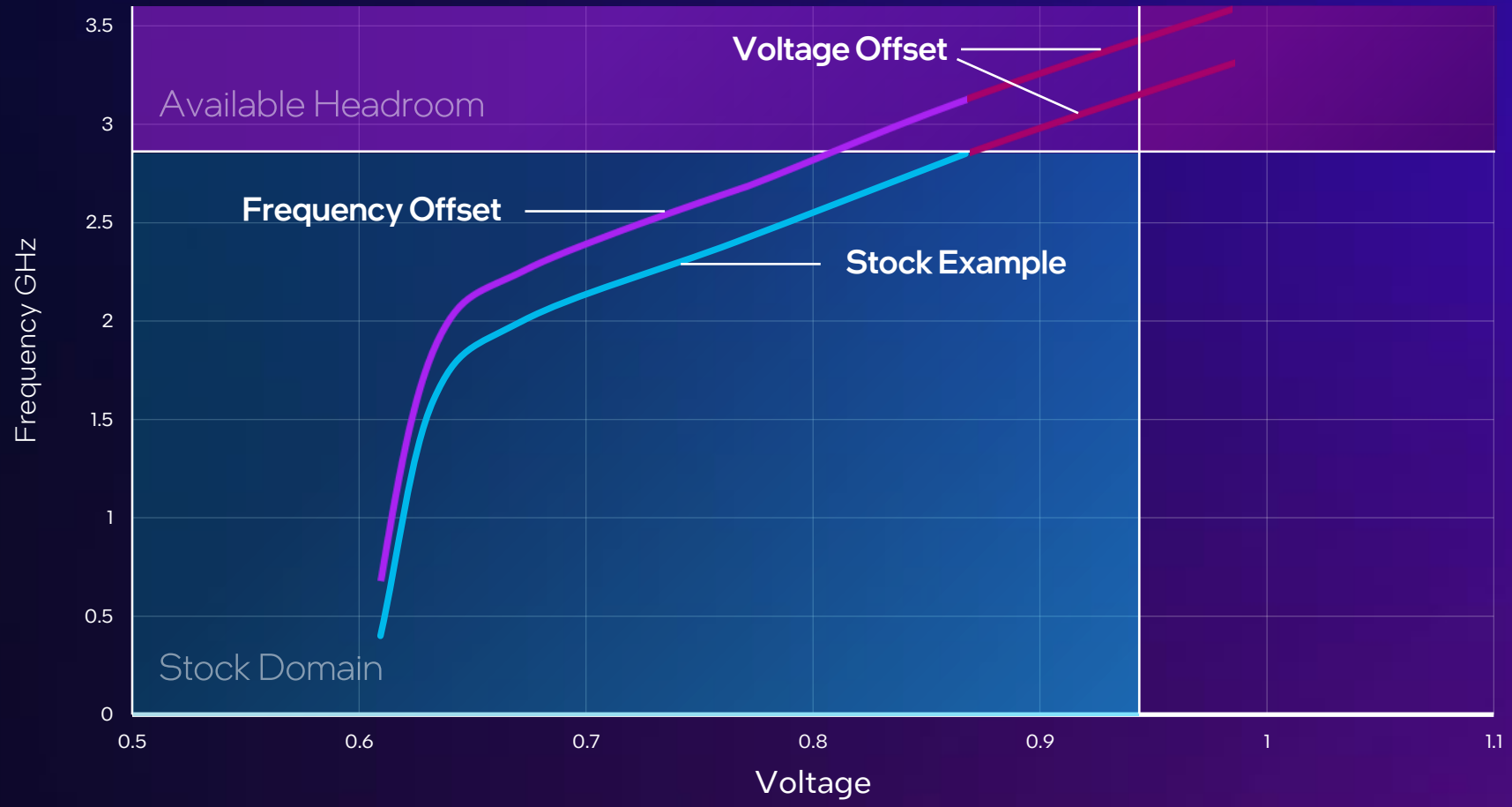
Expanded Overclocking Capabilities

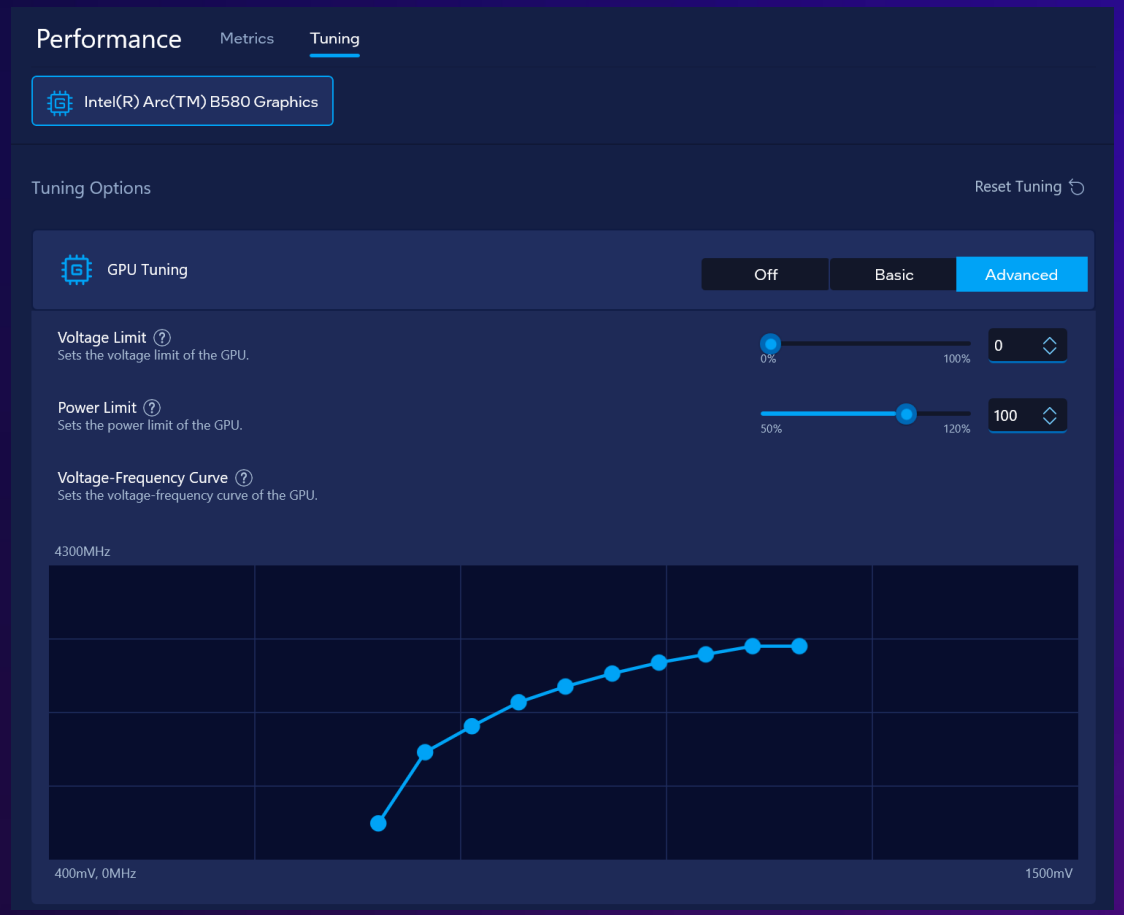
- Board Power Limit
- Memory Overclocking
- VF/Curve Customization
- Per Design Overclocking Limits



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. Visualization for illustrative purposes only.

Overclocking Controls Directly in App

Basic and advanced modes, user-friendly no matter the skill level



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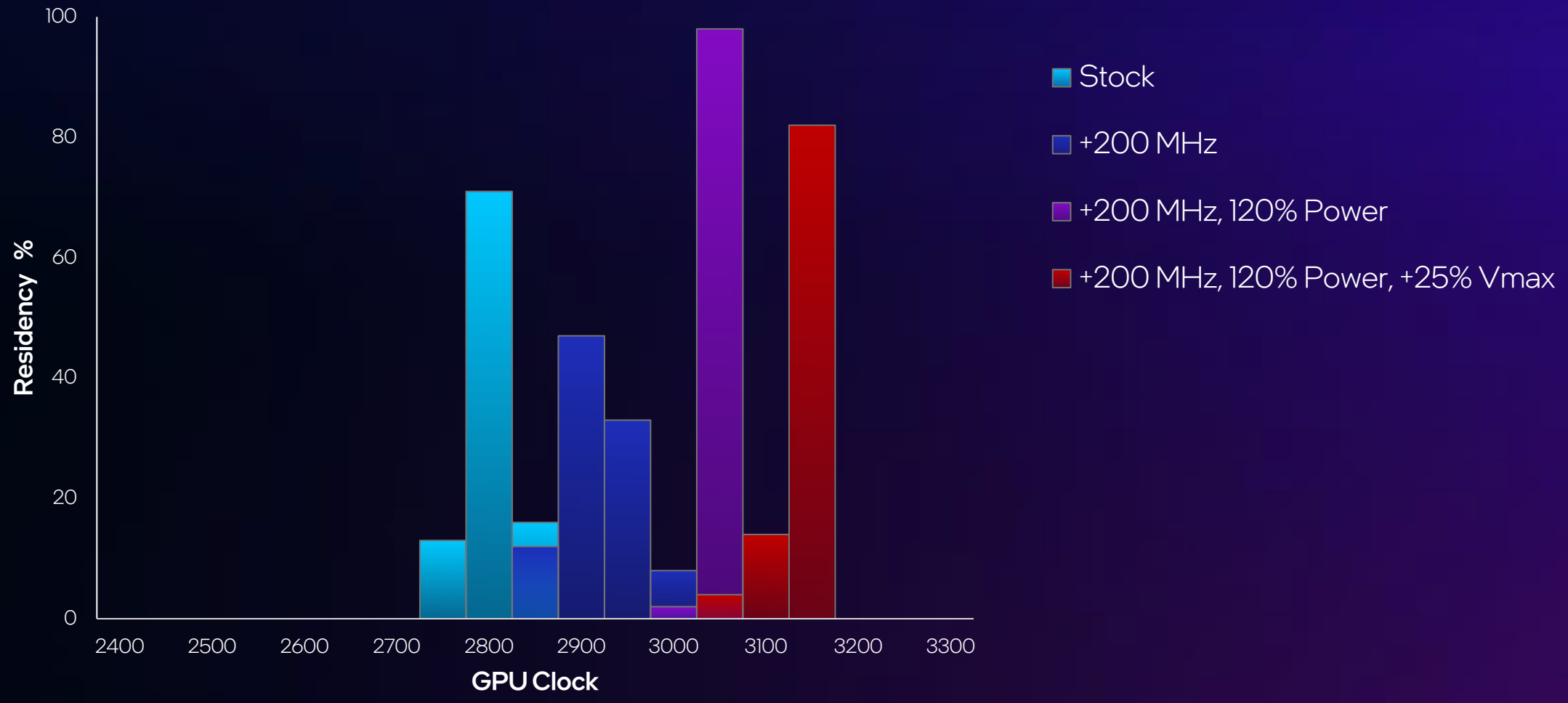
Altering clock frequency or voltage may void any product warranties and reduce stability, security, performance, and life of the processor and other components. Check with system and component manufacturers for details. Visualization for illustrative purposes only.

GPU Clock Residency Example

Intel® Arc™ B580 Graphics Card



INTRODUCING

intel ARC B580 Limited Edition

intel ARC

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intel ARC B580 Limited Edition

Designed for

Higher Performance

Increased Air Flow

Whisper Quiet

*vs Intel Arc A770/A750 Limited Edition

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Performance varies by use, configuration, and other factors. See backup for details.

intel ARC B580	intel ARC B570	
20	18	Xe- cores
5	5	Render Slices
20	18	Ray Tracing Units
160	144	XMX AI Engines
2670 MHz	2500 MHz	Graphics Clock
12 GB	10 GB	Memory
192 bit	160 bit	Memory Interface
456 GB/s	380 GB/s	Memory Bandwidth
233	203	Peak TOPs (int8 dense)
190 W	150 W	Total Board Power
1x 8-Pin		Power Connector
PCIe 4.0 x8		PCIe Configuration
AV1, HEVC, AVC, VP9, XAVC-H		HW Accelerated Media
3x DisplayPort 2.1 (up to UHBR 13.5) 1x HDMI 2.1		Display Configuration

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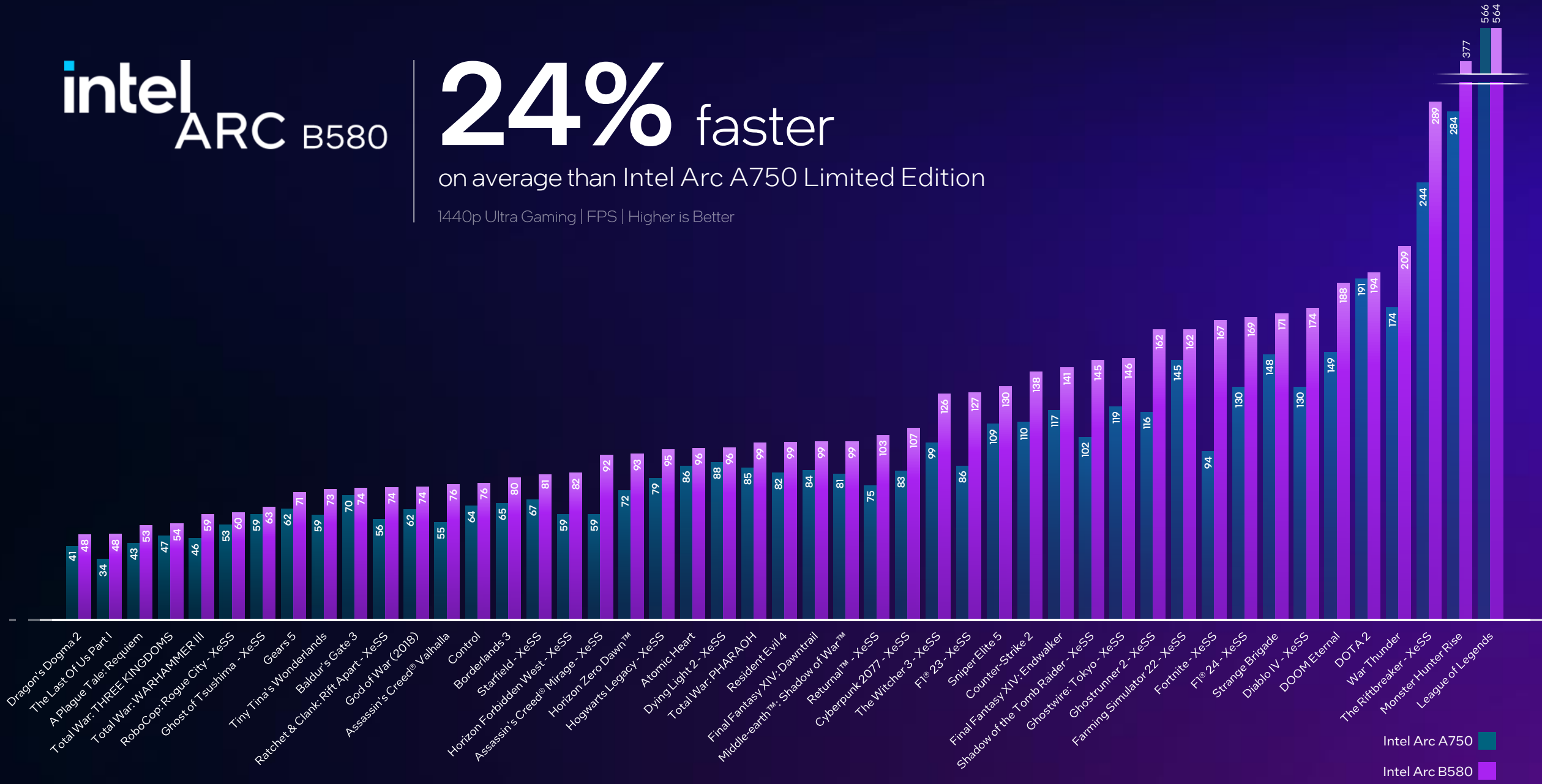
*Stock/Reference Specifications, Partner designs may vary

intel ARC B580

24% faster

on average than Intel Arc A750 Limited Edition

1440p Ultra Gaming | FPS | Higher is Better



Under embargo until December 3, 2024, at 6:00 AM Pacific Time

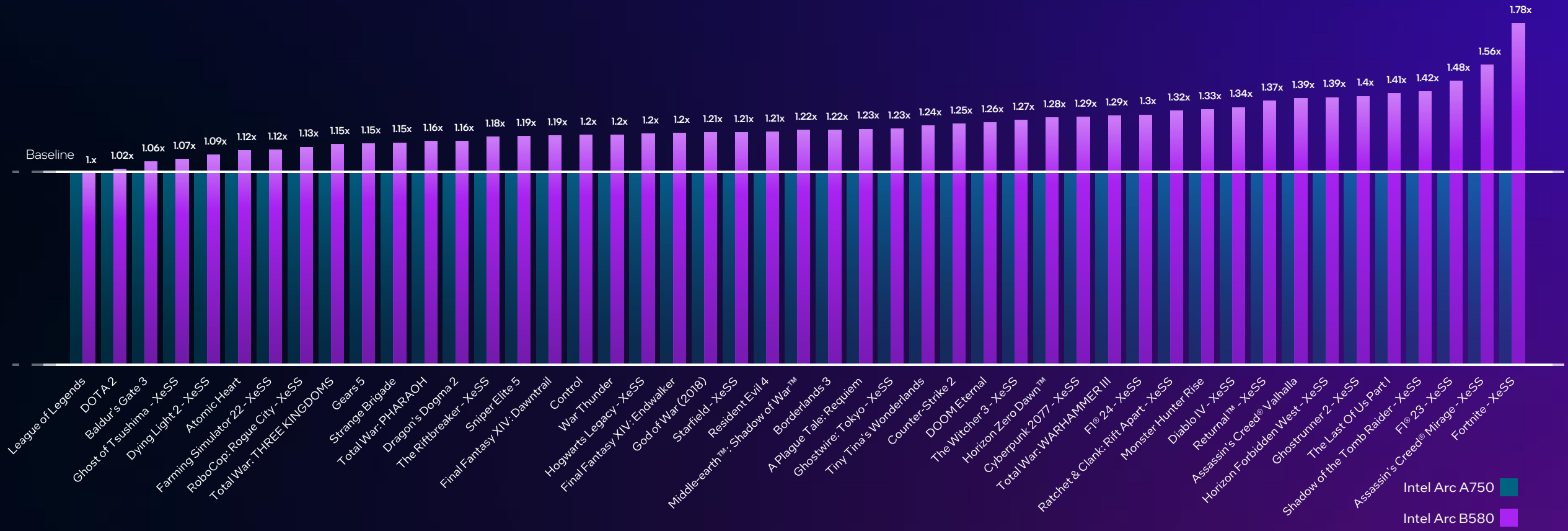
Performance varies by use, configuration, and other factors. See backup for details.

intel ARC B580

24% faster

on average than Intel Arc A750 Limited Edition

1440p Ultra Gaming | Relative Performance | Higher is Better



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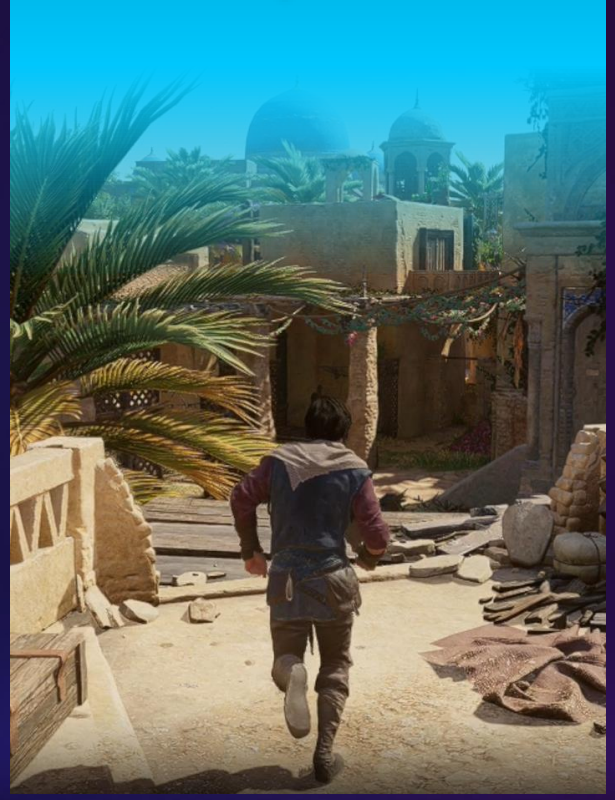
Performance varies by use, configuration, and other factors. See backup for details.

The Modern Gaming Experience

More Realistic Lighting

Highly Detailed Graphics



1440p Ultra Gaming

intel ARC

Unlock the Latest Features in Modern Games

1440p Ultra Gaming | 39 game average Raster

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Performance varies by use, configuration, and other factors. See backup for details.

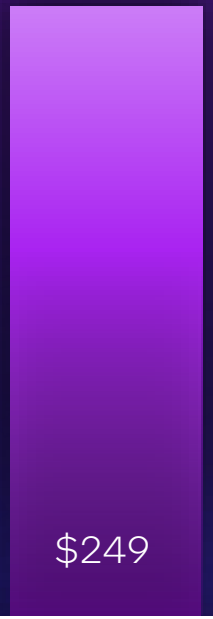
Best-in-Class Performance per Dollar

1440p Ultra Gaming | 47 game average Raster | 9 game average RT | MSRP Launch Price

Raster

NVIDIA
RTX 4060

AMD
RX 7600

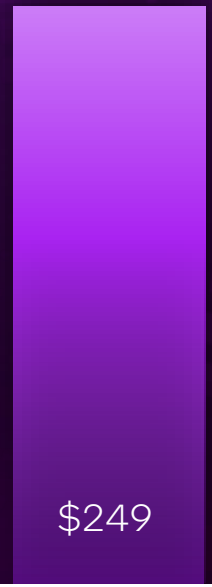


Intel
Arc B580

Ray Tracing

NVIDIA
RTX 4060

AMD
RX 7600



Intel
Arc B580

intel ARC

As of November 2024 among discrete graphics priced under $300 USD, based gaming performance averaged over 40+ games

Under embargo until December 3, 2024, at 6:00 AM Pacific Time

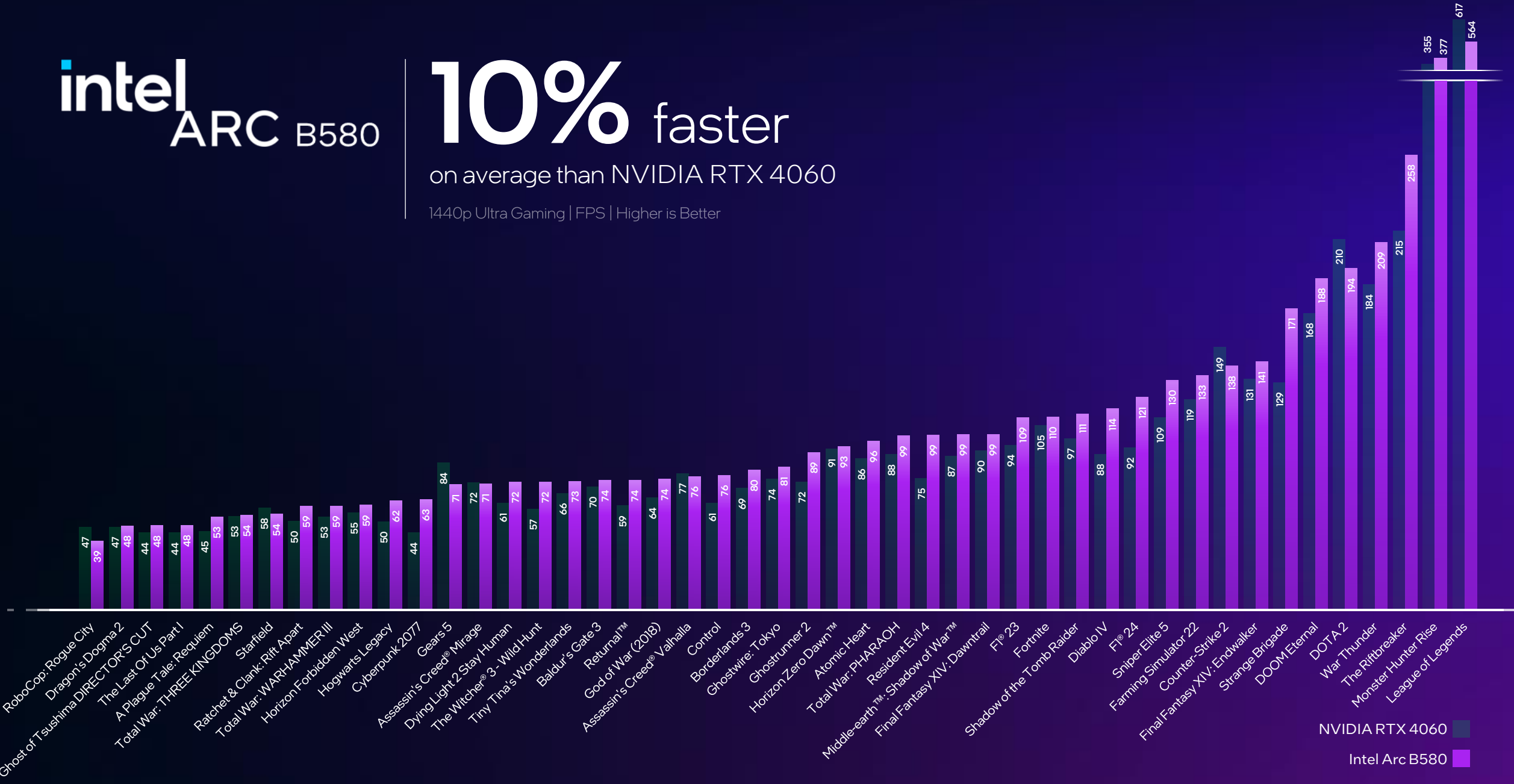
Performance varies by use, configuration, and other factors. See backup for details.

intel ARC B580

10% faster

on average than NVIDIA RTX 4060

1440p Ultra Gaming | FPS | Higher is Better



intel ARC

Under embargo until December 3, 2024, at 6:00 AM Pacific Time

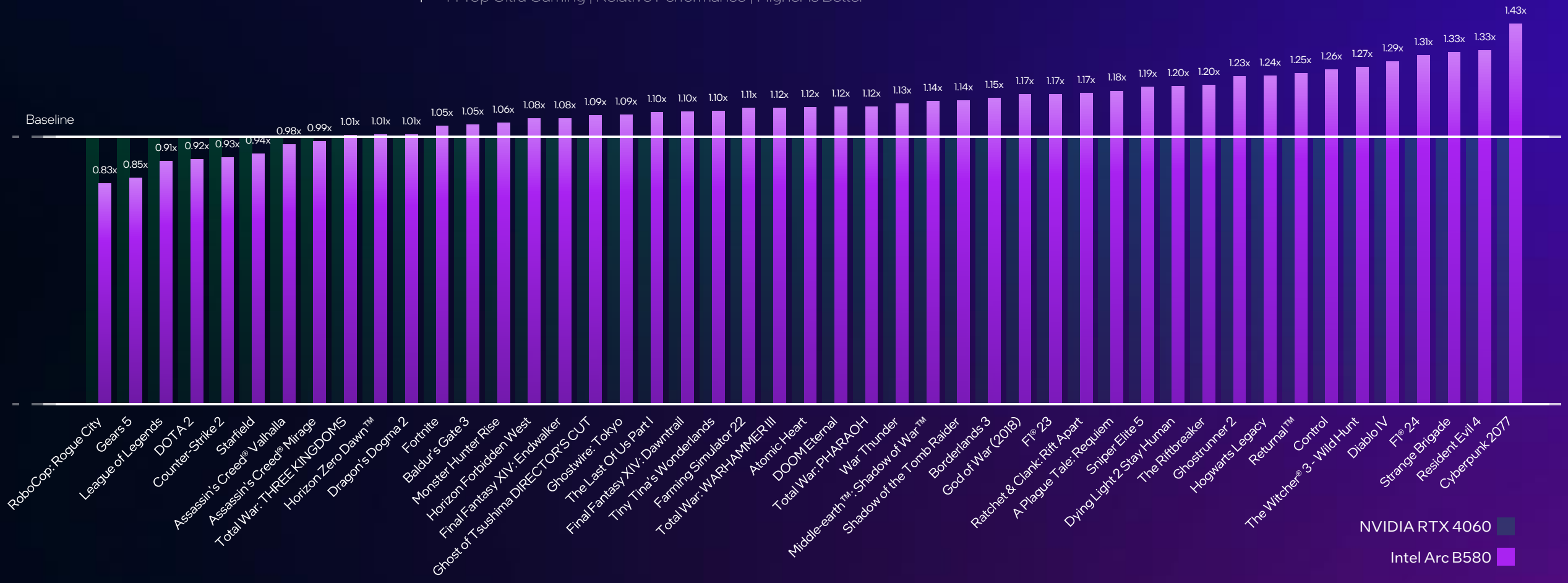
Performance varies by use, configuration, and other factors. See backup for details.

intel ARC B580

10% faster

on average than NVIDIA RTX 4060

1440p Ultra Gaming | Relative Performance | Higher is Better

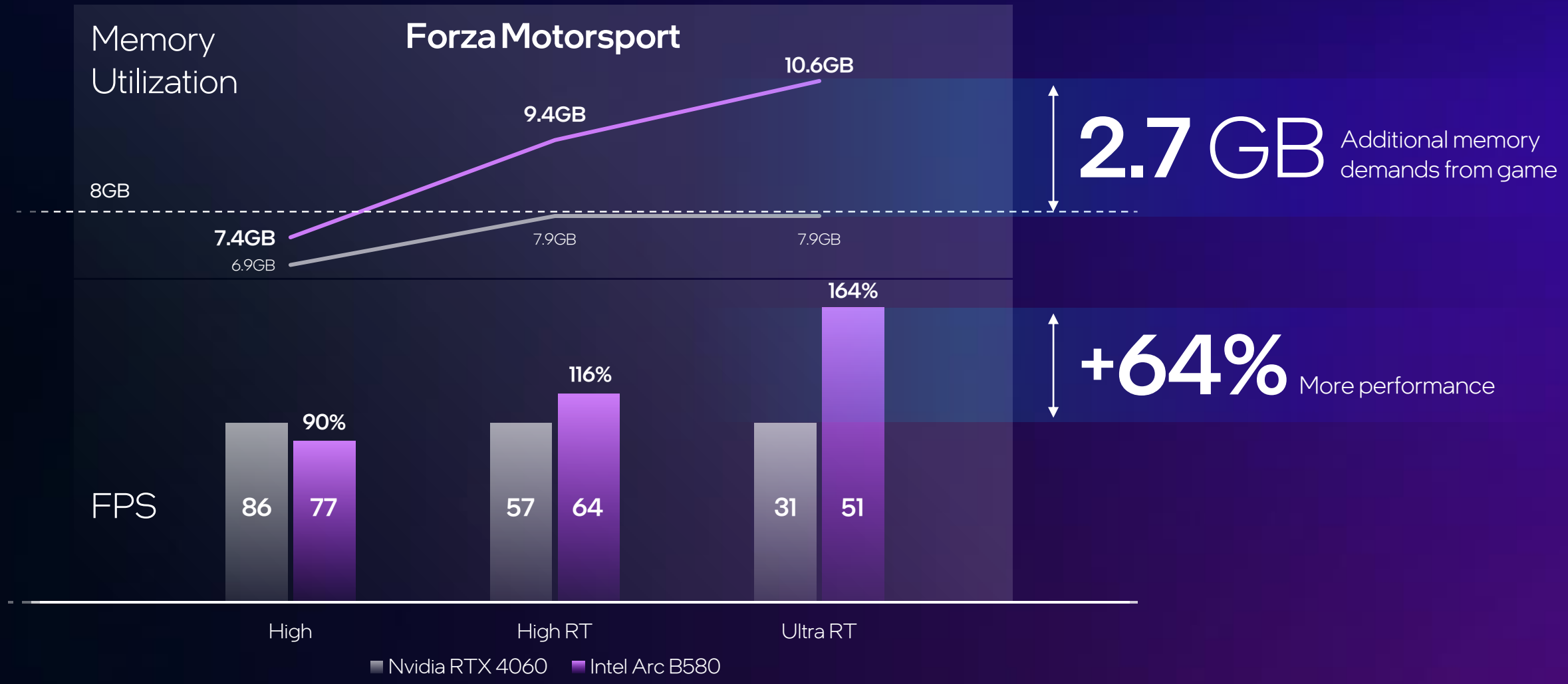


intel ARC

Under embargo until December 3, 2024, at 6:00 AM Pacific Time

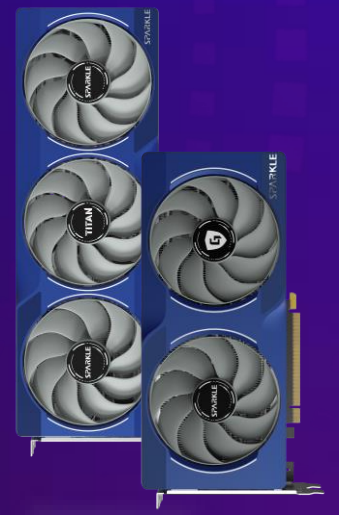
Performance varies by use, configuration, and other factors. See backup for details.

10 GB+ for High Quality 1440p Gaming



intel ARC B-Series

acer	ASRock	GUNNIR	MAXSUN	ONIX	SPARKLE
NITRO	STEEL LEGEND	PHOTON	I-CRAFT	LUMI	TITAN
	CHALLENGER	INDEX	MILESTONE	ODYSSEY	GUARDIAN

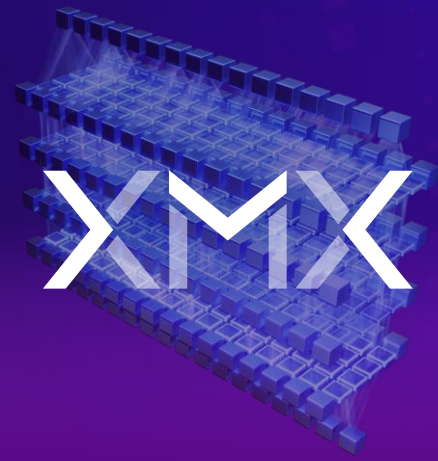


intel ARC

intel ARC B-Series

Modern Gaming Features

Best-in-Class Performance per Dollar



AI Acceleration

intel ARC

As of November 2024 among discrete graphics priced under $300 USD, based gaming performance averaged over 40+ games

Under embargo until December 3, 2024, at 6:00 AM Pacific Time

Performance varies by use, configuration, and other factors. See backup for details.

intel ARC B580

Starting at
$249 USD

Available
Dec 13th '24

intel ARC B570

Available
Jan 16th '25

Starting at
$ 219 USD

intel ARC

Under embargo until December 3, 2024, at 6:00 AM Pacific Time

Workloads and Configurations

All games tested at 1440p Ultra settings, with select games using XeSS performance mode (if available), unless otherwise stated.

Results are the median of 3 runs.

Testing as of November 2024.

GPU Tested	Driver Version
Intel® Arc™ B580 Limited Edition	101.6239
Intel® Arc™ A750 Limited Edition	101.6130
NVIDIA GeForce GTX 1060 6GB	566.03
NVIDIA GeForce GTX 1660 SUPER 6GB	566.03
NVIDIA GeForce RTX 4060 8GB	566.03
AMD Radeon RX 7600 8GB	24.10.1

Motherboard	ROG MAXIMUS Z790 HERO
BIOS Version	2703
CPU	Intel® Core™ i9 processor 14900K
VBS	VBS ON
Resizable BAR	Enabled
Memory Profile	XMP1
Memory Model	Corsair DOMINATOR PLATINUM RGB DDR5 32GB (2x16GB) 5600MHz C36
Storage	Corsair MP600 PRO XT
Operating System	Windows 11 Pro - 10.0.22631 Build 26100.2033
Defender	Enabled
Vt-d	Enabled
Power Supply Model	Corsair RMX Series (2021), RM1000x, 1000 Watt
Power Plan	High performance

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