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AI everywhere

it starts with

intel.
Welcome to the Siliconomy

>15% of GDP is fueled by digital economy

Projection based on Oxford Economics, BCG, and McKinsey data
Welcome to the Siliconomy

>15% of GDP is fueled by digital economy

~33% with AI influenced innovations

Projection based on Oxford Economics, BCG, and McKinsey data
From the data center, cloud, and network, to the client and edge.
AI For Good

We must ensure AI technology advances responsibly
Solving Global Issues at Scale
More compute, faster memory and monumental performance
AI Continuum Enables AI Everywhere

From the data center, cloud and network, to the client and edge
The Three Laws
Shaping the increasing importance of the edge

- Economics
- Physics
- Land
Fundamentally transforming PC experience

New Age of AI PC

Launching the next PC ecosystem evolution

Personal, private, and more secure AI capabilities

New user experiences we’ve yet to invent... beginning today

“The PC is the ultimate Darwinian device.”

- Andy Grove
5 Nodes in 4 Years

Moving at the speed of innovation

NOW
In high volume manufacturing

NOW
In high volume manufacturing

2H 2023
Manufacturing ready

2024
On-track for manufacturing

ON TRACK
Silicon goes into the fab in Q1 2024

Intel 7

Intel 4

Intel 3

Intel 20A

Intel 18A

Next

Next +
World-changing technology that improves the life of every person on the planet
AI everywhere

Michelle Johnston Holthaus
Executive Vice President and GM, Client Computing Group
AI PCs are expected to comprise 80% of PC market by 2028.
Our vision for the AI PC

A processor that delivers compute, graphics, power, battery life and AI to meet your needs
Age of the AI PC powered by Intel® Core™ Ultra processors

Launching TODAY
Intel® Core™ Ultra Processors

- **3D Performance Hybrid Architecture with Foveros**
- **Dedicated NPU with n-Stream Execution**
- **Intel 4 Compute Tile**
  - Up to 6x P-cores
  - 8x E-cores
  - 2x LP E-cores
  - 22 Threads
- **Up to 5.1GHz Max Turbo**
- **Thunderbolt™ 4**
- **Built-In Arc GPU™ with up to 8 Xe Cores**
- **Integrated Wi-Fi 6E (Gig+)**

1. Intel® Arc™ GPU available on select H-series Intel® Core™ Ultra processor-powered systems. Other system configurations feature Intel® Graphics. Details at intel.com/performanceindex. Results may vary.
Leadership Compute Performance

Plus generational improvements in performance-per-watt¹

VS
Core™ i7 1370P
+8% Performance
Similar Power

VS
Ryzen 7840U
+11% Performance
Similar Power

1. Among processors powering ultrathin systems, based on SPECrates™2017, int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp; as of December 2023.

All figures tested on AC with Windows® “Best Performance” setting. Details at intel.com/performanceindex for details. Results may vary.
Up to 79% Lower power than AMD at the same 28W envelope for ultrathin notebooks¹

1. Learn more at www.intel.com/PerformanceIndex. Results may vary.
Intel® Arc™ GPU
High-Efficiency Modern GPU
1. Based on Intel Core Ultra 7 165H performance with built-in Intel Arc GPU. Details at intel.com/performanceindex. Results may vary.
Jim Johnson
Senior Vice President, CCG
General Manager, Client Business Group
up to **3x faster**
1080p gaming

up to **3x more**
power efficient
3 Powerful AI Engines

When using Intel® Core™ Ultra processors

**CPU**
Fast Response
Ideal for low-latency AI workloads

**GPU**
High Throughput
Ideal for AI-accelerated digital content creation

**NPU**
Low Power
Ideal for sustained AI workloads and AI offload for battery life
Intel Core Ultra features

3 AI accelerators
to help manage your AI tasks

For video editing workflows with Adobe Premier, we’ve **cut the time** it takes for you to edit a video **by more than 56%** vs. our previous gen.

With Core Ultra, you can do generative AI locally in **nearly half the time**.

**2.5x more** energy efficient with AI workloads with the addition of the NPU.

Details at intel.com/performanceindex. Results may vary.
Based on the broad compatibility, extensive software options, unique architecture, and impressive performance of Intel® Core™ Ultra processors that combine to deliver the best overall AI experience, including in comparison to comp (as of December 2023). AI features may require additional purchase or specific compatibility requirements. Details at intel.com/performanceindex. Results may vary.
AI Broad Engine & Data Type Leadership

OpenVINO™ enables consistent AI performance across engines with Intel® Core™ Ultra processors.

<table>
<thead>
<tr>
<th>Processor</th>
<th>NPU FP16</th>
<th>NPU Int8</th>
<th>GPU FP16</th>
<th>GPU Int8</th>
<th>CPU FP16</th>
<th>CPU Int8</th>
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<td>Intel® Core™ Ultra 7</td>
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<td>Processor 165H OpenVINO</td>
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<td>Snapdragon 8cx Gen 3</td>
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<td>SNPE Framework (NPU)</td>
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<td>WinML (CPU+GPU)</td>
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- **●** Performant
- **▲** Non-Performant
- **❌** Did Not Run

Testing as of 06 December 2023 in UL Procyon® AI Inference Test. Learn more at www.intel.com/PerformanceIndex. Results may vary. Non-performant results are defined as performance figures that are substandard to IP and framework performance demonstrated by the Intel® Core™ Ultra 7 165H processor.
AI PC Acceleration Program
Accelerating adoption of AI with global ecosystem

Enabling AI

100M+ PCs through 2025
100+ ISVs
>300 AI-accelerated features
3X AI apps and frameworks than the competition

Unmatched Scale & Speed

Targeting 100 AI software partners throughout 2024

Rollout view as of 4Q23. AI software release dates are determined by Intel software partners. Release dates are subject to change without notice.
GenAI Ready

Intel® Core™ Ultra Processors run the latest LLMs, transformers, and text-to-image workloads – helping you be more productive and creative.

Models (>80 in total)
- BERT
- Whisper
- LLaMA
- ChatGLM
- Stable Diffusion
- Dolly

Quantization Tools
- OpenVINO™ Neural Network Compression Framework
- Intel® Neural Compressor
- Hugging Face Auto GPTQ
- ONNX RT Quantization

Frameworks
- OpenVINO™
- ONNX
- WindowsML
- DirectML
- WebAssembly
- WebNN
- WebGPU
- Hugging Face
- Optimum (OpenVINO backend)
- PyTorch (Open VINO backend)
- Olive

Applications
- Audacity
- GIMP
- Microsoft 365
- Rewind
- …and more to come
Kawehi
Musician, Songwriter and Performer
Available
Starting TODAY

>230 designs

Acer, ASUS, Dell, HP, Lenovo, LG, MSI, Samsung

Intel Core Ultra 7, Intel Core Ultra 9, Intel Core Ultra 5
# What Our Partners Say About Intel Core Ultra

<table>
<thead>
<tr>
<th>Partner</th>
<th>Description</th>
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<tbody>
<tr>
<td>Acer</td>
<td>TRANSFORMATIVE</td>
</tr>
<tr>
<td>ASUS</td>
<td>EFFICIENT</td>
</tr>
<tr>
<td>Dell Technologies</td>
<td>INTELLIGENT</td>
</tr>
<tr>
<td>Chromebook</td>
<td>OPTIMIZED</td>
</tr>
<tr>
<td>HP</td>
<td>HIGH PERFORMANCE</td>
</tr>
<tr>
<td>Lenovo</td>
<td>INFLECTION POINT</td>
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<tr>
<td>MSI</td>
<td>AMAZING</td>
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<tr>
<td>Samsung</td>
<td>POWERFUL</td>
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<td>GAME-CHANGING</td>
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</table>
Intel® Core™ Ultra

Largest architecture change in 40 years

A world-class Arc GPU

The best AI experience for PCs

Dramatic improvements in power
Sandra Rivera
Executive Vice President and GM, Data Center and AI Group
Intel® Xeon® for AI

up to 10x deep learning training and inference performance

Powering the World’s Leading Clouds

- Alibaba Cloud
- AWS
- Baidu Cloud
- ByteDance
- Google Cloud
- IBM Cloud
- Microsoft Azure
- Oracle Cloud Infrastructure
- OVHcloud
- Tencent Cloud

See [A16, A17] at intel.com/processorclaims. 4th Gen Intel Xeon Scalable processors. Results may vary.
THE BEST

Data Center CPU for AI

5th Gen Intel® Xeon® processor

Launching TODAY
THE BEST
Data Center CPU for AI
5th Gen Intel® Xeon® processor
Launching TODAY

General Compute Performance Gains
average 21% vs. prior generation

Higher Performance on AI Inference
up to 42% vs. prior generation
Built to Scale
AI Everywhere

CLOUD
up to 23%
Faster Natural Language Processing*

NETWORK
average 50%
Faster User Plane Functions in 5G Networks*

EDGE
up to 24%
Faster Object Classification*

See [A19, N1, A22] at intel.com/processorclaims: 5th Gen Intel Xeon Scalable processors. Results may vary.
Accelerating the adoption of AI In the enterprise
Unmatched TCO as Customers Upgrade

Refreshing 1st Gen Xeon to 5th Gen Xeon

- Up to 77% reduction in TCO
- Up to 94% reduction in server count
- Up to 90% reduction in CO² emissions & power

See [T7] at intel.com/processorclaims: 5th Gen Intel Xeon Scalable processors. Results may vary.
Lauren Elliott
Founder, CEO, Designer
Gallium Studios
Life
Activities
Social
Place
Emotion
People
Play
Things
Lifestyle
Dreams
Where the heart is
6.5x
Faster than previous GPU-based solution

See at Intel AI Everywhere Press release footnote 11 on Intel.com for workloads and configurations. Results may vary.
Optimized for Training LLMs & Large Generative AI Models

For workloads and configurations, visit https://mlcommons.org/benchmarks/inference-datacenter/. Pricing information for range of servers based on SemianalysisGPUUtils for cloud (with pricing) and for servers as of December 2023. Results may vary.
Platform Approach for Scaling AI
Cloud-to-Edge-to-PC

Application Layer
- Financial Services
- Enterprise
- Healthcare
- Retail

Frameworks & Languages
- TensorFlow
- PyTorch
- Hugging Face
- deepspeed

Software & Toolkits
- OpenVINO
- oneAPI

Foundational Hardware
- intel XEON
- intel CORE
- intel GAUDI
- intel GPL
Growth of Hybrid AI

- Nimble AI Models
- Increased Privacy
- Lower Cost & Power
- Minimize Latency

- Industry-standard APIs
- Open Software
- Heterogeneous Silicon
- Giant AI Models
Deep software ecosystem support

Delivering even higher performance
5th Gen Intel Xeon
Built with AI acceleration in every core

Capstone to an incredible year for Xeon

The Best CPU for AI

Significant Leap in performance & efficiency

Enhanced privacy & security

High-Performance, Ready-to-Use, Open software environment
Enabling the Ecosystem
AI everywhere

Christoph Schell
Chief Commercial Officer

it starts with

intel.
AI Continuum Enables AI Everywhere

From the data center, cloud and network, to the client and edge
Edge Opportunities are driving higher AI inference demand than ever

$445B global market opportunity

Source: https://stlpartners.com/research/edge-computing-market-sizing-forecast-2nd-release
Powering the Ecosystem
The Intel Core Ultra processor is a game-changer, enhancing patient care, and opening new possibilities in the healthcare segment.
MISSION

Bring AI Everywhere
Our Unique Value

- Open approach
- Expertise across hardware & software
- Ecosystem
- Execution
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