

# Intel CNDA Presentation





# Intel Edge Compass

The Intel Edge Compass is a comprehensive resource for discovering current and future Intel products built for edge and embedded environments—bringing together the latest resources, documentation, and support to help teams plan and deploy Intel-based edge solutions with confidence.

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Edge Computing Group  
Client Computing Group

# Welcome to the Intel Edge Compass

Stay up-to-date with the latest on Intel Products for the Edge

The **Intel Edge Compass** is a single, comprehensive resource that brings together current and upcoming Intel edge/embedded product information, resources, documentation, and support so teams can plan and deploy Intel-based edge solutions with confidence.



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**[rdc.intel.com](https://rdc.intel.com)**

**Intel Edge Compass 5Q CNDA**

Available to all CNDA partners/customers

RDC ID: [350329](#)

**Intel Edge Compass 8Q CNDA**

Please contact your Intel representative if access is needed

RDC ID: [616881](#)

**Intel Quick Reference Guide (Intel QRG)**

RDC ID: [615485](#)

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**Change** = New or updated content from prior 10 October 2025 Intel Edge Compass publication

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<sup>1</sup> – “Additional Design Options” refer to current or future Intel products that may be applicable to select edge designs. These are provided for informational purposes only.



# Intel Products for the Edge

## Portfolio Overview

From AI- and edge-optimized multipurpose compute to energy-efficient discrete accelerators to market-leading networking solutions, we proudly offer the most diverse edge-ready hardware in the world.

# Edge-optimized processors



|                            | <a href="#"><u>Intel Xeon Processors</u></a>                                                                                                 | <a href="#"><u>Intel Core Ultra Processors</u></a><br><a href="#"><u>Intel Core Processors</u></a>                             | <a href="#"><u>Intel Processors</u></a>                                                                                                                |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Target workloads</b>    | Most powerful edge workloads, including data plane acceleration and real-time AI                                                             | Most popular edge silicon, with a wide range of performance and power options for machine vision, high-res graphics, and media | Most energy efficient in a single, integrated platform that simplifies deployment                                                                      |
| <b>Target environments</b> | Standard server-based compute in on-premises and colocation facilities                                                                       | ATMs, vending machines, cashier-free checkout, video, industrial PCs and HMIs, and more                                        | Lower-power devices for edge networking, appliances, digital signage, cold storage, POS systems, office automation, AI-capable network video recorders |
| <b>Key features</b>        | Highest aggregate compute performance, memory bandwidth, I/O throughput, and rich security features; in single, dual, or multisocket designs | Latest gen features socketed SoC combining video, graphics, and deep learning for maximum flexibility                          | Available in a multichip package with options for functional safety                                                                                    |

# Edge-optimized processor and platform attributes

|                                    |                                                                                                                                                  |                                                                     |                                                                                                                                                                 |                                                                                                                                                                |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processor and platform description | <u>Intel Xeon processors</u>                                                                                                                                                                                                      | <u>Intel Core Ultra processors</u><br><u>Intel Core processors</u>                                                                                                                                                                    |                                                                                                                                                                                                                                                    | <u>Intel Processors</u>                                                                                                                                        |
|                                    | <p>Offers highest aggregate compute performance, memory bandwidth, I/O throughput, rich security features, real-time, and targeted acceleration (ex Intel QAT, AI).</p> <p>Available in single, dual or multi-socket designs.</p> | <p>S-series</p> <p>For high-power performance demanding applications with integrated GPU, for visual compute, AI capabilities, real-time, display and extended I/O capabilities while retaining flexibility of a LGA form factor.</p> | <p>HX, P, H, U and UL-series</p> <p>Delivering best perf/watt with leading edge integrated GPU while optimized for visual compute, real-time and AI capabilities supporting the smallest form factor with embedded or extended use conditions.</p> | <p>Energy efficient processors at lower TDP with display, media and edge optimized technologies (like Real Time) with embedded or extended use conditions.</p> |
| Target* TDP                        | 35 – 350+W                                                                                                                                                                                                                        | 20 – 175+W                                                                                                                                                                                                                            | 10 – 85+W                                                                                                                                                                                                                                          | 4.5 – 25W                                                                                                                                                      |
| Package Type                       | LGA/socketed                                                                                                                                                                                                                      | LGA/socketed                                                                                                                                                                                                                          | BGA/chip-down                                                                                                                                                                                                                                      | BGA/chip-down                                                                                                                                                  |

# High-performance, energy-efficient, discrete and integrated GPU accelerators



|                     |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                            |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target workloads    | <u>Intel Arc Pro Graphics</u><br>Visualization and display workloads, including simulation, 3D rendering, video processing, and beamforming                                                                                                                                                                                   | <u>Intel Graphics</u><br>Transformational integrated graphics to support fluid designing for client, digital signage, embedded, and light AI-powered usages.                                                               |
| Target environments | Multiscreen commercial displays and video walls, interactive flat panels, kiosks, casino/arcade gaming, medical imaging.                                                                                                                                                                                                      | Supports a wide variety of embedded use cases delivering built-in visuals for display and GPU capabilities for Edge AI usages                                                                                              |
| Key features        | Available in discrete PCIe and small form-factor MXM Type A for compact systems. Also available as integrated Intel Arc Graphics in Intel Core Ultra processors. Longer-life <sup>1</sup> value-added software <sup>1</sup> for edge-specific use-cases such as video wall. Support for embedded use conditions. <sup>1</sup> | Available as integrated GPU on performant embedded Intel Core processors extending to Intel Atom processors, supporting a breadth of performance from 32 EU to 128 EU with multiple display out options, up to 4K and more |

1. Offerings vary among ODMs



# Market-leading<sup>1</sup> discrete and integrated network accelerators

|                  |                                                                                                                                                               |                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |                                                                              |   |
|                  | <u><a href="#">Intel Ethernet Controllers and Adapters</a></u>                                                                                                | <u><a href="#">Intel Wireless Products</a></u>                                                                                                                          |
| Target workloads | Workload-optimized performance and the flexibility to meet changing edge network requirements. High-precision time sync and determinism for edge deployments. | Key ingredient across edge and IoT verticals from industrial automation, to healthcare, entertainment, smart cities/infrastructure, and robotics                        |
| Environments     | Cloud and regional data centers, network infrastructure, edge infrastructure, and Edge/IoT devices                                                            | Edge devices operating under harsh usage conditions, long life availability and first-class regulatory support                                                          |
| Key features     | Standards-based, optional GNSS module; onboard oscillator; support for 1588 PTPv2 and SyncE, Time-Sensitive Networking (TSN)                                  | High reliability, improved security, low latency and high throughput, time synchronization and TSN support                                                              |

1. <https://www.intel.com/content/dam/www/central-libraries/us/en/documents/todays-top-cloud-powered-by-intel-white-paper.pdf>

# Intel Edge Roadmaps



## Intel and NVIDIA to Jointly Develop AI Infrastructure and Personal Computing Products

— 18 September 2025 —

“We will focus on seamlessly connecting Intel and NVIDIA architectures using NVIDIA NVLink – integrating the strengths of NVIDIA’s AI and accelerated computing with Intel’s leading CPU technologies and x86 ecosystem to deliver cutting-edge solutions for customers.”

“For data centers, Intel will build NVIDIA-custom x86 CPUs that NVIDIA will integrate into its AI infrastructure platforms. For personal computing, Intel will build x86 SOCs that integrate NVIDIA GPU chiplets.”

“For our customers and partners, the collaboration will bring more computing solutions and options to the ecosystem, enabling you to select the compute architectures of your choice.”

[Click here to read the full Press Release](#)

[Click here to watch the webcast replay of NVIDIA and Intel CEOs discussing the new collaboration](#)

Additional details on upcoming products and positioning for edge designs will be shared in future updates

**Questions? Please contact your Intel Representative or [edge.products@intel.com](mailto:edge.products@intel.com)**

# The Future of Intel Processors for the Edge

## *Past*



**Increasing Core Count**

---



**Increasing Frequencies**

---



**Newest Manufacturing Process**

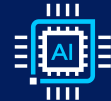
## *Future*



**Deliver Gen-on-Gen Perf/Watt Improvements**

Scalable and optimized core count, core types, and TDP

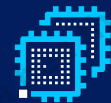
---



**Integrate Graphics, Media and AI Acceleration**

Disruptive, discrete-level, GPU and NPU capabilities

---



**Leverage Mixed Manufacturing Process**

Optimizing for best die performance and choice

---



**Ensure Enhanced Value for the Edge**

Leadership differentiators for the edge



# The Intel<sup>®</sup> edge advantage



**Scalable &  
Configurable TDP**  
4.5W to 350W+



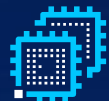
**Embedded and  
Industrial Use  
Conditions**



**Long-term Product  
Availability &  
Technical Support**



**Extended & Industrial  
Temperature  
Support**  
-40°C to 85°C



**Integrated GPU  
and NPU  
Accelerators**



**Edge Manageability  
and Security**



**Functional  
Safety**



**Real Time  
supporting  
TCC and TSN**



**Edge-specific  
OS Support**



**Edge AI  
Systems and  
Solutions**



**Open Edge  
Platform**



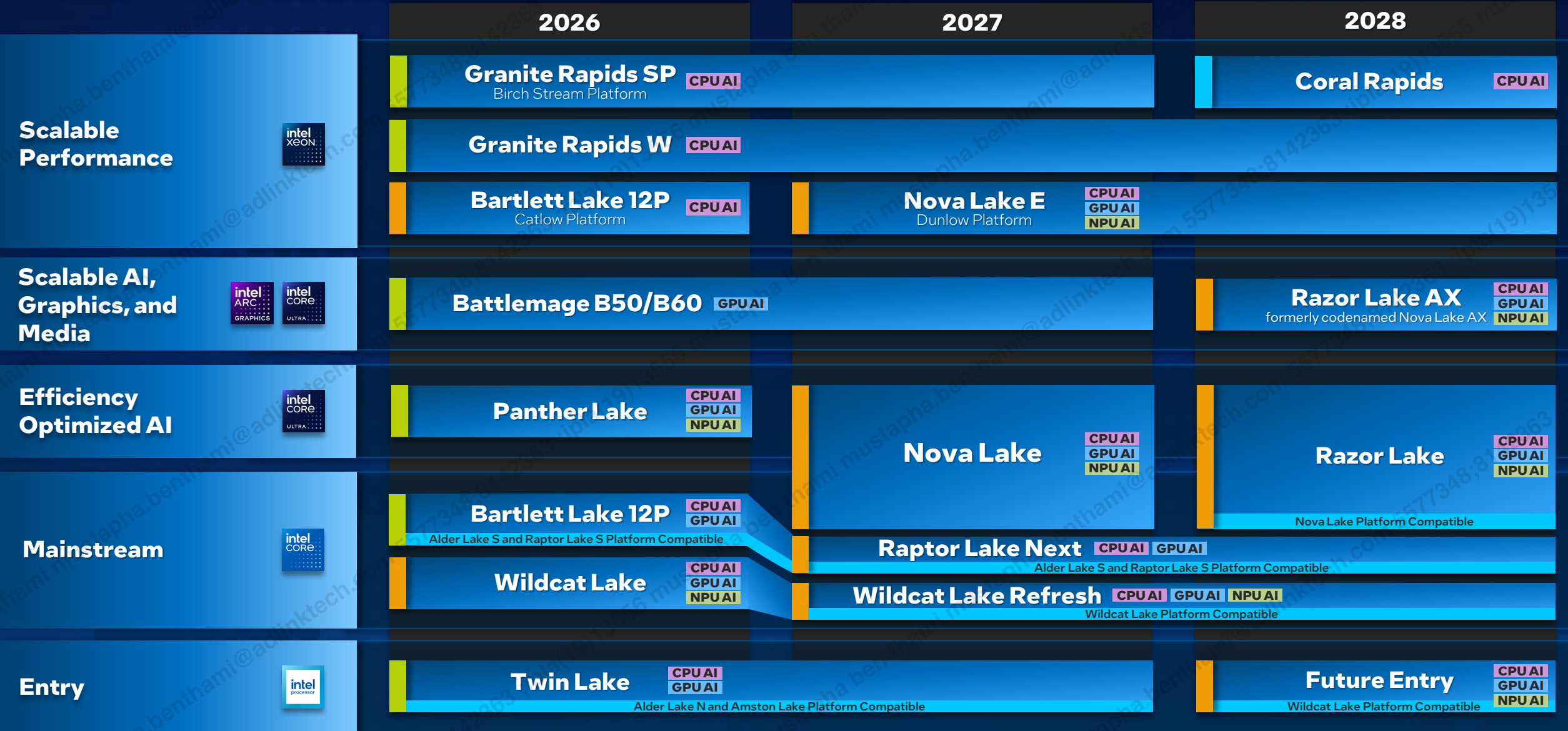
**Edge Vertical  
Solution Suites**

**... and so much more!**

The information above is subject to change without notice. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability. No product or component can be absolutely secure. TCC = Time Coordinated Computing, TSN = Time Sensitive Networking

# Intel Edge Design Landscape Roadmap









## Recommended Scalable Performance Edge Designs

| 2026                                                                                                                                                                                                                                                                                                                | 2027                                                                                                                                                                                                                                                                                                         | 2028                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <div><b>Intel Xeon 6700P and 6500P Processors</b><br/>Granite Rapids SP on the Birch Stream SP Platform</div> <div><div>LGA Socket</div><div>7 Years</div><div>L UC</div><div>AMX CPU AI</div><div>1-8 Socket</div><div>150-350 TDP (W)</div><div>8-86 P-cores</div><div>8 Channel</div><div>Gen 5 PCIe</div></div> |                                                                                                                                                                                                                                                                                                              | <div><b>Coral Rapids</b></div> <div><div>LGA Socket</div><div>CPU AI</div><div>8 Channel</div></div> |
| <div><b>Intel Xeon 600 Processors</b><br/>Granite Rapids W</div> <div><div>LGA Socket</div><div>7 Years</div><div>AMX CPU AI</div><div>1 Socket</div><div>150-350 TDP (W)</div><div>12-86 P-cores</div><div>Gen 5 PCIe</div><div>vPro</div></div>                                                                   |                                                                                                                                                                                                                                                                                                              |                                                                                                      |
| <div><b>Intel Xeon 6300 Processors</b><br/>Bartlett Lake 12P on the Catlow Platform</div> <div><div>LGA Socket</div><div>7 Years</div><div>AVX CPU AI</div><div>1 Socket</div><div>55-125 TDP (W)</div><div>4-12 P-cores</div><div>Gen 5 PCIe</div><div>vPro</div></div>                                            | <div><b>Nova Lake E</b><br/>Dunlow Platform</div> <div><div>LGA Socket</div><div>7 Years</div><div>AVX10.2 CPU AI</div><div>≤12 Xe3P GPU AI</div><div>6.0 NPU AI</div><div>1 Socket</div><div>35-125 TDP (W)</div><div>4-32 Cores</div><div>≤200 TOPS (int8)</div><div>Gen 5 PCIe</div><div>vPro</div></div> |                                                                                                      |

## Additional Design Options<sup>1</sup>

|                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                 |                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <div><b>Intel Xeon 6900P Processors</b><br/>Granite Rapids AP on the Birch Stream AP Platform</div> <div><div>LGA Socket</div><div>AVX CPU AI</div><div>1-2 Socket</div><div>350-500 TDP (W)</div><div>72-128 P-cores</div><div>Gen 5 PCIe</div></div>                                            | <div><b>Diamond Rapids</b><br/>Oak Stream Platform</div> <div><div>LGA Socket</div><div>AMX CPU AI</div><div>1-4 Socket</div><div>≤500 TDP (W)</div><div>≤192+ P-cores</div><div>12/16 Channel</div><div>Gen 6 PCIe</div></div> | <div><b>Coral Rapids</b></div> <div><div>LGA Socket</div><div>CPU AI</div><div>16 Channel</div></div>     |
| <div><b>Intel Xeon 6700P-B and 6500P-B Processors</b><br/>Granite Rapids D on the Kaseyville Platform</div> <div><div>BGA Socket</div><div>T UC</div><div>AMX CPU AI</div><div>1 Socket</div><div>35-125 TDP (W)</div><div>12-72 P-cores</div><div>Gen 5 PCIe</div><div>200G Ethernet</div></div> |                                                                                                                                                                                                                                 | <div><b>Palm Ridge</b><br/>Summitville Platform</div> <div><div>BGA Socket</div><div>CPU AI</div></div>   |
| <div><b>Intel Atom P6000 Processors</b><br/>Grand Ridge on the Loganville Platform</div> <div><div>BGA Socket</div><div>T UC</div><div>AVX CPU AI</div><div>1 Socket</div><div>43-86 TDP (W)</div><div>8-24 E-cores</div><div>Gen 4 PCIe</div><div>100G Ethernet</div></div>                      |                                                                                                                                                                                                                                 | <div><b>Beaver Ridge</b><br/>Meadowville Platform</div> <div><div>BGA Socket</div><div>CPU AI</div></div> |

1 – “Additional Design Options” refer to current or future Intel products that may be applicable to select edge designs. These are provided for informational purposes only. For product specifications, SKUs, availability, technical support, OS compatibility, and other details, please visit <https://rdc.intel.com> or contact your Intel representative.

The Intel products listed above do not represent all available products. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (ID: 615485) available on [rdc.intel.com](https://rdc.intel.com). Placement indicates future, yearly trend, for production hardware availability and is not reflective of launch granularity and/or launch timing. It is subject to change and may be different from other Intel divisions with similar products. For the latest detailed product schedule information, please refer to individual product gold decks/snapshots, or contact your Intel representative. The information above is subject to change without notice and should not be viewed as an official POR or product schedule document. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.

Product Highlights

BGA

Chip-down CPU package

LGA

Socketed CPU package

Years

Estimated Product Availability

vPro

Available with Intel vPro technology

Use Condition Support

Highlights added after internal development milestones

L

Support for long-life reliability, up to 10-year use

T

Support for extended temperature

 Tip: Click on a codename for additional details (when available)



intel  
Recommended  
Scalable AI, Graphics  
and Media Designs

intel  
Recommended  
Efficiency Optimized  
AI Edge Designs

Additional  
Design Options<sup>1</sup>

| 2026                                                                                                                                                                                                                                                                                                                                                 | 2027                                                                                                                                                                                                                                                                                                             | 2028                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><h3>Intel Arc Pro B50 and B60 Graphics</h3><p>Battlemage</p><div><div>PCIe Card</div><div>3+ Years</div><div>≤20 Xe2 GPU AI</div><div>70-200 TDP (W)</div><div>≤197 TOPS (int8)</div><div>Gen 5 PCIe</div></div></div>                                                                                                                          |                                                                                                                                                                                                                                                                                                                  | <div><h3>Razor Lake AX</h3><p>Formerly codenamed Nova Lake AX</p><div><div>BGA Socket</div><div>TBD Years</div><div>P, R UC</div><div>CPU AI</div><div>≤32 Xe3P GPU AI</div><div>7.0 NPU AI</div></div><div><div>35-70 cTDP (W)</div><div>≤28 Cores</div><div>≤600+ TOPS (int8)</div><div>Gen 5 PCIe</div><div>vPro</div></div></div> |
| <div><h3>Intel Core Ultra Series 3 Processors</h3><p>Panther Lake</p><div><div>BGA Socket</div><div>10 Years</div><div>F, I, P, R, T UC</div><div>AVX CPU AI</div><div>≤12 Xe3 GPU AI</div><div>5.0 NPU AI</div></div><div><div>15-65 cTDP (W)</div><div>6-16 Cores</div><div>≤180 TOPS (int8)</div><div>Gen 5 PCIe</div><div>vPro</div></div></div> | <div><h3>Nova Lake</h3><div><div>BGA &amp; LGA Sockets</div><div>10 Years</div><div>P, R UC</div><div>AVX 10.2 CPU AI</div><div>≤12 Xe3P GPU AI</div><div>6.0 NPU AI</div></div><div><div>12-175 cTDP (W)</div><div>6-52 Cores</div><div>≤200+ TOPS (int8)</div><div>Gen 5 PCIe</div><div>vPro</div></div></div> | <div><h3>Razor Lake</h3><div><div>BGA &amp; LGA Sockets</div><div>10 Years</div><div>P, R UC</div></div><div><div>CPU AI</div><div>GPU AI</div><div>NPU AI</div></div><div>Nova Lake Platform Compatible</div></div>                                                                                                                  |
| <div><h3>Intel Core Ultra 200V Series Processors</h3><p>Lunar Lake</p><div><div>BGA Socket</div><div>3 Years</div><div>AVX CPU AI</div><div>≤8 Xe2 GPU AI</div><div>4.0 NPU AI</div><div>8-95 TDP (W)</div><div>8 Cores</div><div>≤120 TOPS (int8)</div><div>Gen 5 PCIe</div><div>vPro</div></div></div>                                             |                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                       |

|                                                                |              |                                      |                       |
|----------------------------------------------------------------|--------------|--------------------------------------|-----------------------|
| Product Highlights                                             | <b>BGA</b>   | Chip-down CPU package                | Use Condition Support |
|                                                                | <b>LGA</b>   | Socketed CPU package                 |                       |
|                                                                | <b>Years</b> | Estimated Product Availability       |                       |
|                                                                | <b>vPro</b>  | Available with Intel vPro technology |                       |
| Highlights added after internal development milestones         |              |                                      |                       |
| <b>F</b> Support for Intel Functional Safety (FuSa) technology |              |                                      |                       |
| <b>I</b> Extended temperature with industrial reliability      |              |                                      |                       |
| <b>P</b> Supports Product Tuning for Reliability (PTR)         |              |                                      |                       |
| <b>R</b> Real Time, supporting TCC and TSN                     |              |                                      |                       |
| <b>T</b> Support for extended temperature                      |              |                                      |                       |

 Tip: Click on a codename for additional details (when available)

1 – “Additional Design Options” refer to current or future Intel products that may be applicable to select edge designs. These are provided for informational purposes only. For product specifications, SKUs, availability, technical support, OS compatibility, and other details, please visit <https://rdc.intel.com> or contact your Intel representative.

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# Mainstream and Entry Edge Designs

Products shown as in “development” or “planning” reflect the calendar-year in-market ramp for edge designs only—not launch or engineering milestones. The information below is not a comprehensive list of all available Intel products, future Intel products, or SKU configurations.

Production

Development

2026

2027

2028

## Intel Core Processors (Series 2)

Bartlett Lake and Bartlett Lake 12P

LGA Socket

10 Years

P, R UC

AVX CPU AI

≤2 Xe GPU AI

35-125 TDP (W)

2-24 Cores

Gen 5 PCIe

vPro

## Raptor Lake Next

LGA Socket

10 Years

P, R UC

AVX CPU AI

≤2 Xe GPU AI

Gen 5 PCIe

vPro

Alder Lake S and Raptor Lake S Platform Compatible

## Intel Core Series 3 Processors

Wildcat Lake

BGA Socket

10 Years

P, R UC

AVX CPU AI

≤2 Xe3 GPU AI

5.0 NPU AI

10-28 cTDP (W)

6 Cores

≤40 TOPS (int8)

Gen 4 PCIe

## Wildcat Lake Refresh

BGA Socket

10 Years

P, R UC

AVX CPU AI

≤2 Xe3 GPU AI

5.0 NPU AI

10-35 cTDP (W)

≤8 Cores

≤40+ TOPS (int8)

Gen 4 PCIe

vPro

Wildcat Lake Platform Compatible

## Intel Core Ultra 200S Plus Series Processors

Arrow Lake S Refresh

LGA Socket

4 Years

P UC

AVX CPU AI

≤4 Xe GPU AI

4.0 NPU AI

125-250 TDP (W)

≤24 Cores

≤36 TOPS (int8)

Gen 5 PCIe

vPro

Arrow Lake S Platform Compatible

## Intel Core 3 N300 Series, Intel Atom x7000 Series and Intel Processor N Series

Alder Lake N, Amston Lake and Twin Lake

BGA Socket

10 Years

F, I, P, R, T UC

AVX CPU AI

≤2 Xe GPU AI

6-25 TDP (W)

2-8 Cores

≤4 TOPS (int8)

Gen 3 PCIe

Alder Lake N Platform Compatible

## Future Entry

BGA Socket

10 Years

P, R, T UC

AVX CPU AI

≤2 Xe3 GPU AI

NPU AI

Wildcat Lake Platform Compatible



Recommended Mainstream Edge Designs

Additional Design Options<sup>1</sup>



Recommended Entry Edge Designs

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The Intel products listed above do not represent all available products. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (ID: 615485) available on [rdc.intel.com](https://rdc.intel.com). Placement indicates future, yearly trend, for production hardware availability and is not reflective of launch granularity and/or launch timing. It is subject to change and may be different from other Intel divisions with similar products. For the latest detailed product schedule information, please refer to individual product gold decks/snapshots, or contact your Intel representative. The information above is subject to change without notice and should not be viewed as an official POR or product schedule document. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.



Tip: Click on a codename for additional details (when available)

BGA

Chip-down CPU package

LGA

Socketed CPU package

Years

Estimated Product Availability

vPro

Available with Intel vPro technology

Use Condition Support

Highlights added after internal development milestones

- F Support for Intel Functional Safety (FuSa) technology
- I Extended temperature with industrial reliability
- P Supports Product Tuning for Reliability (PTR)
- R Real Time, supporting TCC and TSN
- T Support for extended temperature



|                                                                                | 2025                                                                                                         | 2026                                                                                                        | 2027                                                                                                    | 2028                                                                                     |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <div><div>intel xeon</div><div>TDP 35-350+W</div><div>LGA</div></div>          | Granite Rapids SP<br>Brich Stream Platform <div>CPU AI</div>                                                 |                                                                                                             |                                                                                                         | Coral Rapids <div>CPU AI</div>                                                           |
|                                                                                | Granite Rapids W <div>CPU AI</div>                                                                           |                                                                                                             |                                                                                                         |                                                                                          |
|                                                                                |                                                                                                              | Bartlett Lake 12P<br>Catlow Platform <div>CPU AI</div>                                                      | Nova Lake E<br>Dunlow Platform <div>CPU AI GPU AI NPU AI</div>                                          |                                                                                          |
| <div><div>intel ARC GRAPHICS</div><div>TDP 35-200W</div><div>ULTRA</div></div> | PCIe Battlemage B50/B60 <div>GPU AI</div>                                                                    |                                                                                                             |                                                                                                         | BGA Razor Lake AX <div>CPU AI GPU AI NPU AI</div>                                        |
| <div><div>intel CORE ULTRA</div><div>TDP 12-85+W</div><div>BGA</div></div>     | Arrow Lake <div>CPU AI GPU AI NPU AI</div>                                                                   | Panther Lake <div>CPU AI GPU AI NPU AI</div>                                                                | Nova Lake <div>CPU AI GPU AI NPU AI</div>                                                               | Razor Lake <div>CPU AI GPU AI NPU AI</div> <div>Nova Lake Platform Compatible</div>      |
|                                                                                | Raptor Lake Refresh <div>CPU AI GPU AI</div> <div>Alder Lake and Raptor Lake Platform Compatible</div>       | Wildcat Lake <div>CPU AI GPU AI NPU AI</div>                                                                | Wildcat Lake Refresh <div>CPU AI GPU AI NPU AI</div> <div>Wildcat Lake Platform Compatible</div>        |                                                                                          |
| <div><div>intel CORE ULTRA</div><div>TDP 10-45W</div><div>BGA</div></div>      |                                                                                                              |                                                                                                             |                                                                                                         |                                                                                          |
|                                                                                |                                                                                                              |                                                                                                             |                                                                                                         |                                                                                          |
| <div><div>intel CORE ULTRA</div><div>TDP 20-175+W</div><div>LGA</div></div>    | Arrow Lake <sup>1</sup>                                                                                      | Arrow Lake Refresh <sup>1</sup> <div>CPU AI GPU AI NPU AI</div> <div>Arrow Lake S Platform Compatible</div> | Nova Lake <div>CPU AI GPU AI NPU AI</div>                                                               | Razor Lake <div>CPU AI GPU AI NPU AI</div> <div>Nova Lake Platform Compatible</div>      |
|                                                                                | Bartlett Lake <div>CPU AI GPU AI</div>                                                                       | Bartlett Lake 12P <div>CPU AI GPU AI</div>                                                                  | Raptor Lake Next <div>CPU AI GPU AI</div> <div>Alder Lake S and Raptor Lake S Platform Compatible</div> |                                                                                          |
| <div><div>intel</div><div>TDP 6-25W</div><div>BGA</div></div>                  | Alder Lake N, Amston Lake and Twin Lake <div>CPU AI GPU AI</div> <div>Alder Lake N Platform Compatible</div> |                                                                                                             |                                                                                                         | Future Entry <div>CPU AI GPU AI NPU AI</div> <div>Wildcat Lake Platform Compatible</div> |





# Edge Designs | Detailed View

Products shown as in “development” or “planning” reflect the calendar-year in-market ramp for edge designs only—not launch or engineering milestones. The information below is not a comprehensive list of all available Intel products, future Intel products, or SKU configurations.

Production

Development

Planning

|      |                        | 2025                                                                                                                                                                                                  | 2026                                                                                                                                               | 2027                                                                                                | 2028                                                                                     |
|------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|      | TDP<br>35-350+W<br>LGA | Intel Xeon 6700P and 6500P Processors<br>Granite Rapids SP on the Birch Stream SP Platform<br>LGA 7 Years CPU AI L                                                                                    |                                                                                                                                                    |                                                                                                     | Coral Rapids<br>LGA 7 Years CPU AI                                                       |
|      |                        | Intel Xeon 600 Processors for the Edge<br>Granite Rapids W<br>LGA 7 Years CPU AI                                                                                                                      |                                                                                                                                                    |                                                                                                     |                                                                                          |
| <br> | TDP<br>30-200W<br>PCIe | Intel Arc Pro B50 and B60 Graphics<br>Battlemage<br>3+ Years GPU AI                                                                                                                                   |                                                                                                                                                    |                                                                                                     | Razor Lake AX<br>Formerly codenamed Nova Lake AX<br>BGA TBD CPU AI GPU AI NPU P,R vPro   |
|      |                        |                                                                                                                                                                                                       |                                                                                                                                                    |                                                                                                     |                                                                                          |
| <br> | TDP<br>12-85+W<br>BGA  | Intel Core Ultra Processors (Series 2)<br>Arrow Lake H, U<br>BGA 5 Years CPU AI GPU AI NPU P vPro                                                                                                     | Intel Core Ultra Series 3 Processors<br>Panther Lake<br>BGA 10 Years CPU AI GPU AI NPU F,I,P,R,T vPro                                              | Nova Lake<br>BGA 10 Years CPU AI GPU AI NPU vPro P,R                                                | Razor Lake<br>BGA 10 Years CPU AI GPU AI NPU vPro P,R<br>Nova Lake Platform Compatible   |
|      |                        | Intel Core Processors (Series 1 and Series 2)<br>Raptor Lake H Refresh, Raptor Lake U Refresh<br>BGA 10 Years CPU AI GPU AI vPro P,R<br>Alder Lake and Raptor Lake Platform Compatible                | Intel Core Series 3 Processors<br>Wildcat Lake<br>BGA 10 Years CPU AI GPU AI NPU P,R                                                               | Wildcat Lake Refresh<br>BGA 10 Years CPU AI GPU AI NPU P,R vPro<br>Wildcat Lake Platform Compatible |                                                                                          |
| <br> | TDP<br>20-175+W<br>LGA | Intel Core Ultra Processors (Series 2)<br>Arrow Lake S<br>LGA 5 Years CPU AI GPU AI NPU vPro P                                                                                                        | Intel Core Ultra 200S Plus Series Processors<br>Arrow Lake S Refresh<br>LGA 4 Years CPU AI GPU AI NPU vPro P<br>Arrow Lake Platform Compatible     | Nova Lake<br>LGA 10 Years CPU AI GPU AI NPU vPro P,R                                                | Razor Lake<br>LGA 10 Years CPU AI GPU AI NPU vPro P,R<br>Nova Lake Platform Compatible   |
|      |                        | Intel Core Processors (Series 2)<br>Bartlett Lake S<br>LGA 10 Years CPU AI GPU AI vPro P,R                                                                                                            | Intel Core Processors (Series 2)<br>Bartlett Lake 12P<br>LGA 10 Years CPU AI GPU AI vPro P,R<br>Alder Lake S and Raptor Lake S Platform Compatible | Raptor Lake Next<br>LGA 10 Years CPU AI GPU AI vPro P,R                                             |                                                                                          |
|      | TDP<br>6-25W<br>BGA    | Intel Core 3 N300 Series, Intel Atom x7000 Series and Intel Processor N Series<br>Alder Lake N, Amston Lake and Twin Lake<br>BGA 10 Years CPU AI GPU AI F,I,P,R,T<br>Alder Lake N Platform Compatible |                                                                                                                                                    |                                                                                                     | Future Entry<br>BGA 10 Years CPU AI GPU AI NPU P,R,T<br>Wildcat Lake Platform Compatible |

1 – “Additional Design Options” refer to current or future Intel products that may be applicable to select edge designs. These are provided for informational purposes only. The Intel products listed above do not represent all available products. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (ID: 615485) available on [rdc.intel.com](https://rdc.intel.com). Placement indicates future, yearly trend, for production hardware availability and is not reflective of launch granularity and/or launch timing. It is subject to change and may be different from other Intel divisions with similar products. For the latest detailed product schedule information, please refer to individual product gold decks/snapshots, or contact your Intel representative. The information above is subject to change without notice and should not be viewed as an official POR or product schedule document. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.

|                    |       |                                        |
|--------------------|-------|----------------------------------------|
| Product Highlights |       | Recommended Edge Designs               |
|                    |       | Additional Design Options <sup>1</sup> |
|                    | BGA   | Chip-down CPU package                  |
|                    | LGA   | Socketed CPU package                   |
|                    | Years | Estimated Product Availability         |
|                    | vPro  | Available with Intel vPro technology   |

|                       |                                                        |                                                       |
|-----------------------|--------------------------------------------------------|-------------------------------------------------------|
| Use Condition Support | Highlights added after internal development milestones |                                                       |
|                       | F                                                      | Support for Intel Functional Safety (FuSa) technology |
|                       | I                                                      | Extended temperature with industrial reliability      |
|                       | L                                                      | Support for long-life reliability                     |
|                       | P                                                      | Supports Product Tuning for Reliability (PTR)         |
|                       | T                                                      | Support for extended temperature                      |
|                       | R                                                      | Real Time, supporting TCC and TSN                     |

|                                       |  |                                 |
|---------------------------------------|--|---------------------------------|
| Integrated AI Acceleration Highlights |  | Processor-based AI acceleration |
|                                       |  | Integrated GPU AI acceleration  |
|                                       |  | Integrated NPU, Intel AI Boost  |

Tip: Click on a codename for additional details (when available)

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Revision Date: 13 February 2026





# Intel Edge Roadmaps

## Positioning and Transition Guidance

# Intel Edge Design Landscape

The **Intel Edge Design Landscape** provides a horizontal grouping of Intel products and their general fitment into various edge and embedded designs. Each grouping forms a set of products designed to address specific demands or requirements at the edge. This horizontal grouping is not intended to be prescriptive and is provided to help offer general guidance in assisting with edge and embedded design discussions.

## Scalable Performance



**Scalable Performance** is aligned to **Intel Xeon processor**-branded products, which offer the most performant class of Intel processors, intended for use in edge devices and server designs with very high-performance requirements.

## Scalable AI, Graphics, and Media



**Scalable AI, Graphics, and Media** feature **Intel Arc Graphics** discrete and integrated products within select **Intel Core Ultra processors** that are designed to scale-up Edge AI, graphics and media performance across edge and embedded designs.

## Efficiency Optimized AI



**Efficiency Optimized AI** highlights the unique differentiation of **Intel Core Ultra processor**-branded products which integrate the CPU, Intel Arc GPU, and an NPU, into a unified solution with an optimized TDP, offering an efficient Edge AI architecture, especially when compared to edge designs that rely on multiple, independent discrete AI products, to support Edge AI workloads.

## Mainstream



**Mainstream** groups a variety of **Intel Core and Intel processor**-branded products which serve a broad and diverse set of edge designs across a large variety of vertical use cases and edge design requirements. Supporting socketed and chip-down designs, alongside TDP configurations from 12 watts to 250+ watts, these processors are used prolifically in legacy, modern, and future edge devices and usages.

## Entry



**Entry** offers a variety of **Intel Core 3, Intel processor, and Intel Atom**-branded products which offer lower core count, lower power, lower price point, edge designs. Historical products in this category include former Pentium and Celeron-branded processors which were replaced with the "Intel processor" brand in 2023.

Integrated  
AI Acceleration  
Highlights based on the  
Intel Edge Roadmap

- CPU AI** Processor-based AI acceleration
- GPU AI** Integrated GPU AI acceleration
- NPU AI** Integrated NPU, Intel AI Boost



# Recommended Edge Designs | Summary View

Products shown as in “development” or “planning” reflect the calendar-year in-market ramp for edge designs only—not launch or engineering milestones. The information below is not a comprehensive list of all available Intel products, future Intel products, or SKU configurations.

Production

Development

Planning

|                                  | 2026                                                                                                                                                                                                                                                                                              | 2027                                                                                                                                                                                                                                                                                                | 2028                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scalable Performance             | <div>Granite Rapids SP<br/>Birch Stream Platform</div> <div>Granite Rapids W CPU AI</div>                                                                                                                                                                                                         | <div>Granite Rapids W delivers a significant leap in performance (higher frequencies, larger cache) and expanded platform capabilities that meet the needs of demanding edge workloads: Video Analytics, Test and Measurement, Health Screening and Automation</div>                                | <div>Coral Rapids CPU AI</div>                                                                                                                                                                                                                                                                                                                  |
|                                  | <div>Bartlett Lake 12P<br/>Catlow Platform</div>                                                                                                                                                                                                                                                  | <div>Nova Lake E CPU AI GPU AI NPU AI<br/>Dunlow Platform</div> <div>Nova Lake E will be first Intel Xeon processor to offer integrated Intel Arc GPU and integrated NPU.</div>                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                 |
| Scalable AI, Graphics, and Media | <div>Battlemead B50/B60 GPU AI</div> <div>Panther Lake CPU AI GPU AI NPU AI<br/>Panther Lake is ideal for near-term edge designs requiring premium AI and industrial/extended temp design options</div>                                                                                           | <div>Nova Lake delivers a unified architecture that will scale from Core Ultra to Core processors SKUs, offering breakthrough AI performance and robust I/O</div>                                                                                                                                   | <div>Razor Lake AX CPU AI GPU AI NPU AI<br/>formerly codenamed Nova Lake AX</div> <div>B50/B60 will support incremental, discrete-based Edge AI performance uplift through late 2027 when <b>Razor Lake AX</b> will arrive. Razor Lake AX will integrate the equivalent of <u>two</u> B50 discrete GPUs into a BGA/chip-down edge design.</div> |
| Efficiency Optimized AI          | <div>Panther Lake CPU AI GPU AI NPU AI</div>                                                                                                                                                                                                                                                      | <div>Nova Lake CPU AI GPU AI NPU AI</div>                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                 |
| Mainstream                       | <div>Bartlett Lake 12P CPU AI GPU AI<br/>Alder Lake S and Raptor Lake S Platform Compatible</div> <div>Wildcat Lake CPU AI GPU AI NPU AI<br/>Wildcat Lake offers mainstream performance and value while for the first time offering a ~40 TOPs NPU in our Intel Core processor product line</div> | <div>Nova Lake CPU AI GPU AI NPU AI</div> <div>Bartlett Lake 12P offers the most P-cores (Performance cores) ever in LGA/socketed edge design. Fully drop-in compatible with prior Alder Lake, Raptor Lake, Raptor Lake Refresh designs, offering improved perf/\$ in the same socket/design.</div> | <div>Future entry will be Intel’s first entry processor to offer integrated Intel Xe graphics and NPU, alongside drop-in Wildcat Lake platform compatibility.</div> <div>Future Entry CPU AI GPU AI NPU AI<br/>Wildcat Lake Platform Compatible</div>                                                                                           |
| Entry                            |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                 |

The Intel products listed above do not represent all available products. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (ID: 615485) available on [rdc.intel.com](https://rdc.intel.com). Placement indicates future, yearly trend, for production hardware availability and is not reflective of launch granularity and/or launch timing. It is subject to change and may be different from other Intel divisions with similar products. For the latest detailed product schedule information, please refer to individual product gold decks/snapshots, or contact your Intel representative. The information above is subject to change without notice and should not be viewed as an official POR or product schedule document. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.

Integrated AI Acceleration Highlights

CPU AI

GPU AI

NPU AI

Processor-based AI acceleration  
Integrated GPU AI acceleration  
Integrated NPU, Intel AI Boost

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|      |                                                                                |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|--------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2026 |                                                                                |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1    | <b>Granite Rapids SP</b><br>Birch Stream Platform                              | CPU AI                     | 1<br>Designs on prior generations of Intel Xeon Scalable and Intel Xeon W processors will discover a significant uplift in performance, including strong AI interference performance with new <b>Granite Rapids SP, known as Intel Xeon 6700P/6500P processors. Granite Rapids W, known as Intel Xeon 600 Processors</b> deliver even higher performance for the most demanding edge designs through higher processor frequencies/cache and enhanced I/O. Select Granite Rapids W SKUs will offer up to 7 years of product availability.                                                                                                                                                                                                 |
|      | <b>Granite Rapids W</b>                                                        | CPU AI                     | 2<br><b>Bartlett Lake 12P on the Catlow platform</b> will validate the 12 P-core only SKU from the Bartlett Lake 12P family and offer support on the Catlow platform. Intel Xeon 6300 Processors are currently shipping, and this will add a new SKU known as the <b>Intel Xeon 6377P Processor</b> . This SKU will offer up to 7 years of product availability and bring outstanding processor frequencies and performance at a 95W TDP.                                                                                                                                                                                                                                                                                                |
| 2    | <b>Bartlett Lake 12P</b><br>Catlow Platform                                    | CPU AI                     | 3<br><b>Battlemage, known as Intel Arc Pro B50 and B60 Graphics</b> will offer support for edge environments, with flexible TDP ranges, and a breadth of support for Intel Xeon, Intel Core Ultra, and Intel Core processors, and is an ideal solution for demanding Edge AI designs, in addition to offering performance for graphics and media workloads.                                                                                                                                                                                                                                                                                                                                                                              |
|      | <b>Battlemage B50/B60</b>                                                      |                            | 4<br><b>Panther Lake, known as Intel Core Ultra Series 3 processors</b> is ideal for near-term edge designs requiring premium AI to replace expensive and power-hungry discrete GPUs, and/or use cases requiring industrial/extended temp. Offering up to ~180 pTOPS, it is the most AI processing we’ve ever offered, rivaling some discrete GPUs with lower cost and lower power. In addition, Panther Lake also has our latest and greatest performance and efficiency core architecture offering enhanced performance.                                                                                                                                                                                                               |
|      |                                                                                |                            | With up to ten years of product availability and support for a variety of critical edge design requirements such as embedded, industrial, extended temperature, Functional Safety, Real Time/TCC, and more, Panther Lake will be an important part of next-gen Edge AI systems, Industrial AI PCs, Robotics, and much more.                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4    | <b>Panther Lake</b>                                                            | CPU AI<br>GPU AI<br>NPU AI | Panther Lake is a premium product with excellent AI performance, this won’t meet the TCO needs of all use cases, especially those not taking advantage of the AI performance, Industrial, or Extended Temp capabilities. Our 2027 Nova Lake platform will offer greater scalability on TCO from Core to Core Ultra in a unified platform.                                                                                                                                                                                                                                                                                                                                                                                                |
|      |                                                                                |                            | <b>Historical Products Transitioning to Panther Lake</b><br>Lunar Lake, Legacy “H” products, Arrow Lake H, Raptor Lake H Industrial, Tiger Lake H Industrial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 5    | <b>Bartlett Lake 12P</b><br>Alder Lake S and Raptor Lake S Platform Compatible | CPU AI<br>GPU AI           | 5<br><b>Bartlett Lake S 12P, known as Intel Core Processors (Series 2)</b> offers the most P-cores (Performance cores) ever in LGA/socketed edge design. As a P-core <u>only</u> design, Bartlett Lake S 12P will have no “hybrid architecture,” this will help deliver breakthrough deterministic performance, critical for some mission critical Edge use cases while being drop-in compatible with prior Alder Lake S, Raptor Lake S, and Raptor Lake S Refresh designs. In most price bands, we are offering two-additional P-cores, significantly improving performance/\$, gen-on-gen.                                                                                                                                             |
|      |                                                                                |                            | <b>Historical Products Transitioning to Bartlett Lake</b><br>Legacy “S” products, Rocket/Alder/Raptor/Raptor Lake S Refresh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 6    | <b>Wildcat Lake</b>                                                            | CPU AI<br>GPU AI<br>NPU AI | 6<br><b>Wildcat Lake, known as future Intel Core Series 3 Processors</b> , will offer mainstream price points along with ~40 pTOPS offering the most AI ever in an Intel Core processor-brand CPU. In addition to excellent AI, Wildcat Lake has our latest and greatest performance and efficiency core architecture offering enhanced performance. Wildcat Lake is positioned for <u>long-term</u> multi-generational use, offering lower cost and power consumption. It complements Panther Lake from below and extends into the value segment of the Nova Lake SKU stack. Its AI performance and extended lifecycle are key to enhancing customer ROI. Wildcat Lake configurable TDP scales from 12W to 25W, with a base TDP of 15W. |
|      |                                                                                |                            | <b>Historical Products Transitioning to Wildcat Lake</b><br>Legacy “U” Products (e.g. Sky/Kaby/Whiskey Lake), Alder Lake U, Raptor Lake U, Raptor Lake U Refresh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7    | <b>Twin Lake</b><br>Alder Lake N and                                           | CPU AI<br>GPU AI           | 7<br><b>Twin Lake, known as Intel Processor N150, N250 and Intel Core 3 N355 Processor</b> , are fully compatible with prior generation Alder Lake N and Amston Lake, further extending the perf/\$ of this design, with up to ten-years of product availability. Amston Lake should be used for Industrial and Extended Temp designs.                                                                                                                                                                                                                                                                                                                                                                                                   |



2027

1

**Nova Lake E on the Dunlow Platform** will be the first Intel Xeon processor to offer an integrated Intel Arc GPU (Up to 12 Xe) and integrated NPU (6.0). Available in SKU configuration that offer up to 32 E-core only SKUs and up to 16 P-core only SKUs, this will be a truly disruptive offering when it arrives in 2027. Select SKUs will offer up to 7 years of product availability. In addition, we will offer the flexibility to take Nova Lake E SKUs and use them on the Nova Lake S (LGA) design, which simplifies and expands the use of Nova Lake S beyond the Intel Core Ultra and Intel Core processor brands. With flexible TDPs ranging from 25W to 125W, this will truly be one of the most game changing Xeon-branded products in over a decade and suited perfectly for lower core count, lower TDP, Xeon-based Edge AI, edge and embedded workloads.

## Historical Products Transitioning to Nova Lake

Raptor Lake E and Bartlett Lake I2P on the Catlow Platform

2

**Nova Lake** will offer a simplified edge design landscape, with a single BGA/chip-down board design, and a single LGA/socketed board design. Nova Lake will offer a SKU stack that scales from top-to-bottom, Intel Core Ultra processors to Intel Core processors, integrated next-gen Intel Arc graphics, integrated next-gen NPU, integrated next-gen media processing. Offering up to 200+ TOPS across both the BGA and LGA designs, Nova Lake truly delivers a no compromise solution, regardless if designing for BGA (chip-down) or LGA (socketed) solutions. For BGA/chip-down designs that require higher I/O demands, we will offer an optional I/O Expander chipset, leveraged from Nova Lake LGA/socketed designs, to help boost I/O on BGA designs. With multi-generational support across both LGA and BGA designs, Nova Lake brings all the enthusiasm established with Panther Lake and expand/enhance the offering across the broadest set of edge and embedded use cases, with TDPs as low as 15W. Nova Lake will be a truly disruptive platform for Edge AI and deliver breakthrough differentiation for performance/TDP efficiency.

## Historical Products Transitioning to Nova Lake

Tiger Lake, Alder Lake, Raptor Lake, Raptor Lake Refresh, Meteor Lake, Arrow Lake, Bartlett Lake, Panther Lake

3

**Raptor Lake Next** will offer a refresh of select Raptor Lake S Refresh SKUs (Hybrid architecture only) delivering enhanced performance, and continued longevity of the long service life of Alder Lake S and Raptor Lake S platforms. Complimenting Bartlett Lake, Raptor Lake Next will deliver yet another set of SKUs to continue to drive price/performance differentiation for traditional/legacy edge workloads.

## Historical Products Transitioning to Raptor Lake Next

Legacy “S” products, Rocket/Alder/Raptor/Raptor Lake S Refresh, Bartlett Lake (Hybrid SKUs)

4

**Wildcat Lake Refresh** will offer a set of new SKUs with up to 8 cores and introduce support for Intel vPro technology. Wildcat Lake, also known as Intel Core Series 3 processors, launching in 2026, alongside Wildcat Lake Refresh in 2027, will establish the Wildcat Lake platform as a long-term service platform for mainstream edge designs, offering the perfect balance of performance, integrated AI acceleration, TDP efficiency and price.

## Historical Products Transitioning to Wildcat Lake Refresh

Legacy “U” Products (e.g. Sky/Kaby/Whiskey Lake), Alder Lake U, Raptor Lake U, Raptor Lake U Refresh, Wildcat Lake

1

**Nova Lake E**  
Dunlow Platform

CPU AI  
GPU AI  
NPU AI

2

**Nova Lake**

CPU AI  
GPU AI  
NPU AI

3

**Raptor Lake Next**

CPU AI

Alder Lake S and Raptor Lake S

4

**Wildcat Lake Refresh**

CPU AI

Wildcat Lake

2028

1

Coral Rapids

CPU AI

We had previously guided edge/embedded customers toward the future Diamond Rapids (8 ch)/PCIe 6 solution as the follow-on to Granite Rapids SP (8 ch). In late 2025, Intel made the decision to prioritize its focus for Diamond Rapids toward the unprecedented demand of CSPs that are focused on next-gen solutions that will be truly disruptive for cloud-based AI and Agentic AI solutions. Diamond Rapids will now focus on delivering a next-gen solution that is offered in a 12 or 16-channel only configuration, which creates design and cost constraints for many edge/embedded customers. Intel will continue to ship and support Granite Rapids SP (8 ch) with select SKUs offering up to 7 years of product availability alongside extended support options.

**Coral Rapids** will be our next 8 channel/PCIe 6 Intel Xeon-branded solution in the 2028 timeframe. We will have additional details on Coral Rapids as it proceeds into the development milestone. For near-term guidance and questions on Granite Rapids, Diamond Rapids, or Coral Rapids, please contact your Intel Representative.

**Historical Products Transitioning to Coral Rapids**  
Cascade Lake, Ice Lake, Sapphire Rapids, Emerald Rapids, Granite Rapids

2

Razor Lake AX

CPU AI  
GPU AI  
NPU AI

formerly codenamed Nova Lake AX

Nova Lake AX was renamed to **Razor Lake AX** and adjusted to a 2028 calendar year to reflect the expected launch and in-market ramp for this product. There are no changes to the Razor Lake AX engineering milestones, and this change was made solely to reflect its architectural and timing alignment with the greater Razor Lake product family that will ramp in 2028.

Razor Lake AX will integrate the equivalent of two Intel Arc Pro B50 discrete GPUs into a BGA/chip-down edge design. Razor Lake AX will be Intel’s first wide-memory, big graphics Edge BGA design, offering up to 600 TOPS, combining up to 28 CPU cores, up to 32 Xe GPU cores, and the latest generation NPU. With an operating TDP of 50W and cTDP of 35-70W, with up to 128GB of 256b LPDDR5x-10700, and a memory bandwidth of 340GB/s, Razor Lake AX will truly be one of the most efficient and disruptive Edge AI solution in the marketplace.

**Historical Products Transitioning to Razor Lake AX**  
Alchemist and Battlemage

3

Razor Lake

CPU AI  
GPU AI  
NPU AI

Nova Lake Platform Compatible

**Razor Lake** will be a Nova Lake platform compatible solution, offering full reuse of the Nova Lake BGA/chip-down board design and Nova Lake LGA/socketed board design. Razor Lake will offer enhanced performance when compared to Nova Lake, as well as full-reuse of the BGA I/O expansion option established with Nova Lake. Additional details on Razor Lake will be shared as we move closer to the end of 2027.

**Historical Products Transitioning to Razor Lake**  
Tiger Lake, Alder Lake, Raptor Lake, Raptor Lake Refresh, Meteor Lake, Arrow Lake, Bartlett Lake, Panther Lake, Nova Lake

4

Future Entry

CPU AI  
GPU AI  
NPU AI

Wildcat Lake Platform Compatible

**Future Entry** has now been approved for engineering commitment and will receive a formal codename in a mid-2026 update. Our future entry product will be a derivative of Wildcat Lake, which will afford the use of our 2026 Wildcat Lake board design to support the 2027 Wildcat Lake Refresh and 2028 Future Entry. With the use of the Wildcat Lake architecture, Intel will be able to offer entry SKUs with integrated Intel Xe graphics and integrated NPU for lower-power, lower-cost entry edge designs. In addition, future entry will also support extended temperature SKU requirements. The addition of this Future Entry solution, with integrated Xe GPU and NPU, will offer significant entry AI performance, when compared to legacy Intel entry processors.

**Historical Products Transitioning to Future Entry**  
Gemini Lake, Elkhart Lake, Jasper Lake, Alder Lake N, Twin Lake

The Intel products listed above do not represent all available products. For a complete list of Intel products, visit the Intel Product Reference Guide (ID: 615485) available on [rdc.intel.com](https://rdc.intel.com). Placement indicates the product is in development or planning. It is subject to change and may be different from other Intel divisions with similar products. For the latest detailed product schedule information, please refer to individual product gold decks/snapshots, or contact your Intel representative. The information above is subject to change without notice and should not be viewed as an official POR or product schedule document. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.

# Intel Edge Roadmaps

## Vertical Solutions and Use Case Positioning

# Edge growth opportunities in Vertical markets

## SW-Defined Industrial and Energy

Transition to IT-like SW infrastructure to support workload consolidation for increased flexibility, agility, and ease of incorporating AI

## Transportation Infrastructure

Aging infrastructure undergoing upgrades globally with new compute and AI – roadside units, electronic toll collection, infrastructure servers, etc

## Retail

Continued refresh of point of sale devices, as well as AI-enhanced self checkout and broadening the use of kiosks beyond retail implementations

## Federal

Opportunities for AI in tactical edge systems for military apps - real-time battlefield awareness, resilient logistics, unmanned ops

## Video Safety and Security

AI-enhanced video servers that help with proactive, coordinated responses to security events in smart cities and enterprise campuses

## vLabs – Intelligent Desktop Virtualization

Edge boxes with up to 4 terminals to manage and secure regulated systems in cost sensitive markets - classrooms, hospitals, call centers, banks

## Interactive Flat Panel Display

Interactive compute device with AI capabilities that allows teachers to bring rich video and media experiences into the classroom

## Health

Medical and hospital upgrades globally fueled by gov't investments – growing interest and AI and new use cases



# Health, Education, and Consumer

Use case and solution examples to illustrate product usage affinity. Not comprehensive or prescriptive.

|                                       | Entry                                                                                                                                                                                                                                                 | Mainstream                                                                                                                                                                                                                                                                                                                                 | Efficiency Optimized AI                                                                                                                                                                                                                                     | Scalable Performance                                                                                                                                                                                                                                        | Scalable AI, Graphics, and Media                                                                                                                                        |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |    |     |    |    |   |
| Example Products<br>Not comprehensive | Alder Lake N, Amston Lake, Twin Lake                                                                                                                                                                                                                  | Raptor Lake H/U Refresh, Arrow Lake S, Bartlett Lake S, Wildcat Lake                                                                                                                                                                                                                                                                       | Meteor Lake H/U, Arrow Lake H/U, Panther Lake                                                                                                                                                                                                               | Sapphire Rapids SP/Emerald Rapids SP, Granite Rapids SP                                                                                                                                                                                                     | Alchemist, Battlemage                                                                                                                                                   |
| Consumer Industries                   | POS & Small Form Factor/ATM                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | Kiosk                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | Digital Signage                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | Self Checkout                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
| Healthcare and Life Sciences          | Ultrasound, X-ray, Endoscopy, Patient Monitoring, Screening Tools                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       |                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             | MRI, PET, CT                                                                                                                                                                                                                                                |                                                                                                                                                                         |
|                                       | Electrosurgery                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | Microscopy, Sequencers                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
| Gaming, Education, and Collaboration  | Office Automation                                                                                                                                                                                                                                     | OPS & IFPD                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       |                                                                                                                                                                                                                                                       | VLAB/UCC                                                                                                                                                                                                                                                                                                                                   | Corporate Collaboration                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | Casino Gaming                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
| Multiple Verticals                    | Thin Client                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       |                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
| Emerging Segments                     | AI Weighting                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | School Digital Library CAP                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                            | AI Learning Kit + FineTuning                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |
|                                       | Medical Carts / Post Imaging                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                             |                                                                                                                                                                         |

Focused Use Cases & Solutions

Next-Gen Use Cases & Solutions

Product Highlights

|     |
|-----|
| BGA |
| LGA |
| TDP |

Chip-down processor package  
Socketed processor package  
Thermal Design Power (in watts)

[Table of Contents](#) | [Detailed Roadmap](#)

intel

# Industrial and Robotics

Use case and solution examples to illustrate product usage affinity. Not comprehensive or prescriptive.

|                                              | Entry                                                                                                                       | Mainstream                                                                                                                                                                                                           | Efficiency Optimized AI                                                                                                      | Scalable Performance                                                                                                           | Scalable AI, Graphics, and Media                                                                               |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|                                              |  <div>TDP<br/>4.5-12W</div> <div>BGA</div> |   <div>TDP<br/>12-65W</div> <div>LGA<br/>BGA</div> |  <div>TDP<br/>15-45W</div> <div>BGA</div> |  <div>TDP<br/>105-350W</div> <div>LGA</div> |  <div>TDP<br/>30-225W</div> |
| Example Products<br><i>Not comprehensive</i> | Elkhart Lake, Alder Lake N, Amston Lake, Twin Lake                                                                          | Raptor Lake H/U Refresh, Arrow Lake S, Bartlett Lake S, Wildcat Lake                                                                                                                                                 | Meteor Lake H/U, Arrow Lake H/U, Panther Lake                                                                                | Sapphire Rapids SP/Emerald Rapids SP, Granite Rapids SP, Broadwell-DE, Ice Lake-D, Granite Rapids-D                            | Alchemist, Battlemage                                                                                          |
| Industrial AI                                | Machine Vision                                                                                                              | Vision Analytics                                                                                                                                                                                                     |                                                                                                                              | High Resolution & multi stream input<br>Vision Analytics                                                                       | High Resolution, multi stream input, & batching                                                                |
|                                              | Time Series Analysis                                                                                                        | Time Series Analysis                                                                                                                                                                                                 |                                                                                                                              |                                                                                                                                |                                                                                                                |
|                                              | GenAI                                                                                                                       |                                                                                                                                                                                                                      |                                                                                                                              |                                                                                                                                |                                                                                                                |
| Robotics & Autonomous Machines               | AGVs <sup>1</sup>                                                                                                           | Entry AMRs <sup>2</sup>                                                                                                                                                                                              | Mid- AMRs                                                                                                                    | Advanced AMRs                                                                                                                  | Advanced AMRs                                                                                                  |
|                                              | Traditional Fixed Robots                                                                                                    | Co-bots                                                                                                                                                                                                              | Brownfield AI Upgrades                                                                                                       | Edge Gateways                                                                                                                  | Brownfield AI Upgrades                                                                                         |
|                                              |                                                                                                                             |                                                                                                                                                                                                                      | Hybrids: AMRs with Fixed Arms                                                                                                | Edge Workstations                                                                                                              | Hybrids: AMRs with Fixed Arms                                                                                  |
|                                              |                                                                                                                             |                                                                                                                                                                                                                      | Advanced Humanoids                                                                                                           |                                                                                                                                | Advanced Humanoids                                                                                             |
|                                              |                                                                                                                             |                                                                                                                                                                                                                      | Quadrupeds, Bi-peds                                                                                                          |                                                                                                                                | Quadrupeds, Bi-peds                                                                                            |
|                                              |                                                                                                                             |                                                                                                                                                                                                                      | Military Drones                                                                                                              |                                                                                                                                |                                                                                                                |
| Automation Compute & Control/Server          | Automation Compute                                                                                                          |                                                                                                                                                                                                                      |                                                                                                                              |                                                                                                                                |                                                                                                                |
|                                              | Small/Med PLCs                                                                                                              | Large PLCs for Automation                                                                                                                                                                                            |                                                                                                                              |                                                                                                                                |                                                                                                                |
|                                              | HMIs                                                                                                                        |                                                                                                                                                                                                                      |                                                                                                                              |                                                                                                                                |                                                                                                                |
|                                              |                                                                                                                             | Test & Measurement                                                                                                                                                                                                   |                                                                                                                              |                                                                                                                                |                                                                                                                |
| Energy                                       |                                                                                                                             | Substation Automation & Control                                                                                                                                                                                      |                                                                                                                              |                                                                                                                                |                                                                                                                |
|                                              | Microgrid and DER <sup>3</sup> Monitoring                                                                                   |                                                                                                                                                                                                                      |                                                                                                                              | Virtual Protection Relay                                                                                                       |                                                                                                                |

<sup>1</sup> AGVs – Automated Guided Vehicles  
<sup>2</sup> AMRs – Autonomous Mobile Robots  
<sup>3</sup> DER - Distributed Energy Resources

|                    |     |                                 |
|--------------------|-----|---------------------------------|
| Product Highlights | BGA | Chip-down processor package     |
|                    | LGA | Socketed processor package      |
|                    | TDP | Thermal Design Power (in watts) |

# Critical Infrastructure Federal and Aerospace

Use case and solution examples to illustrate product usage affinity. Not comprehensive or prescriptive.

|                     | Entry                                                                                                              | Mainstream                                                                                                                                                                                                | Efficiency Optimized AI                                                                                             | Scalable Workstation                                                                                               | Scalable Performance                                                                                                  | Scalable AI, Graphics, and Media                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                     |  <b>TDP</b><br>4.5-12W <b>BGA</b> |   <b>TDP</b><br>12-125+W <b>LGA BGA</b> |  <b>TDP</b><br>15-45W <b>BGA</b> |  <b>TDP</b><br>300W+ <b>LGA</b> |  <b>TDP</b><br>105-350W <b>LGA</b> |  <b>TDP</b><br>30-225W |
| Example Products    | Alder Lake N, Amston Lake, Twin Lake<br><i>Not comprehensive</i>                                                   | Raptor Lake H/U Refresh, Arrow Lake S, Bartlett Lake S, Wildcat Lake                                                                                                                                      | Meteor Lake H/U, Arrow Lake H/U, Panther Lake                                                                       | Sapphire Rapids Refresh, Granite Rapids W                                                                          | Sapphire Rapids SP, Emerald Rapids SP, Granite Rapids SP, Ice Lake D                                                  | Alchemist, Battlemage                                                                                     |
| Federal & Aerospace | Radar and High-Performance Compute                                                                                 |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |
|                     | Cockpit Display and Pilot Assistance                                                                               |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |
|                     | Voting machines                                                                                                    |                                                                                                                                                                                                           | Air Traffic Control, Training and Simulation Systems                                                                |                                                                                                                    |                                                                                                                       |                                                                                                           |
|                     | Rugged Edge and AI Compute (VPX, laptops)                                                                          |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |
| Transportation      | Smart Roadside Unit / Electronic Tolling                                                                           |                                                                                                                                                                                                           |                                                                                                                     | Transportation Command and Control (Traffic/Train/Fleet)                                                           |                                                                                                                       |                                                                                                           |
|                     | Smart Parking / EV Charging                                                                                        |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |
|                     | Rail Wayside Controller                                                                                            |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |
|                     | Fleet Computer / Train Computer/Ticketing Machine                                                                  |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |
| Safety and Security | NVR                                                                                                                |                                                                                                                                                                                                           | AI Box (Video Analytics)                                                                                            | AI Server (Video Analytics)                                                                                        |                                                                                                                       |                                                                                                           |
|                     | Smart NVR / Smart VSaaS Devices                                                                                    |                                                                                                                                                                                                           |                                                                                                                     | VMS Server                                                                                                         |                                                                                                                       | Smart NVR                                                                                                 |
|                     | VSaaS Devices                                                                                                      |                                                                                                                                                                                                           | Smart VMS Server                                                                                                    |                                                                                                                    | Smart VMS Server                                                                                                      |                                                                                                           |
|                     | VMS Workstation                                                                                                    |                                                                                                                                                                                                           | VMS Workstation                                                                                                     |                                                                                                                    | VMS Workstation                                                                                                       |                                                                                                           |
|                     | Access Control                                                                                                     |                                                                                                                                                                                                           |                                                                                                                     |                                                                                                                    |                                                                                                                       |                                                                                                           |

Product Highlights

**BGA**

Chip-down processor package

**LGA**

Socketed processor package

**TDP**

Thermal Design Power (in watts)

# Key Use Cases with Sample Applications from Intel Edge AI Suites

<https://github.com/open-edge-platform>



## Metro

### Computer Vision

- Image Based Video Search
- Loitering Detection
- Smart Intersection
- Smart Parking
- Sensor Fusion For Traffic Management

### Gen AI

- Interactive Digital Avatar
- Smart NVR
- Video Processing for NVR
- Video Search Question And Answering



## Manufacturing

### Computer Vision

- Pallet Defect Detection
- PCB Anomaly Detection
- Weld Porosity
- Worker Safety Gear Detection

### Gen AI

- HMI Augmented Worker

### Time-series

- Industrial Edge Insights Time Series



## Retail

### Computer Vision

- Automated Self-Checkout
- Loss Prevention
- Order Accuracy



## Robotics

- Humanoid – Imitation Learning
- Autonomous Mobile Robots
- Stationary ARM – Vision & Control
- Intel OpenVINO toolkit optimized model algorithms



# Vertical Software Ecosystem for Intel Edge Products



## Safety & Security - VA

- Ambient AI
- Camio
- Epic IO
- iOmniscient
- ISS (Intelligent Security Systems)
- March Networks
- Saimos
- VCA
- Irisity
- Centific
- Videonetics / Soterix



## Safety & Security - VMS

- Axxonsoft
- Genetec
- Network Optix
- Salient Systems
- Milestone



## Safety & Security - VSaaS

- Alarm.com
- Eagle Eye
- Solink
- Spot
- Verkada



## Transportation

- Sonda
- Cubic
- Datacorp Traffic
- Indra
- Iteris
- LTTS
- ISS (Intelligent Security Systems)
- Nokia
- Kapsch



## Critical Infrastructure

- Axcelia
- Airev
- Ipsotek
- Avidbeam
- Fluentgrid
- Mitac
- Disruptx



## Consumer Industries

- Fingerprint
- SAI Group
- Seechange
- WaitTime



## Health and Life Sciences

- JelloX
- Medical Informatics
- Leica
- Bruker

# Performance Benchmarking and Edge AI

Unlock the power of Intel processors for the Edge and Intel AI to drive your edge solutions, empowered by our proven expertise, perfect-fit edge hardware and software solutions, and ecosystem of partners.

# Accelerating Edge AI Through an Open Ecosystem

## Silicon top to bottom scalability

Core Ultra breakthroughs enabling edge AI on CPU w/  
integrated acceleration



## Open Edge Approach

Enabling broad, open ecosystem  
across the entire value chain

**ODMs and OEMs**  
Accelerate delivery of  
AI-ready systems

**Intel® AI Edge Systems**  
Sized, verified, benchmarked  
and scalable, delivered by partners

**ISVs, SIs, Solution Builders**  
Optimize and scale  
industry solutions faster

**Edge AI Suites**  
Industry-specific reference apps,  
sample code and benchmarks

**OSVs, ISVs, SIs**  
Use the optimizations in  
Intel technology

**Open Edge Platform**  
Modular and optimized edge AI  
libraries and toolkits for partners

# intel ai Edge Systems, supported by Reference Edge Systems

## Intel® AI Edge Systems

 Reference Systems– HW Configs + AI Software Stacks

 Performance Benchmarking across Edge Workloads

 Scalable options for the best Performance / Watt / TCO



### Scalable Performance

Inference, Retrain and Fine Tune

200-1600+ TOPS \*  
250W-4kW  
100+ Video AI Streams  
16-70B+ Parameter LLM

intel  
XEON

intel  
CORE

intel  
ARC  
GRAPHICS

CPU AI

GPU AI

Server grade AI acceleration and scale by adding multiple discrete GPUs

### Efficiency Optimized AI

Inference

50-200 TOPS \*  
100W-250W  
35-50 Video AI Streams  
8B+ Parameter LLM

intel  
CORE  
ULTRA

CPU AI

GPU AI

NPU AI

Add powerful AI to existing solutions without adding a discrete GPU

### Mainstream

Light Inference

<50 TOPS, 75W-150W \*  
10-15 Video AI Streams  
3B+ Parameter LLM

intel  
CORE

intel  
processor

CPU AI

GPU AI

NPU AI

Performance for existing workloads and light AI inference

### Entry

Low Power and Light Inference

<10 TOPS, <20W \*  
1-3 Video AI Streams  
1B Parameter LLM

intel  
CORE

intel  
processor

intel  
ATOM

CPU AI

GPU AI

Light inference for power constrained form factors

\* Target System KPIs for Illustration purposes, will vary by specific workload and configuration, more detailed workload performance numbers per system will be provided

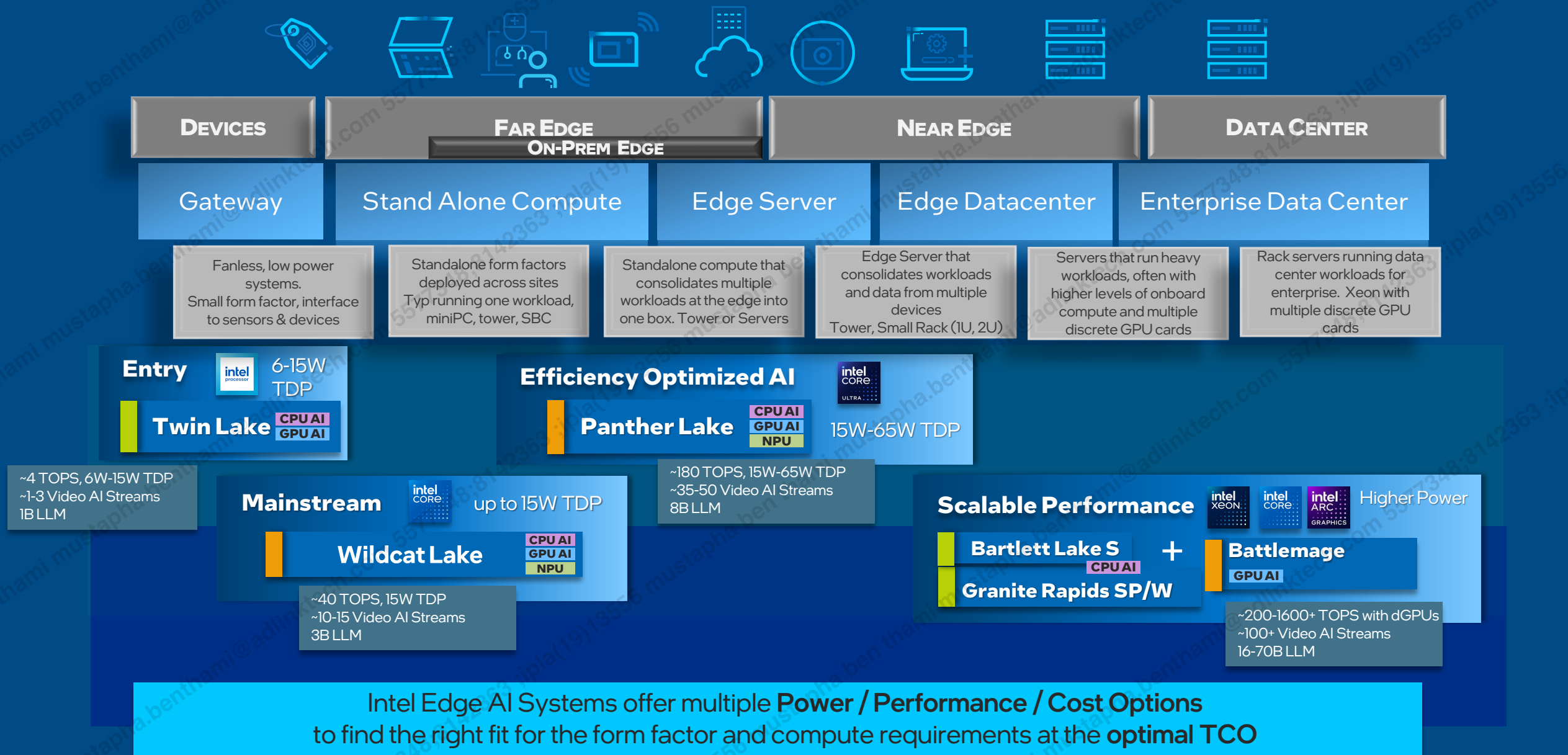
Integrated  
AI Acceleration  
Highlights

CPU AI  
GPU AI  
NPU AI

Processor-based AI acceleration  
Integrated GPU AI acceleration  
Integrated NPU, Intel AI Boost



# intel ai Edge Segments and Systems (2025–2026)



# Get Started Today

intel ai



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**Visit [builders.intel.com](https://builders.intel.com) or [Intel® AI Edge Systems](#)**

# Intel Edge Workloads and Benchmarking

## Edge Performance

### *Becoming more complex with AI*



#### CPU performance still critical

Scalable and optimized core count, core types, and TDP



#### Integrated Graphics, Media and AI Acceleration

Disruptive, discrete-level, GPU and NPU capabilities



#### New AI Models and Pipelines

Get the most performance from the silicon capability



#### Form Factor and Power Constraints

Scalable and optimized core count, core types, and TDP



#### Edge focus on TCO

Deliver the required performance at the best cost

## Benchmark Resources



#### Edge Focused KPIs

Define set of edge focused KPIs and AI models representative of wide set of use cases



#### Optimized Performance

Optimized inference models and platform performance at launch



#### Measured Datapoints

Published results on edge KPIs across products



#### Reproducible Results

Share implementation, source code and optimizations



#### System Performance for the Edge

Define the right product to deliver end to end solutions for the edge

► Available at RDC [856311](#)

# Intel Edge Workloads and Benchmarking



## Edge Focused KPIs

Define set of edge focused KPIs and AI models representative of wide set of use cases

Existing workloads continue to need CPU **compute performance**

Real-world inference becoming **AI center of gravity** enabled by emerging edge focused models

**TCO surpasses TOPS** as top consideration

**Edge power levels and form factors** drive different configurations than PC

- The Edge Needs Performance Benchmarks Relevant to Unique Edge Workloads and Constraints



**Performance = Compute + Media + Inference**

**Constraints = Power + Form Factor + Cost**

## Edge Benchmarks & Workloads

- Processor Performance – CPU SPEC Int
- Graphics – 3DMark, Unigine
- Media – Encode & Decode
- AI Inference – Image Detection & Classification
- AI Inference – Gen AI (SLMs and LLM)
- AI Inference – Multi-modal LLMs
- Video Analytics – Light, Medium and Heavy AI Inference
- Media Pipeline – Video Wall
- Real Time / Time Sensitive Networking





# Intel Edge Workloads and Benchmarking



## Measured Datapoints

Published results on edge KPIs across products

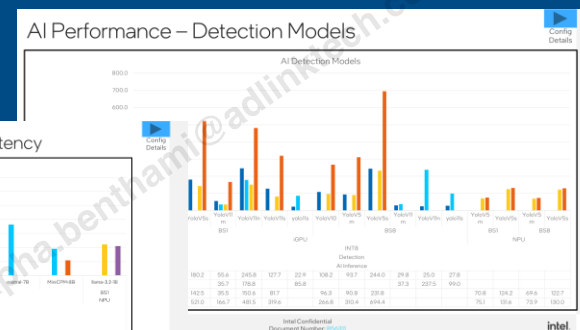
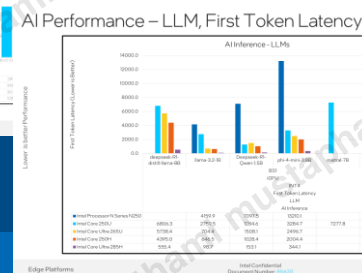
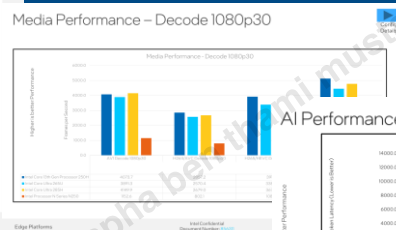
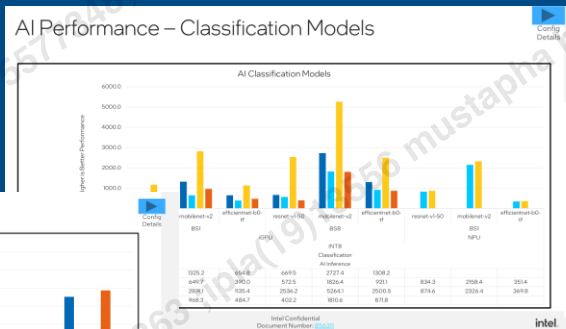
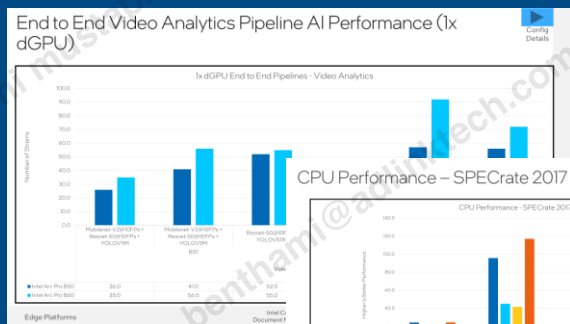
- Measurements on production Intel Products ► [RDC 856310](#)
  - Efficiency AI: Intel Core Ultra Series 2 (Arrow Lake): 285H, 265U, 265H, 235H, 225U
  - Efficiency AI: Intel Core Ultra Series 1 (Meteor Lake): 165H, 165U, 125H, 125U
  - Mainstream: Intel Core Series 2 (Raptor Lake Refresh): 250H, 250U, 220H, 220U
  - Entry: Intel Processor (Twin Lake): N250, N355
  - dGPU: Intel Arc Pro B50, Intel Arc Pro B60
- Edge workloads and AI Models
  - Microbenchmarks for CPU, Graphics, Media, AI Inference
  - End to end workloads for Vision AI



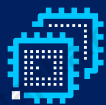
|                                                                                                                                              |     |                                                                                                                                  |                                                                                                                               |                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <br>TDP<br>30-225W                                        |     | <br>Alchemist GPU AI                          | <br>Battlemage B50/60 GPU AI               |                                                                                                                                  |
| <br>TDP<br>12-85+W                                        | BGA | <br>Meteor Lake H, U CPU AI GPU AI NPU AI     | <br>Arrow Lake H, U CPU AI GPU AI NPU AI   | <br>Panther Lake CPU AI GPU AI NPU AI         |
| <br>TDP<br>10-45W                                         |     | <br>Raptor Lake H, U CPU AI GPU AI            | <br>Raptor Lake U, H Refresh CPU AI GPU AI | <br>Wildcat Lake CPU AI GPU AI NPU AI         |
| <br>TDP<br>12-250+W                                       | LGA | <br>Meteor Lake PS CPU AI GPU AI NPU AI       | <br>Arrow Lake S CPU AI GPU AI NPU AI      | <br>Arrow Lake S Refresh CPU AI GPU AI NPU AI |
| <br>Raptor Lake PS<br>Raptor Lake S Refresh CPU AI GPU AI |     | <br>Bartlett Lake S CPU AI GPU AI             | <br>Bartlett Lake S 12P CPU AI GPU AI      |                                                                                                                                  |
| <br>TDP<br>6-12W                                          | BGA | <br>Alder Lake N<br>Amston Lake CPU AI GPU AI | <br>Twin Lake CPU AI GPU AI                |                                                                                                                                  |
| <br>TDP<br>4.5-12W                                        |     |                                                                                                                                  |                                                                                                                               |                                                                                                                                  |

ECG Benchmark data available by Q1'26 Compass

ECG Benchmark data coming in Q2'26 Compass



# Intel Edge Workloads and Benchmarking

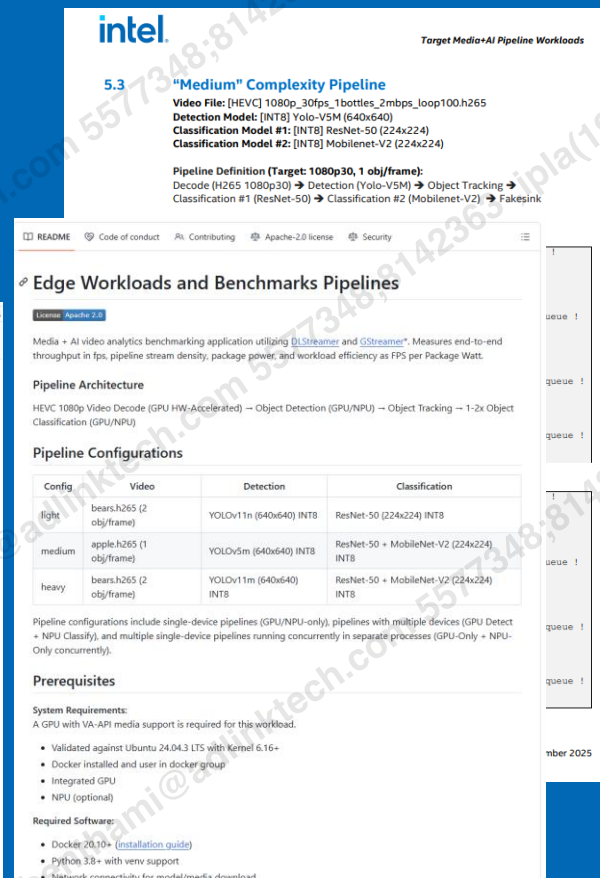
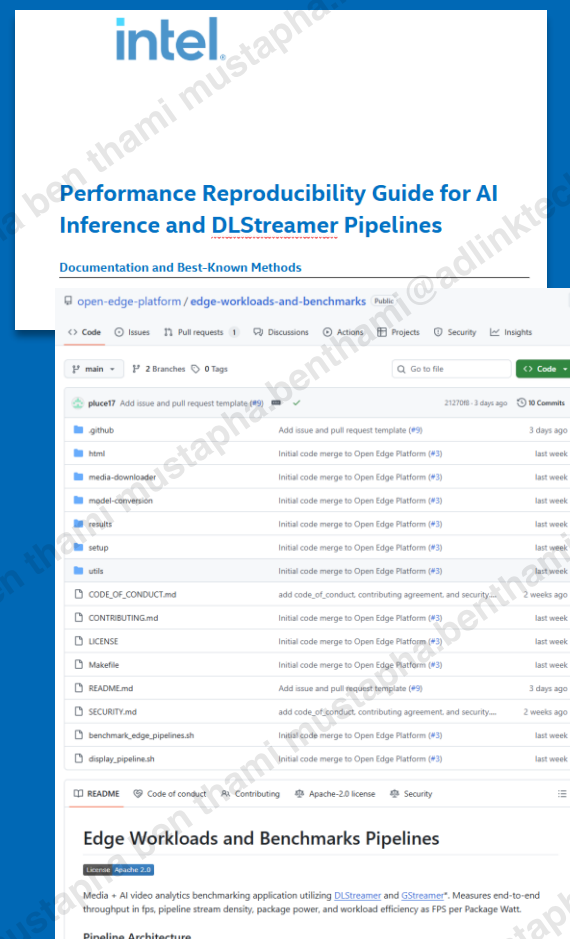


## Reproducible Results

Share implementation, source code & optimizations

- Reproduce Benchmark results on any Intel system
  - Measure performance and showcase on your designs
  - Share results with your end customers
  - Test across Intel products to find the right performance / power and TCO for your unique application
- Performance Reproducibility Guide for AI Inference and DL Streamer Pipelines, ► RDC [857078](#)
  - Run end to end pipelines on Linux
  - Framework setup and installation – OpenVINO and DL Streamer
  - Reproducibility instructions
    - Vision AI / Video Analytics Pipelines – Light/Medium/Heavy AI
    - AI Inference Models – GenAI/LLMs, Detection, Classification, Multimodal
  - Pipeline optimization tips
  - Public [Github](#) code repository to run video analytics pipelines
- Get started today ► RDC [856311](#)

## Setup and Run End-to-End Pipelines and Inference Models



# Intel Edge Workloads and Benchmarking



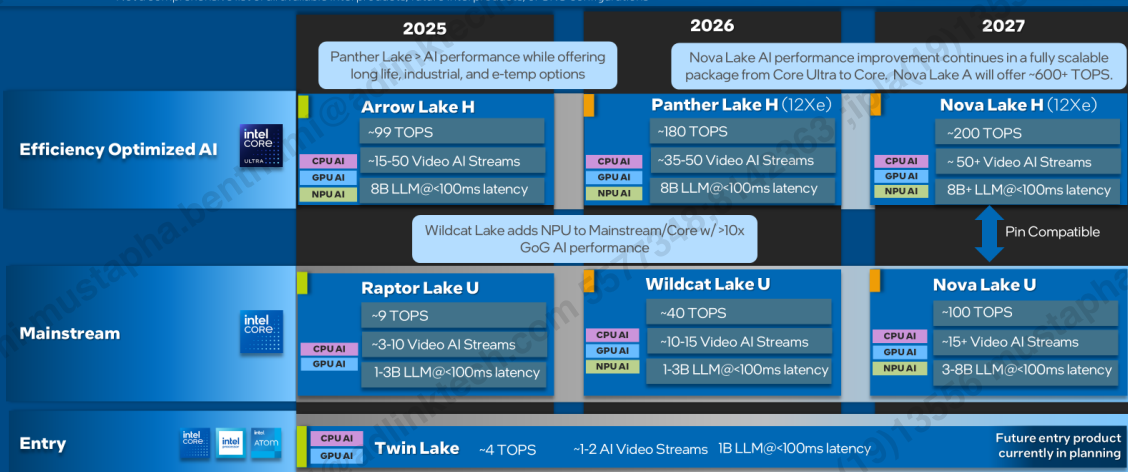
## System Performance for the Edge

Define the right product to deliver end to end solutions for the edge

- System performance scales across product portfolio
- Size design to meet use case system requirements
- Select the right product for the best TCO at the edge
  - Deliver the needed performance at the right cost

### intel ai Edge Systems Roadmap – Efficiency and Mainstream Focus

Not a comprehensive list of all available Intel products, future Intel products, or SKU configurations



The Intel products listed above do not represent all available products. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (ID: 618463) available on [intel.com](https://www.intel.com). Placement indicates future, yearly trend, for production hardware availability and is not reflective of launch granularity and/or launch timing. It is subject to change and may be different from other Intel divisions with similar products. For the latest detailed product schedule information, please refer to individual product gold deck/launchphoto, or contact your Intel representative. The information above is subject to change without notice and should not be viewed as an official POR or product schedule document. Select features, highlighted above, are not supported on all SKUs. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.

Performance Highlights: Video AI Streams: Decode + detection and classification with high/medium AI LLM (or at least 10 tokens/sec, BSI)

Integrated AI Acceleration Highlights: CPU AI: Processor-based AI acceleration; GPU AI: Integrated GPU AI acceleration; NPU AI: Integrated NPU, Intel AI Boost

Intel is focused on increasing Edge AI performance, with every future product

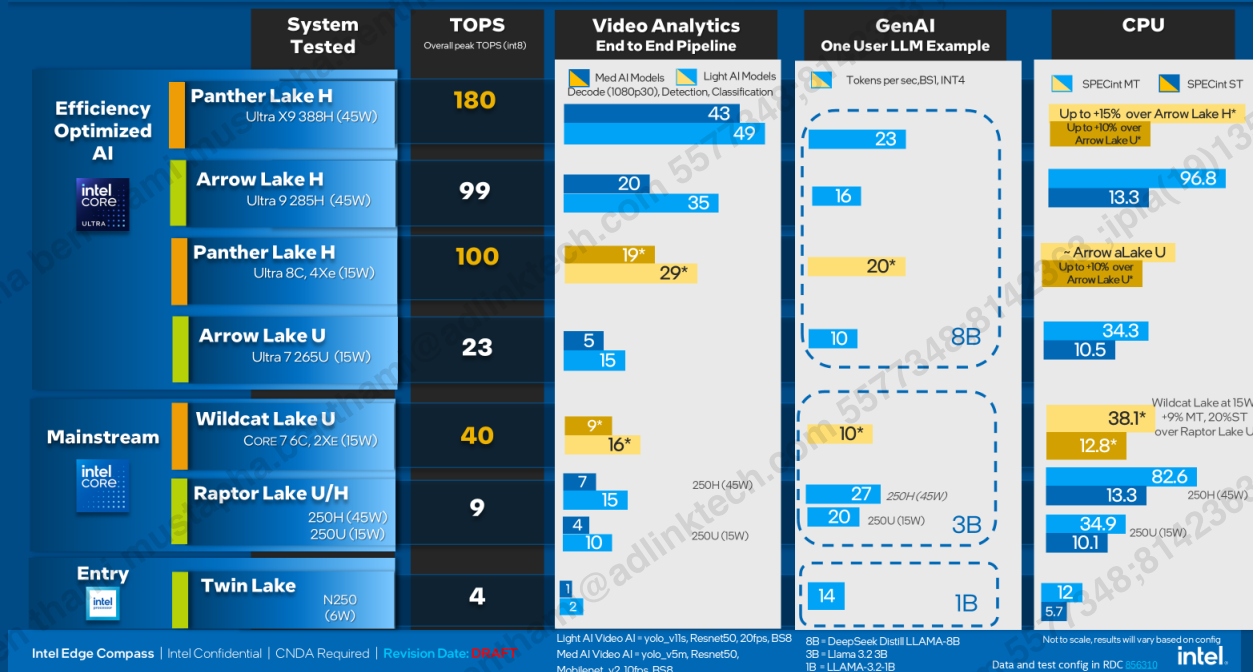
Intel Edge Compass | Intel Confidential | CNDA Required | Revision Date: 03/07/26

intel 32

### intel ai Recommended Edge Designs – Performance Results for Example System Configs

Not a comprehensive list of all available Intel products, future Intel products, or SKU configurations

Projections/estimates, subject to change. Measurements are in progress and will be updated at a future date.



Intel Edge Compass | Intel Confidential | CNDA Required | Revision Date: 03/07/26

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|                         | System Tested                                                   | TOPS<br>Overall peak TOPS (int8) | Video Analytics<br>End to End Pipeline                                                                                                                   | GenAI<br>One User LLM Example                                                                | CPU                                                                                                               |
|-------------------------|-----------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Efficiency Optimized AI | <div>Panther Lake H</div> <div>Ultra X9 388H (45W)</div>        | 180                              | <div><div>Med AI Models</div><div>Light AI Models</div><div>Decode (1080p30), Detection, Classification</div><div><div>43</div><div>49</div></div></div> | <div><div>Tokens per sec,BS1, INT4</div><div><div>27</div></div></div>                       | <div><div>SPECint MT</div><div>SPECint ST</div><div><div>14</div><div>108</div></div></div>                       |
|                         | <div>Arrow Lake H</div> <div>Ultra 9 285H (45W)</div>           | 99                               | <div><div>20</div><div>35</div></div>                                                                                                                    | <div><div>19</div></div>                                                                     | <div><div>13.3</div><div>96.1</div></div>                                                                         |
|                         | <div>Panther Lake H</div> <div>Ultra 7 365 (15W)</div>          | 100                              | <div><div>19*</div><div>29*</div></div>                                                                                                                  | <div><div>21.2</div></div>                                                                   | <div><div>47.5</div><div>12.3</div></div>                                                                         |
|                         | <div>Arrow Lake U</div> <div>Ultra 7 265U (15W)</div>           | 23                               | <div><div>5</div><div>15</div></div>                                                                                                                     | <div><div>14.7</div><div>8B</div></div>                                                      | <div><div>43.9</div><div>10.5</div></div>                                                                         |
| Mainstream              | <div>Wildcat Lake U</div> <div>CORE 7 6C, 2Xe (15W)</div>       | 40                               | <div><div>9*</div><div>16*</div></div>                                                                                                                   | <div><div>20</div></div>                                                                     | <div><div>+4%</div><div>+21%</div><div>+4% MT, 21%ST over Raptor Lake U Refresh</div></div>                       |
|                         | <div>Raptor Lake U/H</div> <div>250H (45W)<br/>250U (15W)</div> | 9                                | <div><div>7</div><div>15</div><div>250H (45W)</div><div>4</div><div>10</div><div>250U (15W)</div></div>                                                  | <div><div>27</div><div>20</div><div>250H (45W)</div><div>250U (15W)</div><div>3B</div></div> | <div><div>82.6</div><div>13.3</div><div>250H (45W)</div><div>34.9</div><div>10.1</div><div>250U (15W)</div></div> |
| Entry                   | <div>Twin Lake</div> <div>N250 (6W)</div>                       | 4                                | <div><div>1</div><div>2</div></div>                                                                                                                      | <div><div>14</div><div>1B</div></div>                                                        | <div><div>12</div><div>5.7</div></div>                                                                            |



|                         | 2025                                                                                                                                                | 2026                                                                                                                                                         | 2027                                                                                                                                                      |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | Panther Lake > AI performance while offering long life, industrial, and e-temp options                                                              | Nova Lake AI performance improvement continues in a fully scalable package from Core Ultra to Core. Nova Lake A will offer ~600+ TOPS.                       |                                                                                                                                                           |
| Efficiency Optimized AI | <div>Arrow Lake H</div> <div>~99 TOPS</div> <div>CPU AI ~15-50 Video AI Streams</div> <div>GPU AI 8B LLM@&lt;100ms latency</div> <div>NPU AI</div>  | <div>Panther Lake H (12Xe)</div> <div>~180 TOPS</div> <div>CPU AI ~35-50 Video AI Streams</div> <div>GPU AI 8B LLM@&lt;100ms latency</div> <div>NPU AI</div> | <div>Nova Lake H (12Xe)</div> <div>~200 TOPS</div> <div>CPU AI ~ 50+ Video AI Streams</div> <div>GPU AI 8B+ LLM@&lt;100ms latency</div> <div>NPU AI</div> |
|                         | Wildcat Lake adds NPU to Mainstream/Core w/ >10x GoG AI performance                                                                                 |                                                                                                                                                              | Pin Compatible                                                                                                                                            |
| Mainstream              | <div>Raptor Lake U</div> <div>~9 TOPS</div> <div>CPU AI ~3-10 Video AI Streams</div> <div>GPU AI 1-3B LLM@&lt;100ms latency</div> <div>NPU AI</div> | <div>Wildcat Lake U</div> <div>~40 TOPS</div> <div>CPU AI ~10-15 Video AI Streams</div> <div>GPU AI 1-3B LLM@&lt;100ms latency</div> <div>NPU AI</div>       | <div>Nova Lake</div> <div>~100 TOPS</div> <div>CPU AI ~15+ Video AI Streams</div> <div>GPU AI 3-8B LLM@&lt;100ms latency</div> <div>NPU AI</div>          |
| Entry                   | <div>Twin Lake ~4 TOPS ~1-2 AI Video Streams 1B LLM@&lt;100ms latency</div> <div>Future entry product currently in development</div>                |                                                                                                                                                              |                                                                                                                                                           |

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Performance Highlights

Video AI Streams

Integrated AI Acceleration Highlights

CPU AI Processor-based AI acceleration

GPU AI Integrated GPU AI acceleration

NPU AI Integrated NPU, Intel AI Boost

Intel is focused on increasing Edge AI performance, with every future product

# Intel Edge Intel Core Ultra Series 3 Processors Panther Lake

- Strong CPU performance
- Integrated AI Accelerators for the Edge
  - NPU scales to up to 50 TOPs
  - Built in GPU 4Xe, 12Xe with XMV for AI

Compute: Up to +5% ST, 12% MT over Series 2



**NPU >3X from Arrow Lake**  
Split pipelines across NPU & GPU  
Low power inference

**Built in GPU**  
GFX: 1.5X Gen over Gen improvement in Graphics, can outperform RTX A2000 dGPU on 3DMark GenAI: Xe3 with XMV for low first token latency  
Computer Vision: Gen over gen improvement in inference models

## Leadership Performance

Across ALL AI Engines  
Geekbench AI 1.6 Scores

| Series 3<br>intel<br>CORE<br>ULTRA<br>X9 |      |  | Intel® Core™ Ultra X9 388H |                     |
|------------------------------------------|------|--|----------------------------|---------------------|
|                                          |      |  | vs. AMD HX 370             | vs. Qualcomm 84-100 |
| CPU                                      | INT8 |  | 1.2x                       | 1.5x                |
|                                          | FP16 |  | 2.3x                       | 1.7x                |
|                                          | FP32 |  | 1.2x                       | 2.7x                |
| GPU                                      | INT8 |  | 9.0x                       | DNR ❌               |
|                                          | FP16 |  | 3.1x                       | DNR ❌               |
|                                          | FP32 |  | 2.3x                       | DNR ❌               |
| NPU                                      | INT8 |  | DNR ❌                      | 1.3x                |
|                                          | FP16 |  | DNR ❌                      | 2.2x                |
|                                          | FP32 |  | DNR ❌                      | 2.6x                |

See intel.com/performanceindex for details. Results may vary.

# Intel Edge Intel Core Ultra Series 3 Processors Panther Lake

## AI Inference Performance

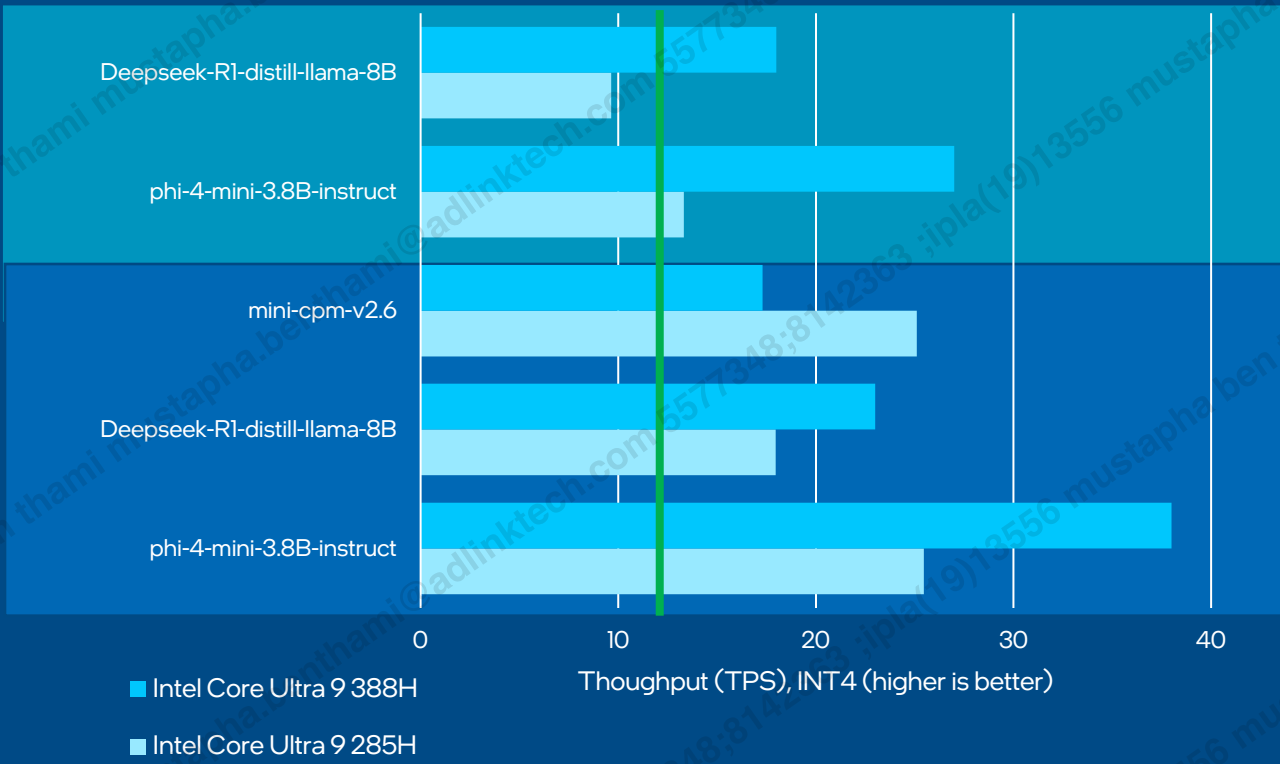
Intel Core Ultra X9  
processor 388H  
(codenamed Panther Lake H)

VS

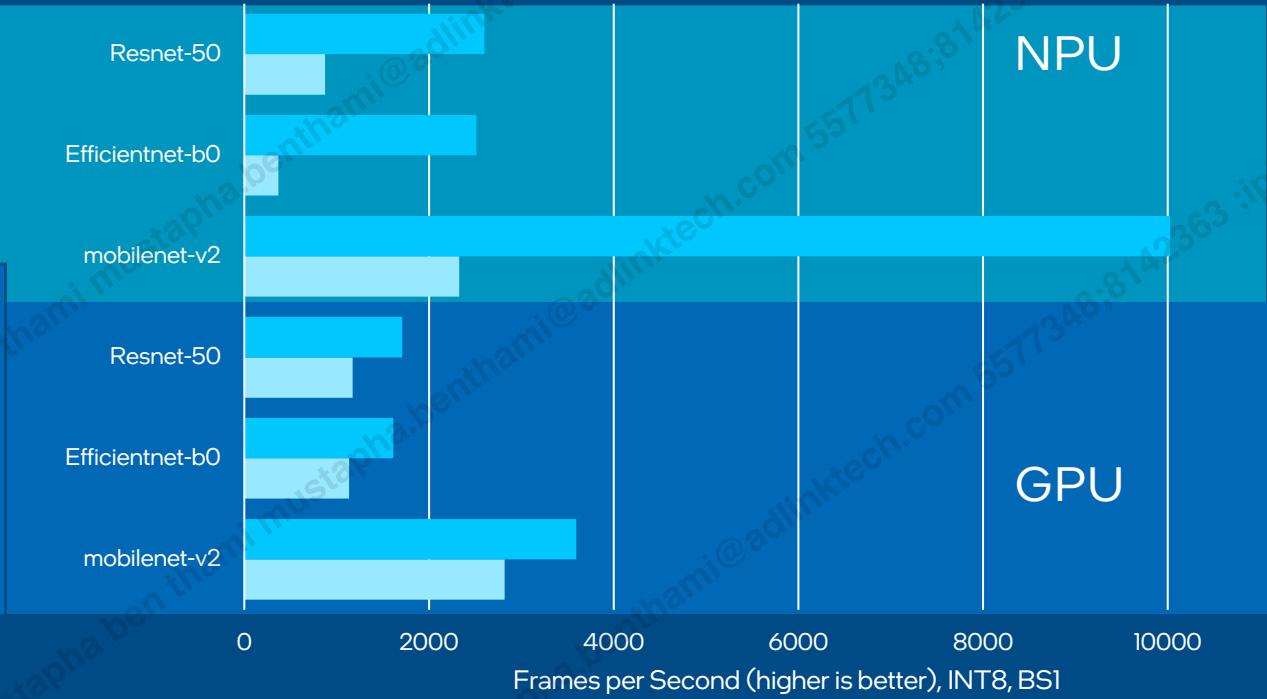
Intel Core Ultra 9  
processor 285H  
(codenamed Arrow Lake H)



Gen AI Performance on Panther Lake



Computer Vision Models



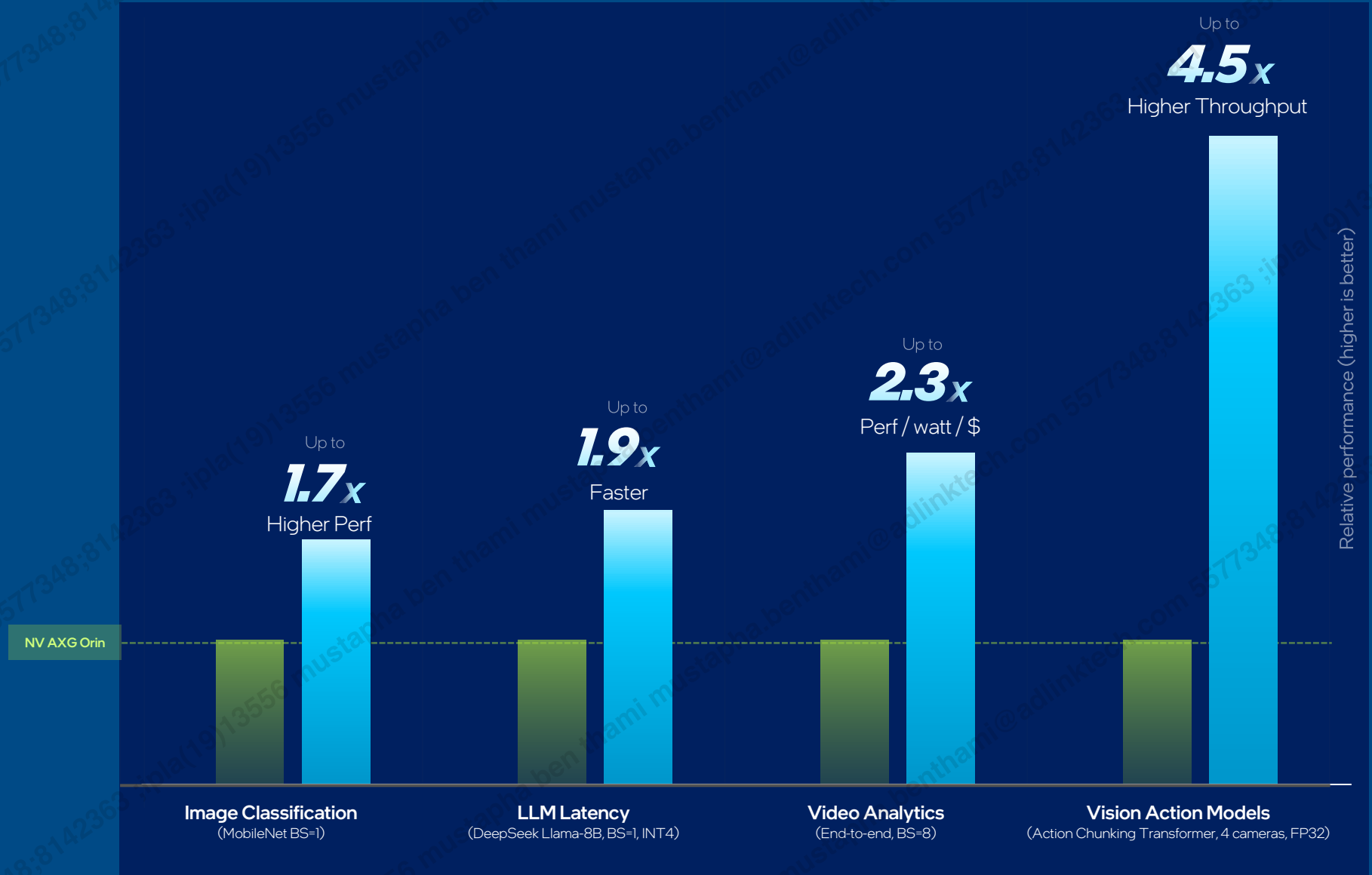
# Intel Edge Intel Core Ultra Series 3 Processors Panther Lake

Details at [intel.com/performanceindex](https://intel.com/performanceindex). Results may vary.

## Intel vs. Nvidia



- Intel® Core™ Ultra X9 processor 388H (180 TOPS) VS
- NVIDIA® Jetson AGX Orin 64GB (275 TOPS)





# Intel Edge Intel Core Ultra Series 3 Processors

## Panther Lake

### Intel vs. AMD

Panther Lake outperforms AMD Strix Point (AI 300 Series) on computer vision, CPU and graphics performance

Intel Core Ultra X9  
processor 388H  
(codenamed Panther Lake H)

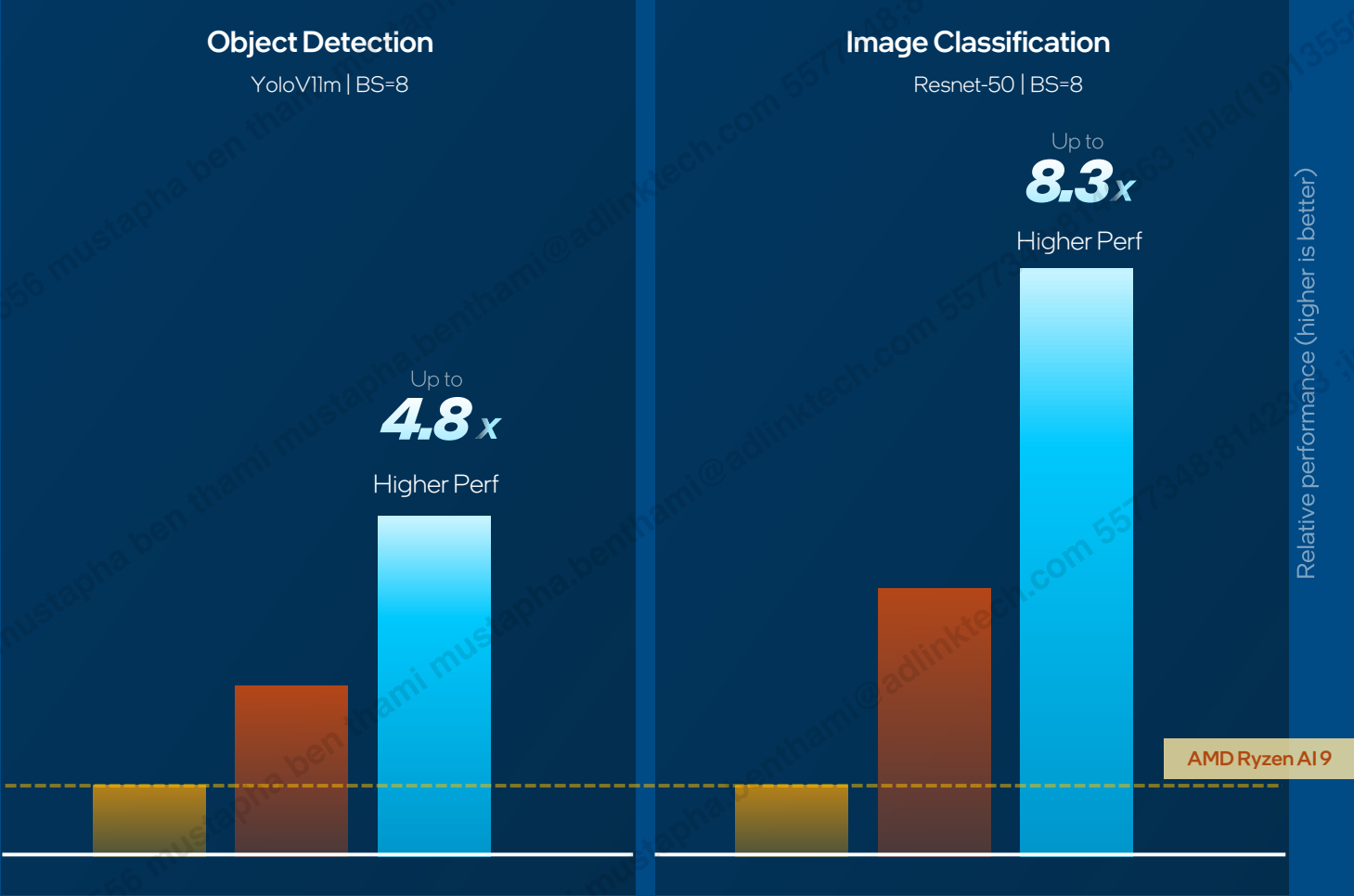
VS AMD Ryzen AI 9 HX370

Up to  
**1.25x**  
Higher single thread CPU  
Performance with Spec Int<sup>2</sup>

Up to  
**2x**  
better graphics  
performance<sup>3</sup>

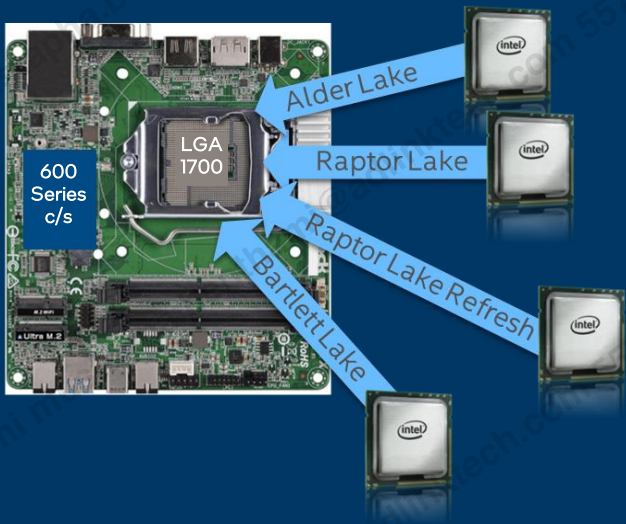
- Intel® Core™ Ultra X9 388H
- AMD Ryzen AI 9 HX370
- AMD Ryzen AI Max+ 395

Details at [intel.com/performanceindex](https://intel.com/performanceindex). Results may vary.



# Core S P-core Only: Intel Core Processors (Series 2)

## Formerly codenamed Bartlett Lake



**New**

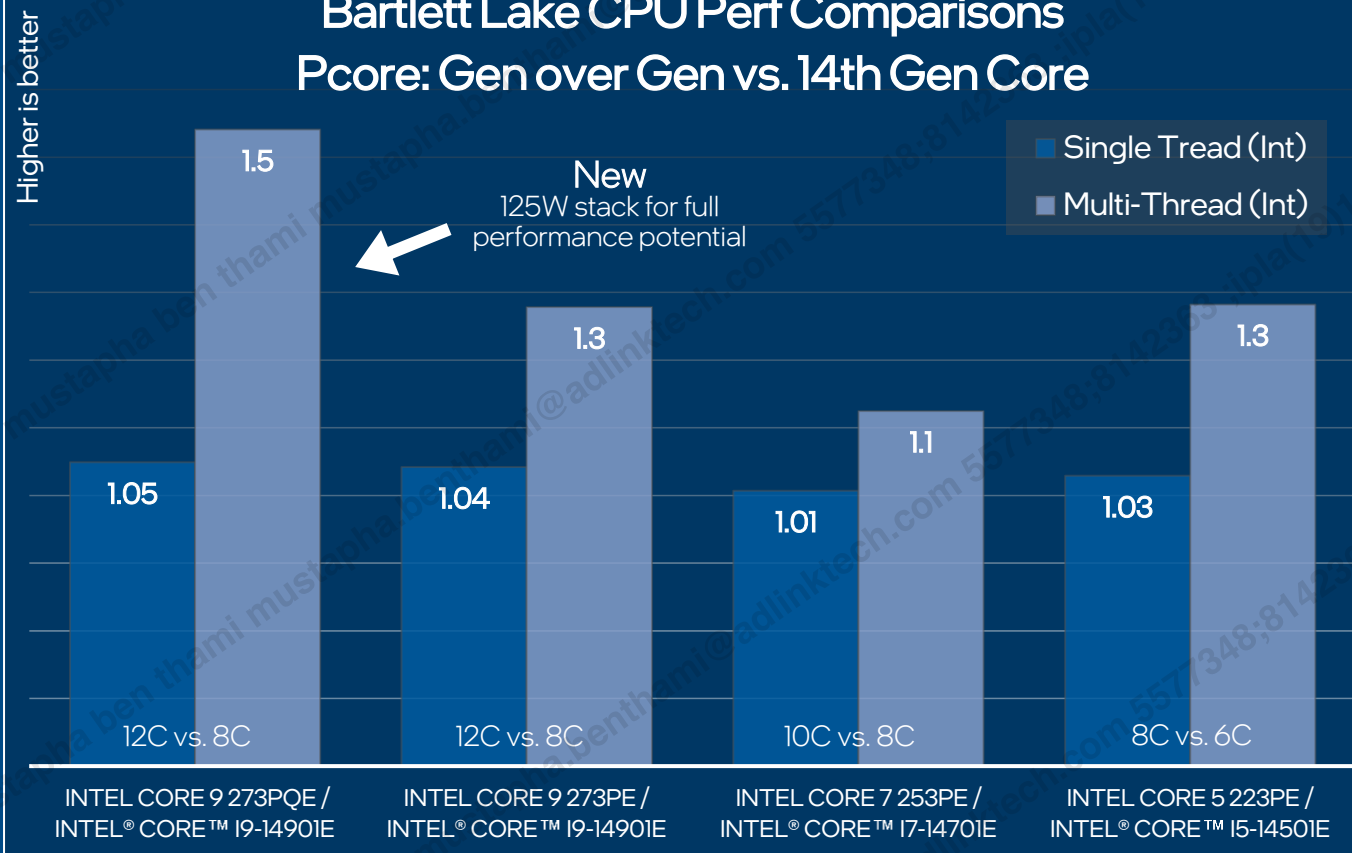
Available Q1 2026  
**Bartlett Lake S  
P-Core Only SKUs**

- Up to 12 P-cores, 24 threads, available across multiple TDP configurations
- Drop-in compatible with prior-gen edge designs: Alder Lake S (2022), Raptor Lake S (2023), Raptor Lake S Refresh (2024)
- Product availability through 2035<sup>1</sup> extends life of in-market edge designs
- Performance Core Only (or P-core only) SKUs with up to 12 Performance-cores along with Hybrid (P-core and E-Core) SKUs.

The information shared here is subject to change without notice and should not be viewed as an official POR or product schedule document. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software, and software support services, through standard EOL/PDN processes.

### Bartlett Lake CPU Perf Comparisons

#### Pcore: Gen over Gen vs. 14th Gen Core



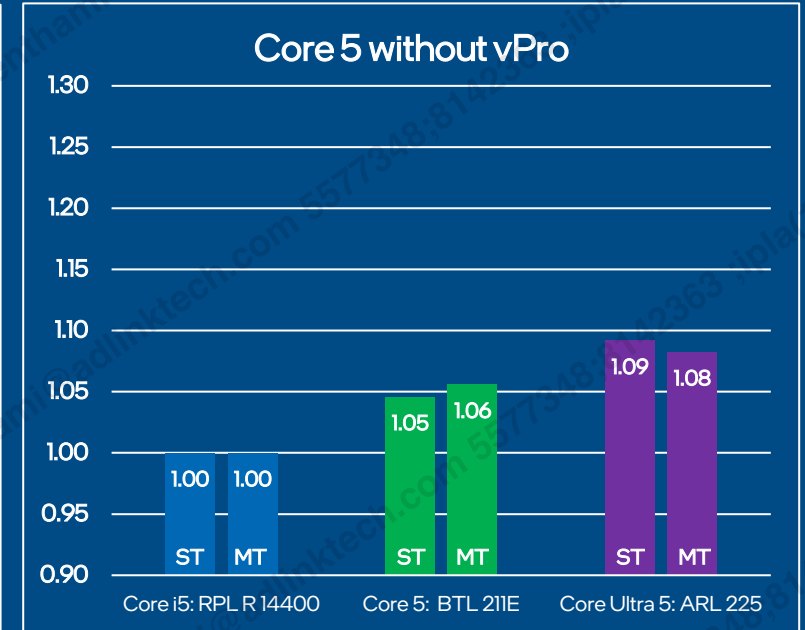
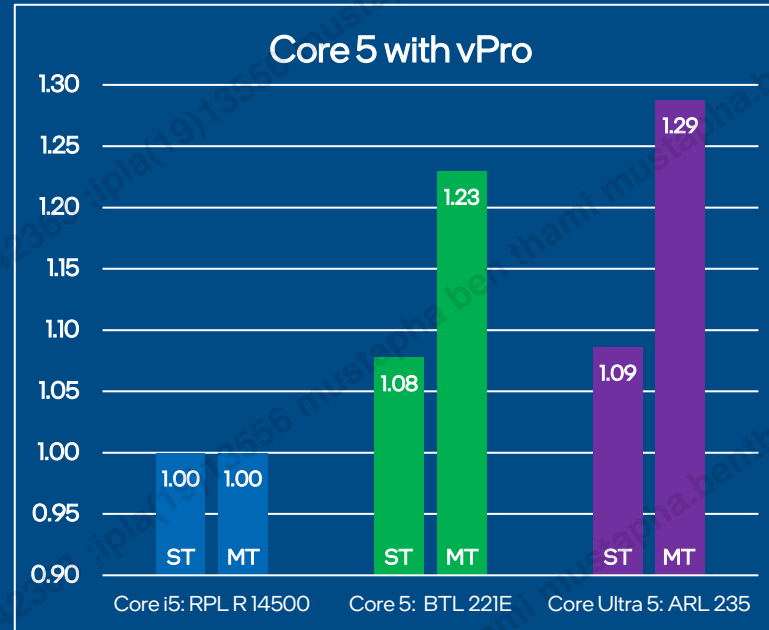
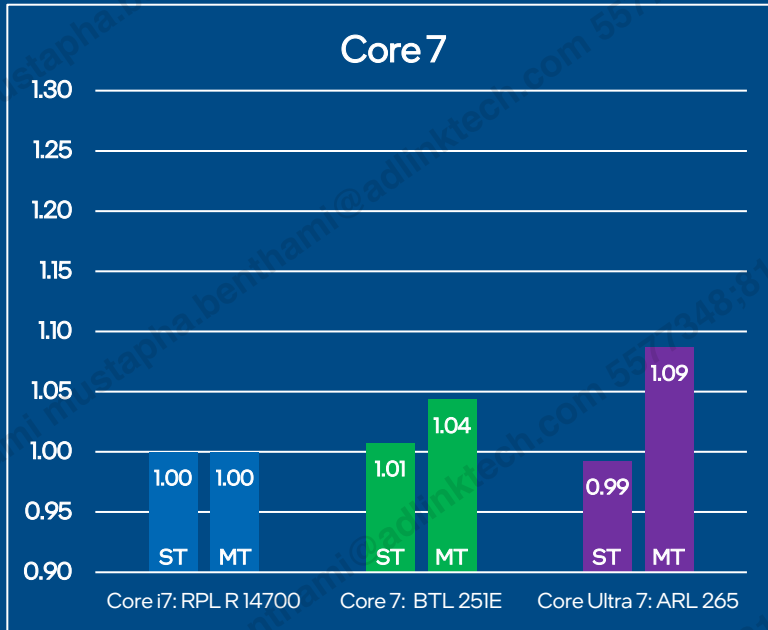
125W Bartlett Lake P-Core delivers MT performance gains up to 50% over RPL-S R P-Core

Performance varies by use, configuration and other factors. Learn more at [www.intel.com/PerformanceIndex](https://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 Appendix for configuration details.

# Bartlett Lake S (Hybrid SKU) vs. Arrow Lake S (Hybrid SKU)

## Intel Core & Core Ultra Processors (Series 2)

CPU Performance Gain vs. 14<sup>th</sup> Gen Raptor Lake S Refresh on SPEC CPU® 2017



Raptor Lake S  
Refresh

Bartlett Lake S

Arrow Lake S

ST = Single Thread, MT = Multi Thread

Performance varies by use, configuration and other factors. Learn more at [www.intel.com/PerformanceIndex](https://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 Appendix for configuration details.

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Code names are used by Intel to identify products, technologies, or services that are in development and not publicly available. These are not "commercial" names and not intended to function as trademarks. The products described may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

# Intel Core CPU Performance

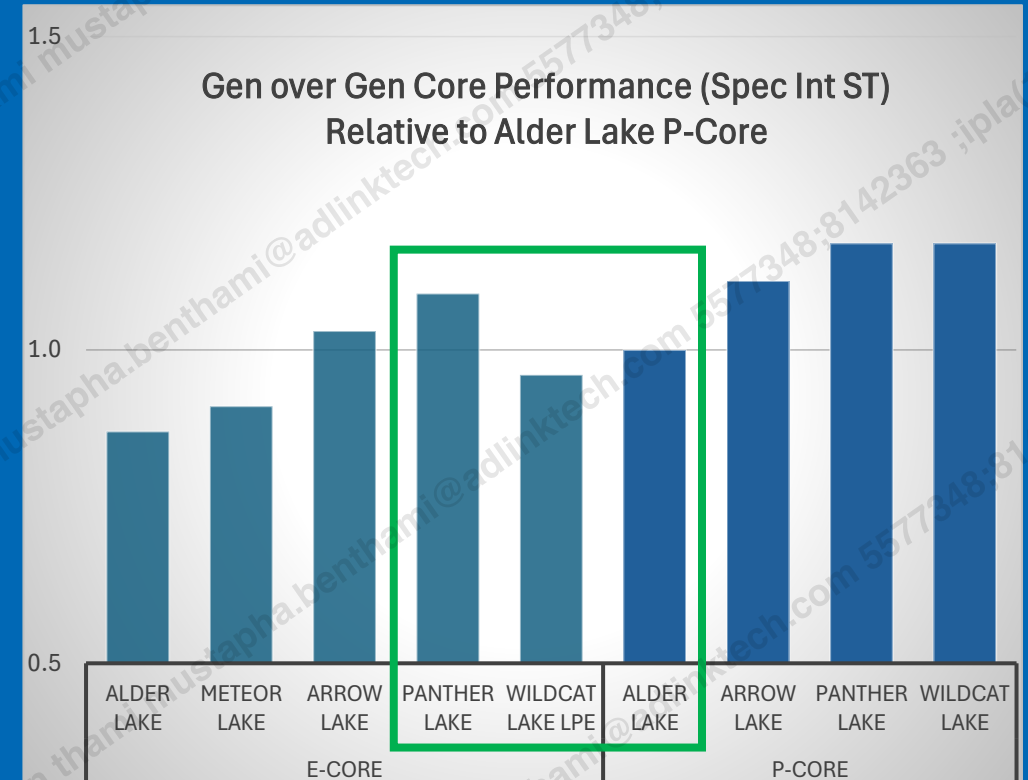
## P-Cores and E-Cores



- Intel Core Hybrid Architecture
  - Performance (P-cores)** for highest single thread performance
  - Efficient (E-cores)** for better multi-thread performance per watt
- Both P and E cores have the same instructions (ISA)
- For edge, both P and E cores can be used for edge workloads
  - E-cores are controllable in a group of 4 – change turbo range, lock freq or disable
  - Efficient support of AI workloads running on integrated accelerators (iGPU & NPU)

E-Cores in Wildcat Lake offers similar ST perf as Alder Lake P-cores¹

E-Cores in Panther Lake are even better than Alder Lake P-Cores for SIR!



Low Power E-Cores further optimize efficiency and deliver performance within 5-15% of CPU tile E-cores.

1 - When operating at the same frequency



# Intel Core CPU Performance Gen over Gen Performance

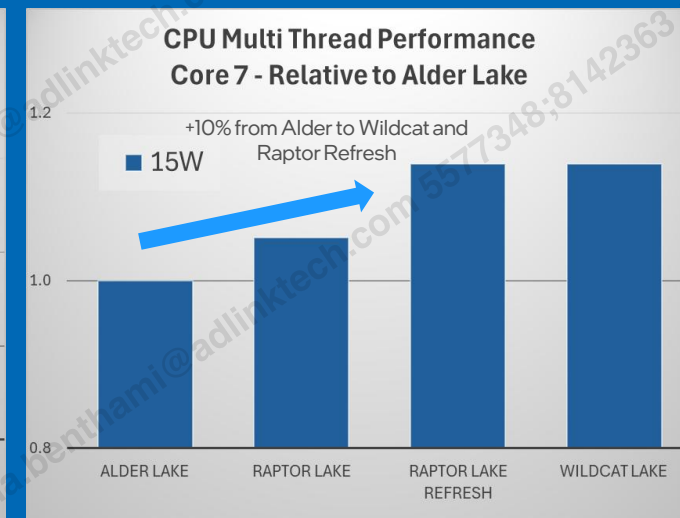
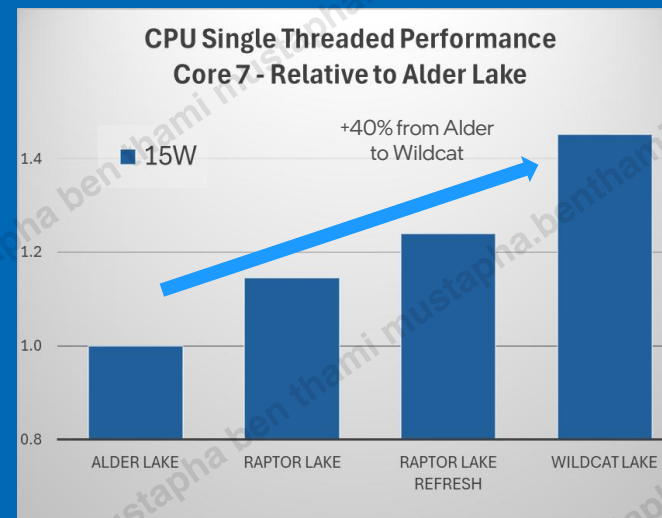
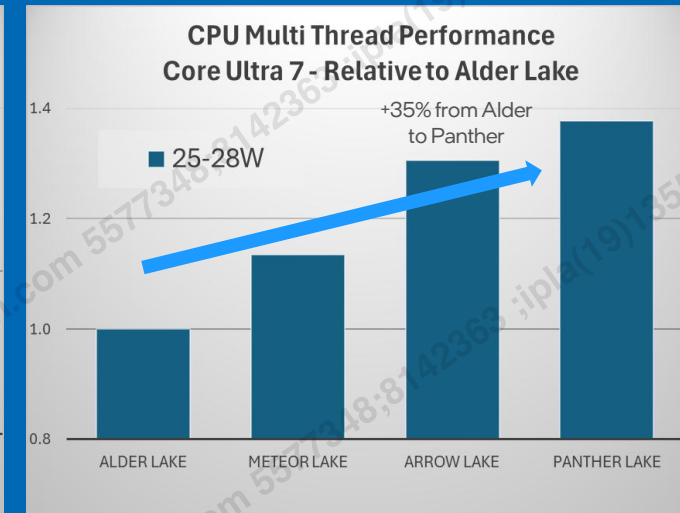
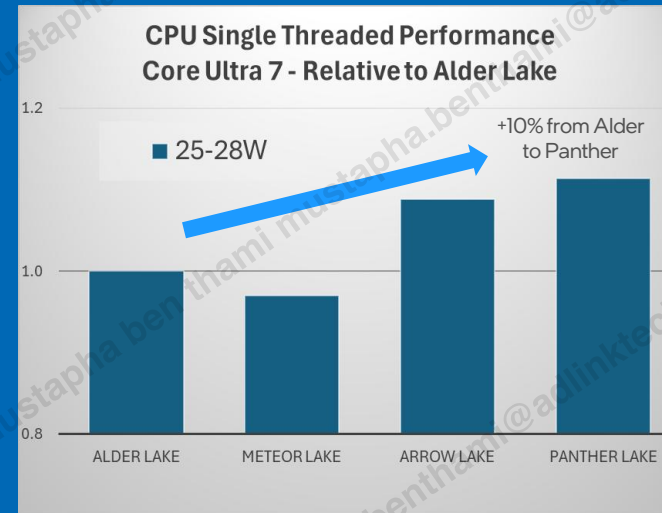
## ■ CPU Performance on Panther Lake

- Core Ultra 7 – 16C, 25W vs. [i270P](#) – i7, 12C, 28W
- ST Spec Int > 10% performance gain
- MT Spec Int > 35% performance gain



## ■ CPU Performance on Wildcat Lake

- Core 7 – 6C, 15W vs. [i265U](#) – i7, 10C, 15W
- ST Spec Int > 40% performance gain
- MT Spec Int > 10% performance gain



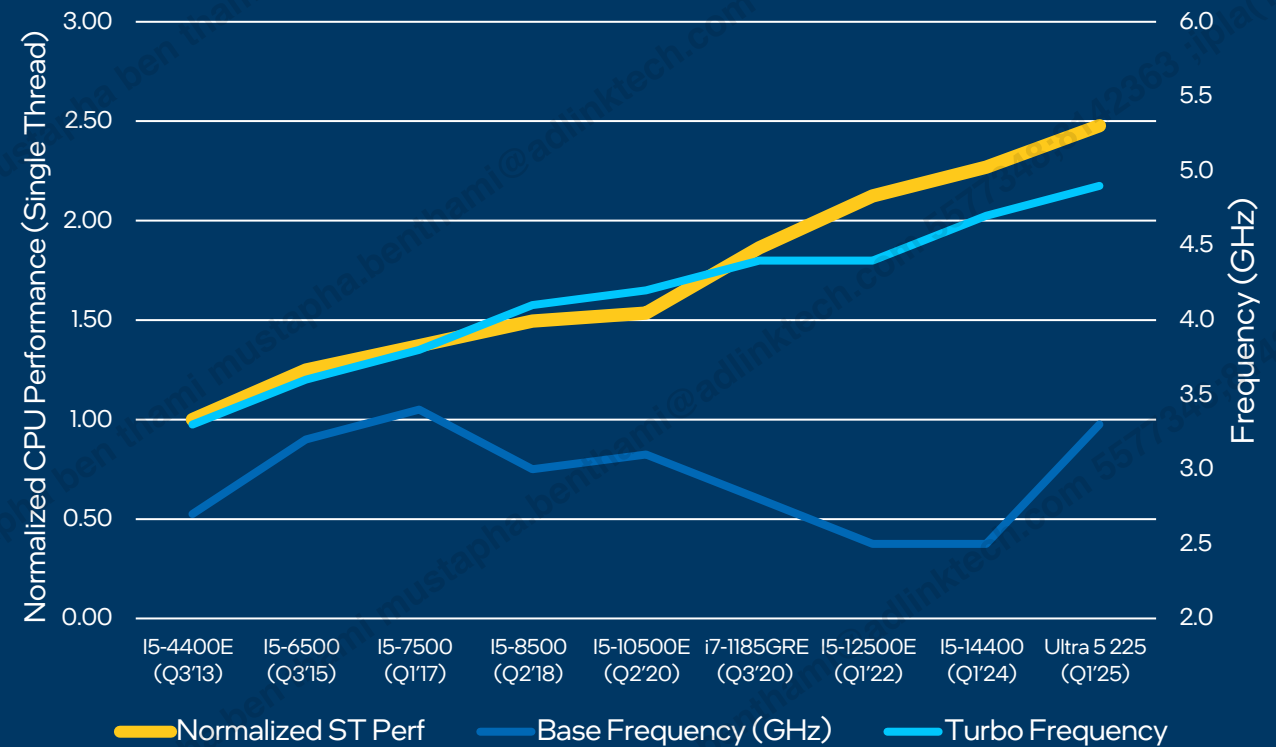
Mobile Processors

# Intel Core CPU Performance Base Frequency vs. Performance

Base frequency is no longer a suitable metric for comparing performance of processors from different lines and/or generations

- [Processor](#) Base Frequency is a legacy parameter that is specified for backwards compatibility. For modern Intel processors, performance is derived from a combination of many factors, including (but not limited to) Instructions Per Cycle (IPC), processor features, process technology, processor architecture/design, and effective clock speeds. The best user experience is enabled by balancing these various factors to optimize performance within the specific system design.
- While we specified Base Frequency for our products prior to 12th Generation Intel® Core™, it is no longer a suitable metric to use for comparing the performance of processors from different lines and/or generations in light of the changes above.

CPU Performance decouples from Processor  
Base Frequency in Modern Intel CPUs



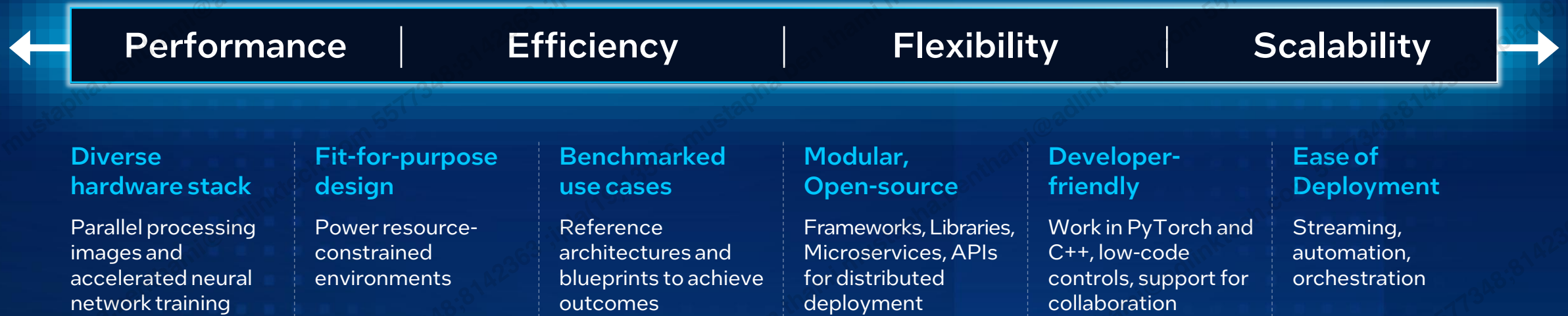
# Open Edge Platform

An Intel-based, partner-enabled, secure, optimized open platform  
for the edge to accelerate solution development.

Learn more about the Open Edge Platform at [intel.com](https://intel.com)

# Heterogeneous AI at the Edge

Ingredients for successful Edge AI Transformation



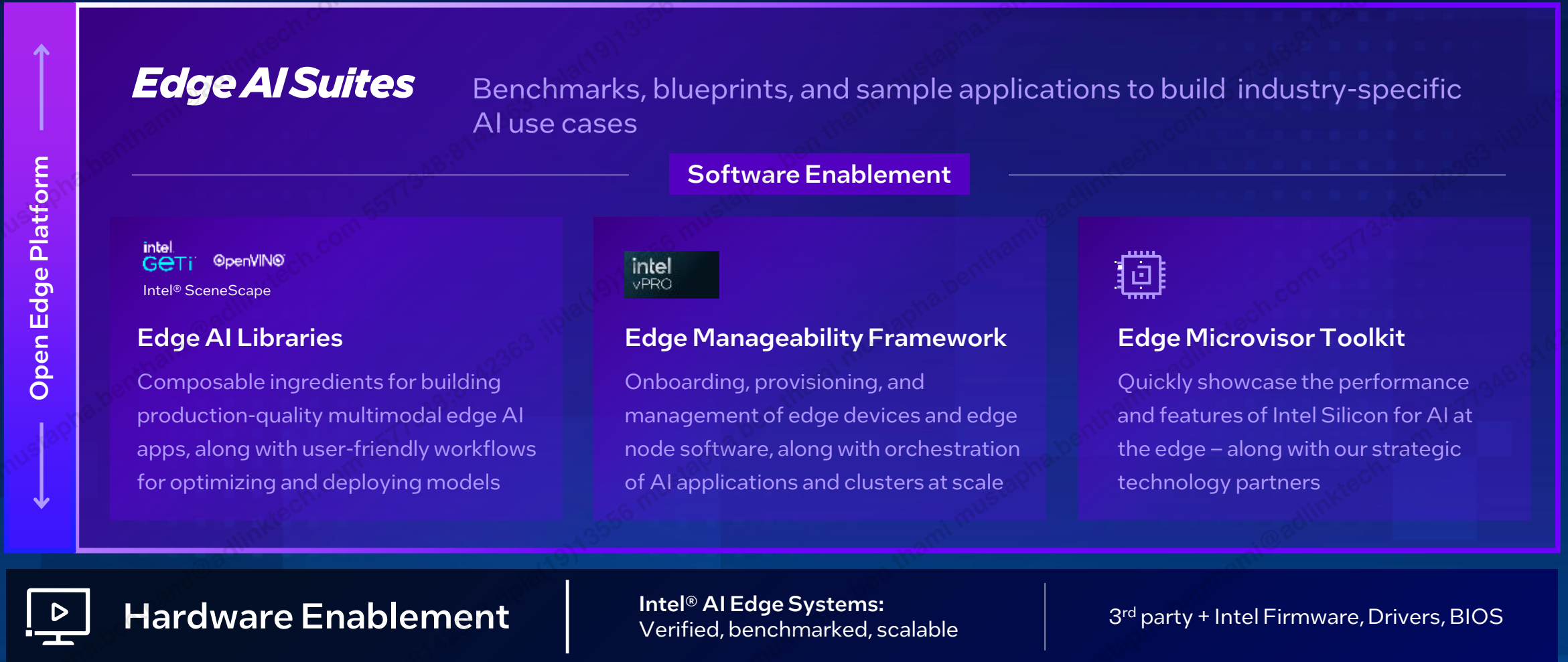
## Control and Security

Over sensitive data



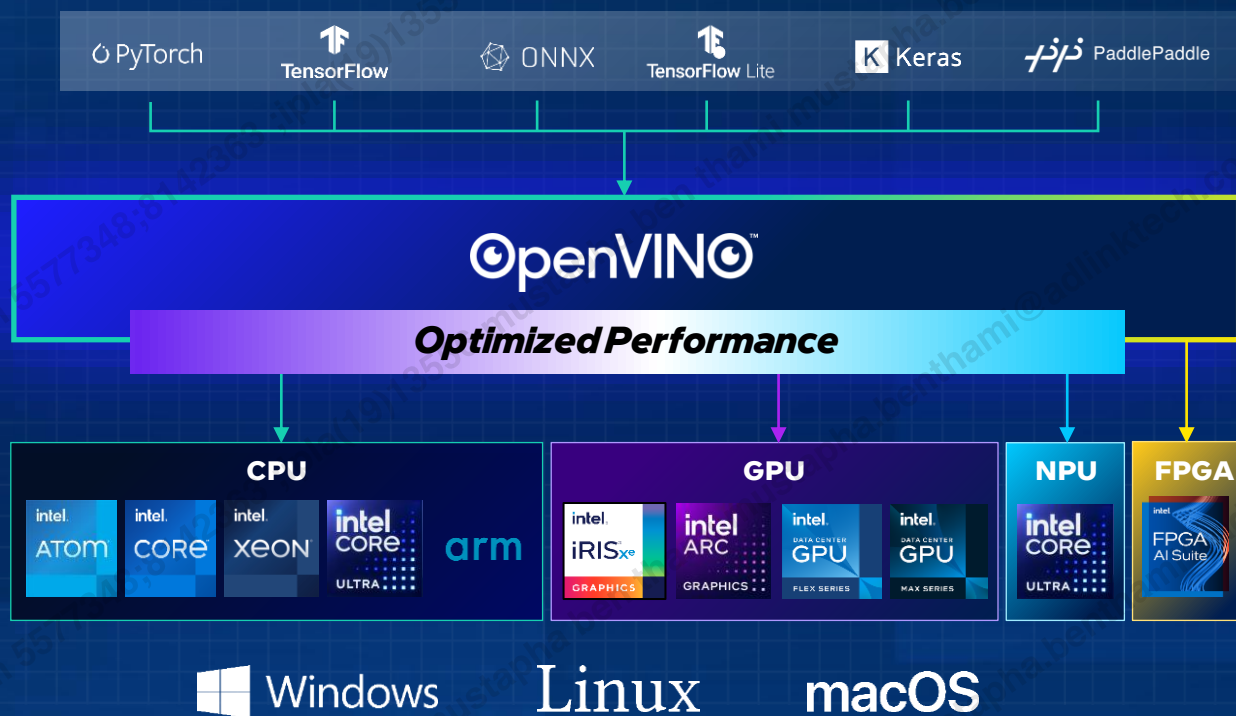
# Open Edge Platform

Modular and Optimized Edge AI Libraries, Edge Manageability Software, Toolkits, and More for Partners



# AI Model Inference on Intel

OpenVINO™ optimizes AI inference performance and fast deployment on CPU, NPU, and GPU



Mature Optimized Performance  
for Computer Vision, GenAI,  
Agentic AI, "AI Next

Widely Adopted by hundreds  
of ISVs easy adoption without  
use of CUDA

Ecosystem Support for dozens AI  
projects including PyTorch, WinML,  
ONNX RT, vLLM, LangChain and  
more

Optimized for Intel  
Silicon for efficient, performance  
of CPU, iGPU and NPU

# Edge AI Suites: Accelerate Solution Development

Reduce time to value for running concurrent edge AI workloads on Intel®

## AI Suites

Modular, open-source building blocks for developing vision and Gen AI use cases and accelerating performance



Tailor and evaluate, qualify and verify edge AI workloads faster with referenceable code, pipelines, and benchmarks

- Evaluate sample implementations
- Benchmark Workloads
- Demonstrate Performance and TCO

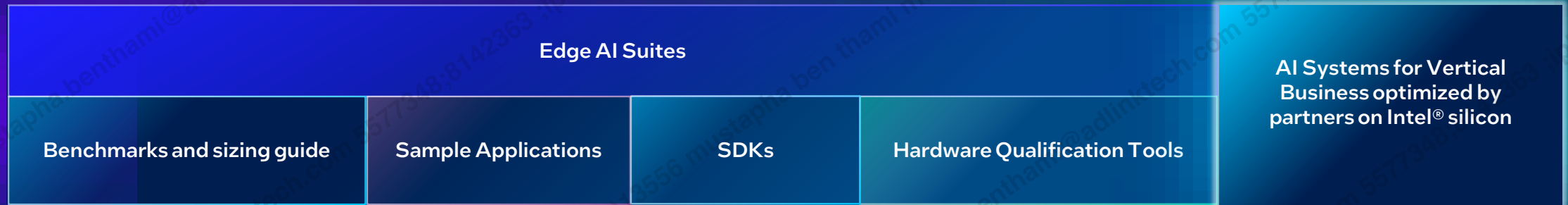
...deliver AI use cases across industries





# Inside Edge AI Suites

Get to market fast and reduce guesswork to deploy and scale industry-specific edge AI



AI Systems for Vertical Business optimized by partners on Intel® silicon

Prove concepts, create value faster

with curated industry use cases for vision AI, time series analytics, and Gen AI at the edge.

Validate, scale and deploy

using best-known configurations, to build and scale right-sized systems at an affordable TCO

Speed time to market

with modular, integrated AI systems fine tuned for interoperability and scalability at the edge.



# Retail AI Building Blocks

Real-time vision AI, Gen AI, and media analytics pipelines for loss prevention, inventory management, and quality control

Monitor self-checkout and PoS lanes with multimodal media pipelines



Recognize, monitor, count, classify, and detect products in cart



Contextualize and recommend products with multimodal search and summarization



Detect anomalies to prevent shrinkage and improve order accuracy



Manage inventories and real-time product updates with AI inferencing



Identify products in cart, monitor track inventories and shopper behavior, validate accuracy and quality assurance

## Order Accuracy

- Order Validation
- Packing Video Summarization

## Self-Checkout

- Product Recognition (detection, classification, tracking)
- Full pipeline (SKU, weight, text, barcode)
- Age verification

## Loss Prevention

- Fake Scans
- Items in Basket
- Multi-product ID
- Product Switching
- Shopper Behavior
- Event Video Summarization

## AI Library Components

- DL Streamer
- DL Streamer pipeline server
- OpenVINO
- Geti
- Scenescape



# Metro AI Building Blocks

Manage and ease traffic and parking flows, ensure public safety, with real time, contextual insights

Multi-camera NVR streams and transforms media into analytics pipelines



Computer vision AI trains models for precise object detection



Capture real-time views with scene-based analytics pipelines



Real, time multi-view scene control and spatial intelligence



Gen AI inference for real-time, contextual insights for inventory management



Enables real-time traffic and situationally aware monitoring to precisely detect and initiate real time response

## Reference Applications

- Advanced Video Search
- Video Summarization
- Natural Language Search
- Live Video Stream Analysis
- Live Avatar Interaction

## Use Cases

- Smart Network Recorder
- Smart Intersection
- Smart Parking
- Loitering Detection
- Sensor Fusion Traffic management

## AI Library Components

- DL Streamer
- DL Streamer pipeline server
- SceneScope™
- Geti™
- OpenVINO™



# Manufacturing AI Building Blocks

Vision AI with media analytics pipelines, anomaly detection, and time series to detect changes and avoid downtime

Gathers time series data to analyze quality control, throughput, and yield



Generate multimodal media analytics pipelines from sensors and ruggedized sources



Monitors patterns and detects anomalies with vision AI



Analyzes changes, recommend maintenance and automate solutions



RAG pipelines and Visual Q&A create context-aware insights and human system interfaces



**Monitors real time, sensor data to detect defects ,recommend maintenance, and protect worker safety**

## Reference Applications

- Process Optimization
- Quality Inspection
- Operational Diagnostics
- Worker safety gear detection

## Use Cases

- Weld Porosity Detection
- Wind Turbine Predictive Maintenance
- HMI Augmented Worker
- Pallet Defect Detection
- PCB Anomaly Detection

## AI Library Components

- DL Streamer
- SceneScape™
- Geti™
- DL Streamer Pipeline Server
- Model registry

# More Open Edge Platform Resources

Learn more at Intel.com: [Open Edge Platform](#)

## Intel Developer Zone Web page

Discover the latest release notes and Open Edge Platform resources



## Open Edge Platform Blog

Insights about the Open Edge Platform Tools, AI capabilities, and features



Join the  
Open Edge Platform  
Email list



## Intel Solution Builders

Verification tools, sizing guides and from partners to simplify and speed time to value.



## GitHub

Open Edge Platform sample applications and AI Libraries Repos





# Intel Products for the Edge

## Use Conditions, Product Availability, and Technical Support

Intel's edge processors and discrete GPUs provide unparalleled support for unique use conditions, industry-leading extended supply availability, and comprehensive support, ensuring reliability and continuity for critical operations.

# Unparalleled support for diverse use conditions, extended supply availability, and comprehensive product support

## Use Conditions

Accommodate diverse and demanding use cases, ranging from industrial IoT applications to telecommunications infrastructure, with robust performance and reliability.

## Product Availability

Intel's edge processors and discrete GPUs offer extended supply availability, ensuring uninterrupted access to critical components for long-term deployment, scalability, and serviceability.

## Technical Support

Comprehensive support services tailored to meet the specific needs of customers, guaranteeing seamless integration and optimized performance throughout the product lifecycle.

# Overview of Intel edge processors and discrete GPU

## Use conditions

### Product Development Phase

---

During the initial phases of product development, input from partners and customers is assembled to determine if specific use condition support is needed to meet solution demand and market conditions.

The scope of use condition support is preliminary until samples are available for testing and validation.

Processors families that are qualified for specific use conditions include: Intel Xeon processors, Intel Core processors, Intel Atom processors, and Intel Arc GPUs

### Quality & Reliability Testing

---

Intel's product development groups work with industry-leading quality and reliability analysis teams to test and simulate the operating conditions that a particular processor would experience during the expected life of the intended use condition, including environmental operating temperatures and process usage.

Once final testing and analysis is complete, the identified SKUs are qualified for specific use conditions.

### Final SKU Use Conditions Qualified

---

Once final testing and analysis is complete, the identified SKUs are fully qualified for specific use conditions. These use conditions include details temperature and operating range and operating life duration (reliability).

A list of all SKUs qualified for specific use conditions can be found at [ark.intel.com](https://ark.intel.com) or the [Quick Reference Guide](#) (QRG) available on RDC.

## Introducing Product Tuning for Reliability (PTR) for select Intel Core processors

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Product Tuning for Reliability (PTR) has been developed to afford increased flexibility and adoption of select current and future Intel Core processor SKUs, for a variety of edge use conditions. PTR allows partners and customers to adopt more readily available select Intel Core processors qualified for PC Client use conditions.

Using setting adjustments such as turbo frequency and/or temperature, PTR enables the custom tuning of an Intel Core processor SKU initially qualified for PC Client use conditions for an to meet a desired operating life duration with a desired reliability. This enables increased flexibility in SKU adoption and its use in a variety of edge solutions.

Support for PTR begins with new Intel Core Ultra processors (Series 1), previously codenamed Meteor Lake. Additional information and resources for using PTR is available in the next few slides.

# Network and edge processors and discrete GPU

## Use conditions detail

Additional detail [available on RDC](#)

|                                          | Industrial                                                                                                                 | Communications                                                                                                             | Virtualized Radio Access Network (vRAN)                   | Embedded Broad Market                                                                                                      | Server/Enterprise                                       | PC Client (Desktop)                                            | PC Client (Mobile)                                             | Workstation                                    |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------|
| Local Ambient Temp (TLA) Operating Range | Commercial Temp Range: 0°C to Thermal specification limit<br><br>Extended Temp Range: -40°C to Thermal specification limit | Commercial Temp Range: 0°C to Thermal specification limit<br><br>Extended Temp Range: -40°C to Thermal specification limit | Commercial Temp Range: 0°C to Thermal specification limit | Commercial Temp Range: 0°C to Thermal specification limit<br><br>Extended Temp Range: -40°C to Thermal specification limit | 0°C to Thermal specification limit                      | 0°C to Thermal specification limit                             | 0°C to Thermal specification limit                             | 0°C to Thermal specification limit             |
| Operating Life Duration (Reliability)    | 10 Years, up to 100% Active (No Turbo)                                                                                     | 7 to 10 Years*, up to 100% Active                                                                                          | 7 Years, up to 100% Active                                | 5 Years, up to 80% Active                                                                                                  | 5 Years, up to 100% Active                              | 5 Years, up to 30% Active                                      | 5 Years, up to 20% Active                                      | 5 Years, up to 20% Active                      |
| Applicable processor families            | Intel Core processors, Intel Atom processors, Intel Xeon W processors                                                      | Intel Xeon Scalable processors, Intel Xeon D processors, Intel Core processors, Intel Atom processors, Intel processors    | Intel Xeon Scalable processors, Intel Xeon D processors   | Intel Core processors, Intel Atom processors, Intel processors, Intel Xeon W processors, Intel Arc GPU for the Edge        | Intel Xeon Scalable processors, Intel Xeon D processors | Intel Core processors, Intel Atom processors, Intel processors | Intel Core processors, Intel Atom processors, Intel processors | Intel Xeon W processors, Intel Core processors |

- (\*) Dependent on processor SKU and design type. Please contact your Intel representative with any questions.
- Individual processor SKUs can support one, or multiple, use conditions. Please access the [Quick Reference Guide](#) to comprehend the use condition(s) supported on specific SKUs.
- Intel provides detailed product specifications that guide the design applications to the optimal operation within the noted Use Condition. The product spec takes priority over this summarized table.
- The summarized table above does not provide guidance regarding SKU supply availability. Please access the [Quick Reference Guide](#) for SKU supply availability.
- The Intel Edge 5 Quarter and 8 Quarter CNDA Processor roadmaps provided pre-production hardware targets. The [Quick Reference Guide](#) provides post launched specific SKU level details of the qualified Use Condition.
- Operating outside of product datasheet spec limits is a scenario where Intel cannot guarantee functionality - Intel does not collect any product qualification or validation data to support usage outside of published product specifications. Sustained exposure to extreme use environments that significantly deviate from the environment described in the Product Qualification Report may affect long-term component reliability.
- Specific product Reliability failure rates calculated / published in the PRQ Report are based on a weighted temperature distribution for a given use condition – not at the temperature limits stated above – Reliability Lifetime are based on a certain % of System Active on time - Refer to the product PRQ report located in RDC for specifics
- Local ambient operating temperature ranges provided are defined as TLA (local ambient temperature) and are not Intel spec requirements – these ranges are based on common industry standards - see the definitions foil for the specific description of TLA.
- Product specific TLA ranges as well as other thermal system requirements are documented in the product External Design Specification (EDS) and the Thermal Mechanical Design Guide (TMDG). These documents can be found on RDC once the product is launched.
- The Active % values referenced in the Use Condition Matrix are to be used for general planning / information purposes only – product specific Active % may vary.
- **Industrial use conditions are base frequency operation only – no core or graphics turbo operation is assumed for product optimization and Reliability goal compliance**
- The most stringent use conditions can support lesser use condition requirements in many but not all cases.
- Meeting Intel’s quality and reliability goals is expected when the product operates with the datasheet specification limits and are at or below Intel’s reference use conditions defined for the target market segment.



# Configurable Intel Core Processors for Edge Use Conditions





# Configurable Intel Core Processors for the Edge

Intel® Core™ processors offer Edge customers flexible customizations without the need for unique hardware SKUs.



## P-Core or E-Core only Configuration

Intel® Core™ processors with P and E cores support selective disabling for homogenous core configurations.

## Adjustable TDP

Configurable power limits enable power control to support low-power designs like fan-less and ultra-thin systems.

## Adjustable Memory Allocation for Intel Graphics

Exclusive to Intel integrated GPUs, allows the ability set the percentage of the system RAM to be used as GPU memory (VRAM).

## Product Tuning for Reliability (PTR)

PTR enables custom tuning of Intel® Core™ SKUs to meet target reliability and operating life goals. Refer to published [PTR documentation](#).

## Predictable per-core Performance

Enable to provide predictable real time KPIs that cannot tolerate a variability in frequency. Refer to [dynamic frequency scaling](#) and [real-time computing](#) for implementation guidance.



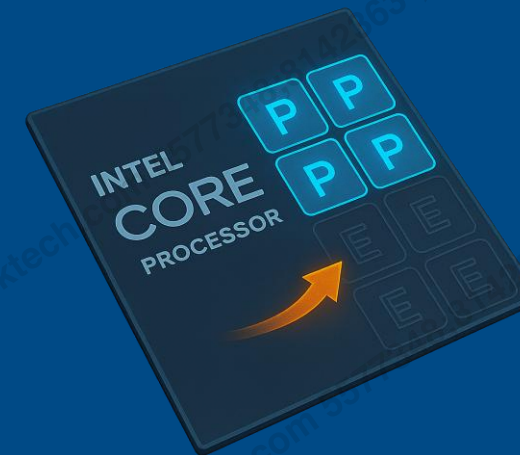
# Configurable Intel Core Processors for the Edge

## P-Core or E-Core Only Configuration

Intel Core processors with Performance (P) and Efficiency (E) cores can be configured to selectively disable cores<sup>1</sup>, enabling a P or E-core-only design on product generations with hybrid core configurations.

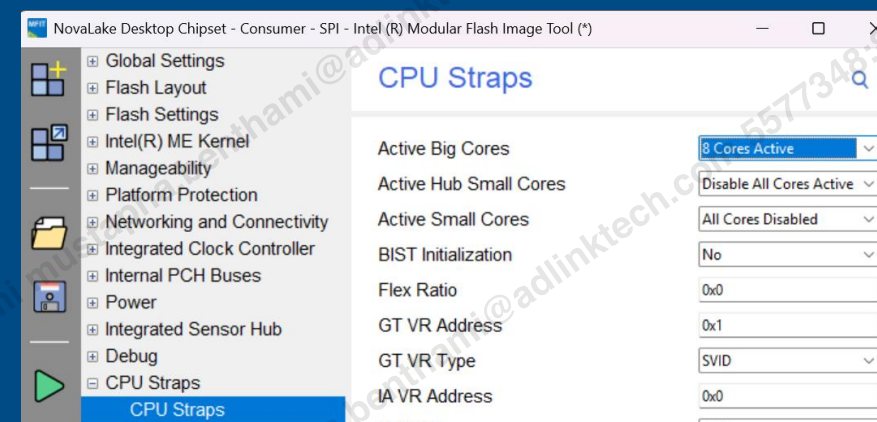
### Enabling this Configuration:

- Reallocates power from disabled cores to the active cores, boosting their base performance<sup>3</sup> while staying within the max Turbo Ratio limits.
- Optimizes platforms for specific workloads, thermal targets<sup>2</sup>, or power budgets without requiring a different hardware SKU.
- Enables system designers with sustained performance, OS compatibility or simplified validation.



### Technical Resources & Guidance

- “Converged Security and Management Engine Firmware Consumer Firmware Bring Up Guide” in [RDC](#) provides a guide to use the Intel Modular Flash Image Tool (MFIT) for this configuration.



<sup>1</sup> The ability to disable both P & E-cores is possible depending on the desired product configuration. Contact your Intel account representative for questions on specific product lines.

<sup>2</sup> Operating in P-core-only or E-core-only mode may necessitate improved cooling beyond the baseline configuration.

<sup>3</sup> Base frequency is a reference point and is based on assumed activity of other IPs (GPU, NPU, etc.) and may vary with actual running workloads.



# Configurable Intel Core Processors for the Edge

## Adjustable TDP

Intel® provides configuration options to control the power limits for system designers that have power and thermal constraints. The ability to configure the TDP broadens viable processor SKU<sup>1</sup> options across the roadmap.

### Enabling this Configuration:

- Matches processor power consumption to platform thermal and power constraints.
- Expands design flexibility, allowing use of Intel processors in products not previously considered due to TDP limitations.
- Supports predictable and efficient power management, improving performance-per-watt while ensuring thermal compliance.
- Provides firmware, driver, and OS-level control for tuning and adapting power behavior throughout the product lifecycle.



### Technical Resources & Guidance:

- “Platform Turbo and Thermal Power Management Guide for Intel® Core™-Based Processors Implementation Guide” in [RDC](#).
- [Intel® 64 and IA-32 Architectures Software Developer’s Manual Volume 3](#) in “Platform Specific Power Management Support” refer to “Running Average Power Limits” (RAPL).

<sup>1</sup> Supported TDP adjustment ranges vary by processor SKU and platform design. Please contact your Intel representative with any questions.

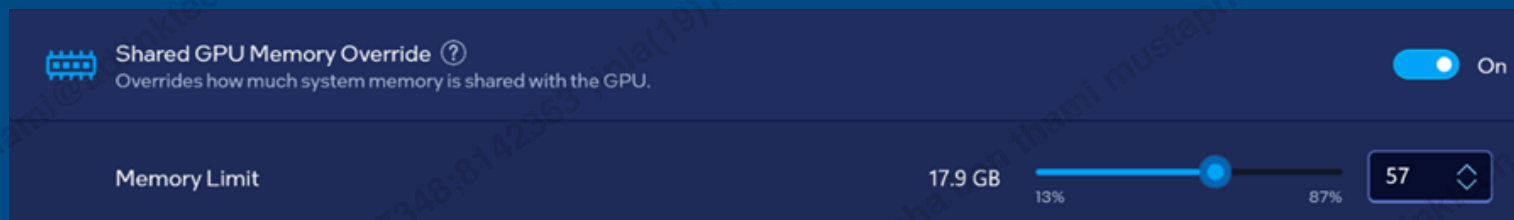




# Configurable Intel Core Processors for the Edge

## Adjustable Memory Allocation for Intel Graphics

Intel® Graphics Software now contains a feature<sup>2</sup> called Shared GPU Memory Override. This feature, available exclusively for integrated Intel® Graphics on Intel Core Ultra Series 2 Processors and later<sup>1</sup>.



### Enabling this Configuration:

- Allows users configure the percentage of system RAM allocated as GPU memory (VRAM) overriding the DVMT limit.
- Provides the GPU with additional headroom for rendering, video, and AI workloads. This can accelerate edge workloads like video analytics, defect detection, autonomous vision, and AI inference, while reducing latency from CPU-shared memory traffic.

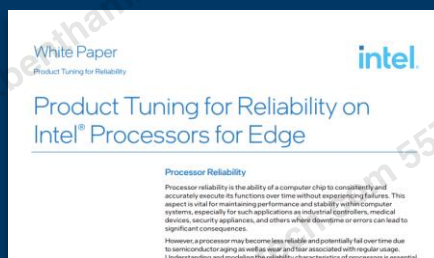
### Technical Resources & Guidance

- [Shared GPU Memory Override Feature and Requirements](#)
- [Intel's oneAPI GPU Optimization Guide](#)

<sup>1</sup>Enabling this feature may impact overall system performance. Intel recommends thoroughly testing your configuration to ensure it meets your performance and functionality requirements.

<sup>2</sup>Feature available starting with Intel® Graphics Software (IGS) version 25.26.1602.2 and Intel Graphics Driver version 32.0.101.6974

# Intel Product Tuning for Reliability (PTR) for Edge Design Use Conditions



## Product Tuning for Reliability on Intel Processors for Edge

Publicly available for download. Click on link above or visit [rdc.intel.com](https://rdc.intel.com) and search for 867336

This whitepaper provides an overview of the concept and practice of Product Tuning for Reliability, a methodology for expanding the use reliability of Intel processors for edge applications. It covers the basics of processor reliability, the method of Product Tuning of Reliability, and how to apply it to designs targeting embedded or industrial use conditions.

NEW

# Introducing custom use conditions for select Intel Core processors

## Product Tuning for Reliability (PTR)

### PC Client Use Condition Support

- Intel processor products include SKUs qualified for PC Client use conditions. These SKUs are qualified for optimal performance and reliability under use condition typical of PC or client-device computing.
- Although qualified for PC Client use conditions, these SKUs can be used in applications that have more challenging use condition requirements, for example: embedded computing

### Product Tuning for Reliability (PTR) with Intel Core processors

- Intel has developed a customer-centric, expanded-use reliability methodology program, for use by systems engineers to incorporate PC Client SKUs into applications requiring optimal performance and reliability under custom and application-specific use conditions
- Supporting Collateral
  - Reliability Application Note: Includes information on reliability resulting from varying turbo frequency and temperature
  - BIOS Writers Guide Addendum
  - Thermal Design Guide Addendum
- This program is intended to support future Intel Core processors, beginning with Meteor Lake processors

### Program Overview

beginning with Meteor Lake processors

- 1 Choose an Intel processor SKU, qualified for “PC Client” use condition
- 2 Apply expanded-use reliability methodology and testing to determine SKU configuration
- 3 Verify intended use condition and SKU configuration with Intel program managers
- 4 The SKU may now be used to achieve expanded-use reliability based on the configuration determined
- 5 Deploy processors into production environments



Questions or inquiries, please contact your Intel Representative or Intel Premier Support

Custom use conditions for select Intel Core processors

# Product Tuning for Reliability (PTR) Resources

Product Tuning for  
Reliability (PTR) Gold Deck

Available on [RDC](#)  
RDC ID: 795291

Use Reliability  
Application Note

Available on [RDC](#)  
RDC ID: 812322

BIOS Writer's Guide  
Addendum for Product  
Tuning for Reliability

BIOS Writer's Guide on [RDC](#)  
RDC ID: 795822  
TMDG Addendum on [RDC](#)  
RDC# : 812507

PTR  
Questions and Inquires

Please contact your Intel Representative or Intel Premier Support



# Use Conditions for Reliability of Intel Core Processors

|                                                                                                 |                                                                                              |                                                                                                                  |
|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Operating Time</b><br>Time period the processor is put into use or operation (i.e. lifetime) | <b>Active %</b><br>% time spent by all the cores in executing instructions over its lifetime | <b>Inactive %</b><br>% time the cores are idling, or the processor is in standby or off states over its lifetime |
|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|

| Use Conditions         | Use Life* | Active Operation*             | Inactive Operation* |
|------------------------|-----------|-------------------------------|---------------------|
| PC/Client<br>- CT*     | 5 years   | Time: 20% or 30%              | Time: 80% or 70%    |
| Embedded<br>- CT/ET*   | 5 years   | Time: 80%                     | Time: 20%           |
| Industrial<br>- CT/ET* | 10 years  | Time: 100% (Turbo Freq = off) | Time: 0%            |

\* Commercial Temp Range (CT): 0° C to Thermal specification limit, Extended Temp Range (ET): -40° C to Thermal specification limit

\*\* As qualified against Intel Quality Goals

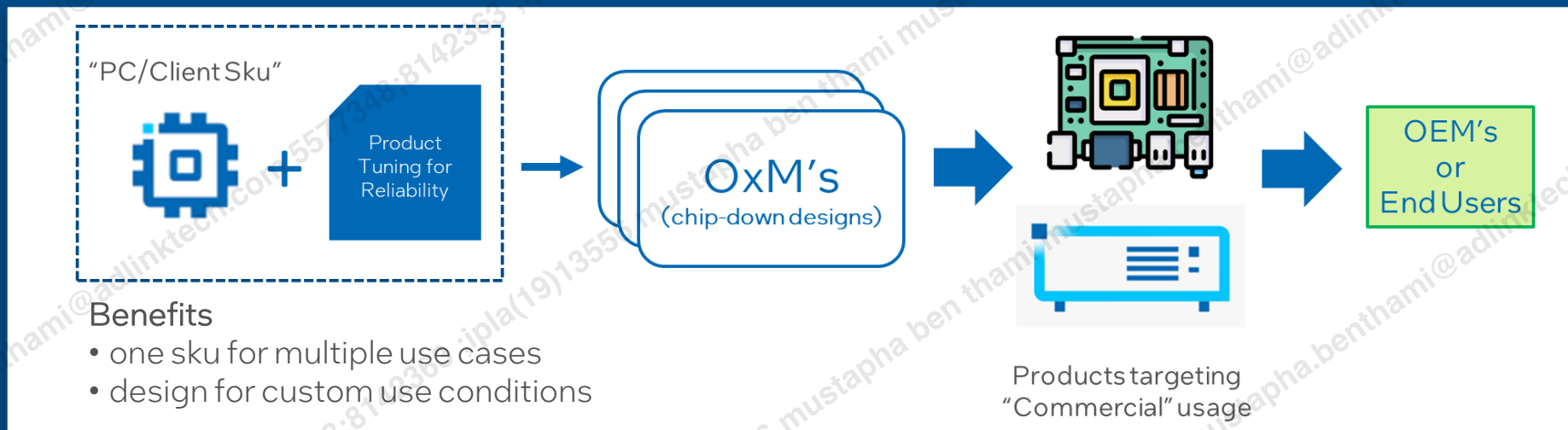
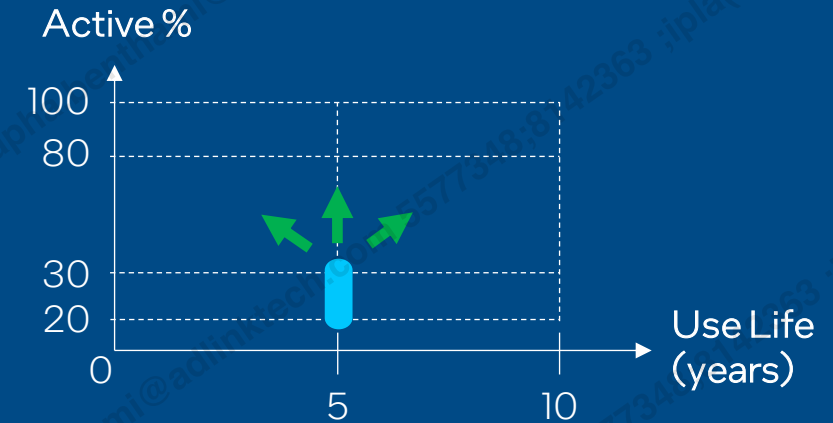
Ref: <https://www.intel.com/content/www/us/en/secure/confidential/products/use-conditions.html> (CNDA site)

On Intel Edge product roadmap, generally, all Core processors offer PC/Client SKUs, and selected Core processors also offer Embedded SKUs and/or Industrial SKUs.

# Product Tuning For Reliability (PTR)

- It is a design-in Methodology for using PC/Client-qualified processors in designs that have more stringent usage requirements (higher activity, longer use life)\* without compromising product reliability targeted by Intel.
- It is also a Practice/Program to enable OxM\* customers to use this methodology to meet design needs through Reliability Projections, Documentation, and Support.

\*not including Extended Temperature



# Product Tuning For Reliability: Enablement



## Use Reliability App Note

- Reliability specs (i.e. Freq & Temp settings) for higher active % and use life and corresponding failure rates.
- For reference in conjunction with the product's main PRQ report(s).



## Implementation Guides

- Documentation to explain the how-to of setting frequencies and designing CPU cooling for reliability control.
  - *BIOS Writer's Guide Addendum*
  - *Thermal Mechanical Design Guide Addendum*



## Technical Support

- Intel resources to provide guidance, and answer questions.
- Consultation to assist with determining custom settings and failure rates for select designs.

# Intel Product Tuning for Reliability (PTR): Simplifying Intel PTR

## Intel Provided PTR collaterals

PC/Client SKU  
"Hard SKU"



PRQ Report



qualified for  
PC/Client use  
condition  
as per Intel Q&R  
Goals



Use Condition  
Reliability App Note



### Option One

#### The "Easy Button"

Pre-tuned reliability settings  
by Intel

Pin strap or one click BIOS  
setting

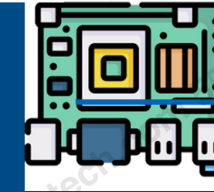
Intel validated reference BIOS  
with PTR settings for EMB and  
INDU use cases

### Option Two

Size CPU cooling solution as  
per Temp spec.

Set CPU Frequencies  
in BIOS\*

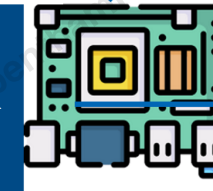
Customer tunes sku for desired  
reliability/performance



High Reliability  
"Soft Sku"



Embedded Computers  
/ Industrial PCs



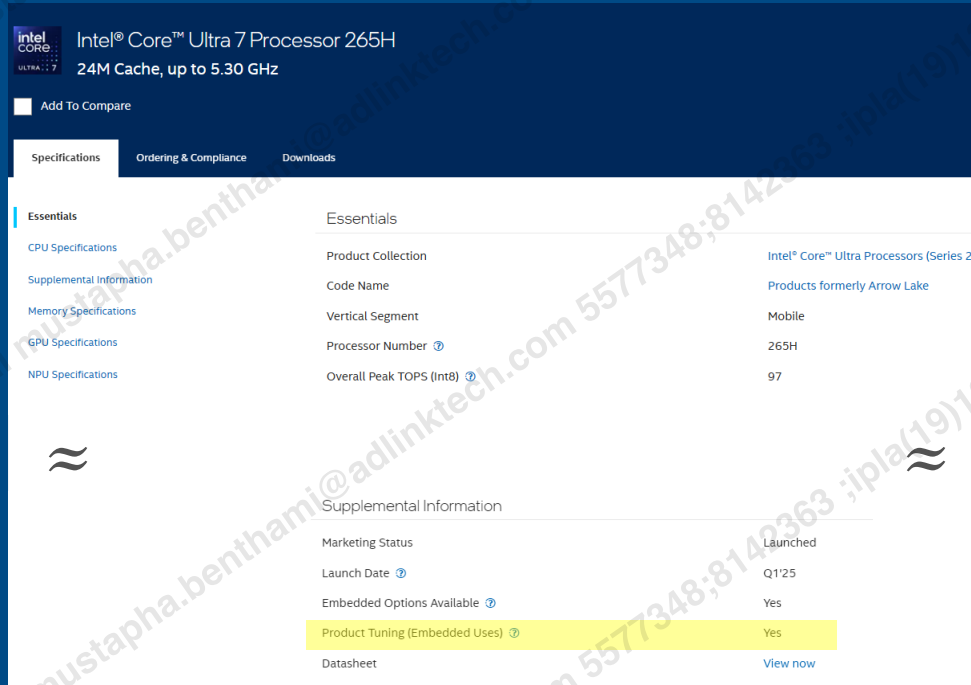
High Reliability  
"Soft Sku"



Embedded Computers  
/ Industrial PCs



# Intel Product Tuning for Reliability (PTR): Simplifying Intel PTR



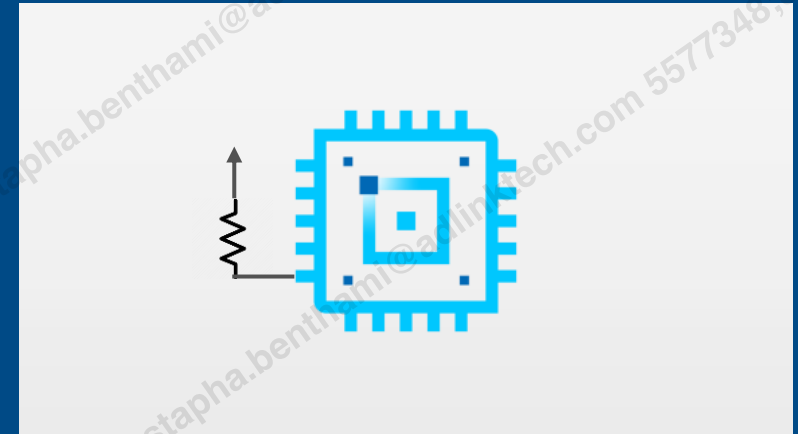
Ref: <https://www.intel.com/content/www/us/en/products/sku/241750/intel-core-ultra-7-processor-265h-24m-cache-up-to-5-30-ghz/specifications.html>

Option One:  
Choose from  
BIOS menu

Select Processor Use Condition  
Reliability

- ☐ PC/Client
- ☐ Embedded
- ☐ Industrial

Option Two:  
Select via  
GPIO setup



# Intel Product Tuning for Reliability (PTR): Simplifying Intel PTR

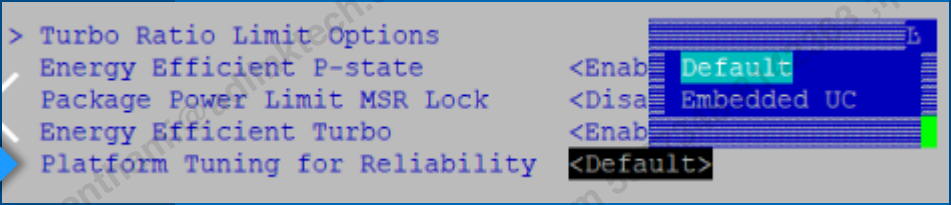
## Simplified PTR enablement in BIOS

To ease implementation of PTR for customers, Intel is pulling the PTR data in the REL app note for each product into the reference BIOS, making it easy to implement reliability levels via BIOS menu or by reading a GPIO pin at boot

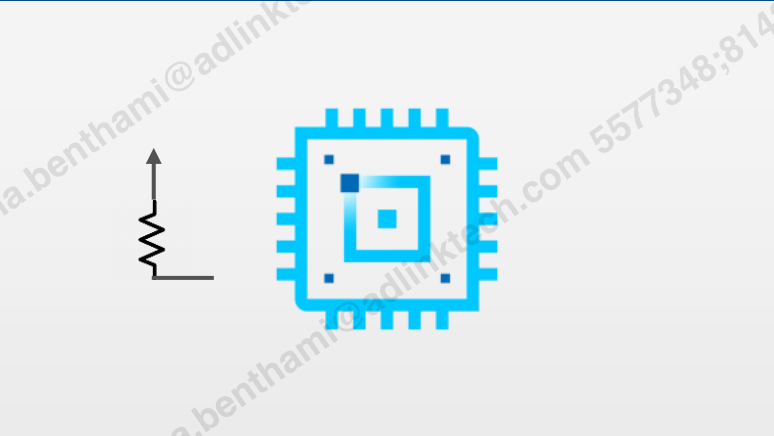
| Platform            | Availability |
|---------------------|--------------|
| Arrow Lake          | Now          |
| Meteor Lake         | Now          |
| Raptor Lake Refresh | Now          |
| Panther Lake        | Q2'26        |

Option One:  
**Choose from BIOS menu**

Select Processor Use Condition Reliability



Option Two:  
**Select via GPIO setup**



# Intel Xeon Processors

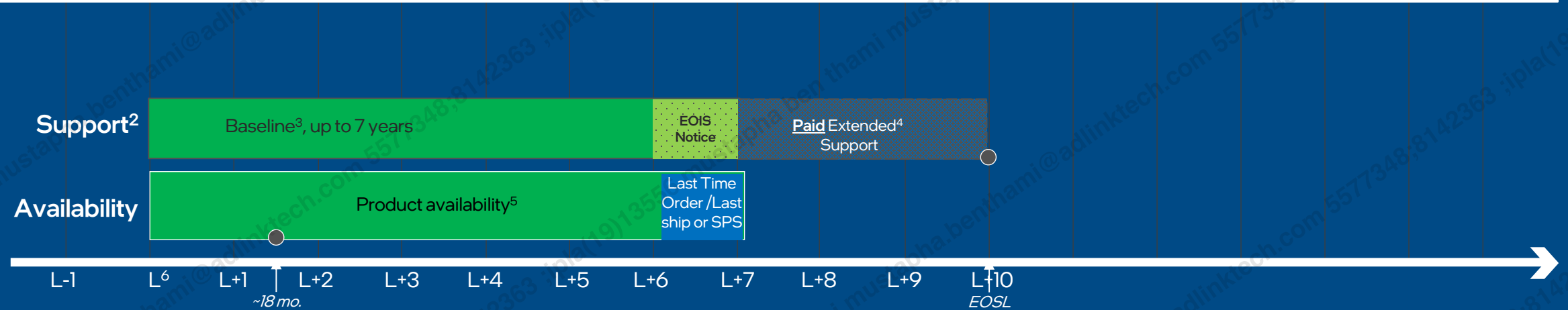
## Hardware Availability and Technical Support Lifecycle



# Intel Xeon Processor Hardware Availability\* and Technical Support Lifecycle

**Product Guidance for Granite Rapids and future design engagements\*:**

- Long Life product availability and guidance by Product and SKU can be found in the Quick Reference Guide<sup>1</sup>
- Technical Support Lifecycle Guidance below applies to SKUs listed in the Quick Reference Guide starting with Granite Rapids and beyond. For all other SKUs please contact your sales representative.
- Products are advocated for new designs for up to 18 months after Component family introduction (L= Launch of 1<sup>st</sup> SKU) dates (some exceptions may apply).
- Product Discontinuance Notifications (PDN)<sup>\*</sup> will typically be issued no later than 6 years after component family introduction date.
- Publication of the PDN will typically be followed by a 12-month last-time-order period, followed by 6-month last-time-ship period.



\* Intel does not commit or guarantee product Availability or Technical Support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software and software support services through standard EOL/PDN processes. Please contact your Intel account rep for additional information.

<sup>1</sup> The Availability Lifecycle guidance applies to Intel SKUs listed in the Quick Reference Guide.

<sup>2</sup> The Hardware and Software Technical Support (also referred to as Interactive Support) Lifecycle guidance applies to Intel Xeon SP and Xeon D Base Platform silicon for Granite Rapids and beyond.

<sup>3</sup> Baseline Support includes coverage, when technically feasible, for Change Requests/Bugs/Security & Functional Updates for 18 months followed by Bugs/Security & Functional Updates only and other Technical Support Requests up to 5 years . End of Interactive Support (EOIS) will typically be issued 12 months prior to the end of 5 years. Requests are addressed based on the existing Priority definitions

<sup>4</sup> Paid Extended Support, when technically feasible, is typically available for up to an additional 3 years. Support covers Bugs using existing Priority definitions. End of servicing lifetime (EOSL) indicates when all interactive support, including Security & Functional Updates, have concluded

<sup>5</sup> Intel Hardware Product availability guidance typically extends up to 7 years. If needed, Hardware Product Availability may be extended using the Supplemental Product SKU (SPS) Process. Please refer to the Quick Reference Guide for additional details.

<sup>6</sup> L represents the Component Family Introduction date and represents the launch of the 1<sup>st</sup> SKU in the Family.

\* Guidance on products prior to Granite Rapids do not change



# Intel Core Ultra, Intel Core and Intel Entry Processors

## Hardware Availability and Technical Support Lifecycle

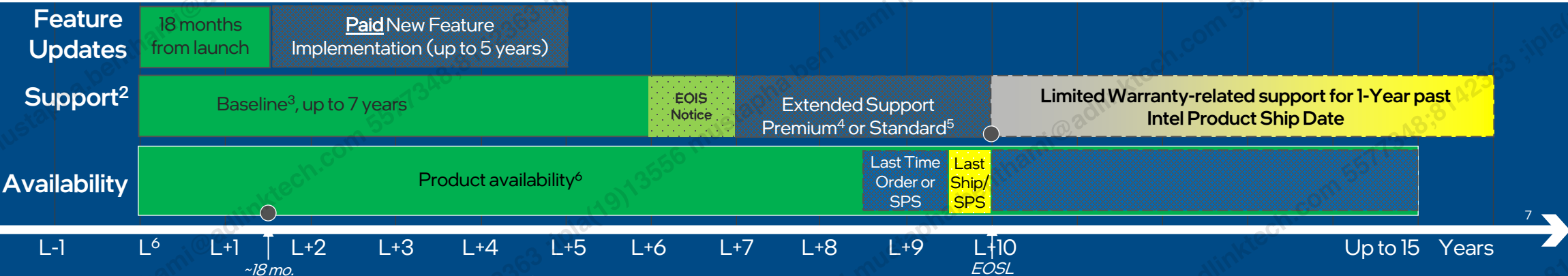
Access the Intel Edge Platforms Extended Support Primer  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 728368



# Intel Edge Core/Entry Hardware Availability\* and Technical Support Lifecycle

## Product Guidance:

- Long Life product availability and guidance by Product and SKU can be found in the ECG Edge / Network and Edge Group (NEX) Quick Reference Guide<sup>1</sup>
- Technical Support Lifecycle Guidance below applies to SKUs listed in the “Edge IoT CPUs and Chipsets” portion of the Quick Reference Guide launched after Q3 2021. For all other SKUs please contact your sales representative.
- Products are advocated for new designs for up to 3 years after Component family introduction (L= Launch of 1<sup>st</sup> SKU) dates (some exceptions may apply).
- Product Discontinuance Notifications (PDN)<sup>†</sup> will typically be issued no later than 13 years after component family introduction date.
- Publication of the PDN will typically be followed by a 12-month last-time-order period, followed by 6-month last-time-ship period.
- Warranty information is general guidance only, and warranties are governed by signed written agreements and Intel Standard Terms and Conditions of Sale. Customers purchasing Intel products through distribution channels should check with their supply chain partner for warranty details



\* Intel does not commit or guarantee product Availability or Technical Support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software and software support services through standard EOL/PDN processes. Please contact your Intel account rep for additional information.

<sup>1</sup> The Availability Lifecycle guidance applies to NEX/Edge Base Platform silicon SKUs listed in the “Edge IoT CPUs and Chipsets” portion of the Quick Reference Guide for platforms launched after Q3’20 (Ice Lake SP, Ice Lake D, Tiger Lake, Elkhart Lake and beyond). Wireless, Vision Products, and other components may have different availability, servicing & support. Please refer to those sections in this document or your Intel Account rep for guidance.

<sup>2</sup> The Hardware and Software Technical Support (also referred to as Interactive Support) Lifecycle guidance applies to NEX Core/Entry Base Platform silicon for platforms launched after Q3’21 (Alder Lake and beyond). Wireless, Vision Products, and other components may have different availability, servicing & support. Please refer to those sections in this document or your Intel Account rep for guidance.

<sup>3</sup> Baseline Support includes coverage, when technically feasible, for Change Requests/Bugs/Security & Functional Updates for 18 months followed by Bugs/Security & Functional Updates only and other Technical Support Requests up to 7 years. End of Interactive Support (EOIS) will typically be issued 12 months prior to the end of 7 years. Requests are addressed based on the existing Priority definitions.

<sup>4</sup> Premium Extended Support, when technically feasible, is typically available for up to an additional 3 years. Support covers Bugs using existing Priority definitions. Support includes enablement of a third LTSC on Windows, when technically feasible. Premium extended support includes access to Intel Premier Support (IPS) tools. End of servicing lifetime (EOSL) indicates when all interactive support, including Security & Functional Updates, have concluded. Premium support option available on Core, Entry and Xeon products identified as edge enhanced in ECG Compass.

<sup>5</sup> Standard extended support includes Intel Platform Updates only for up to three additional years. Standard support option available only on Core and Entry products identified as edge enhanced in ECG Compass.

<sup>6</sup> ECG Core and Entry Hardware Product availability guidance typically extends up to 10 years. If needed, Hardware Product Availability may be extended up to 15 Years using the Supplemental Product SKU (SPS) Process. Please refer to the Quick Reference Guide for additional details.

<sup>7</sup> L represents the Component Family Introduction and represents the launch of the 1<sup>st</sup> SKU in the Family.

# Intel Products for the Edge

## Product Availability Resources



# Industry-leading product availability

# Intel Quick Reference Guide (QRG) Overview

Access the QRG for a comprehensive resources of all current shipping and legacy processors

Updated and published quarterly as Microsoft Excel workbook file, the QRG provides processor, chipset, edge/iot connectivity, and more, pulled from Intel's ARK website, which is a comprehensive product database. The QRG reflects the specifications, features, compatibility information, product codes, and other relevant details for each product on ARK, allowing users to compare different products and make informed decisions based on their needs.

| QUICK REFERENCE GUIDE                                                                                                                                                                                                                                                |             |                          |                              |                                |                                                                                     |           |                   |               |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|------------------------------|--------------------------------|-------------------------------------------------------------------------------------|-----------|-------------------|---------------|--|
| EDGE/IOT CPUS AND CHIPSETS                                                                                                                                                                                                                                           |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| INTEL CONFIDENTIAL - CNDA USE ONLY                                                                                                                                                                                                                                   |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| The information below represents the prior "IOTG" SKUs previously published as the "IOTG QRG."                                                                                                                                                                       |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| **Product availability is subject to change. Intel reserves the right to change roadmaps or discontinue products, software and software support services through standard EOL/PDN processes. Please contact your Intel account rep for additional information.       |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| ***Product availability guidance typically extends up to 10 years. If needed, Hardware Product Availability may be extended up to 15 Years using the Supplemental Product SKU (SPS) Process. SPS Process to include customer demand forecast submitted at PCN.       |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| The * indicates products in End-of-Life process, please refer to published PCN for the last order date                                                                                                                                                               |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| 1- Intel® Xeon® W-1290E and Intel® Xeon® W-1270E are offered for 5 year availability on roadmap. For extended availability of Intel® Xeon® W-1290E and Intel® Xeon® W-1270E, please contact your local Intel representative for Supplemental Product Support (SPS) c |             |                          |                              |                                |                                                                                     |           |                   |               |  |
| Brand Name                                                                                                                                                                                                                                                           | Processor # | Product Family Code Name | Component Family Launch Date | Silicon Availability (Years)** | Use Condition                                                                       | Socket    | Cache             | Cores/Threads |  |
| Intel® Xeon® Bronze 3106 Processor (11M Cache, 1.70 GHz)                                                                                                                                                                                                             | 3106        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 11 MB          | 8C/8T         |  |
| Intel® Xeon® Silver 4110 Processor (11M Cache, 2.10 GHz)                                                                                                                                                                                                             | 4110        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 11 MB          | 8C/16T        |  |
| Intel® Xeon® Silver 4116 Processor (16.5M Cache, 2.10 GHz)                                                                                                                                                                                                           | 4116        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 16.5 MB        | 12C/24T       |  |
| Intel® Xeon® Gold 5118 Processor (16.5M Cache, 2.30 GHz)                                                                                                                                                                                                             | 5118        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 16.5 MB        | 12C/24T       |  |
| Intel® Xeon® Gold 6126 Processor (19.25M Cache, 2.60 GHz)                                                                                                                                                                                                            | 6126        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 19.25 MB       | 12C/24T       |  |
| Intel® Xeon® Gold 6130 Processor (22M Cache, 2.10 GHz)                                                                                                                                                                                                               | 6130        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 22 MB          | 16C/32T       |  |
| Intel® Xeon® Gold 6138 Processor (27.5M Cache, 2.00 GHz)                                                                                                                                                                                                             | 6138        | Skylake SP               | Q3'17                        | 15                             | Server/Enterprise                                                                   | FCLGA3647 | L3 27.5 MB        | 20C/40T       |  |
| Intel® Xeon® Silver 4109T Processor (11M Cache, 2.00 GHz)                                                                                                                                                                                                            | 4109T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 11 MB L3 Cache    | 8C/16T        |  |
| Intel® Xeon® Silver 4114T Processor (13.75M Cache, 2.20 GHz)                                                                                                                                                                                                         | 4114T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 13.75 MB L3 Cache | 10C/20T       |  |
| Intel® Xeon® Silver 4116T Processor (16.5M cache, 2.10 GHz)                                                                                                                                                                                                          | 4116T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 16.5 MB L3 Cache  | 12C/24T       |  |
| Intel® Xeon® Gold 5119T Processor (19.25M Cache, 1.90 GHz)                                                                                                                                                                                                           | 5119T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 19.25 MB L3 Cache | 14C/28T       |  |
| Intel® Xeon® Gold 5120T Processor (19.25M Cache, 2.20 GHz)                                                                                                                                                                                                           | 5120T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 19.25 MB L3 Cache | 14C/28T       |  |
| Intel® Xeon® Gold 6126T Processor (19.25M Cache, 2.60 GHz)                                                                                                                                                                                                           | 6126T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 19.25 MB L3 Cache | 12C/24T       |  |
| Intel® Xeon® Gold 6130T Processor (22M Cache, 2.10 GHz)                                                                                                                                                                                                              | 6130T       | Skylake SP               | Q3'17                        | 15                             | Communications                                                                      | FCLGA3647 | 22 MB L3 Cache    | 16C/32T       |  |
| Intel® Celeron® Processor 3955U (2M Cache, 2.00 GHz)                                                                                                                                                                                                                 | 3955U       | Skylake                  | Q3'15                        | 15                             | Industrial Commercial Temp, Embedded Broad Market Commerci                          | FCBGA1356 | 2 MB Intel® Smart | 2C/2T         |  |
| Intel® C236 Chipset                                                                                                                                                                                                                                                  | C236        | Skylake                  | Q3'15                        | 15                             | Industrial Commercial Temp, Embedded Broad Market Commercial Temp, PC/Client/Tablet |           |                   |               |  |
| Mobile Intel® CM236 Chipset                                                                                                                                                                                                                                          | CM236       | Skylake                  | Q3'15                        | 15                             | Industrial Commercial Temp, Embedded Broad Market Commercial Temp, PC/Client/Tablet |           |                   |               |  |
| Mobile Intel® CM238 Chipset                                                                                                                                                                                                                                          | CM238       | Skylake                  | Q3'15                        | 15                             | Industrial Commercial Temp, Embedded Broad Market Commercial Temp, PC/Client/Tablet |           |                   |               |  |
| Intel® Xeon® Processor E3-1225 v5 (8M Cache, 3.30 GHz)                                                                                                                                                                                                               | E3-1225V5   | Skylake                  | Q3'15                        | 15                             | PC/Client/Tablet                                                                    | FCLGA1151 | 8 MB Intel® Smart | 4C/4T         |  |
| Intel® Xeon® Processor E3-1268L v5 (8M Cache, 2.40 GHz)                                                                                                                                                                                                              | E3-1268LV5  | Skylake                  | Q3'15                        | 15                             | Embedded Broad Market Commercial Temp, PC/Client/Tablet                             | FCLGA1151 | 8 MB Intel® Smart | 4C/8T         |  |
| Intel® Xeon® Processor E3-1275 v5 (8M Cache, 3.60 GHz)                                                                                                                                                                                                               | E3-1275V5   | Skylake                  | Q3'15                        | 15                             | PC/Client/Tablet                                                                    | FCLGA1151 | 8 MB Intel® Smart | 4C/8T         |  |
| Intel® Xeon® Processor E3-1505L v5 (8M Cache, 2.00 GHz)                                                                                                                                                                                                              | E3-1505LV5  | Skylake                  | Q3'15                        | 15                             | Industrial Commercial Temp, Embedded Broad Market Commerci                          | FCBGA1440 | 8 MB Intel® Smart | 4C/8T         |  |
| Intel® Xeon® Processor E3-1505M v5 (8M Cache, 2.80 GHz)                                                                                                                                                                                                              | E3-1505MV5  | Skylake                  | Q3'15                        | 15                             | PC/Client/Tablet                                                                    | FCBGA1440 | 8 MB Intel® Smart | 4C/8T         |  |
| Intel® Celeron® Processor G3900 (2M Cache, 2.80 GHz)                                                                                                                                                                                                                 | G3900       | Skylake                  | Q3'15                        | 15                             | Embedded Broad Market Commercial Temp, PC/Client/Tablet                             | FCLGA1151 | 2 MB Intel® Smart | 2C/2T         |  |
| Intel® Celeron® Processor G3900E (2M Cache, 2.40 GHz)                                                                                                                                                                                                                | G3900E      | Skylake                  | Q3'15                        | 15                             | Industrial Commercial Temp, Embedded Broad Market Commerci                          | FCBGA1440 | 2 MB Intel® Smart | 2C/2T         |  |
| Introduction Legal Notices & Disclaimers Edge IoT CPUs & Chipsets Network CPUs & Chipsets Edge IoT Connectivity Supply Only Legacy +                                                                                                                                 |             |                          |                              |                                |                                                                                     |           |                   |               |  |

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Not seeing a in-production SKU?

The QRG is updated and published typically on a quarterly basis.

Intel may conduct a product introduction that occurs near the QRG publication, where the SKUs are not yet visible at [ark.intel.com](https://ark.intel.com), and are therefore not included in the QRG.

Please check back for out-of-cycle updates to the QRG. If SKU questions exist, please check [ark.intel.com](https://ark.intel.com) or contact your Intel representative.





# Industry-leading product availability and technical support

## Intel Xeon Processors (LGA) Availability<sup>1</sup> and Technical Support

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| Product                                                |                                                                               | Availability <sup>1</sup> |                                     |                                                                                                                                        |                                                  | Technical Support                                  |
|--------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Processor Brand with link to SKUs                      | Processor Codename                                                            | Product Launch Date       | Estimated Availability <sup>1</sup> | Estimated Last Time Order or SPS Request                                                                                               | Estimated Last Time Ship and SPS Request Closure | Estimated End of Interactive Support (EOIS) Notice |
| Intel Xeon Processors for LGA-based Edge Designs       |                                                                               |                           |                                     |                                                                                                                                        |                                                  |                                                    |
| <a href="#">3rd Gen Intel Xeon Scalable Processors</a> | Ice Lake SP<br>Whitley Platform                                               | Q2 2021                   | Up to 10 Years <sup>2</sup>         | Please refer to the <b>Intel Xeon Processor Hardware Availability and Technical Support Lifecycle</b> slide for date estimate guidance |                                                  |                                                    |
| <a href="#">4th Gen Intel Xeon Scalable Processors</a> | Sapphire Rapids SP<br>Sapphire Rapids EE<br>Eagle Stream Platform             | Q1 2023                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                        |                                                  |                                                    |
| <a href="#">5th Gen Intel Xeon Scalable Processors</a> | Emerald Rapids SP<br>Sapphire Rapids EE for Edge/IoT<br>Eagle Stream Platform | Q1 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                        |                                                  |                                                    |
| <a href="#">Intel Xeon 6700P/6500P Processors</a>      | Granite Rapids SP<br>Birch Stream SP Platform                                 | Q1 2025                   | Up to 7 Years <sup>2</sup>          |                                                                                                                                        |                                                  |                                                    |
| <a href="#">Intel Xeon 600 Processors</a>              | Granite Rapids W                                                              | Q1 2026                   | Up to 7 Years <sup>2</sup>          |                                                                                                                                        |                                                  |                                                    |
| Future Intel Xeon 6377P Processor                      | Bartlett Lake 12P<br>Catlow Platform                                          | TBD                       | Up to 7 Years <sup>2</sup>          |                                                                                                                                        |                                                  |                                                    |
| Future Intel Xeon Processors                           | Nova Lake E<br>Dunlow Platform                                                | TBD                       | Up to 7 Years <sup>2</sup>          |                                                                                                                                        |                                                  |                                                    |
| Future Intel Xeon Processors                           | Coral Rapids                                                                  | TBD                       | Up to 7 Years <sup>2</sup>          |                                                                                                                                        |                                                  |                                                    |

<sup>1</sup> Intel does not commit or guarantee product availability.

<sup>2</sup> Estimated availability is dependent on processor SKU and design type (e.g. network or IoT/edge)

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# Industry-leading product availability and technical support

## Intel Core Ultra and Intel Core Processors (LGA) Availability<sup>1</sup> and Technical Support Forecast (1 of 2)

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| Product                                                               |                                                                                   | Availability <sup>1</sup> |                                     |                                                                                                                                                                                          |                                                  | Technical Support                                  |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Processor Brand with link to SKUs                                     | Processor Codename                                                                | Product Launch Date       | Estimated Availability <sup>1</sup> | Estimated Last Time Order or SPS Request                                                                                                                                                 | Estimated Last Time Ship and SPS Request Closure | Estimated End of Interactive Support (EOIS) Notice |
| Intel Core Ultra and Intel Core Processors for LGA-based Edge Designs |                                                                                   |                           |                                     |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">12th Gen Intel Core Processors</a>                        | Alder Lake S                                                                      | Q1 2022                   | Up to 10 Years <sup>2</sup>         | Please refer to the <b>Intel Core, Intel Core Ultra, Intel Atom x-Series, and Entry Processor Hardware Availability and Technical Support Lifecycle</b> slide for date estimate guidance |                                                  |                                                    |
| <a href="#">12th Gen Intel Core Processors</a>                        | Alder Lake PS                                                                     | Q3 2022                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">13th Gen Intel Core Processors</a>                        | Raptor Lake S<br>Compatible with Alder Lake S platform                            | Q1 2023                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">14th Gen Intel Core Processors</a>                        | Raptor Lake S Refresh<br>Compatible with Alder Lake S and Raptor Lake S platforms | Q1 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Core Ultra Processors (Series 1)</a>                | Meteor Lake PS                                                                    | Q2 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Core Processors (Series 1)</a>                      | Raptor Lake PS<br>Compatible with Alder Lake PS platform                          | Q2 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |

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# Industry-leading product availability and technical support

## Intel Core Ultra and Intel Core Processors (LGA) Availability<sup>1</sup> and Technical Support Forecast (2 of 2)

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| Product                                                               |                                                                                                       | Availability <sup>1</sup> |                                     |                                          |                                                  | Technical Support                                  |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------|------------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Processor Brand with link to SKUs                                     | Processor Codename                                                                                    | Product Launch Date       | Estimated Availability <sup>1</sup> | Estimated Last Time Order or SPS Request | Estimated Last Time Ship and SPS Request Closure | Estimated End of Interactive Support (EOIS) Notice |
| Intel Core Ultra and Intel Core Processors for LGA-based Edge Designs |                                                                                                       |                           |                                     |                                          |                                                  |                                                    |
| <a href="#">Intel Core Ultra Processors (Series 2)</a>                | Arrow Lake S                                                                                          | Q1 2025                   | Up to 5 Years                       |                                          |                                                  |                                                    |
| <a href="#">Intel Core Processors (Series 2)</a>                      | Bartlett Lake S<br>Compatible with Alder Lake S, Raptor Lake S, and Raptor Lake S Refresh platforms   | Q1 2025                   | Up to 10 Years <sup>2</sup>         |                                          |                                                  |                                                    |
| <a href="#">Intel Core Processors (Series 2)</a>                      | Bartlett Lake 12P<br>Compatible with Alder Lake S, Raptor Lake S, and Raptor Lake S Refresh platforms | Q1 2026                   | Up to 10 Years <sup>2</sup>         |                                          |                                                  |                                                    |
| <a href="#">Intel Core Ultra 200S Plus Series Processors</a>          | Arrow Lake S Refresh                                                                                  | Q1 2026                   | Up to 4 Years                       |                                          |                                                  |                                                    |
| Future Intel Core Ultra and Intel Core Processors                     | Nova Lake LGA                                                                                         | TBD                       | Up to 10 Years <sup>2</sup>         |                                          |                                                  |                                                    |
| Future Intel Core Processors                                          | Raptor Lake Next                                                                                      | TBD                       | Up to 10 Years <sup>2</sup>         |                                          |                                                  |                                                    |
| Future Intel Core Ultra and Intel Core Processors                     | Razor Lake LGA                                                                                        | TBD                       | Up to 10 Years <sup>2</sup>         |                                          |                                                  |                                                    |

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# Industry-leading product availability and technical support

## Intel Core Ultra and Intel Core Processors (BGA) Availability<sup>1</sup> and Technical Support Forecast (1 of 2)

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| Product                                                               |                                                                                      | Availability <sup>1</sup> |                                     |                                                                                                                                                                                          |                                                  | Technical Support                                  |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Processor Brand with link to SKUs                                     | Processor Codename                                                                   | Product Launch Date       | Estimated Availability <sup>1</sup> | Estimated Last Time Order or SPS Request                                                                                                                                                 | Estimated Last Time Ship and SPS Request Closure | Estimated End of Interactive Support (EOIS) Notice |
| Intel Core Ultra and Intel Core Processors for BGA-based Edge Designs |                                                                                      |                           |                                     |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">12th Gen Intel Core Processors</a>                        | Alder Lake P                                                                         | Q1 2022                   | Up to 10 Years <sup>2</sup>         | Please refer to the <b>Intel Core, Intel Core Ultra, Intel Atom x-Series, and Entry Processor Hardware Availability and Technical Support Lifecycle</b> slide for date estimate guidance |                                                  |                                                    |
| <a href="#">13th Gen Intel Core Processors</a>                        | Raptor Lake P<br>Compatible with Alder Lake P platform                               | Q2 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Core Ultra Processors (Series 1)</a>                | Meteor Lake U, H                                                                     | Q1 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Core Processors (Series 1, Series 2)</a>            | Raptor Lake H, U Refresh<br>Compatible with Alder Lake P and Raptor Lake P platforms | Q1 2025                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |

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# Industry-leading product availability and technical support

## Intel Core Ultra and Intel Core Processors (BGA) Availability<sup>1</sup> and Technical Support Forecast (2 of 2)

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| Product                                                               |                      | Availability <sup>1</sup> |                                     |                                                                                                                                                                                          |                                                  | Technical Support                                  |
|-----------------------------------------------------------------------|----------------------|---------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Processor Brand with link to SKUs                                     | Processor Codename   | Product Launch Date       | Estimated Availability <sup>1</sup> | Estimated Last Time Order or SPS Request                                                                                                                                                 | Estimated Last Time Ship and SPS Request Closure | Estimated End of Interactive Support (EOIS) Notice |
| Intel Core Ultra and Intel Core Processors for BGA-based Edge Designs |                      |                           |                                     |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Core Ultra Processors (Series 2)</a>                | Arrow Lake U, H      | Q1 2025                   | Up to 5 Years                       | Please refer to the <b>Intel Core, Intel Core Ultra, Intel Atom x-Series, and Entry Processor Hardware Availability and Technical Support Lifecycle</b> slide for date estimate guidance |                                                  |                                                    |
| <a href="#">Intel Core Ultra Series 3 Processors</a>                  | Panther Lake         | Q1 2026                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| Future Intel Core Series 3 Processors                                 | Wildcat Lake         | TBD                       | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| Future Intel Core Ultra and Intel Core Processors                     | Nova Lake BGA        | TBD                       | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| Future Intel Core Processors                                          | Wildcat Lake Refresh | TBD                       | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| Future Intel Core Ultra and Intel Core Processors                     | Razor Lake BGA       | TBD                       | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |

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# Industry-leading product availability and technical support

## Entry Processors (BGA) Availability<sup>1</sup> and Technical Support Forecast

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| Product                                                                                                 |                                                                          | Availability <sup>1</sup> |                                     |                                                                                                                                                                                          |                                                  | Technical Support                                  |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
| Processor Brand with link to SKUs                                                                       | Processor Codename                                                       | Product Launch Date       | Estimated Availability <sup>1</sup> | Estimated Last Time Order or SPS Request                                                                                                                                                 | Estimated Last Time Ship and SPS Request Closure | Estimated End of Interactive Support (EOIS) Notice |
| Entry Processors for BGA-based Edge Designs                                                             |                                                                          |                           |                                     |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Atom x6000-series Processors, Core i3 N-series, Pentium &amp; Celeron 6000-series</a> | Elkhart Lake                                                             | Q1 2021                   | Up to 10-15 Years <sup>2</sup>      | Please refer to the <b>Intel Core, Intel Core Ultra, Intel Atom x-Series, and Entry Processor Hardware Availability and Technical Support Lifecycle</b> slide for date estimate guidance |                                                  |                                                    |
| <a href="#">Intel Atom x6000-series Processors, Core i3 N-series, Pentium &amp; Celeron 6000-series</a> | Elkhart Lake Performance Update<br>Compatible with Elkhart Lake platform | Q1 2023                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Atom x7000-series, Intel Processor N-series, Core i3 N-series Processors</a>          | Alder Lake N                                                             | Q1 2023                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Atom x7000 Processors</a>                                                             | Amston Lake<br>Compatible with Alder Lake N platform                     | Q2 2024                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| <a href="#">Intel Processor N-series, Core 3 N-Series Processors</a>                                    | Twin Lake<br>Compatible with Alder Lake N and Amston Lake platforms      | Q1 2025                   | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |
| Future Intel Processors                                                                                 | Future Entry<br>Compatible with Wildcat Lake platform                    | TBD                       | Up to 10 Years <sup>2</sup>         |                                                                                                                                                                                          |                                                  |                                                    |

<sup>1</sup> Intel does not commit or guarantee product availability.  
<sup>2</sup> Product availability guidance typically extends up to 10 years. If needed, Hardware Product Availability may be extended up to 15 Years using the Supplemental Product SKU (SPS) Process. SPS Process to include customer demand forecast submitted at PCN.  
Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support. Please view the “Hardware Availability and Technical Support Lifecycle” slide, available in this content package, for additional details, or contact your Intel representative for additional information.

# Intel Edge Platform Software

## Boot Firmware, Operating Systems and Hypervisors

Intel's comprehensive support and developer-friendly approach empower software developers to harness the full potential for edge and AI- usages, fostering a vibrant ecosystem of innovative applications and solutions.

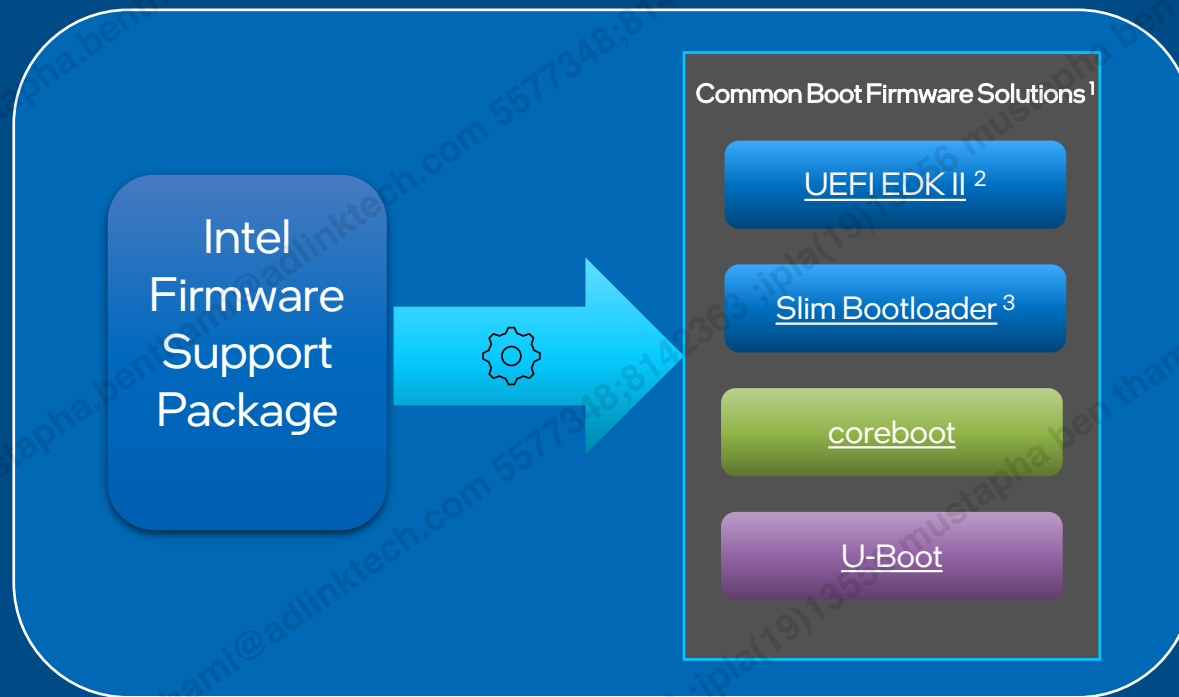
# Boot Firmware Development Options with Intel® FSP

## Intel® Firmware Support Package (Intel® FSP):

Provides key programming information for initializing Intel® silicon. It is easy to adopt, scalable to design, royalty free, reduces time-to-market, and is economical to build.

## Reference Boot Firmware Solutions:

Intel® provides reference boot firmware to enable developers to quickly integrate Intel® FSP into a boot firmware solution. It is the sole discretion of the OEM to evaluate which boot solution available is optimal for their product.



## OEM Development and Support Options

### Engineering Services (IBV,IFV)

Engage with an engineering services vendor to support and develop boot firmware.

### Reference solution customization

Customize the Intel reference implementation. Support provided primarily from the open-source community.

### Fully Customized

Take the Intel® FSP and develop boot firmware of choice. Support provided primarily by the open-source community.

<sup>1</sup>Not a comprehensive list of all available boot firmware solutions in the market.

<sup>2</sup>Intel® provides a reference implementation (binary) for Intel® RVP/CRB.

<sup>3</sup>Intel® provides a reference implementation (source & binary) for Intel® RVP/CRB.



# Intel Reference Boot Solutions (Entry and Core Processors)

| Processor Brand                                | Platform/Processor code name             | UEFI                            | SBL                             | coreboot                        |
|------------------------------------------------|------------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Intel® Atom® Processors                        | Twin Lake                                | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Amston Lake                              | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Alder Lake N                             | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Elkhart Lake                             | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Apollo Lake                              | Extended Paid Support Available | Extended Paid Support Available | Extended Paid Support Available |
| Intel® Core™ Ultra and Intel® Core™ Processors | Wildcat Lake <sup>(1)</sup>              | In Development                  | In Development                  | Standard Support Available      |
|                                                | Panther Lake <sup>(1)</sup>              | In Development                  | In Development                  | Standard Support Available      |
|                                                | Bartlett Lake S 12P <sup>(1)</sup>       | In Development                  | In Development                  | Standard Support Available      |
|                                                | Bartlett Lake S                          | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Arrow Lake S                             | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Arrow Lake H / U                         | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Meteor Lake PS                           | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Meteor Lake H / U                        | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Raptor Lake S Refresh P-Core only        | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Raptor Lake S Refresh / P / PS           | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Raptor Lake H / U (Refresh)              | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Alder Lake S / P / PS                    | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Tiger Lake H                             | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Tiger Lake UP3                           | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Comet Lake S                             | Standard Support Available      | Standard Support Available      | Standard Support Available      |
|                                                | Coffee Lake S / S Refresh <sup>(2)</sup> | Extended Paid Support Available | Extended Paid Support Available | Extended Paid Support Available |
|                                                | Coffee Lake H / H Refresh <sup>(2)</sup> | Extended Paid Support Available | Extended Paid Support Available | Extended Paid Support Available |
|                                                | Whiskey Lake U                           | Extended Paid Support Available | Extended Paid Support Available | Extended Paid Support Available |
|                                                | Kaby Lake S / U / Y                      | Extended Paid Support Available | Extended Paid Support Available | Extended Paid Support Available |
|                                                | Sky Lake                                 | Extended Paid Support Available | Extended Paid Support Available | Extended Paid Support Available |

|                                 |
|---------------------------------|
| Standard Support Available      |
| In Development                  |
| Extended Paid Support Available |
| Extended Paid Support Planned   |

## Intel® Firmware Support Package (FSP):

- Provides key programming information for initializing Intel® silicon and can be easily integrated into a bootloader of the developer's choice (EDKII, Slim Bootloader, coreboot, etc.). Intel® FSP is not a standalone bootloader and needs to be integrated into a bootloader.

## Unified Extensible Firmware Interface (UEFI):

- Specification that defines an interface between an OS and platform firmware. Intel provides a reference UEFI implementation based on EDKII with Intel® FSP integration for Intel reference platforms and enables IBVs to support our customers.

## Slim Bootloader (SBL):

- Open-Source boot loader built from the ground up to be small, secure and optimized for Intel x86 architecture. Slim Bootloader is based on Intel® FSP and is supported by open-source community and ecosystem partners.

## coreboot:

- Open-Source boot loader. A reference coreboot implementation is available on select older platforms. Customers can get support working with the open-source community and/or ecosystem partners to enable coreboot based on Intel® FSP.

All dates, plans, and information shared here is subject to change without notice. Please contact your Intel representative with any questions.

# Intel Reference Boot Solutions (Xeon Processors)

| Processor Brand            | Platform/Processor code name                         | UEFI | SBL |
|----------------------------|------------------------------------------------------|------|-----|
| Intel® Xeon® SP Processors | Granite Rapids SP                                    |      |     |
|                            | Emerald Rapids SP                                    |      |     |
|                            | Sapphire Rapids SP                                   |      |     |
|                            | Sapphire Rapids EE – IOT SKUs                        |      |     |
|                            | Ice Lake SP                                          |      |     |
|                            | Cascade Lake SP                                      |      |     |
| Intel® Xeon® E Processors  | Raptor Lake E / Raptor Lake E Refresh                |      |     |
|                            | Coffee Lake E / Coffee Lake E Refresh <sup>(2)</sup> |      |     |
| Intel® Xeon® D Processors  | Ice lake D / Ice Lake D Refresh                      |      |     |
|                            | Granite Rapids D                                     |      |     |
| Intel Xeon® Workstation    | Granite Rapids W                                     |      |     |
|                            | Comet Lake                                           |      |     |
|                            | Tiger Lake H                                         |      |     |

|  |                                 |
|--|---------------------------------|
|  | Standard Support Available      |
|  | In Development                  |
|  | Extended Paid Support Available |
|  | Extended Paid Support Planned   |

## Intel® Firmware Support Package (FSP):

- Provides key programming information for initializing Intel® silicon and can be easily integrated into a bootloader of the developer's choice (EDKII, Slim Bootloader, coreboot, etc.). Intel® FSP is not a standalone bootloader and needs to be integrated into a bootloader.

## Unified Extensible Firmware Interface (UEFI):

- Specification that defines an interface between an OS and platform firmware. Intel provides a reference UEFI implementation based on EDKII with Intel® FSP integration for Intel reference platforms and enables IBVs to support our customers.

## Slim Bootloader (SBL):

- Open-Source boot loader built from the ground up to be small, secure and optimized for Intel x86 architecture. Slim Bootloader is based on Intel® FSP and is supported by open-source community and ecosystem partners.

## coreboot:

- Open-Source boot loader. A reference coreboot implementation is available on select older platforms. Customers can get support working with the open-source community and/or ecosystem partners to enable coreboot based on Intel® FSP.

All dates, plans, and information shared here is subject to change without notice. Please contact your Intel representative with any questions.

# Independent BIOS & FW Vendors

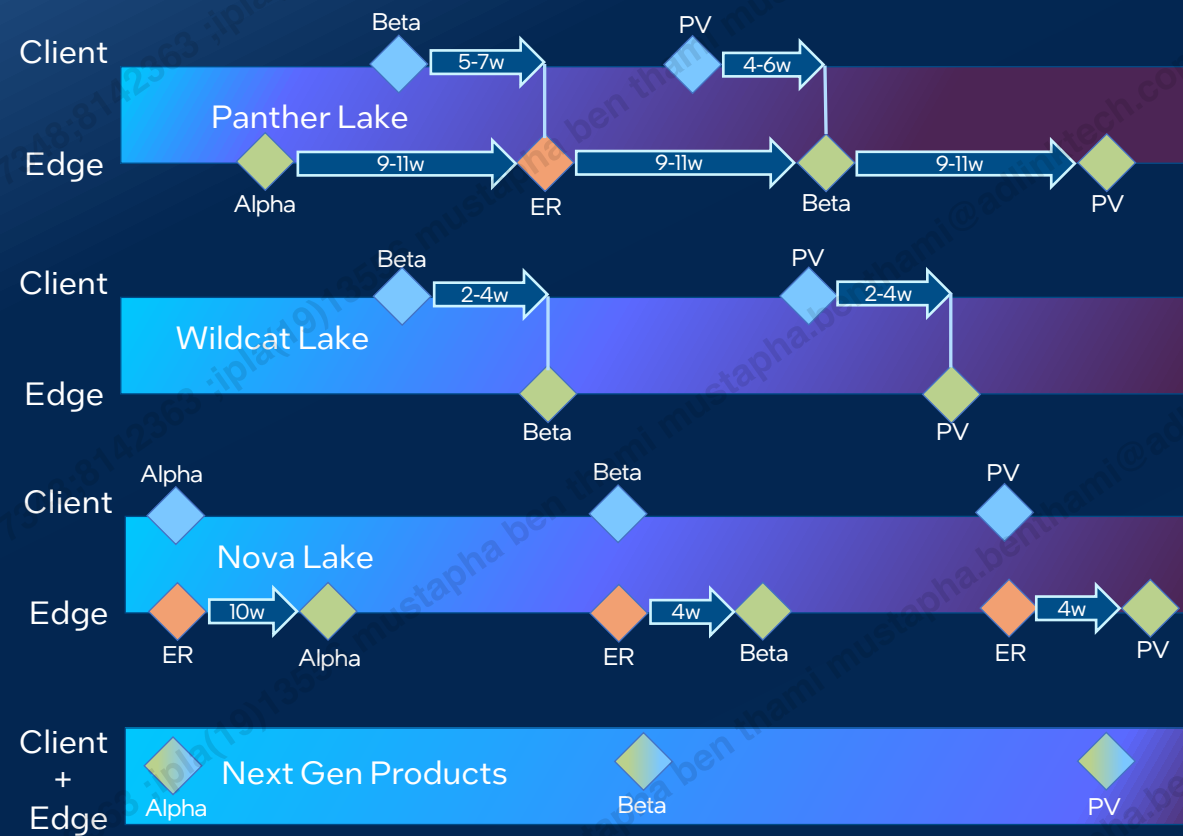
| Category                       | Ecosystem Partners                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Independent BIOS Vendors (IBV) |  <ul style="list-style-type: none"> <li>Intel will deliver BIOS in binary format for customer reference boards only.</li> <li>BIOS IBVs will provide support and BIOS source code for customers.</li> </ul>                                                                                   |
| Bootloader Firmware Vendors    |  <ul style="list-style-type: none"> <li>Intel releases the Intel Firmware Support Package (Intel FSP) used in various bootloader solutions.</li> <li>Bootloader ecosystem will provide support to customers for board customization, feature development &amp; defect resolution.</li> </ul> |

# Edge and Client BIOS Release Alignment

- Intel's Client and Edge teams have established a working model for BIOS/UEFI feature co-development with built-in source modularity to support customers with one Client/Edge BIOS reference. The goal is to provide optionality to customers and IBVs on how they consume and build their customized BIOS.
- Edge BIOS releases typically followed CCG BIOS by one quarter or longer which has caused friction in faster enablement.
- With the new working model in place, Edge and Client BIOS release milestone timelines will converge over the next product generations allowing for faster integration aligned with Client releases.

Beginning with Panther Lake after CCG Beta and continuing in Nova Lake, <sup>1</sup>Engineering Releases (ERs) will give Edge customers & IBVs earlier access for development and integration.

Next generation products and beyond, <sup>2</sup>Client & Edge will provide one BIOS release customizable to include Client and Edge specific features.



For Panther Lake Edge BIOS, only critical fixes will be applied between the Beta and PV milestones, keeping the PV release as close to Beta as possible.

<sup>1</sup> Release dates are subject to change. For current dates on engineering & milestone releases please contact your Intel account representative.

<sup>2</sup> Support for a subset of Edge features in the Client BIOS can be available upon request. Please contact your Intel account representative.



# Edge OS and Hypervisor Guidance

Intel focuses on open-source community contributions and partners with leading vendors to provide the industry's strongest portfolio of commercial OS and Hypervisor solutions



- ❑ Intel works closely with Microsoft to validate and release platform drivers and BKC's for Windows IoT Enterprise LTSC which includes support for Hyper-V as the off the shelf hypervisor for Windows.
- ❑ Intel also supports Windows Server LTSC and Windows GAC on select platforms.



- ❑ Intel up-streams to linux.org, contributes to open-source communities and works with leading OSVs to deliver commercial OS distributions. This includes contributions to KVM as the off the shelf hypervisor for Linux OS'es.
- ❑ Out-Of-Tree drivers and patches (not available upstream) are posted on Intel GitHub to be used for pre-production development through BKC's.
- ❑ Intel also maintains a meta-intel layer with Edge Platform customizations in the [Yocto](#) open-source project.



- ❑ Intel drives innovations and contributions to Real-Time Linux (enabled by PREEMPT\_RT patches in Linux mainline) and partners with leading vendors for commercial RTOS and Hypervisors support.
- ❑ Intel contributes to the [Zephyr](#) (RTOS) and [ACRN](#) (Hypervisor) open-source projects as a reference for select platforms.



- ❑ Intel provides a base Android\* release validated on select Intel platforms, based on customer demand
- ❑ Production support are available through ISVs or SI partners. OEM + ISV can customize this base release to match requirements of the specific OEM solution
- ❑ Google Mobile Services/GMS certification is currently not available as Google does not support x86 GMS certification



# Intel Edge Platforms: OS and Hypervisor Enablement Model

| OS and Hypervisors                                                                                |                                                                                 | Enablement Model   |                                                 | Remarks                                                                            |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------|-------------------------------------------------|------------------------------------------------------------------------------------|
|                                                                                                   |                                                                                 | Ownership          | Intel Deliverable                               |                                                                                    |
| Linux OS Ecosystem Enablement via Upstream First Strategy<br><i>Includes Linux KVM hypervisor</i> | Linux kernel upstreaming<br>User-space upstreaming<br>Out-of-tree (OOT) patches | Intel              | Driver development & Opensource Support         | OS vendors leverage Intel's Linux kernel, user-space upstream, and OOT patches.    |
|                                                                                                   | Ubuntu                                                                          | Canonical          | Driver development, BKC creation and validation | Ubuntu BKC is released until PV for pre-production development by EA customers.    |
|                                                                                                   | Red Hat Enterprise Linux                                                        | Red Hat            | Tech Support                                    |                                                                                    |
|                                                                                                   | Yocto Project                                                                   | Open Source        | Basic test, Tech Support                        | Intel maintains the meta-intel layer. No Yocto BKC is released.                    |
|                                                                                                   | Wind River Linux                                                                | Wind River Systems | Ecosystem Enablement                            | Wind River Linux leverages the Yocto Project.                                      |
| Microsoft Windows OS<br><i>Includes Windows Hyper-V hypervisor</i>                                | Windows IoT Enterprise LTSC                                                     | Microsoft          | Driver development, BKC creation and validation |                                                                                    |
|                                                                                                   | Windows Enterprise (GAC)                                                        |                    |                                                 | Not all edge features may be available.                                            |
|                                                                                                   | Windows Server IoT LTSC                                                         |                    |                                                 | Available only on homogeneous cores SKUs or configurations, e.g. P-core only SKUs. |
| Android                                                                                           | Android Open-Source Project (AOSP)                                              | Google             | Driver development, reference implementation    | Limited availability and support.                                                  |
| Real Time OS (RTOS) and Hypervisor                                                                | Zephyr RTOS                                                                     | Open Source        | Driver development & Opensource Support         | Upstream to zephyrproject.org                                                      |
|                                                                                                   | VxWorks RTOS                                                                    | Wind River         | Ecosystem Enablement                            | Hard RTOS with commercial support                                                  |
|                                                                                                   | Windows RTX64/MaxRT                                                             | IntervalZero       | Ecosystem Enablement                            | Windows based real-time extension                                                  |
|                                                                                                   | Blackberry QNX RTOS                                                             | Blackberry         | Ecosystem Enablement                            | QNX is an RTOS and a Type-1 hypervisor.                                            |
|                                                                                                   | Pike OS RTOS                                                                    | SYSGO              | Ecosystem Enablement                            | Pike OS is an RTOS and a Type-1 hypervisor.                                        |
|                                                                                                   | INtime RTOS                                                                     | TenAsys            | Ecosystem Enablement                            | RTOS for Windows, commercial products                                              |
|                                                                                                   | CODESYS Control Solutions                                                       | CODESYS            | Ecosystem Enablement                            | Real-time control solutions for various OSes (Windows, Linux, VxWorks and etc)     |
|                                                                                                   | Acontis Windows RT-Ext & Real-time Hypervisor                                   | Acontis            | Ecosystem Enablement                            | Windows real-time extension solutions, type-1 & 2 hypervisors, commercial products |
|                                                                                                   | RTS Hypervisor                                                                  | Real Time Systems  | Ecosystem Enablement                            | Type-1 hypervisor, commercial products                                             |
|                                                                                                   | ACRN Hypervisor                                                                 | Open Source        | Driver development & Opensource Support         | Type-1 hypervisor, optimized for real-time and IoT use cases                       |



LGA

**Raptor Lake S Refresh**  
**Bartlett Lake S**

**Bartlett Lake 12P**  
Catlow Platform

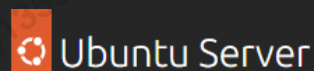
**Nova Lake E**  
Dunlow Platform

Intel's Edge  
Platforms now  
support a wide  
range of **Server**  
**Operating Systems**  
powering the **next**  
**generation of Edge**  
**Servers.**



Windows Server\* is supported on Edge platforms featuring homogeneous cores, such as P-core only SKUs or configurations.<sup>1</sup>

### Commercial Linux



Intel contributes upstream kernel patches and collaborates closely with leading Linux OS vendors to ensure downstream support on all Edge platforms.



Intel's Linux upstream-first strategy enables support for platforms across a wide range of compatible free and open-source server distributions.



<sup>1</sup>Microsoft does not currently offer support for Hybrid Architecture on Windows Server.

# Windows OS Support (Entry and Core Processors)

For OS, FW and Hypervisor support please access the respect product gold decks available on RDC (Filter by “For Hardware” > “Processors & Chipsets”) for full support details.

|  |                                 |
|--|---------------------------------|
|  | Available                       |
|  | In Development                  |
|  | Extended Paid Support Available |
|  | Extended Paid Support Planned   |

## Notes:

- Intel Edge platforms support two Windows IoT Enterprise (LTSC) and/or two Windows Server (LTSC) releases for platforms where these are supported.
- Intel has added support for Windows 11 IoT Enterprise LTSC for select platforms
- Currently Microsoft does not officially support Windows Server on processors with Hybrid architecture (where both P and E cores are enabled).
- Intel does not upload drivers to Windows Update and does not support Driver Resell
- Intel only provides support for our tools, patches and utilities on the OS. Actual OS support should come from the OS Vendor.
- Up to date info from Microsoft can be found here: [Intel® Processor Support for Windows\\* for IoT Applications](#)
- All dates, plans, and information shared here is subject to change without notice. Please contact your Intel representative with any questions.
- Please contact respective Microsoft for details on platforms and features supported..

(1) For platforms in development, showing targeted versions for release and subject to change based on OSV roadmap

(2) Coffee Lake SKUs with CPUID 906ED are in base support until Q2 2026.

| Processor Brand                            | Platform/Processor code name             | Windows IoT Enterprise |             |             |                 | Windows Enterprise GAC | Windows Server |           |           |           |
|--------------------------------------------|------------------------------------------|------------------------|-------------|-------------|-----------------|------------------------|----------------|-----------|-----------|-----------|
|                                            |                                          | Windows 10 LTSC        |             |             | Windows 11 LTSC | Windows 11 Enterprise  | 2016 LTSC      | 2019 LTSC | 2022 LTSC | 2025 LTSC |
|                                            |                                          | 2016 (1607)            | 2019 (1809) | 2021 (21H2) | 2024 (24H2)     | 25H2                   |                |           |           |           |
| Intel Atom Processors                      | Twin Lake                                |                        |             |             |                 |                        |                |           |           |           |
|                                            | Amston Lake                              |                        |             |             |                 |                        |                |           |           |           |
|                                            | Alder Lake N                             |                        |             |             |                 |                        |                |           |           |           |
|                                            | Elkhart Lake                             |                        |             |             |                 |                        |                |           |           |           |
|                                            | Apollo Lake                              |                        |             |             |                 |                        |                |           |           |           |
| Intel Core Ultra and Intel Core Processors | Wildcat Lake <sup>(1)</sup>              |                        |             |             |                 |                        |                |           |           |           |
|                                            | Panther Lake <sup>(1)</sup>              |                        |             |             |                 |                        |                |           |           |           |
|                                            | Bartlett Lake S 12P <sup>(1)</sup>       |                        |             |             |                 |                        |                |           |           |           |
|                                            | Bartlett Lake S                          |                        |             |             |                 |                        |                |           |           |           |
|                                            | Arrow Lake S                             |                        |             |             |                 |                        |                |           |           |           |
|                                            | Arrow Lake H / U                         |                        |             |             |                 |                        |                |           |           |           |
|                                            | Meteor Lake PS                           |                        |             |             |                 |                        |                |           |           |           |
|                                            | Meteor Lake H / U                        |                        |             |             |                 |                        |                |           |           |           |
|                                            | Raptor Lake S Refresh P-Core only        |                        |             |             |                 |                        |                |           |           |           |
|                                            | Raptor Lake S Refresh / P / PS           |                        |             |             |                 |                        |                |           |           |           |
|                                            | Raptor Lake H / U (Refresh)              |                        |             |             |                 |                        |                |           |           |           |
|                                            | Alder Lake S / P / PS                    |                        |             |             |                 |                        |                |           |           |           |
|                                            | Tiger Lake H                             |                        |             |             |                 |                        |                |           |           |           |
|                                            | Tiger Lake UP3                           |                        |             |             |                 |                        |                |           |           |           |
|                                            | Comet Lake S                             |                        |             |             |                 |                        |                |           |           |           |
|                                            | Coffee Lake S / S Refresh <sup>(2)</sup> |                        |             |             |                 |                        |                |           |           |           |
|                                            | Coffee Lake H / H Refresh <sup>(2)</sup> |                        |             |             |                 |                        |                |           |           |           |
|                                            | Whiskey Lake U                           |                        |             |             |                 |                        |                |           |           |           |
|                                            | Kaby Lake S / U / Y                      |                        |             |             |                 |                        |                |           |           |           |
|                                            | Sky Lake                                 |                        |             |             |                 |                        |                |           |           |           |



# Windows OS Support (Xeon Processors)

For OS, FW and Hypervisor support please access the respect product gold decks available on RDC (Filter by “For Hardware” > “Processors & Chipsets”) for full support details.

| Processor Brand       | Platform/Processor code name                         | Windows IOT Enterprise |             |             |                 | Windows Server |           |           |           |
|-----------------------|------------------------------------------------------|------------------------|-------------|-------------|-----------------|----------------|-----------|-----------|-----------|
| Intel Xeon Processors |                                                      | Windows 10 LTSC        |             |             | Windows 11 LTSC |                |           |           |           |
|                       |                                                      | 2016 (1607)            | 2019 (1809) | 2021 (21H2) | 2024 (24H2)     | 2016 LTSC      | 2019 LTSC | 2022 LTSC | 2025 LTSC |
|                       | Granite Rapids SP                                    |                        |             |             |                 |                |           |           |           |
|                       | Emerald Rapids SP                                    |                        |             | (1)         |                 |                | (1)       |           |           |
|                       | Sapphire Rapids SP                                   |                        |             | (1)         |                 |                | (1)       |           |           |
|                       | Sapphire Rapids EE – IOT SKUs                        |                        |             |             |                 |                |           |           |           |
|                       | Ice Lake SP                                          |                        |             |             |                 |                |           |           |           |
|                       | Cascade Lake SP                                      |                        |             |             |                 |                |           |           |           |
|                       | Raptor Lake E / Raptor Lake E Refresh                |                        |             |             |                 |                |           |           |           |
|                       | Coffee Lake E / Coffee Lake E Refresh <sup>(2)</sup> |                        |             |             |                 |                |           |           |           |
|                       | Ice lake D / Ice Lake D Refresh                      |                        |             |             |                 |                |           |           |           |
|                       | Granite Rapids W                                     |                        |             |             |                 |                |           |           |           |
|                       | Comet Lake                                           |                        |             |             |                 |                |           |           |           |
|                       | Tiger Lake H                                         |                        |             |             |                 |                |           |           |           |

|  |                                 |
|--|---------------------------------|
|  | Available                       |
|  | In Development                  |
|  | Extended Paid Support Available |
|  | Extended Paid Support Planned   |

Notes:

- OS supported features are dependent on OSV roadmaps. Please contact respective OS vendor(s) for details.
- Intel only provides support for our tools, patches and utilities on the OS. Actual OS support should come from the OS Vendor.
- All dates, plans, and information shared here is subject to change without notice. Please contact your Intel representative with any questions.

- (1) Limited Compatibility (See product snapshot or SPS): Legacy features only, no SPR/EGS features enabled. Versions will be dropped if the OS vendor discontinues commercial support. Windows 10 LTSC (CSME or SPS FW)
- (2) Coffee Lake SKUs with CPUID 906ED are in base support until Q2 2026.

# Linux OS Support (Entry and Core Processors)

For OS, FW and Hypervisor support please access the respect product gold decks available on RDC (Filter by “For Hardware” > “Processors & Chipsets”) for full support details.

| Processor Brand                            | Platform/Processor code name             | Intel kernel version | Yocto <sup>(1)</sup>         | Ubuntu            | Red Hat (RHEL) | Wind River Linux |
|--------------------------------------------|------------------------------------------|----------------------|------------------------------|-------------------|----------------|------------------|
| Intel Atom Processors                      | Twin Lake                                | 6.12+                | YP 5.2.x                     | 24.04             | 9.6/10.0       | Contact Vendor   |
|                                            | Amston Lake                              | MLT 6.5+             | YP 5.2.x <sup>(2)</sup>      | 22.04 or later    | 9.4+           | Contact Vendor   |
|                                            | Alder Lake N                             | 5.15+                | YP 4.0.x LTS <sup>(2)</sup>  | 22.04 or later    | 8.8/9.2+       | Contact Vendor   |
|                                            | Elkhart Lake                             | 5.4+                 | YP 4.0.x LTS                 | 20.04 or later    | 8.6/9.2+       | Contact Vendor   |
|                                            | Apollo Lake                              | 4.14+                | YP2.5 (4.14)<br>YP2.7 (4.19) | 20.04 or later    | 8.0+           | Contact Vendor   |
| Intel Core Ultra and Intel Core Processors | Wildcat Lake <sup>(2)</sup>              | TBD                  | YP 5.3.x                     | 24.04/25.10/26.04 | 9.8/10.2       | Contact Vendor   |
|                                            | Panther Lake <sup>(2)</sup>              | TBD                  | YP 5.3.x                     | 24.04/25.10       | 9.8/10.2       | Contact Vendor   |
|                                            | Bartlett Lake 12P <sup>(2)</sup>         | TBD                  | YP 5.3.x                     | 24.04/25.04       | TBD            | Contact Vendor   |
|                                            | Bartlett Lake S                          | 6.12                 | YP 5.2.x                     | 24.04/25.04       | TBD            | Contact Vendor   |
|                                            | Arrow Lake S                             | MLT 6.11+            | YP 5.2.x                     | 24.04/24.10       | 9.5            | Contact Vendor   |
|                                            | Arrow Lake U/H                           | MLT 6.11+            | YP 5.2.x                     | 24.04/24.10       | 9.6/10.0       | Contact Vendor   |
|                                            | Meteor Lake U/H/PS                       | MLT 6.5+             | YP 5.0.x LTS                 | 22.04 or later    | 9.4            | Contact Vendor   |
|                                            | Raptor Lake S                            | MLT 5.19+            | YP 5.0.x LTS                 | 22.04 or later    | 8.8/9.2        | Contact Vendor   |
|                                            | Raptor Lake S Refresh                    | 6.1+                 | YP 5.0.x LTS                 | 22.04 or later    | 9.3            | Contact Vendor   |
|                                            | Raptor Lake P/PS                         | 6.6+                 | YP 5.0.x LTS                 | 22.04 or later    | 8.8/9.2        | Contact Vendor   |
|                                            | Raptor Lake U/H Refresh                  | 6.6+                 | YP 5.0.x LTS                 | 22.04 or later    | 9.2/10.0       | Contact Vendor   |
|                                            | Alder Lake S/P/PS                        | 5.10+, 6.6+ for PS   | YP 4.0.x LTS                 | 22.04 or later    | 8.6/9.2        | Contact Vendor   |
|                                            | Tiger Lake H                             | 5.4+                 | YP 4.0.x LTS                 | 20.04 or later    | 8.4            | Contact Vendor   |
|                                            | Tiger Lake UP3                           | 5.4+                 | YP 4.0.x LTS                 | 20.04 or later    | 8.4            | Contact Vendor   |
|                                            | Comet Lake S                             | 5.4+                 | YP 3.1.x LTS                 | 20.04 or later    | 8.2+           | Contact Vendor   |
|                                            | Coffee Lake S / S Refresh <sup>(3)</sup> | 4.19+                | YP 3.1.x LTS                 | 20.04 or later    | 8.0+           | Contact Vendor   |
|                                            | Coffee Lake H / H Refresh <sup>(3)</sup> | 4.19+                | YP 3.1.x LTS                 | 20.04 or later    | 8.0+           | Contact Vendor   |
|                                            | Whiskey Lake U                           | 4.19+                | YP 3.1.x LTS                 | 20.04 or later    | 8.0+           | Contact Vendor   |
|                                            | Kaby Lake S / U / Y                      | 4.14+                | 2.4 Rocko                    | 20.04 or later    | 8.0+           | Contact Vendor   |
|                                            | Sky Lake                                 | 4.14+                | 2.4 Rocko                    | 20.04 or later    |                | Contact Vendor   |

|  |                                 |
|--|---------------------------------|
|  | Available                       |
|  | In Development                  |
|  | Extended Paid Support Available |
|  | Extended Paid Support Planned   |

## Notes:

- Intel kernel version : kernel used to validate platform at PV. Not all versions listed. Please refer to related OS kernel version.
- Showing OS versions known to have been validated by Intel, OSV or customer/partners. Please contact OSV for actual versions per platform and supported features.
- Intel only provides support for our tools, patches and utilities on the OS. Actual OS support comes from the OS Vendor.
- For unique customer-built Linux Kernels, customers will be required to replicate issues on Intel-supported Long Term kernel releases prior to requesting debug and root-cause support from Intel.
- Yocto Platform Kernel Support – See latest BSP /BKC for LTS Kernel version
- All dates, plans, and information shared here is subject to change without notice. Please contact your Intel representative with any questions.

- (1) Starting with RPL-P, Yocto BKC's are not published, but recipes for the platform will be up-streamed to the Yocto project. Customers can continue to use Yocto Project tools to create their custom Linux image and report issues via the Yocto Project community ([https://git.yoctoproject.org/meta-intel/tree/documentation/reporting\\_bugs.md](https://git.yoctoproject.org/meta-intel/tree/documentation/reporting_bugs.md))
- (2) For Alder Lake N and Amston Lake platforms, ECG offers Yocto Project BKC support as a paid option for target customers. To request this support, contact your Intel representative
- (3) Coffee Lake SKUs with CPUID 906ED are in base support until Q2 2026.

# Linux OS / Hypervisor Support (Xeon)

For OS, FW and Hypervisor support please access the respect product gold decks available on RDC (Filter by “For Hardware” > “Processors & Chipsets”) for full support details.

|  |                                 |
|--|---------------------------------|
|  | Available                       |
|  | In Development                  |
|  | Extended Paid Support Available |
|  | Extended Paid Support Planned   |

## Notes:

- Intel kernel version : kernel used to validate platform at PV. Not all versions listed. Please refer to related OS kernel version.
- Showing OS versions known to have been validated by Intel, OSV or customer/partners. Please contact OSV for actual versions per platform and supported features.
- Intel only provides support for our tools, patches and utilities on the OS. Actual OS support comes from the OS Vendor.
- For unique customer-built Linux Kernels, customers will be required to replicate issues on Intel-supported Long Term kernel releases prior to requesting debug and root-cause support from Intel.
- Yocto Platform Kernel Support – See latest BSP /BKC for LTS Kernel version
- All dates, plans, and information shared here is subject to change without notice. Please contact your Intel representative with any questions.

- (1) For updated info on Intel® Xeon® Scalable Processors OS support, refer to:  
<https://www.intel.com/content/www/us/en/support/articles/000055440/processors/intel-xeon-processors.html>
- (2) Coffee Lake SKUs with CPUID 906ED are in base support until Q2 2026.

| Processor Brand       | Platform/Processor code name                         | Intel Kernel Version | Yocto <sup>1</sup>  | Ubuntu                     | Red Hat (RHEL)          | Wind River Linux    | SuSe SLES       | Alibaba Linux | VMWare ESXi    |
|-----------------------|------------------------------------------------------|----------------------|---------------------|----------------------------|-------------------------|---------------------|-----------------|---------------|----------------|
| Intel Xeon Processors | Granite Rapids SP                                    |                      |                     | 24.04                      | 9.4                     |                     | 15 SP6          | Version 3     | Contact Vendor |
|                       | Emerald Rapids SP                                    | 6.2+                 |                     | 21.10, 22.04 LTS and later | 8.8, 9.2                | Contact Vendor      | 15 SP5          | Version 2/3   | Contact Vendor |
|                       | Sapphire Rapids SP                                   | 5.15+                |                     | 21.10, 22.04 LTS and later | 8.4 LTS / 8.5 and later | Contact Vendor      | 15 SP4          | Version 2     | Contact Vendor |
|                       | Sapphire Rapids EE IoT                               | 5.15+                |                     | 21.10, 22.04 LTS and later | 9.2 LTS and later       | Contact Vendor      | 15 SP4          |               | Contact Vendor |
|                       | Ice Lake SP                                          | 5.10+                | YP 3.3 Hardknott    | 20.04 or later             | 8.2                     | Contact Vendor      | 15 SP2          |               | Contact Vendor |
|                       | Cascade Lake SP                                      | 4.19+ / 5.4+         | YP 2.6.1 Thud       | 18.04 or later             | 7.3 and later           | Contact Vendor      | 12 SP3, 15 SP1  |               | Contact Vendor |
|                       | Coffee Lake E / Coffee Lake E Refresh <sup>(2)</sup> |                      |                     | 20.04 or later             | 7.x, 8.x                |                     | 12 SP3, 15      |               | ESXi 6.7, 7.x  |
|                       | Raptor Lake E / Raptor Lake E Refresh                |                      |                     | 21.04 or later             | 8.5 or later            |                     | 15 SP3 or later |               | Contact Vendor |
|                       | Ice lake D / Ice Lake D Refresh                      | 5.10+                | Yocto v4.0 Kirkston | 20.04 or later             | 8.4, 8.5, 8.6, 9.2      | Wind River Linux 11 | 15 SP2, 15 SP4  |               | ESXi 8.0 U1    |
|                       | Granite Rapids W                                     |                      |                     | 24.10                      | 9.4 and later           |                     | Contact Vendor  |               | Contact Vendor |
|                       | Comet Lake                                           |                      |                     | 20.04 or later             | Contact Vendor          |                     | Contact Vendor  |               | Contact Vendor |
|                       | Tiger Lake H                                         |                      |                     | 21.04 or later             | Contact Vendor          |                     | Contact Vendor  |               | Contact Vendor |

# Android for Intel Edge Platforms

- Intel offers a base Android release validated on select Intel platforms in response to customer demand.
- Intel enables Independent Software Vendors to customize and productize the base release to meet the unique requirements of the OEM and end customer solutions.
- Currently, Google Mobile Services (GMS) certification is unavailable because Google does not support x86 GMS certification.
- Celadon in VM (CiV) Edge BKC releases were discontinued after Raptor Lake–S Refresh (RPL-SR) and Amston Lake (ASL) platforms.
- Initial release plan for Twin Lake (TWL) in 2025. Contact your Intel account representative for access to software and release collaterals.

## What's changing?

|                          | Before (until RPL-SR, ASL)                              | After (starting in 2025 with TWL)                                           |
|--------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|
| Android Hosting Approach | Shared Workloads<br>CiV: Celadon in VM                  | Native Android                                                              |
| Engineering Activities   | Celadon Team (Base Platform Support)<br>Edge Team (CiV) | Edge Team (Base Platform Support)                                           |
| Android Versions         | 14 and older                                            | 15 and future                                                               |
| Customer Support         | Level 1: ISVs<br>Level 2: Celadon Team (Best Effort)    | Level 1: ISVs<br>Level 2: Edge Team per Platform POR                        |
| Collaboration Model      | Open Source via Celadon Project                         | Open Source via Celadon Github repo,<br>RDC for manifest (moving to github) |

## ISV Partners





# Intel Edge Reference Board Designs

## Edge Board Roadmap

Intel's edge-enabling platforms span silicon enablement through product concepts, helping partners bring solutions to market faster. Our goal is to deliver validated, unified solutions by integrating partners' building blocks—driving customer confidence and accelerating Edge AI transformation and adoption.

Questions? Please contact your Intel Representative or [edge.products@intel.com](mailto:edge.products@intel.com)

2025

2026

EDGE PLATFORM ENABLING (RVP & ERD) – EARLY ACCESS BOARDS

RVP & ERD

EDGE FEATURES DRIVEN ENABLING BOARDS

"GENERAL PURPOSE PLATFORM FOR SILICON & BROAD MARKET ENABLING"

RAPTOR LAKE - REFRESH

✓ RVP (ATX)

BARTLETT LAKE -S / 12P

✓ RVP (ATX)

WILDCAT LAKE

✓ RVP (ATX)

✓ ERD (µATX)

WILDCAT RIDGE

PANTHER LAKE H

✓ ERD (COM HPC)

SOFT COLLATERAL

✓ ERD (µATX)

PANTHER RIDGE

ARROW LAKE H/U

✓ ERD (COM HPC)

ASTRAL PEAK + REEF RIDGE

TWIN LAKE

✓ RVP (ATX)

✓ ERD (µATX)

GRANITE RAPID "SP"

✓ RVP (19" server)

GRANITE RAPID "W"

✓ RVP (ATX)

NOVA LAKE - S

✓ RVP (ATX)

SOFT COLLATERAL

✓ ERD (µATX)

NORWAY ISLAND

NOVA LAKE - E

✓ RVP (ATX)

NOVA LAKE - U/H

✓ RVP (ATX)

SOFT COLLATERAL

✓ ERD (µATX)

NOVA RIDGE

WCL-R

✓ ERD (Mini-ITX)

WILDE BAY

EDGE PLATFORM CONCEPTS (EPC) – ACCELERATING PARTNERS TIME TO MARKET

EPC

EDGE CAPABILITIES & FORM FACTOR CONCEPTS

ARROW ISLAND BASED ON ARROW LAKE H/U

EC-less SBC design with UCSI Type C compliance support, featuring 2x MIPI CSI connectors that support up to 4 GMSL cameras with AIC expansion and on-board HDMI Capture for **embedded vision systems & live streams applications**. Derivative designs that come with maximum IO expansion for **edge AI computing** and **industrial PC**

Broad Availability : Now

INDUSTRIAL & EDGE AI

PANTHER VALLEY BASED ON PANTHER LAKE -H

EC-less SBC design with LPDD5 to optimized AI performance for **retail** and **healthcare** workloads. Two chassis configurations are offered for optimum usage of iGPU & dGPU. Featuring 4x HDMI display, 10Gbps ethernet, 2x MIPI CSI conn that support up to 8 cameras with AIC expansion & 8x USB expansion, for max IO support

Broad Availability : Now

RETAIL

ROBINSON BAY BASED ON PANTHER LAKE -H

Modular form factor focused on supporting wide range of **robotic** w/integrated GMSL camera connectivity , EtherCAT for real-time controls and additional capabilities to address diverse robotic requirements

Broad Availability : 1H '26

ROBOTICS

WILDE BAY BASED ON WILDCAT LAKE

Optimize design for scalable I/O expansion by utilizing PCIe switch (Microchip PCI1008) and Intel® Barlow Ridge that showcase various I/O expansion options with integrated I Manageability. Power and board layout are optimized to enable efficient , cost-effective AI workloads for **retail, healthcare** and **robotics**.

Target Availability : TBD

I/O EXPANSION

SEABECK BAY BASED ON NOVA LAKE - S & XEON - E

Platform leveraging a single solution for both Core-S and Xeon-E , using a HPM (Host Processor Module) design to enable both 1U rack and tower servers. Nova Lake provides integrated AI acceleration capability to support vision, media and ML inference w/o a need for discrete GPU.

Target Availability : TBD

CONVERGED SERVER

SIGNAL BAY BASED ON NOVA LAKE U/H

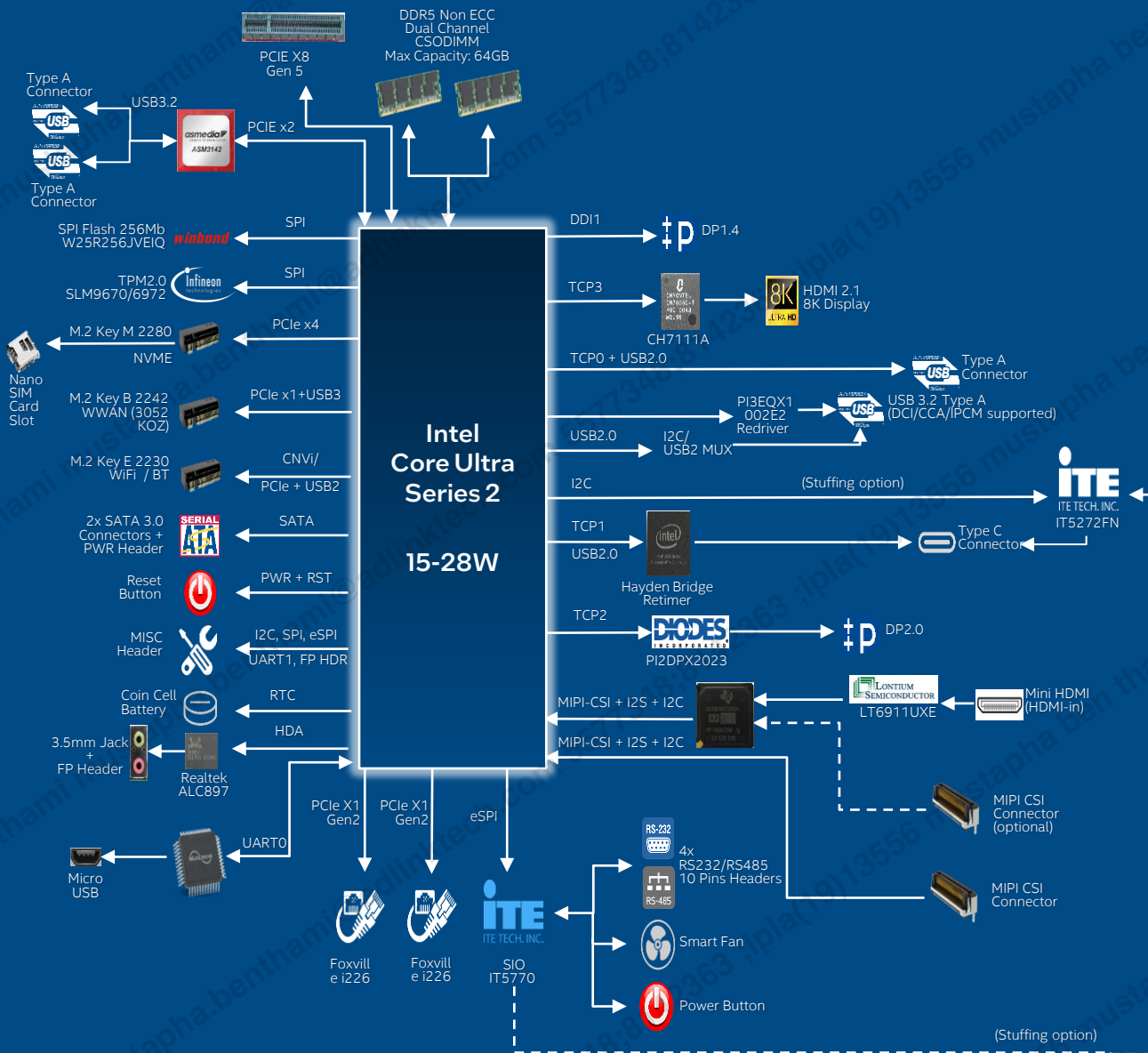
Next generation of modular form factor for robotics and Ai that supports various Nova Lake SKU 's to address wide range of capabilities & performance for various **robotic** workloads.

Target Availability : TBD

ROBOTICS

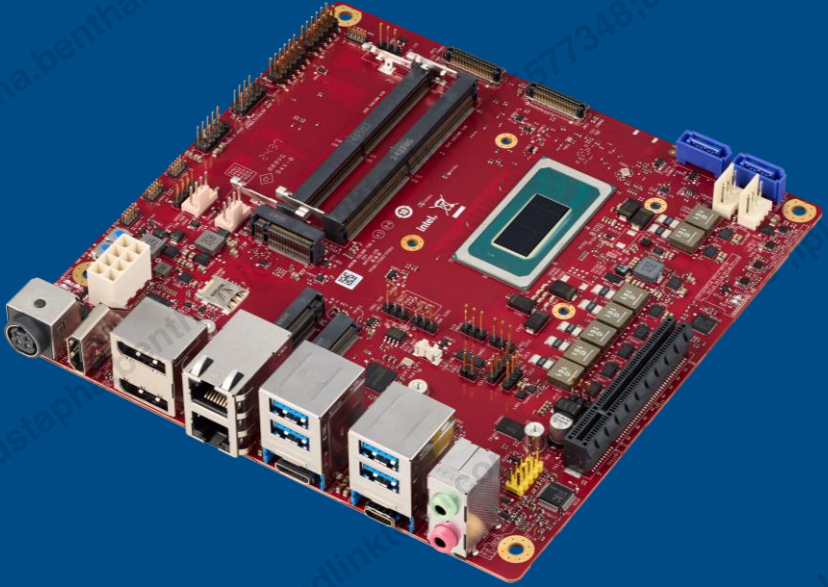
# Arrow Island (Arrow Lake) – Vision & Industrial AI

AVAILABLE



| BOARD KEY FEATURES          | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COMPUTE REQUIREMENT         | Intel Core Ultra Series 2 15-28W silicon (soldered down)                                                                                                                                                                                                                                                                                                                                                                                             |
| MEMORY SUPPORT              | DDR5 CSODIMM (6400MT/s, NON ECC, MAX: 64GB)                                                                                                                                                                                                                                                                                                                                                                                                          |
| FORMFACTOR                  | mITX SBC: 170mm x170mm; Type 3 Hybrid PCB 10 Layer                                                                                                                                                                                                                                                                                                                                                                                                   |
| STORAGE/EXPANSION SLOT      | <ul style="list-style-type: none"><li>1x M.2 Key B 2280 SSD [SATA/ NVMe]</li><li>1x M.2 Key M 2280 [PCle x4]</li><li>2x SATA3.2 Connector with PWR headers</li><li>256Mb SPI Chip [W25R256JWEIO]</li></ul>                                                                                                                                                                                                                                           |
| NETWORKING/CONNECTIVITY     | <ul style="list-style-type: none"><li>2x Foxville i225 2.5Gb Ethernet [PCle Gen2]</li><li>1x M.2 Key E 2230 for WIFI/BT [CNVI/PCle+USB]</li><li>1x M.2 Key B 2280 for WWAN (LTE/5G with 3052 KOZ)</li><li>1x Nano SIM Slot</li></ul>                                                                                                                                                                                                                 |
| USB CONNECTIVITY            | <ul style="list-style-type: none"><li>4x USB 3.2 Gen 2 Type A Connector (1-PCH, 2- PCIE bridge, 1-stuffing option between Type C &amp; Type A)</li><li>1x USB 3.2 Gen 2 x2 Type C Connector</li><li>1x USB to UART debug port (FTDI)</li></ul>                                                                                                                                                                                                       |
| CAMERA/SENSOR CONNECTIVITY  | <ul style="list-style-type: none"><li>2x Samtec 60-pins MIPI CSI connector</li></ul>                                                                                                                                                                                                                                                                                                                                                                 |
| DISPLAY INTERFACES          | <p>Display Output (Max 4 display at one time)</p> <ul style="list-style-type: none"><li>1x Standard HDMI connector (HDMI2.1 – 8k through retimer)</li><li>1x Type C Connector (through Hayden Bridge DP2.0)</li><li>1x Standard DP++ connector (DP1.4a)</li><li>1x DP2.0 connector (through retimer)</li></ul> <p>Display Input</p> <ul style="list-style-type: none"><li>1x mini-HDMI (LT6911UXE HDMI in – muxes with MIPI CSI connector)</li></ul> |
| AUDIO CONNECTIVITY          | <ul style="list-style-type: none"><li>Realtek ALC897 (I2S), 3.5mm Line-out &amp; MIC connector</li></ul>                                                                                                                                                                                                                                                                                                                                             |
| OTHER EXPANSION/ INTERFACES | <ul style="list-style-type: none"><li>1x PCIE Gen 5 X8 connector</li><li>HDR: eSPI, Front Panel, UART, Fan, I2C</li><li>Discreate TPM SLB9670VQ2.0</li></ul>                                                                                                                                                                                                                                                                                         |
| POWER                       | <ul style="list-style-type: none"><li>12V, 10A input Discrete Solution (2x4 ATX connector &amp; DC jack connector)</li></ul>                                                                                                                                                                                                                                                                                                                         |

# Arrow Island (Arrow Lake) – Vision & Industrial AI



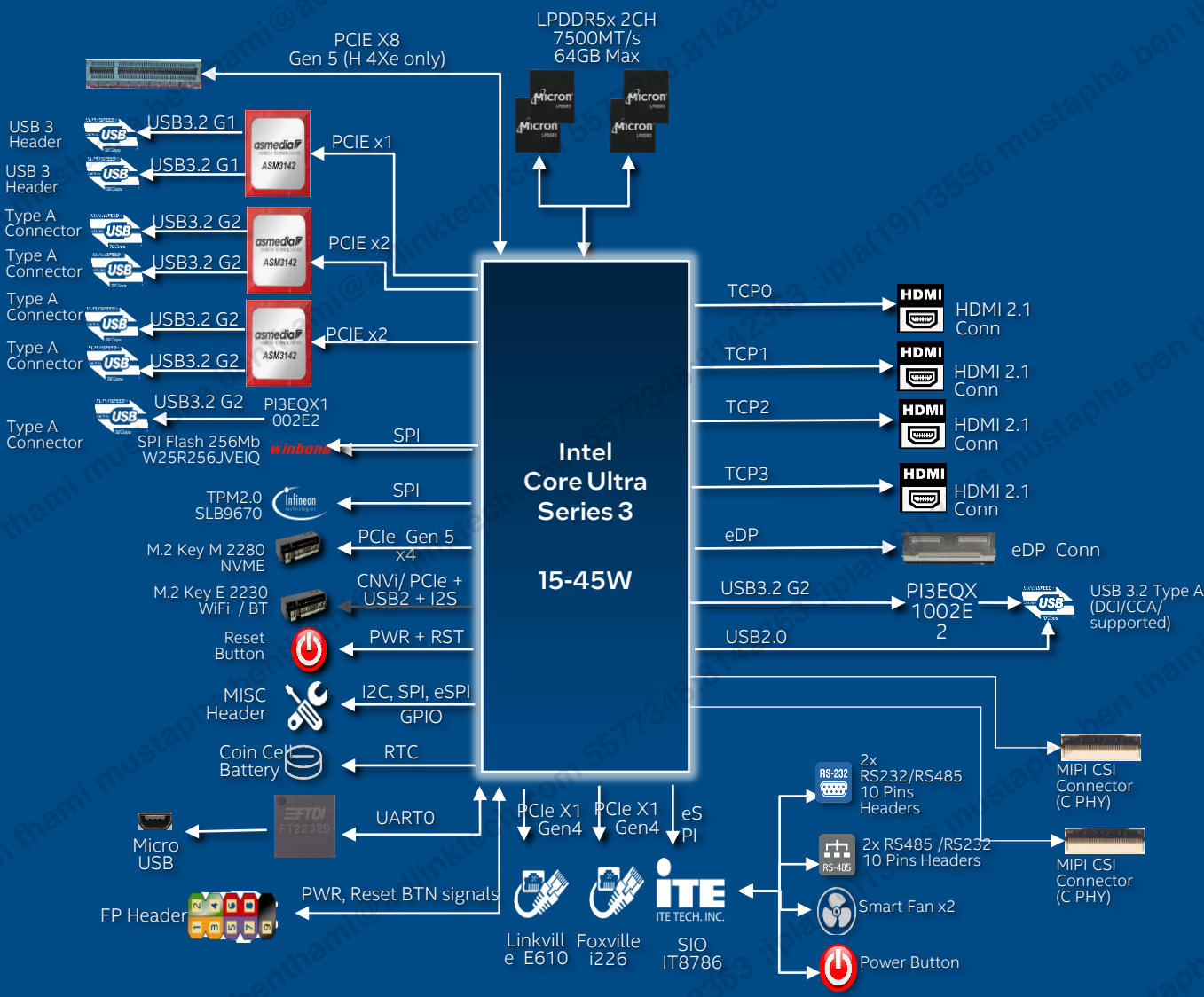
| ARROW ISLAND COLLATERAL         | DOC ID |
|---------------------------------|--------|
| Gold Deck                       | 822989 |
| Schematics PDF                  | 822991 |
| Schematics – Cadence            | 822992 |
| Schematics – OrCAD              | 822993 |
| Schematics – Zuken              | 822994 |
| Schematics – Mentor             | 822995 |
| Bill of Materials (BOM)         | 822997 |
| Board Layout Files              | 822996 |
| Tape Out Manufacturing Files    | 822998 |
| User Guide                      | 822999 |
| Thermal Mechanical Design Guide | 840098 |

Design Licensing Agreement signage needed prior to access is granted

- In partnership with Innodisk Corporation  
Product brief available [HERE](#)
- Board can be purchased through:
  - [Mouser](#)
  - [Digikey](#)
- Other developer kits based on Core Ultra Series 2 Processor can be found [HERE](#).



# Panther Valley (Panther Lake) – Retail, Healthcare & Gaming



| BOARD KEY FEATURES          | DESCRIPTION                                                                                                                                                                                                                                                                          |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SOC                         | <ul style="list-style-type: none"><li>PTL-U/H15W-45W Silicon (Solder Down)</li></ul>                                                                                                                                                                                                 |
| FORM FACTOR                 | <ul style="list-style-type: none"><li>SBC: 170mm x170mm; Type 3 PCB 12 Layer</li></ul>                                                                                                                                                                                               |
| MEMORY                      | <ul style="list-style-type: none"><li>LPDDR5x MD Dual Channels (7500MT/s, NON ECC, 64GB)</li></ul>                                                                                                                                                                                   |
| DISPLAY                     | <p>Display Outputs (Support Maximum 4x 4k60Hz or 2x 8k60Hz)</p> <ul style="list-style-type: none"><li>2x HDMI 2.1 Standard Connectors</li><li>2x HDMI 2.0 Standard Connectors</li><li>1x eDP Connector</li></ul>                                                                     |
| STORAGE                     | <ul style="list-style-type: none"><li>1x M.2 Key M 2280 [PCIe x4 Gen5]</li><li>256Mb SPI Chip [W25R256JVEIQ]</li></ul>                                                                                                                                                               |
| USB                         | <ul style="list-style-type: none"><li>2x USB 3.2 Gen 1 Type E Key-B Header (PCH with redriver)</li><li>4x USB 3.2 Gen 2 Type A Connector (through PCIE Bridge)</li><li>2x USB 3.2 Gen 1 Type E Key-B Header (through PCIE Bridge)</li><li>1x USB to UART Debug Port (FTDI)</li></ul> |
| CONNECTIVITY                | <ul style="list-style-type: none"><li>1x Foxville i226 2.5Gb Ethernet (Support Vpro and TSN)</li><li>1x Linkville E610 10Gb Ethernet</li><li>1x M.2 Key E 2230 for WIFI/BT [CNVi/PCIe+USB]</li></ul>                                                                                 |
| OTHER EXPANSION/ INTERFACES | <ul style="list-style-type: none"><li>1x PCIE Gen 5 X8 connector</li><li>HDR: eSPI, Front Panel, UART, Fan, I2C, GSPI, GPIO</li><li>RTC Battery</li><li>Discrete TPM SLB9670VQ2.0</li></ul>                                                                                          |
| CAMERA CONNECTIVITY         | <ul style="list-style-type: none"><li>2x Samtec 60-pins Connectors (C-PHY with 12V)</li></ul>                                                                                                                                                                                        |
| POWER                       | <ul style="list-style-type: none"><li>ATX Power Connector 24 pins + PCIE 8 pins</li></ul>                                                                                                                                                                                            |

# Panther Valley (Panther Lake) – Retail, Healthcare & Gaming



Panther Valley System for Integrated Graphics

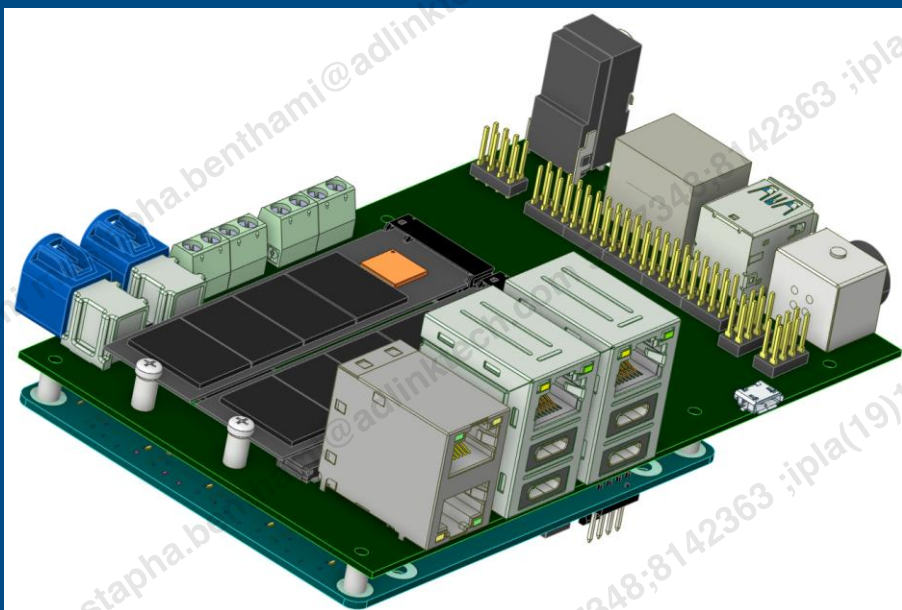
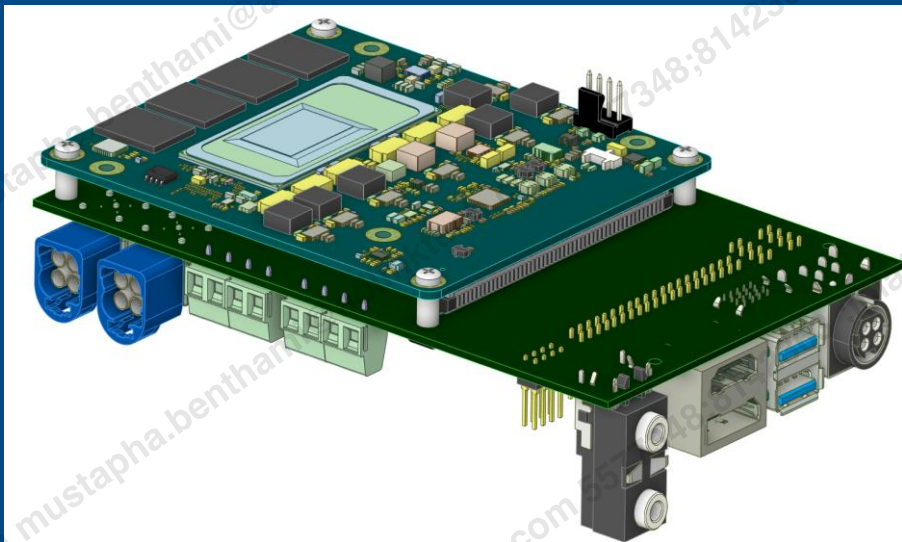


Panther Valley System for Discrete Graphics

| PANTHER ISLAND COLLATERAL              | RDC#   |
|----------------------------------------|--------|
| Panther Island Gold Deck               | 850937 |
| Panther Island Hardware Spec           | TBD    |
| Schematics PDF                         | 850939 |
| Schematic Cadence Format               | 850940 |
| Schematic OrCAD Format                 | 850941 |
| Schematic Zuken Format                 | 850942 |
| Schematic Mentor Format                | 850943 |
| Board Layout Files                     | 850944 |
| Bill of Materials (BOM)                | 850945 |
| Tape Out Manufacturing Files           | 850946 |
| User Guide                             | TBD    |
| Thermal Mechanical Design Guide (TMDG) | 858065 |

Design Licensing Agreement signage needed prior to access is granted

# Robinson Bay – (Panther Lake) - Robotics



| BOARD KEY FEATURES         | DESCRIPTION                                                                                                                                                                                                                            |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COMPUTE REQUIREMENT        | Panther Lake/PTL (Core Ultra) CPU – support all SKU's from 15W – 65W                                                                                                                                                                   |
| MEMORY SUPPORT             | Designed with LPDDR5 @8533 MT/s support up to 64GB                                                                                                                                                                                     |
| SYSTEM POWER MANAGEMENT    | Platform power profile would vary depending on the PTL SKU used.                                                                                                                                                                       |
| FORMFACTOR                 | Compute Board -100x87mm<br>Carrier Board – 145 x90 mm                                                                                                                                                                                  |
| STORAGE/EXPANSION SLOT     | 1x M.2 Type M slot to enable NVMe device<br>1x M.2 Key B-M (PCIe G4 x2) Expansion slot                                                                                                                                                 |
| NETWORKING/CONNECTIVITY    | <ul style="list-style-type: none"> <li>4x Intel i226 1G/2.5GbE Ethernet (EtherCAT Master)</li> <li>1x M.2 Type E Supported for external Wifi/BT/Cellular device</li> </ul>                                                             |
| USB CONNECTIVITY           | <ul style="list-style-type: none"> <li>4x integrated USB 3.2</li> <li>2x integrated USB 2.0</li> </ul>                                                                                                                                 |
| CAMERA/SENSOR CONNECTIVITY | <ul style="list-style-type: none"> <li>2x GMSLv2 Fakra x4 ports (2x MAX 96724 on the carrier board connected via integrated MIPI ports to support up to x8 devices connectivity )</li> <li>1x CSI CPHY connector on carrier</li> </ul> |
| DISPLAY INTERFACES         | <ul style="list-style-type: none"> <li>1x HDMI 2.0</li> <li>1x DP 2.0</li> </ul>                                                                                                                                                       |
| AUDIO CONNECTIVITY         | <ul style="list-style-type: none"> <li>Line Out, MIC &amp; SPKR</li> </ul>                                                                                                                                                             |
| OTHER INTERFACES           | <ul style="list-style-type: none"> <li>2x CAN FD Interfaces</li> <li>40 pin Raspberry PI Header (GPIO, I2IC, SPI etc)</li> <li>Misc - SPI Dediprog , TPM (SLB9670), RTC (Battery Connector) ,Fan Header (PWM 12V)</li> </ul>           |
| POWER                      | <ul style="list-style-type: none"> <li>19 – 24V DC in</li> <li>12V to Compute board through B2B connector</li> </ul>                                                                                                                   |
| BOARD-TO BOARD CONNECTOR   | <ul style="list-style-type: none"> <li>Samtec ADM6-100-03.5-L-4-0-A-TR</li> </ul>                                                                                                                                                      |



# Robinson Bay – (Panther Lake) - Robotics

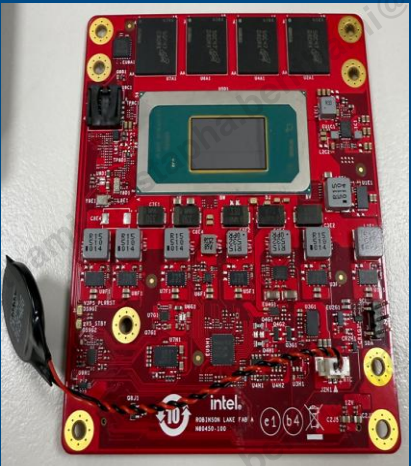
## Accelerate development for all kinds of robotics

Industrial, service, mobile and humanoid robotics  
Locomotion, Perception, and Imitation Learning  
Run vision AI, media analytics, and Gen AI workloads with real-time controls

## Reduce Complexity, Improve TCO

Latest generation processors for best possible performance  
Integrated CPUs, GPUs, NPUs for robotics performance across form factors  
Drive real-time controls & AI/perception from one platform

| COLLATERAL AVAILABILITY IN RDC       | Doc #                         |
|--------------------------------------|-------------------------------|
| Gold Deck                            | <a href="#">869076</a>        |
| User and Enabling Guide              | <a href="#">869082</a>        |
| <b>Robinson Lake – Compute Board</b> | Doc#                          |
| Schematics PDF                       | <a href="#">867535</a>        |
| Layout Files                         | <a href="#">867536</a>        |
| Bill of Materials (BOM)              | <a href="#">869034</a>        |
| Tape Out Manufacturing Files         | <a href="#">869035</a>        |
| <b>Pelican Bay – Carrier Board</b>   | Doc#                          |
| Schematics PDF                       | <a href="#">869077</a> (ww07) |
| Layout Files                         | <a href="#">869079</a> (ww07) |
| Bill of Materials (BOM)              | <a href="#">869080</a> (ww07) |
| Tape Out Manufacturing Files         | <a href="#">869081</a> (ww07) |



COMPUTE BOARD



COMPUTE + CARRIER BOARD

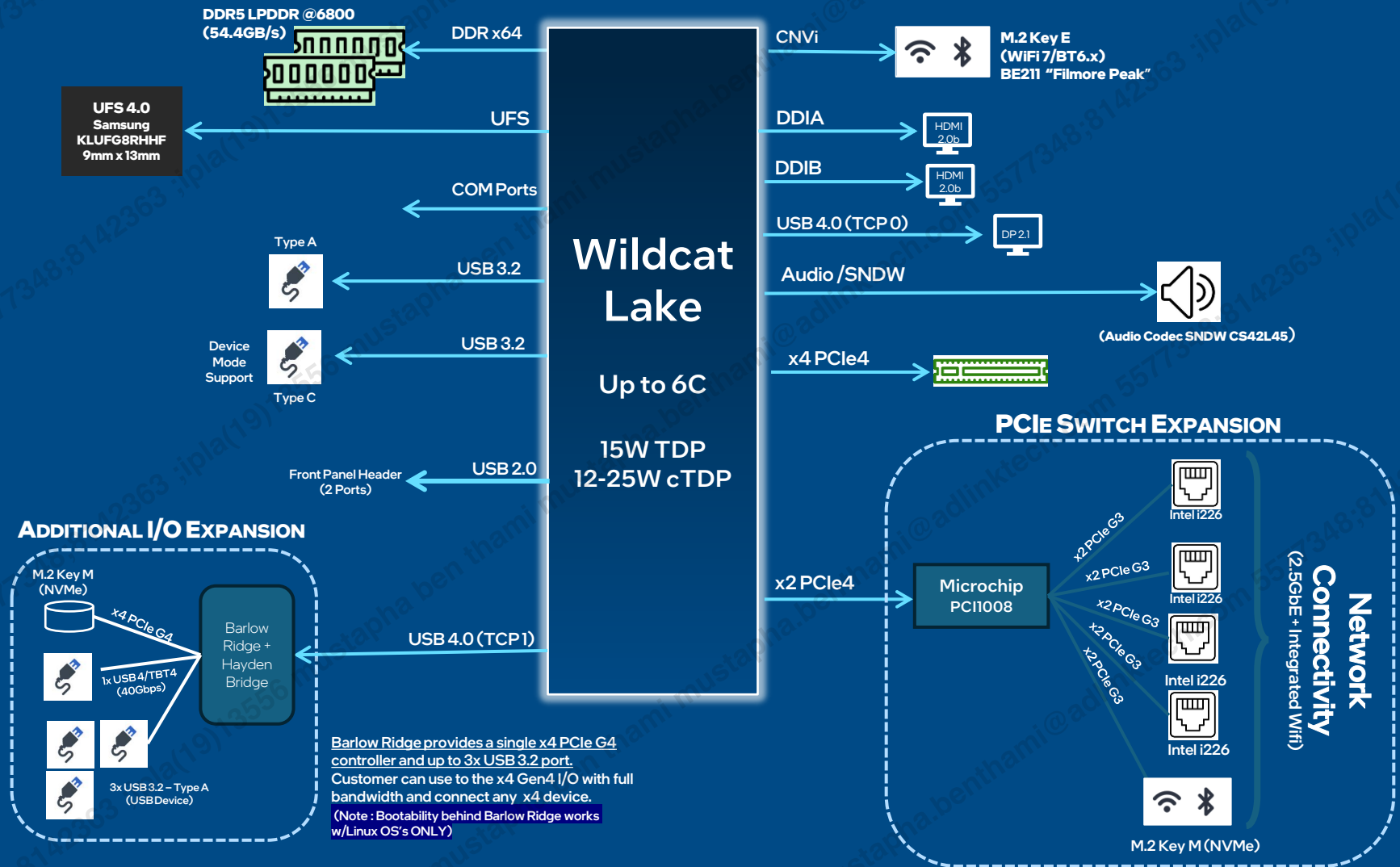




# Wilde Bay (Wildcat Lake)

## Enabling broad Edge usages through cost effective I/O expansion

- Use cases include thin client, interactive display, POS, rail, robotics controller, HMI and many more.
- Additional I/O expansion is available via PCIe switch (Microchip PCI1008) that is included within the reference design & validated by Intel.
- Various options to optimize I/O usages, which includes :
  - Leveraging integrated WiFi
  - Barlow Ridge connected via USB Type C to provide additional PCIe & USB connectivity.
  - UFS for system boot or Storage



# PCI1008 PCIe Fanout Switch

## Intel Wildcat Lake Edge Reference Design

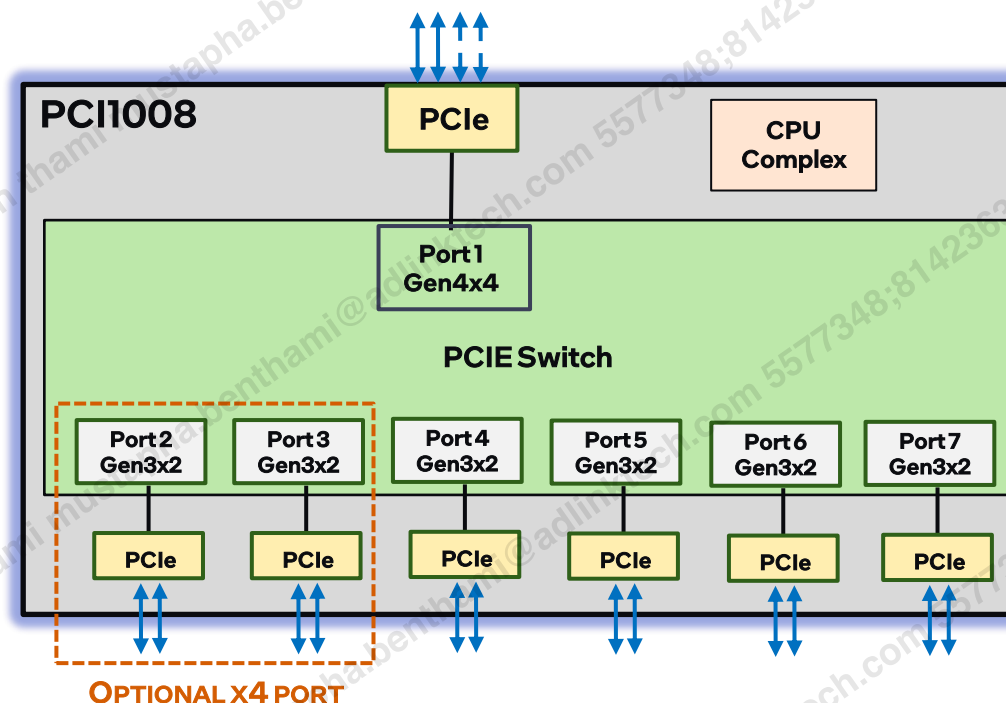
### Key Features

- **Upstream Ports (USP) – Gen4 1x4 Lane Port (16GT/s)**
- **Downstream Ports (DSP)**
  - Default config: Gen3 6x2 Lane Ports 8GT/s
  - Optional config: Gen3 4x2 Lane Ports + 1x4 Lane port 8GT/s
  - DFP configuration via GPIO strap
- **DMA; Management EP**
- **Peripheral I/O Interfaces**
  - JTAG/EJTAG
  - TWI recovery interface
  - UART recovery interface
  - UART command server for Chiplink
- **Power Management**
  - Typical power 4.6W @ 25C
- **Error Containment – AER, DPC, CTS, IER**
- **ChipLink Configuration & Diagnostic Tool Suite**
- **Temperature Industrial temp -40°C to +85°C**
- **Extended Life support (10 years supply/support)**

### Availability

- Evaluation Kit EVB-PCI1005 - Now (contact Microchip for availability)
- Evaluation Kit EVB-PCI1008 - 2Q 2026
- Samples PCI1005-I/5CW - Now (Full featured emulation device)
- Samples PCI1008-I/5CW - March 2026

**Contact Microchip or Intel for special budgetary pricing.**



# Intel Xeon Processors for Performance Edge Designs

For the most powerful edge workloads, including data acceleration and real-time AI.





# Intel Xeon Processors

Built-in Accelerators Deliver Value Across these Targeted Workloads



## AI

- Recommendation Systems
- Natural Language Processing
- Image Recognition
- Object Detection
- Machine Learning
- Video Analytics



## Data Analytics

- In-Memory Databases
- Big Data Analytics
- Data Warehousing
- Relational Databases



## Edge Networking

- Security Gateway
- Crypto Acceleration
- Packet Processing
- Content Delivery Network



## Storage

- High Performance Storage
- Storage Management
- Distributed Storage / Storage Appliances
- Virtualized Storage



## HPC

- Computational Fluid Dynamics
- Molecular Dynamics
- Weather Simulation
- Financial Services
- AI Inference / Training
- Drug Discovery

## Security



# THE PERFORMANCE EDGE LANDSCAPE

## CLOUD AND LARGE DATA CENTERS

One-to-eight socket performance servers hosting a variety of cloud and enterprise workloads (including edge)

**350W+ TDP**  
**32+ Cores**

Intel Xeon 6900P and 6700P Processors  
Granite Rapids AP  
Granite Rapids SP

Intel Xeon Platinum 8500 Processors  
Emerald Rapids SP

## ENTERPRISE SERVER AND EDGE SERVER WITH INTEGRATED AI

One or two socket enterprise servers requiring demanding compute for on-premise workloads

**185-350W TDP**  
**16 to 32 Cores**

Intel Xeon 6700P and 6500P Processors  
Granite Rapids SP  
Intel Xeon 600 Processors  
Granite Rapids W  
Intel Xeon Gold 6500 Processors  
Emerald Rapids SP  
Intel Xeon Gold 5500 Processors  
Sapphire Rapids SP

Single socket edge servers, flexible designs, with outstanding AI-performance featuring Xeon's first integrated NPU & GPU<sup>1</sup>

**<185W TDP**  
**4 to 16 Cores**

Future Intel Xeon Processors  
Nova Lake E (Dunlow)  
Intel Xeon 6377P Processor  
Bartlett Lake 12P (Catlow)  
3rd Gen Intel Xeon Scalable Processors  
Ice Lake SP  
2nd Gen Intel Xeon Scalable Processors  
Cascade Lake SP

<sup>1</sup> – Integrated GPU and NPU available on select SKUs with future Nova Lake E processors on the Dunlow platform  
All product plans and roadmaps are subject to change without notice.



# INTEL XEON GUIDE FOR THE EDGE

|                                      | Existing Configuration                                    | Intel Xeon AP not a recommended edge design                                                                                                     | Example Edge Workloads                                                                             |
|--------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| CLOUD AND<br>LARGE DATA<br>CENTERS   | 2U+ Rack<br>350W+ TDP                                     | <b>Emerald Rapids or Granite Rapids SP</b><br><b>32 to 86 Cores</b><br>Highest performance, TDP, memory, and I/O scale-out                      | VMS Server<br>MRI, PET, CT<br>Defense Comms<br>Central Train/Traffic<br>Command                    |
| ENTERPRISE<br>SERVER                 | 1U/2U Rack or<br>Workstation<br>150W to 350W TDP          | <b>Emerald Rapids or Granite Rapids (SP/W)</b><br><b>16 to 32 Cores</b><br>Demanding compute with high I/O expansion<br>for discrete GPU attach | Data Science/AI Dev<br>High-end VFX Compute<br>Engineering Simulation<br>Engineering Visualization |
| EDGE SERVER<br>WITH<br>INTEGRATED AI | 1U, Rack or Tower<br>with Discrete GPU<br>65W to 185W TDP | <b>Nova Lake E</b><br><b>16 to 32 Cores</b><br>High per core performance, lower TDP,<br>value-optimized edge server                             | Content Delivery<br>Edge Analytics<br>Cloud Gaming                                                 |
|                                      | 1U, Rack or Tower<br>25W to 85W TDP                       | <b>Nova Lake E</b><br><b>4 to 16 Cores</b><br>High per core performance, lowest TDP,<br>cost-optimized edge server                              | Storage Server<br>Edge Analytics<br>Patient Monitoring<br>Traffic Monitoring                       |



# Intel Xeon Processors for LGA-based Edge Designs

## EAGLE STREAM PLATFORM



### 5th Gen Intel Xeon Scalable Processors for Edge/IoT

PRODUCTION  
SAPPHIRE RAPIDS EE

Includes all the features and technologies on Sapphire Rapids and brings in more capability to:

- Tuned and optimized for optimal power-to-performance for edge usages
- New Intel Trust Domain Extensions (Intel TDX) for enhanced confidential computing at the edge



### 5th Gen Intel Xeon Scalable Processors

PRODUCTION  
EMERALD RAPIDS SP

Includes all the features and technologies on Sapphire Rapids and brings in more capability to:

- Augment the platform
  - Expanded Core Count Options
  - 3X larger LLC
- Expand Memory Value
  - Up to 8 channels of memory (per processor) with support for up to 5600MT/s (1DPC) & 4400MT/s (2DPC)
- Secure VMs and Containers through Enhanced Data Protection with Trust Domain Extensions

## BIRCH STREAM PLATFORM



### Intel Xeon 6700P and 6500P Processors

PRODUCTION  
GRANITE RAPIDS SP

Enhanced processor and platform performance

- Scalable support for up to 2 sockets
- Up to 86 P-cores, per processor

Enhanced memory support

- Up to 8 channels of DDR5 memory (per processor), up to DDR5 6400 MT/s
- Support for new Monument Creek (MRDIMM), up to DDR5 8000 MT/s

Enhanced I/O

- 88 lanes of PCI Express 5.0, support for Compute Express Link (CXL 2.0)
- Rich One-Socket design supporting up to 136 lanes of PCIe 5

Built-in Acceleration and Security

- Intel Advanced Matrix Extensions, Intel QuickAssist Technology, Intel Dynamic Load Balancer, Intel Data Streaming Accelerator, Intel AVX-512, Intel Total Memory Encryption Multi-Tenant, Intel Software Guard Extensions, Intel Trusted Domain Extensions

## Coral Rapids

IN PLANNING

- Currently targeting 8 channel design support
- Additional details will be shared in a future Intel Edge Compass publication

The information above is not an official POR document and may be different from other Intel divisions with similar products. Select features, highlighted above, are not supported on all SKUs. Dates, details and information are subject to change without notice. For the latest detailed schedule information, please refer to individual product gold decks, product snapshots, or contact your Intel representative. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (QRG) available on [rdc.intel.com](https://rdc.intel.com). No product or component can be absolutely secure.



# Intel Xeon Processors for LGA-based Edge Designs



## Intel Xeon 600 Processors

PRODUCTION

GRANITE RAPIDS W

Proven Intel Xeon Architecture

- Up to 86 P-Cores
- Up to 8 Channels & 4TB Memory
- Up to DDR5-6400 / DDR5-8000 (MCR)

I/O and Connectivity

- Up to 128 CPU PCIe 5.0 Lanes+ 8L (DMI)
- 24 PCH PCIe\* 4.0 lanes
- 5 USB3 20G / 10 USB3 10G Ports, 1 or 2.5Gb Ethernet LAN
- Integrated WiFi6E and Discrete WiFi7
- Advanced Storage Support, 8x Chipset SATA

Turbo, vPro and Sleep States

- Overclocking and Turbo Boost
- S3, S4, S5, DeepSx Sleep States
- Intel® vPro Enterprise support

## CATLOW PLATFORM



## Intel Xeon 6377P Processor

IN DEVELOPMENT

BARTLETT LAKE 12P

Enhanced processor and platform performance

- Up to 12 Cores (Intel Xeon 6377P Processor)

Enhanced memory support

- Up to 2 channels of DDR5 memory, support for up-to DDR5 4800 MT/s

Enhanced I/O

- Up to 48 total lanes of PCIe, supporting up to PCIe 5

Built-in Acceleration

- SSE 4.1, SSE 4.2, AVX and AVX2

## DUNLOW PLATFORM

## Nova Lake E

IN DEVELOPMENT

Enhanced processor and platform performance

- Offering P-core only and E-core only SKU options
  - E-core only SKUs up to 32 cores and P-core only SKUs up to 16 cores
- First Intel Xeon processor to offer integrated Intel Arc GPU with up to 12 Xe3P graphics
- First Intel Xeon processor to offer integrated NPU 6.0 (Intel AI Boost)

Enhanced memory support

- Up to 2 channels of DDR5 memory, support for up-to DDR5 5600 MT/s

Enhanced I/O

- Up to 48 total lanes of PCIe, supporting up to PCIe 5

Built-in Acceleration

- SSE 4.1, SSE 4.2, AVX and AVX2, AVX10.2 and APX 1.0

Built-in Manageability and Security

- Support for Intel vPro technology
- Support for Intel Trusted Domain Extensions (Intel TDX)

The information above is not an official POR document and may be different from other Intel divisions with similar products. Select features, highlighted above, are not supported on all SKUs. Dates, details and information are subject to change without notice. For the latest detailed schedule information, please refer to individual product gold decks, or contact your Intel representative. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (QRG) available on [rdc.intel.com](https://rdc.intel.com). No product or component can be absolutely secure.



# Intel Xeon 6700P/6500P Processors

## Granite Rapids SP on the Birch Stream SP Platform



Access the full Birch Stream Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 790943

Intel Xeon 6700P/6500P Processors

# World's Best CPU for AI

Embrace and quickly scale AI everywhere

## Up to 86 cores per CPU

### Increased Memory BW

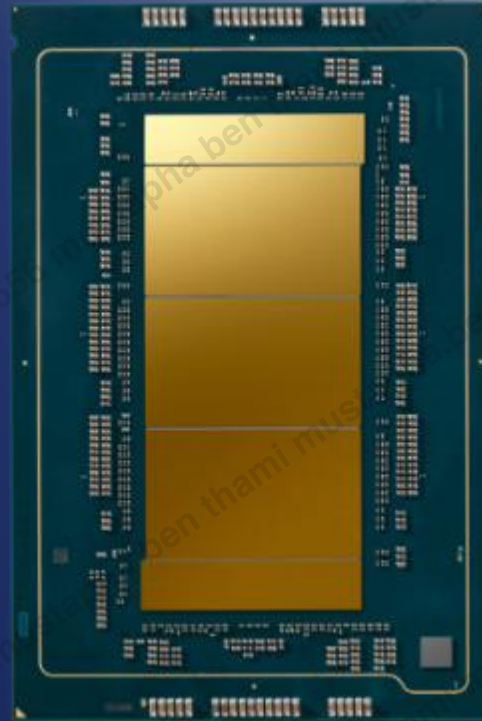
Up to 2.3x higher memory bandwidth w/MRDIMM memory vs. 5th Gen Intel® Xeon® processors<sup>1</sup>

### Increased LLC

L3 cache as large as 504 MB and with exceptionally low latency at large L3 access sizes

### Intel® AI Software

Variety of tools available for AI development across GenAI, Edge deployment and classical Machine Learning



## Intel® Advanced Matrix Extensions (Intel® AMX)

FP16-based models to enhance AI performance

## Advanced Vector Extensions 512 (AVX-512)

Unique instructions and two 512-bit fused-multiply add (FMA) units per core

## Advanced Vector Extensions 2 (AVX2)

New VNNI instructions and fast up/down convert for BF16 and FP16

<sup>1</sup>See ISC 2024 section of [intel.com/performanceindex](https://www.intel.com/performanceindex) for workloads and configurations. Your results may vary. Intel technologies may require enabled hardware, software or service activation.

# Intel Xeon 6700P/6500P Processors

P-core  
Up to **86 cores**  
per processor

Increased Memory Bandwidth  
Up to **1.7x (DDR5)**  
vs. 5th Gen Intel® Xeon® CPU

Up to **2.3x (MRDIMM)\*\***  
vs. 5th Gen Intel Xeon CPU

Increased I/O Bandwidth  
**1.2x (PCIe 5)**  
vs. 5th Gen Intel Xeon CPU

Increased Inter-Socket Bandwidth  
Up to **1.8x (UPI 2.0)**  
vs. 5th Gen Intel Xeon CPU

Compute Express Link\* (CXL\*) 2.0  
**Type 1, Type 2 & Type 3**

intel  
xeon

Socket Scalability  
**1 to 8S**

Increased Last Level Cache  
Up to **504MB total**

Integrated IP Accelerators  
Intel® QuickAssist Technology (Intel® QAT)  
Intel® In-Memory Analytics Accelerator (Intel® IAA)  
Intel® Data Streaming Accelerator (Intel® DSA)  
Intel® Dynamic Load Balancer (Intel® DLB)

AI Accelerator built in  
Intel® Advanced Matrix Extensions (Intel® AMX)\*\*

Hardware Enhanced Security  
Intel® Trust Domain Extensions (Intel® TDX)  
Intel® Software Guard Extensions (Intel® SGX)

Common OS and Firmware  
Simplify development and deployment

\*\*P-core only

# Intel® Xeon® 6 processors with P-cores

## Processor Offerings

P-core



## Intel Accelerator Engines

### AI & HPC

Intel Advanced Matrix Extensions (INT8, BF16, FP16)  
Intel Advanced Vector Extensions 512 (VNNI/INT8)

### Security

Intel Software Guard Extensions  
Intel Trusted Domain Extensions  
Intel Crypto Acceleration

### Storage & Analytics

Intel Data Streaming Accelerator  
Intel In-Memory Analytics Accelerator  
Intel QuickAssist Technology

### Network

Intel QuickAssist Technology  
Intel Dynamic Load Balancer

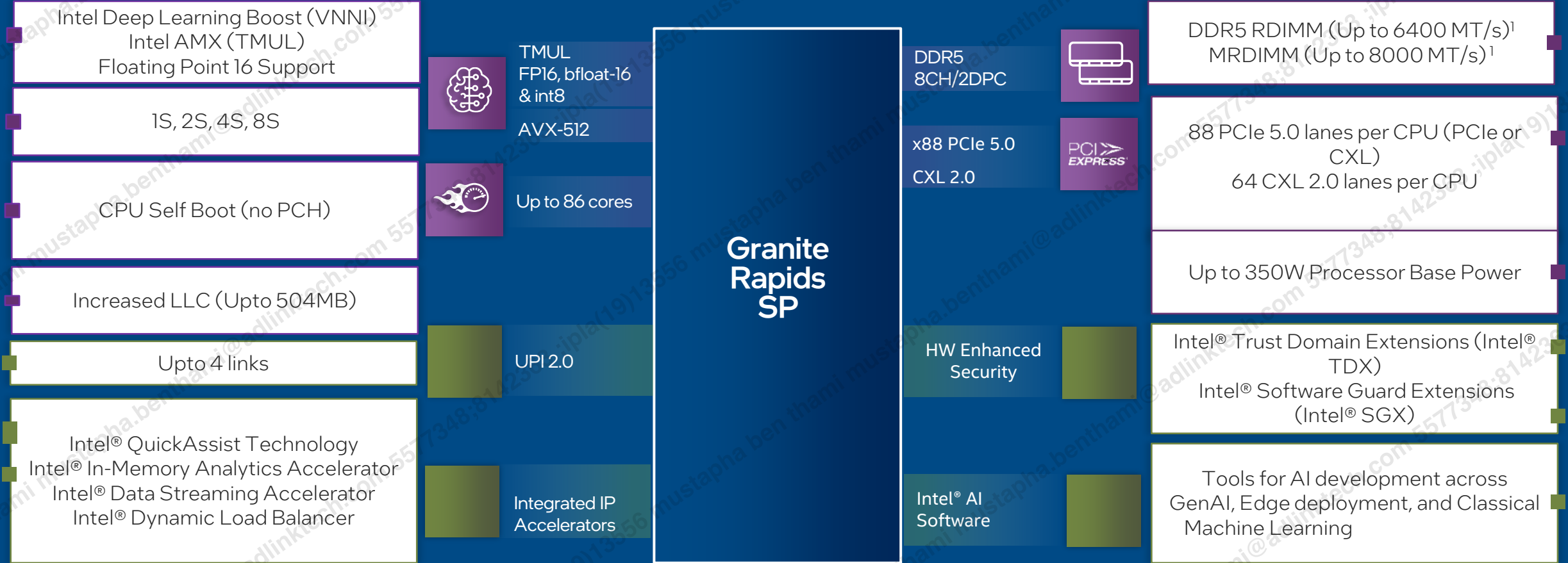




# Intel Xeon 6700P and 6500P Processors for the Edge **Overview**

## Granite Rapids SP

Designed for scalable performance edge designs



1) DDR5-6400 MT/s 1DPC RDIMM and DDR5-5200 2DPC RDIMM, MRDIMM 1DPC Only  
2) On Select SKUs



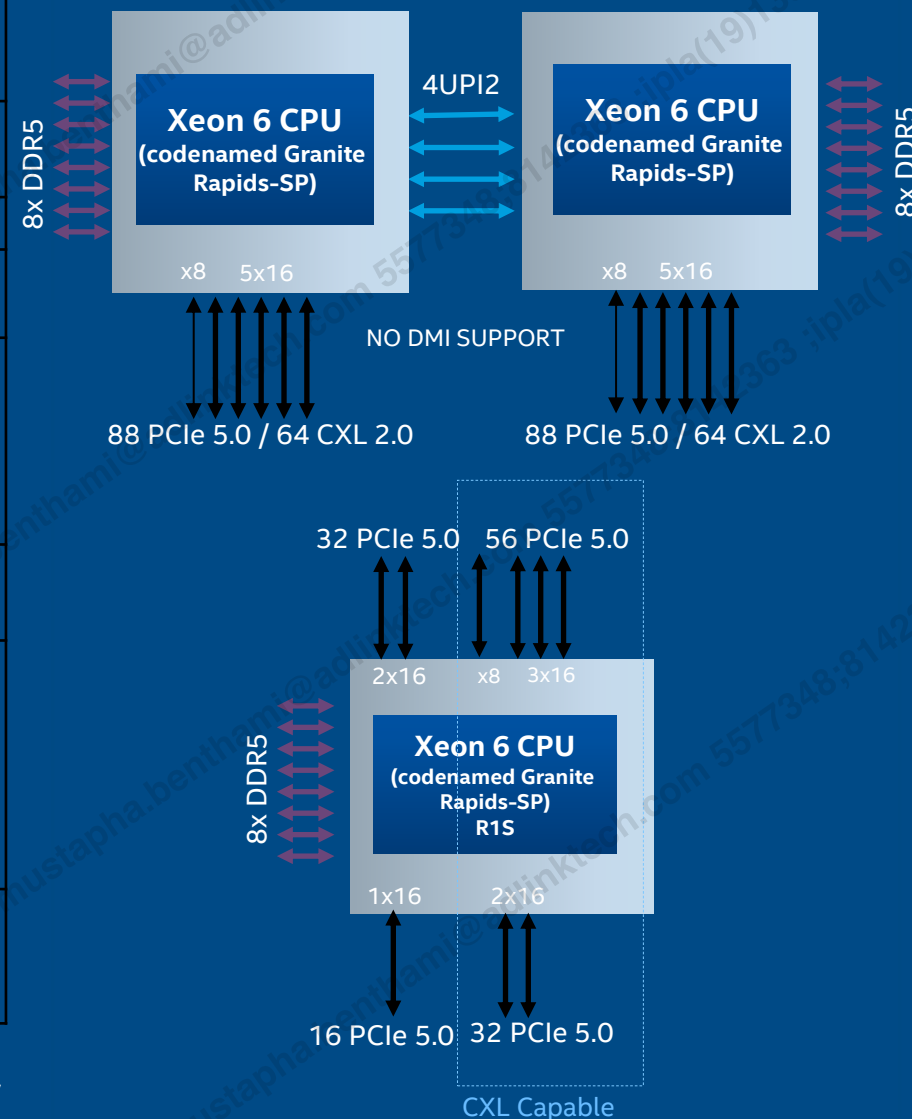
# Intel Xeon 6700P/6500P Processor Overview

## Granite Rapids SP on the Birch Stream SP Platform

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                         | 8 to 86 cores<br><b>CPU self-boot only (NO PCH)</b><br>(Package dimension: 77.5 x 56.5 mm)                                                                                                                                                                                                                                                                                                                                   |
| Socket and TDP              | <b>Socket E2: 4710 pins (77.5 x 56.5 mm),</b><br>SP: 150-165W to 350W<br>R1S: 165-185 to 350W                                                                                                                                                                                                                                                                                                                                |
| Scalability                 | 1S, 2S, 4S, & 8S glueless (>8S via xNC support)                                                                                                                                                                                                                                                                                                                                                                              |
| Accelerators                | Intel® Quick Assist Technology, DLB, DSA, IAA, 5G ISA, BFloat16, <b>AMX-FP16</b><br><b>R1S: Up to 3 accelerator instances</b>                                                                                                                                                                                                                                                                                                |
| Memory                      | <b>8 channels DDR5</b> per CPU<br>DDR5: <b>Up to 6400MTs 1DPC / 5200MTs 2DPC</b><br>2DPC / 16 DIMMs per CPU<br><b>MCR DIMM: Up to 8000 1DPC (2 slots per channel)</b>                                                                                                                                                                                                                                                        |
| UPI 2.0                     | Up to 4 links per CPU (x24 width)<br><b>Speed: 16, 20, 24GTs</b><br><b>R1S: No UPI</b>                                                                                                                                                                                                                                                                                                                                       |
| PCIe / Compute Express Link | <b>88 PCIe 5.0 lanes per CPU (PCIe or CXL)</b><br><b>56 lanes north / 32 lanes south of socket</b><br><b>NTB @ PCIe 5.0, higher PCIe P2P performance (vs SPR)</b><br>PCIe bifurcation: x16, x8, x4, x2(PCIe 5.0)<br><b>64 CXL 2.0 lanes per CPU (any 4 of 5 x16 ports)</b><br>CXL bifurcation: x16, x8 (Type 3)<br><b>R1S: 136 PCIe 5.0 lanes 88 lanes north / 48 lanes south, incremental PCIe ports do not support CXL</b> |
| Security                    | Software Guard Extensions (SGX) for Application Isolation – AES 256-bit keys<br>Trust Domain Extensions (TDX) for VM isolation - <b>2048 keys, AES 256-bit keys</b><br><b>Link Protection [PCIe (x16, x8, x4), CXL, UPI], PFR 4.0</b>                                                                                                                                                                                        |

New capabilities relative to <Prior Gen> in **Bold**  
Platform support timing for DDR5 6400 1DPC will be based on memory availability

### SP Platform Diagram



# Intel Xeon Capability Matrix

All product plans and roadmaps are subject to change without notice.  
Performance targets have been estimated or simulated – subject to change.

| Platform / Processor Specification                   | EAGLESTREAM                                      |                                                  | BIRCHSTREAM (XEON 6)                                                          |                                                                                                                     |                                                                                          |
|------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Core Count / CPU Socket                              | 60 cores                                         | 64 cores                                         | 64 to 144 cores (E)/<br>192 to 288 cores (E)                                  | 8 to 86 cores (P)/<br>72 to 128 cores (P)                                                                           | Up to 192 cores (E)/<br>288 cores (E)                                                    |
| Socket Scalability (per node)                        | 1S, 2S, 4S, 8S                                   | 1S, 2S                                           | 1S, 2S                                                                        | 1S, RIS, 2S, 4S, 8S/1S, 2S                                                                                          | 1S, 2S                                                                                   |
| Min TDP / Max TDP                                    | 350W                                             | 350W                                             | 205 to 330W/~350 to ~500W                                                     | 150-165 to 350W/400 to 500W                                                                                         | Up to 350W/Up to 500W                                                                    |
| Physical/Virtual Address Bits                        | 52/57                                            | 52/57                                            | AP & SP: 52 Physical address bits/<br>48 virtual address bits                 | AP & SP: 52 Physical address bits/<br>57 virtual address bits                                                       | AP & SP: 52 Physical address bits/<br>48 virtual address bits                            |
| Memory support (DDR4/DDR5)                           | DDR5                                             | DDR5                                             | DDR5                                                                          | DDR5, MRDIMM                                                                                                        | DDR5, MRDIMM                                                                             |
| # Memory channels                                    | 8                                                | 8                                                | 8/12                                                                          | 8/12                                                                                                                | 8/12                                                                                     |
| Memory max. speeds                                   | 4800 (1 DPC) & 4400 (2 DPC)                      | 5600 (1 DPC) & 4400 (2 DPC)                      | SP: 6400/5200 (1/2 DPC)<br>AP: 6400 (1 DPC)                                   | SP: 6400/5200 (1/2 DPC), 8000 (1DPC MRDIMM) AP: 6400 (1 DPC), 8800 (1DPC MRDIMM)                                    | SP: 6400/5200 (1/2 DPC)<br>8000 (1DPC MRDIMM)/<br>AP: 7200 (1 DPC)<br>8800 (1DPC MRDIMM) |
| # Intel® UPI links                                   | UPI 2.0 (up to 4)                                | UPI 2.0 (up to 4)                                | UPI 2.0 (up to 4)/UPI 2.0 (up to 6)                                           | UPI 2.0 (up to 4)/UPI 2.0 (up to 6)                                                                                 | UPI 2.0 (up to 4)/UPI 2.0 (up to 6)                                                      |
| Intel® UPI speeds                                    | Up to 16 GT/s                                    | Up to 20 GT/s                                    | Up to 24 GT/s                                                                 |                                                                                                                     |                                                                                          |
| PCIe*Generation (I/O)                                | 80 lanes, PCIe*5.0 (x16, x8, x4), PCIe*4.0 (x2)  | 80 lanes, PCIe*5.0 (x16, x8, x4), PCIe*4.0 (x2)  | 88 lanes, PCIe*5.0 (x16, x8, x4, x2)/<br>96 lanes, PCIe*5.0 (x16, x8, x4, x2) | SP: 88 lanes, PCIe*5.0 (x16, x8, x4, x2)<br>SP: RIS SKUs: 136 PCIe*5.0/<br>AP: 96 lanes, PCIe*5.0 (x16, x8, x4, x2) | 88 lanes, PCIe*5.0 (x16, x8, x4, x2)/96 lanes, PCIe*5.0 (x16, x8, x4, x2)                |
| Intel® Deep Learning Boost (AI Inference / Training) | AMX/TMUL (INT8 & BFloat16) & AVX-512 (VNNI/INT8) | AMX/TMUL (INT8 & BFloat16) & AVX-512 (VNNI/INT8) | AVX2 (VNNI/INT8, BF16/FP16 Fast up/down convert) (2x128)                      | AMX/TMUL (INT8 & BFloat16, FP16) & AVX-512 (VNNI/INT8)                                                              | AVX2 (VNNI/INT8, BF16/FP16 Fast up/down convert) (4x128)                                 |
| Security – Intel® SGX & TDX                          | SGX Enhanced                                     | SGX, TDX                                         | SGX, TDX, LASS, LAM                                                           | SGX, TDX                                                                                                            | SGX, TDX, LASS, LAM                                                                      |
| Crypto Instructions                                  | Vector AES, SHA extensions, VPMADD52             | Vector AES, SHA extensions, VPMADD52             | Vector AES, SHA2-256 extensions, VPMADD52                                     |                                                                                                                     | Vector AES, SHA2-512, VPMADD52, SM3, SM4                                                 |
| Compute Express Link (CXL®)                          | Yes; spec 1.1, 4 x16 devices                     | Yes; spec 1.1, 4 x16 devices                     | CXL*2.0, 64 lanes                                                             |                                                                                                                     |                                                                                          |
| Integrated Accelerators®                             | QAT G4, DLB 2.0, DSA 1.0, IAA 1.0                | QAT G4, DLB 2.0, DSA 1.0, IAA 1.0                | QAT G4, DLB 2.5, DSA 2.0, IAA 2.0                                             |                                                                                                                     |                                                                                          |

\*DDR5-8000 rated RDIMMS only

# Intel® Xeon® 6700P/6500P Processors SKU Tables, Frequency Modes

Select Intel Xeon 6 processors support different frequency modes.  
Consistent with 4<sup>th</sup> and 5<sup>th</sup> Gen Intel® Xeon® Scalable Processors.

## Frequency Modes:

- Server Mode – Default out of the box mode for Xeon 6 processors. This mode is to operate over many use cases. Guaranteed not to throttle if following intel thermal recommendations.
- Network Mode - Deterministic base frequency rating only applicable for Networking 5G Core (UPF) workloads. More intensive workloads may see throttling.
- Compute Mode - Deterministic base frequency assumes lower utilization (80%) which is typical for cloud deployments and select Network security workloads. If utilization exceeds this, throttling may occur.
- Intel Xeon 6 processors use an SSE instruction heavy workload to set base frequency.



# Intel® Xeon® 6700E-Series Processors: HDCC Production SKUs

| SKU                                    | Spec Code | MM#    | Ordering Code/<br>Product Code | CORES | BASE<br>(GHz) | AVX2<br>BASE<br>(GHz) | ALL CORE<br>TURBO<br>(GHz) | Max<br>TURBO<br>(GHz) | CACHE<br>(MB) | TDP<br>(Watts) | Maximum<br>Scalability | DDR5<br>Memory<br>Speed | RAS      | TDX<br>Keys Count | Intel SGX<br>Enclave<br>Capacity<br>(Per CPU) | Long life<br>reliability<br>(10 years) | Long life<br>availability<br>(7 years) |
|----------------------------------------|-----------|--------|--------------------------------|-------|---------------|-----------------------|----------------------------|-----------------------|---------------|----------------|------------------------|-------------------------|----------|-------------------|-----------------------------------------------|----------------------------------------|----------------------------------------|
| EFFICIENT CORES - PERFORMANCE PER WATT |           |        |                                |       |               |                       |                            |                       |               |                |                        |                         |          |                   |                                               |                                        |                                        |
| 6780E                                  | SRPG3     | 99CJZ7 | PK8077105931400                | 144   | 2.2           | 1.8                   | 3.0                        | 3.0                   | 108           | 330            | 2S                     | 6400                    | Advanced | 1,024             | 512 GB                                        | -                                      | ✓                                      |
| 6766E                                  | SRPFW     | 99CJXZ | PK8077105930900                | 144   | 1.9           | 1.5                   | 2.7                        | 2.7                   | 108           | 250            | 2S                     | 6400                    | Advanced | 1,024             | 512 GB                                        | -                                      | ✓                                      |
| 6756E                                  | SRPFX     | 99CJZ0 | PK8077105931000                | 128   | 1.8           | 1.4                   | 2.6                        | 2.6                   | 96            | 225            | 2S                     | 6400                    | Advanced | 1,024             | 512 GB                                        | -                                      | ✓                                      |
| 6746E                                  | SRPFZ     | 99CJZ5 | PK8077105931200                | 112   | 2.0           | 1.5                   | 2.7                        | 2.7                   | 96            | 250            | 2S                     | 5600                    | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6740E                                  | SRPFV     | 99CJXX | PK8077105930800                | 96    | 2.4           | 2.0                   | 3.2                        | 3.2                   | 96            | 250            | 2S                     | 6400                    | Advanced | 1,024             | 512 GB                                        | -                                      | ✓                                      |
| 6731E                                  | SRPFY     | 99CJZ2 | PK8077105931100                | 96    | 2.2           | 1.9                   | 3.1                        | 3.1                   | 96            | 250            | 1S                     | 5600                    | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6710E                                  | SRPG2     | 99CJZ6 | PK8077105931300                | 64    | 2.4           | 2.0                   | 3.2                        | 3.2                   | 96            | 205            | 2S                     | 5600                    | Advanced | 1,024             | 512 GB                                        | -                                      | ✓                                      |

# Intel® Xeon® 6900P-Series Processors: UCC Production SKUs

| SKU               | Spec Code | MM#    | Ordering Code/<br>Product Code | CORES | BASE<br>(GHz) | ALL CORE<br>TURBO<br>(GHz) | Max<br>TURBO<br>(GHz) | CACHE<br>(MB) | TDP<br>(Watts) | Maximum<br>Scalability | DDR5<br>Memory<br>Speed | MRDIMM<br>Memory<br>Speed | RAS      | TDX<br>Keys Count | Intel SGX<br>Enclave<br>Capacity<br>(Per CPU) | Long life<br>reliability<br>(10 years) | Long life<br>availability<br>(7 years) |
|-------------------|-----------|--------|--------------------------------|-------|---------------|----------------------------|-----------------------|---------------|----------------|------------------------|-------------------------|---------------------------|----------|-------------------|-----------------------------------------------|----------------------------------------|----------------------------------------|
| PERFORMANCE CORES |           |        |                                |       |               |                            |                       |               |                |                        |                         |                           |          |                   |                                               |                                        |                                        |
| 6980P             | SRPL2     | 99CKX8 | PK8072006023100                | 128   | 2.0           | 3.2                        | 3.9                   | 504           | 500            | 2S                     | 6400                    | 8800                      | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6979P             | SRPKZ     | 99CKX7 | PK8072006023000                | 120   | 2.1           | 3.2                        | 3.9                   | 504           | 500            | 2S                     | 6400                    | 8800                      | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6972P             | SRPKY     | 99CKX6 | PK8072006022900                | 96    | 2.4           | 3.5                        | 3.9                   | 480           | 500            | 2S                     | 6400                    | 8800                      | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6960P             | SRPKX     | 99CKX4 | PK8072006022800                | 72    | 2.7           | 3.8                        | 3.9                   | 432           | 500            | 2S                     | 6400                    | 8800                      | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6952P             | SRQ6Q     | 99CM84 | PK8072006151500                | 96    | 2.1           | 3.2                        | 3.9                   | 480           | 400            | 2S                     | 6400                    | 8800                      | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |
| 6944P             | SRVUS     | 99D4K9 | PK8072006410200                | 72    | 1.8           | 3.1                        | 3.9                   | 432           | 350            | 2S                     | 6400                    | NA                        | Advanced | 1,024             | 512 GB                                        | -                                      | -                                      |

# Intel® Xeon® 6700P-Series Processors: XCC Production SKUs

| SKU   | Spec Code | MM#    | Ordering Code/<br>Product Code | CORES | BASE (GHz) | ALL CORE TURBO (GHz) | Max TURBO (GHz) | Frequency Modes                                                                        | CACHE (MB) | TDP (Watts) | Maximum Scalability | DDR5 Memory Speed | MRDIMM Memory Speed | RAS      | TDX Keys Count | Intel SGX Enclave Capacity (Per CPU) | Long life reliability (10 year) | Long life availability (7 years) |
|-------|-----------|--------|--------------------------------|-------|------------|----------------------|-----------------|----------------------------------------------------------------------------------------|------------|-------------|---------------------|-------------------|---------------------|----------|----------------|--------------------------------------|---------------------------------|----------------------------------|
| 6787P | SRV5E     | 99CN3X | PK8072006269800                | 86    | 2.0        | 3.2                  | 3.8             | Server                                                                                 | 336        | 350         | 2S                  | 6400              | 8000                | Advanced | 2,048          | 512 GB                               | -                               | -                                |
| 6767P | SRV5F     | 99CN3Z | PK8072006269900                | 64    | 2.4        | 3.6                  | 3.9             | Server (default),<br>Compute:<br>(64C/350W 2.8/3.5/3.9)                                | 336        | 350         | 2S                  | 6400              | 8000                | Advanced | 2,048          | 512 GB                               | -                               | -                                |
| 6747P | SRVEZ     | 99CND1 | PK8072006305000                | 48    | 2.7        | 3.8                  | 3.9             | Server (default),<br>Compute (48C/330W 3.1/3.8/3.9)                                    | 288        | 330         | 2S                  | 6400              | 8000                | Advanced | 2,048          | 512 GB                               | -                               | -                                |
| 6760P | SRV5G     | 99CN40 | PK8072006270000                | 64    | 2.2        | 3.4                  | 3.8             | Server (default),<br>Compute (64C/330W 2.6/3.4/3.8),<br>Compute (64C/250W 2.0/2.9/3.6) | 320        | 330         | 2S                  | 6400              | -                   | Advanced | 1,024          | 128 GB                               | -                               | -                                |
| 6740P | SRV5H     | 99CN41 | PK8072006270100                | 48    | 2.1        | 3.3                  | 3.8             | Server                                                                                 | 288        | 270         | 2S                  | 6400              | -                   | Advanced | 1,024          | 128 GB                               | -                               | Yes                              |
| 6781P | SRV5J     | 99CN42 | PK8072006270200                | 80    | 2.0        | 3.2                  | 3.8             | Server (default),<br>Network (80C/350W 2.1/3.2/3.8),<br>Compute (80C/350W 2.5/3.2/3.8) | 336        | 350         | 1S                  | 6400              | 8000                | Advanced | 1,024          | 128 GB                               | -                               | Yes                              |
| 6761P | SRV5L     | 99CN44 | PK8072006270400                | 64    | 2.5        | 3.6                  | 3.9             | Server                                                                                 | 336        | 350         | 1S                  | 6400              | 8000                | Advanced | 1,024          | 128 GB                               | -                               | -                                |
| 6741P | SRVEY     | 99CND0 | PK802006304900                 | 48    | 2.5        | 3.7                  | 3.8             | Server                                                                                 | 288        | 300         | 1S                  | 6400              | -                   | Advanced | 1,024          | 128 GB                               | -                               | -                                |
| 6788P | SRV5N     | 99CN46 | PK8072006270600                | 86    | 2.0        | 3.2                  | 3.8             | Server                                                                                 | 336        | 350         | 8S, xNC             | 6400              | -                   | Advanced | 1,024          | 512 GB                               | -                               | -                                |
| 6768P | SRV5P     | 99CN47 | PK8072006270700                | 64    | 2.4        | 3.6                  | 3.9             | Server                                                                                 | 336        | 330         | 8S, xNC             | 6400              | -                   | Advanced | 1,024          | 512 GB                               | -                               | -                                |
| 6730P | SRV5R     | 99CN49 | PK8072006270900                | 32    | 2.5        | 3.6                  | 3.8             | Server                                                                                 | 288        | 250         | 2S                  | 6400              | -                   | Advanced | 2,048          | 512GB                                | -                               | -                                |
| 6745P | SRWPA     | 99D5TH | PK8072006455200                | 32    | 3.1        | 4.1                  | 4.3             | Server<br>Compute (32C/300W 3.6/4.1/4.3)                                               | 336        | 300         | 2S                  | 6400              | -                   | Advanced | 2,048          | 512 GB                               | -                               | -                                |

- Max turbo frequencies are achieved when the number of active cores is less than or equal to half the number of supported cores. As the number of active cores increases, the achievable turbo frequency decreases. The frequencies remain the same for the range of active cores specified in column "Number of Active Cores."
- E-core processor SKUs turbo frequency is not dependent on the number of active cores. This was done purposefully to minimize end-customer performance variability specifically on E-core processors.

# Intel® Xeon® 6500P/6700P-Series Processors: HCC Production SKUs

| SKU   | Spec Code | MM#    | Ordering Code/<br>Product Code | CORES | BASE Freq | ALL CORE | Max core turbo | Frequency Modes                                             | CACHE | TDP | Maximum Scalability | DDR5 Memory | RAS      | TDX  | Intel SGX | Long life reliability (10 year) | Long life availability (7 years) |
|-------|-----------|--------|--------------------------------|-------|-----------|----------|----------------|-------------------------------------------------------------|-------|-----|---------------------|-------------|----------|------|-----------|---------------------------------|----------------------------------|
| 6530P | SRVNP     | 99DIG2 | PK8072006347400                | 32    | 2.300     | 3.700    | 4.1            | Server (Default)<br>Compute Mode - (32C/225W) 2.8/3.7/4.1   | 144   | 225 | 2S                  | 6400        | Advanced | 1024 | 128GB     | -                               | Yes                              |
| 6520P | SRVNQ     | 99DIG3 | PK8072006347500                | 24    | 2.400     | 3.400    | 4              | Server (Default)<br>Compute Mode - (24C/210W) 2.8/3.4/4.0   | 144   | 210 | 2S                  | 6400        | Advanced | 1024 | 128GB     | Yes                             | Yes                              |
| 6731P | SRVNR     | 99DIG4 | PK8072006347600                | 32    | 2.500     | 3.900    | 4.1            | Server (Default)<br>Compute Mode - (32C/245W) – 3.0/3.9/4.1 | 144   | 245 | 1S                  | 6400        | Advanced | 1024 | 128GB     | -                               | Yes                              |
| 6521P | SRVNS     | 99DIG5 | PK8072006347700                | 24    | 2.600     | 4.100    | 4.1            | Server                                                      | 144   | 225 | 1S                  | 6400        | Advanced | 1024 | 128GB     | -                               | Yes                              |
| 6748P | SRVNT     | 99DIG6 | PK8072006347800                | 48    | 2.500     | 3.800    | 4.1            | Server                                                      | 192   | 300 | 4s_8s               | 6400        | Advanced | 1024 | 512GB     | -                               | -                                |
| 6738P | SRVNU     | 99DIG7 | PK8072006347900                | 32    | 2.900     | 4.100    | 4.2            | Server                                                      | 144   | 270 | 4s_8s               | 6400        | Advanced | 1024 | 512GB     | -                               | -                                |
| 6736P | SRVNW     | 99DIG9 | PK8072006348100                | 36    | 2.000     | 3.400    | 4.1            | Server (Default)<br>Compute Mode - (36C/205W)-2.5/3.4/4.1   | 144   | 205 | 2S                  | 6400        | Advanced | 2048 | 512GB     | -                               | Yes                              |
| 6527P | SRVNY     | 99DIGC | PK8072006348300                | 24    | 3.000     | 4.200    | 4.2            | Server                                                      | 144   | 255 | 2S                  | 6400        | Advanced | 2048 | 512GB     | -                               | -                                |
| 6737P | SRVNZ     | 99DIGD | PK8072006348400                | 32    | 2.900     | 4.000    | 4.0            | Server                                                      | 144   | 270 | 2S                  | 6400        | Advanced | 2048 | 512GB     | -                               | -                                |
| 6728P | SRVP3     | 99DIGG | PK8072006348601                | 24    | 2.700     | 3.900    | 4.1            | Server (Default)<br>Server Mode- (24c/185W)-2.4/3.8/4.1     | 144   | 210 | 4s_8s               | 6400        | Advanced | 1024 | 512GB     | -                               | -                                |

- Max turbo frequencies are achieved when the number of active cores is less than or equal to half the number of supported cores. As the number of active cores increases, the achievable turbo frequency decreases. The frequencies remain the same for the range of active cores specified in column “Number of Active Cores.”
- E-core processor SKUs turbo frequency is not dependent on the number of active cores. This was done purposefully to minimize end-customer performance variability specifically on E-core processors.

# Intel® Xeon® 6500P/6700P-Series Processors: LCC Production SKUs

| SKU   | Spec Code | MM#    | Ordering Code/<br>Product Code | CORES | BASE Freq | ALL CORE | Max core turbo | Frequency Modes                                   | CACHE | TDP | Maximum Scalability | DDR5 Memory | RAS      | TDX  | Intel SGX | Long life reliability (10 year) | Long life availability (7 years) |
|-------|-----------|--------|--------------------------------|-------|-----------|----------|----------------|---------------------------------------------------|-------|-----|---------------------|-------------|----------|------|-----------|---------------------------------|----------------------------------|
| 6517P | SRVU4     | 99D4HC | PK8072006398400                | 16    | 3.200     | 4.000    | 4.2            | Server                                            | 72    | 190 | 2S                  | 6400        | Advanced | 2048 | 512GB     | -                               | Yes                              |
| 6507P | SRVU5     | 99D4HD | PK8072006398500                | 8     | 3.500     | 4.300    | 4.3            | Server                                            | 48    | 150 | 2S                  | 6400        | Advanced | 2048 | 512GB     | -                               | -                                |
| 6515P | SRVU6     | 99D4HF | PK8072006398600                | 16    | 2.300     | 3.800    | 3.8            | Server                                            | 72    | 150 | 2S                  | 6400        | Advanced | 1024 | 128GB     | Yes                             | Yes                              |
| 6505P | SRVU7     | 99D4HG | PK8072006398700                | 12    | 2.200     | 3.900    | 4.1            | Server                                            | 48    | 150 | 2S                  | 6400        | Advanced | 1024 | 128GB     | -                               | Yes                              |
| 6511P | SRVU9     | 99D4HH | PK8072006398800                | 16    | 2.300     | 4.100    | 4.2            | Server-default<br>Server Mode 8c/150W-3.0/4.3/4.3 | 72    | 150 | 1S                  | 6400        | Advanced | 1024 | 128GB     | -                               | -                                |
| 6724P | SRVUA     | 99D4HJ | PK8072006398900                | 16    | 3.600     | 4.200    | 4.3            | Server                                            | 72    | 210 | 8S                  | 6400        | Advanced | 1024 | 512GB     | -                               | -                                |
| 6714P | SRVUC     | 99D4HK | PK8072006399000                | 8     | 4.000     | 4.300    | 4.3            | Server                                            | 48    | 165 | 8S                  | 6400        | Advanced | 1024 | 512GB     | -                               | -                                |

- Max turbo frequencies are achieved when the number of active cores is less than or equal to half the number of supported cores. As the number of active cores increases, the achievable turbo frequency decreases. The frequencies remain the same for the range of active cores specified in column “Number of Active Cores.”
- E-core processor SKUs turbo frequency is not dependent on the number of active cores. This was done purposefully to minimize end-customer performance variability specifically on E-core processors.



# Intel Xeon 600 Processors

## Granite Rapids W

Download the public Intel Xeon 600 Processors  
Platform Brief at [intel.com](https://www.intel.com)



# Intel Xeon 600 Processors for the Edge

formerly codenamed Granite Rapids W

Intel Xeon 600 processors deliver a significant leap in performance and expanded platform capabilities that meet the needs of Edge workloads.

## Featured Intel Xeon 600 Processor Use Cases for the Edge



Video Analytics



Test and Measurement



Health Screening



Automation

### Proven Intel Xeon Architecture

- Up to 86 P-Cores
- Up to 8 Channels & 4TB Memory
- Up to DDR5-6400 / DDR5-8000 (MCR)

### I/O and Connectivity

- Up to 128 CPU PCIe 5.0 Lanes+ 8L (DMI)
- 24 PCH PCIe\* 4.0 lanes
- 5 USB3 20G / 10 USB3 10G Ports, 1 or 2.5Gb Ethernet LAN
- Integrated WiFi6E and Discrete WiFi7
- Advanced Storage Support, 8x Chipset SATA

### Turbo, vPro and Sleep States

- Overclocking and Turbo Boost
- S3, S4, S5, DeepSx Sleep States
- Intel® vPro Enterprise support



# Intel Xeon 600 Processors for the Edge

Delivering the power of Intel Xeon Processors into a scalable, performance edge design

## New CPU Cores

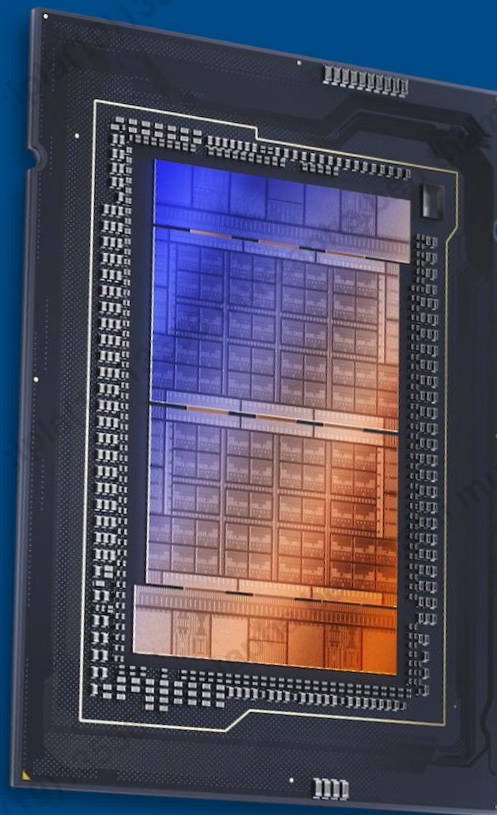
- New Redwood Cove+ P-Core
- Up to 86 P-Cores

## Advanced Storage Support

- VROC, VMD and RAID
- CPU NVMe & 8x Chipset SATA

## Latest Connectivity

- Integrated Wi-Fi 6E
- Discrete Wi-Fi 7



## New Chipset & Platform I/O

- 24 Chipset PCIe 4.0 Lanes
- 5 USB3 20G / 10 USB3 10G Ports
- Up to 128 CPU PCIe 5.0 Lanes

## Flexible Memory

- Up to 8 Channels & 4TB Memory
- Standard, 3DS & Monument Creek RDIMM
- Up to DDR5-6400 / DDR5-8000 (MCR)

## Updated Security

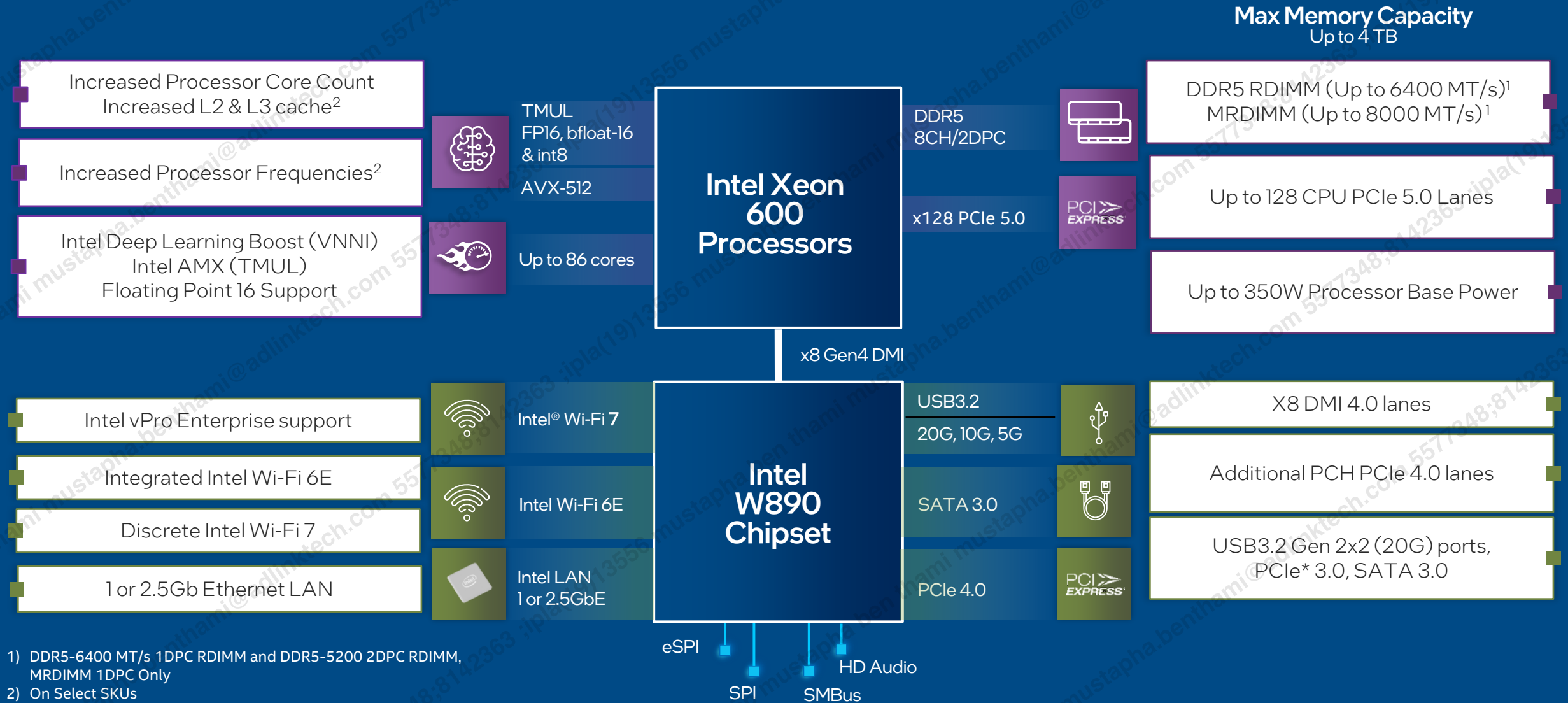
- Intel® VT-rp (previously HLAT)
- Intel® Total Memory Encryption – Multi Key



# Intel Xeon 600 Processors for the Edge Overview

formerly codenamed Granite Rapids W

Designed for scalable performance edge designs



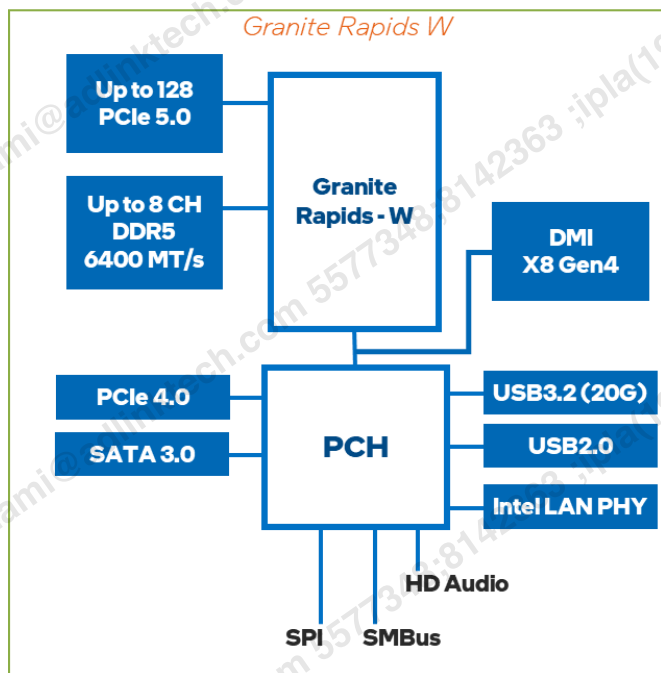




# Intel Xeon 600 Processors for the Edge

formerly codenamed Granite Rapids W

Intel Xeon 600 processors deliver a significant leap in performance and expanded platform capabilities for the Edge.



GNR Server and GNR W CPUs are NOT cross compatible  
GNR W CPUs will not boot in a Birch Stream platform and vice versa

### Microsoft\* Windows client OS & Linux Supported

1. Legacy boot not supported for Windows\*10, Windows\*11 and Linux. Customers should work with their BIOS vendors for enabling/validating legacy BIOS features.
2. Linux supported by Intel via the upstreaming of Intel Linux\* drivers to the Linux Open-Source Community. Adoption into individual Linux distributions is dependent upon the OS vendor.

In accordance with Microsoft's\* Windows OS support policy

### Proven Intel Xeon Architecture

- Up to 86 P-Cores
- Up to 8 Channels & 4TB Memory
- Up to DDR5-6400 / DDR5-8000 (MCR)

### IO and Connectivity

- Up to 128 CPU PCIe 5.0 Lanes+ 8L (DMI)
- 24 PCH PCIe\* 4.0 lanes
- 5 USB3 20G / 10 USB3 10G Ports, 1 or 2.5Gb Ethernet LAN
- Integrated WiFi6E and Discrete WiFi7
- Advanced Storage Support, 8x Chipset SATA

### Turbo, vPro and Sleep States

- Overclocking and Turbo Boost
- S3, S4, S5, DeepSx Sleep States
- Intel® vPro Enterprise support



Intel Xeon 600 processors includes intuitive numeric levels to signal relative performance among the full SKU stack

## Internal Codenames

## External Performance Tiers

## Relative Performance



Intel Xeon 690 processor

*Premium*  
*Maximum performance*

Intel Xeon 670 processor

*Best*  
*Enhanced performance*

Intel Xeon 650 processor

*Better*  
*Essential performance*

Intel Xeon 630 processor

*Good*  
*Entry-level performance*

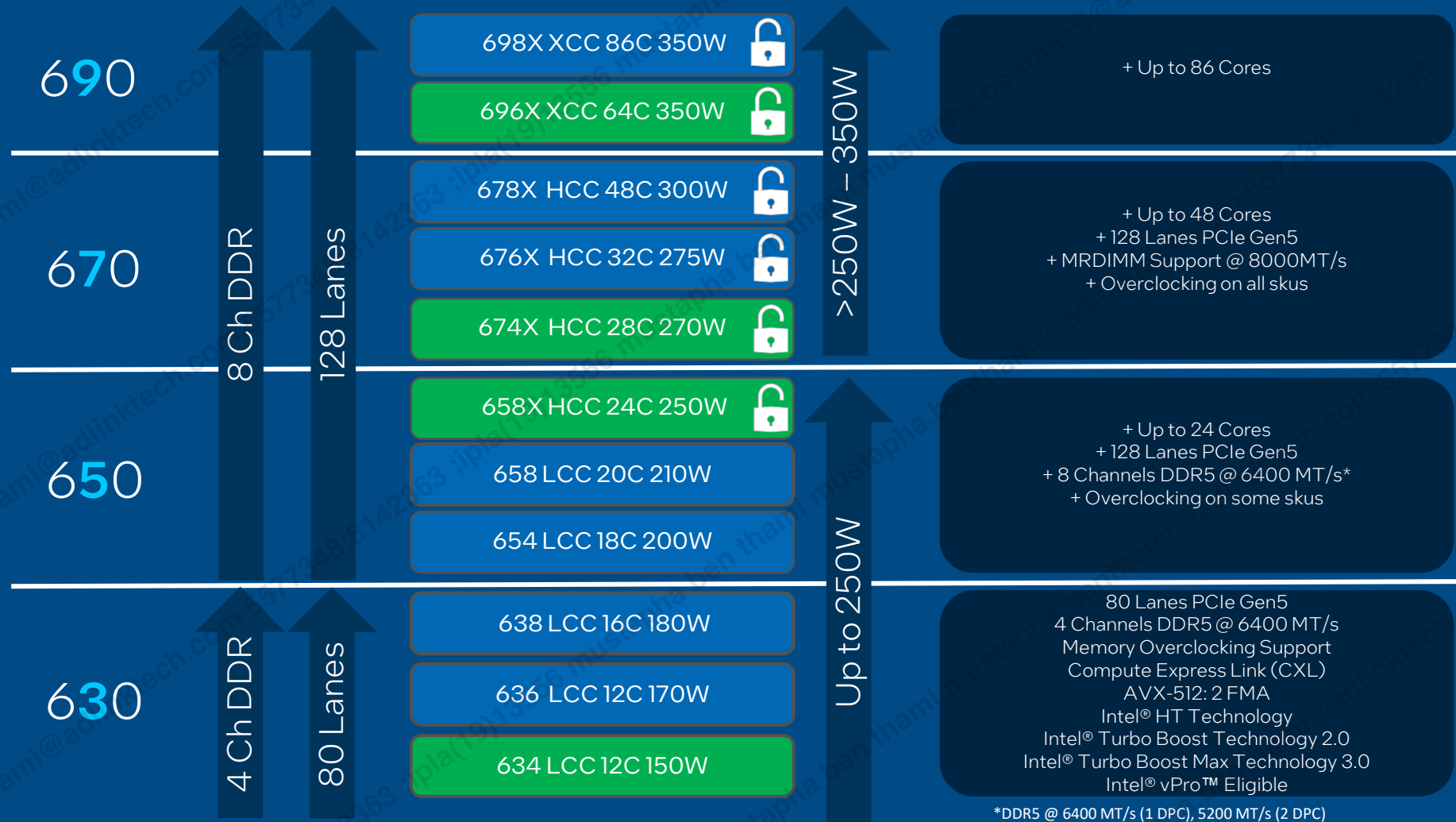


# Intel Xeon 600 Processor SKUs

formerly codenamed Granite Rapids W

Unlocked for  
overclocking

Indicates SKU will offer up to  
7 Years of Product Availability<sup>1</sup>



<sup>1</sup> Intel does not commit or guarantee product availability.

Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support. Please view the "Hardware Availability and Technical Support Lifecycle" slide, available in this content package, for additional details, or contact your Intel representative for additional information.



# Intel Xeon 600 Processors Edge Support

- Select SKUs with up to 7 Years of product availability<sup>1</sup>
- Extensive design collateral and technical support
- BKC releases included
- Microsoft Windows client OS & Linux Supported
- Smoke test for WinServer. Existing BKC works for server OS as well.
- Boards and samples will be provided
- Priority design review and IPS support
  - Questions can span client and edge design collateral

<sup>1</sup> Intel does not commit or guarantee product availability.

Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support. Please view the "Hardware Availability and Technical Support Lifecycle" slide, available in this content package, for additional details, or contact your Intel representative for additional information.



# Future Intel Xeon 6300 Processors

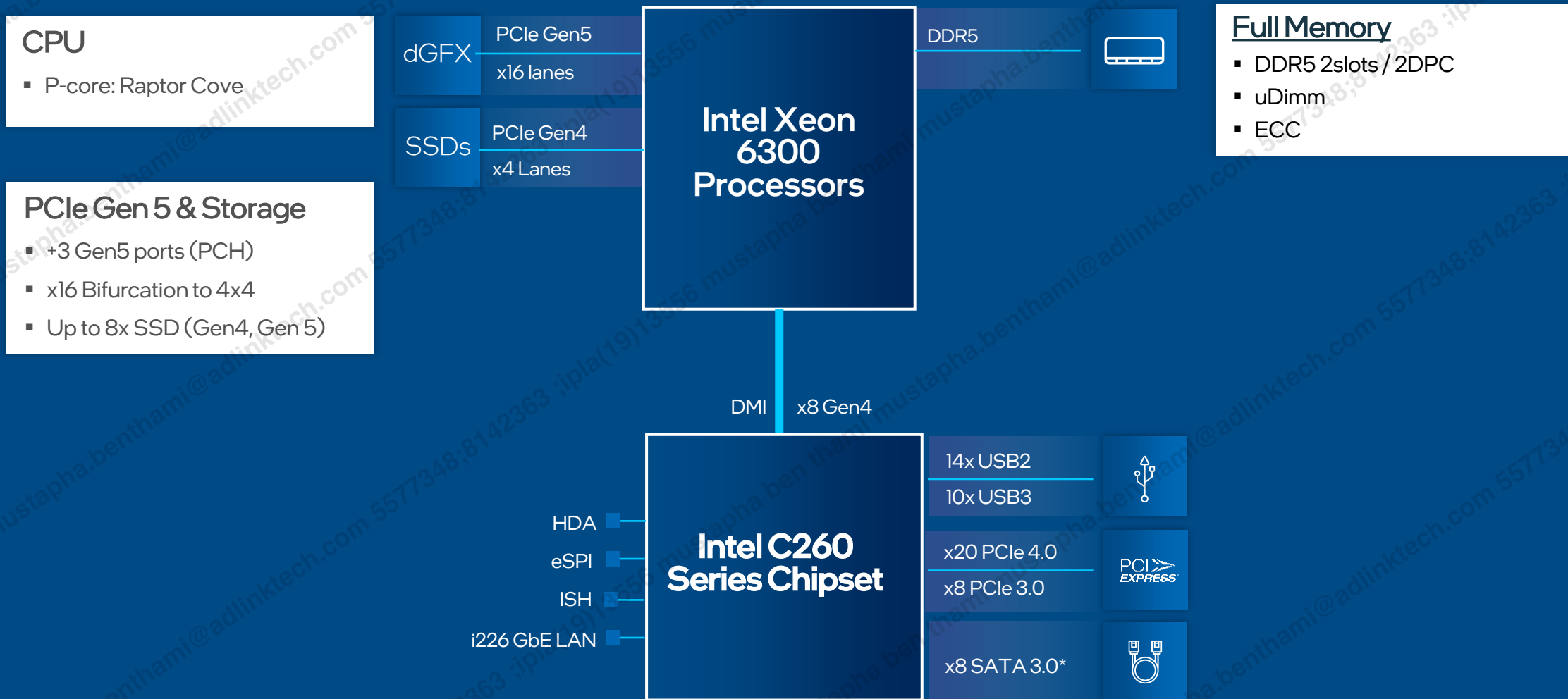
## Bartlett Lake 12P on the Catlow Platform



Access the full Catlow Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 754474



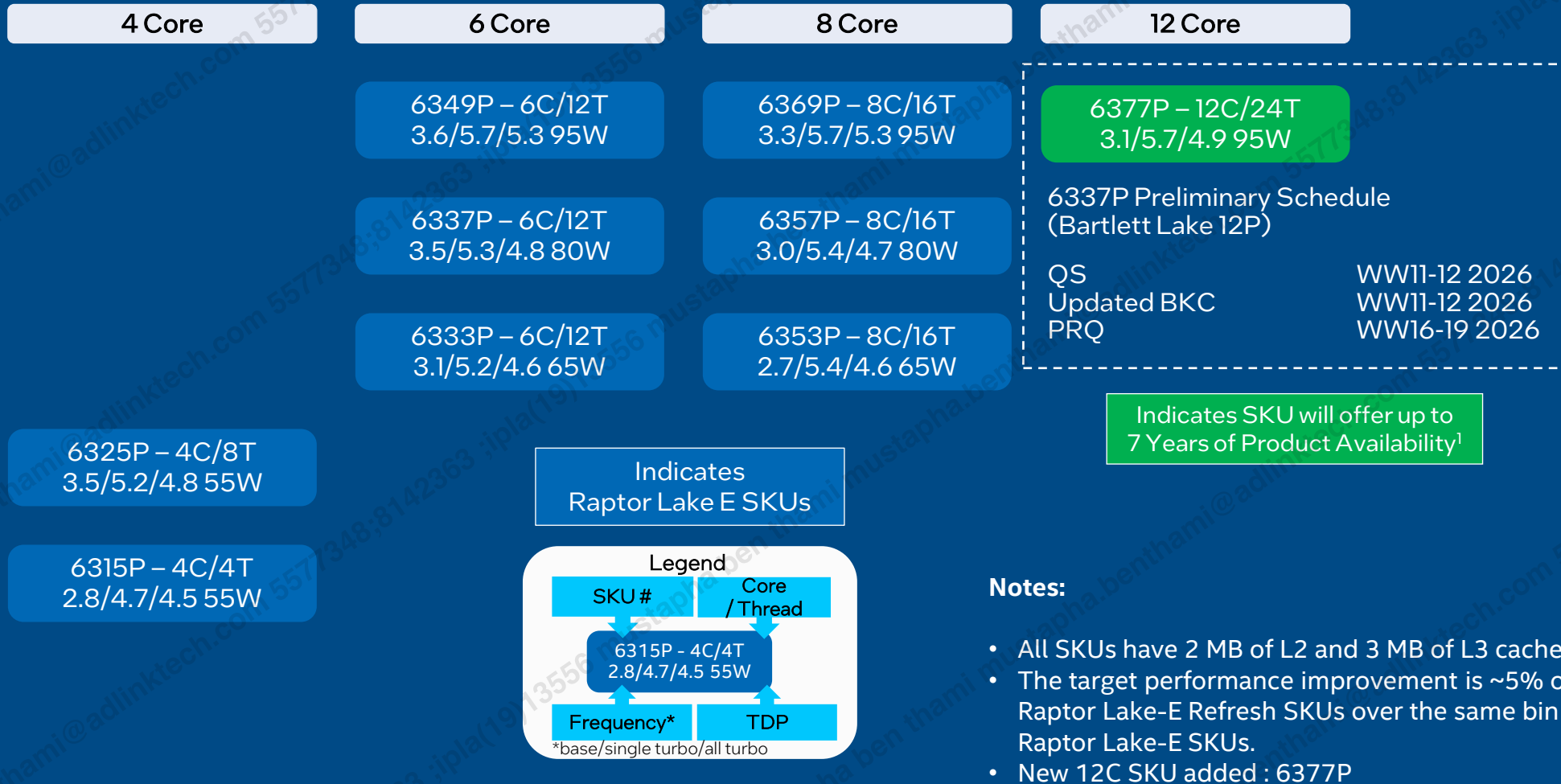
# Intel Xeon 6300 Processors Overview



\*8 out of the x12 PCIe 4.0 lanes can be x8 SATA 3.0



# Intel Xeon 6300 Processor SKUs



<sup>1</sup> Intel does not commit or guarantee product availability.

Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support. Please view the "Hardware Availability and Technical Support Lifecycle" slide, available in this content package, for additional details, or contact your Intel representative for additional information.

# Future Intel Xeon Processors

## Nova Lake E on the Dunlow Platform



Access the full Dunlow Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 855297





# Nova Lake E on the Dunlow Platform for the Edge **Overview**

Future Intel Xeon Processors

Designed for entry performance edge designs with integrated AI



## Ultimate Performance & Efficiency

Up to 1.3-1.6x higher NVL-E 8 P-core vs Xeon 6369P<sup>1</sup>

Up to 2.0-2.5x higher NVL-E 16 P-core vs Xeon 6369P<sup>1</sup>

Up to 1.5-1.7x higher NVL-E 16 E-core vs Xeon 6369P<sup>1</sup>

Up to 2.5-3.2x higher NVL-E 32 E-core vs Xeon 6369P<sup>1</sup>

## Integrated Graphics Support

Introduce new Xe3/3P Graphics w/ 4-deep systolic  
XE3P Media/Display

## Most Advanced xPUs and Pro Media Support

Up to 200+ platform TOPS, NPU up to 70 TOPs

Professional codecs, unmatched software enablement

**Biggest platform update in 15 years with combination of performance, power efficiency, and AI**

Note:

1. Pre-production projections subject to further testing. (Xeon 6369P is 8P-core 95W)

2. Xeon 6369P measured for SPECrate2017\_int\_base; NVL-E estimated using same compiler for projected SIR performance improvement



# Nova Lake E on the Dunlow Platform for the Edge **Overview**

Future Intel Xeon Processors

Designed for entry performance edge designs with integrated AI

## CPU

- P-core: Coyote Cove
- E-core: Arctic Wolf

## Graphics

- Xe3 Graphics w/ 4-deep systolic
- Xe3P Media/Display

## PCIe Gen 5 & Storage

- +3 Gen5 ports (PCH)
- x16 Bifurcation to 4x4
- Up to 8x SSD (Gen4, Gen 5)

dGFX PCIe Gen5  
x16 lanes

SSDs Up to 2 x4  
PCIe Gen5

## Nova Lake E

CPU

GPU

NPU

DDR5

DP2.1, HDMI 2.1

DMI x4 Gen5

## Intel CXXX Series Chipset (NVL)

HDA

eSPI

ISH

i226 GbE LAN

14x USB2

10x USB3

x12 PCIe 5.0

x12 PCIe 4.0\*

x8 SATA 3.0\*

**Max Memory Capacity**  
Up to 256GB

## Full Memory

- DDR5 2slots / 2DPC
- uDimm
- ECC

## Display

- x2 Dedicated Display

## NPU

- NPU 6.0
- Windows AI support

\*8 out of the x12 PCIe 4.0 lanes can be x8 SATA 3.0



# Nova Lake E on the Dunlow Platform for the Edge Preliminary SKU Structure

Future Intel Xeon Processors

Designed for entry performance edge designs with integrated AI

## E-Core Only SKUs

E-core only  
with integrated  
NPU

32 E-cores  
95-125W

16 E-cores  
55-65W

4 E-cores  
25-35W

E-core SKUs with  
integrated NPU  
and Intel Xe GPU

8 E-cores  
+ 12 Xe GPU\*\*  
65W

8 E-cores  
65W

\*\*12 Xe, up to 192EU

## P-Core Only SKUs

P-core SKUs  
with integrated  
NPU only

16 P-cores  
95-125W

12 P-cores  
95-125W

8 P-cores  
55-65W

6 P-cores  
25-35W

4 P-cores  
25-35W

P-core SKUs with  
integrated NPU  
and Intel Xe GPU

16 P-cores  
95-125W

12 P-cores  
95-125W

8 P-cores  
95W-125W

6 P-cores  
55-65W

4 P-cores  
55-65W

PRELIMINARY and subject to change without notice.

| Nova Lake E    | Raptor Lake E Refresh | Projected SIR Performance Improvement* |
|----------------|-----------------------|----------------------------------------|
| 8 P-core 125W  | 8 P-core 95W          | 1.3-1.6x                               |
| 16 E-core 65W  | 8 P-core 95W          | 1.5-1.7x                               |
| 16 P-core 125W | 8 P-core 95W          | 2.0 - 2.5x                             |
| 32 E-core 125W | 8 P-core 95W          | 2.5-3.2x                               |

\*Estimate based on SPECrate2017\_int\_base

# Future Intel Xeon Processors

## Coral Rapids 8CH



Additional details on Coral Rapids 8CH will be made available later in 2026.  
For any immediate questions, please contact your Intel representative.



# Intel Core Ultra and Intel Core Processors for Efficiency Optimized AI and Mainstream Edge Designs

Latest gen features socketed SoC combining video, graphics, and AI acceleration in a BGA and LGA package, for maximum flexibility and build-to-order assembly





# Intel Core Ultra and Intel Core Processors for BGA-based Edge Designs

BUILT FOR THE EDGE



## Intel Core Ultra Processors (Series 2)

**PRODUCTION**  
ARROW LAKE H

- Platform compatible with prior Meteor Lake H designs
- New performance architecture supporting up to 14 cores
- LPDDR5x support up to 8400 MT/s, DDR5-6400
- Integrated GPU with Intel Arc graphics
- New XMV systolic arrays provide up to 77 TOPS on GPU alone
- Integrated NPU (Intel AI Boost) for dedicated AI acceleration
- PCIe 5.0, PCIe 4.0, USB 3.2 Gen 2x2 (20G), Thunderbolt™ 4, Integrated Wi-Fi 7, Discrete Wi-Fi 7



## Intel Core Processors (Series 2)

**PRODUCTION**  
RAPTOR LAKE H REFRESH

- Refresh of select Raptor Lake H-series SKUs
- Platform compatible with prior Alder Lake U/H and Raptor Lake U/H designs
- Increased processors and support for higher memory speeds



## Intel Core Ultra Processors (Series 2)

**PRODUCTION**  
ARROW LAKE U

- Platform compatible with prior Meteor Lake U designs
- New performance architecture supporting up to 14 cores
- LPDDR5x support up to 8400 MT/s, DDR5-6400
- Integrated GPU with Intel Arc graphics
- New XMV systolic arrays provide up to 77 TOPS on GPU alone
- Integrated NPU (Intel® AI Boost) for dedicated AI acceleration
- PCIe 5.0, PCIe 4.0, USB 3.2 Gen 2x2 (20G), Thunderbolt™ 4, Integrated Wi-Fi 7, Discrete Wi-Fi 7



## Intel Core Processors (Series 1)

**PRODUCTION**  
RAPTOR LAKE U REFRESH

- Refresh of select Raptor Lake U-series SKUs
- Platform compatible with prior Alder Lake U/H and Raptor Lake U/H designs
- Increased processors and support for higher memory speeds



## Intel Core Ultra Series 3 Processors

**PRODUCTION**  
PANTHER LAKE

- New performance architecture supporting up to 16 cores
- Industrial features: TCC, TSN, InBand ECC, Extended Temp, FuSa/FSEDP on select SKUs
- LPDDR5x support up to 8533 MT/s, DDR5 up to 7200 MT/s
- Integrated NPU 5.0 for dedicated AI acceleration with up to 3x performance in TOPS (compared to Arrow Lake H)
- Xe3 GPU architecture for up to 2x improvement (compared to Arrow Lake H)
- IPU7.5 with up to 3 concurrent MIPI cameras
- Ready to use camera module solutions
- Up to 20 PCIe lanes (x8 G4, x12 G5)
- Thunderbolt 4, Discrete Wi-Fi 7



## Future Intel Core Series 3 Processors

**IN DEVELOPMENT**  
WILDCAT LAKE

- New performance architecture supporting up to 6 cores
- Integrated NPU 50 for dedicated AI acceleration
- Xe3 GPU architecture with up to 64EUs, XMV
- LPDDR5x up to 6800 MT/s, DDR5 up to 6800 MT/s
- PCIe 4, Thunderbolt 4/USB 4.0
- Intel Partner Security Engine with SHA2/384/512 crypto acceleration
- Up to 3 display pipes



## Nova Lake BGA

**IN DEVELOPMENT**

- Performance hybrid architecture with new P core and E core
- LPDDR5x support up to 9600MHz, DDR5 support up to 8000 across all SKUs
- Intel Arc integrated graphics architecture provides entry to mid-range level discrete graphics performance
- Integrated NPU for dedicated AI acceleration with up to 50% performance improvement over PTL
- 200+ pTOPS AI inferencing
- New Integrated IPU8.0 architecture with MIPI camera interface for best in market image quality and noise reduction
- Ready to use camera module solutions
- PCIe 5 1x8 (NVL-U/H/HX), PCIe 4, USB3.2 Gen 2x1 (10G), eUSB2 w/ 2x BW, TBT 5 and/or 4 (40G), Discrete Wi-Fi 7 R2
- 24 PCIe lanes expandable to 44 lanes via IO Expansion. USB3.2 IO Expansion also available.



## Wildcat Lake Refresh

**IN DEVELOPMENT**

- New 8C and 6C SKUs
- Enhanced performance
- Support for Intel vPro technology

## Razor Lake BGA

**IN DEVELOPMENT**

- Platform compatible with Nova Lake BGA
- Enhanced performance vs. Nova Lake
- Support for I/O expansion options available on Nova Lake BGA
- Product Tuning for Reliability to support Embedded and Industrial use conditions at commercial temp
- Real time TCC/TSN (discrete) support
- Display features including Display lock, EDID, bezel correction, Gen Lock
- SRIOV in GPU
- Windows LTSC and Linux

Intel Edge Compass | Intel Confidential | CNDA Required | **Revision Date: 13 February 2026**

The information above is not an official POR document and may be different from other Intel divisions with similar products. Select features, highlighted above, are not supported on all SKUs. Dates, details and information are subject to change without notice. For the latest detailed schedule information, please refer to individual product gold decks, or contact your Intel representative. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (QRG) available on [rdc.intel.com](https://rdc.intel.com). No product or component can be absolutely secure.

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# Intel Core Ultra and Intel Core Processors for LGA-based Edge Designs

BUILT FOR THE EDGE



## Intel Core Ultra Processors (Series 2)

- New performance architecture with up-to 24 cores
- Improved integrated NPU performance
- Integrated GPU with Xe LPG architecture
- Up to DDR5-6400
- PCIe 5.0, PCIe 4.0, USB 3.2 Gen 2x2 (20G), Thunderbolt™ 4 Discrete
- Discrete Wi-Fi 6E and Wi-Fi 7

**PRODUCTION**  
ARROW LAKE S



## Intel Core Ultra 200S Plus Series Processors

- Performance enhancement of select "K" SKUs only

**PRODUCTION**  
ARROW LAKE S  
REFRESH



## Intel Core Processors (Series 2)

- Platform compatible with prior Alder Lake S and Raptor Lake S designs
- Supporting up to 24 cores (8 P-core, 16 E-core)
- Evaluating up to 12 P-core only SKU options
- Targeting increased ST/MT/AI performance compared to Raptor Lake S Refresh
- Integrated 2.5 GbE MAC with TSN support

**PRODUCTION**  
BARTLETT LAKE S



## Intel Core Processors (Series 2)

- Platform compatible with prior Alder Lake S and Raptor Lake S designs
- 12 P-core only SKU option
- Targeting increased ST/MT/AI performance compared to Raptor Lake S Refresh
- Integrated 2.5 GbE MAC with TSN support

**PRODUCTION**  
BARTLETT LAKE 12P



## Nova Lake S

**IN DEVELOPMENT**



- Newest performance hybrid design combining Performance cores with Efficient-cores supporting up to 52 cores
- New efficient integrated NPU6 architecture for dedicated AI acceleration with up to 5x performance improvement over ARL-S
- Integrated Thunderbolt 5
- DDR5 up to 8000MHz support
- Graphics with Xe3 LPG architecture, up to 2Xe on all SKUs, 4 Independent Displays
- New 12Xe integrated graphics SKU in planning to boost socketed Edge AI performance
- PCIe 5.0, PCIe 4.0, USB3.2 Gen 2x1/2x2 (10G/20G), Thunderbolt™ 5 Discrete, Discrete Wi-Fi 7(5G) w/ dual BT6.x



## Raptor Lake Next

**IN DEVELOPMENT**

- Refresh of select Raptor Lake S Refresh SKUs (Hybrid only)
- Enhanced performance

## Razor Lake S

**IN DEVELOPMENT**

- Platform compatible with Nova Lake LGA
- Enhanced performance vs. Nova Lake
- Support for I/O expansion options available on Nova Lake BGA
- Product Tuning for Reliability to support Embedded and Industrial use conditions at commercial temp
- Real time TCC/TSN (discrete) support
- Display features including Display lock, EDID, bezel correction, Gen Lock
- SRIOV in GPU
- Windows LTSC and Linux

Intel Edge Compass | Intel Confidential | CNDA Required | **Revision Date: 13 February 2026**

# Intel Core Ultra and Intel Core Processors for LGA-based Edge Designs





# Intel Core Ultra Processors (Series 2)

## Arrow Lake S



Access the full Arrow Lake S Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 821356



# Intel Core Ultra Processors (Series 2)

formerly codenamed Arrow Lake S

## Built for Edge

### Overview

- Intel® Core™ Ultra S-series Processor Platform with new P cores and new E cores
- Up to 24 Cores / Multi-Threaded performance.
- Integrated NPU and Thunderbolt
- Optimized for Network and Edge applications
- Intel vPro® platform eligible

### Improved Performance and I/O

- Newest performance hybrid design combining Performance cores with Efficient-cores supporting up to 24 cores
- Integrated NPU for dedicated AI acceleration
- Integrated Thunderbolt 4
- Supports Intel® 800 Series Chipset
- DDR5 up to 6400MHz support <sup>(1)</sup>
- Graphic with Xe LPG architecture, up to 4Xe Graphics Engines, 4 Independent Displays
- PCIe 5.0, PCIe 4.0, USB3.2 Gen 2x2 (20G), Discrete Wi-Fi 6E and Wi-Fi 7

### Network and Edge Differentiators

- Product availability up to 5 years <sup>(2)</sup>
- Mainstream SKUs
- Genlock
- Pipelock
- Lock Display
- Bezel Correction
- One board scalability
- Support for Microsoft Windows 11, Windows 11 IoT Enterprise 2024 LTSC
- Microsoft Hyper-V Hypervisor
- Ubuntu\* Linux\*
- KVM
- Intel® Slim Bootloader, UEFI BIOS

(1) Support for up to 6400MHz pending eco-system readiness of memory modules and Intel validation

(2) For component family introduction date and product availability details, roadmap is not reflective of exact launch granularity and timing.



# Intel Core Processors (Series 2) Platform Overview

formerly codenamed Arrow Lake S

## Built for the Edge

### 24-Core CPU

- Disaggregated Architecture
- P-core & E-core Architecture
- Core & Memory Overclocking Features

### Graphics

- XeLPG Graphics Architecture
- Display Features for Premium Content Support

### Software Instruction Set

- Intel Deep Learning Boost (VNNI, DP4A)

### Intel vPro

- NIST 800-88r1 compliant Remote Platform Erase/Local Platform Erase
- Excessive Temperature, Excessive Shock, and Sanitization event logging via Platform Service Record



### Max Memory Capacity

Up to 192 GB

### Full Memory

- DDR5 (Up to 6400MHz)<sup>1</sup>

### Thunderbolt / USB 4

- 2x Integrated Thunderbolt 4 ports<sup>2</sup>
- 80/120G via Discrete Thunderbolt 5

### NPU

- Integrated NPU
- ML & NN workloads

### Expanded I/O

- Up to 20 CPU PCIe\* 5.0 lanes<sup>2</sup>
- Increased Chipset PCIe\* 4.0 lanes

### Intel Wi-Fi

- Discrete Intel Wi-Fi 7 support
- Integrated Wi-Fi 6E supported (CNVi)



# Intel Core Processors (Series 2) SKUs

formerly codenamed Arrow Lake S

| Price Tier                                                                                          | Brand                                                                             | Mainstream (65W) <sup>1</sup>                                         | Low Power 'T' (35W) <sup>1</sup>                                       | Blue = New to Core S Platforms                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P2                                                                                                  |  | <b>285</b><br>24C (8+16) 24T 36M 4Xe <sup>6</sup> vPro <sup>2,3</sup> | <b>285T</b><br>24C (8+16) 24T 36M 4Xe <sup>6</sup> vPro <sup>2,3</sup> | Additional Capabilities for P2:<br>+4 E-Cores, +4 Threads, +6M L3 Cache,<br>+Intel® Thermal Velocity Boost <sup>4</sup> ,<br>+Intel® Adaptive Boost Technology                                                      |
| P1                                                                                                  |  | <b>265</b><br>20C (8+12) 20T 30M 4Xe <sup>6</sup> vPro <sup>2,3</sup> | <b>265T</b><br>20C (8+12) 20T 30M 4Xe <sup>6</sup> vPro <sup>2,3</sup> | Additional Capabilities for P1:<br>+2 P-Cores, +4 E-Cores, +6 Threads,<br>+6M L3 Cache, +DDR5-6400 <sup>5</sup> , +1Xe-core <sup>6</sup> ,<br>+Intel® Turbo Boost Max 3.0                                           |
| MS2                                                                                                 |  | <b>245</b><br>14C (6+8) 14T 24M 4Xe <sup>6</sup> vPro <sup>2,3</sup>  | <b>245T</b><br>14C (6+8) 14T 24M 4Xe <sup>6</sup> vPro <sup>2,3</sup>  | Additional Capabilities for MS2:<br>+4 E-Cores, +4 Threads, +4M L3 Cache,<br>+2Xe-core <sup>6</sup> , +ECC Memory Eligible <sup>3</sup><br>+Intel vPro® Eligible <sup>2</sup> ,                                     |
| MS0                                                                                                 |                                                                                   | <b>225</b><br>10C (6+4) 10T 20M 2Xe <sup>6</sup>                      | <b>225T</b><br>10C (6+4) 10T 20M 2Xe <sup>6</sup>                      | Base Capabilities for MS0:<br>6 P-Cores, 4 E-Cores, 10 Threads, 20M L3<br>Cache, Intel® Turbo Boost Technology 2.0,<br>2 Intel® Xe® LPG Graphics cores (Xe-cores <sup>6</sup> ),<br>TBT4/USB4, NPU & GNA, DDR5-5600 |
| Intel® Core™ i3 & Entry Intel® Processor price points<br>are supported with SKUs from Bartlett Lake |                                                                                   |                                                                       |                                                                        | <div>SKU Key:</div> <div>8P+16E CPU Tile</div> <div>6P+8E CPU Tile</div>                                                                                                                                            |

#### NOTES:

- (1) Processor Base Power specs correspond to reference thermal profiles.
- (2) Intel vPro® eligible when paired with an Intel® Q870 or W880 chipset.
- (3) ECC Memory eligible when paired with an Intel® W880 chipset.
- (4) Intel® Thermal Velocity Boost (Intel® TVB) not available with 35W.
- (5) Up to 6400 MT/s support pending ecosystem readiness of memory modules and Intel validation.
- (6) One X<sup>e</sup>-core represents 16 Execution Units (EU).

SKUs are subject to change without notice.





# Intel Core Ultra Processors (Series 2) SKUs for the Edge

formerly codenamed Arrow Lake S

| CPU Part Number*          | CPU Use Condition  | Validated Chipset | Processor Cores (P+E) <sup>1</sup> | Threads | Intel® Smart Cache (L3) | Processor base power | Single P-core Turbo Freq <sup>2</sup> | Single E-core Turbo Freq <sup>2</sup> | P-core Base Freq <sup>2</sup> | E-core Base Freq <sup>2</sup> | GFX EUs | ECC | Intel vPro® Platform | PEG Bifurcation | Premium IO |
|---------------------------|--------------------|-------------------|------------------------------------|---------|-------------------------|----------------------|---------------------------------------|---------------------------------------|-------------------------------|-------------------------------|---------|-----|----------------------|-----------------|------------|
| Intel® Core™ Ultra 9 285  | PC Client 5Y @ 30% | W880              | 24 (8+16)                          | 24      | 36MB                    | 65W                  | Up to 5.6 GHz                         | Up to 4.6 GHz                         | 2.5 GHz                       | 1.9 GHz                       | 64EUs   | Yes | Yes                  | Yes             | Yes        |
|                           |                    | Q870              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | Yes                  | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
| Intel® Core™ Ultra 9 285T | PC Client 5Y @ 30% | W880              | 24 (8+16)                          | 24      | 36MB                    | 35W                  | Up to 5.4 GHz                         | Up to 4.6 GHz                         | 1.4 GHz                       | 1.2 GHz                       | 64EUs   | Yes | Yes                  | Yes             | Yes        |
|                           |                    | Q870              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | Yes                  | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
|                           |                    | W880              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
| Intel® Core™ Ultra 7 265  | PC Client 5Y @ 30% | Q870              | 20 (8+12)                          | 20      | 30MB                    | 65W                  | Up to 5.3 GHz                         | Up to 4.6 GHz                         | 2.4 GHz                       | 1.8 GHz                       | 64EUs   | Yes | Yes                  | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | Yes                  | Yes             | Yes        |
|                           |                    | W880              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
| Intel® Core™ Ultra 7 265T | PC Client 5Y @ 30% | Q870              | 20 (8+12)                          | 20      | 30MB                    | 35W                  | Up to 5.3 GHz                         | Up to 4.6 GHz                         | 1.5 GHz                       | 1.2 GHz                       | 64EUs   | Yes | Yes                  | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | Yes                  | Yes             | Yes        |
|                           |                    | W880              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |

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

1. Processor cores listed first are the total number of cores in the processor followed by the number of Performance-cores and number of Efficient-cores in parentheses (P+E)
2. Efficient-core frequencies are lower to optimize power usage. 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.

\* CPU Part Numbers

P-cores = Performance-cores

E-cores = Efficient-cores

- Intel Core processors (Series 2), codenamed Arrow Lake S, are offered for up to 5 years availability. For extended availability of Intel Core processors (Series 2), codenamed Arrow Lake S, please contact your local Intel representative for Supplemental Product Support (SPS) consideration.
- SKUs are subject to change without notice.

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# Intel Core Ultra Processors (Series 2) SKUs for the Edge

formerly codenamed Arrow Lake S

| CPU Part Number*          | CPU Use Condition  | Validated Chipset | Processor Cores (P+E) <sup>1</sup> | Threads | Intel® Smart Cache (L3) | Processor base power | Single P-core Turbo Freq <sup>2</sup> | Single E-core Turbo Freq <sup>2</sup> | P-core Base Freq <sup>2</sup> | E-core Base Freq <sup>2</sup> | GFX EUs | ECC | Intel vPro® Platform | PEG Bifurcation | Premium IO |
|---------------------------|--------------------|-------------------|------------------------------------|---------|-------------------------|----------------------|---------------------------------------|---------------------------------------|-------------------------------|-------------------------------|---------|-----|----------------------|-----------------|------------|
| Intel® Core™ Ultra 5 245  | PC Client 5Y @ 30% | W880              | 14 (6+8)                           | 14      | 24MB                    | 65W                  | Up to 5.1 GHz                         | Up to 4.5 GHz                         | 3.5 GHz                       | 3.0 GHz                       | 48EU    | Yes | Yes                  | Yes             | Yes        |
|                           |                    | Q870              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | Yes                  | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
| Intel® Core™ Ultra 5 245T | PC Client 5Y @ 30% | W880              | 14 (6+8)                           | 14      | 24MB                    | 35W                  | Up to 5.1 GHz                         | Up to 4.5 GHz                         | 2.2 GHz                       | 1.7 GHz                       | 48EU    | Yes | Yes                  | Yes             | Yes        |
|                           |                    | Q870              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | Yes                  | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
| Intel® Core™ Ultra 5 225  | PC Client 5Y @ 30% | W880              | 10 (6+4)                           | 10      | 20MB                    | 65W                  | Up to 4.9 GHz                         | Up to 4.4 GHz                         | 3.3 GHz                       | 2.7 GHz                       | 32EU    | No  | No                   | Yes             | Yes        |
|                           |                    | Q870              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |
| Intel® Core™ Ultra 5 225T | PC Client 5Y @ 30% | W880              | 10 (6+4)                           | 10      | 20MB                    | 35W                  | Up to 4.9 GHz                         | Up to 4.4 GHz                         | 2.5 GHz                       | 1.9 GHz                       | 32EU    | No  | No                   | Yes             | Yes        |
|                           |                    | Q870              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | Yes             | Yes        |
|                           |                    | H810              |                                    |         |                         |                      |                                       |                                       |                               |                               |         | No  | No                   | No              | No         |

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

1. Processor cores listed first are the total number of cores in the processor followed by the number of Performance-cores and number of Efficient-cores in parentheses (P+E)

2. Efficient-core frequencies are lower to optimize power usage. 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.

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# Intel Core Processors (Series 2)

## Bartlett Lake S Processors and Bartlett Lake 12P Processor

Access the full Bartlett Lake S Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 827197



# Intel Core Processors (Series 2)

formerly codenamed Bartlett Lake S

Built for the Edge

## Overview

- Hybrid skus up to 24 Cores / 32 Threads<sup>1</sup> with Intel's latest generation performance hybrid architecture combining Performance-cores with Efficient-cores for environments where a balance between performance and power efficiency is crucial
- P-core only skus with up to 12 P-cores / 24 Threads suited for edge computing scenarios that are suited for edge computing scenarios that require high Single Threaded Performance
- Pin Compatible with Intel® Core™ Processors (14<sup>th</sup> Gen), 13<sup>th</sup> Gen and 12<sup>th</sup> Gen Intel Core Processors
- Intel vPro® platform eligible / PC Client Use Condition

## Improved Performance, I/O

- Hybrid skus combining with up to 8 Performance-cores (P-cores) and 16 Efficient-cores (E-cores) for up to 32 threads for outstanding Multi Threaded performance
- Performance Core Only (or P-core only) skus with up to 12 Performance-cores. Performance core (P-core) only SKUs are suited for edge computing scenarios that require high Single Threaded Performance**
- Targeting increased ST/MT/AI Performance compared to 14<sup>th</sup> Gen Intel® Core™ Processors (RPL-S Refresh)**
- DDR5-4800/DDR5-5600, DDR4-3200
- Up to Intel® UHD Graphics 770 driven by Xe Architecture, up to 4 Independent Displays
- PCIe 5.0, PCIe 4.0, USB3.2 Gen 2x2 (20G), Thunderbolt™ 4 Discrete, Discrete Wi-Fi 6E, Discrete Wi-Fi 7
- Integrated 2.5GbE MAC with TSN support and discrete Intel® Ethernet Controller I226 with TSN support

## Edge Differentiators

- Long product availability
- Real Time with TCC/TSN on all SKUs
- Genlock
- Pipelock
- Lock Display
- Bezel Correction
- Single root I/O virtualization
- One board scalability
- Windows\* 10 IoT Enterprise LTSC 2021, Windows 11 IoT Enterprise LTSC 2024, Windows Server 2025<sup>2</sup>
- Linux
- KVM and ACRN hypervisor (community support)
- Intel® Slim Bootloader, UEFI BIOS

<sup>1</sup> performance hybrid design on RPL-S combines up to 8 Performance-cores (P-cores) and up to 16 Efficient-cores (E-cores)

<sup>2</sup> On BTL-S P-core only skus with R680E

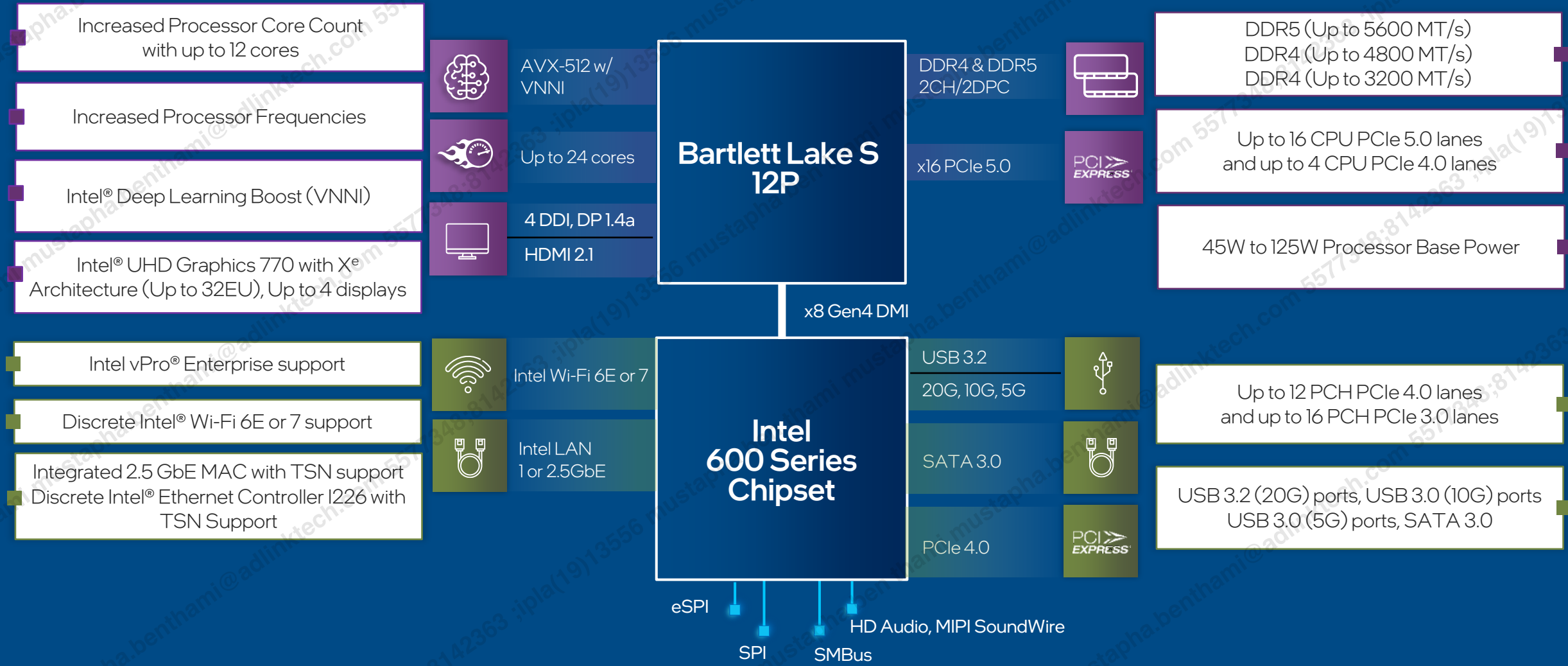
Intel may change availability of products and support at any time without notice. Not all features available on all SKUs. Please contact your Intel account rep for additional information.





# Intel Core Processors (Series 2) with P-cores

## Bartlett Lake S 12P Delivers Enhanced Performance and Value





# Intel Core Processors (Series 2) for the Edge

## Bartlett Lake S

- 1 Hybrid line for maximum performance with +5% ST and +8% MT vs. 14<sup>th</sup> Gen.
- 2 P-Core line for deterministic performance & Win Server support.
- 3 +4 E-Cores at the Core 7 for Hybrid
- 4 125W P-Core only stack
- 5 Drop-in compatible for 12<sup>th</sup>, 13<sup>th</sup> & 14<sup>th</sup> Gen edge designs
- 6 Full SKU stack: Core 9/7 to Intel Processor
- 7 Supply thru 2035<sup>1</sup>: Extends life of in-market edge designs
- 8 12 P-Cores – highest P-Core count of any client CPU.
- 9 8 P-Cores at Core 5

### 1 Hybrid SKU Stack<sup>1</sup> P-cores + E-cores

| 6               |                      | 65W                  | 45W                  | 35W                  |
|-----------------|----------------------|----------------------|----------------------|----------------------|
| intel CORE 9    |                      |                      |                      | 8P+16E<br>32 Threads |
| intel CORE 7    | 8P+16E<br>32 Threads | 8P+16E<br>32 Threads | 8P+12E<br>28 Threads |                      |
| intel CORE 5    | 6P+8E<br>20 Threads  | 6P+8E<br>20 Threads  | 6P+8E<br>20 Threads  |                      |
| intel CORE 5    |                      |                      |                      | 6P+0E<br>12 Threads  |
| intel CORE 3    | 4P+0E<br>8 Threads   | 4P+0E<br>8 Threads   | 4P+0E<br>8 Threads   |                      |
| intel processor | 2P+0E<br>4 Threads   | 2P+0E<br>4 Threads   | 2P+0E<br>4 Threads   |                      |

### 2 P-Core Only SKU Stack<sup>1</sup>

| 4 | 125W                 | 65W                  | 45W                  | vs. 14 <sup>th</sup> Gen |
|---|----------------------|----------------------|----------------------|--------------------------|
| 8 | 12P+0E<br>24 Threads | 12P+0E<br>24 Threads | 12P+0E<br>24 Threads | +4 P-Cores               |
|   | 10P+0E<br>20 Threads | 10P+0E<br>20 Threads | 10P+0E<br>20 Threads | +2 P-Cores               |
| 9 | 8P+0E<br>16 Threads  | 8P+0E<br>16 Threads  | 8P+0E<br>16 Threads  | +2 P-Cores               |
|   |                      | 6P+0E<br>12 Threads  | 6P+0E<br>12 Threads  |                          |
|   |                      | 4P+0E<br>8 Threads   | 4P+0E<br>8 Threads   | +100 MHz                 |
|   |                      | 2P+0E<br>4 Threads   | 2P+0E<br>4 Threads   |                          |

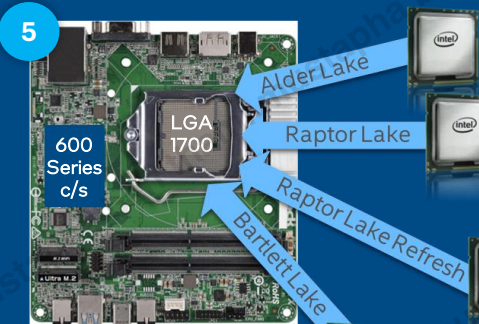
### Die Legend

|                      |        |
|----------------------|--------|
| Bartlett Lake S SKUs | 12P+0E |
| Prior Gen SKUs       | 12P+0E |

### More performance per \$ at every SKU level

drop-in compatible with prior-gen edge designs

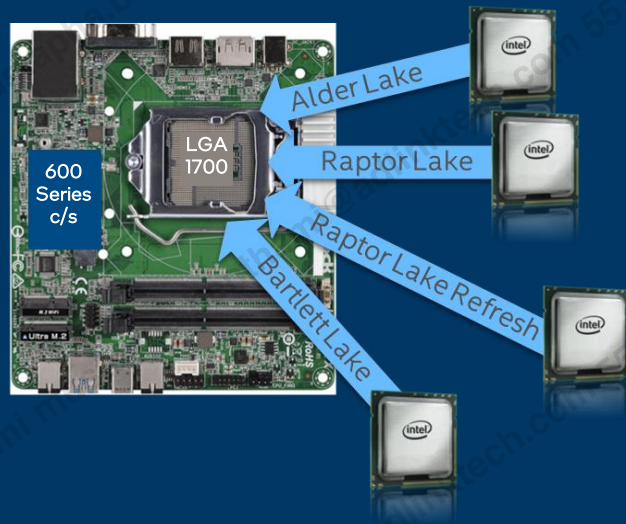
Alder Lake S (2022), Raptor Lake S (2023), Raptor Lake S Refresh (2024)



LGA = Socketed CPU Package

1 – Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Not all features available on all SKUs. Please contact your Intel account rep for additional information.

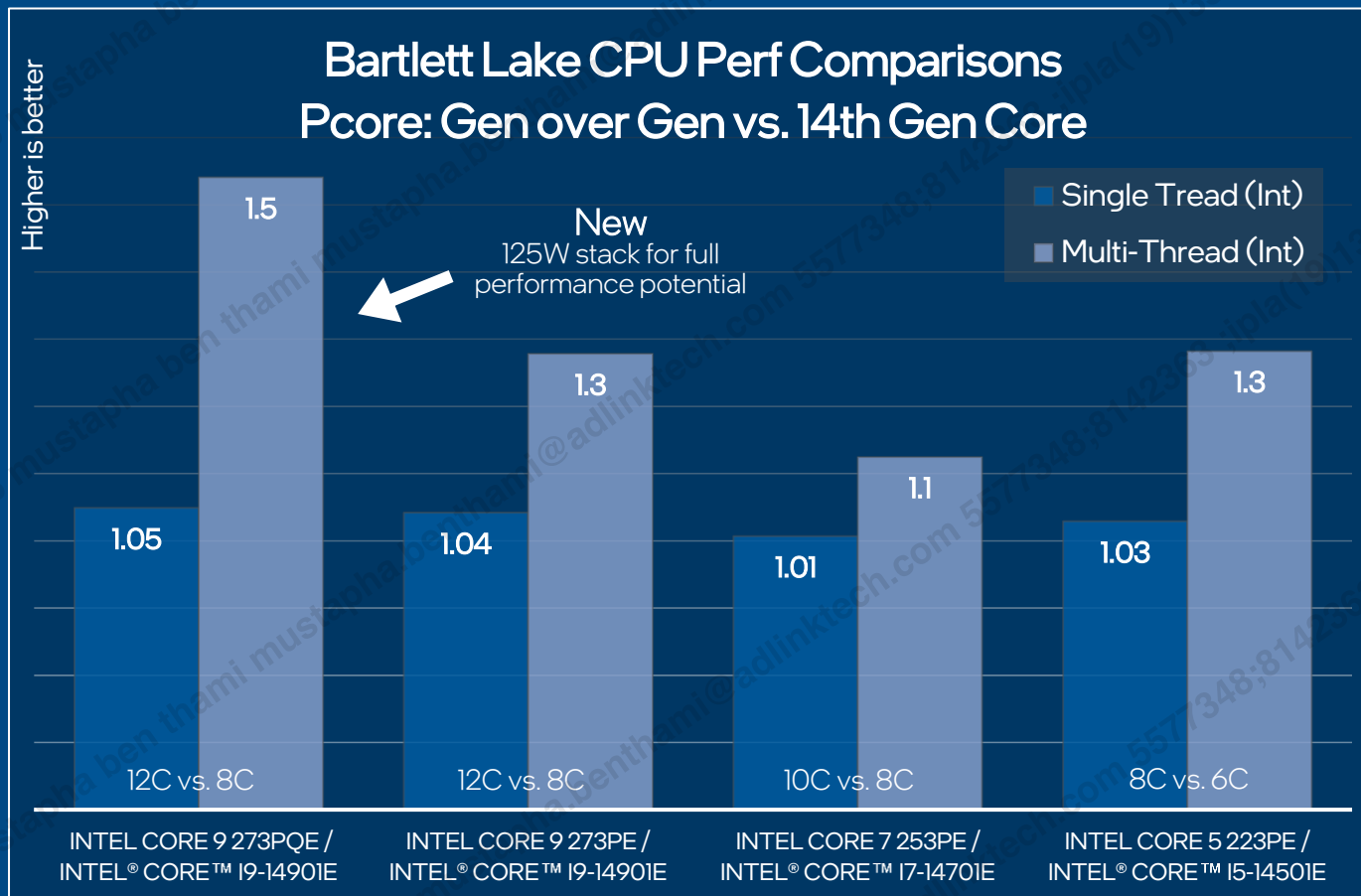
# P-core Only: Intel Core Processors (Series 2) Formerly codenamed Bartlett Lake 12P



## **New** Bartlett Lake 12P P-Core Only SKUs

- Up to 12 P-cores, 24 threads, available across multiple TDP configurations
- Drop-in compatible with prior-gen edge designs: Alder Lake S (2022), Raptor Lake S (2023), Raptor Lake S Refresh (2024)
- Product availability through 2035<sup>1</sup> extends life of in-market edge designs
- Performance Core Only (or P-core only) SKUs with up to 12 Performance-cores along with Hybrid (P-core and E-Core) SKUs.

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125W Bartlett Lake P-Core delivers MT performance gains up to 50% over RPL-S R P-Core

Performance varies by use, configuration and other factors. Learn more at [www.Intel.com/PerformanceIndex](http://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 Appendix for configuration details.



# Intel Core Processors (Series 2) Hybrid SKUs

## Bartlett Lake

| Brand          | Processor Number  | Processor Cores (P+E) <sup>1</sup> | Intel® Smart Cache | Processor Base Power | Single P-Core Turbo Freq. <sup>2</sup> | Single E-Core Turbo Freq. <sup>2</sup> | P-Core Base Freq. <sup>2</sup> | E-Core Base Freq. <sup>2</sup> | GFX Execution Units | Max DDR5 Freq | PEG Config       | vPro® Eligible <sup>3</sup> | ECC <sup>4</sup> | Video Decode Boxes |
|----------------|-------------------|------------------------------------|--------------------|----------------------|----------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------|---------------|------------------|-----------------------------|------------------|--------------------|
| Intel® Core™ 7 | 251E              | 24 (8+16)                          | 36 MB              | 65 W                 | 5.6 GHz                                | 4.4 GHz                                | 2.1 GHz                        | 1.6 GHz                        | 32                  | 5600 MHz      | 1x16+4,<br>2x8+4 | YES                         | YES              | 2                  |
| Intel® Core™ 7 | 251TE             | 24 (8+16)                          | 36 MB              | 45 W                 | 5.4 GHz                                | 3.9 GHz                                | 1.4 GHz                        | 1.0 GHz                        | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 221E              | 14 (6+8)                           | 24 MB              | 65 W                 | 5.2 GHz                                | 3.9 GHz                                | 2.7 GHz                        | 2.1 GHz                        | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 221TE             | 14 (6+8)                           | 24 MB              | 45 W                 | 5.0 GHz                                | 3.6 GHz                                | 1.8 GHz                        | 1.3 GHz                        | 32                  | 4800 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 211E              | 10 (6+4)                           | 20 MB              | 65 W                 | 4.9 GHz                                | 3.7 GHz                                | 2.7 GHz                        | 2.0 GHz                        | 24                  | 4800 MHz      |                  | No                          | YES              | 1                  |
| Intel® Core™ 5 | 211TE             | 10 (6+4)                           | 20 MB              | 45 W                 | 4.8 GHz                                | 3.4 GHz                                | 1.7 GHz                        | 1.3 GHz                        | 24                  | 4800 MHz      |                  | No                          | YES              | 1                  |
| Intel® Core™ 3 | 201E              | 4 (4+0)                            | 12 MB              | 60 W                 | 4.8 GHz                                | N/A                                    | 3.6 GHz                        | N/A                            | 24                  | 4800 MHz      |                  | No                          | YES              | 1                  |
| Intel® Core™ 3 | 201TE             | 4 (4+0)                            | 12 MB              | 45 W                 | 4.6 GHz                                | N/A                                    | 2.9 GHz                        | N/A                            | 24                  | 4800 MHz      |                  | No                          | YES              | 1                  |
| Intel® 300     | 300 <sup>5</sup>  | 2 (2+0)                            | 6 MB               | 46 W                 | 3.9 GHz                                | N/A                                    | 3.9 GHz                        | N/A                            | 16                  | 4800 MHz      |                  | No                          | YES              | 1                  |
| Intel® 300T    | 300T <sup>5</sup> | 2 (2+0)                            | 6 MB               | 35 W                 | 3.4 GHz                                | N/A                                    | 3.4 GHz                        | N/A                            | 16                  | 4800 MHz      |                  | No                          | YES              | 1                  |

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

1. Processor cores listed first are the total number of cores in the processor followed by the number of Performance-cores and number of Efficient-cores in parentheses (P+E)
2. Turbo frequencies cited are the maximum possible and may be lower. The frequency of cores and core types varies by workload, power consumption and other factors. Efficient-core frequencies are lower to optimize power usage. Visit <https://www.intel.com/content/www/us/en/support/articles/000007359/processors/intel-core-processors.html> for more information.
3. vPro requires an eligible chipset (Q670E, Q670, R680E, W680)
4. ECC requires an eligible chipset (R680E, W680)
5. Intel® 300 and Intel® 300T are Raptor Lake Refresh SKUs that have been extended to the Bartlett Lake platform.

SKUs are subject to change without notice.





# Intel Core Processors (Series 2) P-Core Only SKUs

## Bartlett Lake 12P

| Brand          | Processor Number | Processor Cores (P+E) <sup>1</sup> | Intel® Smart Cache | Processor Base Power | Single P-Core Turbo Freq <sup>2</sup> | All P-Core Turbo Freq <sup>2</sup> | P-Core Base Freq | GFX Execution Units | Max DDR5 Freq | PEG Config       | vPro® Eligible <sup>3</sup> | ECC <sup>4</sup> | Video Decode Boxes |
|----------------|------------------|------------------------------------|--------------------|----------------------|---------------------------------------|------------------------------------|------------------|---------------------|---------------|------------------|-----------------------------|------------------|--------------------|
| Intel® Core™ 9 | 273PQE           | 12 (12+0)                          | 36 MB              | 125W                 | 5.9 GHz                               | 5.3 GHz                            | 3.4 GHz          | 32                  | 5600 MHz      | 1x16+4,<br>2x8+4 | YES                         | YES              | 2                  |
| Intel® Core™ 9 | 273PE            | 12 (12+0)                          | 36 MB              | 65W                  | 5.7 GHz                               | 5.2 GHz                            | 2.3 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 9 | 273PTE           | 12 (12+0)                          | 36 MB              | 45W                  | 5.5 GHz                               | 4.6 GHz                            | 1.4 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 7 | 253PQE           | 10 (10+0)                          | 33 MB              | 125W                 | 5.7 GHz                               | 5.3 GHz                            | 3.5 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 7 | 253PE            | 10 (10+0)                          | 33 MB              | 65W                  | 5.5 GHz                               | 5.1 GHz                            | 2.5 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 7 | 253PTE           | 10 (10+0)                          | 33 MB              | 45W                  | 5.4 GHz                               | 4.6 GHz                            | 1.8 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 223PQE           | 8 (8+0)                            | 24 MB              | 125W                 | 5.5 GHz                               | 5.3 GHz                            | 4.0 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 223PE            | 8 (8+0)                            | 24 MB              | 65W                  | 5.4 GHz                               | 4.8 GHz                            | 2.9 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 223PTE           | 8 (8+0)                            | 24 MB              | 45W                  | 5.4 GHz                               | 4.8 GHz                            | 2.3 GHz          | 32                  | 5600 MHz      |                  | YES                         | YES              | 2                  |
| Intel® Core™ 5 | 213PE            | 8 (8+0)                            | 24 MB              | 65W                  | 5.2 GHz                               | 4.6 GHz                            | 2.7 GHz          | 24                  | 4800 MHz      |                  | NO                          | YES              | 1                  |
| Intel® Core™ 5 | 213PTE           | 8 (8+0)                            | 24 MB              | 45W                  | 5.2 GHz                               | 4.6 GHz                            | 2.1 GHz          | 24                  | 4800 MHz      |                  | NO                          | YES              | 1                  |

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

1. Processor cores listed first are the total number of cores in the processor followed by the number of Performance-cores and number of Efficient-cores in parentheses (P+E)
2. Turbo frequencies cited are the maximum possible and may be lower. The frequency of cores and core types varies by workload, power consumption and other factors. Efficient-core frequencies are lower to optimize power usage. Visit <https://www.intel.com/content/www/us/en/support/articles/000007359/processors/intel-core-processors.html> for more information.
3. vPro requires an eligible chipset (Q670E, Q670, R680E, W680)
4. ECC requires an eligible chipset (R680E, W680)

SKUs are subject to change without notice.

# Comparing Bartlett Lake S and Arrow Lake S

## Intel Core 200E-series Processors and Intel Core Ultra 200-series Processors



### Bartlett Lake S

Intel Core 200-series Processors

Mainstream and value-focused edge designs



### Arrow Lake S

Intel Core Ultra 200-series Processors

AI performance and premium-focused edge designs

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                         | Up to 24 cores (Hybrid: 8 P-cores, 16 E-cores, 251E SKU), up to 5.6 GHz <sup>1</sup><br>Up to 12 cores (P-core only: 12 P-cores, 273PQE SKU), up to 6.0 GHz <sup>1</sup>                                                                                                                                                                                                                                                                                    | Up to 24 cores (Hybrid: 8 P-cores, 16 E-cores, 285 SKU) up to 5.6 GHz <sup>1</sup>                                                                                                                                                                                                                                                                                              |
| Integrated GPU              | Intel Graphics with up to 32 GPU cores                                                                                                                                                                                                                                                                                                                                                                                                                      | Intel Graphics with up to 4 Xe-cores (64 GPU cores)                                                                                                                                                                                                                                                                                                                             |
| Integrated AI               | Intel Graphics with up to 32 GPU cores<br>Intel Deep Learning Boost                                                                                                                                                                                                                                                                                                                                                                                         | Integrated NPU<br>Intel Graphics with up to 64 GPU cores<br>Intel Deep Learning Boost                                                                                                                                                                                                                                                                                           |
| PCIe                        | CPU: Up to 16x PCIe 5.0 and 4x PCIe 4.0<br>PCH: Up to 12x PCIe 4.0 and up to 16x PCIe 3.0                                                                                                                                                                                                                                                                                                                                                                   | CPU: Up to 20x PCIe 5.0 and 4x PCIe 4.0<br>PCH: Up to 24x PCIe 4.0                                                                                                                                                                                                                                                                                                              |
| Edge OS Support             | Windows Server 2025, Windows 10/11 IoT Enterprise LTSC, Linux                                                                                                                                                                                                                                                                                                                                                                                               | Windows 10/11 IoT Enterprise LTSC, Linux                                                                                                                                                                                                                                                                                                                                        |
| Supply Availability         | Up to 10 years <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                 | Up to 5 years <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                      |
| Market Availability         | Q1 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Available today                                                                                                                                                                                                                                                                                                                                                                 |
| Available SKU Pricing Tiers | Intel Core 9, Core 7, Core 5, Core 3 and Intel Processors <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                      | Intel Core Ultra 9, Ultra 7, and Ultra 5 Processors                                                                                                                                                                                                                                                                                                                             |
| Example Use Cases           | <ul style="list-style-type: none"><li>▪ Head node for multi-GPU Edge AI and media systems</li><li>▪ Edge server/gateway</li><li>▪ Industrial: Automation controller, basic machine vision, fleet management</li><li>▪ Retail: Entry POS/Signage/Kiosk, retail analytics</li><li>▪ Healthcare: Medical imaging, radiology workstation</li><li>▪ Life Science: Live cell imaging, genomic sequencer</li><li>▪ Edu: Classroom desktop virtualization</li></ul> | <ul style="list-style-type: none"><li>▪ Industrial: AI-vision quality control</li><li>▪ Retail: AI-assisted self-checkout, loss prevention, smart inventory</li><li>▪ Smart city: Network video recorder, video summarization</li><li>▪ Healthcare: AI-assisted medical imaging</li><li>▪ Life Science: AI-assisted digital pathology</li><li>▪ Edu: Smart whiteboard</li></ul> |

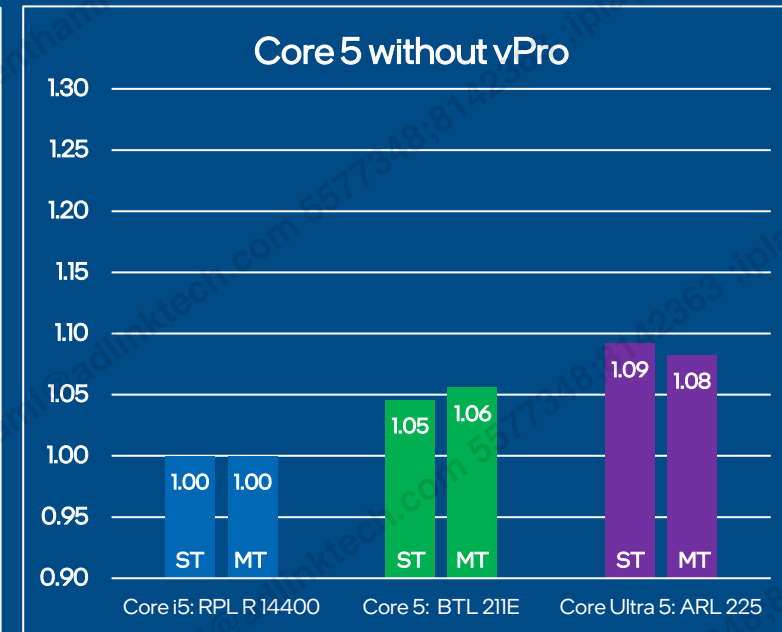
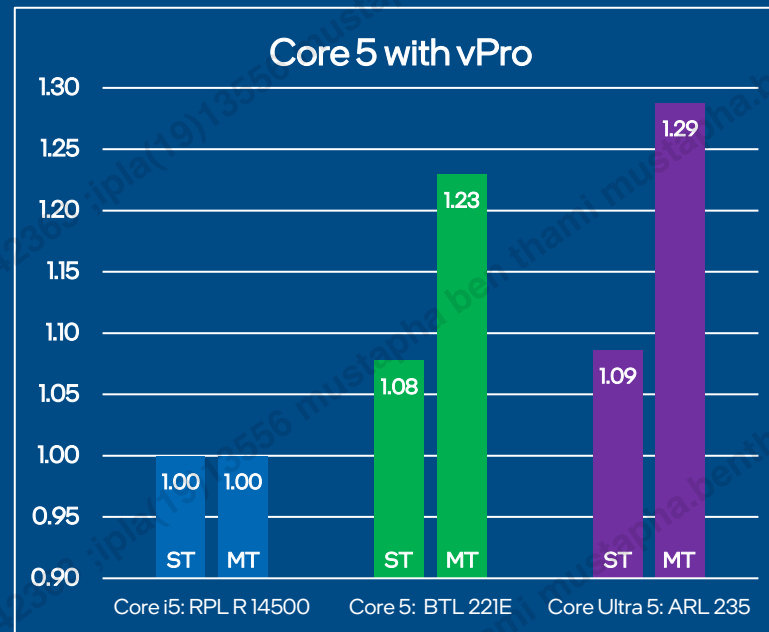
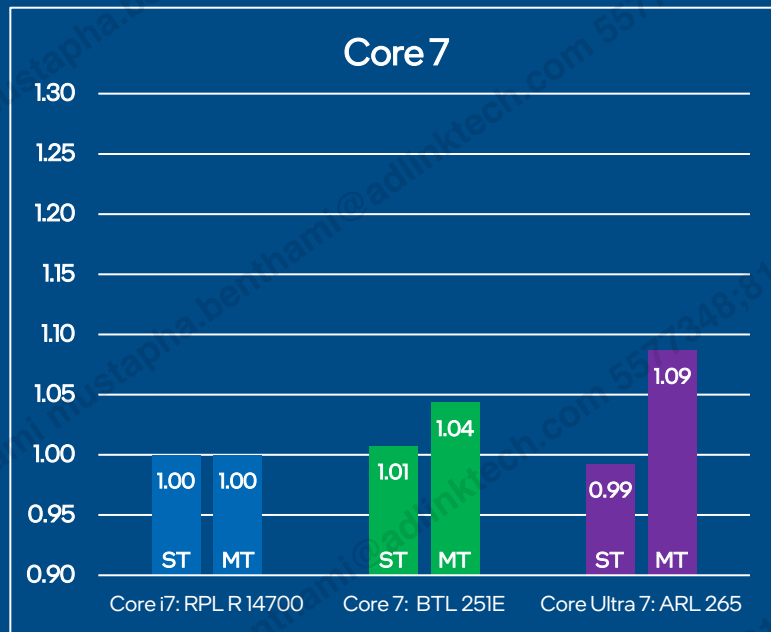
1 Max Turbo Frequency

2 Intel does not commit or guarantee product availability. Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support.

# Bartlett Lake S (Hybrid SKU) vs. Arrow Lake S (Hybrid SKU)

## Intel Core & Core Ultra Processors (Series 2)

CPU Performance Gain vs. 14<sup>th</sup> Gen Raptor Lake S Refresh on SPEC CPU® 2017



Raptor Lake S  
Refresh

Bartlett Lake S

Arrow Lake S

ST = Single Thread, MT = Multi Thread

Performance varies by use, configuration and other factors. Learn more at [www.intel.com/PerformanceIndex](https://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 Appendix for configuration details.

The information shared here is subject to change without notice and should not be viewed as an official POR or product schedule document. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software, and software support services, through standard EOL/PDN processes.

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# Future Intel Core Ultra and Intel Core Processors

## Nova Lake S

Access the Nova Lake S LGA Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 862459





# Intel's Biggest LGA Platform Update for the Edge



## Nova Lake S

Now available with up to 200+ TOPS<sup>1</sup>  
(previously up to 100 TOPS<sup>1</sup>)

### New Nova Lake S 12Xe GPU SKUs

Delivering efficiency-optimized AI performance for Edge LGA designs with new integrated 12Xe Arc GPU, new NPU, and new CPU AI acceleration



### Multi-Generation Compatibility

Simplified LGA roadmap for long-term design reuse and design ROI



Targeting up-to three generations of pin-compatibility

### Drop-In Compatibility for Intel Xeon Processors

Utilize select future Nova Lake E (Dunlow) Xeon SKUs on Nova Lake S designs and beyond



Offering a wide-range of performance, brands and pricing

**Delivering a powerful combination of edge performance, power efficiency, robust I/O and incredible AI capabilities**

1 – Target TOPS (int8) for illustration purposes, will vary by specific workload and configuration, more detailed workload performance numbers will be provided. Branding for Nova Lake is preliminary. Additional detail will be shared at a future date. Details shared here are preliminary and subject to change without notice.



# Introducing Nova Lake S 16C (12Xe) for the Edge



**intel ai**

**Industry leading AI and GPU performance in a socketed design**

**Planning for a 2H 2027 launch**

## **Peak XPU Performance (Over 200\* Total TOPS)**

CPU: Supports up to 16 cores

GPU: Features up to 12 Xe 4-deep XMX systolic cores, delivering >110+ TOPS in int8 performance

NPU: Offers over 70 TOPS in int8

## **Discrete GPU Replacement**

Provides a solution for entry to mid-range discrete GPU replacement across various deployed AI end-to-end workloads

Up to 256GB DDR5 memory

## **Base Platform Compatibility**

Fully socket and pin compatible with the NVL-S platform family configurations

Advanced power delivery design ensures full compatibility across all SKU variations

\*Board design requires a 2-phase GT Voltage Regulator and GPU load-line target of 4mΩ to achieve max performance

# Nova Lake for the Edge – Design Options Overview

## BGA/Chip Down Edge Designs



BGA/chip-down  
COM-HPC design example

### Razor Lake AX

Formerly codenamed Nova Lake AX

Disruptive AI and media performance  
Unique BGA design, arriving late 2027

### Nova Lake HX 28C

### Nova Lake H 12Xe

### Nova Lake H 16C

### Nova Lake 8C

### Nova Lake 6C

Pin and Package  
Compatible BGA Design

Socket scalability in a pin-compatible  
package

From top-to-bottom of the SKU stack, one design  
can support any SKU choice

### Optional I/O Expander Chipset

Utilized in LGA/Socket design; increases I/O  
scalability up to 44 PCIe lanes for BGA/chip down  
designs connecting via PCIe

### Flexible TDPs

As low as 12W with configurable TDP

**1.25X** CPU performance boost<sup>1</sup>

**200+ TOPS<sup>3</sup>**

## LGA/Socketed Edge Designs



LGA/chip-down  
design example

### Nova Lake E Xeon (Dunlow)

### Nova Lake S 52C

### Nova Lake S 28C

### Nova Lake S 12Xe

### Nova Lake S 16C

### Nova Lake S 8C<sup>4</sup>

Pin and Package  
Compatible LGA Design

### Support for Intel Xeon Processors

Utilize select future NVL E (Dunlow) Xeon SKUs  
on Nova Lake S designs and beyond

**NEW**

### No Compromise I/O and Connectivity

48 PCIe lanes (36x PCIe 5), 2x bandwidth with  
integrated Thunderbolt 5, Wi-Fi 7

### New NVL S 12Xe: Intel's first "big graphics" for Edge LGA designs

Up to 12Xe 4-deep XMV systolic cores

**NEW**

### Flexible TDPs

As low as 35W with configurable TDP and  
**exploring cTDPs as low as 20W (on select SKUs)**

**1.2X** Single threaded  
performance  
boost<sup>2</sup>

**1.7X** Multi-threaded  
performance  
boost<sup>2</sup>

**200+ TOPS<sup>3</sup>**

**NEW**

**Nova Lake is a game changer platform for the Edge. Seamless scalability, breakthrough AI performance, and robust I/O.**

Branding for Nova Lake is preliminary. Additional details will be shared at a future date. The information shared here is subject to change without notice and should not be viewed as an official POR or product schedule document. 1 – Estimated. Nova Lake HX vs. Arrow Lake HX. 2 – Estimated. Nova Lake S vs. Arrow Lake S. 3 – Target TOPS (int8) for illustration purposes, will vary by specific workload and configuration, more detailed workload performance numbers will be provided. 4 – Core count scalable down to 6C.





# Nova Lake S for the Edge

Robust AI, Scalable Compute and Graphics, delivering up to ~200+ pTOPS for efficient AI designs

**Max Memory Capacity**  
Up to 256GB

## New CPU Architectures

- P-cores + E-cores + LPE-cores
- Coyote Cove Performance Cores
- Arctic Wolf Efficiency Cores

## Intel X<sup>e</sup>3 Graphics

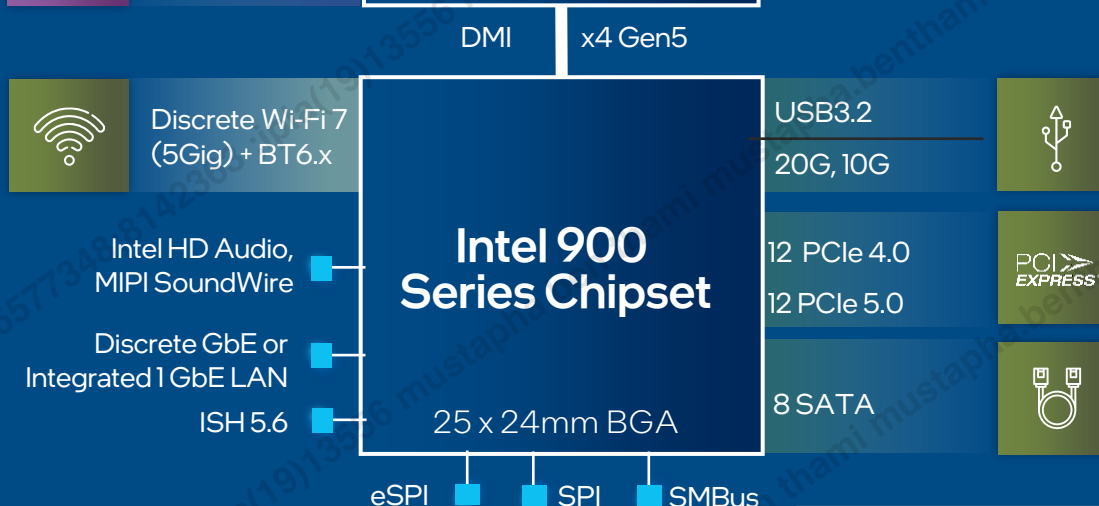
- Introducing new X<sup>e</sup>3 Architecture
- With 4-deep XMX Systolic

## Intel X<sup>e</sup>3P Media

- JPEG-XS decode
- Pro Codecs: DNx/VC-3 decode
- AV1 Pro Profile encode/decode

## Intel NPU 6

- New, Efficient NPU6 Arch
- 4 Tile, 70 TOPS
- Common NPU across NVL



\* Core Count/Xe3 Engine Ranges  
6-52C: 2 X<sup>e</sup>3  
16C: up to 12 X<sup>e</sup>3P

\*\* TDP Ranges  
20W - 65W TDP  
65W - 125W TDP  
175W+ TDP

## Memory

- Faster DDR5 up to 8.0GT/s 1DPC
- DDR5 CUDIMM/CSODIMM ECC

## Enhanced Processor I/O

- Up to 24 CPU PCIe 5.0 Lanes
- PCIe 5.0 3x8 support

## Thunderbolt 5

- 2 Integrated TBT 5 or 4 ports

## Intel Wi-Fi & BT (PCH)

- Integrated WiFi7 (5 Gig)
- Dual Bluetooth 6.x

## Expanded Chipset I/O

- Up to 12 PCIe 5, 12 PCIe 4 Lanes
- Up to 5 USB3 (20G)
- Up to 10 USB3 (10G)



# Future Intel Core Processors

## Raptor Lake Next

Raptor Lake Next will be a refresh of select Raptor Lake S Refresh SKUs (Hybrid architecture only).

Additional product information will be made available in a future Intel Edge Compass publication. For any immediate questions, please contact your Intel representative.



# Future Intel Core Ultra and Intel Core Processors

## Razor Lake S

Additional product information will be made available in a future Intel Edge Compass publication. For any immediate questions, please contact your Intel representative.



# Razor Lake S for the Edge **Product Targets**

- Razor Lake is the follow on to Nova Lake
- Enhanced performance vs Nova Lake
- Multi-generational compatibility builds on the foundation defined by Nova Lake
  - Razor Lake S is backward compatible to Nova Lake S and forward compatible to Future Lake S generation
  - Reference designs implemented on Nova Lake S can be reused for the Razor Lake S product family

Additional details will be shared at a future date. The information shared here is subject to change without notice.

# Intel Core Ultra and Intel Core Processors for BGA-based Edge Designs





# Intel Core Processors U (Series 1) & H (Series 2) Raptor Lake U & H Refresh



Access the full Raptor Lake U/H Refresh Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 730563



# Intel Core Processors (Series 1)

formerly codenamed Raptor Lake U Refresh

## Built for the Edge

### Overview

- Edge Platform with cTDP scaling 12W-28W
- BGA platform in Intel® Core™ Processors with Dynamic Scalable Architecture
- Improved performance over 13<sup>th</sup> Gen Intel® Core™ Mobile Processors (RPL-U)
- Optimized for Edge/IoT Media applications
- Intel vPro® Essentials eligible

### Improved Performance and I/O

- Hybrid architecture supporting up to 10 cores and 12 threads in a 2P+8E configuration for outstanding Multi Threaded performance in 15W power envelope
- Increased performance from higher P-Core and E-Core frequencies
- Increased memory speeds up to DDR5-5200, DDR4-3200, LPDDR5/x-6400 and LPDDR4x-4267
- Max memory capacity of 96GB
- 2 x4 PCIe 4.0 on CPU, x12 PCIe 3.0 on PCH
- Intel® Graphics with up to 96 EUs, 4 Independent Displays (up to 8K), Pipe Lock (Display Synchronization) & SRIOV
- Four ports integrated USB4/Thunderbolt™ 4
- Discrete Intel® Wi-Fi 6E and Intel® Wi-Fi 7

### Edge Differentiators

- Extended product availability
- Piplinck video synchronization for Windows, 2x2 Display w/EDID management, Bezel Correction
- Linux Kernel Overlays, VxWorks\* and Windows\* 10 IoT Enterprise 2021 LTSC, Celadon (Android) in VM (Community support)
- KVM and ACRN Virtualization (Community support)
- Slim Bootloader
- Intel® In-band Manageability
- Real Time with TCC and TSN on select SKUs



# Intel Core Processors (Series 2)

formerly codenamed Raptor Lake H Refresh

## Built for the Edge

### Overview

- Edge Platform with cTDP scaling 35-65W
- BGA platform in Intel® Core™ Processors with Dynamic Scalable Architecture
- Improved performance over 13<sup>th</sup> Gen Intel® Core™ Mobile Processors (RPL-H)
- Optimized for Edge/IoT Media applications

### Improved Performance and I/O

- Hybrid architecture supporting up to 14 cores and 20 threads in a 6P+8E configuration for outstanding Multi-Threaded performance in 45W power envelope
- Increased performance from higher P-Core and E-Core frequencies
- Increased memory speeds up to DDR5-5200, DDR4-3200, LPDDR5/x-6400 and LPDDR4x-4267
- Max memory capacity of 96GB
- x8 PCIe 5.0 + 2 x4 PCIe 4.0 on CPU, x12 PCIe 3.0 on PCH
- Intel® Graphics with up to 96 EUs, 4 Independent Displays (up to 8K), Pipe Lock (Display Synchronization) & SRIOV
- Four ports integrated USB4/Thunderbolt™ 4
- Discrete Intel® Wi-Fi 6E and Intel® Wi-Fi 7

### Edge Differentiators

- Extended product availability
- Pipelock video synchronization for Windows, 2x2 Display w/EDID management, Bezel Correction
- Linux Kernel Overlays, VxWorks\* and Current Windows\* IoT Enterprise 2021 LTSC, Celadon (Android) in VM (Community support)
- KVM and ACRN Virtualization (Community support)
- Slim Bootloader
- Intel® In-band Manageability
- Real Time with TCC and TSN on select SKUs



# Intel Core Processors (Series 1 and Series 2)

formerly codenamed Raptor Lake U Refresh (Series 1) and Raptor Lake H Refresh (Series 2)

## Up to 10-Core (U-series) and up to 14-Core (H-series) CPU

- New higher performance SKUs
- Higher LP5/5x memory speed support on T3/T4 boards<sup>1,2</sup>

## Intel® Graphics

- Up to 96 EUs

## Lid Controller Hub

- Clover Falls



## Max Memory Capacity

Up to 96 GB

## 4x Thunderbolt™ 4

- Hayden Bridge (DP2.1, USB3 20G)
- Burnside Bridge (DPI.4, USB3 10G)

## Discrete Intel® Wi-Fi 7 & Bluetooth® 5.4\*

## Intel® Wi-Fi 6E (Gig+) & Bluetooth 5.2

- Low Energy (LE) Audio
- Wi-Fi based Sensing

\*PCIe Gen 5 would only be available on H-series

1. For latest memory configurations and speeds, refer to [RPL Memory Enabling Guide](#). DDR5 top speed enabled with specific DIMMs ( 1 SPC, 1 DPC, 1R). Other DIMMs may operate with one speed bin lower and different SAGV points. Not supported on all SKUs. Please see DCLs for SKU level memory support.
  2. RPL-U Refresh and RPL-H Refresh LPDDR5x T4 board 2R 6400 is POR and enabled with lead vendor. RPL-U Refresh and RPL-H Refresh LPDDR5/5x T3 10L board targets 1R/2R 5200 or higher, pending Intel validation
- \*Full Wi-Fi7 support is dependent on future OS version release; Windows\*11 22H2 supports Gale Peak2 with Wi-Fi6E capabilities.





# Intel Core Processors (Series 1 and Series 2) SKUs

formerly codenamed Raptor Lake U Refresh (Series 1) and Raptor Lake H Refresh (Series 2)

| Brand         | Price Tier | U 15W                                            |                                             | H 45W <sup>1</sup>                           |
|---------------|------------|--------------------------------------------------|---------------------------------------------|----------------------------------------------|
| Core 9 (H)    | T7K        |                                                  |                                             |                                              |
|               | MS5        |                                                  |                                             |                                              |
|               | T6K        |                                                  |                                             | 270H<br>14 Core/20T, 6P+8E 96EU 24M          |
| Core 7 (U, H) | MS3        | 250U <sup>2</sup><br>10 Core/12T, 2P+8E 96EU 12M |                                             |                                              |
|               | T4         | 150U<br>10 Core/12T, 2P+8E 96EU 12M              |                                             | 250H<br>14 Core/20T, 6P+8E 96EU 24M          |
|               | T4C        |                                                  |                                             | 240H<br>10 Core/16T, 6P+4E 64EU 24M          |
| Core 5 (U, H) | MS1        | 220U <sup>2</sup><br>10 Core/12T, 2P+8E 80EU 12M |                                             |                                              |
|               | T3         | 120U<br>10 Core/12T, 2P+8E 80EU 12M              |                                             | 220H<br>12 Core/16T, 4P+8E 80EU 18M          |
|               | T2         |                                                  |                                             | 210H<br>8 Core/12T, 4P+4E 48EU 12M<br>No IPU |
| Core 3 (U)    | T1         | 100U<br>6 Core, 2P+4E<br>64EU 10M                | 100U<br>6 Core, 2P+4E<br>64EU 10M<br>No IPU |                                              |

1) SKUs are subject to change without notice  
2) RPL-U Refresh MS3/MS1 SKUs for 2025 support SIPP only, vPro is not supported

# Intel Core Ultra Processors (Series 2)

## Arrow Lake H & U



Access the full Arrow Lake U/H Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 823305



# Intel Core Ultra Processors (Series 2)

formerly codenamed Arrow Lake H & U

## Built for the Edge

### Overview

- Next Generation Edge/IoT P Platform with new CPU core architectures
- Integrated ARC Graphics with XMV systolic arrays boosts AI performance up to 2.5x over MTL<sup>3</sup>
- Targeting Industrial, Video and Edge AI applications
- Intel vPro<sup>®</sup> platform eligible
- Premium SKU's at Intel Core Ultra 9, 7 and 5

### Improved Performance and I/O

- Performance hybrid architecture with new P core and E core
- LPDDR5x support up to 8400MHz, DDR5 6400
- Intel<sup>®</sup> Arc integrated graphics architecture provides entry level discrete graphics performance
- Integrated NPU for dedicated AI acceleration with up to 20x performance/watt improvement
- 99 platform TOPS AI inferencing
- Integrated IPU with MIPI camera interface for best in market image quality and noise reduction
- Ready to use camera module solutions
- PCIe 5.0 1x8 (ARL-H only), PCIe 4.0, USB3.2 Gen 2x2 (20G), Thunderbolt 4, Discrete Wi-Fi 7

### Edge Differentiators

- 5 years availability<sup>2</sup>
- In Band ECC
- Pipelock video synchronization for Windows\*, 2x2 Display w/EDID management, Bezel Correction
- Ubuntu\* overlays/BKC, VxWorks and Windows\* 11 LTSC
- KVM Virtualization (Community Support)
- Slim Bootloader

<sup>1</sup>Hybrid Architecture on ARL-H combines up to 6 P-cores and up to 8 E-cores

<sup>2</sup>For component family introduction date and product availability details, the roadmap is not reflective of exact launch granularity and timing.

<sup>3</sup>Resnet50 at BS=4 running on CPU+GPU



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formerly codenamed Arrow Lake H & U  
**Built for the Edge**

## Processor Graphics (ARL-H)<sup>1</sup>

- 2x local cache
- Full Rate Ray-Tracing (2x MTL H)
- XMX Matrix Engine (4x MTL H TOPs)

## Security

- Intel® Silicon Security Engine
- Linear Address Space Separation (ARL-H Only)



**ARL-H**  
6P+8E +2LPE  
8X<sup>e</sup> LPG+

**ARL-U**  
2P+8E +2LPE  
4X<sup>e</sup> LPG

eSPI SPI  
50 x 25 x 1.35  
BGA

MIPI CSI (IPU)

DDR5 6400  
LP5X 8400  
LP5/5X CMM2

11 TOPS

3x4 PCIe Gen4  
12 lanes

10x USB2  
2x USB3

8 PCIe Gen4<sup>2</sup>  
8 lanes

SATA 3.0  
x2



**Max Memory Capacity**  
Up to 96 GB

## Intel® Wi-Fi, BT and 5G Support

- Discrete Wi-Fi 7(5Gig) & BT 5.4
- Discrete Wi-Fi 6E
- Discrete 5G
- All wireless modules Intel validated with differentiated features

## Thunderbolt™

- 4x Integrated Thunderbolt™ 4 ports



<sup>1</sup> New iGFX architecture is only on ARL-H

<sup>2</sup> Supports x4,x2,x1 bifurcation





# Intel Core Ultra Processors (Series 2) SKUs

formerly codenamed Arrow Lake H

| Brand                | Processor Number | Process or Cores | Number of P-cores | Number of E-cores | Number of LPE-cores | Number of Threads | Intel® Smart Cache (L3) | Max Turbo Freq (GHz) <sup>A</sup> |        | Processor Base Frequency (GHz) |        | Graphics Max Freq (GHz) | Intel vPro® Eligible <sup>B</sup> | Processor Graphics           | Number of Execution Units (EUs) | Video Decode Boxes | Total PCIe Lanes                       | Max Memory Speed                                         | Max Memory Capacity | TCC/TSN | Extended Temp | Processor Base Power (W)                               |
|----------------------|------------------|------------------|-------------------|-------------------|---------------------|-------------------|-------------------------|-----------------------------------|--------|--------------------------------|--------|-------------------------|-----------------------------------|------------------------------|---------------------------------|--------------------|----------------------------------------|----------------------------------------------------------|---------------------|---------|---------------|--------------------------------------------------------|
|                      |                  |                  |                   |                   |                     |                   |                         | P-core                            | E-core | P-core                         | E-core |                         |                                   |                              |                                 |                    |                                        |                                                          |                     |         |               |                                                        |
| Intel® Core™ Ultra 9 | 285H             | 16               | 6                 | 8                 | 2                   | 16                | 24 MB                   | 5.4                               | 4.5    | 2.5 (@45W)                     |        | 2.35                    | Yes                               | Intel® ARC® GPU <sup>B</sup> | 128                             | 2                  | 8 (CPU: 1x8 PCIe 5.0)<br>20 (PCIe 4.0) | DDR5-6400<br>LPDDR5-6400<br>LPDDR5x-8400<br>LPDDR5x-7467 | 64 GB               | No      | No            | 45W (base power, Ultra 9 only)                         |
| Intel® Core™ Ultra 7 | 265H             | 16               | 6                 | 8                 | 2                   | 16                | 24 MB                   | 5.3                               | 4.5    | 1.2 (@28W)                     |        | 2.3                     | Yes                               |                              | 128                             | 2                  |                                        |                                                          |                     | No      | No            | 65W (max assured power)<br><br><b>28W (base power)</b> |
| Intel® Core™ Ultra 7 | 255H             | 16               | 6                 | 8                 | 2                   | 16                | 24 MB                   | 5.1                               | 4.4    | 1.2 (@28W)                     |        | 2.25                    | No                                |                              | 128                             | 2                  |                                        |                                                          |                     | No      | No            |                                                        |
| Intel® Core™ Ultra 5 | 235H             | 14               | 4                 | 8                 | 2                   | 14                | 18 MB                   | 5.0                               | 4.4    | 1.3 (@28W)                     |        | 2.25                    | Yes                               |                              | 128                             | 2                  |                                        |                                                          |                     | No      | No            |                                                        |
| Intel® Core™ Ultra 5 | 225H             | 14               | 4                 | 8                 | 2                   | 14                | 18 MB                   | 4.9                               | 4.3    | 1.2 (@28W)                     |        | 2.2                     | No                                |                              | 112                             | 2                  |                                        |                                                          |                     |         |               | 20W (min assured power)                                |

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

All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards).

All processors support Intel® Virtualization Technology (Intel® VT-x, VT-d).

- A. The frequency of cores and core types varies by workload, power consumption, and other factors. Visit [Turbo Boost Technology](#) for more information.
- B. Intel® Arc™ GPU only available on select H-Series, Intel® Core™ Ultra processor powered systems with at least 16GB of system memory in a dual-channel configuration. OEM enablement required; check with OEM for system configuration details.
- C. Intel vPro® Enterprise includes Intel® TXT, Intel® Hardware Shield, Intel® AMT. Please refer to vPro brand requirements for full details (RDC#635949).
- D. Validated, but Intel® Active Management and other security features are not available.
- E. To use the Intel® ARC brand, the system must be populated with 128-bit (dual-channel) memory. Otherwise, use the Intel® Graphics brand.

For product specifications, please refer to [ark.intel.com](#).

- Intel Core processors (Series 2), codenamed Arrow Lake H, are offered for up to 5 years availability. For extended availability of Intel Core processors (Series 2), codenamed Arrow Lake S, please contact your local Intel representative for Supplemental Product Support (SPS) consideration. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance.
- SKUs are subject to change without notice.



# Intel Core Ultra Processors (Series 2) SKUs

formerly codenamed Arrow Lake U

| Brand                | Processor Number | Processor Cores | Number of P-cores | Number of E-cores | Number of LPE cores | Number of Threads | Intel® Smart Cache (L3) | Max Turbo Freq (GHz) <sup>A</sup> |        | Processor Base Frequency (GHz) |        | Graphics Max Freq (GHz) | Intel vPro® Enterprise <sup>B</sup> | Processor Graphics | Number of Execution Units (EUs) | Video Decode Boxes | Total PCIe Lanes | Max Memory Speed | Max Memory Capacity                                      | TCC/TSN and In-Band ECC | Extended Temp | Processor Base Power (W) |                                                                                |
|----------------------|------------------|-----------------|-------------------|-------------------|---------------------|-------------------|-------------------------|-----------------------------------|--------|--------------------------------|--------|-------------------------|-------------------------------------|--------------------|---------------------------------|--------------------|------------------|------------------|----------------------------------------------------------|-------------------------|---------------|--------------------------|--------------------------------------------------------------------------------|
|                      |                  |                 |                   |                   |                     |                   |                         | P-core                            | E-core | P-core                         | E-core |                         |                                     |                    |                                 |                    |                  |                  |                                                          |                         |               |                          |                                                                                |
| Intel® Core™ Ultra 7 | 265U             | 14              | 2                 | 8                 | 2                   | 12                | 12 MB                   | 5.3                               | 4.2    | 1.8(@15W)                      |        | 1.5                     | 2.1                                 | Yes                | Intel® Graphics <sup>B</sup>    | 64                 | 2                | 20 PCIe 4.0      | DDR5-6400<br>LPDDR5-6400<br>LPDDR5x-8400<br>LPDDR5x-7467 | 64 GB                   | No            | No                       | 28W (Max Assured Power)<br><br>15W (Base Power)<br><br>12W (Min Assured Power) |
| Intel® Core™ Ultra 7 | 255U             | 14              | 2                 | 8                 | 2                   | 12                | 12 MB                   | 5.2                               | 4.2    | 1.8(@15W)                      |        | 1.5                     | 2.1                                 | No                 |                                 | 64                 | 2                |                  |                                                          |                         | No            | No                       |                                                                                |
| Intel® Core™ Ultra 5 | 235U             | 14              | 2                 | 8                 | 2                   | 12                | 12 MB                   | 4.9                               | 4.1    | 1.6(@15W)                      |        | 1.3                     | 2.05                                | Yes                |                                 | 64                 | 2                |                  |                                                          |                         | No            | No                       |                                                                                |
| Intel® Core™ Ultra 5 | 225U             | 14              | 2                 | 8                 | 2                   | 12                | 12 MB                   | 4.8                               | 3.8    | 1.2(@15W)                      |        | 0.9                     | 2.0                                 | No                 |                                 | 64                 | 2                |                  |                                                          |                         | No            | No                       |                                                                                |

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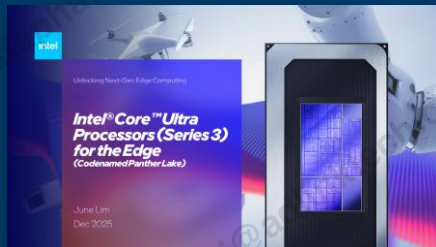
# Intel Core Ultra Series 3 Processors

## Panther Lake



Access the full Panther Lake Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 846491

**NEW**



### Intel Core Ultra Series 3 Processors for the Edge Product Overview

Publicly available for download. Click on link above or visit [rdc.intel.com](https://rdc.intel.com) and search for 855291

Product overview for the Intel Core Series 3 Processors for the Edge.  
Includes benefits, TCO, and customer testimonials.



Intel Core Ultra Series 3 processors

# Proven Ideal for Mission-Critical Edge and Physical AI



Power-efficient  
AI and graphics

**Up to 1.8x more TOPS**  
vs. Arrow Lake-H

**Up to 50% more GPU  
cores** vs. Arrow Lake-H

**Supercharge agents**  
Concurrent reasoning with  
integrated AI acceleration



Deterministic  
performance

**Time-aware execution**  
Intel® TCC and Discrete TSN

**Reliable Real-Time & AI**  
Ideal for mixed-criticality  
workloads

**AI with real-time  
response**  
Ensures low-latency, instant  
decision-making



Industrial durability  
& flexibility

**Industrial Grade**  
support for extended temp  
and ECC memory

**Accelerated FuSa dev**  
with Intel® Silicon Integrity  
Tech & FSED

**Design for 100% operation**  
with up to 10 years availability  
and Windows and Linux long  
term service channel



Built for developer  
agility

**Accelerate AI inference**  
with OpenVINO™ across  
CPU, GPU and NPU

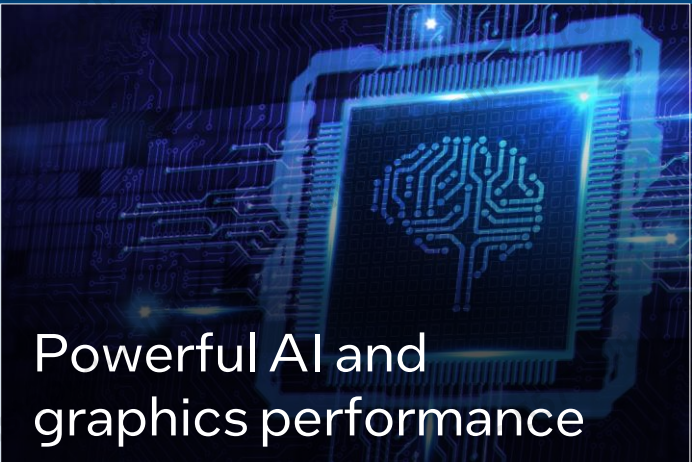
**Fast track development**  
using Open Edge Platform's  
modular open-source AI  
tools

**Industry curated AI**  
Reference apps, verified  
systems and benchmarks for  
fast time-to-value



# Benefits of Intel Core Ultra Series 3 Processors

(Codenamed Panther Lake)



## Powerful AI and graphics performance

- Up to 180 total platform TOPS<sup>1</sup>, enable/accelerate AI inferencing with built-in NPU & GPU cost-effectively without discrete accelerator.
- Up to 50% more GPU cores (12 Xe cores) than ARL for AI-intensive workloads at the edge.
- Access up to 64GB of LPDDR5 8533 or up to 128GB of DDR5 7200 memory—an advantage over dGPUs with fixed VRAM, ideal for large AI workloads.



## Power-efficient compute and graphics

- As low as 15W for fanless designs and up to 65W.
- Built-in GPU reduces power consumption, lower BOM costs and enables smaller form factor design.
- Faster connectivity with Thunderbolt™ 4 and integrated Wi-Fi 7 R2



## Industrial reliability and flexibility

- Maximize reliability with industrial-grade features such as support for Functional Safety, Intel® TCC, and extended temperature support (-40°C to +100°C).
- Ensure long-term durability through select SKUs designed for 100% operation over 10 years in industrial conditions.

1. Select H-SKUs of Intel Core Ultra processors (Series 3) can achieve up to 180 total platform TOPS. Results may vary.

2. Intel® Arc™ GPU only available on select H-SKUs, Intel® Core™ Ultra processor powered systems with at least 16GB of system memory in a dual-channel configuration. OEM enablement required; check with OEM for system configuration details.



# Target Segments for Intel Core Ultra Series 3 Processors

(Codenamed Panther Lake)



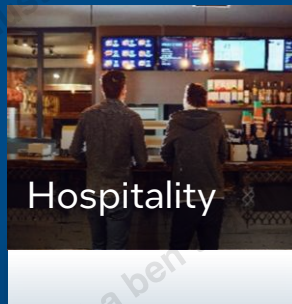
Industrial



Energy



Public Sector



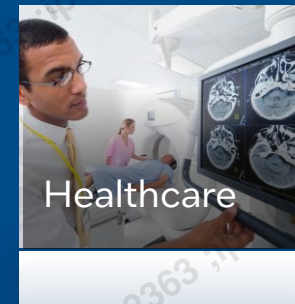
Hospitality



Retail



Smart Cities & Transportation



Healthcare

Key Features

Extended Temperature (-40°C to 100°C)  
Industrial Use Conditions  
FuSa, IBECC  
TCC, TSN

4 concurrent 6K displays  
SW Genlock, Pipelock  
Bezel Correction  
EDID

Extended Temperature  
Industrial Use Conditions

AI-Capable: Inferencing with CPU, NPU and iGPU with Intel® XMN

Up to 16 Cores, 12 X<sup>e</sup>-Cores, 20 PCIe lanes, 96GB LPDDR5 or 128GB DDR memory

Up to 10 Years Availability<sup>1</sup>

<sup>1</sup> Intel does not commit or guarantee product availability.

Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support. Please view the "Hardware Availability and Technical Support Lifecycle" slide, available in this content package, for additional details, or contact your Intel representative for additional information.





# Introducing the Robotics Reference Board

## Faster time to market

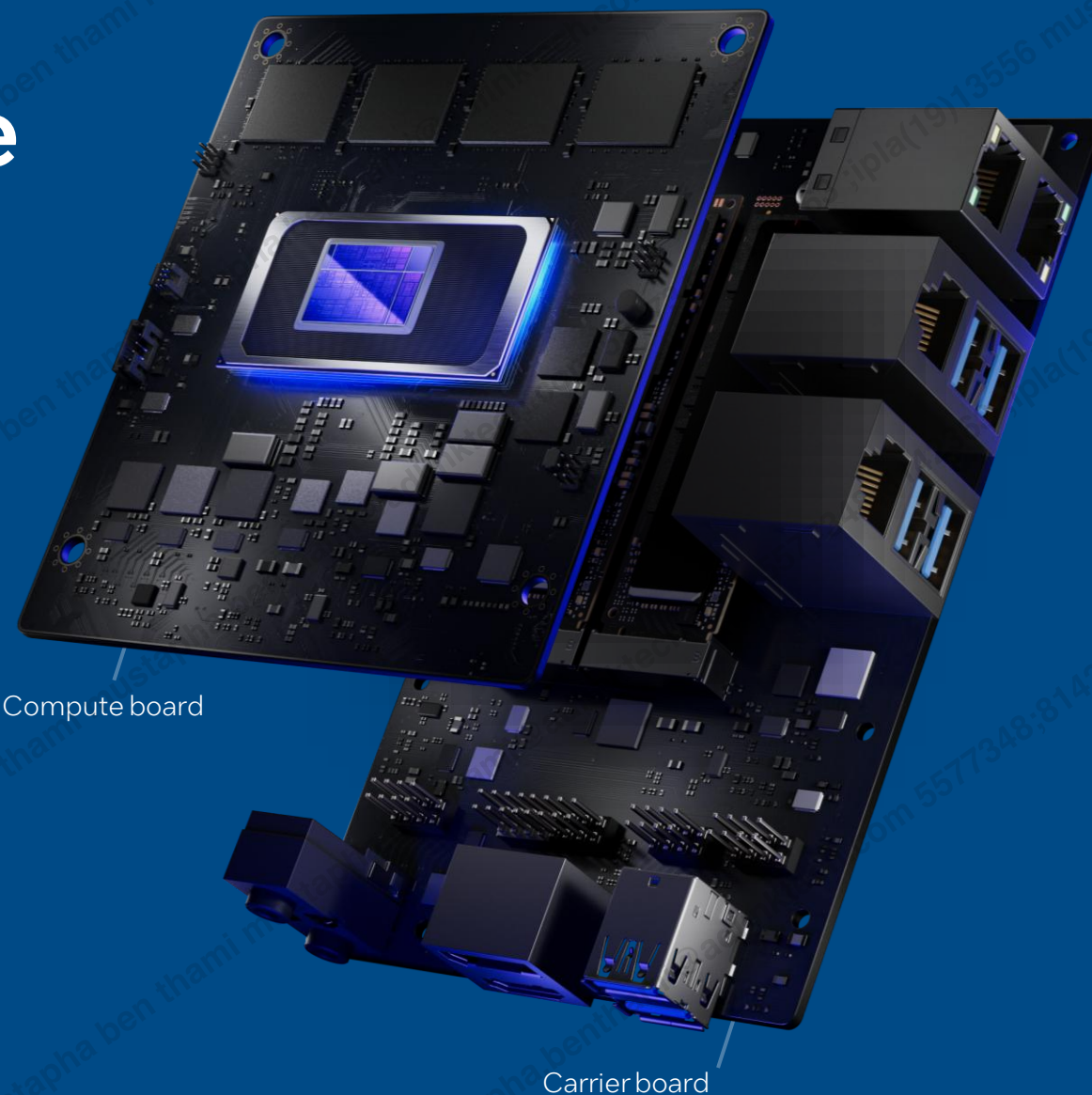
Shorten onboarding with optimized reference solution  
Lower research and development cost

## Scalable & ready-to-use

Modular design for scalability & reuse  
Built in EtherCAT, CAN-HD, GMSL and USB extends functionality

## Open ecosystem collaboration

Driving industry form-factor standards  
Broad collaboration with top industry partners





# Intel Core Ultra Series 3 Processors Overview

Formerly codenamed Panther Lake

Designed for Efficiency Optimized AI with Scalable Compute and Graphics, delivering up to ~180 pTOPS

## New CPU Architecture

- P-cores + E-cores + LP E-cores
- 1.19X better ST perf vs ARL
- 1.13X better MT perf vs ARL

## Intel X<sup>e</sup>3 Graphics

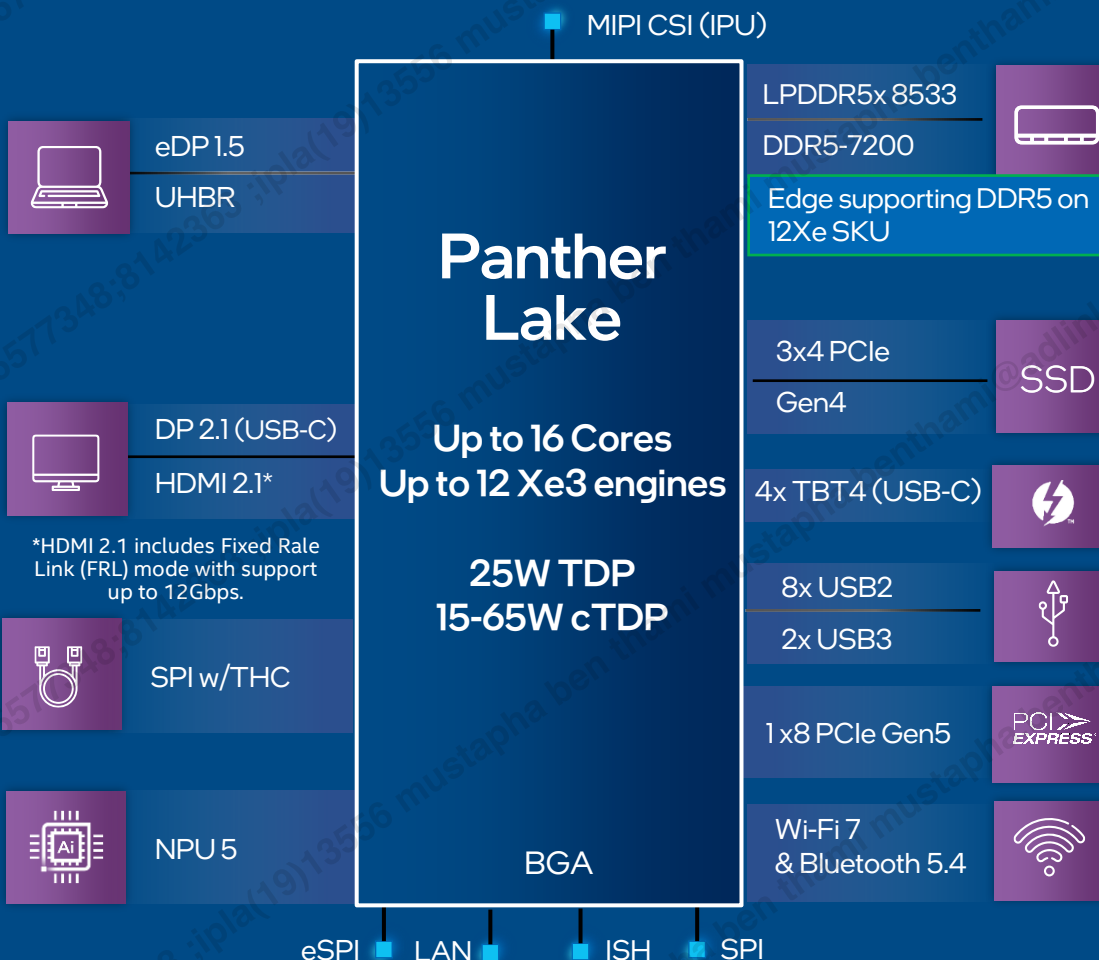
- Up to 1.4x performance over ARL
- Capacity to displace entry level discrete accelerator

## Imaging Processing Unit 7.5

- High image quality
- 3X MIPI camera connectivity

## Intel NPU 5

- Power optimized AI acceleration
- 50 TOPS



\*HDMI 2.1 includes Fixed Rate Link (FRL) mode with support up to 12Gbps.

cTDP = Configurable TDP  
BGA = Chip-down CPU Package

## Use Condition Support

- Industrial
- Extended Temp (-40°C-100°C)
- Intel Product Tuning for Reliability

## Real-Time, FuSa and TCC

- Real-Time with TCC/TSN
- Functional Safety (FuSa)

## 4x Thunderbolt™ 4

- 40Gbps bi-directional, per port
- Certified E2E

## Intel® Wi-Fi & BT

- With M2 module
- Wi-Fi 7 / BT 5.4

**Max Memory Capacity**  
Up to 128 GB

Details shared here are preliminary and subject to change without notice.



# Intel Assured Supply Chain (Intel ASC)

Trace and verify the source of silicon components and manufacturing locations

**Only Intel  
Provides**

Industry-first supply chain security feature  
for enhanced transparency in semiconductor manufacturing



**Pre-determined end-to-end silicon  
manufacturing corridor spanning 5 locations:**  
US, Ireland, Vietnam, Taiwan, Malaysia

**Digital supply chain verification:**  
Intel® ASC identifier embedded at the silicon level  
Customer verifiable using OEM and industry tools

**New**

**Intel ASC supply chain security and assurance available on:**  
Panther Lake Intel vPro® eligible SKUs in commercial systems from leading PC manufacturers

**DELL** Technologies



**Lenovo**

# Intel Core Ultra Series 3 Processor SKUs

| Brand                                                                              | Price Tier | 404 4Xe<br>Commercial Temp*<br>25W (12-45W) | 404 4Xe<br>Extended Temp<br>25W (15-65W)                 | 484 4Xe<br>Commercial Temp*<br>25W (15-65W) | 484 4Xe<br>Extended Temp<br>25W (15-65W)                  | 484 12Xe<br>Commercial Temp*<br>25W (15-65W) |                                                 |
|------------------------------------------------------------------------------------|------------|---------------------------------------------|----------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------|----------------------------------------------|-------------------------------------------------|
|    | MS5+       |                                             |                                                          |                                             |                                                           | 388H4P+8E+4LPE, 18M<br>12 Xe, 12PCIe         |                                                 |
|                                                                                    | MS5        |                                             |                                                          | 386H<br>4P+8E+4LPE, 18M<br>4Xe, 20 PCIe     |                                                           |                                              |                                                 |
|    | MS3+       |                                             |                                                          |                                             |                                                           | 368H4P+8E+4LPE, 18M<br>12 Xe, 12PCIe         |                                                 |
|                                                                                    | MS3-2      |                                             |                                                          | 366H<br>4P+8E+4LPE, 18M<br>4Xe, 20 PCIe     | 366HRE<br>4P+8E+4LPE, 18M, ET<br>4Xe, 20 PCIe, INDU, FuSa |                                              |                                                 |
|                                                                                    | MS3-1      | 365<br>4P+0E+4LPE, 12M<br>4Xe, 12 PCIe      | 365RE<br>4P+0E+4LPE, 18M, ET, 4Xe<br>20 PCIe, INDU, FuSa |                                             |                                                           |                                              |                                                 |
|                                                                                    | T4+        |                                             |                                                          |                                             |                                                           | 358H<br>4P+8E+4LPE, 18M<br>12 Xe, 12PCIe     | 358HR<br>4P+8E+4LPE, 18M<br>12 Xe, 12PCIe, FuSa |
|                                                                                    | T4-2       |                                             |                                                          | 356H<br>4P+8E+4LPE, 18M<br>4Xe, 20 PCIe     |                                                           |                                              |                                                 |
|                                                                                    | T4         | 355<br>4P+0E+4LPE, 12M<br>4Xe, 12 PCIe      |                                                          |                                             |                                                           |                                              |                                                 |
|                                                                                    |            |                                             |                                                          |                                             |                                                           |                                              |                                                 |
|  | MS1+       |                                             |                                                          |                                             |                                                           | 338H4P+4E+4LPE, 18M<br>10 Xe, 12PCIe         |                                                 |
|                                                                                    | MS1-2      |                                             |                                                          | 336H<br>4P+4E+4LPE, 18M<br>4Xe, 20 PCIe     | 336HRE<br>4P+4E+4LPE, 18M, ET<br>4Xe, 20 PCIe, INDU, FuSa |                                              |                                                 |
|                                                                                    | MS1        | 335<br>4P+0E+4LPE, 12M<br>4Xe, 12 PCIe      | 335RE<br>4P+0E+4LPE, 18M, ET<br>4Xe, 20 PCIe, INDU, FuSa |                                             |                                                           |                                              |                                                 |
|                                                                                    | T3         | 325<br>4P+0E+4LPE, 12M<br>4Xe, 12 PCIe      |                                                          |                                             |                                                           |                                              |                                                 |
|                                                                                    | MS3c       | 332<br>2P+0E+4LPE, 12M<br>2Xe, 12 PCIe      |                                                          |                                             |                                                           |                                              |                                                 |
|                                                                                    | T3c        | 322<br>2P+0E+4LPE, 12M<br>2Xe, 12 PCI       |                                                          |                                             |                                                           |                                              |                                                 |

**Note:** Information shown is preliminary and subject to change without notice.

- PTL 484 12Xe
- PTL 484 4Xe
- PTL404 4Xe



MS\* SKUs are vPro eligible

All SKU's pin compatible and packaged in 50x25mm BGA

\*Embedded and Industrial use conditions available via [PTR](#)



# Intel Core Ultra Series 3 Processors (Panther Lake) Ultra 9 and Ultra 7

## Commercial Temp SKUs

| Price Point | Processor Brand & Number   | QDF  | CPU                   |                                          |                             |           | Integrated NPU PTOPS <sup>2</sup> | Integrated GPU                           |                |                                       | Intel® Platform Eligibility | Firmware Support (ME19.0)       | I/O & Memory                  |                                            |                                 |                                   |                                          | Power                                     |                                  |
|-------------|----------------------------|------|-----------------------|------------------------------------------|-----------------------------|-----------|-----------------------------------|------------------------------------------|----------------|---------------------------------------|-----------------------------|---------------------------------|-------------------------------|--------------------------------------------|---------------------------------|-----------------------------------|------------------------------------------|-------------------------------------------|----------------------------------|
|             |                            |      | Total Cores & Threads | P-core Max Turbo Freq (GHz) <sup>1</sup> | Intel® Smart Cache LLC (MB) | Base Freq |                                   | Graphics Brand <sup>7</sup>              | Total Xe Cores | Max Freq (GHz) / PTOPS <sup>2,6</sup> |                             |                                 | Intel vPro® <sup>3</sup>      | Total Platform PCIe Lanes, CPU PCIe Config | Thunderbolt                     | Wi-Fi,BT                          | Maximum Memory Speed (MT/s) <sup>5</sup> | Maximum Memory Capacity (GB) <sup>5</sup> | Processor Base Power (W)         |
| MS5+ T5+    | Intel® Core™ Ultra X9 388H | A4QW | 16                    | 5.0                                      | 18                          | 2.1       | 50                                | Intel® Arc™ B390<br>Intel® Arc™ Pro B390 | 12Xe           | 2.5/122                               | Yes                         | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)  | Integrated 4x TBT4,                        | Integrated Wi-Fi 7 R2 /Dual BT6 | LP5/X 9600 DDR5 7200 <sup>8</sup> | 96 (LP5/x) 128 (DDR5)                    | 25W                                       | 64 <sup>7</sup> ,80 <sup>7</sup> |
| MS5 T5      | Intel® Core™ Ultra 9 386H  | A4R5 | 16                    | 4.8                                      | 18                          | 2.1       | 50                                | Intel Graphics                           | 4Xe            | 2.5/40                                | Yes                         | Corporate Consumer              | 20 PCIe lanes (x8 G4, x12 G5) | Discrete TBT5                              |                                 | LP5/X 8533 DDR5 7200              | 96 (LP5/x) 128 (DDR5)                    |                                           | 64 <sup>7</sup> ,80 <sup>7</sup> |
|             |                            |      |                       |                                          |                             |           |                                   |                                          |                |                                       |                             |                                 |                               |                                            |                                 |                                   |                                          |                                           |                                  |
| MS3+        | Intel® Core™ Ultra X7 368H | A4R7 | 16                    | 4.9                                      | 18                          | 2.0       | 50                                | Intel® Arc™ B390<br>Intel® Arc™ Pro B390 | 12Xe           | 2.5/122                               | Yes                         | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)  | Integrated 4x TBT4,                        |                                 | LP5/X 9600 DDR5 7200 <sup>8</sup> | 96 (LP5/x) 128 (DDR5)                    |                                           | 64 <sup>7</sup> ,80 <sup>7</sup> |
| MS3-2       | Intel® Core™ Ultra 7 366H  | A4R9 | 16                    | 4.7                                      | 18                          | 2.0       | 50                                | Intel Graphics                           | 4Xe            | 2.5/40                                | Yes                         | Corporate Consumer              | 20 PCIe lanes (x8 G4, x12 G5) | Discrete TBT5                              |                                 | LP5/X 8533 DDR5 7200              | 96 (LP5/x) 128 (DDR5)                    |                                           | 64 <sup>7</sup> ,80 <sup>7</sup> |
| MS3-1       | Intel® Core™ Ultra 7 365   | A4RC | 8                     | 4.7                                      | 12                          | 2.4       | 49                                | Intel Graphics                           | 4Xe            | 2.5/40                                | Yes                         | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)  | Integrated 4x TBT4                         |                                 | LP5/X 6800 DDR5 6400              |                                          |                                           | 55                               |
| T4+         | Intel® Core™ Ultra X7 358H | A4RA | 16                    | 4.7                                      | 18                          | 1.9       | 50                                | Intel® Arc™ B390                         | 12Xe           | 2.5/122                               | No                          | Corporate Consumer <sup>4</sup> | 12 PCIe lanes (x8 G4, x4 G5)  | Integrated 4x TBT4.                        |                                 | LP5/X9600 DDR5 7200 <sup>8</sup>  | 96 (LP5/x) 128 (DDR5)                    |                                           | 64 <sup>7</sup> ,80 <sup>7</sup> |
| T4-2        | Intel® Core™ Ultra 7 356H  | A4RG | 16                    | 4.6                                      | 18                          | 1.9       | 50                                | Intel Graphics                           | 4Xe            | 2.45/40                               | No                          | Corporate Consumer <sup>4</sup> | 20 PCIe lanes (x8 G4, x12 G5) | Discrete TBT5                              | LP5/X 8533 DDR5 7200            | 96 (LP5/x) 128 (DDR5)             | 64 <sup>7</sup> ,80 <sup>7</sup>         |                                           |                                  |
| T4          | Intel® Core™ Ultra 7 355   | A4RF | 8                     | 4.6                                      | 12                          | 2.3       | 49                                | Intel Graphics                           | 4Xe            | 2.5/40                                | No                          | Corporate Consumer <sup>4</sup> | 12 PCIe lanes (x8 G4, x4 G5)  | Integrated 4x TBT4                         | LP5/X 6800 DDR5 6400            |                                   | 55                                       |                                           |                                  |

Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.  
All processors are lead-free (per EU RoHS directive July 2006) and halogen-free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards).  
All processors support Intel® Virtualization Technology (Intel® VT-x, VT-d), Intel® Trusted Execution Technology (Intel® TXT), and the Secured-core PC specification.

1. The frequency of cores and core types varies by workload, power consumption, and other factors. Visit [www.intel.com/technology/turboboost](https://www.intel.com/technology/turboboost) for more information.
2. Neural Processing Unit (NPU) and GPU based Peak Tera Operations Per Second (PTOPS) is a calculated value based on several assumptions about operating conditions, including but not limited to maximum frequency, data type, and other design and workload parameters.
3. Intel vPro® support requires Corporate ME Firmware, not supported with Consumer ME Firmware. Refer to the *Intel vPro® Brand Requirements for Panther Lake Notebooks* (Document number: 820648).
4. Maximum memory speeds are associated with board type and DIMM configurations, which may also affect maximum memory capacity. For configuration details, refer to the *Panther Lake Processor External Design Specification, Volume 1 of 2* (Document number: 815002) and *Panther Lake Platform Memory Enablement Guide* (Document number: 847650).
5. Intel® Xe Matrix eXTensions (Intel® XMx) are specialized AI engines that operate on systolic arrays, resulting in a high value of calculated PTOPS based on assumptions about certain operating conditions that directly benefit in accelerating AI workloads.
6. Intel® Arc™ brand requires the system to be populated with at least 16GB in a 128-bit/dual-channel memory configuration. Systems designed with less than 16GB size in a 128-bit/dual-channel memory configuration must use Intel® Graphics branding
7. System designs using Processor Base Power (PBP) of 25W and Maximum Turbo Power (MTP) of 64W are supported. System designs using PBP of 45W and MTP of 80W are supported
8. ECG will validate DDR5 on all 12Xe SKU's but LPDDR5x is required for max performance and Intel® Arc™ B390 branding.



# Intel Core Ultra Series 3 Processors (Panther Lake) Ultra 5 Commercial Temp SKUs

| Price Point | Processor Brand & Number  | QDF  | CPU                   |                                          |                             |           | Integrated NPU PTOPS <sup>2</sup> | Integrated GPU                           |                |                                       | Intel® Platform Eligibility | Firmware Support (ME19.0)       | I/O & Memory                               |                                   |                                 |                                          |                                           | Power                    |                                  |
|-------------|---------------------------|------|-----------------------|------------------------------------------|-----------------------------|-----------|-----------------------------------|------------------------------------------|----------------|---------------------------------------|-----------------------------|---------------------------------|--------------------------------------------|-----------------------------------|---------------------------------|------------------------------------------|-------------------------------------------|--------------------------|----------------------------------|
|             |                           |      | Total Cores & Threads | P-core Max Turbo Freq (GHz) <sup>1</sup> | Intel® Smart Cache LLC (MB) | Base Freq |                                   | Graphics Brand <sup>7</sup>              | Total Xe Cores | Max Freq (GHz) / PTOPS <sup>2,6</sup> |                             |                                 | Total Platform PCIe Lanes, CPU PCIe Config | Thunderbolt                       | Wi-Fi,BT                        | Maximum Memory Speed (MT/s) <sup>5</sup> | Maximum Memory Capacity (GB) <sup>5</sup> | Processor Base Power (W) | Maximum Turbo Power (W)          |
| MS1+        | Intel® Core™ Ultra 5 338H | A4RE | 12                    | 4.6                                      | 18                          | 1.9       | 47                                | Intel® Arc™ B370<br>Intel® Arc™ Pro B370 | 10Xe           | 2.4/98                                | Yes                         | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)               | Integrated 4x TBT4, Discrete TBT5 |                                 | LP5/X 8533<br>DDR5 7200                  |                                           |                          | 65 <sup>7</sup> ,80 <sup>7</sup> |
| MS1-2       | Intel® Core™ Ultra 5 336H | A4RD | 12                    | 4.5                                      | 18                          | 1.9       | 47                                | Intel Graphics                           | 4Xe            | 2.3/37                                | Yes                         | Corporate Consumer              | 20 PCIe lanes (x8 G4, x12 G5)              |                                   |                                 | LP5/X 8533<br>DDR5 7200                  |                                           |                          | 65 <sup>7</sup> ,80 <sup>7</sup> |
| MS1         | Intel® Core™ Ultra 5 335  | A4R2 | 8                     | 4.5                                      | 12                          | 2.2       | 47                                | Intel Graphics                           | 4Xe            | 2.45/40                               | Yes                         | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)               | Integrated 4x TBT4                | Integrated Wi-Fi 7 R2 /Dual BT6 | LP5/X 6800<br>DDR5 6400                  | 96 (LP5/x) 128 (DDR5)                     | 25W                      | 55                               |
| T3          | Intel® Core™ Ultra 5 325  | A4QX | 8                     | 4.4                                      | 12                          | 2.1       | 47                                | Intel Graphics                           | 4Xe            | 2.45/40                               | No                          | Corporate Consumer <sup>4</sup> | 12 PCIe lanes (x8 G4, x4 G5)               |                                   |                                 |                                          |                                           |                          | 55                               |
| MS1c        | Intel® Core™ Ultra 5 332  | A4QY | 6                     | 4.3                                      | 12                          | 2.5       | 47                                | Intel Graphics                           | 2Xe            | 2.5/20                                | Yes                         | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)               |                                   |                                 | LP5/X 7467<br>DDR5 6400                  |                                           |                          | 55                               |
| T3c         | Intel® Core™ Ultra 5 322  | A4R6 | 6                     | 4.3                                      | 12                          | 2.5       | 47                                | Intel Graphics                           | 2Xe            | 2.5/20                                | No                          | Corporate Consumer              | 12 PCIe lanes (x8 G4, x4 G5)               |                                   |                                 |                                          |                                           |                          | 55                               |

Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.  
All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards).  
All processors support Intel® Virtualization Technology (Intel® VT-x, VT-d), Intel® Trusted Execution Technology (Intel® TXT), and the Secured-core PC specification.

1. The frequency of cores and core types varies by workload, power consumption, and other factors. Visit [www.intel.com/technology/turboboost](https://www.intel.com/technology/turboboost) for more information.
2. Neural Processing Unit (NPU) and GPU based Peak Tera Operations Per Second (PTOPS) is a calculated value based on several assumptions about operating conditions, including but not limited to maximum frequency, data type, and other design and workload parameters.
3. Intel vPro® support requires Corporate ME Firmware, not supported with Consumer ME Firmware. Refer to the *Intel vPro® Brand Requirements for Panther Lake Notebooks* (Document number: 820648).
4. Maximum memory speeds are associated with board type and DIMM configurations, which may also affect maximum memory capacity. For configuration details, refer to the *Panther Lake Processor External Design Specification, Volume 1 of 2* (Document number: 815002) and *Panther Lake Platform Memory Enablement Guide* (Document number: 847650).
5. Intel® Xe® Matrix eXtensions (Intel® XMX) are specialized AI engines that operate on systolic arrays resulting in high value of calculated PTOPS based on assumptions about certain operating conditions that directly benefit in accelerating AI workloads.
6. Intel® Arc™ brand requires the system to be populated with at least 16GB size in a 128-bit/dual-channel memory configuration. Systems designed with less than 16GB size in a 128-bit/dual-channel memory configuration must use Intel® Graphics branding.
7. System designs using Processor Base Power (PBP) of 25W and Maximum Turbo Power (MTP) of 64W are supported. System designs using PBP of 45W and MTP of 80W are supported.



# Future Intel Core Series 3 Processors

## Wildcat Lake



Access the full Wildcat Lake Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 859374

# Wildcat Lake for the Edge

An AI-ready mainstream edge solution that seamlessly scales across future entry-class designs

## 2026



### Wildcat Lake

- Scaling Panther Lake architecture to mainstream and value-priced edge solutions
- First Intel mainstream processor with new Intel Arc B-series Xe architecture and NPU

## 2027



### Wildcat Lake Refresh

Wildcat Lake Platform Compatible

- Enhanced performance
- New SKUs with higher core counts
- Support for Intel vPro technology and Intel Standard Manageability

## 2028



### Future Entry

Wildcat Lake Platform Compatible

- Intel's future entry edge solution
- Drop-in compatible with current Wildcat Lake designs
- Intel Xe GPU architecture and NPU for the first time in an Intel entry processor

**+ Up to 20 PCIe lanes**  
with optional PCIe switch and Barlow Ridge

Wildcat Lake will deliver long-term value and unique AI differentiation for mainstream and future entry edge designs

Details shared here are preliminary and subject to change without notice.



# intel ai

Mainstream and Entry  
Edge AI Systems

## Industry-leading product supply and availability

Up to 10 years of product availability with paid extended support available

## Optimized for the Edge

Embedded and Industrial use conditions through Intel Product Tuning for Reliability (Intel PTR)

## Enhanced AI performance for mainstream edge designs

Enhanced iGPU plus new NPU for Edge AI, when compared to Raptor Lake H/U Refresh

## Real-Time and Time Sensitive Networking

Time Coordinated Computing (TCC) and Time Sensitive Networking (TSN) discrete support

## Lower power/cost BGA (chip-down) edge design option

Provides a flexible design point for lower-mainstream and entry edge designs



### Federal and Industrial Solutions

Industrial AI, Robotics & Autonomous  
Machines, Automation Compute &  
Control, Energy, Federal & Aerospace



### Healthcare, Education, and Consumer Retail

Consumer Industries, Healthcare & Life  
Sciences, Gaming, Education &  
Collaboration, Thin Client



### Cities and Critical Infrastructure

Transportation, Safety & Security

The information shared here is subject to change without notice and should not be viewed as an official POR or product schedule document. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software, and software support services, through standard EOL/PDN processes.



# Future Intel Core Series 3 Processors

## Codenamed Wildcat Lake

**Platform controller tile**

Built on

External

I/O

6

PCIe lanes

6x

PCIe gen 4

Up to

2x

Thunderbolt™ 4

2x USB 3.2

8x USB 2.0

Connectivity

Intel®

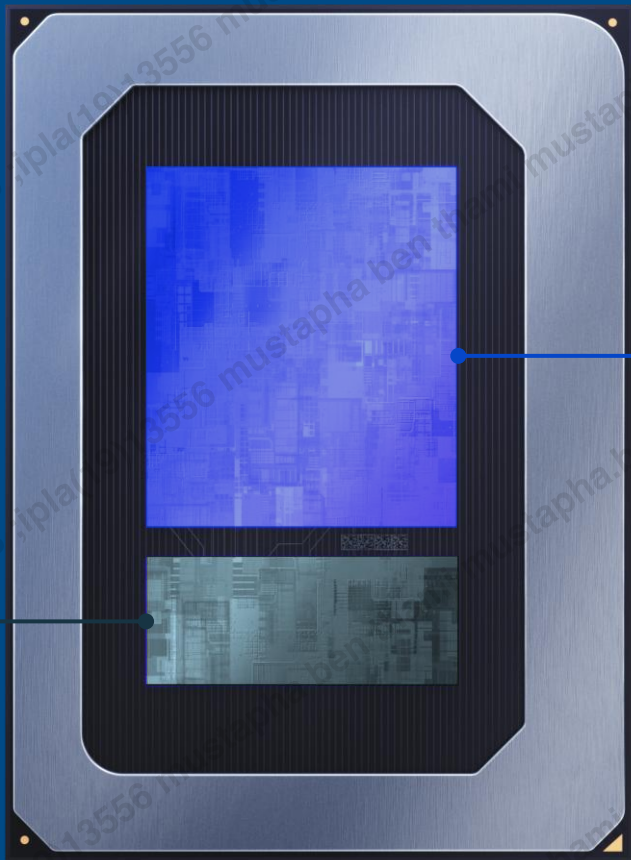
Wi-Fi 7

(R2)

Intel®

Bluetooth®

Core 6.0



**Compute & GPU tile**

Built on

intel 18A

CPU

up to

6

cores

P-cores

2

Cougar Cove

LP E-cores

4

Darkmont

xPU

NPU 5

Xe

Media & display engines

Memory

Up to

7467 MT/s

LPDDR5x

Up to

6400 MT/s

DDR5

4MB

Memory-side cache

GPU

Xe3

Architecture

2

Xe-cores





# Future Intel Core Series 3 Processors Overview

## Codenamed Wildcat Lake

Mainstream edge compute delivering up to ~40 pTOPS, with the first ever NPU in an Intel Core processor

### New CPU Architecture

- P-cores + LP E-cores
- 1.27X better ST perf vs RPL-U
- 1.06X better MT perf vs RPL-U

### Intel Xe3 Graphics

- 2 Xe3 engines
- ~18 TOPS

### Intel NPU 5

- Power optimized AI acceleration
- ~18 TOPS
- First ever NPU in an Intel Core-branded processors



eDP 1.5  
UHBR



DP 2.1 (USB-C)  
HDMI 2.1\*

\*HDMI 2.1 includes Fixed Rate Link (FRL) mode with support up to 12Gbps.



SPI w/THC



NPU 5

## Wildcat Lake

Up to 6 cores

15W TDP  
12-25W cTDP

BGA

LPDDR5x 6800  
DDR5-6400



2x TBT4 (USB-C)



8x USB2  
2x USB3



3x2 PCIe  
Gen4



UFS



Wi-Fi 7 (CNVi)  
& Bluetooth



eSPI LAN ISH SPI

### Max Memory Capacity

Up to 128 GB

### Use Conditions Support

- Intel PTR (Embedded/Industrial)
- PC/Client

### Cost-Optimized AI

- 3.3x AI TOPS over RPL-U
- Scalable SKU stack from Core 7 to Core 3 price points

### 2x Thunderbolt™ 4

- 40Gbps bi-directional, per port
- Certified E2E

### Intel Wi-Fi & BT

- With M2 module
- Wi-Fi 7 / BT 5.4

Details shared here are preliminary and subject to change without notice.

cTDP = Configurable TDP  
BGA = Chip-down CPU Package

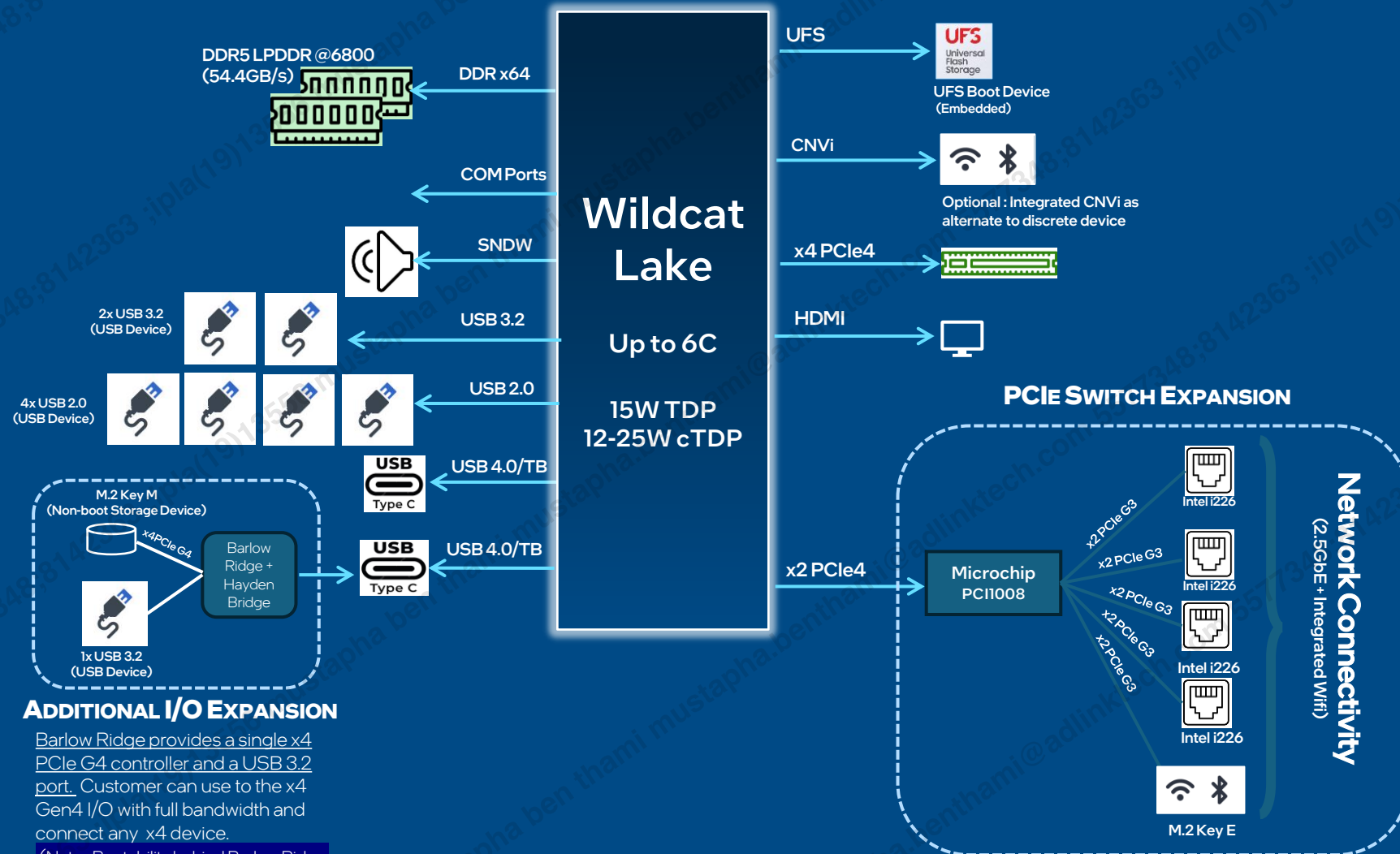


# Future Intel Core Series 3 Processors **PCI Expansion Options**

## Codenamed Wildcat Lake

### Enabling broad Edge usages through cost effective I/O expansion

- Use cases include thin client, interactive display, POS, rail, robotics controller, HMI and many more.
- Additional I/O expansion is available via PCIe switch (Microchip PCI1008) that is included within the reference design & validated by Intel.
- Various options to optimize I/O usages, which includes:
  - Leveraging integrated WiFi
  - Barlow Ridge connected via USB Type C to provide additional PCIe & USB connectivity.
  - UFS for system boot or Storage



# PCI1008 PCIe Fanout Switch

## Intel Wildcat Lake Edge Reference Design

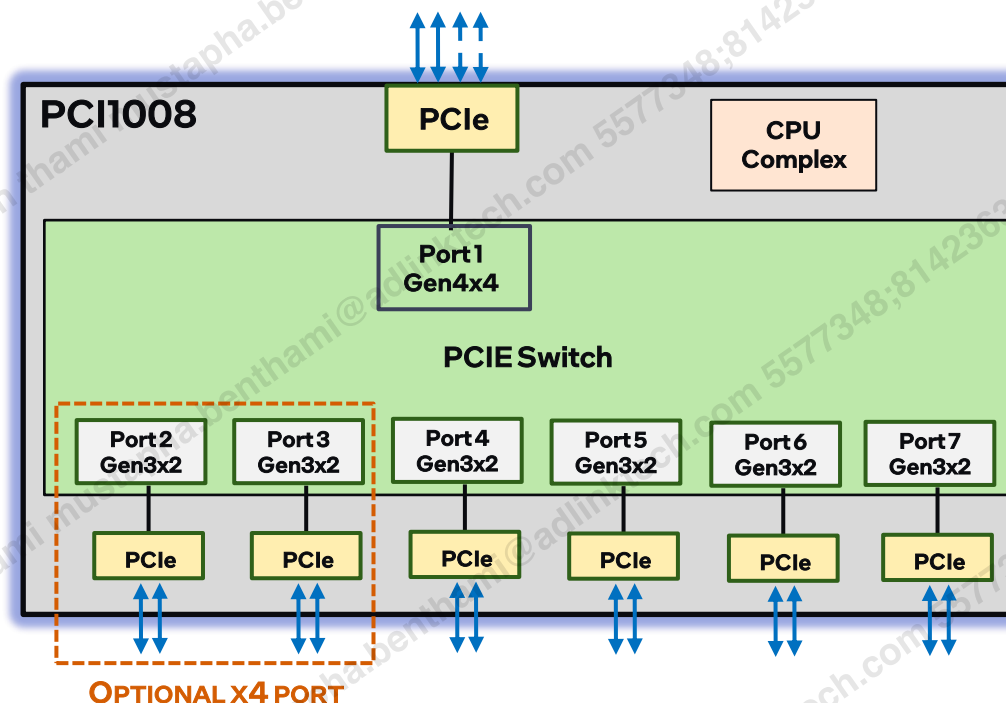
### Key Features

- **Upstream Ports (USP) – Gen4 1x4 Lane Port (16GT/s)**
- **Downstream Ports (DSP)**
  - Default config: Gen3 6x2 Lane Ports 8GT/s
  - Optional config: Gen3 4x2 Lane Ports + 1x4 Lane port 8GT/s
  - DFP configuration via GPIO strap
- **DMA; Management EP**
- **Peripheral I/O Interfaces**
  - JTAG/EJTAG
  - TWI recovery interface
  - UART recovery interface
  - UART command server for Chiplink
- **Power Management**
  - Typical power 4.6W @ 25C
- **Error Containment – AER, DPC, CTS, IER**
- **ChipLink Configuration & Diagnostic Tool Suite**
- **Temperature Industrial temp -40°C to +85°C**
- **Extended Life support (10 years supply/support)**

### Availability

- Evaluation Kit EVB-PCI1005 - Now (contact Microchip for availability)
- Evaluation Kit EVB-PCI1008 - 2Q 2026
- Samples PCI1005-I/5CW - Now (Full featured emulation device)
- Samples PCI1008-I/5CW - March 2026

**Contact Microchip or Intel for special budgetary pricing.**





# Future Intel Core Series 3 Processors **Preliminary SKUs**

## Codenamed Wildcat Lake

| Brand | Price Tier | WCL<br>LP5x-6800, DDR5 6400, PCIe Gen4<br>15W<br>(10W <sup>1</sup> -28W) | Intel Standard<br>Manageability | SIPP |
|-------|------------|--------------------------------------------------------------------------|---------------------------------|------|
|       | MS3        | 360<br>2P+0E+4LPE, 2Xe, NPU                                              | Yes                             | Yes  |
|       | T4         | 350<br>2P+0E+4LPE, 2Xe, NPU                                              | Yes                             | No   |
|       | MS1        | 330<br>2P+0E+4LPE, 2Xe, NPU                                              | Yes                             | Yes  |
|       | T3         | 320<br>2P+0E+4LPE, 2Xe, NPU                                              | Yes                             | No   |
|       | T1         | 310<br>2P+0E+4LPE, 2Xe, NPU                                              | Yes                             | No   |
|       | T1C-2      | 305<br>2P+0E+4LPE, 1Xe, no NPU                                           | Yes                             | No   |

### WCL Package BGA1516

- The SKU line-up is under planning and subject to change.
- All SKU's support Intel Standard Manageability (ISM)
- WCL and WCL-R are pin compatible

[Wildcat Lake \(6C\) to Wildcat Lake Refresh \(8C & 6C\) Chassis Compatibility Guidance Technical Advisory \(RDC# 867883\)](#)

<sup>1</sup> Minimum assured power=10W



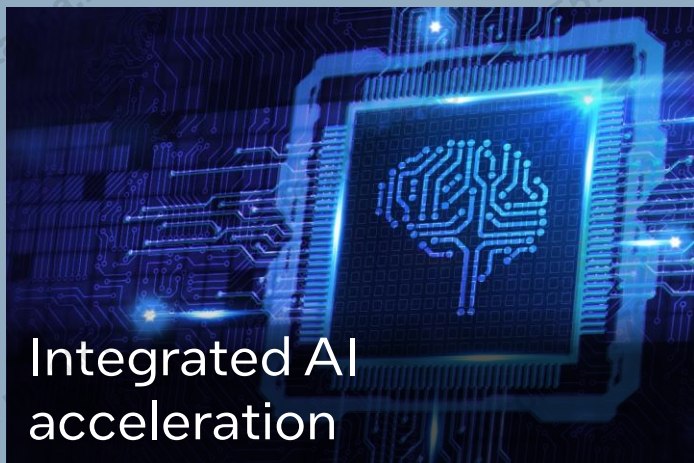
# Future Intel Core Ultra and Intel Core Processors

## Nova Lake BGA

The Nova Lake BGA Edge Gold Deck will be available before the end of Q1 2026 on [rdc.intel.com](https://rdc.intel.com). For any immediate questions, please contact your Intel representative.



# Introducing Nova Lake BGA for the Edge



## Integrated AI acceleration

- Accelerate AI cost effectively with 200+ platform TOPS – reduces power consumption, lower BOM costs and enables smaller form factor design.
- With 3 AI accelerators built-in: Up to 28 cores with AVX 10.2, enhanced Xe3P GPU architecture w/ up to 12Xe cores and Intel® XMV, upgraded NPU 6 with up to 70+ TOPS for increased edge AI capabilities at low power.
- Improved memory bandwidth enables faster AI performance



## Optimized for Edge

- Maximize reliability with industrial-grade features such as support for IB ECC memory, Intel® TCC and TSN.
- Up to 10-year product availability extends the duration between refreshes
- Windows IoT and Linux LTSC support
- Embedded/Industrial use conditions via Platform Tuning for Reliability.

1. Up to 8 PCIe Gen 5.0 lanes; Up to 12 PCIe Gen 4.0 lanes. Up to 8 USB 2.0 ports and up to 2 USB 3 ports.



## Scalability & Compatibility

- Pin-compatible SKU stack enables one board design that can support any SKU choice.
- Forward compatible with next gen processor
- Connect more accelerators, peripherals, and sensors with up to 24 PCIe lanes and up to 10 USB ports<sup>1</sup>.
- Support for optional I/O Expander Chipset provides an additional 24 PCIe lanes<sup>2</sup>

2. Use of optional expander uses a x4 gen5 lane from CPU, for a net of 20 additional lanes.

# Nova Lake for the Edge – Design Options Overview

## BGA/Chip Down Edge Designs



BGA/chip-down  
COM-HPC design example

### Razor Lake AX

Formerly codenamed Nova Lake AX

Disruptive AI and media performance  
Unique BGA design, arriving late 2027

### Nova Lake HX 28C

### Nova Lake H 12Xe

### Nova Lake H 16C

### Nova Lake 8C

### Nova Lake 6C

Pin and Package  
Compatible BGA Design

Socket scalability in a pin-compatible  
package

From top-to-bottom of the SKU stack, one design  
can support any SKU choice

### Optional I/O Expander Chipset

Utilized in LGA/Socket design; increases I/O  
scalability up to 44 PCIe lanes for BGA/chip down  
designs connecting via PCIe

### Flexible TDPs

As low as 12W with configurable TDP

**1.25X** CPU performance boost<sup>1</sup>

**200+ TOPS<sup>3</sup>**

## LGA/Socketed Edge Designs



LGA/chip-down  
design example

### Nova Lake E Xeon (Dunlow)

### Nova Lake S 52C

### Nova Lake S 28C

### Nova Lake S 12Xe

### Nova Lake S 16C

### Nova Lake S 8C<sup>4</sup>

Pin and Package  
Compatible LGA Design

### Support for Intel Xeon Processors

Utilize select future NVL E (Dunlow) Xeon SKUs  
on Nova Lake S designs and beyond

**NEW**

### No Compromise I/O and Connectivity

48 PCIe lanes (36x PCIe 5), 2x bandwidth with  
integrated Thunderbolt 5, Wi-Fi 7

### New NVL S 12Xe: Intel's first "big graphics" for Edge LGA designs

Up to 12Xe 4-deep XMV systolic cores

**NEW**

### Flexible TDPs

As low as 35W with configurable TDP and  
**exploring cTDPs as low as 20W (on select SKUs)**

**1.2X** Single threaded  
performance  
boost<sup>2</sup>

**1.7X** Multi-threaded  
performance  
boost<sup>2</sup>

**200+ TOPS<sup>3</sup>**

**NEW**

**Nova Lake is a game changer platform for the Edge. Seamless scalability, breakthrough AI performance, and robust I/O.**

Branding for Nova Lake is preliminary. Additional details will be shared at a future date. The information shared here is subject to change without notice and should not be viewed as an official POR or product schedule document. 1 – Estimated. Nova Lake HX vs. Arrow Lake HX. 2 – Estimated. Nova Lake S vs. Arrow Lake S. 3 – Target TOPS (int8) for illustration purposes, will vary by specific workload and configuration, more detailed workload performance numbers will be provided. 4 – Core count scalable down to 6C.





# Nova Lake BGA for the Edge Overview

Future Intel Core Ultra and Intel Core Processors for BGA/Chip-down edge designs

Powerful AI, Scalable Compute and Graphics delivering up to ~200+ pTOPS for efficiency optimized AI designs

## New CPU Architectures

- P-cores + E-cores+ LP E-cores
- CYC Performance Cores
- ARW Efficiency Cores

## Xe3/3P Graphics/Xe3P Media

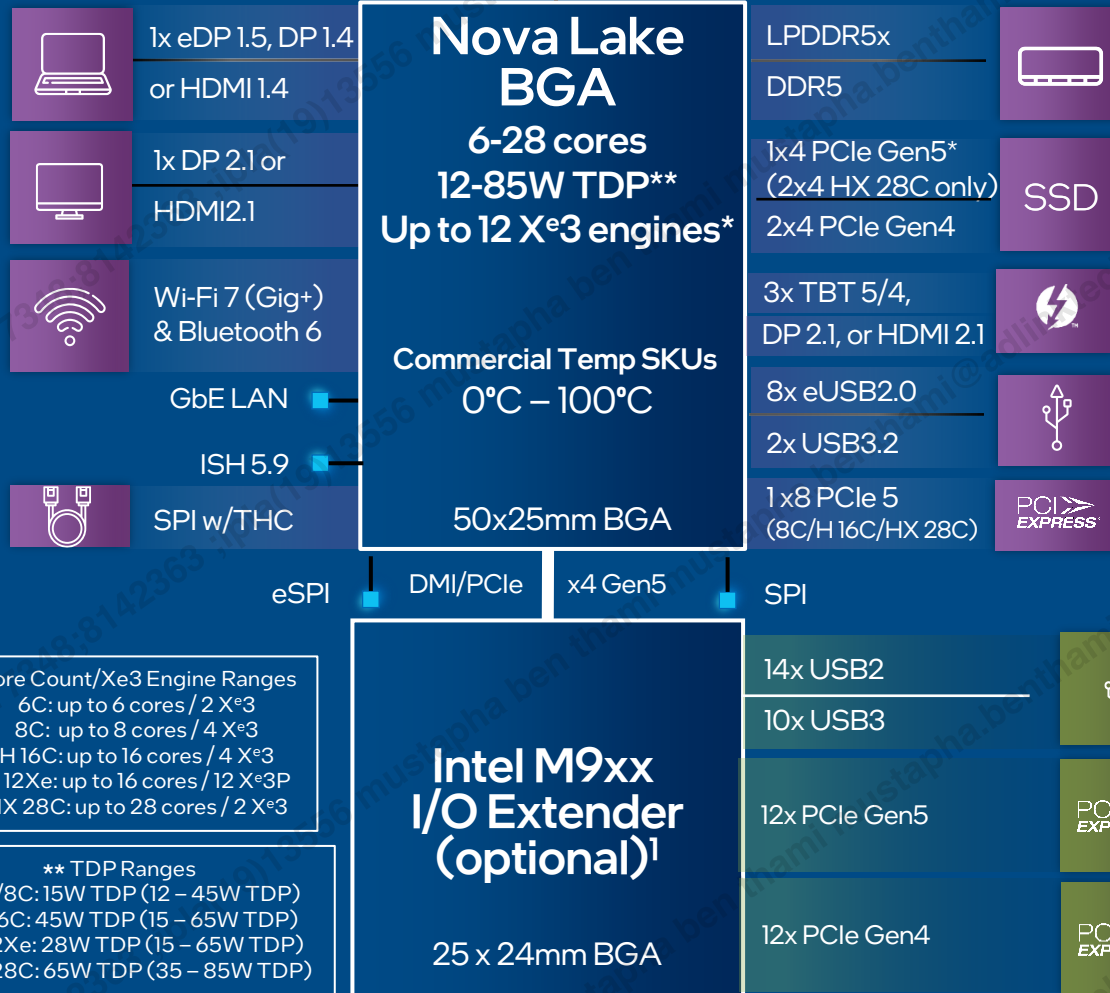
- Up to 12 Xe3P cores
- New Xe3P media
- dGfx with up to x8 Gen5

## Intel NPU 6

- New, Efficient NPU6 Arch
- 4 Tile, Up to 70 TOPS
- Common NPU across NVL

## Optional I/O Expansion

- Up to 12 PCIe 5, 12 PCIe 4 Lanes
- Up to 5 USB3 (20G)
- Up to 10 USB3 (10G)
- Up to 8x SATA



**Max Memory Capacity**  
Up to 256GB

## Memory

- LPDDR5x up to 9.6GT/s
- DDR5 up to 8.0GT/s
- IB ECC (all configs), DDR5 OOB ECC (HX)

## New IPU 8 Architecture

- Introducing AI centric ISP
- Up to 3 concurrent cameras

## Thunderbolt 5/4

- Up to x3 Integrated TBT 5 or 4 ports
- Barlow Ridge Discrete

## Intel Wi-Fi & BT

- Integrated WiFi7 R2 (Gig+)
- Bluetooth 6.x

## Storage

- UFS 4.0 gear 5 (excluding HX)
- Up to 3x SSDs Direct (HX up 4x)

<sup>1</sup>One x4 Gen5 is muxed with DMI for IOE attach. The IOE requires both DMI and sideband signals to operate.

Details shared here are preliminary and subject to change without notice.



# Future Intel Core Processors

## Wildcat Lake Refresh



Access the full Wildcat Lake Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 859374



# Wildcat Lake Refresh

Expanding Wildcat Lake family for higher performance mainstream edge designs



## Built-in Edge Manageability and Security

Intel vPro<sup>1</sup> & SIPP eligible

## Expanded SKU Stack & Compatibility

New 8 core & 6 core configuration; Socket compatible<sup>2</sup> w/ WCL

## Elevated Performance

Improved multi-thread performance

| Design-in Collateral | First Sampling | Production | Market Window |
|----------------------|----------------|------------|---------------|
| Q4 2025              | Q1 2027        | Mid 2027   | 2H 2027       |

<sup>1</sup> vPro and SIPP on select SKUs only

<sup>2</sup> See Wildcat Lake (6C) to Wildcat Lake Refresh (8C & 6C) Chassis Compatibility Guidance for details  
Details shared here are preliminary and subject to change without notice.

# Future Intel Core Ultra Processors

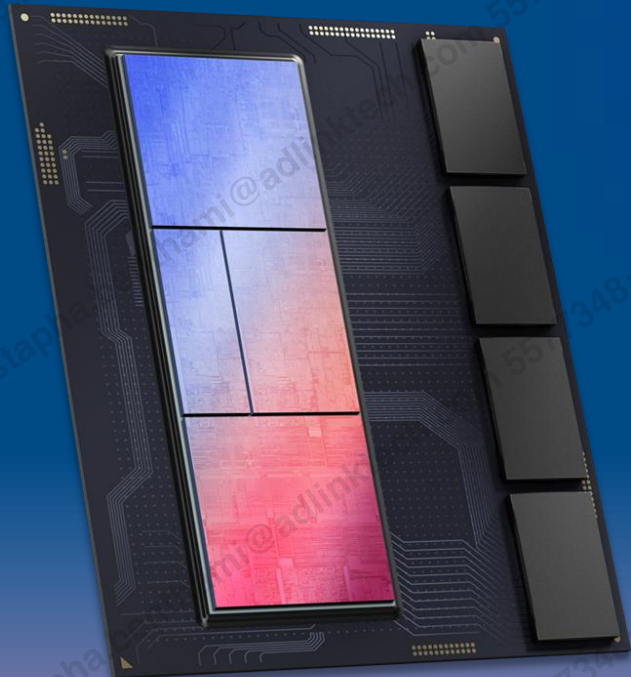
## Razor Lake AX

Additional product information will be made available in a future Intel Edge Compass publication. For any immediate questions, please contact your Intel representative.



# Razor Lake AX for the Edge

Formerly codenamed Nova Lake AX



**intel ai**

**Disruptive AI and media performance  
Arriving late 2027**

All product plans and roadmaps are subject to change without notice.  
\*cTDP range is preliminary. Additional details to be shared at a future date.

## Intel's first wide-memory, big-graphics Edge BGA design

### Peak XPU Performance (>600 Total TOPS)

CPU: Up to 28-cores

GPU: Up to 32Xe (>x60-class), >400 TOPS int8

NPU: >100+ TOPS int8

Media: 3X HW Decode

### Disruptive Efficiency for Edge AI Performance

50W TDP (cTDP 35W-70W\*)

Package size: 56.5x 37.5mm

### Unified Memory and Breakthrough Memory Bandwidth

256b LPDDR5x-10700 on-package

Up to 128GB at 340GB/s

### Small Form Factor Design

45% PCB Area Reduction vs. system with dGPU and memory on board



# Future Intel Core Ultra and Intel Core Processors

## Razor Lake BGA

Additional product information will be made available in a future Intel Edge Compass publication. For any immediate questions, please contact your Intel representative.



# Razor Lake BGA for the Edge **Product Targets**

- Razor Lake is the follow on to Nova Lake
- Enhanced performance vs Nova Lake
- Multi-generational compatibility builds on the foundation defined by Nova Lake
  - Razor Lake BGA is backward compatible to Nova Lake BGA
  - Reference designs implemented on Nova Lake BGA can be reused for the Razor Lake BGA product family

Additional details will be shared at a future date. The information shared here is subject to change without notice and should not be viewed as an official POR.

# Entry Processors for Entry Edge Designs

Most energy efficient in a single,  
integrated platform, that simplifies deployment



# Intel Processors for the Edge

## PC Client



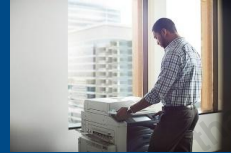
Education



Conference Room



Point of Sales



Office Automation

## Industrial



Video Recorder



Robotics/AGV



Edge Network

## Communication



Kiosk



Signage



Healthcare



Industrial PC



AI Box



Transportation

Available Today



Intel Processor N Series  
codenamed Alder Lake N



Intel Atom  
x7000E Series  
codenamed Alder Lake N



Intel Atom  
x7000RE, C, FE Series  
codenamed Amston Lake



Intel Processor N-  
Series  
codenamed Twin Lake



# Entry Processors for BGA-based Edge Designs

BUILT FOR THE EDGE



## Intel Atom x7000 Processors

**PRODUCTION**  
ALDER LAKE N

- Up to 4 cores
- Same feature set as Alder Lake N (N & J Series) plus:
  - Intel TCC
  - Supports 2.5Gb TSN Ethernet
  - Embedded Use Conditions, Commercial Temp



## Intel N-series Processors

**PRODUCTION**  
ALDER LAKE N

- Up to 8 cores
- DDR4, DDR5 and LPDDR5
- Up to 9 lanes PCIe 3.0
- Integrated Intel UHD Graphics , 3 display ports
- IPU6EP
- In-Band ECC
- AI Acceleration with Intel Deep Learning Boost (VNNI), INT8 support
- PC Client Use Conditions, Commercial Temp



## Intel Core i3 N305 Processor

**PRODUCTION**  
ALDER LAKE N

- Up to 8 cores
- DDR4, DDR5 and LPDDR5
- Up to 9 lanes PCIe 3.0
- Integrated Intel UHD Graphics , 3 display ports
- IPU6EP
- In-Band ECC
- AI Acceleration with Intel Deep Learning Boost (VNNI), INT8 support
- PC Client Use Conditions, Commercial Temp



## Intel Atom x7000 Processors

**PRODUCTION**  
AMSTON LAKE

- Up to 8 cores
- Compatible with Alder Lake N
- Embedded/Industrial Use Conditions
- Extended Temperature (DTR±110°C)
- SKUs designed for edge networking
- DDR4, DDR5 and LPDDR5
- Up to 9 lanes PCIe 3.0
- Integrated Intel® UHD Graphics , 3 display ports
- AI Acceleration with Intel Deep Learning Boost (VNNI), INT8 support
- Supports 2.5Gb TSN Ethernet
- Intel® TCC
- In-Band ECC



## Intel Atom x7000FE Processors

**PRODUCTION**  
AMSTON LAKE

- Same feature set as Intel Atom x7000RE Series Processors plus
  - Intel Silicon Integrity Technology
  - FuSa Essential Design Package (FSEDP) & Airworthiness Evidences Package (AEP)



## Intel Processor N-series

**PRODUCTION**  
TWIN LAKE

- Up to 4 cores
- Refresh of selected ADL-N SKUs
- CPU and GPU performance improvements
- Windows 11 LTSC and Linux (Ubuntu)
- Discrete Wi-Fi 7
- Drop-in compatible with Alder Lake N
- Real-time support with TCC and TSN
- PC Client Use Condition & Commercial Temp



## Intel Core 3 N355 Processor

**PRODUCTION**  
TWIN LAKE

- Same highlights as listed above
- Refresh of ADL-N i3 N305 SKU
- CPU and GPU performance
- Up to 8 cores
- PC Client Use Conditions, Commercial Temp

## Future Entry

**IN DEVELOPMENT**

- Derivative of Wildcat Lake
- Platform/Pin Compatible with Wildcat Lake
- Targeting SKUs with integrated Intel Xe GPU and NPU (Intel AI Boost)
- Greater AI performance and improved features for the next generation of entry-class edge devices

The information above is not an official POR document and may be different from other Intel divisions with similar products. Select features, highlighted above, are not supported on all SKUs. Dates, details and information are subject to change without notice. For the latest detailed schedule information, please refer to individual product gold decks, or contact your Intel representative. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (QRG) available on [rdc.intel.com](https://rdc.intel.com). Beginning with new product introductions in 2023, Intel® Pentium® and Intel® Celeron® are now branded Intel® Processors.

# Intel Atom x7000 Processors

## Alder Lake N and Amston Lake



Access the full Alder Lake N Gold Deck at [rdc.intel.com](https://rdc.intel.com) Document ID: 648572

Access the full Amston Lake Gold Deck at [rdc.intel.com](https://rdc.intel.com) Document ID: 775769



# Intel Atom x7000-series processors

inclusive of Intel Core i3 N-series, Intel Processors N-series options  
formerly Alder Lake N

## Built for the Edge

### Overview

- The Alder Lake N platform comes with improved performance, higher graphics capability, breakthrough memory & I/O features, and an improved user experience over prior generations of entry processors.
- Enhanced for edge/IoT to build efficient solution for various applications, such as visual and transactional retail, education and multi-function printers.

### Enhanced Performance

- Up to 8 Gracemont (E-cores) with new architecture for significant improvements on ST & MT performance.
- DDR5/LPDDR5 memory support for the 1st time in the entry swimlane.
- Low-power range from 6-15W with pin-compatibility and one software stack.

### Enhanced Media & AI

- Integrated Intel® UHD Graphics with up to 32 EU.
- AVX256 & VNNI support for faster AI inference and media transcoding.
- HDR10 HW support with up to 3 independent 4K60 displays<sup>2</sup> Pipelock<sup>4</sup> and Graphics Virtualization.

### Software & Security

- Azure IoT Edge for Linux on Windows EFLOW, running containerized Linux workloads alongside Windows applications
- Trusted Platform Module (TPM) secure key storage for uses cases like full-disk encryption.

### Edge Differentiators

- Extended product availability<sup>1</sup>
- Embedded Use Condition at commercial temperature<sup>2</sup>
- Realtime capability with TCC/TSN<sup>2</sup> and additional OS support
- 2.0GHz High Frequency Mode available<sup>3</sup>

<sup>1</sup> Intel does not commit or guarantee product availability or SW support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software and software support services through standard EOL/PDN processes. Please contact your Intel account rep for additional information.

<sup>2</sup> - Available on select SKUs, <sup>3</sup> - Frequencies are subject to change, <sup>4</sup> - Pipelock is the mechanism to synchronize multiple display output and Alder Lake N supports 2 monitor synchronization



# New Intel Atom x7000-series Processors Overview formerly Amston Lake

## Alder Lake N Extension

- Extending the latest feature set of Alder Lake N to Industrial and Communication use conditions
- Fully compatible with Alder Lake N software and reference board for smoother transition and rapid deployment
- Product availability of 10 years<sup>1</sup>

## Upgraded Performance

- Introducing 8 Gracemont core configuration to Atom product line with scalability from 2 cores to 8 cores
- Bringing improved CPU and GPU performance to INDU and Communication SKUs<sup>2</sup>
- AI inference performance improvement with AVX2 and VNNI. INT8 support for both CPU and GPU <sup>2</sup>

## RE Series (Predictable Performance)

- Industrial use condition at extended temperature with DTR =  $\pm 110^{\circ}\text{C}$ <sup>3</sup>
- Predictable performance with turbo disabled. Real-time capability with Intel® TCC and TSN
- Integrated GPU for AI inference and media processing

## C Series (High Compute)

- Consolidating entry edge computing product with software-defined network security
- Higher HFM for compute-intensive workload, providing over 2.0 GHz<sup>4</sup>
- Communication use conditions at commercial temperature
- Headless configuration with platform NIC solutions

IN DEVELOPMENT

## FE Series (FuSa)

- Industrial use condition at extended temperature with DTR =  $\pm 110^{\circ}\text{C}$ <sup>3</sup>
- Support for Functional Safety
- Intel® Silicon Integrity Technology plumbed in silicon

1 – Intel does not commit or guarantee product availability or SW support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software, and software support services through standard EOL/PDN processes. Contact your Intel account rep for additional information.

2 – GPU is not available for C Series

3 – When RE/FE Series is used as an Embedded use condition, DTR will be  $\pm 90^{\circ}\text{C}$

4 – Frequencies are subject to change





# New Intel Atom x7000-series Processors Overview

## Codenamed Amston Lake

### Compute

- Up to 8 Gracemont cores
- Intel® AVX2 with VNNI
- Higher frequency



3x 4k60 SDR  
2 pipelock



LP/DDR5 4800  
DDR4 3200

### Amston Lake (Alder Lake N Silicon)

Gracemont 8C  
GEN12 32 EU

Type C  
x2



Max Memory Capacity  
Up to 16 GB

### Processor Die HSIO

- 2 Type C

### UHD Graphics

- Up to 32EUs
- 3 display output (2 pipelock)
- INT8 support



SATA 3.0  
x2

### Alder Lake N PCH

4x USB3  
8x USB2



PCIe Gen 3  
9 lanes



### PCH HSIO

- Up to 9 PCIe Gen 3
- Up to 4 USB 3.2
- Up to 2 SATA 3.0



# New Intel Atom x7000-series Processors **SKUs**

## Codenamed Alder Lake N and Amston Lake

|               |          | Alder Lake N                         |                      |                       |                      |                    |                    |                    | Amston Lake (Alder Lake N Extension)                                                        |                                                                                             |                                                                                             |                                                                                             |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                            |
|---------------|----------|--------------------------------------|----------------------|-----------------------|----------------------|--------------------|--------------------|--------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|               |          | PC Client N Series                   |                      |                       |                      | Embedded E Series  |                    |                    | Industrial RE Series                                                                        |                                                                                             |                                                                                             |                                                                                             | Industrial FE Series                                                                        |                                                                                             | Communication C Series                                                                     |                                                                                            |                                                                                            |
| Brand         |          | Intel® Processor N50                 | Intel® Processor N97 | Intel® Processor N200 | Intel® Core™ i3-N305 | Intel Atom® x7211E | Intel Atom® x7213E | Intel Atom® x7425E |  x7211RE |  x7213RE |  x7433RE |  x7835RE |  x7433FE |  x7835FE |  x7203C |  x7405C |  x7809C |
| Use Condition |          | PC Client                            |                      |                       |                      | Embedded           |                    |                    | Embedded, Industrial and Communication                                                      |                                                                                             |                                                                                             |                                                                                             |                                                                                             |                                                                                             | Embedded and Communication                                                                 |                                                                                            |                                                                                            |
| Temperature   |          | Commercial Temperature(DTR = ±70 °C) |                      |                       |                      |                    |                    |                    | Extended Temperature(DTR = ±110 °C)                                                         |                                                                                             |                                                                                             |                                                                                             |                                                                                             |                                                                                             | Commercial Temperature(DTR = ±70 °C)                                                       |                                                                                            |                                                                                            |
| TDP           |          | 6                                    | 12                   | 6                     | 9/15                 | 6                  | 10                 | 12                 | 6                                                                                           | 9                                                                                           | 9                                                                                           | 12                                                                                          | 9                                                                                           | 12                                                                                          | 9                                                                                          | 12                                                                                         | 25                                                                                         |
| CPU           | Core #   | 2                                    | 4                    | 4                     | 8                    | 2                  | 2                  | 4                  | 2                                                                                           | 2                                                                                           | 4                                                                                           | 8                                                                                           | 4                                                                                           | 8                                                                                           | 2                                                                                          | 4                                                                                          | 8                                                                                          |
|               | HFM      | 1.0 GHz                              | 2.0 GHz              | 1.0 GHz               | 1.0/1.8 GHz          | 1.0 GHz            | 1.7 GHz            | 1.5 GHz            | 1.0 GHz                                                                                     | 2.0 GHz                                                                                     | 1.5 GHz                                                                                     | 1.3 GHz                                                                                     | 1.5 GHz                                                                                     | 1.3 GHz                                                                                     | 2.0 GHz                                                                                    | 2.2 GHz                                                                                    | 2.4 GHz                                                                                    |
|               | 1C Turbo | 3.4 GHz                              | 3.6 GHz              | 3.7 GHz               | 3.8 GHz              | 3.2 GHz            | 3.2 GHz            | 3.4 GHz            | 3.2 GHz                                                                                     | 3.4 GHz                                                                                     | 3.4 GHz                                                                                     | 3.6 GHz                                                                                     | 3.4 GHz                                                                                     | 3.6 GHz                                                                                     | 3.2 GHz                                                                                    | 3.4 GHz                                                                                    | 3.6 GHz                                                                                    |
|               | MC Turbo | 3.4 GHz                              | 2.9 GHz              | 3.2 GHz               | 3.0 GHz              | 2.9 GHz            | 2.9 GHz            | 2.7 GHz            | 2.9 GHz                                                                                     | 2.9 GHz                                                                                     | 2.7 GHz                                                                                     | 3.0 GHz                                                                                     | 2.7 GHz                                                                                     | 3.0 GHz                                                                                     | 2.9 GHz                                                                                    | 2.7 GHz                                                                                    | 3.0 GHz                                                                                    |
| GPU           | EU Count | 16                                   | 24                   | 32                    | 32                   | 16                 | 16                 | 24                 | 16                                                                                          | 16                                                                                          | 32                                                                                          | 32                                                                                          | 32                                                                                          | 32                                                                                          |                                                                                            |                                                                                            |                                                                                            |
|               | HFM      | 600 MHz                              | 850 MHz              | 450 MHz               | 1.0 GHz              | 600 MHz            | 800 MHz            | 800 MHz            | 400 MHz                                                                                     | 600 MHz                                                                                     | 600 MHz                                                                                     | 800 MHz                                                                                     | 600 MHz                                                                                     | 800 MHz                                                                                     |                                                                                            |                                                                                            |                                                                                            |
|               | Turbo    | 750 MHz                              | 1.2 GHz              | 750 MHz               | 1.25 GHz             | 1.0 GHz            | 1.0 GHz            | 1.0 GHz            | 1.0 GHz                                                                                     | 1.0 GHz                                                                                     | 1.0 GHz                                                                                     | 1.2 GHz                                                                                     | 1.0 GHz                                                                                     | 1.2 GHz                                                                                     |                                                                                            |                                                                                            |                                                                                            |
| Intel® TCC    |          | No                                   | No                   | No                    | No                   | Yes                | Yes                | Yes                | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                        | Yes                                                                                        | Yes                                                                                        |
| TSN GbE       |          | No                                   | No                   | No                    | No                   | Yes                | Yes                | Yes                | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                        | Yes                                                                                        | Yes                                                                                        |
| CNVi          |          | Yes                                  | Yes                  | Yes                   | Yes                  | Yes                | No                 | Yes                | No                                                                                          | No                                                                                          | No                                                                                          | No                                                                                          | No                                                                                          | No                                                                                          | No                                                                                         | No                                                                                         | No                                                                                         |
| IPU           |          | Yes                                  | Yes                  | Yes                   | Yes                  | Yes                | No                 | Yes                | Yes                                                                                         | No                                                                                          | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | Yes                                                                                         | No                                                                                         | No                                                                                         | No                                                                                         |
| TCSS          |          | Yes                                  | Yes                  | Yes                   | Yes                  | Yes                | Yes                | Yes                | 5 Gbps                                                                                      | 5 Gbps                                                                                      | 5 Gbps                                                                                      | 5 Gbps                                                                                      | 5 Gbps                                                                                      | 5 Gbps                                                                                      | 5 Gbps                                                                                     | 5 Gbps                                                                                     | 5 Gbps                                                                                     |
| FuSa          |          | No                                   | No                   | No                    | No                   | No                 | No                 | No                 | No                                                                                          | No                                                                                          | No                                                                                          | No                                                                                          | Yes                                                                                         | Yes                                                                                         | No                                                                                         | No                                                                                         | No                                                                                         |

### Notes:

- Amston Lake SKU configurations are subject to change
- eMMC, TCSS, and Turbo configuration will be different between Embedded and Industrial/Communication use conditions. Refer to Amston Lake Gold Deck for additional details.
- When RE Series is used as an Embedded use condition, DTR will be ±90 °C
- Communication use condition is enveloped by Industrial use condition, C Series supports Linux only and x7809C will require an active cooling solution
- Processor Base Power (a.k.a TDP) is the average power dissipation (at Tj=100 °C) that is validated during manufacturing for the base configuration when executing a near worst-case commercially available workload as specified by Intel for the SKU segment. The base configuration for this platform is defined in the Thermal Mechanical Design Guide (RDC# 646747). The workload specified for this platform is CPU-intensive with minimal GPU activity.

# Intel Processors N-Series

## Twin Lake



Access the full Twin Lake Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 826634

# Twin Lake Platform Introduction

- Twin Lake is the follow-on N-series platform to some Alder Lake N PC Client SKUs
- Key Twin Lake platform highlights:
  - **New** Refresh with CPU performance improvement
  - **New** Refresh with graphics performance improvements
  - **New** Additional 4 Core 6W SKU
  - Drop-in compatible with Alder Lake N and Amston Lake
  - Same power delivery and thermal specifications as Alder Lake N and Amston Lake
  - **New** Windows 11 LTSC support
  - Software backward compatibility to Alder Lake N and Amston Lake
  - **New** Next-Gen Wireless with discrete Wi-Fi 7 + BT 5.4 (Gale Peak)
  - Continued support of discrete Wi-Fi 6E + BT 5.3 (Typhoon Peak)



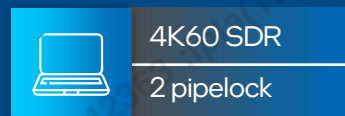
# Twin Lake

## Compute

- Up to 8 Gracemont cores
- Intel® AVX2 with VNNI
- **New** Higher performance SKUs

## Intel® Graphics

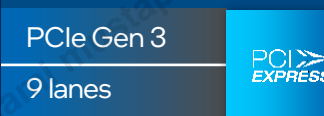
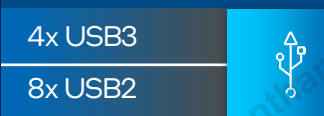
- Up to 32EUs with INT8 support
- 3 display output (2 pipelock)
- **New** Higher Graphics performance in 6W SKUs



## Twin Lake (Alder Lake N Silicon)

Gracemont 8C  
GEN12 32 EU

## Alder Lake N PCH



## Max Memory Capacity

Up to 16 GB

## Processor Die HSIO

- 2 Type C

## Imaging Processing Unit

- High image quality IPU6
- fEcosystem camera enabling
- Ready to use camera kit

## PCH HSIO

- Up to 9 PCIe Gen 3
- Up to 4 USB 3.2
- Up to 2 SATA 3.0
- **New** Discrete Wi-Fi 7

\* Processor die and PCH are in a single package

# Twin Lake, Amston Lake, and Alder Lake SKUs

|               |          | Alder Lake N Silicon                 |                      |                       |                       |                       |                      |                     |                     |                     |                                        |                      |                      |                      |                      |                            |                                      |                        |                     |                     |
|---------------|----------|--------------------------------------|----------------------|-----------------------|-----------------------|-----------------------|----------------------|---------------------|---------------------|---------------------|----------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|--------------------------------------|------------------------|---------------------|---------------------|
|               |          | Twin Lake & Alder Lake N             |                      |                       |                       |                       |                      | Alder Lake N        |                     |                     | Amston Lake                            |                      |                      |                      |                      |                            |                                      |                        |                     |                     |
|               |          |                                      |                      |                       |                       |                       |                      |                     |                     |                     | Industrial RE Series                   |                      |                      |                      |                      | Industrial FE Series       |                                      | Communication C Series |                     |                     |
| Use Condition |          | PC Client N Series                   |                      |                       |                       |                       |                      | Embedded E Series   |                     |                     | Embedded, Industrial and Communication |                      |                      |                      |                      | Embedded and Communication |                                      |                        |                     |                     |
| Temperature   |          | Commercial Temperature (DTR = ±70°C) |                      |                       |                       |                       |                      |                     |                     |                     | Extended Temperature (DTR = ±110°C)    |                      |                      |                      |                      |                            | Commercial Temperature (DTR = ±70°C) |                        |                     |                     |
| Processor     |          | Intel® Processor N50                 | Intel® Processor N97 | Intel® Processor N150 | Intel® Processor N200 | Intel® Processor N250 | Intel® Core™ i3 N305 | Intel® Core™ 3 N355 | Intel® Atom® x721IE | Intel® Atom® x7213E | Intel® Atom® x7425E                    | Intel® Atom® x7211RE | Intel® Atom® x7213RE | Intel® Atom® x7433RE | Intel® Atom® x7835RE | Intel® Atom® x7433FE       | Intel® Atom® x7435FE                 | Intel® Atom® x7203C    | Intel® Atom® x7405C | Intel® Atom® x7809C |
| MM#           |          | 99C62L                               | 99C82I               | 99CLKP                | 99C62K                | 99CLKR                | 99C62M               | 99CLKT              | 99C823              | 99C824              | 99C822                                 | 99CH13               | 99CH0W               | 99CH10               | 99CH11               | 99D850                     | 99D854                               | 99CH12                 | 99CH0P              | 99CH0R              |
| TDP           |          | 6                                    | 12                   | 6                     | 6                     | 6                     | 9/15                 | 9/15                | 6                   | 10                  | 12                                     | 6                    | 9                    | 9                    | 12                   | 9                          | 12                                   | 9                      | 12                  | 25                  |
| CPU           | Core #   | 2                                    | 4                    | 4                     | 4                     | 4                     | 8                    | 8                   | 2                   | 2                   | 4                                      | 2                    | 2                    | 4                    | 8                    | 4                          | 8                                    | 2                      | 4                   | 8                   |
|               | HFM      | 1.0GHz                               | 2.0GHz               | 0.8GHz                | 1.0GHz                | 1.3GHz                | 1.0/1.8GHz           | 1.0/1.9GHz          | 1.0GHz              | 1.7GHz              | 1.5GHz                                 | 1.0GHz               | 2.0GHz               | 1.5GHz               | 1.3GHz               | 1.5 GHz                    | 1.3 GHz                              | 2.0GHz                 | 2.2GHz              | 2.4GHz              |
|               | 1C Turbo | 3.4GHz                               | 3.6GHz               | 3.6GHz                | 3.7GHz                | 3.8GHz                | 3.8GHz               | 3.9GHz              | 3.2GHz              | 3.2GHz              | 3.4GHz                                 | 3.2GHz               | 3.4GHz               | 3.4GHz               | 3.6GHz               | 3.4 GHz                    | 3.6 GHz                              | 3.2GHz                 | 3.4GHz              | 3.6GHz              |
|               | MC Turbo | 3.4GHz                               | 2.9GHz               | 2.9GHz                | 3.2GHz                | 3.2GHz                | 3.0GHz               | 3.0GHz              | 2.9GHz              | 2.9GHz              | 2.7GHz                                 | 2.9GHz               | 2.9GHz               | 2.7GHz               | 3.0GHz               | 2.7 GHz                    | 3.0 GHz                              | 2.9GHz                 | 2.7GHz              | 3.0GHz              |
| GPU           | EU Count | 16                                   | 24                   | 24                    | 32                    | 32                    | 32                   | 32                  | 16                  | 16                  | 24                                     | 16                   | 16                   | 32                   | 32                   | 32                         | 32                                   |                        |                     |                     |
|               | HFM      | 600MHz                               | 850MHz               | 400MHz                | 450MHz                | 550MHz                | 1.0GHz               | 1.0GHz              | 600MHz              | 800MHz              | 800MHz                                 | 400MHz               | 600MHz               | 600MHz               | 800MHz               | 600 MHz                    | 800 MHz                              |                        |                     |                     |
|               | Turbo    | 750MHz                               | 1.2GHz               | 1.0GHz                | 750MHz                | 1.25GHz               | 1.25GHz              | 1.35GHz             | 1.0GHz              | 1.0GHz              | 1.0GHz                                 | 1.0GHz               | 1.0GHz               | 1.0GHz               | 1.2GHz               | 1.0 GHz                    | 1.2 GHz                              |                        |                     |                     |
| Intel® TCC    |          | No                                   | No                   | Yes <sup>2</sup>      | No                    | Yes <sup>2</sup>      | No                   | Yes <sup>2</sup>    | Yes                 | Yes                 | Yes                                    | Yes                  | Yes                  | Yes                  | Yes                  | Yes                        | Yes                                  | Yes                    | Yes                 | Yes                 |
| TSN GbE       |          | No                                   | No                   | No                    | No                    | No                    | No                   | No                  | Yes                 | Yes                 | Yes                                    | Yes                  | Yes                  | Yes                  | Yes                  | Yes                        | Yes                                  | Yes                    | Yes                 | Yes                 |
| CNVi          |          | Yes                                  | Yes                  | Yes <sup>1</sup>      | Yes                   | Yes <sup>1</sup>      | Yes                  | Yes <sup>1</sup>    | Yes                 | No                  | Yes                                    | No                   | No                   | No                   | No                   | No                         | No                                   | No                     | No                  | No                  |
| IPU           |          | Yes                                  | Yes                  | Yes                   | Yes                   | Yes                   | Yes                  | Yes                 | Yes                 | No                  | Yes                                    | Yes                  | No                   | Yes                  | Yes                  | Yes                        | Yes                                  | No                     | No                  | No                  |
| TCSS          |          | Yes                                  | Yes                  | Yes                   | Yes                   | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 | Yes                                    | 5Gbps                | 5Gbps                | 5Gbps                | 5Gbps                | 5Gbps                      | 5Gbps                                | 5Gbps                  | 5Gbps               | 5Gbps               |
| FuSa          |          | No                                   | No                   | No                    | No                    | No                    | No                   | No                  | No                  | No                  | No                                     | No                   | No                   | No                   | No                   | Yes                        | Yes                                  | No                     | No                  | No                  |

## Notes:

- Other names and brands may be claimed as the property of others. All products, computer systems, dates, and figures specified are preliminary based on current expectations and are subject to change without notice.
  - eMMC, TCSS, Turbo configuration will be different between Embedded and Industrial/Communication use conditions. Refer to the "Multiple Use Condition Support" page on the Amston Lake Gold Deck (RDC#775769).
  - When RE Series is used as Embedded use condition, DTR will be  $\pm 90^{\circ}\text{C}$ .
  - Communication use condition is enveloped by Industrial use condition.
  - C Series support Linux only and x7809C will require active cooling solution.
  - Processor Base Power (a.k.a TDP) is the average power dissipation (at  $T_j=100^{\circ}\text{C}$ ) that is validated during manufacturing for the base configuration when executing a near worst-case commercially available workload as specified by Intel for the SKU segment. The base configuration for this platform is defined in the Thermal Mechanical Design Guide (RDC# 646747) and External Design Specification (EDS) – Addendum (RDC#721616). The workload specified for this platform is CPU-intensive with minimal GPU activity.
1. CNVi support is available starting from Twin Lake MR2 for Edge applications.
  2. Real-Time support with Intel® TCC is available starting from Twin Lake MR2 for Edge applications.

# Twin Lake SKU Transition from Alder Lake N

## Alder Lake-N PC Client SKUs

Intel® Core™ i3 N305  
8C, 15W (cTDP 9W), 3.8/3.0 GHz  
Intel® UHD Graphics  
32EUs, 1250 MHz

Intel® Processor N200  
4C, 6W, 3.7/3.2 GHz  
Intel® UHD Graphics  
32EUs, 750 MHz

Intel® Processor N97  
4C, 12W, 3.6/2.9 GHz  
Intel® UHD Graphics  
24EUs, 1200 MHz

Intel® Processor N50  
2C, 6W, 3.4/3.4 GHz  
Intel® UHD Graphics  
16EUs, 750 MHz



## Twin Lake & Alder Lake N PC Client SKUs

Intel® Core™ 3 N355  
8C, 15W (cTDP 9W), 3.9/3.0 GHz  
Intel® Graphics  
32EUs, 1350MHz

Intel® Processor N250  
4C, 6W, 3.8/3.2 GHz  
Intel® Graphics  
32EUs 1250MHz

Intel® Processor N150  
4C, 6W, 3.6/2.9 GHz  
Intel® Graphics  
24EUs, 1000MHz

Intel® Core™ i3 N305  
8C, 15W (cTDP 9W), 3.8/3.0 GHz  
Intel® UHD Graphics  
32EUs, 1250 MHz

Intel® Processor N200  
4C, 6W, 3.7/3.2 GHz  
Intel® UHD Graphics  
32EUs, 750 MHz

Intel® Processor N97  
4C, 12W, 3.6/2.9 GHz  
Intel® UHD Graphics  
24EUs, 1200 MHz

Intel® Processor N50  
2C, 6W, 3.4/3.4 GHz  
Intel® UHD Graphics  
16EUs, 750 MHz

### Note:

CPU Frequency listed above is Single core Turbo frequency / All core Turbo frequency.

Other names and brands may be claimed as the property of others. All products, computer systems, dates, and figures specified are preliminary based on current expectations and are subject to change without notice.

Alder Lake N SKUs will be available through Alder Lake N supply period.

# Future Intel Processors

## Future Entry



Additional product information will be made available in a future Intel Edge Compass publication. For any immediate questions, please contact your Intel representative.





## Future Entry Processors **for the Edge**

- Targeting market readiness by 2028
- Derivative of Wildcat Lake
- Platform/Pin Compatible with Wildcat Lake
- SKUs offering integrated Intel Xe Graphics and NPU
- Targeting greater AI performance and improved features for the next generation of entry-class edge devices
- Additional details to be shared in late Q1 2026

# Additional Design Options

This section features select content to help provide guidance on additional Intel products that may have fitment and affinity for select edge and embedded designs.

This is provided here for informational purposes only. Please contact your Intel Representative with any questions.

# Intel Xeon 6900 Processors

## Granite Rapids AP on the Birch Stream AP Platform

Access the full Intel Xeon 6 Processor Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 861272



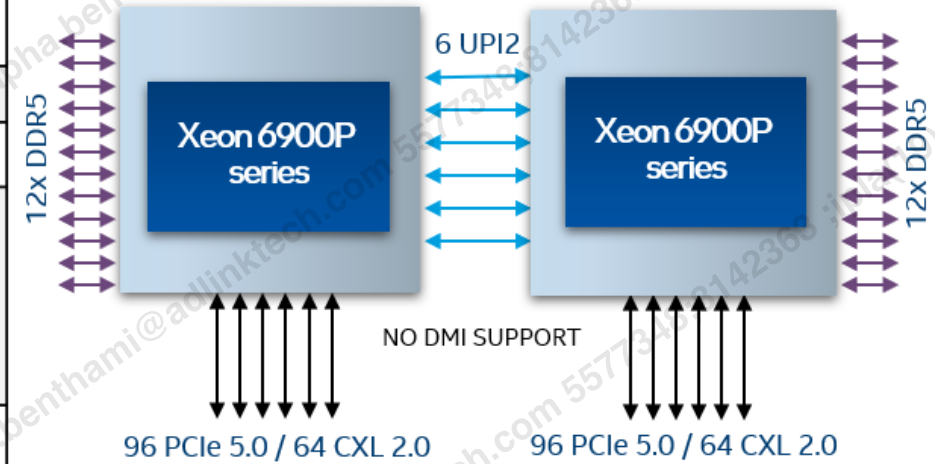
# Intel Xeon 6900P-series processors

|                             |                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                         | <b>72 to 128 cores</b><br><b>CPU self-boot only (NO PCH)</b><br>(Package dimension: 104.5 x 70.5mm)                                                                                                                                                                                                                           |
| Socket and TDP              | <b>Socket BR (LGA 7529-1)</b><br><b>400-450W to 500W</b>                                                                                                                                                                                                                                                                      |
| Scalability                 | 1S, 2S                                                                                                                                                                                                                                                                                                                        |
| Accelerators                | Next-gen Intel® Quick Assist Technology, DLB, DSA, IAA, 5G ISA, BFloat16, <b>AMX-FP16</b>                                                                                                                                                                                                                                     |
| Memory                      | <b>12 channels DDR5 per CPU</b><br><b>DDR5: Up to 6400MTs 1DPC</b><br><b>MRDIMM: Up to 8800 1DPC</b>                                                                                                                                                                                                                          |
| UPI 2.0                     | <b>6 links per CPU (x24 width)</b><br><b>Speed: 16, 20, 24GTs</b>                                                                                                                                                                                                                                                             |
| PCIe / Compute Express Link | <b>96 PCIe 5.0 lanes per CPU (PCIe or CXL)</b><br><b>64 lanes north / 32 lanes south of socket</b><br><b>NTB @ PCIe 5.0, higher PCIe P2P performance (vs SPR)</b><br>PCIe bifurcation: x16, x8, x4, <b>x2(Pcie 5.0)</b><br><b>64 CXL 2.0 lanes per CPU (any 4 of 6 x16 ports)</b><br><b>CXL bifurcation: x16, x8 (Type 3)</b> |
| Security                    | Software Guard Extensions (SGX) for Application Isolation – AES 256-bit keys<br>Trust Domain Extensions (TDX) for VM isolation - 1,024 keys, <b>AES 256-bit key strength</b><br><b>Link Protection [PCIe (x16, x8, x4), CXL, UPI], PFR 4.0</b>                                                                                |

Platform support timing for DDR5 6400 1DPC will be based on memory availability

\*Other names and brands may be claimed as property of others

## Intel Xeon 6-AP Platform Diagram



New capabilities relative to <Prior Gen> in **Bold Purple**

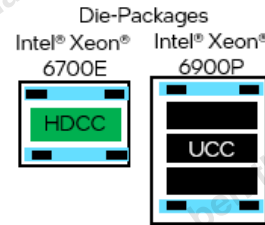


# Intel® Xeon® 6700E-series SKU Stack

## Intel® Xeon® 6900P-series SKU Stack

### Intel Xeon 6700E-series processors

| Performance/Watt |             |                                         |                                 |
|------------------|-------------|-----------------------------------------|---------------------------------|
| Max DDR5         | 6780E       |                                         |                                 |
|                  | 144C 330W   | SSTPP: 144C/320W 2.3/3.0/3.0 (Network)* |                                 |
| 6400             | 2.2/3.0/3.0 | 2/2/2/2                                 | Compute / Network Modes         |
|                  | 6766E       |                                         |                                 |
| 6400             | 144C 250W   |                                         |                                 |
|                  | 1.9/2.7/2.7 | 2/2/2/2                                 | Compute / Network Modes         |
| 6400             | 6756E       |                                         |                                 |
|                  | 128C 225W   |                                         |                                 |
|                  | 1.8/2.6/2.6 | 2/2/2/2                                 | Compute / Network Modes         |
| 5600             | 6746E       |                                         |                                 |
|                  | 112C 250W   |                                         |                                 |
|                  | 2/2.7/2.7   | 2/2/2/2                                 | Compute / Network Modes         |
| 6400             | 6740E       |                                         |                                 |
|                  | 96C 250W    | SSTPP: 96C/250W 2.6/3.2/3.2 (Network)*  |                                 |
|                  | 2.4/3.2/3.2 | 2/2/4/4                                 | 80C/225W 2.6/3.2/3.2 (Network)* |
| 5600             | 6731E       |                                         |                                 |
|                  | 96C 250W    |                                         |                                 |
|                  | 2.2/3.1/3.1 | 2/2/2/2                                 | Compute / Network Modes         |
| 5600             | 6710E       |                                         |                                 |
|                  | 64C 205W    | SSTPP: 64C/205W 2.5/3.2/3.2 (Network)*  |                                 |
|                  | 2.4/3.2/3.2 | 2/2/4/4                                 | Compute / Network Modes         |



Accelerators  
(Intel® DSA / Intel® IAA / Intel® QAT / Intel® DLB)

### Intel Xeon 6900P-series processors

|                                                        |                                        |         |  |
|--------------------------------------------------------|----------------------------------------|---------|--|
| Max MRDIMM/DDR5                                        | 6980P                                  |         |  |
| 8800/6400                                              | 128C 500W                              |         |  |
|                                                        | 2.0/3.2/3.9                            | 4/4/4/4 |  |
|                                                        | 6979P                                  |         |  |
| 8800/6400                                              | 120C 500W                              |         |  |
|                                                        | 2.1/3.2/3.9                            | 4/4/4/4 |  |
| 6900-series 'P' SKUs, except for 6944P, support MRDIMM |                                        |         |  |
|                                                        | 6972P                                  |         |  |
| 8800/6400                                              | 96C 500W                               |         |  |
|                                                        | 2.4/3.5/3.9                            | 4/4/4/4 |  |
|                                                        | SSTPP: 96C/400W 2.0/3.2                |         |  |
|                                                        | 6960P                                  |         |  |
| 8800/6400                                              | 72C 500W                               |         |  |
|                                                        | 2.7/3.8/3.9                            | 4/4/4/4 |  |
|                                                        | SSTPP: 72C/400W 2.3/3.5                |         |  |
|                                                        | 66C/450W 2.6/3.9                       |         |  |
|                                                        | 48C/450W 3.1/3.9                       |         |  |
|                                                        | 6952P                                  |         |  |
| 8800/6400                                              | 96C 400W                               |         |  |
|                                                        | 2.1/3.2/3.9                            | 4/4/4/4 |  |
|                                                        | SSTPP: 96C/400W 2.5/3.2/3.9 (Compute)* |         |  |
|                                                        | 6944P                                  |         |  |
| 6400 only                                              | 72C 350W                               |         |  |
|                                                        | 1.8/3.1/3.9                            | 0/0/0/0 |  |

All SKUs, frequencies and performance are PRELIMINARY and can change without notice.

# Intel Xeon 6700P-B and 6500P-B Processors

## Granite Rapids D on the Kaseyville Platform



Access the full Intel Xeon 6 SoC Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 858953

# Intel Xeon 6 SoC Overview

| CPU Config               | HCC                                                                                                                                                                                                                                           | XCC                                                                                                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Socket & TDP             | FCBGA 77.5 mm x 50 mm;<br><b>110W – 235W</b>                                                                                                                                                                                                  | FCBGA <b>77.5 mm x 56.5 mm</b> ;<br><b>305W – 325W</b>                                                    |
| Platform                 | 1 Socket <b>Kaseyville Platform</b>                                                                                                                                                                                                           |                                                                                                           |
| Target Core Count        | <b>12 - 42 cores</b>                                                                                                                                                                                                                          | <b>64 - 72 cores</b>                                                                                      |
| Core                     | New ISA: Accelerator ISA (AiA), AMX FP16 Complex Support<br>Intel® SGX-TEM, TDX 2.0, Intel® TXT, Intel® Boot-Guard<br>ROP Attack Protection (CET)                                                                                             |                                                                                                           |
| LLC                      | <b>4MB per core up to 168MB</b>                                                                                                                                                                                                               | <b>4MB per core up to 288MB</b>                                                                           |
| Memory                   | <b>Up to 4 channels DDR5 (Gen3 Modules)</b><br>(up to 2 DIMMs per channel)<br>DDR5 Speeds 4800-6400 MT/s                                                                                                                                      | <b>Up to 8 channels DDR5 (Gen 3 Modules)</b><br>(up to 2 DIMMs per channel)<br>DDR5 speeds 4800-6400 MT/s |
|                          | RDIMM, <b>Memory down (SODIMM like topology), SODIMM</b>                                                                                                                                                                                      | RDIMM                                                                                                     |
| Ethernet/LAN             | <b>2X100 , 4X50, 8X{ 25, 10, 2.5, 1Gbe, 100Mb}</b><br>Throughput: Up to 200 Gbps                                                                                                                                                              |                                                                                                           |
| Intel Accelerators       | <b>Crypto (up to 200G), Compression (up to 80G),<br/>Decompression (up to 160G); Intel® vRAN Boost Accelerator; Intel® AMX,<br/>Intel® Media Transcode Accelerator, Intel® Dynamic Load Balancer (DLB), Intel® Data Streaming Accelerator</b> |                                                                                                           |
| PCIe 5.0/CXL<br>PCIe 4.0 | <b>32 PCIe 5.0/CXL 2.0 on 16 Lanes + 16 PCIe 4.0.</b><br>Bifurcation of x16, x8, x4, x2. <b>Shared Virtual Memory</b>                                                                                                                         |                                                                                                           |
| Comms Use Conditions     | Commercial Temp: <b>-5°C</b> to ~85°C Tcase<br>Extended Temp Option: -40°C to ~85°C Tcase<br>Full Dynamic Temp Range support                                                                                                                  |                                                                                                           |

† 40GBASE-KR4 supported via 1x100G or 2x100G backplane configurations

\*All product plans and roadmaps are subject to change without notice.

**Bold Black** indicate updates over Icelake-D

**Bold Purple** indicates differences between HCC and XCC

# Intel Xeon 6 SOC Production SKUs – XCC & HCC

|                  |           | CPU Cores |         |            |                      |                             |        | Memory        |      | I/O                | Accelerators       |                   |                                    |            | Support       |                     |
|------------------|-----------|-----------|---------|------------|----------------------|-----------------------------|--------|---------------|------|--------------------|--------------------|-------------------|------------------------------------|------------|---------------|---------------------|
| Processor Number | Spec Code | Cores     | TDP (W) | Base (GHz) | All Core Turbo (GHz) | AVX512 All Core Turbo (GHz) | Uncore | #Mem Channels | DDR5 | Integratd Ethernet | Intel® QAT Support | Intel® vRAN Boost | Intel® Media Transcode Accelerator | Intel® AMX | Extended Temp | 10yr support option |
| 6776P-B          | A4J2      | 72        | 325     | 2.300      | 2.900                | 2.500                       | 1.800  | 8             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        |               | Yes                 |
| 6768P-B          | A4J5      | 64 SST†   | 325     | 2.200      | 3.300                | 2.600                       | 1.600  | 8             | 6400 | 200G               | 1x                 | Yes               | Yes                                | Yes        |               | Yes                 |
| 6766P-B          | A4J3      | 64 SST    | 305     | 2.300      | 2.900                | 2.500                       | 1.800  | 8             | 6400 | 200G               | 2x*                | Yes               |                                    | Yes        |               | Yes                 |
| 6756P-B          | A4J4      | 64 SST†   | 325     | 2.200      | 3.300                | 2.600                       | 1.600  | 8             | 6400 | 200G               | 2x*                | Yes               | Yes                                | Yes        |               | Yes                 |
| 6726P-B          | RW FY     | 42        | 235     | 2.3        | 2.9                  | 2.5                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        |               | Yes                 |
| 6718P-B††        | A35Z      | 40 SST†   | 235     | 2.5        | 2.9                  | 2.9                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               | Yes                                | Yes        |               | Yes                 |
| 6716P-B          | RWGG      | 40 SST    | 235     | 2.5        | 2.9                  | 2.9                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        |               | Yes                 |
| 6706P-B          | RWGD      | 40        | 235     | 2.5        | 2.9                  | 2.9                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        |               | Yes                 |
| 6563P-B          | RWG4      | 38 SST    | 235     | 2.4        | 3.1                  | 2.9                         | 1.8    | 4             | 6400 | 200G               | 2x*                |                   | Yes                                | Yes        |               | Yes                 |
| 6556P-B          | RWG2      | 36        | 215     | 2.3        | 2.9                  | 2.5                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        | Yes           | Yes                 |
| 6553P-B          | RWG5      | 36        | 235     | 2.6        | 3.4                  | 3                           | 1.6    | 4             | 6400 | 200G               | 2x*                |                   | Yes                                | Yes        |               | Yes                 |
| 6548P-B††        | A362      | 32 SST    | 195     | 2.0        | 2.9                  | 2.5                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        | Yes           | Yes                 |
| 6546P-B          | RWFZ      | 32        | 195     | 2.3        | 2.9                  | 2.5                         | 1.6    | 4             | 6400 | 200G               | 1x                 | Yes               |                                    | Yes        |               | Yes                 |
| 6544P-B††        | A3MH      | 32 SST    | 170     | 2          | 2.6                  | 2.4                         | 1.4    | 4             | 5600 | 100G               | 1x                 |                   | Yes                                | Yes        |               | Yes                 |
| 6543P-B          | RWG9      | 32        | 160     | 2          | 2.6                  | 2.4                         | 1.4    | 4             | 5600 | 100G               | 1x                 |                   |                                    | Yes        |               | Yes                 |
| 6533P-B          | RWGA      | 32        | 205     | 2.2        | 2.6                  | 2.4                         | 1.6    | 4             | 5600 | None               | 2x                 |                   |                                    | Yes        |               | Yes                 |
| 6532P-B††        | RWXH      | 32        | 205     | 2.2        | 2.6                  | 2.4                         | 1.6    | 4             | 5600 | None               | 2x                 |                   |                                    | Yes        |               | Yes                 |
| 6523P-B          | RWGC      | 24 SST    | 175     | 2.5        | 3.3                  | 3.1                         | 1.8    | 4             | 5600 | 100G               | 2x                 |                   |                                    | Yes        |               | Yes                 |
| 6518P-B††        | A363      | 20C       | 150     | 2.0        | 2.9                  | 2.5                         | 1.6    | 4             | 4800 | 200G               | 1x                 | Yes               |                                    | Yes        | Yes           | Yes                 |
| 6516P-B          | RWG3      | 20        | 145     | 2.3        | 2.9                  | 2.5                         | 1.6    | 4             | 4800 | 200G               | 1x                 | Yes**             |                                    | Yes        |               | Yes                 |
| 6513P-B          | RWG7      | 20        | 130     | 2          | 2.6                  | 2.4                         | 1.4    | 4             | 5600 | 100G               | 1x                 |                   |                                    | Yes        |               | Yes                 |
| 6503P-B          | RWG6      | 12        | 110     | 2          | 2.6                  | 2.4                         | 1.4    | 4             | 4800 | 100G               | 1x                 |                   |                                    | Yes        |               | Yes                 |

\* QAT Gen3 supported when Media acceleration is enabled. If Media is disabled, QAT Gen5 is supported

\*\* Reduced throughput, scaled per lower CPU core count

† Concurrent use of vRAN and Media/VDI accelerators is not supported. Refer doc# 865507

Note: SST-PP Dynamic Switching not supported on 6544P-B, 6718P-B, 6548P-B, 6756P-B, 6766P-B, 6768P-B

†† 6718P-B, 6548P-B, 6544P-B, 6532P-B & 6518P-B are post-PRQ HCC SKUs – they require BKC#41 or later



# Intel Atom P6000 Processors

## Grand Ridge on the Loganville Platform



Access the full Intel Atom P6000 Processor Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 839774

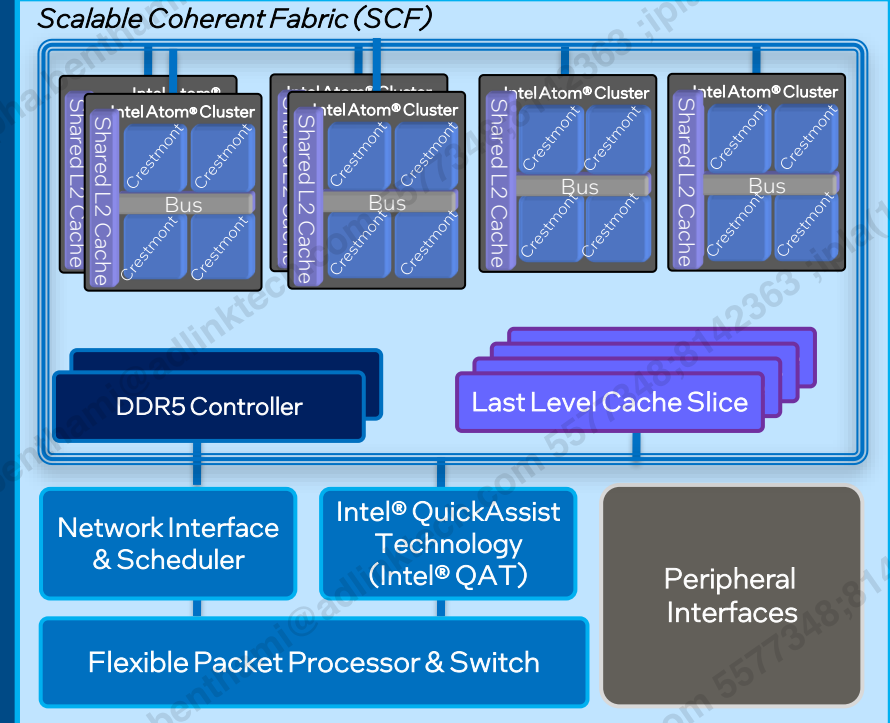
# Intel Atom P6000 Processors Overview

Formerly codenamed Grand Ridge

|              |                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CORE         | Up to 24C Atom@ up to 2.6GHz (AiA and new instructions)<br>64KB iCache/ 32KB dCache, 4MB L2/cluster                                                             |
| MEMORY       | Up to 2 channels <b>DDR5</b> per SoC up to 5600 MT/s,<br>up to 128GB capacity, 64GB per controller                                                              |
|              | Memory Down, UDIMM                                                                                                                                              |
| ETHERNET/LAN | 4x100/20x{50, 25, 10, 2.5, 1} GbE<br>100G full-duplex throughput                                                                                                |
| ACCELERATORS | QAT/IPSec (up to 100G), SSL (up to 50G) <b>AES 256</b><br>Packet processing – Flow distribution, Flexible processing pipeline, Transmit scheduler and Intel QAT |
| PCIE         | <b>16 lanes per SoC (PCIe 4.0 @ 2.5, 5, 8, 16 GT/s)</b><br>Up to 13 PCIe Gen3/2 lanes<br>Bifurcation support: x8, x4, x2, x1                                    |
| OTHER I/O    | 4x USB 3.2 Gen 1x1 & USB 2.0, eSPI, MDIO, UART, SMBus, I2C, <b>I3C</b>                                                                                          |
| PACKAGE      | 45 x 45 mm FCBGA                                                                                                                                                |

NEW CAPABILITIES RELATIVE TO SNR IN **BOLD**

## GRAND RIDGE BLOCK DIAGRAM



- Latest Atom CPU Core
- Updated I/O & Packet Acceleration
- Software Compatible with SNR

# Intel Atom P6000 Processor SKUs

Formerly codenamed Grand Ridge

|                                | Grand Ridge 16c                                                                                                                                                    | Grand Ridge 20c    | Grand Ridge 24c    | Grand Ridge 24c    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|
| Product MM# Number             | 99CF61                                                                                                                                                             | 99CHAZ             | 99C3WH             | 99CFN6             |
| Processor Number               | P6942-3                                                                                                                                                            | P6952-3            | P6962-3            | P6962-5            |
| Power (SDP)                    | 66W                                                                                                                                                                | 74W                | 82W                | 86W                |
| CPU Cores<br>(Atom® Crestmont) | 16c @ up to 2.2GHz                                                                                                                                                 | 20c @ up to 2.2GHz | 24c @ up to 2.2GHz | 24c @ up to 2.6GHz |
| Mid-Level Cache                | 16MB Shared L2                                                                                                                                                     | 20MB Shared L2     | 24MB Shared L2     | 24MB Shared L2     |
| Last Level Cache               | 16 MB Shared                                                                                                                                                       | 20 MB Shared       | 24 MB Shared       | 24 MB Shared       |
| DDR Controllers (80 bit)       | 2x DDR5, @ Up to 5600MT/s                                                                                                                                          |                    |                    |                    |
| Switching                      | Up to 1200 Gbps                                                                                                                                                    |                    |                    |                    |
| Packet Processing              | Up to 100Gbps                                                                                                                                                      |                    |                    |                    |
| IPSec In-line/Look-aside       | Up to 100 Gbps                                                                                                                                                     |                    |                    |                    |
| Integrated Ethernet Interfaces | <b>20 Eth SerDes</b> supporting up to: <ul style="list-style-type: none"> <li>• 4x 100G</li> <li>• 20x 50G/25G/10G/2.5G/1G/100MbE</li> <li>• 20x MACsec</li> </ul> |                    |                    |                    |
| I/O up to:                     | • 16 x PCIe Gen 4, 13 x PCIe Gen2, 4x USB2 & 4x USB 3.2 Gen 1x1, 2 x SATA, 1x I3C                                                                                  |                    |                    |                    |
| Package                        | 45 x 45 mm                                                                                                                                                         |                    |                    |                    |

# Future Intel Xeon Processors

## Diamond Rapids 16CH on the Oak Stream Platform



Access the full Oak Stream Snapshot  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 820874

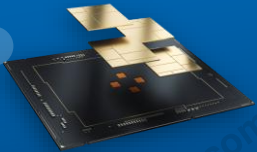


# Intel® Xeon® Processors are Designed for AI at the Edge

## 4th Gen Intel® Xeon® Processor

Intel 7

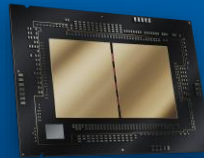
8ch



## 5th Gen Intel® Xeon® Processor

Intel 7

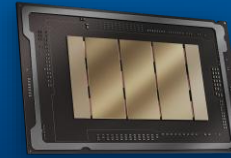
8ch



## Intel® Xeon® 6 Processor

Intel 3

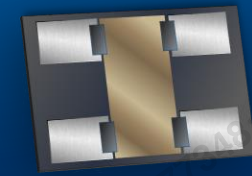
12ch



## Diamond Rapids

Intel 18A

16ch



1X -Baseline

1.25X

2X

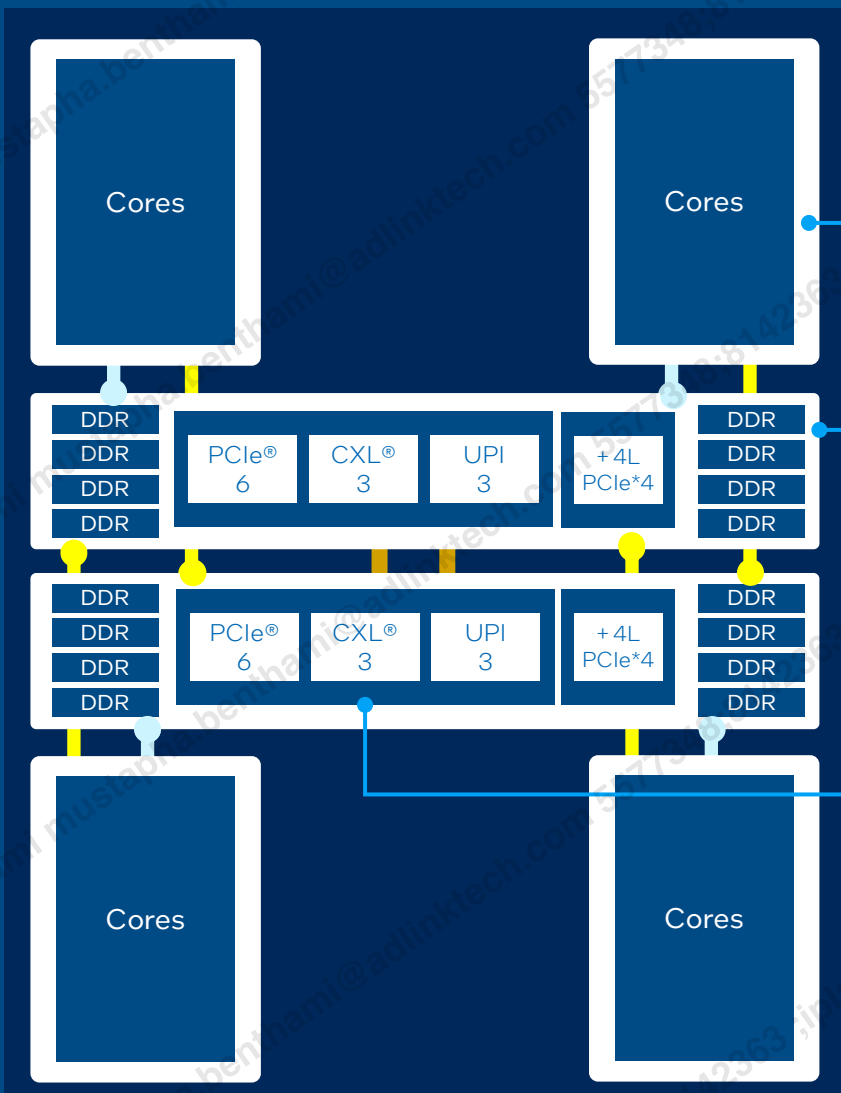
3.5-4X with FP8

|            |                |       |                                                                                                   |
|------------|----------------|-------|---------------------------------------------------------------------------------------------------|
| Data Types | +INT8, BF16    | +FP16 | +TF32, FP8                                                                                        |
| ISA        | Intel® AMX     |       | Intel® AMX w/ increased ease of use & efficiency +transpose, memadvise, tile2zmm, shared prefetch |
|            | Intel® AVX-512 |       | Intel® AVX-512 (AVX10)                                                                            |

All product plans and roadmaps are subject to change without notice.  
Performance targets have been estimated or simulated – subject to change.

# Diamond Rapids 16CH

## An Architecture Designed for the Most Demanding Edge Workloads



up to  
4  
compute blocks per CPU

Compute Block  
Lower average LLC latency

12Ch to 16Ch  
DDR5

- 8000
- up to 12800 MRDIMM

IO/Memory Block  
Independent core scaling &  
uniform memory latency

128 lanes  
flexible IO

- PCIe\*6
- CXL\*3
- UPI 3

Flexible IO  
Lower power &  
higher performance

**Performance and  
Efficiency Leadership**  
For AI and all general-purpose  
workloads

**Quality &  
Reliability**  
Innovations to maximize  
uptime and reliability

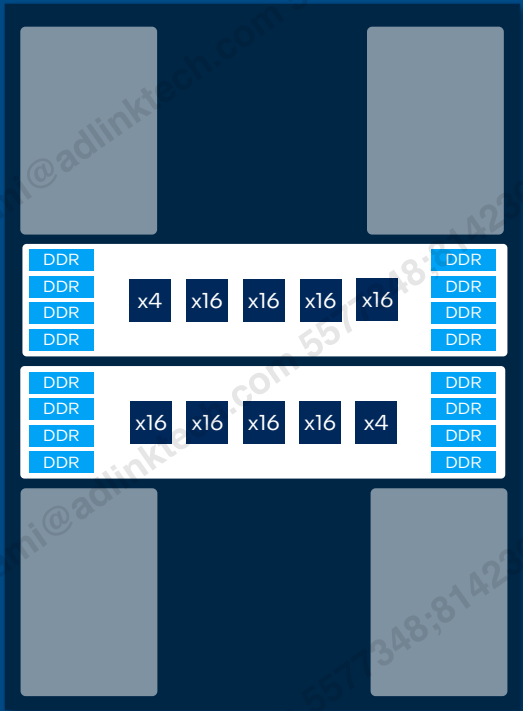
**Best-in-Class  
Security**  
Hardware-enabled  
platform integrity

DC-MHS compliant design

All product plans and roadmaps are subject to change without notice.  
Performance targets have been estimated or simulated – subject to change.

# Diamond Rapids for the Edge

## 16 Channel



Die Configuration: UCC-M  
M = Max IO, Multi-Socket

Flexible IO

|                         |                                                                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cores                   | up to 192 <sup>1</sup>                                                                                                                                                 |
| Platform TDP            | up to 500W                                                                                                                                                             |
| Sockets                 | 1S, 2S, 4S                                                                                                                                                             |
| Memory                  | 12Ch or 16Ch DDR5<br>DDR5 RDIMM (1-2SPC) & MRDIMM (1 SPC)                                                                                                              |
| Package size            | 113 x 77.5 mm                                                                                                                                                          |
| Memory Speed            | 6000, 5600 (2DPC) <sup>2</sup><br>8000, 7200, 6400, 6000 (1DPC) <sup>2</sup><br>12800, 12000, 11200, 10400 (MRDIMM)                                                    |
| Total HSIO Lanes        | 128+8L (1S), up to 192+16L (96L per skt in 2S) <sup>3</sup>                                                                                                            |
| PCI Express             | up to 128L PCIe*6<br>+ 8L PCIe*4                                                                                                                                       |
| CXL                     | up to 64L CXL 3 per socket (any lanes)                                                                                                                                 |
| UPI                     | up to 64L UPI 3 @ 48-56GT/s                                                                                                                                            |
| AI                      | Intel AVX (FP32, INT8, BF16, FP16)<br>Intel AMX (FP32, INT8, BF16, FP16, TF32, FP8)                                                                                    |
| Confidential Computing  | Intel® Trusted Domain Extensions (Intel TDX), Intel® Software Guard Extensions (Intel® SGX)                                                                            |
| Integrated Accelerators | Intel® QuickAssist Technology (Intel® QAT), Intel® Data Streaming Accelerator (Intel® DSA), Intel® In-Memory Analytics Accelerator (Intel® IAA)<br>4 instances of each |

1. Support for up to 256 cores possible. Off roadmap / custom only, limited availability, pricing TBD.  
2. DDR5-8000 rated RDIMMS only.  
3. Assumes a 2x16 UPI 2S topology. 4x16 UPI and Mixed mode results in fewer lanes for other devices.

All product plans and roadmaps are subject to change without notice.  
Performance targets have been estimated or simulated – subject to change.

# Intel Core Ultra 200S Plus Series Processors

## Arrow Lake S Refresh



Access the full Arrow Lake S Refresh Gold Deck  
at [rdc.intel.com](https://rdc.intel.com) Document ID: 867850



# Intel Core Ultra 200S Plus Series



Intel Core  
**Ultra 7 270K Plus**

**24**  
Cores  
(8P+16E)

**24**  
Total  
threads

**5.5**  
Max  
GHz

**13**  
TOPS  
NPU

Intel Core  
**Ultra 5 250K Plus**

**18**  
Cores  
(6P+12E)

**18**  
Total  
threads

**5.3**  
Max  
GHz

**13**  
TOPS  
NPU

Intel Core  
**Ultra 5 250KF Plus**

**18**  
Cores  
(6P+12E)

**18**  
Total  
threads

**5.3**  
Max  
GHz

**13**  
TOPS  
NPU

# Intel Core Ultra 200S Plus Series Processors

## Intel Core Ultra 7 270K Plus



## Intel Core Ultra 5 250K Plus



## Intel Core Ultra 5 250KF Plus



|                              |                  |
|------------------------------|------------------|
| Cores/Threads                | 8P+16E (24T)     |
| Max Boost                    | 5.5GHz           |
| GPU/NPU                      | 4 Xe / 13 TOPS   |
| Vs. 9700X (1T/nT/Gaming) (e) | 6% / +90% / +5%  |
| Vs. 265K (1T/nT/Gaming) (e)  | +0% / +10% / +9% |

|                              |                  |
|------------------------------|------------------|
| Cores/Threads                | 6P+12E (18T)     |
| Max Boost                    | 5.3GHz           |
| GPU/NPU                      | 4 Xe / 13 TOPS   |
| Vs. 9600X (1T/nT/Gaming) (e) | +3% / +70% / +4% |
| Vs. 245K (1T/nT/Gaming) (e)  | +2% / +10% / +8% |

|                              |                  |
|------------------------------|------------------|
| Cores/Threads                | 6P+12E (18T)     |
| Max Boost                    | 5.3GHz           |
| GPU/NPU                      | 4 Xe / 13 TOPS   |
| Vs. 9600X (1T/nT/Gaming) (e) | +3% / +70% / +4% |
| Vs. 245K (1T/nT/Gaming) (e)  | +2% / +10% / +8% |

For data marked '(e)': \* Early performance results have been estimated or simulated using internal Intel analysis or architecture simulation or modeling and provided to you for informational purposes and subject to change without notice. Any differences in your system hardware, software or configuration may affect your actual performance. See appendix for additional details. See appendix for workload configuration and details. Results may vary.

## Key Messages

- ~9% faster gaming than previous gen(e)
- ~5% faster gaming vs. comp SKUs(e)
- Up to ~90% more performance for multithread vs. comp SKUs(e)
- New platform software to simplify system setup and performance acquisition
- WR overclocking capabilities
- Backwards compatible with Intel 800 Series chipsets
- A refreshed take on current product. Intel Core Ultra 200S Plus can deliver:
  - +4 cores for Ultra 7 and Ultra 5
  - +100MHz E-core
  - +200MHz P-Core All Core
  - +400MHz DDR5 & IMC
  - D2D +900MHz
  - Faster DRAM OC

# Future Intel Xeon Processors

## Coral Rapids 16CH



Additional details on Coral Rapids 16CH will be made available later in 2026.  
For any immediate questions, please contact your Intel representative.

# Future Intel Xeon Processors

## Palm Ridge on the Summitville Platform



Additional details on Palm Ridge will be made available later in 2026.  
For any immediate questions, please contact your Intel representative.



# Future Intel Processors

## Beaver Ridge on the Meadowville Platform

The Intel logo, consisting of the word "intel" in white lowercase letters on a black square background.

Additional details on Beaver Ridge will be made available later in 2026.  
For any immediate questions, please contact your Intel representative.

# Intel Arc Pro Graphics for the Edge

## for Scalable AI, Graphics, and Media at the Edge

Purpose-built to deliver discrete GPU acceleration to the edge that advances innovation for AI, visual computing and media processing



# Intel Arc Pro Graphics for the Edge

Purpose-built to deliver discrete GPU muscle to the edge that advances innovation for AI, visual computing and media processing



## Graphics

For immersive visual experiences



## AI Inferencing

Deploy advanced AI workloads at the Edge with specialized AI engines



## Media Processing

Enhance video production, media transcoding and streaming



## Long Life



Up to 3-5 years product availability<sup>1</sup>

Support for Windows IoT Enterprise LTSC

## Digital Signage Features



Genlock, Pipelock, Bezel correction, EDID management and Combined Display

## AI Acceleration



With OpenVINO support and XMX built-in AI engine

## Embedded Use Conditions



On select SKUs

<sup>1</sup> Intel does not commit or guarantee product availability.

Intel reserves the right to change roadmaps or discontinue products, software and software support services at any time. Product availability does not include servicing and technical support. Please view the "Hardware Availability and Technical Support Lifecycle" slide, available in this content package, for additional details, or contact your Intel representative for additional information.

# Intel Arc Pro B-Series Graphics for the Edge (Battlemage)



- Up to 3-year product availability (Conditional)<sup>1</sup>
- Support for Edge and Server Operating Systems
- Support for both Intel Core processor and Intel Xeon processor-based designs
- Server Use Conditions
- Edge Specific SKU for SWAP Constraints
- SRIOV and ECC
- PCIe HHHL Single-Slot Passive Form Factor

<sup>1</sup> – Product availability dependent on GDDR6 ecosystem supply



**Intel Edge Battlemage Gold Deck**

RDC: 857395

Contact your Intel Representative or  
[edge.products@intel.com](mailto:edge.products@intel.com) to request access

|                             | Intel Arc Pro B50 | Intel Arc Pro B60                 |
|-----------------------------|-------------------|-----------------------------------|
| Xe-Cores                    | 16                | 20                                |
| Memory                      | 16GB              | 24 GB                             |
| Memory Bandwidth            | 224 GB/s          | 456 GB/s                          |
| Graphics Clock              | 2600 MHz          | 2400 MHz                          |
| Peak TOPs (Int8)            | 170               | 197                               |
| Total Board Power (Range)   | 70W               | 200 W<br>(120W – 200W)            |
| Display Connectors          | 4x mDP2.1         | 3x DisplayPort 2.1<br>1x HDMI 2.1 |
| PCIe Interface              | Gen 5 x8 Native   | Gen 5 x8 Native                   |
| Thermal                     | Active            | AIB Defined                       |
| Form Factor                 | HHHL 2-Slot       | Full Height                       |
| Pro Driver                  | Y                 | Y                                 |
| Memory ECC                  | Y*                | Y*                                |
| Multi-GPU - Linux           | Y*                | Y*                                |
| SRIOV                       | Y*                | Y*                                |
| Manageability and Telemetry | N                 | Standard (XPU)*                   |
| Reliability                 | Workstation       | Client/Custom**                   |

Purpose-built to deliver discrete GPU performance to the Edge. Advancing Edge AI, visual computing and media processing.

The information shared here is subject to change without notice and should not be viewed as an official POR or product schedule document. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel does not commit or guarantee product availability or technical support by way of roadmap guidance. Intel reserves the right to change roadmaps or discontinue products, software, and software support services, through standard EOL/PDN processes.



# A “Big Win” for “AI Inference GPU”



“Intel has something for those who want to run bigger AI models even in smaller systems.”

“... the Intel Arc Pro B50 did exceedingly well in was in the power consumption and noise segments of our testing.”

“... Intel has a sizable installed base, and it actually has had historically **better AI software than AMD**, even when AMD won its multi-billion dollar data center MI300X AI deals”

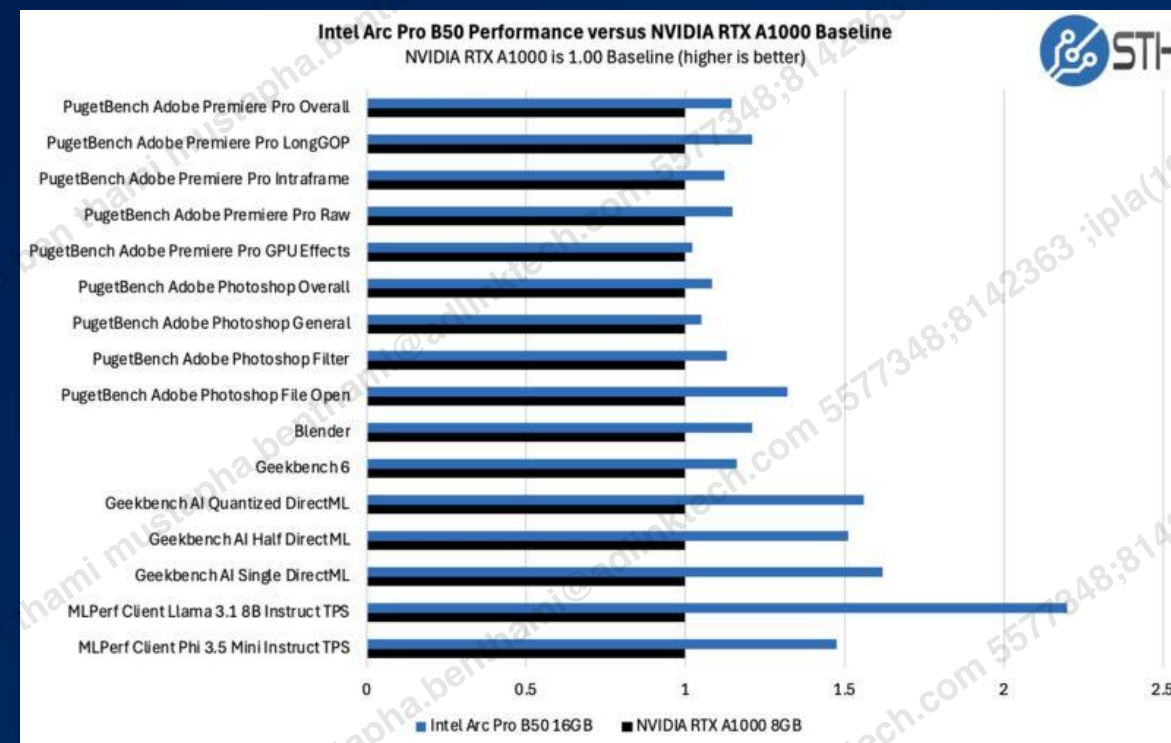
“Maybe the big win is that SFF PCs, workstations, and even 2U servers now have a direct path to a GPU that promises SR-IOV support in the near future so it can be shared, **Intel’s great video transcoding, and an AI inference GPU with 16GB of memory.**”

Lenovo ThinkStation  
P360 Ultra with Intel  
Arc Pro B50

intel ARC  
PRO



Source: [www.servethehome.com/intel-arc-pro-b50-review-a-16gb-sff-mini-gpu/](https://www.servethehome.com/intel-arc-pro-b50-review-a-16gb-sff-mini-gpu/)  
Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy.



Intel Arc Pro B50 16GB To NVIDIA RTX A1000 8GB Performance With MLPerf Client

“The Intel Arc Pro B50’s proposition is effectively that it can beat NVIDIA’s Ampere generation competition at a lower price point. To us, Intel has been successful.”

# Intel Ethernet for the Edge

Intel connectivity facilitates seamless and accelerated data transfer for edge networks, optimizing performance and enhancing overall efficiency.

Learn more about Intel Ethernet at [intel.com](https://www.intel.com)



## Enterprise

Scalability, performance, security and reliability with features such as **OVS DPDK Acceleration, NVMe/TCP**



## Networking

Important tools for modern networking and storage environments, enabling high-performance, scalable, and flexible solutions with **DDP, OVS, DPDK Acceleration, and RDMA**



## Targeted Features

Intel  
Connectivity



## Cloud Service Provider

Flexibility, performance optimization, hardware acceleration and reduced latency with **OVS, DPDK Acceleration, RDMA (iWARP & RoCEv2)**



## HPC/AI

Improved performance, optimized resources, reduced cost, increased flexibility with features such as **RDMA, DDP, OVS, and DPDK Acceleration**

## Embedded/IoT Edge

Features such as **TSN, Multi-Port LOM, and SR-IOV** provide deterministic network performance, reduced cost and complexity with port consolidation and virtualization, and improved performance.



## Telecom

Essential for the reliable and efficient operation of telecom networks, Intel Ethernet features **Precision Timing Synchronization, GNSS, PTM, TEID, floating VEB** and more.



Designed with our customers in mind, Intel® Ethernet Portfolio delivers scalability with up to 200GbE of bandwidth for agile, efficient network infrastructure and optimized performance. Support a wide variety of applications including NFV, storage, HPC-AI, data center, embedded edge and hybrid cloud.



# Intel Ethernet Network Adapter Evolution

## Broad Portfolio

PCIe Adapters (3.0, 4.0, 5.0)

OCP Adapters (2.0, 3.0)

### 400/200Gb/ 100Gb

**IPU E2100 (200GbE QSFP56)**

*1x 200GbE to 2x100GbE with dedicated compute and memory in <75W envelope*



**IPU E2200 (400GbE)**

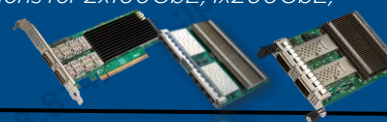
*First 400GbE based on MMG400G includes dedicated compute, memory and advanced accelerations*

**E835 (200GbE QSFP56)**

*Single Port  
Flexible port configurations for 1x200/100GbE or 4x50/25GbE*

**E830/E835 (200GbE QSFP56)**

*Dual Port  
Flexible port configurations for 2x100GbE, 1x200GbE, 4x50GbE, 8x25GbE*



### 100Gb/25Gb

**E810 (100GbE QSFP28)**

*Flexible port configurations for 2x100GbE to 8x10GbE*



### 25Gb/10Gb

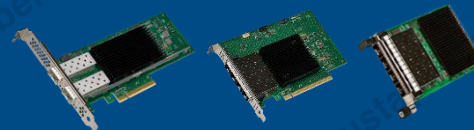
**XXV710 (25GbE SFP28)**

*2x25GbE*



**E810 (25GbE SFP28)**

*2x25GbE and 4x25GbE*



**E830/E835 (25GbE SFP28)**

*2x25GbE, 4x25GbE*



### 10Gb/2.5Gb/1Gb

**X710 (10GbE SFP+)**

*Quad-Port / Dual-Port SFP+*

**X710-T4L/T2L (10GBASE-T)**

*Quad-Port / Dual-Port 10GBASE-T*

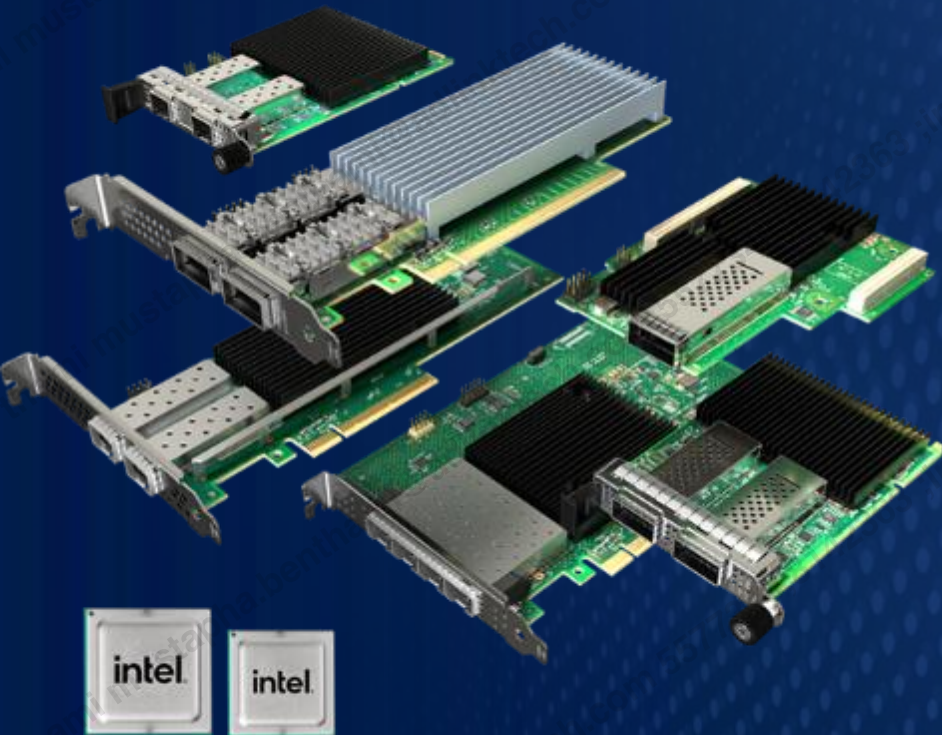
**E610 (10/2.5/1GBASE-T)**

*Quad-Port / Dual Port 10GBASE-T  
Quad-Port 2.5/1GBASE-T*





# Why Intel Ethernet?



Broad Interoperability with Server, Switch & OSV Ecosystem

Optimized for Intel® Architecture

World Class pre and post sales support

Adapters (PCIe/OCP) & Controllers, speeds up to 200GbE

Supports Open Initiatives: DPDK, OCP, OFED, ORAN and more

Wide Variety of Media types: BASE-T, Fiber, QSFP+, SFP28, etc.

Energy-Efficient Technology

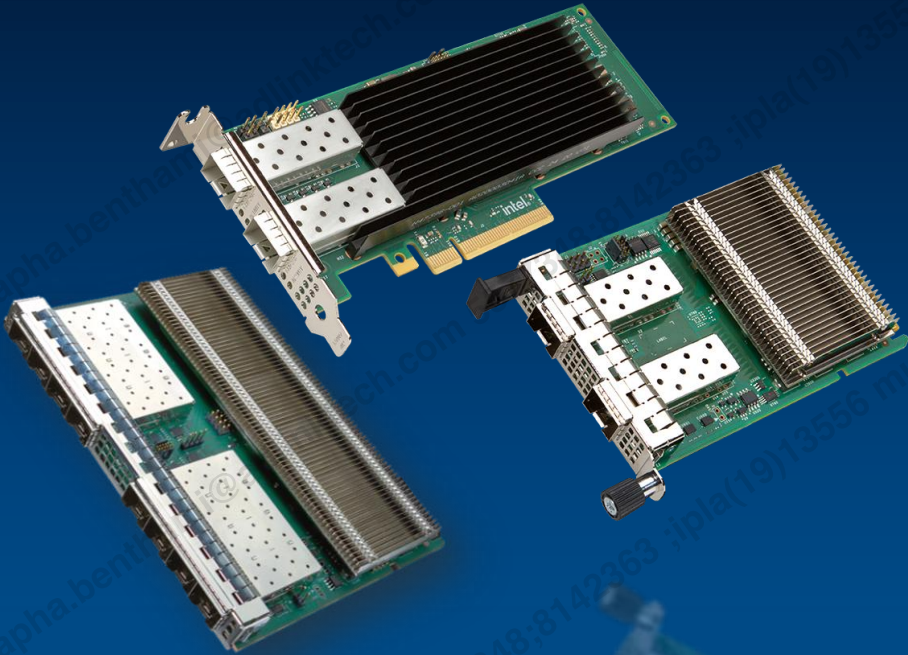
Comprehensive Security & Manageability Features

Decades of Driving Ethernet Innovation

Check Out: <https://www.intel.com/Ethernet>

# Intel Ethernet E830/E835 Controllers and Network Adapters

Performance networking for virtualization, cloud, telecom, and edge



## 200GbE Throughput at Higher Efficiency

2x bandwidth gen-on-gen and improved performance per watt

## Versatile Port Configurations

Enabled by broad port density, for efficient resource scaling.

## Accurate & Advanced Timing Capabilities

PTM with 1588 PTP, SyncE, GNSS for Telecom, FSI, AI applications.

## Robust Security

Secure Boot, Secure FW Upgrade and Dual Hardware Root of Trust

## Comprehensive Manageability

Secure SPDM, PLDM, BMC pass-through, SMBus, RMI, NC-SI, and more

## Enhanced Security

standards-based cryptographic security features, built-in HW Root of Trust

## Power Optimized | 50% lower gen-on-gen

for LOM solutions, among the lowest in the industry.

## Seamless Upgradability

Software compatibility with prior-generation 10GBASE-T adapters.

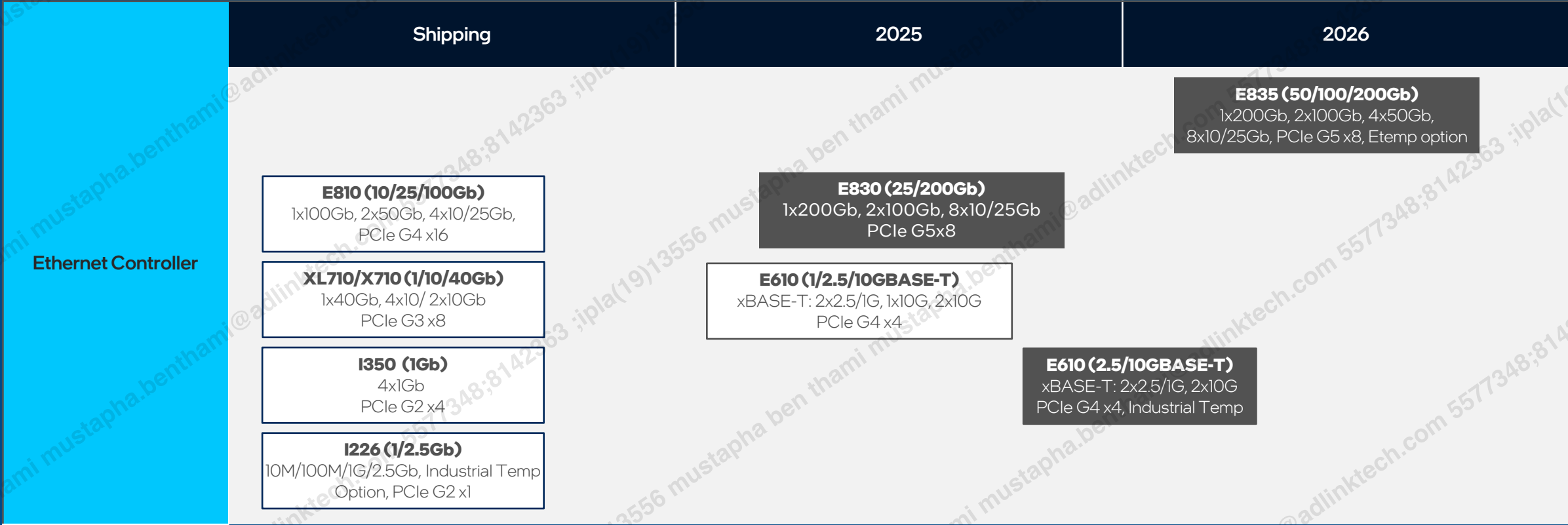
# Intel Ethernet E610 Controllers and Network Adapters

Latest advancements in 10GBASE-T  
connectivity for Management and  
Control Plane Networking and Edge  
IoT





# Intel Ethernet Roadmap



Left edge is front end of availability window

Production

Execution

Definition

See Adapter one-pager details [Ethernet](#)



# Intel Wireless for the Edge

Get fast, integrated wireless solutions which deliver great user experiences and meet our growing demands for higher bandwidth, improved responsiveness, and enhanced reliability.

Learn more about Intel Wireless Products at [intel.com](https://www.intel.com)

intel.

Wi-Fi 7  
5 Gig

intel.

Wi-Fi 6E  
Gig+

# Wi-Fi enabling Connectivity across the Edge



>80% of network operator traffic runs over Wi-Fi



Gen to Gen power consumption improvements (from Wi-Fi 6/6E to Wi-Fi 7)



Key ingredient across IOT verticals enabling converged networks



Much improved security and reliability with low latency and high throughput



# Wireless Solutions Recommended for Edge Platforms

| Shipping |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2025 | 2026                                                                                                                                                                                                                                                                                                                                    |    |    |                                                                                                                                                                                                                                                                                                                                           |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Q4   | Q1                                                                                                                                                                                                                                                                                                                                      | Q2 | Q3 | Q4                                                                                                                                                                                                                                                                                                                                        |
| Wi-Fi7   | <div> <b>Gale Peak 2 – PC Client</b><br/>                     Intel Wi-Fi 7 BE200-2230<br/>                     2x2 Wi-Fi 7 (320MHz)+Bluetooth 5.4                     <div>                         intel 16nm<br/>                         Wi-Fi 7<br/>                         5 Gig                     </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |                                                                                                                                                                                                                                                                                                                                         |    |    |                                                                                                                                                                                                                                                                                                                                           |
|          | <div> <b>Filmore Peak 2 – PC Client</b><br/>                     Intel Wi-Fi 7 BE201<br/>                     2x2 Wi-Fi 7 (320MHz)+Bluetooth 5.4                     <div>                         intel 16nm<br/>                         Wi-Fi 7<br/>                         5 Gig                     </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |                                                                                                                                                                                                                                                                                                                                         |    |    |                                                                                                                                                                                                                                                                                                                                           |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      | <div> <b>Gale Peak 2 – Embedded</b><br/>                     Intel Wi-Fi 7 BE200-2230<br/>                     2x2 Wi-Fi 7 (320MHz)+Bluetooth 5.4                     <div>                         intel 16nm<br/>                         Wi-Fi 7<br/>                         5 Gig                     </div> </div> <div>NEW</div> |    |    | <div> <b>Gale Peak 2 – Industrial</b><br/>                     Intel Wi-Fi 7 BE200-2230<br/>                     2x2 Wi-Fi 7 (320MHz)+Bluetooth 5.4                     <div>                         intel 16nm<br/>                         Wi-Fi 7<br/>                         5 Gig                     </div> </div> <div>NEW</div> |
| Wi-Fi6E  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      | <div> <b>Whale Peak 2 – PC Client</b><br/>                     Intel Wi-Fi 7 BE211<br/>                     2x2 Wi-Fi 7 R2 (320MHz)+2X BT6 &amp; BT HB                     <div>                         intel 14nm<br/>                         Wi-Fi 7<br/>                         5 Gig                     </div> </div>           |    |    |                                                                                                                                                                                                                                                                                                                                           |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      | <div> <b>Spider Peak 2 – PC Client</b><br/>                     Intel Wi-Fi 7 BE213 – non Vpro<br/>                     2x2 Wi-Fi 7 R2 (160MHz)+Bluetooth 6                     <div>                         intel 14nm<br/>                         Wi-Fi 7<br/>                         5 Gig                     </div> </div>      |    |    |                                                                                                                                                                                                                                                                                                                                           |
|          | <div> <b>Typhoon Peak 2 - Embedded</b><br/>                     Intel Wi-Fi 6E AX210 - 2230<br/>                     2x2 Wi-Fi 6E &amp; R2 + Bluetooth5.3                     <div>                         intel 28nm<br/>                         Wi-Fi 6E<br/>                         Gig+                     </div> </div> <div> <b>Typhoon Peak 2 – Industrial</b><br/>                     Intel Wi-Fi 6E AX210-2230<br/>                     2x2 Wi-Fi 6E &amp; R2 + Bluetooth5.3                     <div>                         intel 28nm<br/>                         Wi-Fi 6E<br/>                         Gig+                     </div> </div> <div> <b>Typhoon Peak 2 – Industrial</b><br/>                     Intel Wi-Fi 6E AX210-1216<br/>                     2x2 Wi-Fi 6E &amp; R2 + Bluetooth5.3                     <div>                         intel 28nm<br/>                         Wi-Fi 6E<br/>                         Gig+                     </div> </div> <div> <b>Garfield Peak 2</b><br/>                     Intel Wi-Fi 6E AX211<br/>                     2x2 Wi-Fi 6E &amp; R2 + Bluetooth5.4                     <div>                         intel 28nm<br/>                         Wi-Fi 6E<br/>                         Gig+                     </div> </div> |      |                                                                                                                                                                                                                                                                                                                                         |    |    |                                                                                                                                                                                                                                                                                                                                           |

SHIPPING

POR

PLANNING

CONCEPT

Discrete

Wi-Fi6

WF6E

Wi-Fi7

WF7R2

All products, features, dates and names specified are preliminary based on current expectations and are subject to change without notice.



# Wireless Compatibility/Support for ECG Platforms

**Important Note:** The table below shows the Wi-Fi modules and ECG platform tested/validated. For the complete wireless and platform compatibility options please refer to RDC Document Number 601177 or contact your Intel support team.

| <div>Platforms</div> <div>Wireless Products</div> |                                                            | TGL    | ADL-S<br>ADL-P | ADL-PS | RPL-P<br>RPL-S<br>RPL-SR | RPL-PS | MTL-U<br>MTL-H | MTL-PS | ARL-U<br>ARL-H<br>ARL-S | BTL-S<br>BTL-H<br>BTL-12P | PTL      | WCL    | NVL            | EHL | ADL-N | ASL | TWL   |
|---------------------------------------------------|------------------------------------------------------------|--------|----------------|--------|--------------------------|--------|----------------|--------|-------------------------|---------------------------|----------|--------|----------------|-----|-------|-----|-------|
|                                                   |                                                            | Quasar | Solar          |        | Solar                    |        | Solar          |        | Blazar                  | Solar                     | Scorpius | Blazar | Scorpius<br>s2 |     | Solar |     | Solar |
| 2x2<br>Discrete<br>Wi-Fi                          | Intel® Wi-Fi 6E AX210 (TyP2) & Embedded/Industrial options | ◆○     | ○              | ○      | ○                        | ○      | ○              | ○      | ○                       | ○                         | ○        | ○      | ○              | ○   | ○     | ○   | ○     |
|                                                   | Intel® Wi-Fi 7 BE200 (GaP2) Embedded/Industrial options*   |        |                |        | ○                        | ○      | ◆○             | ○      | ◆○                      | ○                         | ○        | ○      | ○              |     |       | ○   | ○     |
| 2x2<br>Integrated<br>Wi-Fi                        | Intel® Wi-Fi 6E AX211 (GfP2)                               |        | ◆              |        | ◆                        |        |                |        |                         |                           | ○        | ○      |                |     |       |     | ○     |
|                                                   | Intel® Wi-Fi 7 BE201 (FmP2)                                |        |                |        |                          |        |                |        | ◆                       |                           |          |        |                |     |       |     |       |
|                                                   | Intel® Wi-Fi 7 BE211 (WhP2)                                |        |                |        |                          |        |                |        |                         |                           | ◆○       | ○      | ◆○             |     |       |     |       |
|                                                   | Intel® Wi-Fi 7 BE213 (SpP2)                                |        |                |        |                          |        |                |        |                         |                           | ○        | ○      | ○              |     |       |     |       |

◆ Platform POR for vPro® platforms

○ Supported/validated for ECG platforms with Linux OS & Windows LTSC

**Platform POR :** the wireless card is part of the overall platform POR, is validated by the wireless and platform teams and the wireless software is part of the platform BKC.

**Supported/validated:** the wireless card is validated/tested with ECG platforms.

(\*) BE200 (GaP2) Embedded and Industrial SKUs options under development. Embedded SKU expected Q1 2026 and Industrial SKU expected Q4 2026.



# Wireless supporting Edge Use Conditions

## Wi-Fi 6E

### Intel AX210

AVAILABLE NOW

#### Typhoon Peak

- 2x2 Wi-Fi 6E (6GHz band support), Bluetooth 5.3
- PCIe interface for Wi-Fi and USB for Bluetooth
- PC Client SKU
- Embedded Use Condition SKU (0 to 70C)
- Industrial Extended Temp (-40 to 85C) SKU
- Antenna Kits available (Embedded/Industrial)
- Both 2230 and 1216 form factor - Industrial
- Wi-Fi Time Sensitive Networking (Wi-Fi TSN)
- vPRO available in all SKUs

## Wi-Fi 7

### Intel BE200

AVAILABLE NOW

#### Gale Peak

- 2x2 Wi-Fi 7, 320MHz, Bluetooth 5.4
- PCIe interface for Wi-Fi and USB for Bluetooth
- PC Client SKU
- (New) Embedded Use Condition SKU (0 to 70C)\*
- (New) Industrial Extended Temp SKU (-40 to 85C) \*
- 2230 form factor (Embedded/Industrial)
- vPRO available on PC Client and Industrial SKUs

#### Wi-Fi Notes:

- Please refer to Document Number 602054 for detailed plans and end of life estimates for wireless solutions
- For more details, please refer to document "[Wireless Connectivity Products for IoT Platforms - Message of the Month \(MoM\)](#)"
- (\*) Embedded/ Industrial SKU options under development

The information above is not an official POR document and may be different from other Intel divisions with similar products. Select features, highlighted above, are not supported on all SKUs. Dates, details and information are subject to change without notice. For the latest detailed schedule information, please refer to individual product gold decks, or contact your Intel representative. For a complete list of all available SKUs, across current and prior product generations, please refer to the Quick Reference Guide (QRG) available on [rdc.intel.com](https://rdc.intel.com).

# Wi-Fi Regulatory Services

Best-in-class Wireless Certification Expertise, for our customers

189  
countries  
supported

Wi-Fi 7  
modules  
certified for  
130 countries  
where  
6-7GHz  
operation is  
available



## Our edge

- World-wide & local expertise and relationships
- Platform antenna certification coverage for USA, Canada, EU, Japan, Korea and Taiwan
- FCC/ISED/ EU pathfinding for new wireless features enablement
- ISO17025 Accredited laboratory
- Latest requirements communications

Significant  
cost & time  
savings  
for OEMs

# Intel Technologies for the Edge

Leveraging Intel technologies empowers edge environments with superior performance, increased efficiency, and enhanced capabilities, driving innovation and enabling seamless connectivity.

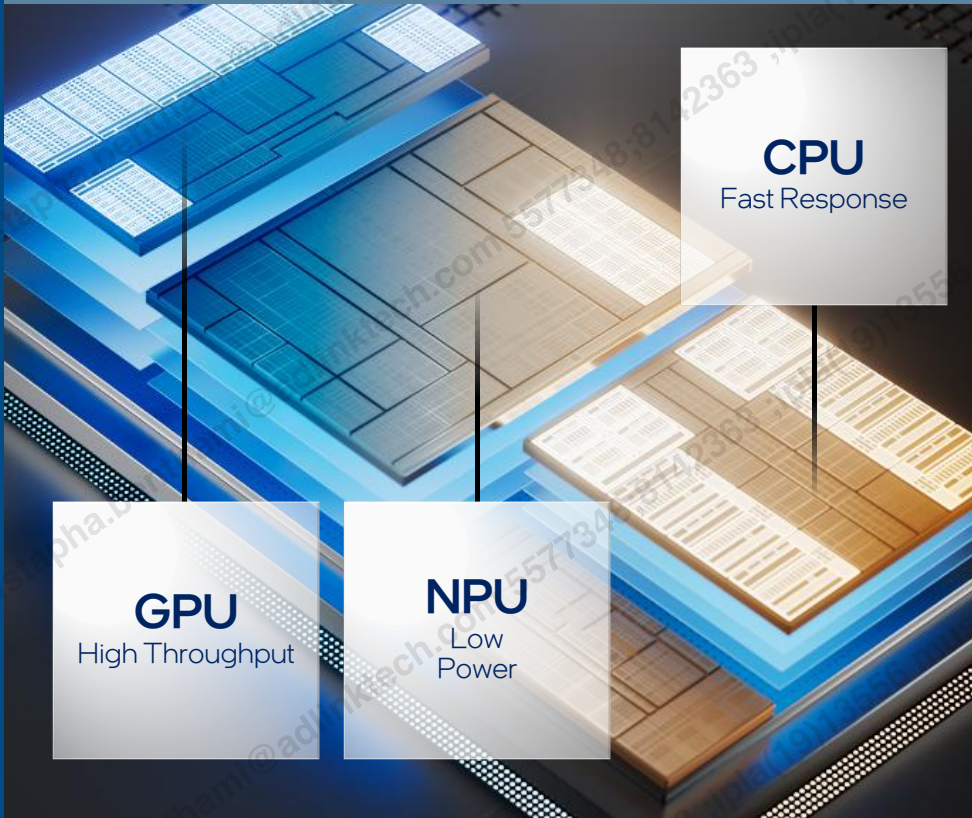
# Intel Neural Processing Unit (NPU) Overview

The Intel AI logo, featuring the word "intel" in white and "ai" in blue, with a vertical white line to its left.





## CPU + GPU + NPU



## Integrated AI Acceleration for the Edge

Edge designs with new Intel Products deliver integrated AI acceleration across three distinct integrated AI capabilities, independently, or through a combination of, the CPU, GPU, and the NPU.

Additionally, Intel Products for the Edge are ranked highest by ABI Research's of product security assurance practices.<sup>1</sup>

<sup>1</sup>As measured by [ABI Research](#)

## Unlock AI inference performance with next gen multi-modal computing: NPU accelerator + CPU and GPU

### Three Intel AI Engines- CPU/GPU/NPU

Choose and/or combine to balance power and performance in deploying AI models



**Fast Response**  
Ideal for low-latency AI workloads  
Ex: real-time object detection



**High Throughput**  
Ideal for accelerated parallel AI workloads  
Ex: multi-user chatbot



**Power Efficiency**  
Ideal for sustained AI workloads requiring energy efficiency  
Ex: audio processing

Distribute AI feature across compute engines for optimal performance and power efficiency

Example: Agentic AI Pipeline for Smart City Intelligence

#### CPU

**Contextual processing and decision making.**  
Integrates all inputs, accesses historical patterns and protocols to make decisions

#### GPU

**Ingest and process data from multiple camera streams.**  
Object detection, crowd analysis, incident detection; Generate synthetic traffic simulations for what-if scenario planning

#### NPU

**Low power continuous monitoring**  
Always on acoustic event detection (sirens, crashes); Trigger usage of GPU models when need to be power efficient

Scale one AI feature using GPU+NPU to maximize performance

Examples: Object Detection, Image Classification

#### GPU + NPU

Expand total video stream capacity with more throughput

### NPU Advantage

- High Performance, Low Power AI Compute
- Accelerate Conventional AI and Generative AI
- Ideal for sustained AI workloads requiring energy efficiency
- Offload compute from CPU/GPU to optimize overall device compute capacity

Streamline solution development with OpenVINO™ toolkit

- **Easy as GPU:** Replace GPU device name with NPU (for supported models)
- **Or use AUTO Plugin:** automatically detects available accelerator devices and configures the ideal optimization settings based on a priority device list. Allows for one deployment package for mixed hardware environments.

### Enabling the NPU on Intel

#### Native Intel Tools



OpenVINO™ GenAI

OpenVINO™ Model Server

- Best performance
- Latest features

#### Leverage the Ecosystem



ONNX Runtime  
OpenVINO  
Extension Plugin



Hugging Face  
Optimum Intel

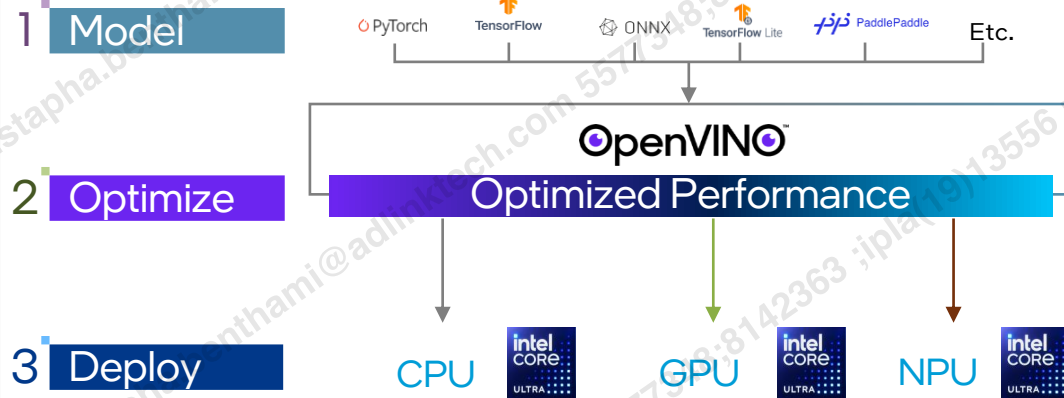


OpenVINO  
backend for  
torch.compile

- Stay in API of choice
- Cross-platform for easy migration
- Few lines of code to turn on Intel processor optimizations

# Intel Neural Processing Unit (NPU)

## OpenVINO™ Toolkit: Write Once, Deploy Anywhere



## OpenVINO Model Support

Explore the list of [900+ AI models](#) that work with OpenVINO™ on CPU/GPU/NPU

- 550+ validated on NPU with broader support on CPU and GPU

## Recently Enabled Edge ISVs with OpenVINO



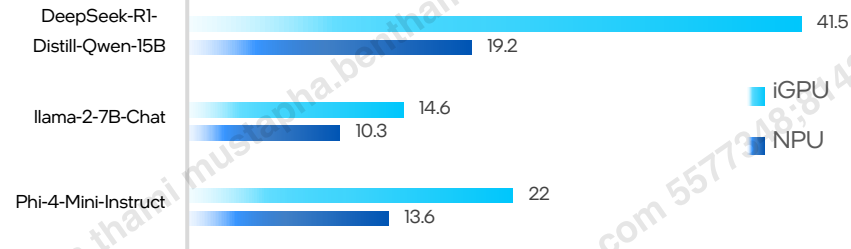
## BKMs and Getting Started on NPU with OpenVINO

- [Install the latest NPU driver](#)
- [How to prepare LLM models for best performance on NPU](#)
- [Use Model Caching](#) to speed up time to first inference
- [Try out 'Hello NPU' notebook](#)
- [NPU Documentation](#)
- [NPU with OpenVINO™ GenAI](#)

## Benchmarks

### Up to 2.16X better performance on iGPU over NPU

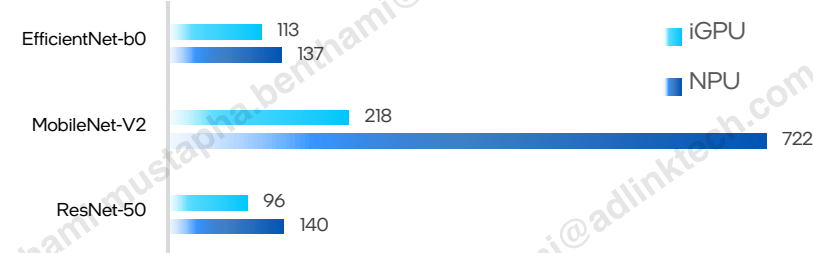
Intel® Core™ Ultra 7-265-H 2nd Token Throughput (Tokens/ec)- Higher is Better



**Example target use case:**  
Customer service chatbot serving multiple users simultaneously

### Up to 3.31X more efficient on NPU vs iGPU

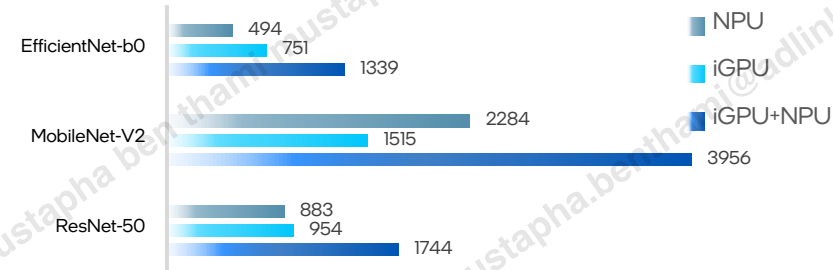
Intel® Core™ Ultra 7-265-H Efficiency (FPS/W-IP) - Higher is Better



**Example target use case:**  
Intelligent traffic monitoring requiring fan-free weatherproof equipment

### Up to 2.61X FPS with iGPU+NPU vs iGPU

Intel® Core™ Ultra 7-265-H Throughput (FPS) - Higher is Better



**Example target use case:**  
Multi-camera customer behavior analytics in retail environments

# Intel Advanced Vector Extensions (Intel AVX) for the Edge





# Intel Advanced Vector Extension (Intel AVX)

Intel AVX is a family of SIMD instruction sets that enables simultaneous processing of multiple data points within a single clock cycle, significantly accelerating computational workloads

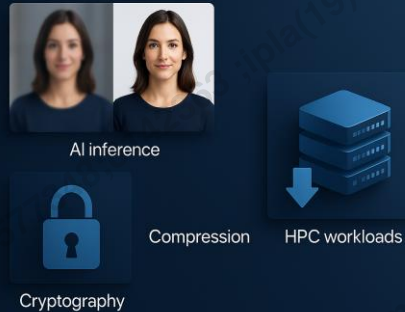
Key Benefit : Optimizes application and workload performance for various usages

## AVX/AVX2 2011/2013



- 256 FP/INT operations
- 16 vector registers

## AVX512 2016



- + 512 FP/INT operations
- + 32 vector registers
- + Flag-based enumeration

## AVX10.1 2023

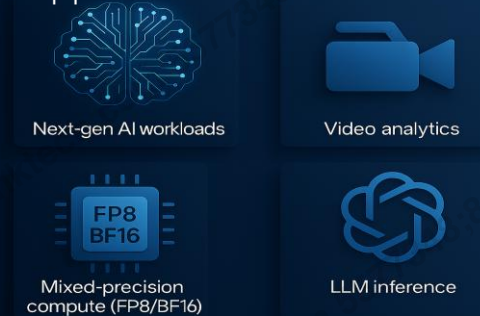
Supported on P cores only



- + Version-based enumeration

## AVX10.2 2026

Supported on P and E cores only



- + Instructions covering new AI data types and conversions, data movement optimizations, and standards support

Whitepaper: [The Converged Vector ISA: Intel® Advanced Vector Extensions 10 Technical Paper](#)

# Intel Advanced Vector Extension (AVX) 10.2

Intel’s next-generation vector instruction architecture designed to accelerate AI workloads on the CPU.

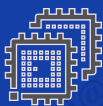
**With AVX 10.2, support for AVX-512 returns to Intel Core processors**

Intel AVX on Intel Processors for the Edge

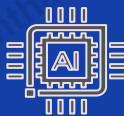
| Processor     | AVX | AVX 2 | AVX 512 | AVX 10.x |
|---------------|-----|-------|---------|----------|
| Nova Lake     |     |       |         | v10.2    |
| Panther Lake  |     |       |         |          |
| Bartlett Lake |     |       |         |          |
| Lunar Lake    |     |       |         |          |
| Arrow Lake    |     |       |         |          |
| Meteor Lake   |     |       |         |          |
| Raptor Lake   |     |       |         |          |
| Alder Lake    |     |       |         |          |
| Rocket Lake   |     |       |         |          |
| Tiger Lake    |     |       |         |          |
| Comet Lake    |     |       |         |          |
| Ice Lake      |     |       |         |          |
| Coffee Lake   |     |       |         |          |
| Whiskey Lake  |     |       |         |          |
| Kaby Lake     |     |       |         |          |
| Sky Lake      |     |       |         |          |

**AVX10.2**  
Boosts AI  
performance  
on the CPU

## New Capabilities



**Full CPU utilization – Now supported on both P- and E- Cores\***



**New AI datatypes and conversion instructions including FP8 datatypes**



**Enhanced motion estimation and expanded VNNI support**



**Simplifies software development with streamlined zero-extension operations and unified instructions semantics**



**Modernized flag-based enumeration model replacing legacy CPU ID paths**

[AVX 10.2 Architecture Spec](#)

\*Performance may vary on P-Cores vs. E-Cores

# Intel AVX Support

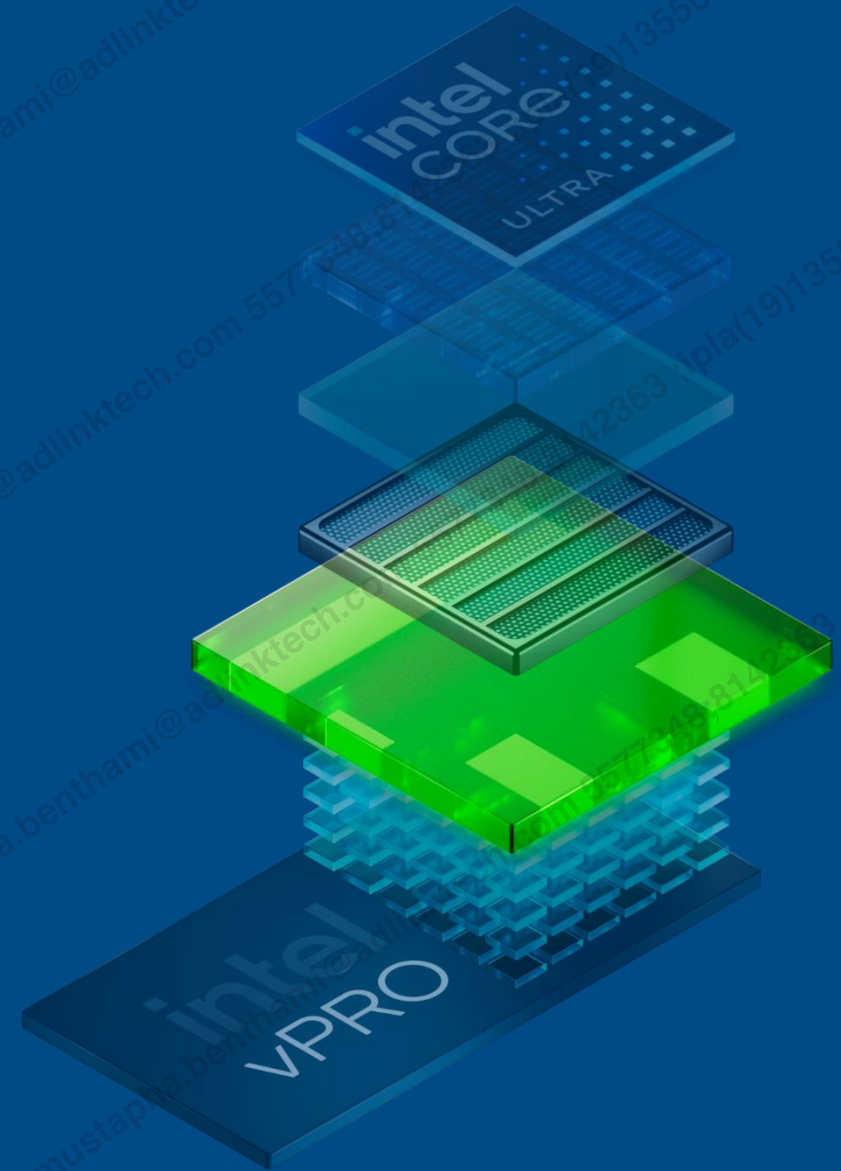
Supported

| Processor Brand                                                                                                                                                        | Platform/Processor Codename   | AVX | AVX 2 | AVX 512 | AVX 10.x   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----|-------|---------|------------|
|                                                                                       | Diamond Rapids                |     |       |         | v10.1/10.2 |
|                                                                                                                                                                        | Nova Lake E                   |     |       |         | v10.2      |
|                                                                                                                                                                        | Granite Rapids (P Cores only) |     |       |         | v10.1      |
|                                                                                                                                                                        | Sapphire Rapids               |     |       |         |            |
|                                                                                                                                                                        | Ice Lake                      |     |       |         |            |
|                                                                                                                                                                        | Cascade Lake                  |     |       |         |            |
|                                                                                                                                                                        | Sky Lake                      |     |       |         |            |
|                                                                                                                                                                        | Broadwell                     |     |       |         |            |
| <br> | Nova Lake                     |     |       |         | v10.2      |
|                                                                                                                                                                        | Panther Lake                  |     |       |         |            |
|                                                                                                                                                                        | Bartlett Lake                 |     |       |         |            |
|                                                                                                                                                                        | Lunar Lake                    |     |       |         |            |
|                                                                                                                                                                        | Arrow Lake                    |     |       |         |            |
|                                                                                                                                                                        | Meteor Lake                   |     |       |         |            |
|                                                                                                                                                                        | Raptor Lake                   |     |       |         |            |
|                                                                                                                                                                        | Alder Lake                    |     |       |         |            |
|                                                                                                                                                                        | Rocket Lake                   |     |       |         |            |
|                                                                                                                                                                        | Tiger Lake                    |     |       |         |            |
|                                                                                                                                                                        | Comet Lake                    |     |       |         |            |
|                                                                                                                                                                        | Ice Lake                      |     |       |         |            |
|                                                                                                                                                                        | Coffee Lake                   |     |       |         |            |
|                                                                                                                                                                        | Whiskey Lake                  |     |       |         |            |
|                                                                                                                                                                        | Kaby Lake                     |     |       |         |            |
|                                                                                                                                                                        | Sky Lake                      |     |       |         |            |
|                                                                                                                                                                        | Amston Lake                   |     |       |         |            |
|                                                                                     | Twin Lake                     |     |       |         |            |
|                                                                                                                                                                        | Alder Lake N                  |     |       |         |            |

The Intel logo, consisting of the word "intel" in white lowercase letters on a black square background.

# Edge Manageability

Take a proactive approach with your “Edge Devices” to reduce costs and deliver reliable edge services.





# Multiple Edge Device Outages on a Friday...

Without  
Intel  
vPro/ISM



One person, fixing one  
edge device at a time  
Manual remediation steps  
must be taken locally  
Costly truck rolls



One person can work on multiple  
edge devices at once, remotely  
No physical access required  
Remediation steps soon to be  
automated

With  
Intel  
vPro/ISM

It's just one of the many reasons the Intel vPro platform is key to keeping  
edge deployments of all sizes running seamlessly and efficiently

Intel Standard Manageability (ISM) is an entry manageability offering with basic features on non-vPro platforms.

Intel® Standard Manageability (ISM) is an entry manageability offering with basic features on non-vPro platforms.

# Intel vPro/ISM Enhances Edge Device Manageability & Delivers Reliable Edge Services

## Proactive

Keep systems patched & current



Increase visibility into endpoints

Monitor patching against known risks

Remotely update during off hours

## Resilient

Quickly recover from an outage



Remote access even when OS is down or unavailable

Remote power control of non-responsive PCs

Recover in a matter of hours, not days

## Flexible

Providing choice to IT organizations



Supporting all types of Edge infrastructure deployments

Intel Device Management Toolkit: Open-Source Software Enabler for vPro® Manageability

## Intelligent

Use data to drive better decisions



Non-intrusively collect & process below OS telemetry

Real-time AI-driven insights to prevent or resolve issues

Enable smarter AI-powered IT operations

Not all features available across all Intel vPro® offerings; some features may require OS or ISV enablement. Intel® Standard Manageability (ISM) is an entry manageability offering with basic features on non-vPro platforms.

# Out of Band Manageability Roadmap

| OOB Manageability | LGA (Socketed CPUs) |           |           |                   |                  |                |             |      | BGA (Chip-down CPUs) |                   |                    |                    |                |                |      |
|-------------------|---------------------|-----------|-----------|-------------------|------------------|----------------|-------------|------|----------------------|-------------------|--------------------|--------------------|----------------|----------------|------|
|                   | RPL-S               | RPL-SR    | RPL-PS    | MTL-PS (Series 1) | ARL-S (Series 2) | BTL-S (Hybrid) | BTL-S (12P) | NVL  | RPL-U/H/P            | RPL-U/H R         | MTL-U/H (Series 1) | ARL-U/H (Series 2) | PTL (Series 3) | WCL (Series 3) | NVL  |
| Ultra 9           | -                   | -         | -         | -                 | vPro             | -              | -           | vPro | -                    | -                 | vPro               | vPro, ISM          | vPro, ISM      | -              | vPro |
| Ultra 7           | -                   | -         | -         | vPro, ISM         | vPro, ISM        | -              | -           | vPro | -                    | -                 | vPro, ISM          | vPro, ISM          | vPro, ISM      | -              | vPro |
| Ultra 5           | -                   | -         | -         | vPro, ISM         | vPro, ISM        | -              | -           | vPro | -                    | -                 | vPro, ISM          | vPro, ISM          | vPro, ISM      | -              | vPro |
| Ultra 3           | -                   | -         | -         | ISM               | -                | -              | -           | vPro | -                    | -                 | -                  | -                  | -              | -              | vPro |
| Core 9            | vPro, ISM           | vPro      | -         | -                 | -                | -              | vPro        | -    | vPro, ISM            | non-vPro, non-ISM | -                  | -                  | -              | -              | -    |
| Core 7            | vPro, ISM           | vPro      | vPro, ISM | -                 | -                | vPro           | vPro        | -    | vPro, ISM            | ISM               | -                  | -                  | -              | ISM            | -    |
| Core 5            | vPro, ISM           | vPro, ISM | vPro, ISM | -                 | -                | vPro           | vPro        | -    | vPro, ISM            | ISM               | -                  | -                  | -              | ISM            | -    |
| Core 3            | ISM                 | ISM       | ISM       | -                 | -                | vPro           | -           | -    | non-vPro, non-ISM    | non-vPro, non-ISM | -                  | -                  | -              | ISM            | -    |
| Intel Processor   | ISM                 | ISM       | ISM       | -                 | -                | ISM            | -           | -    | non-vPro, non-ISM    | -                 | -                  | -                  | -              | -              | -    |
| Intel Pentium     | -                   | -         | -         | -                 | -                | -              | -           | -    | -                    | -                 | -                  | -                  | -              | -              | -    |
| Intel Celeron     | non-vPro, non-ISM   | -         | -         | -                 | -                | -              | -           | -    | -                    | -                 | -                  | -                  | -              | -              | -    |

|                   |                                                                                                                                                                 |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | Indicates non-VPRO, non-ISM SKUs also available in the SKU stack                                                                                                |
|                   | In Planning, so may not have decided on the SKU stack features                                                                                                  |
| vPRO              | Refers to SIPP SKUs, where partner can configure for AMT/ISM/Nothing. Generally, Partners obtain OOBM through AMT. They are also referred to as Corporate SKUs. |
| ISM               | Refers to TX SKUs, configured for ISM, not possible to change like SIPP SKUs. They are also referred to as Consumer SKUs.                                       |
| non-VPRO, non-ISM | Refer to TX SKUs without any OOBM feature and cannot be configured either.                                                                                      |

# Protecting Businesses from the Unexpected



Simplify from up to 26 steps down to 6 to deploy an out-of-band PC fleet management solution, no server infrastructure needed

## Intel vPro® Fleet Services **NEW**

Intel® hosted SaaS solution for IT to access Intel vPro® hardware manageability features.

## Intel® Endpoint Cloud Services **NEW**

Utilize existing commercial vendors as a single tool to natively access Intel vPro® manageability.



## Intel® Endpoint Management Assistant

Self-hosted solution for IT and ISVs.

## Intel® Device Management Toolkit

Open-Source, Building Block, Software Enabler for vPro and ISM

**Remediate from an outage in hours versus days across hundreds of thousands of distributed devices.**



# Edge Security



# Edge HW Security Technology Portfolio

## Crypto Optimization and Acceleration

Intel Advanced Encryption Standard New Instructions (Intel AES-NI)

Intel SHA Extensions

Intel Secure Key

Intel QuickAssist Technology (Intel QAT)

## Platform Trust and Integrity

Intel Boot Guard

Intel BIOS Guard

Intel Converged Security and Management Engine (Intel CSME)

Intel Platform Trust Technology (Intel PTT)

Intel Platform Firmware Resilience (Intel PFR)

Intel Trusted Execution Technology (Intel TXT)

Intel Partner Security Engine (IPSE)

## Workload and Data Protection

Intel Virtualization Technology (Intel VT)

Advanced Programmable Interrupt Controller Virtualization (APICv)

Single Root I/O Virtualization (SRIOV)

Intel Software Guard Extensions (Intel SGX)

Intel Trust Domain Extensions (Intel TDX)

HW-based DRM

Intel Graphics System Controller (GSC)

## Software Hardening

Intel OS Guard

Mode-Based Execution Control

Intel Control-Flow Enforcement Technology (Intel CET)

Page Protection Keys

User-Mode Instruction Prevention (UMIP)

VT-Redirect

# Intel Core Processors Key Hardware Security Technologies

|                                      | Intel Security Technology                                                 | Core Processors                |                              |                 |                 |                 |            |              | Supported      |
|--------------------------------------|---------------------------------------------------------------------------|--------------------------------|------------------------------|-----------------|-----------------|-----------------|------------|--------------|----------------|
|                                      |                                                                           | Comet Lake S<br>(Incl. Xeon-W) | Tiger Lake<br>(Incl. Xeon-W) | Alder Lake      | Raptor Lake     | Meteor Lake     | Arrow Lake | Panther Lake | In Development |
|                                      | Platform Launch Year                                                      | 2020                           | 2020                         | 2022            | 2023            | 2024            | 2025       | 2026         |                |
| Platform Trust and Integrity         | Intel Boot Guard (Secure Boot)                                            |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel BIOS Guard                                                          |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Total Memory Encryption (Intel TME)                                 |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Trusted Execution Technology (Intel TXT)                            | Intel vPro only                | Intel vPro only              | Intel vPro only | Intel vPro only | Intel vPro only |            |              |                |
|                                      | Intel Converged Security and Management Engine (Intel CSME)               |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Platform Trust Technology (Intel PTT) -TPM2.0 / Discrete TPM-TPM2.0 |                                |                              |                 |                 |                 |            |              |                |
| Crypto Optimization and Acceleration | Intel AES-NI                                                              |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel SHA Extensions                                                      |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Secure Key (DRNG)                                                   |                                |                              |                 |                 |                 |            |              |                |
|                                      | SM3 / SM4                                                                 |                                |                              |                 |                 |                 |            |              |                |
| Workload and Data Protection         | Intel Software Guard Extensions (Intel SGX)                               |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Virtualization Technology (Intel VT)                                |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Single Root I/O Virtualization (Intel SR-IOV)                       |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Trusted Domain Extension (Intel TDX)                                |                                |                              |                 |                 |                 |            |              |                |
| Software Hardening                   | Intel OS Guard                                                            |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Control-Flow Enforcement Technology (Intel CET)                     |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel Mode-Based Execution Control (Intel MBEC)                           |                                |                              |                 |                 |                 |            |              |                |
|                                      | Intel VT-Redirect Protection (Intel VT-rp)                                |                                |                              |                 |                 |                 |            |              |                |
|                                      | Page Protection Keys (Memory Protection Keys)                             |                                |                              |                 |                 |                 |            |              |                |
|                                      | Linear Address Space Separation                                           |                                |                              |                 |                 |                 |            |              |                |

This is not comprehensive list of all platform security features. For more information on security features per platform, please see the platform gold deck or contact your Intel representative.

# Intel Xeon Processors Key Hardware Based Security Technologies

|                                      | Intel Security Technology                             | Xeon        |                       |                |                  |                   |
|--------------------------------------|-------------------------------------------------------|-------------|-----------------------|----------------|------------------|-------------------|
|                                      |                                                       | Ice Lake SP | Sapphire Rapids SP/EE | Emerald Rapids | Sierra Forest SP | Granite Rapids SP |
|                                      | Platform Launch Year                                  | 2021        | 2022                  | 2023           | 2024             | 2025              |
| Platform Trust and Integrity         | Intel Boot Guard (Secure Boot)                        |             |                       |                |                  |                   |
|                                      | Intel BIOS Guard                                      |             |                       |                |                  |                   |
|                                      | Intel Platform Firmware Resilience (Intel PFR)        |             |                       |                |                  |                   |
|                                      | Intel Total Memory Encryption (Intel TME)             |             |                       |                |                  |                   |
|                                      | Intel Trusted Execution Technology (Intel TXT)        |             |                       |                |                  |                   |
|                                      | Intel Platform Trust Technology (Intel PTT) -TPM2.0   |             |                       |                |                  |                   |
|                                      | Discrete TPM-TPM2.0                                   |             |                       |                |                  |                   |
| Crypto Optimization and Acceleration | Intel AES-NI                                          |             |                       |                |                  |                   |
|                                      | Intel SHA Extensions                                  |             |                       |                |                  |                   |
|                                      | Intel Secure Key (DRNG)                               |             |                       |                |                  |                   |
|                                      | Intel Quick Assist Technology (Intel QAT)             | PCH         | Integrated            | Integrated     | Integrated       | Integrated        |
| Workload and Data Protection         | Intel Software Guard Extensions (Intel SGX)           |             |                       |                |                  |                   |
|                                      | Intel Virtualization Technology (Intel VT)            |             |                       |                |                  |                   |
|                                      | Intel Single Root I/O Virtualization (Intel SR-IOV)   |             |                       |                |                  |                   |
|                                      | Intel Trusted Domain Extension (Intel TDX)            |             |                       |                |                  |                   |
| Software Hardening                   | Intel OS Guard                                        |             |                       |                |                  |                   |
|                                      | Intel Control-Flow Enforcement Technology (Intel CET) |             |                       |                |                  |                   |
|                                      | Intel VT-Redirect Protection (Intel VT-rp)            |             |                       |                |                  |                   |
|                                      | Intel Mode-Based Execution Control (Intel MBEC)       |             |                       |                |                  |                   |
|                                      | Page Protection Keys (Memory Protection Keys)         |             |                       |                |                  |                   |
|                                      | Linear Address Space Separation                       |             |                       |                |                  |                   |

|  |                |
|--|----------------|
|  | Supported      |
|  | In Development |

This is not comprehensive list of all platform security features. For more information on security features per platform, please see the platform gold deck or contact your Intel representative.



# Atom Processors Key Hardware Based Security Technologies

|                                      | Intel Security Technology                                               | Atom Processors |              |             |           | Supported      |
|--------------------------------------|-------------------------------------------------------------------------|-----------------|--------------|-------------|-----------|----------------|
|                                      |                                                                         | Elkhart Lake    | Alder Lake N | Amston Lake | Twin Lake | In Development |
|                                      | Platform Launch Year                                                    | 2021            | 2023         | 2024        | 2025      |                |
| Platform Trust and Integrity         | Intel Boot Guard (Secure Boot)                                          |                 |              |             |           |                |
|                                      | Intel BIOS Guard                                                        |                 |              |             |           |                |
|                                      | Intel Total Memory Encryption (Intel TME)                               |                 |              |             |           |                |
|                                      | Intel Platform Trust Technology (Intel PTT) - TPM2.0 / Discrete TPM 2.0 |                 |              |             |           |                |
| Crypto Optimization and Acceleration | Intel AES-NI                                                            |                 |              |             |           |                |
|                                      | Intel SHA Extensions                                                    |                 |              |             |           |                |
|                                      | Intel Secure Key (DRNG)                                                 |                 |              |             |           |                |
|                                      | Intel Quick Assist Technology (Intel QAT)                               |                 |              |             |           |                |
| Workload and Data Protection         | Intel Software Guard Extensions (Intel SGX)                             |                 |              |             |           |                |
|                                      | Intel Virtualization Technology (Intel VT)                              |                 |              |             |           |                |
|                                      | Intel Single Root I/O Virtualization (Intel SR-IOV)                     |                 |              |             |           |                |
|                                      | Intel Trusted Domain Extension (Intel TDX)                              |                 |              |             |           |                |
| Software Hardening                   | Intel OS Guard                                                          |                 |              |             |           |                |
|                                      | Intel Control-Flow Enforcement Technology (Intel CET)                   |                 |              |             |           |                |
|                                      | Intel Mode-Based Execution Control (Intel MBEC)                         |                 |              |             |           |                |
|                                      | VT-Redirect Protection                                                  |                 |              |             |           |                |
|                                      | Page Protection Keys (Memory Protection Keys)                           |                 |              |             |           |                |
|                                      | Linear Address Space Separation                                         |                 |              |             |           |                |

This is not comprehensive list of all platform security features. For more information on security features per platform, please see the platform gold deck or contact your Intel representative.

# Intel GPU Key Hardware Based Security Technologies

|                           | Intel Security Technology                                                | Intel GPU      |           |             |              |
|---------------------------|--------------------------------------------------------------------------|----------------|-----------|-------------|--------------|
|                           |                                                                          | Arctic Sound M | Alchemist | Alchemist E | Battlemage E |
|                           | Platform Launch Year                                                     | 2022           | 2022      | 2023        | 2025         |
| Digital Rights Management | DRM: Playready, Widevine                                                 |                | Supported | Supported   | Supported    |
|                           | Output Protection: High Bandwidth Content Protection (HDCPI.4, 2.2, 2.3) |                | Supported | Supported   | Supported    |
|                           | Link Protection:PAVP (Protected Audio/Video Path)/PXP for GPU            |                | Supported | Supported   | Supported    |

|                |
|----------------|
| Supported      |
| In Development |

This is not comprehensive list of all platform security features. For more information on security features per platform, please see the platform gold deck or contact your Intel representative.

# Security Technology Resources

|                                      | Intel Security Technology                                                 | Resource (Public)                      | Sales Guide (NDA)                                                                 | Technical Guide (NDA)                                    |
|--------------------------------------|---------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------|
| Platform Trust and Integrity         | Intel Boot Guard (Secure Boot)                                            | <a href="#">Intel Boot Guard</a>       | <a href="#">Value of Intel Boot Guard</a>                                         | <a href="#">User Guide for Intel Boot Guard Enabling</a> |
|                                      | Intel Platform Firmware Resilience (Intel PFR)                            | <a href="#">Intel PFR</a>              |                                                                                   | <a href="#">Intel PFR Deep dive</a>                      |
|                                      | Intel Total Memory Encryption (Intel TME)                                 | <a href="#">Intel TME</a>              |                                                                                   | <a href="#">Intel TME Deep dive</a>                      |
|                                      | Intel Trusted Execution Technology (Intel TXT)                            | <a href="#">Intel TXT</a>              |                                                                                   | <a href="#">Intel TXT Deep dive</a>                      |
|                                      | Intel Platform Trust Technology (Intel PTT) -TPM2.0 / Discrete TPM-TPM2.0 | <a href="#">Intel PTT</a>              | <a href="#">Intel PTT / TPM 2.0 Overview</a>                                      | <a href="#">Intel PTT Enabling Guide</a>                 |
| Crypto Optimization and Acceleration | Intel AES-NI                                                              | <a href="#">Intel AES-NI</a>           |                                                                                   |                                                          |
|                                      | Intel SHA Extensions                                                      | <a href="#">Intel SHA Extensions</a>   |                                                                                   |                                                          |
|                                      | Intel Secure Key (DRNG)                                                   | <a href="#">Intel Secure Key</a>       |                                                                                   | <a href="#">Intel Secure Key Implementation Guide</a>    |
|                                      | Intel Quick Assist Technology (Intel QAT)                                 | <a href="#">Intel QAT</a>              | <a href="#">Intel QAT Solution Brief</a><br><a href="#">Intel QAT White Paper</a> | <a href="#">Intel QAT Getting Started Guide</a>          |
| Workload and Data Protection         | Intel Software Guard Extensions (Intel SGX)                               | <a href="#">Intel SGX</a>              | <a href="#">Intel SGX User Guide</a>                                              | <a href="#">Intel SGX Solution Brief</a>                 |
|                                      | Intel Virtualization Technology (Intel VT)                                | <a href="#">Intel VT</a>               | <a href="#">Intel VT White Paper</a>                                              |                                                          |
|                                      | Intel Single Root I/O Virtualization (Intel SR-IOV)                       |                                        |                                                                                   |                                                          |
|                                      | Intel Trusted Domain Extension (Intel TDX)                                | <a href="#">Intel TDX</a>              | <a href="#">Intel TDX Case Study</a>                                              | <a href="#">Intel TDX Implementation Guide</a>           |
| Software Hardening                   | Intel OS Guard                                                            | <a href="#">Intel OS Guard</a>         |                                                                                   |                                                          |
|                                      | Intel Control-Flow Enforcement Technology (Intel CET)                     | <a href="#">Intel CET</a>              |                                                                                   |                                                          |
|                                      | Page Protection Keys (Memory Protection Keys)                             | <a href="#">Memory Protection Keys</a> |                                                                                   |                                                          |
| DRM                                  | DRM: Playready, Widevine                                                  |                                        |                                                                                   |                                                          |
|                                      | Output Protection: High Bandwidth Content Protection (HDCP1.4, 2.2, 2.3)  |                                        |                                                                                   |                                                          |
|                                      | Link Protection:PAVP (Protected Audio/Video Path)/PXP for GPU             |                                        |                                                                                   |                                                          |

# SECURITY FRAMEWORK AT THE EDGE NODE

Accelerate Time to Market and Simplify Developer Experience

## Device Integrity

HW RoT

Secure Boot

Trusted Launch

Remote platform attestation

## Security Execution

Limited access

Integrity and confidentiality

Separate and confined execution domains

## Data Protection and Secure Communication

Crypto Key management

Crypto acceleration

Secure Storage

## Secure Resource Usage

Memory and Disk Encryption

Secure I/O

## Device Lifecycle Management

Secure Onboarding with Zero Touch Provisioning

Authorized HW/SW Security Updates

Device Health Status

Onboarding

Provisioning

Patches

Configuration Updates

Platform Security Discovery

Telemetry Insights



# Thunderbolt™ Roadmap



# Thunderbolt™ & USB4 Silicon 5Q Roadmap

|                 |                                                                                                                                                                                                                                                                                                                                                                             | Q4'25 | Q1'26 | Q2'26 | Q3'26 | Q4'26 |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|
| Host Controller | <b>Barlow Ridge DP</b> TBT5 controller <i>[RPL HX Update, ARL S/HX/H, ARL S/HX Refresh, PTL H 484, PTL H 12Xe, NVL]</i><br>JHL9580: 2x 80/120Gbps DP2.1   x4 PCIe Gen 4   USB3 (20G)                                                                                                                                                                                        |       |       |       |       |       |
|                 | <b>Barlow Ridge DP</b> TBT4 controller <i>[RPL HX Update, ARL S/HX/H, ARL S/HX Refresh, PTL H 484, PTL H 12Xe, NVL]</i><br>JHL9540: 2x 40Gbps DP2.1   x4 PCIe Gen 4   USB3 (20G)                                                                                                                                                                                            |       |       |       |       |       |
|                 | <b>Maple Ridge</b> TBT4 controller <i>[ADL, RPL]</i><br>DP (JHL8540): 2 x 40Gbps   x4PCIe Gen 3   DP1.4   USB3 (10G)<br>SP (JHL8340): 1 x 40Gbps   x4PCIe Gen 3   DP1.4   USB3 (10G)                                                                                                                                                                                        |       |       |       |       |       |
| Host Retimer    | <b>June Bridge</b> TBT5 Host Re-timer <i>[NVL]</i><br>JHL9280R: 1x 80/120Gbps DP2.1 (UHBR20)   USB3 (20G)                                                                                                                                                                                                                                                                   |       |       |       |       |       |
|                 | <b>June Bridge</b> TBT4 Host Re-timer <i>[NVL]</i><br>JHL9240R: 1x 40 Gbps DP2.1 (UHBR20)   USB3 (20G)                                                                                                                                                                                                                                                                      |       |       |       |       |       |
|                 | <b>Hayden Bridge</b> Host Re-timer <i>[RPL, MTL, ARL, LNL, PTL H, WCL U, NVL]</i><br>JHL9040R: 1 x 40Gbps DP 2.1 (UHBR20)   USB3 (20G)   Low Voltage I/O levels support<br>JHL9020R# (USB4 20G): DP 2.1 (UHBR10)   USB3 (20G)   Low Voltage I/O levels support<br>JHL9040RIT## 1 x 40Gbps Industrial/Embedded Re-timer: DP 2.1 (UHBR10)   USB3 (20G)   Temp -40 0C to 85 0C |       |       |       |       |       |
|                 | <b>Gothic Bridge</b> TBT4 Re-timer + PD solution <i>[WCL U]</i><br>JHL9140RP: 1 X 40Gbps JHL9040R features + PD3.1                                                                                                                                                                                                                                                          |       |       |       |       |       |
|                 | <b>Burnside Bridge</b> Host Re-timer <i>[TGL, ADL, RPL]</i><br>JHL8040R: 1 x 40Gbps & JHL8010R: (USB4 20Gbps)                                                                                                                                                                                                                                                               |       |       |       |       |       |

|                |
|----------------|
| Thunderbolt™ 5 |
| Thunderbolt™ 4 |
| Thunderbolt™ 3 |
| USB4           |

# JHL9020R is not POR on LunarLake & 2026 platforms  
## Contact Edge Team for PlatformPOR and product information  
Left Edge aligns with PRQ quarter for new products

# Thunderbolt™ & USB4 Accessory Silicon 5Q Roadmap

Q4'25

Q1'26

Q2'26

Q3'26

Q4'26

Thunderbolt™ 5

Thunderbolt™ 4

Thunderbolt™ 3

USB4

## Accessory Controller

### Barlow Ridge QD TBT5 quad port accessory controller

JHL9480: 4x 80/120Gbps DP2.1 | x4 PCIe Gen 4 | USB3 (20G) | vPro Thunderbolt docking

### Barlow Ridge QD TBT4 quad port accessory controller

JHL9440: 4x 40Gbps DP2.1 | x4 PCIe Gen 4 | USB3 (20G) | vPro Thunderbolt docking

### Goshen Ridge QD TBT4 quad port accessory controller

JHL8440: 4 x 40 Gbps | x1 PCIe Gen 3 | 1 x USB3 (10G) port | (USB3 (10G) | x1 DP 1.4 (sink), x2 DP1.4 (source) | vPro Thunderbolt docking

### Titan Ridge DD TBT3 40G dual port accessory controller

JHL7440: 2 x 40Gbps | x4 PCIe Gen3 | 1x DP1.4 sink / 1x DP1.4 src / USB3 (10G) side port | USB3 (10G) XHCI w/ Universal Dock

### Hoover Ridge SD USB4 40G single port accessory controller

JHL8140: 1 x 40 Gbps | 1 x USB3 (10G) data only port | 3 x (USB3 (10G) & DP-MF capable ports | supports x2 DP1.4 streams

Left Edge aligns with PRQ quarter for new products

# Intel Edge Camera Solutions Overview

Supporting Intel Edge AI Camera Solutions





# Intel Image Processing Unit Overview

Edge applications are driving the need for higher quality and reliable camera data processing and video ingestion capabilities



## Frictionless Retail



## Video Collaboration



## Education



## Robotics / AMRs

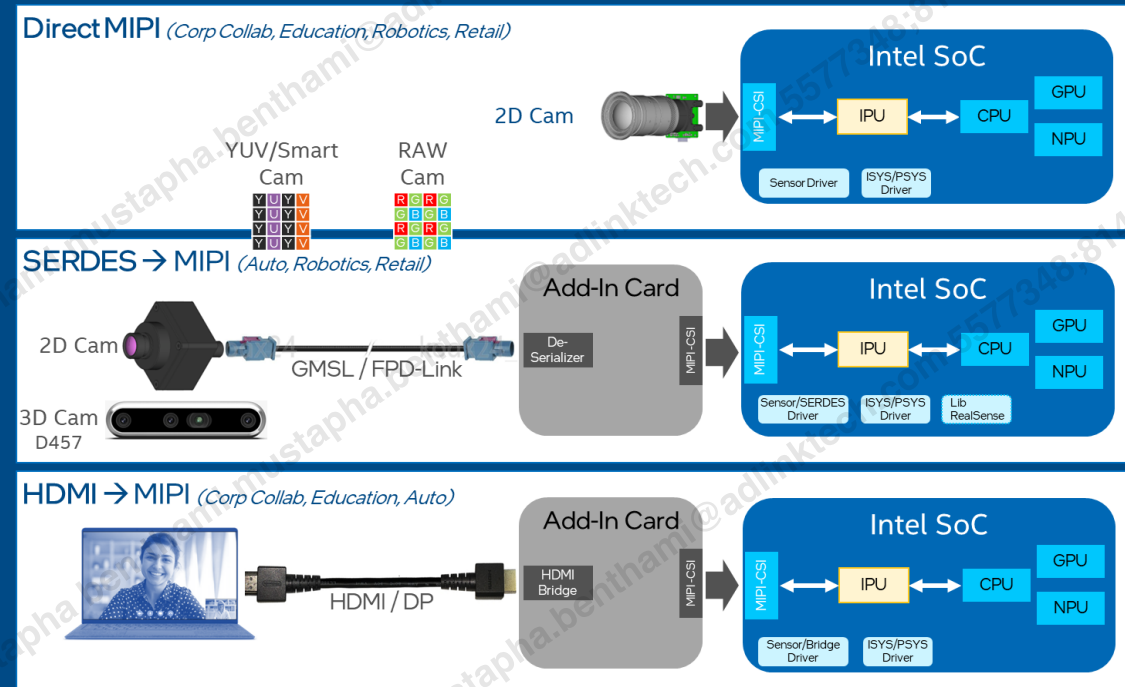


## Manufacturing



## Humanoids

- ❑ Intel® Image Processing Unit (IPU) is the subsystem within Intel SoCs that processes image sensor data delivered via high-speed MIPI-CSI
- ❑ Intel® Image Processing Unit offers:
  - Both processing for RAW cameras and passthrough for YUV (Smart) and depth cameras
  - Concurrent multi stream support via direct MIPI, SerDes, or HDMI-DP bridge
  - Best-in-class image quality with advanced features including high dynamic range, spatial/temporal noise reduction, ultra low light, wide field of view, etc.
  - Comprehensive camera portfolio via established ecosystem



# Intel's Edge Platform Image Processing Unit (IPU) now supports a rich portfolio of cameras modules from industry leading vendors including Direct MIPI-CSI, GMSL and HDMI connectivity

|                                                 | 2024                                                                                                               | 2025                                                                                                                                                                                                                                 |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | IPU version 6: MTL, ASL                                                                                            | IPU version 6: + ARL, TWL. <b>New IPU version 7.5: PTL</b>                                                                                                                                                                           |
| Improved Software                               | <p>✗ Lacking GMSL support</p> <p>✗ Very limited reference drivers (~8)</p> <p>✗ IQ tuning tool not easy to use</p> | <p>✓ GMSL drivers for <b>MAX9296, MAX96724</b> now in Intel BKC</p> <p>✓ <b>18 camera reference drivers</b> by Intel</p> <p>✓ Extensive and improved documentation</p> <p>✓ Easy to use <b>Lightweight IQ Studio</b> tuning tool</p> |
| Expanded Camera Portfolio and Ecosystem Support | <p>✗ Limited cameras supported by vendors</p> <p>✗ Late integration and delivery</p>                               | <p>✓ &gt;<b>110</b> camera modules across <b>55</b> sensors enabled</p> <p>✓ <b>14</b> camera partners, <b>8</b> in ISV Early Access program</p> <div> </div>                                                                        |
| New Hardware Reference Designs                  | <p>✗ No HW reference designs</p>                                                                                   | <p>✓ New GMSL reference designs for Arrow Lake (GMSL AIC 1.0) and Panther Lake (GMSL AIC 2.0)</p> <div> </div>                                                                                                                       |

# Edge Camera Enabling Strategy

- Intel integrates and validates a representative set of camera modules that serve as reference to camera vendors and ISVs.
- Intel partners closely with a growing number of camera vendors and ODMs to scale the portfolio of cameras and provide ready to use solutions and image quality tuning services.



14 Partners  
60+ OTS Cams



- Full Market Coverage
- Full Geo Coverage
- Embedded into TW Ecosystem

Making Intel IPU  
“Easy” and “Accessible”  
to everyone



9 ODMs  
20+ OTS Boards





# Sensor/Camera Support Improvements

|                     | IPU6: MTL/ARL/TWL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | IPU7.5: PTL Camera ISV Early Access                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Software            | <ul style="list-style-type: none"> <li>GMSL MAX9296 driver for IPU6, delivered with Intel BKC</li> <li>Open Edge Robotic AI Suite 2025.2 Debian/Ubuntu package upgrade: <ul style="list-style-type: none"> <li>IPU6 out-of-box GMSL MAX9296 + D457 librealsense2 and GStreamer src-plugin support</li> <li>IPU6 ready GMSL ISV/vendor-specific Linux sensor &amp; SERDES driver Debian/ Ubuntu packages (D3, oTobrite)</li> </ul> </li> <li>Direct MIPI and HDMI-in driver</li> <li>OS : Ubuntu LTS 22.04 (Linux 5.15/LTS, 6.5, 6.8) , Ubuntu LTS 24.04 (Linux 6.6/LTS, 6.8, 6.11, 6.12/LTS, 6.14) compatibility, optionally GNU/Debian LTS 12 (Linux 6.1/LTS, 6.12/LTS)</li> </ul> | <ul style="list-style-type: none"> <li><b>NEW!</b> GMSL MAX96724 driver for IPU7 delivered with Intel BKC</li> <li><b>NEW!</b> IPU7 driver for Panther Lake</li> <li>Open Edge Robotic AI Suite 2026.x Debian/Ubuntu package upgrade: <ul style="list-style-type: none"> <li><b>NEW!</b> IPU7 <i>out-of-box</i> GMSL MAX96724+D457 librealsense2 and GStreamer src-plugin support.</li> <li>Incremental IPU7 and IPU6 <i>ready</i> GMSL ISV/vendor-specific Linux sensor &amp; SERDES driver Debian/Ubuntu packages</li> </ul> </li> <li>OS : Ubuntu LTS 24.04 (Linux 6.12/LTS, 6.14, 6.17) compatibility</li> </ul> |
| Sensors Supported   | <p>~55 total sensors, ~110 total cameras</p> <ul style="list-style-type: none"> <li>~16 new reference drivers enabled by Intel</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>~2 total sensors, ~7 total cameras</p> <ul style="list-style-type: none"> <li>~2 new reference drivers enabled by Intel</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| HW Reference Design | <p>Arrow Lake + GMSL AIC1.0 (MAX9296) reference design</p> <p><i>Off-the-shelf</i> ODM GMSL-enabled products for Open Edge Robotic AI Suite 2025.2</p> <ul style="list-style-type: none"> <li><a href="#">ASR-A502 series</a> (ARL) with <a href="#">Advantech® GMSL Input Module Card</a></li> <li><a href="#">SEAVO® Embedded Computer HB03</a> (ARL)</li> <li><a href="#">Advantech® AFE-R360</a> (MTL) with <a href="#">Advantech® GMSL Input Module Card</a></li> <li><a href="#">Advantech® AFE-R760</a> (RPL)</li> <li><a href="#">Axiomtek ROBOX500</a> (RPL)</li> </ul>                                                                                                    | <p><b>NEW!</b> Panther Lake + GMSL AIC2.0 (MAX96724) reference design available for camera ISV EA customers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Documentation       | <p><b>IPU6 Focus:</b></p> <ul style="list-style-type: none"> <li>Platform bring up guide (RDC#817101)</li> <li>Windows debug guide (RDC#854533)</li> <li>Linux debug guide (RDC#822743)</li> <li>YUV sensor enabling guide (RDC#850830)</li> <li>Driver conversion guide (RDC#850539)</li> <li>HW/SW capability guide (RDC#855244)</li> <li>GMSL enabling guide</li> <li>Architecture conversion guide</li> <li>Debian/Ubuntu users &amp; developers public wiki page <a href="#">GMSL2 Linux v4l2 multi-sensors</a></li> </ul>                                                                                                                                                     | <p><b>IPU7.5 Documentation:</b></p> <ul style="list-style-type: none"> <li>Platform bring up guide (RDC#869409)</li> <li>HW/SW capability guide (RDC#870580)</li> <li>GMSL driver enabling guide (RDC#872110)</li> <li>Linux debug guide (<a href="#">822743</a>)</li> <li>Windows debug guide (<a href="#">854533</a>)</li> <li>YUV sensor enabling guide? (<a href="#">850830</a>)</li> <li>Middleware configuration file guide (libcamhal profile xml) (872111)</li> <li><a href="#">Open Edge Robotic AI Suite v2026.x</a> documentation updates</li> </ul>                                                      |
| Image Quality Tool  | Full & Lightweight IQ Tuning tool for IPU6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Planned* Lightweight &amp; Full IQ Tuning tool for IPU7.5</b></p> <p><small>(80% parameter tuning for improved TTM of camera partners)</small></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



# Intel Image Processing Unit Spec Comparison

| Spec                         |                                             | IPU6<br>(ADL/RPL/MTL/TWL/ARL)                                                                                   | IPU7.5<br>(PTL)                      | IPU8<br>(NVL)                        |
|------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|
| Camera I/O                   |                                             | 8 lanes,<br>Up to 4 ports                                                                                       | 6 lanes,<br>Up to 3 ports            | 6 lanes,<br>Up to 3 ports            |
| Sensor Types                 |                                             | RGB, IR, Mono<br>RGB-IR, Depth                                                                                  | RGB, RCB, IR, Mono,<br>RGB-IR, Depth | RGB, RCB, IR, Mono,<br>RGB-IR, Depth |
| Input Bit Depth              |                                             | Up to 15bit                                                                                                     | Up to 15bit                          | Up to 15bit                          |
| Input Resolution             |                                             | Up to 13MP                                                                                                      | Up to 16MP                           | Up to 33MP                           |
| Output Formats               |                                             | YUV 420/422,<br>Tile-Y, BT.2020                                                                                 | YUV 420/422,<br>BT.2020              | YUV 420/422,<br>BT.2020              |
| Output Bit Depth             |                                             | 8/10bit                                                                                                         | 8/10bit                              | 8/10bit                              |
| Input Bandwidth              | D-PHY                                       | Up to 30 Gbps                                                                                                   | Up to 15 Gbps                        | Up to 15 Gbps                        |
|                              | C-PHY                                       | N/A                                                                                                             | Up to 34 Gbps                        | Up to 34 Gbps                        |
| Configurations               | D-PHY<br>(Ports x Lanes)                    | MTL/ARL M:<br>3 x 4L or 2 x 2L, 2 x 4L<br>MTL/ARL S:<br>2 x 4L or 2 x 2L, 1 x 4L<br>or 1 x 4L, 2 x 2L or 4 x 2L | 3 x 2L<br>1 x 4L + 1 x 2L            | 3 x 2L<br>1 x 4L + 1 x 2L            |
|                              | C-PHY<br>(Ports x Trios)                    | N/A                                                                                                             | 3 x 2T<br>1 x 3T + 1 x 2T            | 3 x 2T<br>1 x 3T + 1 x 2T            |
| # of Concurrent Camera Input | MIPI CSI2                                   | 4                                                                                                               | 3                                    | 3                                    |
|                              | SERDES using GMSL<br>to CSI-2 de-serializer | 10 (via Virtual Channels)                                                                                       | 16 (via virtual channels)            | 16 (via virtual channels)            |

Intel Imaging sub-system and IPU can support a vast list of use cases and typical combinations of concurrent camera inputs for Industrial solutions

# Intel Edge Camera Ecosystem Partners

Intel is building a strong ecosystem by expanding the camera portfolio and scaling partners. Intel has enabled the following partners for ready to use camera solutions and image quality tuning service.

| Partner           | Contact                                                                       | Camera HW Supplier | IQ Tuning | SW             |
|-------------------|-------------------------------------------------------------------------------|--------------------|-----------|----------------|
| D3 Engineering    | <a href="https://www.d3engineering.com/">https://www.d3engineering.com/</a>   | Yes                | Yes       | Linux          |
| Leopard Imaging   | <a href="https://www.leopardimaging.com/">https://www.leopardimaging.com/</a> | Yes                | Yes       | Linux, Windows |
| Thundersoft       | <a href="https://en.thundersoft.com/">https://en.thundersoft.com/</a>         | No                 | Yes       | Linux, Windows |
| MMS (Thundersoft) | <a href="https://www.mm-sol.com/">https://www.mm-sol.com/</a>                 | No                 | Yes       | Linux          |
| Innodisk          | <a href="https://www.innodisk.com/">https://www.innodisk.com/</a>             | Yes                | No        | Linux          |
| TechNexion        | <a href="https://www.technexion.com/">https://www.technexion.com/</a>         | Yes                | No        | Linux          |
| Appro             | <a href="https://www.appropho.com/">https://www.appropho.com/</a>             | Yes                | No        | Linux          |
| oTobrite          | <a href="https://www.otobrite.com/zh">https://www.otobrite.com/zh</a>         | Yes                | No        | Linux          |
| Lontium Semi.     | <a href="http://www.lontiumsemi.com/">http://www.lontiumsemi.com/</a>         | Yes                | N/A       | Linux, Windows |
| e-con             | <a href="https://www.e-consystems.com/">https://www.e-consystems.com/</a>     | Yes                | No        | Linux          |
| FRAMOS            | <a href="https://www.framოს.com/en/">https://www.framოს.com/en/</a>           | Yes                | No        | Linux          |
| SENSING           | <a href="https://sensing-world.com/">https://sensing-world.com/</a>           | Yes                | No        | Linux          |
| ORBEC             | <a href="https://www.orbbec.com/">https://www.orbbec.com/</a>                 | Yes                | No        | Linux          |

- Customers can directly contact the partners.
- Please follow future roadmap updates for latest information.
- Please reach out to your Intel representative for additional details.

# Sensor Support & Plan

|         | MIPI (RAW) | MIPI (YUV) | GMSL (RAW) | GMSL (YUV) | GMSL (Depth) |
|---------|------------|------------|------------|------------|--------------|
| AR0234  | ✓          | ✓          | ✓          | ✓          |              |
| IMX327  | ✓          |            |            |            |              |
| IMX334  | ✓          |            |            |            |              |
| IMX335  | ✓          | ✓          |            | ✓          |              |
| IMX412  | ✓          |            |            |            |              |
| IMX415  | ✓          | ✓          | ✓          | ✓          |              |
| IMX586  | ✓          |            |            |            |              |
| OV13858 | ✓          |            |            |            |              |
| OV13B   | ✓          |            |            |            |              |
| OV2740  | ✓          |            |            |            |              |
| OV5675  | ✓          |            |            |            |              |
| OV5693  | ✓          |            |            |            |              |
| OV8856  | ✓          |            |            |            |              |
| OV8865  | ✓          |            |            |            |              |
| IMX715  | ✓          |            |            |            |              |
| AR0830  | ✓          | ✓          |            |            |              |
| AR0114  |            | ✓          |            |            |              |
| AR0145  |            | ✓          |            |            |              |
| AR0221  |            | ✓          |            |            |              |
| AR0330  |            | ✓          |            |            |              |
| AR0233  |            |            |            | Q1'26      |              |

|        | MIPI (RAW) | MIPI (YUV) | GMSL (RAW) | GMSL (YUV) | GMSL (Depth) |
|--------|------------|------------|------------|------------|--------------|
| AR0246 |            | Q1'26      |            | Q1'26      |              |
| AR0521 |            | ✓          |            |            |              |
| AR0522 |            | ✓          |            |            |              |
| AR0820 |            |            |            | Q1'26      |              |
| AR0821 |            | ✓          |            | Q1'26      |              |
| AR0822 |            | ✓          |            | ✓          |              |
| AR1335 |            | ✓          |            |            |              |
| IMX290 |            | ✓          |            | ✓          |              |
| ISX031 |            | ✓          |            | ✓          |              |
| IMX390 |            |            | ✓          |            |              |
| IMX728 |            |            |            |            |              |
| ISX021 |            |            |            | ✓          |              |
| ISX028 |            |            |            |            |              |
| IMX490 |            |            |            |            |              |
| IMX678 |            | Q4'25      |            |            |              |
| D457   |            |            |            |            | ✓            |

|           | HDMI Bridge |
|-----------|-------------|
| LT6911UXC | ✓           |
| LT6911UXE | ✓           |
| LT6911GXD | ✓           |
| LT7911UXC | ✓           |

Only showing when sensor is first available. The drivers will continue to be maintained after first availability.

# Currently supported camera solutions – MIPI (YUV)

| Partner    | Model                                                 | Sensor      | Res             | Interface  | Supported Platform |
|------------|-------------------------------------------------------|-------------|-----------------|------------|--------------------|
| APPRO.PHO  | [D-06] AP-AR0144-Mini-MIPIYUV                         | AR0144      | 1MP             | MIPI (YUV) | MTL/ADL-N          |
| TechNexion | TEVS-AR0144-C-S33-IR-RPI22                            | AR0144      | 1MP             | MIPI (YUV) | ARL/MTL/ADL-N      |
| TechNexion | TEVS-AR0144-C-S83-IR-RPI22                            | AR0144      | 1MP             | MIPI (YUV) | ARL/MTL/ADL-N      |
| APPRO.PHO  | [D-07] AR0234(Global shutter) MIPI+ISP(YUV)           | AR0234      | 2.3M(1920x1200) | MIPI (YUV) | ARL/MTL/ADL-N      |
| TechNexion | TEVS-AR0145-M-S31-IR-RPI15                            | AR0145-Mono | 1MP             | MIPI (YUV) | ARL                |
| APPRO.PHO  | [D-05] AP-AR0234-Mini-MIPIYUV --> [D-07]              | AR0234      | 2MP             | MIPI (YUV) | MTL/ADL-N          |
| APPRO.PHO  | [D-04] AP-AR0234-MIPIYUV-AFZoomF3.6X                  | AR0234      | 2MP             | MIPI (YUV) | MTL/ADL-N          |
| APPRO.PHO  | [D-03] AP-AR0234-MIPIYUV-AFZoomN2.8X --> next gen TBD | AR0234      | 2MP             | MIPI (YUV) | MTL/ADL-N          |
| E-Con      | e-CAM25_CUR360                                        | AR0234      | 2MP             | MIPI (YUV) | MTL                |
| Innodisk   | EV2M-GOMI-MUCA-C1                                     | AR0330      | 2MP             | MIPI (YUV) | MTL                |
| TechNexion | TEVS-AR0145-M-S78-IR-RPI15                            | AR0145-Mono | 1MP             | MIPI (YUV) | ARL                |
| TechNexion | TEVS-AR0234-C-S32-IR-RPI22                            | AR0234      | 2.3MP           | MIPI (YUV) | ARL/MTL/ADL-N      |
| D3         | 3010181-68                                            | ISX031      | 3MP             | MIPI (YUV) | MTL                |
| TechNexion | TEVS-AR0234-C-S83-IR-RPI22                            | AR0234      | 2.3MP           | MIPI (YUV) | ARL/MTL/ADL-N      |
| TechNexion | TEVS-AR0234-C-S128-IR-RPI22                           | AR0234      | 2.3MP           | MIPI (YUV) | ARL/MTL/ADL-N      |
| TechNexion | TEVS-AR0521-C-S34-IR-RPI22                            | AR0521      | 5MP             | MIPI (YUV) | ARL                |
| TechNexion | TEVS-AR0521-C-S85-IR-RPI22                            | AR0521      | 5MP             | MIPI (YUV) | ARL                |
| E-Con      | e-CAM81_CUR360                                        | AR0821      | 8MP             | MIPI (YUV) | MTL                |
| TechNexion | TEVS-AR0521-C-S140-IR-RPI22                           | AR0521      | 5MP             | MIPI (YUV) | ARL                |
| APPRO.PHO  | [B-17] AR0822(4K) MIPIYUV-i 36PIN/22PIN               | AR0822      | 4K(3840x2160)   | MIPI (YUV) | ARL/MTL/ADL-N      |
| Innodisk   | EV8M-OOMI-RHCF-1I                                     | AR0822      | 8MP             | MIPI (YUV) | ARL                |
| TechNexion | TEVS-AR0522-C-S34-IR-RPI22                            | AR0522      | 5MP             | MIPI (YUV) | ARL                |
| TechNexion | TEVS-AR0522-C-S85-IR-RPI22                            | AR0522      | 5MP             | MIPI (YUV) | ARL                |
| TechNexion | TEVS-AR0522-C-S140-IR-RPI22                           | AR0522      | 5MP             | MIPI (YUV) | ARL                |
| Innodisk   | EVDM-OOMI-RHCF-1I                                     | AR1335      | 13MP            | MIPI (YUV) | ARL                |
| TechNexion | TEVS-AR0522-M-S34-IR-RPI22                            | AR0522-Mono | 5MP             | MIPI (YUV) | ARL                |
| APPRO.PHO  | [C-16] IMX290(2M) MIPI+ISPi(YUV) 15PIN/22PIN/36PIN    | IMX290      | 2M(1920x1080)   | MIPI (YUV) | ARL/MTL/ADL-N      |

Please contact the camera supplier for up-to-date information on camera parts and support.



# Currently supported camera solutions – MIPI (YUV)

| Partner         | Model                                          | Sensor      | Res            | Interface  | Supported Platform |
|-----------------|------------------------------------------------|-------------|----------------|------------|--------------------|
| TechNexion      | TEVS-AR0522-M-S85-IR-RPI22                     | AR0522-Mono | 5MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0522-M-S140-IR-RPI22                    | AR0522-Mono | 5MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0821-C-S44-IR-RPI22                     | AR0821      | 8MP            | MIPI (YUV) | ARL                |
| APPRO.PHO       | [B-18] IMX335(5MP) MIPIYUV-i 15PIN/22PIN/36PIN | IMX335      | 5MP(2560x1920) | MIPI (YUV) | ARL/MTL/ADL-N      |
| Leopard Imaging | LI-AR0830-YUV-MIPI-078H                        | AR0830      | 8MP            | MIPI (YUV) | ARL                |
| Leopard Imaging | LI-AR0830-YUV-MIPI-195H                        | AR0830      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0821-C-S74-IR-RPI22                     | AR0821      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0821-C-S119-IR-RPI22                    | AR0821      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0821-C-S156-IR-RPI22                    | AR0821      | 8MP            | MIPI (YUV) | ARL                |
| APPRO.PHO       | [B-16] IMX415(4K) MIPIYUV-i 36PIN/22PIN        | IMX415      | 4K(3840x2160)  | MIPI (YUV) | ARL/MTL/ADL-N      |
| APPRO.PHO       | [B-19] IMX678(4K) MIPIYUV-i5, 36PIN / 22PIN    | IMX678      | 4K(3840x2160)  | MIPI (YUV) | ARL/MTL/ADL-N      |
| SENSING         | SG3-ISX031C-MIPI-H30X                          | ISX031      | 3MP            | MIPI (YUV) | ARL                |
| SENSING         | SG3-ISX031C-MIPI-H60F                          | ISX031      | 3MP            | MIPI (YUV) | ARL                |
| SENSING         | SG3-ISX031C-MIPI-H100F1                        | ISX031      | 3MP            | MIPI (YUV) | ARL                |
| SENSING         | SG3-ISX031C-MIPI-H120UA                        | ISX031      | 3MP            | MIPI (YUV) | ARL                |
| SENSING         | SG3-ISX031C-MIPI-H190X                         | ISX031      | 3MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-C-S42-IR-RPI22                     | AR0822      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-C-S72-IR-RPI22                     | AR0822      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-C-S108-IR-RPI22                    | AR0822      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-C-S150-IR-RPI22                    | AR0822      | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-M-S42-IR-RPI22                     | AR0822-Mono | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-M-S72-IR-RPI22                     | AR0822-Mono | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-M-S108-IR-RPI22                    | AR0822-Mono | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR0822-M-S150-IR-RPI22                    | AR0822-Mono | 8MP            | MIPI (YUV) | ARL                |
| TechNexion      | TEVS-AR1335-C-S85-IR-RPI22                     | AR1335      | 13MP           | MIPI (YUV) | ARL                |

Please contact the camera supplier for up-to-date information on camera parts and support.

# Currently supported camera solutions – MIPI (RAW)

| Partner         | Model                     | Sensor  | Res  | Interface  | Supported Platform |
|-----------------|---------------------------|---------|------|------------|--------------------|
| D3              | 1002020-68                | AR0234  | 2MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX715-MIPI-M12        | IMX715  | 8MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX327-MIPI-INTL-CS    | IMX327  | 2MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX327-SLVDS-INTL-CS   | IMX327  | 2MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX334-MIPI-INTL-CS    | IMX334  | 8MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX335-MIPI-INTL-CS    | IMX335  | 5MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX412-MIPI-INTL-M12   | IMX412  | 12MP | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX415-MIPI-CS         | IMX415  | 8MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX415-MIPI-081H       | IMX415  | 8MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-IMX586-MIPI-AF-79D     | IMX586  | 8MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-OV13858-MIPI-JP        | OV13858 | 13MP | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-OV13858-MIPI-AF_JP     | OV13858 | 13MP | MIPI (RAW) | ARL                |
| Pegatron        | Custom OV13B module       | OV13B   | 13MP | MIPI (RAW) | ARL                |
| Unison          | OV13B module              | OV13B   | 13MP | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-OV2740-MIPI-xxD V1.0   | OV2740  | 2MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-OV5675-MIPI-FF-JP V1.0 | OV5675  | 5MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-OV5693-MIPI-80D        | OV5693  | 5MP  | MIPI (RAW) | ARL                |
| Leopard Imaging | LI-OV8856-MIPI-AF V1.0    | OV8856  | 8MP  | MIPI (RAW) | ARL                |
| KLT             | JAL-OV8865-A898B_V4.0     | OV8865  | 8MP  | MIPI (RAW) | ARL                |
| KLT             | JAL-OV8865-A898B_V5.0     | OV8865  | 8MP  | MIPI (RAW) | ARL                |

Please contact the camera supplier for up-to-date information on camera parts and support.

# Currently supported camera solutions – GMSL/HDMI Bridge

| Partner         | Model                                               | Sensor | Res              | Interface  | Supported Platform |
|-----------------|-----------------------------------------------------|--------|------------------|------------|--------------------|
| APPRO.PHO       | [E-11] AR0234(Global shutter) + ISPi(YUV) + MAX9295 | AR0234 | 2.3M (1920x1200) | GMSL (YUV) | MTL/ADL-N          |
| E-Con           | NileCAM25_CUR360                                    | AR0234 | 2MP              | GMSL (YUV) | MTL                |
| D3              | D3CMC68N-115-084                                    | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| D3              | D3CMC69N-115-084                                    | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| D3              | D3CMC72N-115-084                                    | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| D3              | D3CMC72N-115-084-S                                  | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| D3              | D3CMC74N-115-084-S                                  | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| D3              | D3CMC75N-115-084-S                                  | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| E-Con           | NileCAM81_CUR360                                    | AR0821 | 8MP              | GMSL (YUV) | MTL                |
| APPRO.PHO       | [E-13] AR0822(4K) + ISPi(YUV) + MAX9295             | AR0822 | 4K (3840x2160)   | GMSL (YUV) | MTL/ADL-N          |
| APPRO.PHO       | [E-12] IMX290(2M) + ISPi(YUV) + MAX9295             | IMX290 | 2M (1920x1080)   | GMSL (YUV) | MTL/ADL-N          |
| APPRO.PHO       | [E-10] IMX335(5M)+ISPi(YUV)+ MAX9295                | IMX335 | 5M (2560x1920)   | GMSL (YUV) | MTL/ADL-N          |
| Leopard Imaging | LI-VENUS-ISX031-GMSL2-118H                          | ISX031 | 3MP              | GMSL (YUV) | ARL                |
| Leopard Imaging | LI-VENUS-ISX031-GMSL2-060H                          | ISX031 | 3MP              | GMSL (YUV) | ARL                |
| Leopard Imaging | LI-VENUS-ISX031-GMSL2-030H                          | ISX031 | 3MP              | GMSL (YUV) | ARL                |
| Leopard Imaging | LI-VENUS-ISX031-GMSL2-195H                          | ISX031 | 3MP              | GMSL (YUV) | ARL                |
| APPRO.PHO       | [E-09] IMX415(4K) + ISPi(YUV) + MAX9295             | IMX415 | 4K (3840x2160)   | GMSL (YUV) | MTL/ADL-N          |
| E-Con           | STURDeCAM31_CUR360                                  | ISX031 | 3MP              | GMSL (YUV) | MTL                |
| SENSING         | SG3S-ISX031C-GMSL2F-H30X                            | ISX031 | 3MP              | GMSL (YUV) | ARL                |

| Partner         | Model                         | Sensor | Res | Interface    | Supported Platform |
|-----------------|-------------------------------|--------|-----|--------------|--------------------|
| SENSING         | SG3S-ISX031C-GMSL2F-H60F      | ISX031 | 3MP | GMSL (YUV)   | ARL                |
| SENSING         | SG3S-ISX031C-GMSL2F-H100F1    | ISX031 | 3MP | GMSL (YUV)   | ARL                |
| SENSING         | SG3S-ISX031C-GMSL2F-H120UA    | ISX031 | 3MP | GMSL (YUV)   | ARL                |
| SENSING         | SG3S-ISX031C-GMSL2F-H190X     | ISX031 | 3MP | GMSL (YUV)   | ARL                |
| SENSING         | SG5-IMX490C-5300-GMSL2-H30S1A | IMX490 | 5MP | GMSL (YUV)   | ARL                |
| SENSING         | SG5-IMX490C-5300-GMSL2-H60SA  | IMX490 | 5MP | GMSL (YUV)   | ARL                |
| SENSING         | SG5-IMX490C-5300-GMSL2-H110SA | IMX490 | 5MP | GMSL (YUV)   | ARL                |
| SENSING         | SG5-IMX490C-5300-GMSL2-H130YA | IMX490 | 5MP | GMSL (YUV)   | ARL                |
| SENSING         | SG8-ISX028C-G2G-H30YA         | ISX028 | 8MP | GMSL (YUV)   | ARL                |
| SENSING         | SG8-ISX028C-G2G-H60SA         | ISX028 | 8MP | GMSL (YUV)   | ARL                |
| SENSING         | SG8-ISX028C-G2G-H120YA        | ISX028 | 8MP | GMSL (YUV)   | ARL                |
| SENSING         | SHF3L                         | ISX031 | 3MP | GMSL (YUV)   | ARL                |
| D3              | D3CMC67N-106-084              | IMX390 | 2MP | GMSL (RAW)   | ARL                |
| Leopard Imaging | LI-IMX415-GMSL2-140H          | IMX415 | 8MP | GMSL (RAW)   | ARL                |
| RealSense       | D457 Stereo Camera            | D457   | 1MP | GMSL (Depth) | MTL                |

| Partner | Model     | Sensor    | Res | Type | Interface |
|---------|-----------|-----------|-----|------|-----------|
| Lontium | LT6911GXD | LT6911GXD | N/A | YUV  | HDMI      |
| Lontium | LT6911UXC | LT6911UXC | N/A | YUV  | HDMI      |
| Lontium | LT6911UXE | LT6911UXE | N/A | YUV  | HDMI      |
| Lontium | LT7911UXC | LT7911UXC | N/A | YUV  | HDMI      |

Please contact the camera supplier for up-to-date information on camera parts and support.

# Real-Time, Time Coordinated Computing, and Time Sensitive Networking





# Industry transformations require new computing approaches



INDUSTRIAL



AV & Enterprises



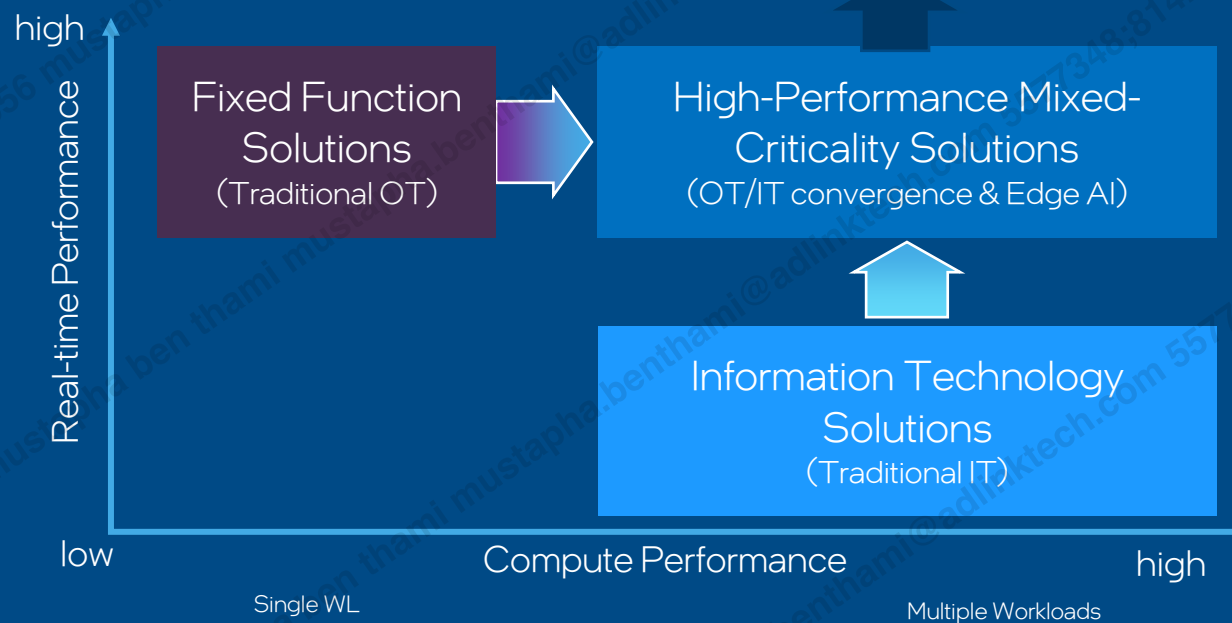
AEROSPACE



AUTOMOTIVE

## Time Coordinated Computing

- ✓ Time-aware
- ✓ Deterministic low latency
- ✓ Mixed-criticality
- ✓ Distributed



# Themes driving transformations across markets

*Shift to AI-driven automation in real-time*

*Shift to software defined workloads*



*Shift to secure, converged networks*



# Intel® TCC enabling Software-defined Systems & AI @ the Edge

## Time Coordinated Compute Experience

- Precise Coordinated Time
- Determinism with **low latency**
- Coexistence of **mixed criticality** workloads
- **Flexibility** to support various applications
- Great overall compute performance
- **Strong SW base and ecosystem**

SW  
&  
FW

Performance & benchmarking tools and documentation

Operating System and Hypervisor optimizations

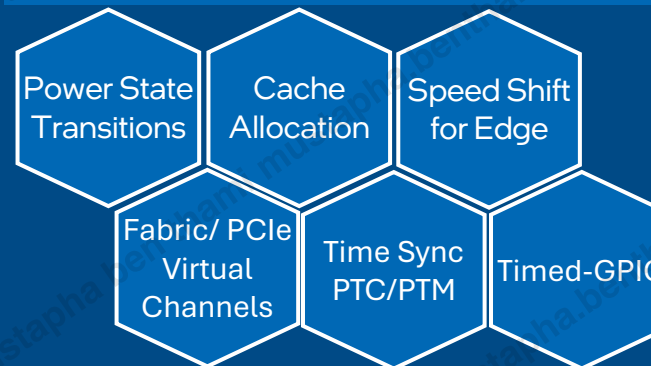
HW Supporting FW & SW

TCC BIOS Mode



Intel  
HW

HW optimizations for Time Coordinated Compute



End point connectivity

Ethernet

Wi-Fi

5G\*

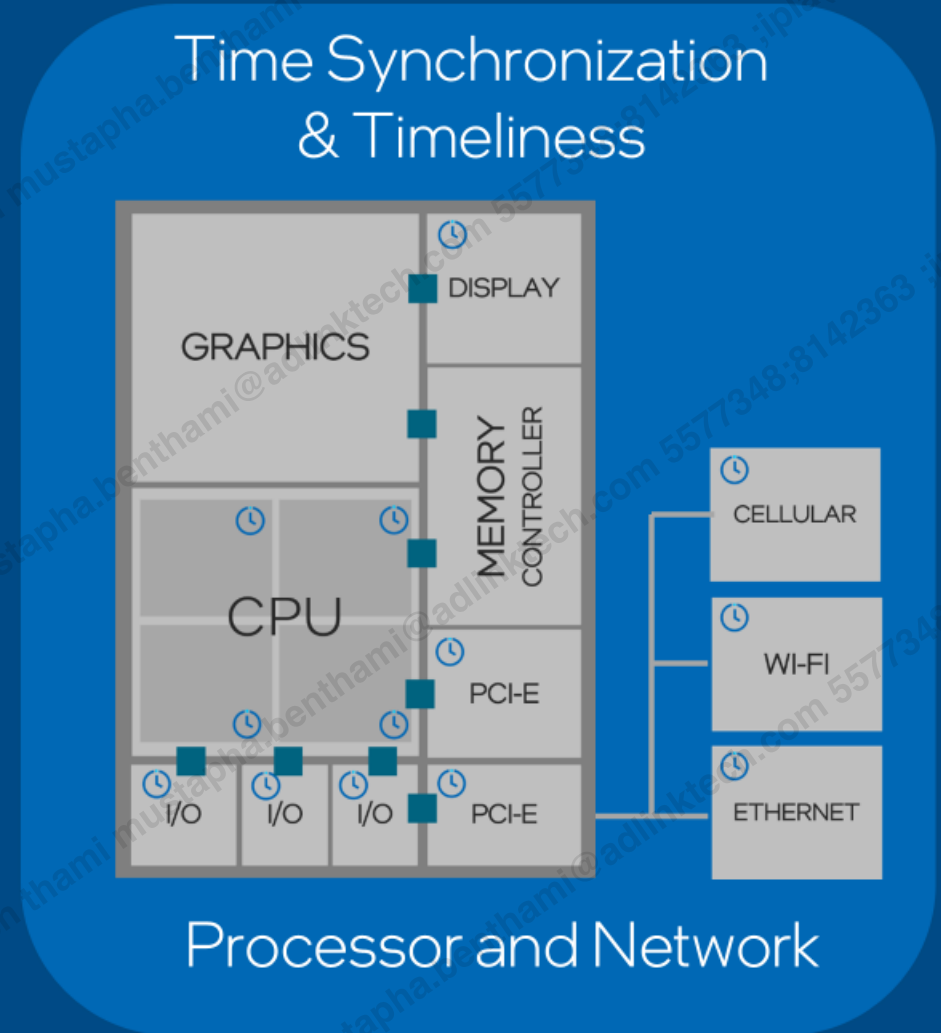
- Ethernet with PTM/PTP
- I226 (Avnu TSN Certified)

\*partner solutions



# Examples of Silicon Platform Enhancements

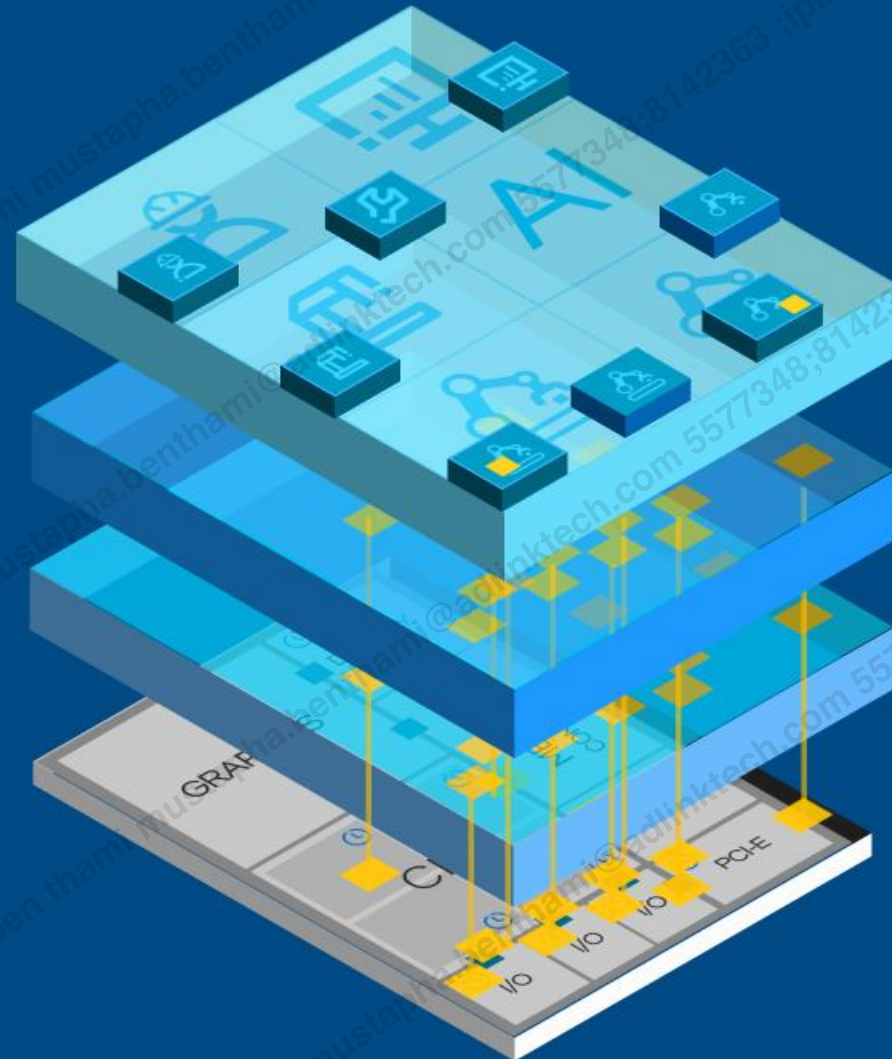
- Clock correlation via HW Time-Stamping
- Power State Transition Optimizations
- Flexible Memory/Cache Allocation
- Interrupt Request Optimizations
- PCIe Precision Time Measurement (PTM)
- Comprehensive IEEE 1588 PTP Support
- Time Sensitive Networking (TSN)





# E2E System Optimizations & SW Ecosystem

- ❑ Ready for Mixed-Criticality Compute  
Various applications on same platform
- ❑ OS and Hypervisor Ecosystem  
Linux, Windows, dedicated RTOS, ...
- ❑ BIOS/Firmware Enhancements  
TCC Mode out-of-the-box configuration



# Intel Real-Time offerings enabling the TCC Experience

| Use Condition Support                                  |                                                       |
|--------------------------------------------------------|-------------------------------------------------------|
| Highlights added after internal development milestones |                                                       |
| E                                                      | Support for embedded use conditions                   |
| F                                                      | Support for Intel Functional Safety (FuSa) technology |
| I                                                      | Extended temperature with industrial reliability      |
| L                                                      | Support for long-life reliability                     |
| P                                                      | Supports Product Tuning for Reliability (PTR)         |
| T                                                      | Support for extended temperature                      |
| <b>R</b>                                               | Real Time, supporting TCC and TSN                     |

- Use Condition Support “R” (Real-Time) expanded to more Intel Platforms enabling
  - Deterministic execution with low latencies and minimal jitter with KPIs published\*
  - Mixed criticality workloads with residual performance measured using industry benchmarks
  - Precise coordinated time
  - Support for Time-Sensitive Networking (TSN) when using TSN-capable Intel NICs\*\*
- Platform features that customers can use to enable the TCC experience
  - TCC Mode (BIOS)
  - Platform QoS (Cache Allocation Technologies, Memory Bandwidth Allocation)
  - Speed Shift for Edge
  - PCIe Virtual Channels and PTM (Precision Time Measurement)
- Platform-specific optimizations and tuning\*\*\*

\* KPIs are platform specific, please refer to the TCC User Guide (RDC #786715) for published KPIs

\*\*For example Intel® Ethernet Controller [i226](#): First [AVNU certified](#) TSN endpoint device in the market!

\*\*\*Some features and configurations are platform-dependent, refer to the TCC User Guide (RDC #786715) for more information

# Intel offerings enabling the TCC Experience

Intel processors with support for Time Coordinated Computing usages, the combination of real-time workloads and best effort workloads on the same system, by leveraging many silicon and SW optimizations on our products.

Ethernet controllers supporting mixed criticality traffic in a single Network with IEEE TSN support

AVAILABLE NOW

IN DEVELOPMENT



Intel® Xeon® D-2800 and D-1800 processors  
Intel® Xeon® D-2700 and D-1700 processors



14th Gen Intel® Core™ S-series processors  
13th Gen Intel® Core™ P & S-series processors  
12th Gen Intel® Core™ S-series processors  
11th Gen Intel® Core™ UP3/H-series processors



Intel Atom® x7000E/x7000C/x7000RE Series processors  
Intel Atom® x6000E Series processors



Intel® Ethernet Controller I225/I226

- 2.5GbE MAC/PHY, PCIe v3.1, gen2 x1
- I225/I226-IT/LM only: TSN (802.1AS, 802.1Qbu, 802.3br, 802.1Qbv), PCIe PTM
- Avnu Alliance Component Certified for compliance with IEEE 802.1AS and IEEE 802.1Qbv

Panther Lake

Nova Lake S/U

Intel Core processors (Series 2)

Bartlett Lake – S

Bartlett Lake S 12P

Wildcat Lake

Intel Processor N-series

Twin Lake

Goldville (up to 25Gb)

- 4x10Gb, 2x25Gb (target)
- xBASE-T: 4x1G, 4x10G
- TSN, PCIe G4 x4

ALL PRODUCT PLANS AND ROADMAPS ARE SUBJECT TO CHANGE WITHOUT NOTICE.



# Reference & Software Resources

- [TCC User Guide](#): Guide on usage of Real-Time capabilities on Intel platforms enabling the TCC Experience
- [TCC Tutorial](#): A step-by-step guide on optimizing Linux Real-Time performance on Intel CPUs
- [Canonical's CTO guide to RT Linux](#): recommended reading as an introduction to Linux real-time capabilities
- [Linux Real-Time Communications Testbench](#): an open-source tool for validating and testing real-time applications and TSN capabilities on Linux systems
- For real-time with Xeon processors specifically refer to [Intel® RDT](#)



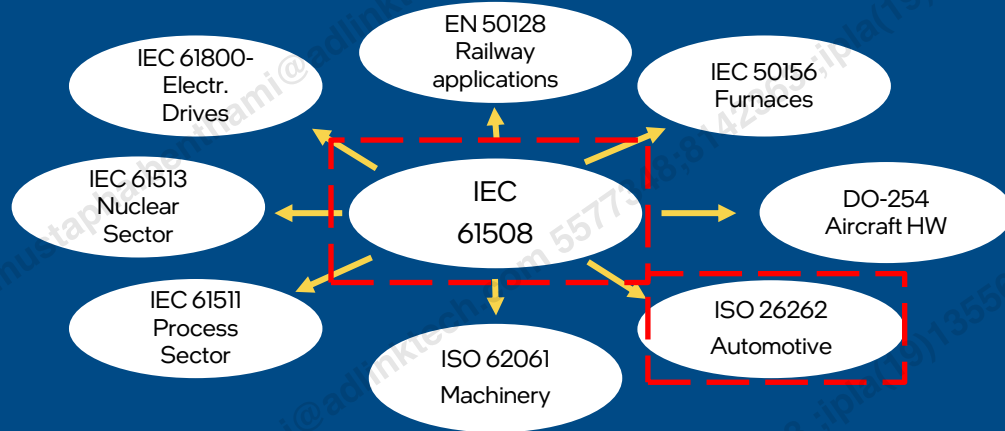
# Functional Safety Overview



# Functional Safety (FuSa) At a Glance

The absence of unreasonable risk caused by malfunctioning behavior in electronic systems

Guided by International Standards  
setting the "state of art" (for liability)

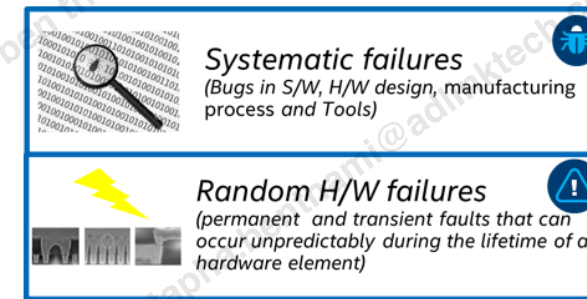


Main targets from which compliance with other International Standards is derived

## FuSa in Action

- Check Systems (Pre-Operation): Ensure all components are functional.
- Monitor Systems (During Operation): Detect potential issues in real-time.
- React (Fault Detected): Automatically switch to a safe state.

## Types of Failures



## Functional Safety Standards

| IEC 61508 - industrial | ISO 26262 (Automotive) | DO-178/254 (Aviation) |
|------------------------|------------------------|-----------------------|
|                        |                        | DAL A                 |
| SIL 4                  | -                      |                       |
| SIL 3                  | ASIL D                 |                       |
|                        | ASIL C                 | DAL B                 |
| SIL 2                  | ASIL B                 |                       |
| SIL 1                  | ASIL A                 | DAL C                 |
|                        | QM                     | DAL D / E             |

- Defines procedures and best practices
- Represents a worldwide consensus
- Defines Safety Integrity levels

# FuSa Target Markets



# Intel® Functional Safety Essential Design Package (Intel® FSEDP)

The **Intel® Functional Safety Essential Design Package (Intel® FSEDP)** includes information that can be used by customers in the context of a Functional Safety (FuSa) lifecycle of standards such as ISO 26262 and IEC 61508.

The **Intel® FSEDP** scope:

- Support Customers in building their own FuSa concepts by taking advantage of features/ process/ information INTEL generates during the product development
- The Integrity Features are functionally and safety-wise described in the FSEDP packages

| Document                                           | Document contents                                                                                                                                                                                                                                                    |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FSEDP introduction                                 | It describes the content of the FSEDP. This document is SoC independent.                                                                                                                                                                                             |
| FSEDP functional safety datasheet                  | It includes details on safety analyses and on Integrity Features. This document is SoC dependent.                                                                                                                                                                    |
| FSEDP Hardware Random Failure analysis (table A&B) | It includes FMEDA (for permanent and transient failures), table with info related to HW integrity features (e.g., ECC, parity) that customer can use as safety mechanisms, description of the methodology and sources with which Base Failure Rate has been computed |
| FSEDP systematic failure avoidance table (table D) | This document highlights the development process techniques used for the avoidance and control of systematic failures at IP level                                                                                                                                    |
| FSEDP DFA and HW FFI analysis (table G)            | This document includes <ul style="list-style-type: none"><li>• the dependent failure analysis (DFA)</li><li>• the HW freedom from interference (FFI) analysis and</li><li>• provide a list of suggested assumptions of use</li></ul>                                 |



# Avionics: Silicon Integrity and Real-Time Technologies

Intel-based solutions for next generation avionics systems

## Accelerate Time to Market

- Intel® Airworthiness Evidence Package: Unprecedented insight to Intel architecture
- Intel® Avionics Pre-OS Checker: DALA certifiable firmware providing independent verification of boot configuration

## Enable Integrity and Determinism

- Intel® Silicon Integrity Technology: Reduced undetected fault rates and common-cause failures
- Intel® Time Coordinated Computing: Multi-core configuration to minimize on-chip interference

## Industry Optimized Silicon

- Optimized for SWaP
- Use conditions: Extended temperature, BGA packaging, in-band ECC
- Integrated accelerators: Intel® Iris® Xe graphics and Intel® Deep Learning Boost
- Extended availability

## Includes...

### Intel® Airworthiness Evidence Package

- Failure Modes, Effects, and Diagnostic Analysis
- Production reliability data
- Single Event Effect Analysis
- AMC 20-193 Guide
- Collateral for DO-254/ED-80 and AC/AMC 20-152A objectives

### Intel® Avionics Pre-OS Checker

- Executes following boot and gates RTOS execution
- DAL A Certifiable
- Source code and collateral as required by DO-178C/ED-12C

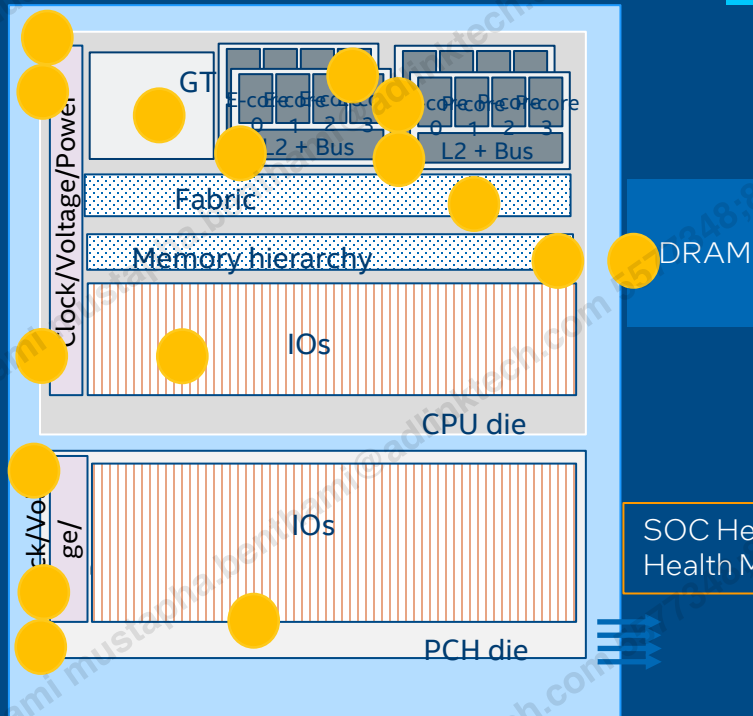
### Silicon with extended temperature & availability

- 11<sup>th</sup> Gen Intel® Core™ i7-1186GRE
- 13<sup>th</sup> Gen Intel® Core™ i7-1376PRE
- Intel Atom® x6000FE
- Intel Atom® x7836FE



# Intel® Silicon Integrity Technology

## Secure, Reliable System Integrity



### Key Integrity Features

- **Dual Core Lock Step:** Real-time fault detection with synchronized core processing.
- **In-Field Diagnostics:** Continuous system health monitoring and diagnostics.
- **ECC/Parity Array Protection:** Memory protection for data integrity.
- **Power Management:** Optimized thermal and voltage control.
- **Error Reporting:** Comprehensive logging and reporting for critical fault.

### Enhanced Reliability Benefits

- Drastic reduction in undetected fault rates.
- Efficient detection of transient and permanent faults.
- Reduced common-cause failures in SoC shared resources.
- Robust error reporting and logging infrastructure.

### Simplified Architecture Diagram

- Exemplary integrity features in yellow
- Main blocks / IPs of SoC in blue

More details in Silicon Integrity Technology tech brief →



# Intel Functional Safety Software Partners



LYNX|OS-178®

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Avionics

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Industrial

# FuSa Collaterals look up

| Title                                     | Link                                                                                                                                                                                                                                                                                |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Raptor Lake FSED/Functional Safety Manual | <a href="https://www.intel.com/content/www/us/en/secure/content-details/790264/raptor-lake-fsedp-functional-safety-manual.html?DocID=790264">https://www.intel.com/content/www/us/en/secure/content-details/790264/raptor-lake-fsedp-functional-safety-manual.html?DocID=790264</a> |
| Raptor Lake SIL3 Technical Safety Concept | <a href="https://cdrdv2.intel.com/v1/dl/getContent/815587">https://cdrdv2.intel.com/v1/dl/getContent/815587</a>                                                                                                                                                                     |
| Silicon integrity technology tech brief   | <a href="https://www.intel.com/content/www/us/en/content-details/847357/intel-silicon-integrity-technology-tech-brief.html">https://www.intel.com/content/www/us/en/content-details/847357/intel-silicon-integrity-technology-tech-brief.html</a>                                   |
| Health monitor whitepaper                 | <a href="https://cdrdv2.intel.com/v1/dl/getContent/851160">https://cdrdv2.intel.com/v1/dl/getContent/851160</a>                                                                                                                                                                     |



# Edge Audio Overview

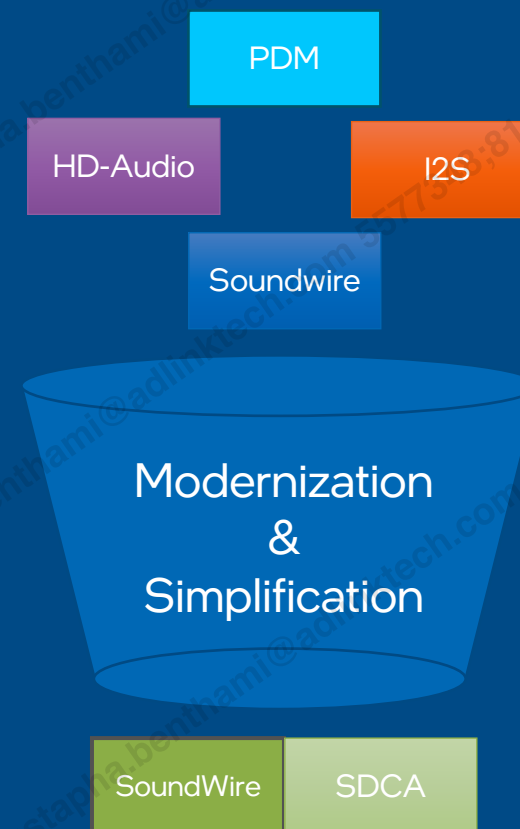


# Edge Audio Enabling Strategy Evolution

Intel is transitioning from fragmented multi-interface audio support for codecs and amplifiers into a unified interface model based on MIPI SoundWire which provides enhanced capabilities at low-power, 2-pin interface for data and control and better interoperability for firmware and drivers.

SoundWire\* Device Class for Audio defines a standard software interface that enables Operating System Vendors (OSVs) to provide enhanced experience via inbox drivers.

Intel partnered with Microsoft in accelerating this transition and new Windows Client and Server editions starting in 26H2 will require SoundWire SDCA compliant codecs/amplifiers to pass Windows logo certification.



All new designs starting in 2026 with Panther Lake and Wildcat Lake are recommended to move to Soundwire codecs.

All new designs based on Windows starting with Nova Lake will be enabled with Soundwire only codecs.<sup>1</sup>

<sup>1</sup> For feedback related to SDCA migration contact us via e-mail: [ecg.audio.feedback@intel.com](mailto:ecg.audio.feedback@intel.com)

# Edge Audio Interface Convergence Plan

Soundwire

HDA

I2S

Planned transition to Soundwire only codecs starting with Nova Lake for Windows-based designs and to complete transition for all designs starting in 2029.

| Title                                  | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|----------------------------------------|------|------|------|------|------|------|
| Meteor Lake                            |      |      |      |      |      |      |
| Arrow Lake                             |      |      |      |      |      |      |
| Panther Lake & Wildcat Lake            |      |      |      |      |      |      |
| Nova Lake                              |      |      |      |      |      |      |
| Soundwire Required for Windows Designs |      |      |      |      |      |      |
| 2028                                   |      |      |      |      |      |      |
| Soundwire Required for Windows Designs |      |      |      |      |      |      |
| 2029                                   |      |      |      |      |      |      |
| Soundwire Required for All Designs     |      |      |      |      |      |      |

## 2026

Panther Lake and Wildcat Lake new designs are recommended to transition to Soundwire. Designs that plan for Windows certification on 26H2 onwards require SoundWire SDCA codec.

## 2027 & 2028

Starting with Nova Lake, Soundwire required for Windows designs and recommended for Linux. HDA and I2S supported on Linux only.

## 2029 onwards

Codecs, amplifiers and other components for main audio subsystem only supported on Soundwire interface.

<sup>1</sup>Support for Windows and Linux for I2S Bridge Devices such as HDMI-in still available/POR.

# Edge Display Technologies Overview

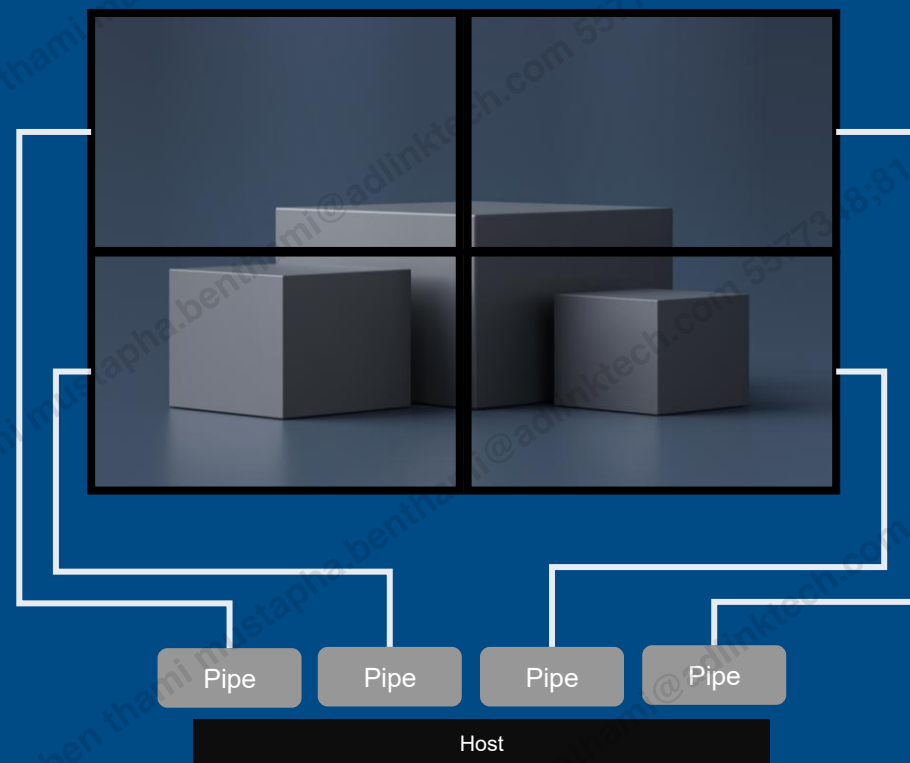




# Multi Display Synchronization and Topology Lock

Enhanced reference solutions for multi display use cases such as Video Walls and Professional Audio/Video applications:

- Up to 4 simultaneous displays
- **Bezel Correction**<sup>1</sup>: Image positioning offset from bezels
- **Combined Display**<sup>1</sup>: Extend content across multiple displays
- **Pipelock**<sup>1</sup>: Display synchronization for smooth playback
- **EDID Management**<sup>1</sup>: Lock displays topology. Even in display hardware failure, image content doesn't shift to different screen
- **Software Genlock**<sup>2</sup>: Display synchronization across multiple systems over network



1. Supported on Windows  
2. Supported on Linux

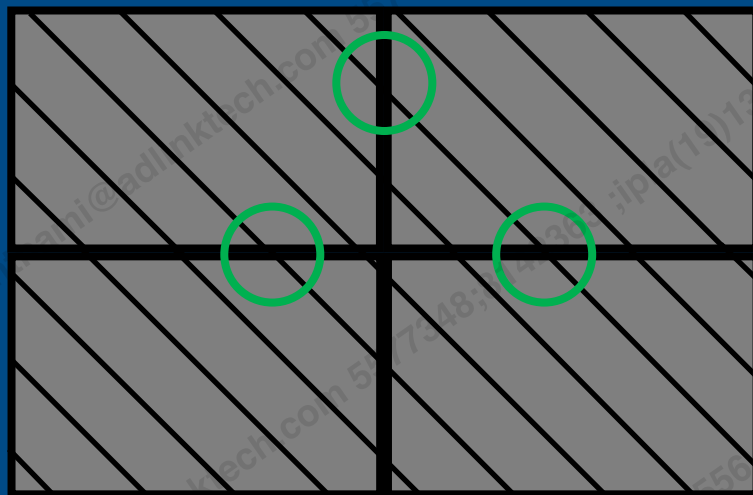
# Display Technologies Software Support Guidance

|                                                                                     | 2025                                                                                                                                                                                                                                                                            | 2026                                                                | 2027                                                                   |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------|
|                                                                                     | <div>Bezel Correction (Windows)</div> <div>Combined Display (Windows)</div> <div>Pipelock – Single System Display Synchronization (Windows)</div> <div>EDID Management/ Lock Display (Windows)</div> <div>Software Genlock – Multi System Display Synchronization (Linux)</div> |                                                                     |                                                                        |
|    |                                                                                                                                                                                                                                                                                 |                                                                     | <div>Razor Lake AX (2028)</div> <div>Up to 4 Concurrent Displays</div> |
|    | <div>Arrow Lake</div> <div>Up to 4 Concurrent Displays</div>                                                                                                                                                                                                                    | <div>Panther Lake</div> <div>Up to 4 Concurrent Displays</div>      | <div>Nova Lake</div> <div>Up to 4 Concurrent Displays</div>            |
|   | <div>Bartlett Lake</div> <div>Up to 4 Concurrent Displays</div>                                                                                                                                                                                                                 | <div>Bartlett Lake 12P</div> <div>Up to 4 Concurrent Displays</div> |                                                                        |
|                                                                                     | <div>Raptor Lake Refresh</div> <div>Up to 4 Concurrent Displays</div>                                                                                                                                                                                                           | <div>Wildcat Lake</div> <div>Up to 3 Concurrent Displays</div>      |                                                                        |
|  | <div>Twin Lake</div> <div>Up to 3 Concurrent Displays</div>                                                                                                                                                                                                                     |                                                                     |                                                                        |

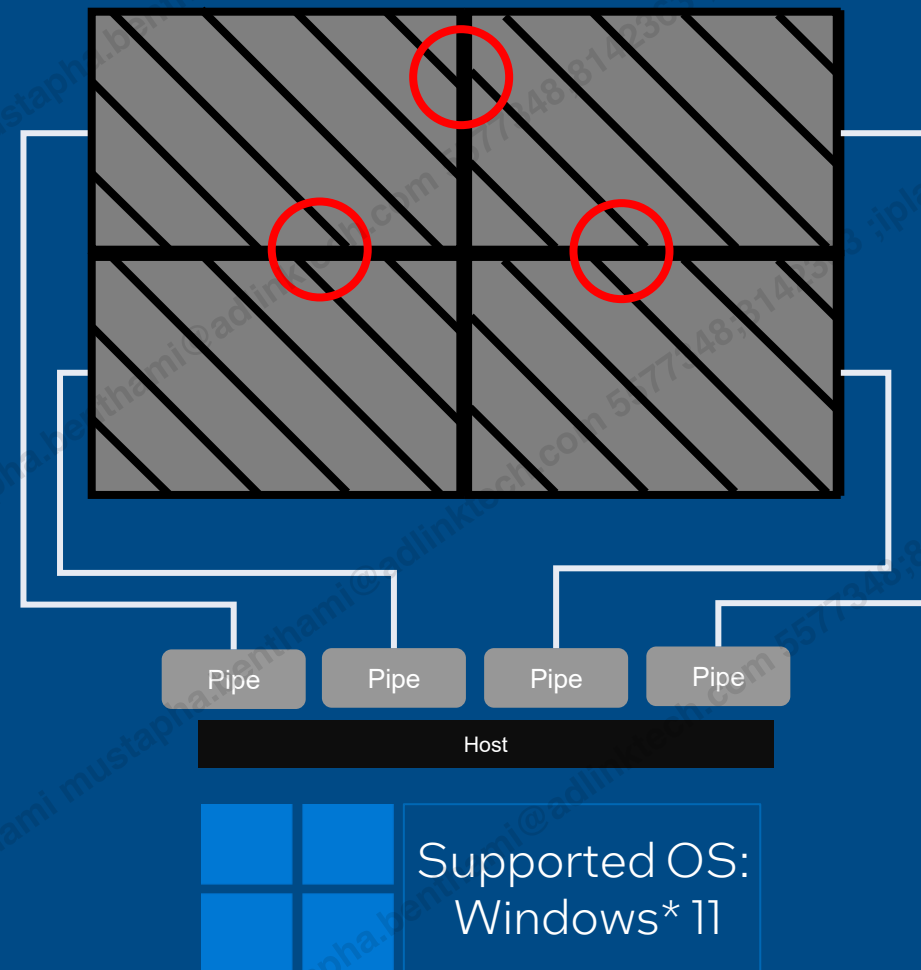
# Bezel Correction

Compensates for bezels/borders in multi-display topologies, creating a smoother combined image.

Bezel Correction Enabled



Bezel Correction Disabled



- For more information, refer to the *Graphics Features for Digital Signage - Technical Application Note* ([Document number: 832605](#)).

# Combined Display / Pipelock

Combined Display is a feature that allows one image to be shared across multiple independent displays.

Pipelock enables those displays to be synchronized, which minimizes discontinuities between the displays.

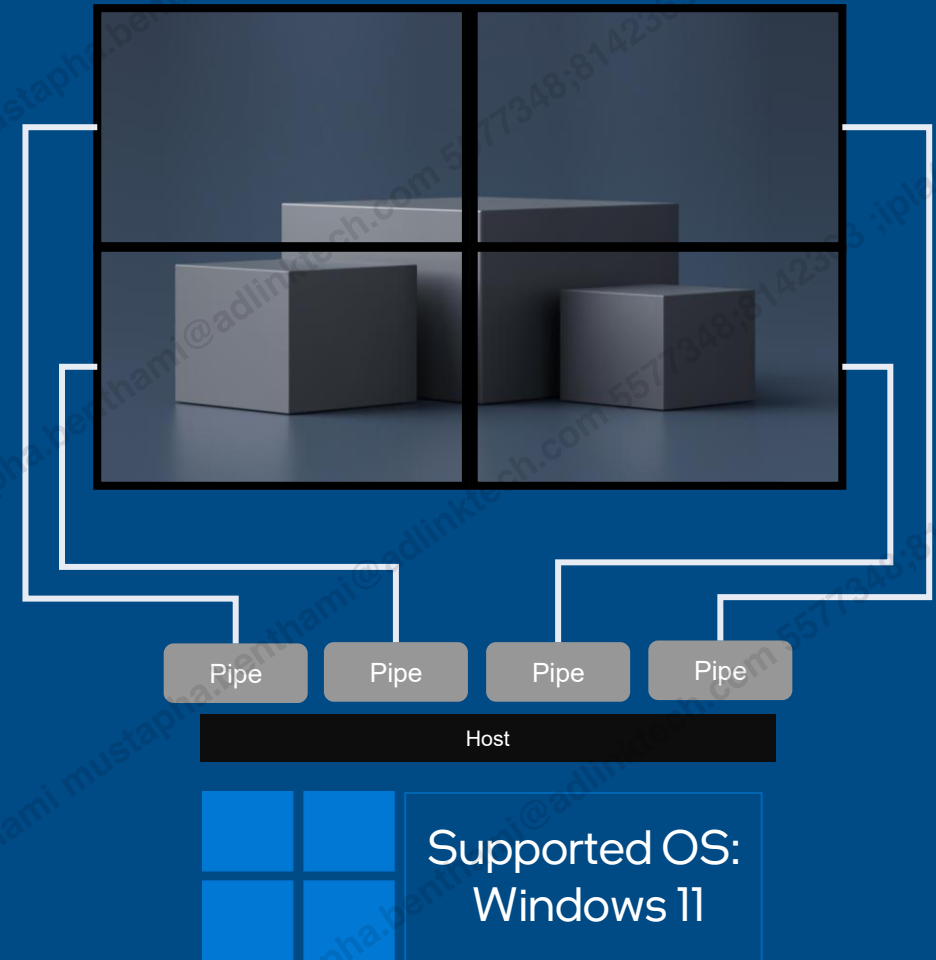
Synchronizes video outputs from a single system up to 4 displays using (HDMI) or (DP)-based video wall.

A common clock between multiple PHYs within a single SoC synchronizes the videos in each display to provide a better visual experience.

Supported display interfaces: HDMI or DP

Same types of display interfaces are required for a configuration.

- For more information, refer to the *Graphics Features for Digital Signage - Technical Application Note* ([Document number: 832605](#)).

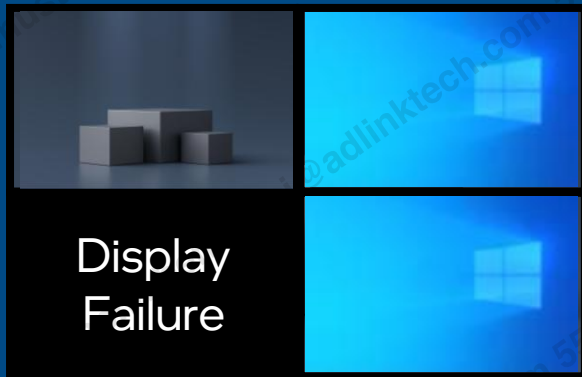




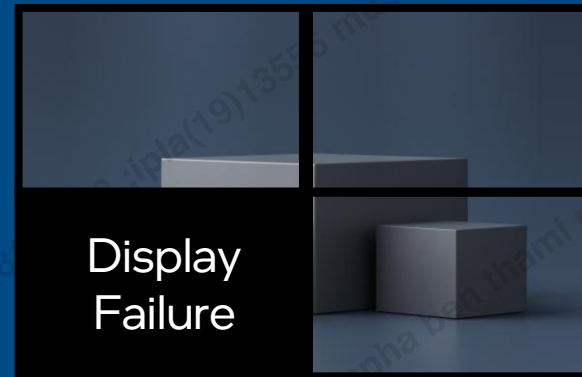
# EDID Management / Lock Display

When the display is not locked, after a display failure, display rearrangement takes place in the operating system. When the display is locked, display failure doesn't affect topology.

Without Lock Display (-unlock)  
Displays Rearranged

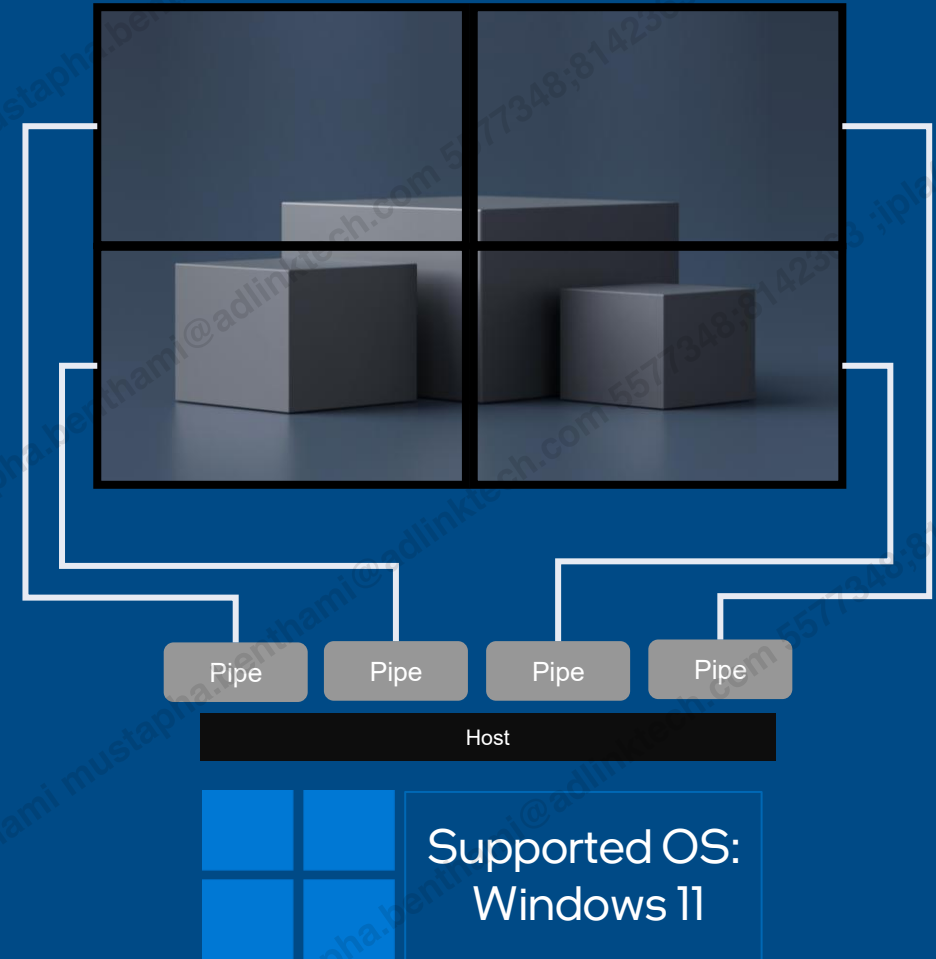


With Lock Display (-lock)  
Positioning preserved



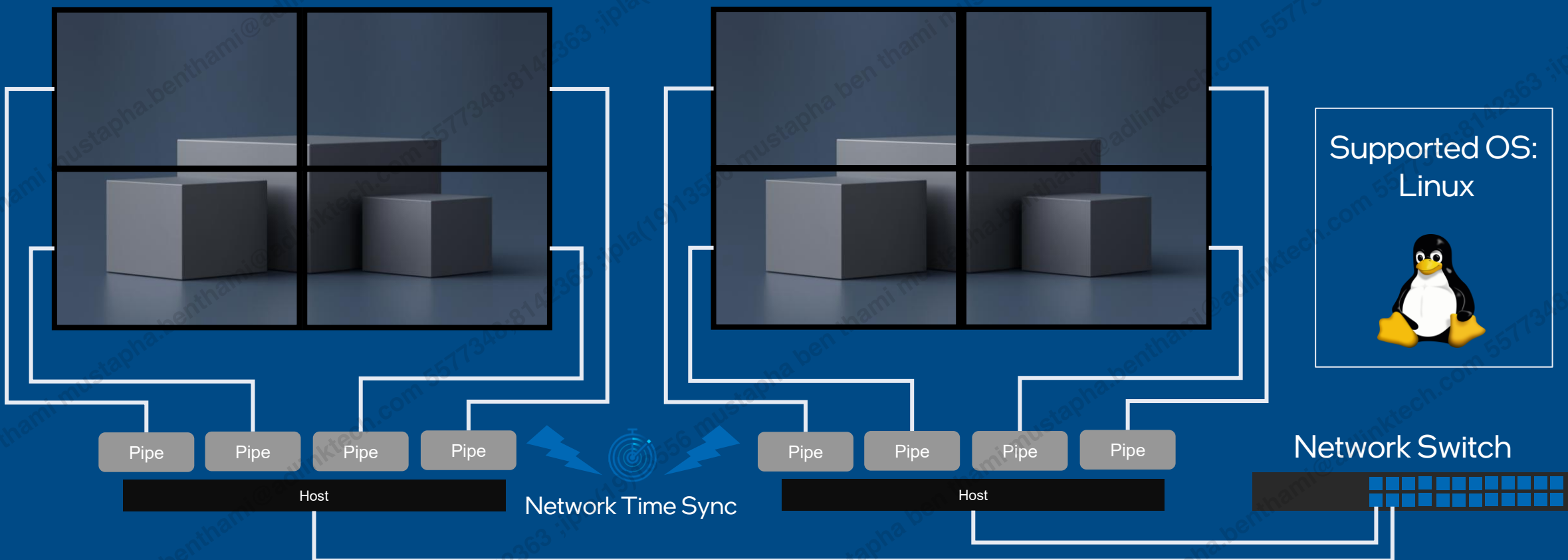
- For more information, refer to the *Graphics Features for Digital Signage - Technical Application Note* ([Document number: 832605](#)).

Original Image



# Software Genlock

Software genlock provides a mechanism for display synchronization between systems to be configured using network clock sync instead of requiring HW/physical clock signals. It provides greater flexibility in providing display sync without additional board design requirements.



- For reference SW solution see: <https://github.com/intel-retail/software-vsync-modulation-sample>

# Edge Graphics Overview



# Integrated Graphics Support Guidance

Comprehensive set of graphics framework options for any edge use case



Graphics and AI Performance Scaling

For more details on compatibility (framework versions), operating system support and more, consult platform gold deck.  
<sup>1</sup> Only supported in H Series



# Graphics Offerings Comparison

Tailored performance and power budget for every edge deployment use case, from great visuals to enhanced AI inference at the low power with integrated graphics and great scalability with discrete GPUs with multi card deployments for most demanding AI workloads.

| Efficiency                                                                                                                                                            |                                                                                                                                                                               |                                                                                                                                                                                          |                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Performance                                                                                                                                                           |                                                                                                                                                                               |                                                                                                                                                                                          |                                                                                                                                                                                |
| 32 EU to 128 EU<br><br>Up to 57% of Shared DRAM<br><br>Up to 125W Total Processor Power <sup>2a</sup><br><br>Linux SRIOV                                              | Up to 12 Xe-cores<br>XMV Graphics Engine<br><br>Up to 57% of Shared DRAM<br>Up to 120 TOPS <sup>1</sup><br><br>Up to 65W Total Package Power <sup>2b</sup><br><br>Linux SRIOV | 16 Xe-cores<br>128 XMV Engines<br><br>16GB of vRAM (Dedicated)<br>170 Peak TOPS <sup>3</sup><br><br>70W Total Board Power<br>PCIe x8 Gen 5<br><br>Energy Efficient, powered via PCIe BUS | 20 Xe-cores<br>160 XMV Engines<br><br>24GB of vRAM (Dedicated)<br>197 Peak TOPS <sup>3</sup><br><br>120-200W Total Board Power<br>PCIe x8 Gen 5<br><br>Linux Multi-GPU + SRIOV |
|   |          |                                                                                                      |                                                                                            |
| Integrated Graphics                                                                                                                                                   |                                                                                                                                                                               | Discrete Graphics                                                                                                                                                                        |                                                                                                                                                                                |

1. Based on Panther Lake H with 12 Xe Graphics

2a. Based on LGA SKUs | 2b. Based on BGA SKUs

3. GPU Peak TOPS (trillions of operations per second) represents the peak throughput when running XMV workloads with INT8 datatype and dense models. Performance may vary based on configuration.

# Tailored Solutions for Optimized Workloads



Great option for scalability with PCIe BUS  
power delivery on B50 SKU

Up to **170 TOPS<sup>1</sup>** @ 70W

Multi-GPU support on Linux

Performance Xe2 Graphics Cores

Scalable Workload Density  
Flexible Power/Performance

Intel® Core™ Ultra

300H Series Processors

(Codename: Panther Lake-H)

Up to 1.5x Gfx Performance<sup>2</sup> over 1<sup>st</sup> generation

Xe

Up to 120 TOPS XMV Graphics Engine

With NPU for low-power AI, up to 50 TOPS

Low power AI workload with NPU

Up to a total of **180 TOPS<sup>3</sup>** @ 65W

Reduced footprint and total system power

Low Power Xe3 Graphics Cores

Long-Term Product Availability and Support

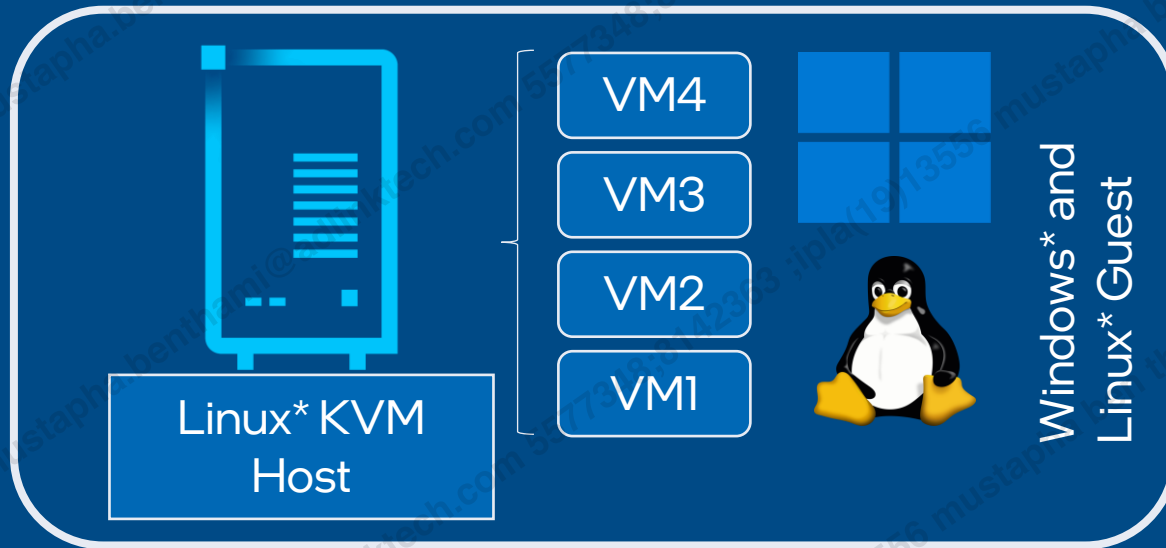
1. GPU Peak TOPS (trillions of operations per second) represents the peak throughput when running XMV workloads with INT8 datatype and dense models. Performance may vary based on configuration

2. 1<sup>st</sup> generation Xe present in "Alchemist" discrete GPUs and "Meteor Lake" / "Arrow Lake" integrated GPUs

3. Total max. system TOPS, including CPU, integrated GPU and integrated NPU

# Graphics Single Root Input Output Virtualization Graphics (SRIOV)

- The Single Root I/O Virtualization (SR-IOV) spec defines extensions to the PCIe spec to enable multiple Virtual Machines (VMs/Guests) in the virtualized environment to share PCI hardware resources.



## Resources:

[SR-IOV Graphics Virtualization Training](#) - Document number: 657261

[SR-IOV High Level Design Document](#) - Document number: 647415

[GFX SR-IOV on Ubuntu BKC](#) - Document number: 680834

## Capabilities & Benefits

Improved media transcoding,  
3D rendering and AI  
inferencing workloads  
performance in guest OS (up to  
7 virtualized functions)

Near native application  
responsiveness and usability  
even in virtualized environment  
(GPU hardware accelerated)

Reduced TCO through support  
for up to 3 users in a single  
system (3 independent display  
pipes)

Multiple OS support both  
legacy and modern application  
(Windows\*, Linux\*)

Workload consolidation  
enablement (multiple guests  
and workloads support)

Uncompromised low latency  
display virtualization  
technology that also empowers  
user with multi-display support  
(display virtualization  
technology)

# Edge Video Overview





# Video Coding Support Guidance

|                     |              |                              |
|---------------------|--------------|------------------------------|
| Video Codec Engines | <b>VDBOX</b> | Video Decode & Encode        |
|                     | <b>VEBOX</b> | Video Enhancer               |
|                     | <b>SFC</b>   | Scaler and Format Conversion |

Comprehensive set of video codec options for any edge use case

|                                                                                                                                                                                                                                                             | 2025                                                                                                                     | 2026                                                                                                                        | 2027                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|                                                                                                                                                                                                                                                             | <b>AVC / H.264</b><br><b>HEVC / H.265</b><br><b>VP9</b><br><b>AV1</b>                                                    | <b>VVC</b>                                                                                                                  | <b>JPEG-XS</b><br><b>DNX (Windows Only)</b>                         |
|                                                                                                                                                                            |                                                                                                                          |                                                                                                                             | <b>Razor Lake AX (2028)</b><br>3 VDBOX, 2 VEBOX, 2 SFC (Xe3P Media) |
|                                                                                                                                                                            | <b>Arrow Lake</b><br>Up to 2 VDBOX, 1 VEBOX, 2 SFC (Xe Media)                                                            | <b>Panther Lake</b><br>1 VDBOX, 1 VEBOX, 1 SFC (Xe3 Media)                                                                  | <b>Nova Lake</b><br>1 VDBOX, 1 VEBOX, 1 SFC (Xe3P Media)            |
|                                                                                         | <b>Bartlett Lake</b><br>Up to 2 VDBOX, 1 VEBOX, 2 SFC<br><br><b>Raptor Lake Refresh</b><br>Up to 2 VDBOX, 1 VEBOX, 2 SFC | <b>Bartlett Lake 12P</b><br>Up to 2 VDBOX, 1 VEBOX, 2 SFC<br><br><b>Wildcat Lake</b><br>1 VDBOX, 1 VEBOX, 1 SFC (Xe3 Media) |                                                                     |
|    | <b>Twin Lake</b><br>1 VDBOX, 1 VEBOX, 1 SFC                                                                              |                                                                                                                             |                                                                     |

Video / Media Density Scaling

For more details on compatibility (decode vs encode), resolutions, chroma subsampling, operating system support and more, consult platform gold deck.

# Video Processing Support Guidance

Video  
Codec  
Engines

**VDBOX**  
**VEBOX**  
**SFC**

Video Decode & Encode  
Video Enhancer  
Scaler and Format Conversion

**Comprehensive set  
of video codec  
options for any edge  
use case**

**2025**

**2026**

**2027**



Across Generations and SKU Stack



**Arrow Lake**

Up to 2 VDBOX, 1 VEBOX, 2 SFC (Xe Media)

**Panther Lake**

1 VDBOX, 1 VEBOX, 1 SFC (Xe3 Media)

**Bartlett Lake**

Up to 2 VDBOX, 1 VEBOX, 2 SFC

**Bartlett Lake 12P**

Up to 2 VDBOX, 1 VEBOX, 2 SFC

**Raptor Lake Refresh**

Up to 2 VDBOX, 1 VEBOX, 2 SFC

**Wildcat Lake**

1 VDBOX, 1 VEBOX, 1 SFC (Xe3 Media)

**Twin Lake**

1 VDBOX, 1 VEBOX, 1 SFC

**Razor Lake AX (2028)**

3 VDBOX, 2 VEBOX, 2 SFC (Xe3P Media)

New in Nova Lake  
8K60 HDR Tone Mapping  
Enhanced 3DLUT (65\*3 LUT)<sup>1</sup>

**Nova Lake**

1 VDBOX, 1 VEBOX, 1 SFC (Xe3P Media)

Video / Media Density Scaling

For more details on compatibility (decode vs encode), resolutions, chroma subsampling, operating system support and more, consult platform gold deck.  
<sup>1</sup>Windows support only

# Latest Video Codec Support Available in Nova Lake



## Supported Capabilities:

- 8K60 HDR Tone Mapping / HDR10
- 3DLUT (65^3 LUT)



**D** Decode    **E** Encode

### AVC

**D** Up to 4k60  
8-bit 4:2:0  
10-bit 4:2:0  
10-bit 4:2:2

**E** Up to 4K60  
8-bit 4:2:0

### HEVC

**D** Up to 8K60  
8-bit 4:2:0  
8-bit 4:2:2  
8-bit 4:4:4  
10-bit 4:2:0  
10-bit 4:2:2  
10-bit 4:4:4  
12-bit 4:2:0  
12-bit 4:2:2  
12-bit 4:4:4

**E** Up to 8K60  
8-bit 4:2:0  
8-bit 4:2:2  
8-bit 4:4:4  
10-bit 4:2:0  
10-bit 4:2:2  
10-bit 4:4:4

### AV1

**D** Up to 8K60  
8-bit 4:2:0  
8-bit 4:2:2  
8-bit 4:4:4<sup>1</sup>  
10-bit 4:2:0  
10-bit 4:2:2  
10-bit 4:4:4<sup>1</sup>

**E** Up to 8K60  
8-bit 4:2:0  
8-bit 4:2:2  
8-bit 4:4:4<sup>1</sup>  
10-bit 4:2:0  
10-bit 4:2:2  
10-bit 4:4:4<sup>1</sup>

### JPEG-XS

**D** Up to 8K120  
10-bit 4:2:2  
10-bit 4:4:4  
12-bit 4:2:2  
12-bit 4:4:4  
16-bit RAW

### VVC

**D** Up to 8K30  
8-bit 4:2:0  
10-bit 4:2:0

### VP9

**D** Up to 8K60  
8-bit 4:2:0  
8-bit 4:4:4  
10-bit 4:2:0  
10-bit 4:4:4

### DNx<sup>1</sup>

**D** Up to 8K60  
10-bit 4:2:2  
10-bit 4:4:4  
12-bit 4:2:2  
12-bit 4:4:4

**Note:** Maximum throughput is dependent on system configuration and workload/use case. Performance guidance is up to.

<sup>1</sup>Windows support only

# Intel® Video Processing Library

**Boost your media and video application performance with hardware-accelerated codecs and programmable graphics.**

Improved frame rate (FPS) and lower power usage when compared to traditional CPUs

Supported video encoders:

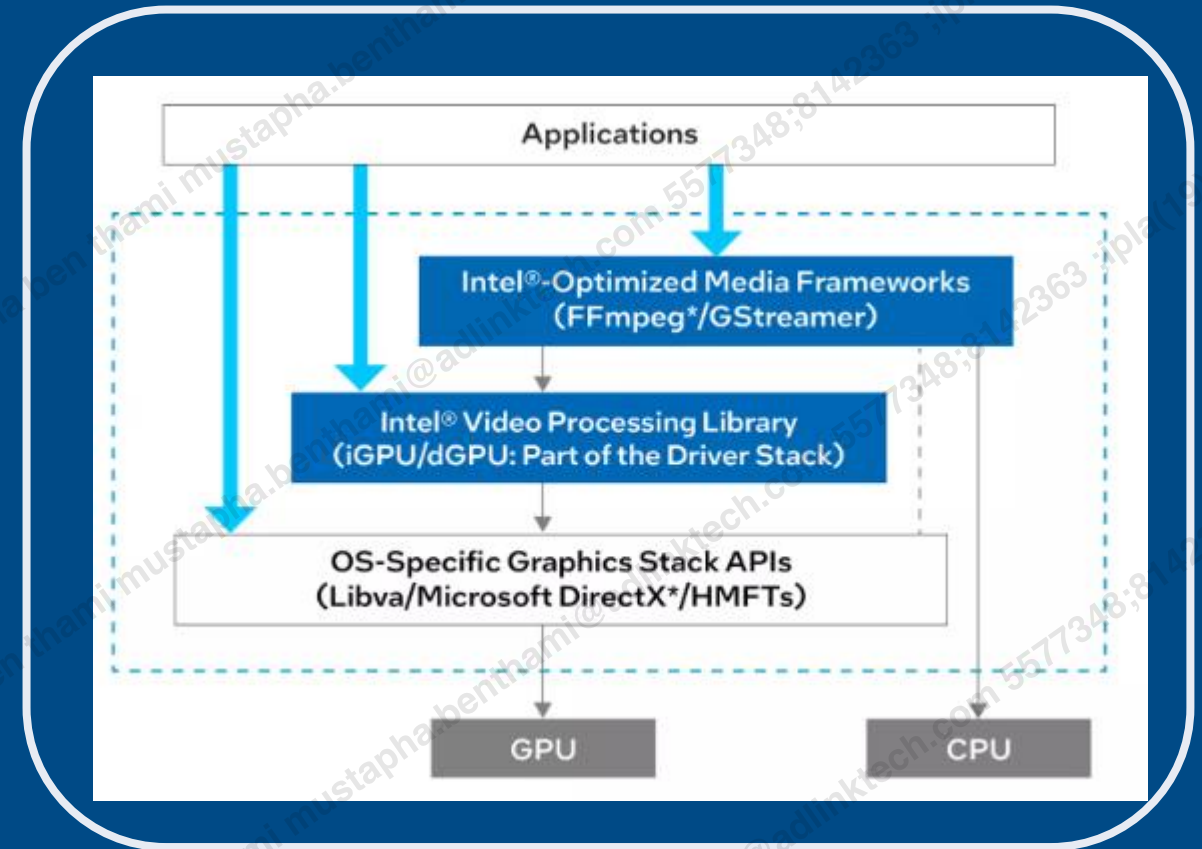
- AVC, HEVC, JPEG, AV1.

Supported video decoders:

- AVC, HEVC, MPEG-2, VC1, JPEG, AV1

Supported video pre-processing filters:

- Color Conversion, Deinterlace, Denoise,
- Resize, Rotate, Composition



<https://www.intel.com/content/www/us/en/developer/tools/vpl/overview.html>

<https://github.com/intel/vpl-gpu-rt>



# Notices and Disclaimers

# Notices and Disclaimers [1 of 2]

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# Test Configurations for AMD Comparisons

| Product         | Beelink SER8 Mini PC (Windows & Linux) | Lenovo ThinkBook 16 G7 (Windows) | AI Mini PC (Linux)      | ASUS NUC 15 Pro+ (Windows) | Intel CRB (Linux)         |
|-----------------|----------------------------------------|----------------------------------|-------------------------|----------------------------|---------------------------|
| Device          | AMD Ryzen 7 8845HS                     | Intel Core Ultra 7 155H          | Intel Core Ultra 7 155H | Intel Core Ultra 7 255H    | Intel Core Ultra 7 265H   |
| Rated Power (W) | 54W TDP                                | 28W TDP                          | 28W TDP<br>65W cTDP Set | 28W TDP                    | 28W Rated<br>65W cTDP Set |
| Cores           | 8 Cores                                | 16 Cores                         | 16 Cores                | 16 Cores                   | 16 Cores                  |
| Device Memory   | 32GB DDR5 5600MHz                      | 32GB DDR5 5600MHz                | 32GB DDR5 5600MHz       | 32GB DDR5 5600MHz          | 16GB DDR5 6400MHz         |
| Memory BW       | 90 GB/s                                | 90 GB/s                          | 90 GB/s                 | 90 GB/s                    | 102 GB/s                  |
| NPU             | NPU Compute Accelerator                | Intel AI Boost                   | Intel AI Boost          | Intel AI Boost             | Intel AI Boost            |
| NPU INT8 Tops   | 16 TOPS                                | 11 TOPS                          | 11 TOPS                 | 13 TOPS                    | 13 TOPS                   |
| GPU             | AMD Radeon 780M Graphics               | Intel Arc Graphics               | Intel Arc Graphics      | Intel Arc 140T GPU         | Intel Arc 140T GPU        |
| Release Date    | Q4'23                                  | Q4'23                            | Q4'23                   | Q1'25                      | Q1'25                     |
| Execution Units | 12 Core GPU                            | 8 Xe Core GPU (128 EU)           | 8 Xe Core GPU (128 EU)  | 8 Xe Core GPU (128 EU)     | 8 Xe Core GPU (128 EU)    |
| System          | Mini PC                                | Laptop                           | Mini PC                 | Mini PC                    | Mini PC                   |

Tests performed by Intel between July and September 2025. See backup for workload and configuration details. Results may vary.



# System Configurations for AMD Comparison Testing

|                               |                                            |                                                                                    |                                                                                    |
|-------------------------------|--------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Name                          | 8845hs                                     | mtl-155h                                                                           | Arrow Lake 265H                                                                    |
| Time                          | Thu Aug 28 02:12:50 PM MST 2025            | Thu Aug 28 04:42:36 PM MST 2025                                                    | Thu Aug 28 03:31:20 PM MST 2025                                                    |
| System                        | AZW SER8                                   | Intel RVP MT08                                                                     | Intel Corporation Arrow Lake Client Platform                                       |
| Baseboard                     | AZW SER8                                   | Default string Default string                                                      | Intel Corporation MTL-P DDR5 CRB                                                   |
| Chassis                       | AZW Mini PC                                | Default string Mini PC                                                             | Intel Corporation Main Server Chassis                                              |
| CPU Model                     | AMD Ryzen 7 8845HS w/ Radeon 780M Graphics | <a href="#">Intel(R) Core(TM) Ultra 7 155H</a>                                     | Intel(R) Core(TM) Ultra 7 265H                                                     |
| Microarchitecture             | AMD64                                      | MTL                                                                                | ARL                                                                                |
| Sockets                       | 1                                          | 1                                                                                  | 1                                                                                  |
| Cores per Socket              | 8                                          | 22                                                                                 | 16                                                                                 |
| Hyperthreading                | SMT                                        | Enabled                                                                            | Not Available                                                                      |
| CPUs                          | 16                                         | 22                                                                                 | 16                                                                                 |
| Max Boost                     | Yes                                        | Enabled                                                                            | Enabled                                                                            |
| Base Frequency                | 3.8GHz                                     | 1.4GHz                                                                             | 2.2 GHz                                                                            |
| All-core Maximum Frequency    |                                            | 4.6GHz                                                                             | 4.8 GHz                                                                            |
| Maximum Frequency             | 5.1GHz                                     | 4.8GHz                                                                             | 5.3 GHz                                                                            |
| NUMA Nodes                    | 1                                          | 1                                                                                  | 1                                                                                  |
| Prefetchers                   |                                            | L2 HW: Enabled, L2 Adj: Enabled, DCU HW: Enabled, DCU IP: Enabled, DCU NP: Enabled | L2 HW: Enabled, L2 Adj: Enabled, DCU HW: Enabled, DCU IP: Enabled, DCU NP: Enabled |
| PPINs                         |                                            |                                                                                    |                                                                                    |
| Accelerators Available [used] |                                            | DLB 0 [0], DSA 0 [0], IAA 0 [0], QAT 0 [0], vRAN Boost 0 [0]                       | DLB 0 [0], DSA 0 [0], IAA 0 [0], QAT 0 [0], vRAN Boost 0 [0]                       |
| Installed Memory              | 32GB (2x16GB DDR5 5600MT/s [5600MT/s])     | 32GB (2x16GB DDR5 5600 MT/s [locked to 4800 MT/s])                                 | 16GB (2x8GB DDR5 6400 MT/s [6400 MT/s])                                            |
| Hugepagesize                  | 2048 kB                                    | 2048 kB                                                                            | 2048 kB                                                                            |
| Transparent Huge Pages        |                                            | madvise                                                                            | madvise                                                                            |
| Automatic NUMA Balancing      |                                            | Disabled                                                                           | Disabled                                                                           |
| NIC                           | RTL8125 2.5GbE                             | 2x , 1x RTL8125 2.5GbE Controller                                                  | 4x                                                                                 |
| Disk                          | Micron Technology Inc 2550 NVMe SSD        | 1x 931.5G WD_BLACK SN770 1TB                                                       | 1x 931.5G Samsung SSD 970 EVO Plus 1TB                                             |
| BIOS                          | HPT.8xxx.SER8.V029.P8C0M0C15.13.Link       | 5.32                                                                               | MTLPEMI1.R00.4341.D43.2409200738                                                   |
| Microcode                     | 0xa705206                                  | 0x24                                                                               | 0x118                                                                              |
| OS                            | Ubuntu 24.04.2 LTS                         | Ubuntu 24.04.2 LTS                                                                 | Ubuntu 24.04.3 LTS                                                                 |
| Kernel                        | 6.11.0-17-generic                          | 6.14.0-28-generic                                                                  | 6.14.0-28-generic                                                                  |
| TDP                           | 54W                                        | 65W                                                                                | 65 watts                                                                           |
| Power & Perf Policy           | amd_pstate                                 | Normal (6)                                                                         | Balanced Performance (6)                                                           |
| Frequency Governor            | performance                                | performance                                                                        | Powersave                                                                          |
| Frequency Driver              | amd_pstate                                 | intel_pstate                                                                       | intel_pstate                                                                       |
| Max C-State                   |                                            | 9                                                                                  | 9                                                                                  |

- Workload: AI Text Generation Benchmark, AI Image Generation Benchmark, MLPerf Client 1.0
- AMD Software (Windows)
- SystemInfo Version 5.83.1368
- UI Version 2.10.794 64
- Product Version 2.10.1729 64
- Test Version 1.0 CV, 1.0 LLM, 1.1 SD

- Default settings used Yes
- **ONNXRuntime-DirectML-AMD1.20.0 GPU SD, 1.20.1 GPU/NPU LLM, 1.20 Windows ML GPU, Ryzen AI 2.19 CV**
- Device type GPU
- Precision integer (INT4) LLM, (INT8 or FP16) SD
- Driver Version 32.0.12019.1028 GPU 8845
- Intel Software (Windows)
- SystemInfo Version 5.83.1368
- UI Version 2.10.794 64
- Product Version 2.10.1729 64
- Test Version 1.0 LLM, 1.1 SD

- Default settings used Yes
- **Intel OpenVINO Version 2025.2.0 CV/SD, 2025.0.0 LLM**
- Device type GPU
- Precision integer (INT4) LLM, (INT8 or FP16) SD
- Workload version 1.9.509 CV
- Driver Version
  - GPU: 32.0.101.6987 MTL, 32.0.101.6989 ARL
  - NPU: 32.0.100.4181

Tests performed by Intel between July and September 2025. See backup for workload and configuration details. Results may vary.

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