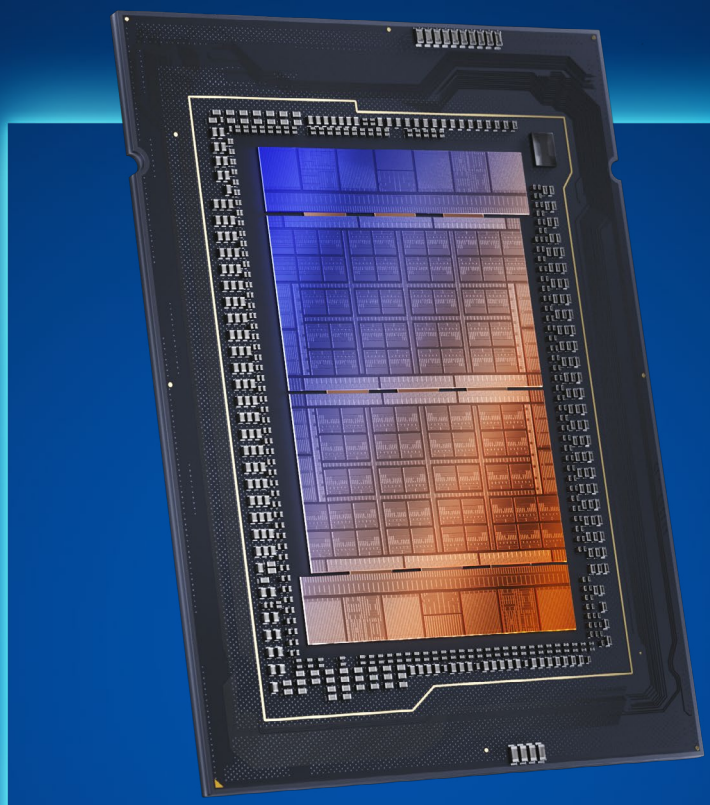
# Intel® Xeon® 600 Processors for Workstation

## *Unleashed Heavy-Duty Compute*

Intel® Xeon® 600 Processors for Workstation deliver breakthrough performance for your most demanding workloads. Built on advanced architecture, these processors provide exceptional scalability and reliability for compute-intensive tasks such as 3D rendering, simulation, and complex data analysis. They enable seamless multi-GPU integration with robust I/O, ensuring optimal throughput for graphics-heavy workflows and accelerating parallel processing for AI and machine learning development. With increased memory speed, robust I/O capabilities, and support for cutting-edge security features, Intel® Xeon® 600 Processors for Workstation empower you to tackle large datasets, train sophisticated models, and execute mission-critical applications without compromise.



**Up to**
# 86
**Cores**
in a single socket

Packing Intel's latest technologies into a single processor, Intel® Xeon® 600 Processors for Workstation offer breakthrough performance efficiency, great compute density, and unmatched scalability with up to 86 cores using the latest Intel® architecture on a single socket. Experience increased performance on data-heavy workloads with increased L3 cache and support for MRDIMM memory with speeds of up to 8000 MT/s, as well as support for DDR5 RDIMM up to 6400 MT/s.

For numbered references, see Notices & Disclaimers section.


# *Developing AI PC Experiences*

With a highly expandable platform and capable architecture, Intel® Xeon® 600 Processors for Workstation are uniquely positioned to accelerate your AI development tasks.

- **Organizing and cleaning your dataset before training:** House entire datasets in system memory with up to 4 TB of memory support.*
- **Training your AI model with accelerators:** This platform features up to 128 PCIe 5.0 lanes supporting multi-GPUs for machine learning, training, and inferencing.
- **Developing an AI model to deploy on Intel® Xeon® processor data centers:** Intel® Xeon® 6 Processors for Workstation feature Intel® AMX instructions built into each CPU core to accelerate FP16, int8, and bfloat16 datatypes for AI inferencing or training.
- A suite of software tools available for AI development within our Intel® oneAPI toolkit.

oneAPI

# *Built for Business*

Intel® Xeon® Processors for Workstation are built to support businesses with Intel vPro® technology. Intel vPro® technology, including Intel® Active Management Technology (AMT) and Intel® One-Click Recovery,* helps organizations meet today's challenges while allowing them to focus on tomorrow's opportunities.

intel vPRO

# Expandable Platform

Intel® Xeon® 600 Processors for Workstation provide the latest in standardized platform technologies for a no-compromise platform experience.

Mix and match your platform configuration with multiple GPUs, SSDs, or other accelerations with up to 128x CPU-attached PCIe 5.0 lanes. Support for the latest Compute Express Link (CXL) 2.0 standards enables a high-speed, low-latency, and memory-coherent interconnect. CXL 2.0 supports caching devices, accelerators, and even system memory expansion with CXL.io, CXL. cache, and CXL.mem protocols.

Transfer local files over high speeds with up to 5x USB 3.2 (20G) ports as well as integrated 2.5Gb Ethernet LAN support. Integrate your workstation into existing wireless deployments with integrated Intel® Wi-Fi 6E and discrete Intel® Wi-Fi 7 support for fast wireless connectivity.

Support massive local dataset storage with redundancy with CPU-accelerated RAID arrays using Intel® Virtual RAID on CPU (VROC) and Intel® VMD for multi-disk storage arrays.

For numbered references, see Notices & Disclaimers section.

# Intel® Xeon® **600** Processors for Workstation Features at a Glance

| Feature | Benefit |
|---|---|
| **Up to 86 cores** | High-performance compute density in a single socket and a wide array of instruction sets to tackle multiple compute workloads. All cores on Intel® Xeon® 600 Processors for Workstation are Performance-cores. |
| **Increased L2 and L3 Cache** | Increased cache to boost performance and improve data management within the CPU. |
| **Up to 128 lanes of PCIe 5.0** | Ready to expand with support for high bandwidth of PCIe 5.0 lanes for large storage arrays or multi-GPU connectivity. |
| **Support for DDR5 RDIMM, up to 6400 MT/s** | High memory capacity/density, up to 4 TB support to work/store on large data sets used in Data Science/AI development. |
| **Support for DDR5 MRDIMM, up to 8000 MT/s** | High memory bandwidth/speed, supporting dual-rank RDIMMs, enabling bursty data transfers between the CPU/Memory to accelerate latency-sensitive workloads. |
| **Intel vPro® Enterprise Technologies** | A suite of tools/technologies that enables IT professionals to integrate, manage, and support an organization's workstation deployments. |
| **Intel® Deep Learning Boost (VNNI, AVX-512, AMX Instructions)** | Advanced Matrix Extensions (AMX) accelerates matrix multiplication workloads, mainly used within AI development, machine learning, and scientific computing. Intel® AMX supports acceleration of Floating Point 16 (FP16), Integer8 (INT8), and Brain Floating Point 16 (bfloat16) datatypes. |
| **Intel® Wi-Fi 7 Support** | Discrete support for Wi-Fi 7 modules provides blazing-fast wireless connection with up to 5.8 Gbps speeds* |
| **Bluetooth® 5.4 Support** | Bluetooth short-range wireless technology enables two devices to connect directly without requiring supporting network infrastructure such as a wireless router or access point. |
| **Compute Express Link (CXL) 2.0 Support** | Compute Express Link provides an open, high-speed, low-latency, memory-coherent interconnect over the PCIe bus, improving the performance, scalability, and efficiency for these workloads. |

For numbered references, see Notices & Disclaimers section.

# Intel® Xeon® **600** Processors for Workstation

| | Intel® Xeon® 698X Processor | Intel® Xeon® 696X Processor | Intel® Xeon® 678X Processor | Intel® Xeon® 676X Processor | Intel® Xeon® 674X Processor | Intel® Xeon® 658X Processor |
|---|---|---|---|---|---|---|
| **Processor Cores** | 86 | 64 | 48 | 32 | 28 | 24 |
| **Processor Threads** | 172 | 128 | 96 | 64 | 56 | 48 |
| **Intel® Smart Cache (L3, MB)** | 336 | 336 | 192 | 144 | 144 | 144 |
| **Intel® Turbo Boost Max Technology 3.0 Frequency (GHz)** | 4.8 | 4.8 | 4.9 | 4.9 | 4.9 | 4.9 |
| **Intel® Turbo Boost Technology 2.0 Maximum Turbo Frequency (GHz)** | 4.6 | 4.6 | 4.7 | 4.7 | 4.7 | 4.7 |
| **Processor Base Frequency (GHz)** | 2.0 | 2.4 | 2.4 | 2.8 | 3.0 | 3.0 |
| **Unlocked*** | Yes | Yes | Yes | Yes | Yes | Yes |
| **CPU PCIe Lanes** | 128 | 128 | 128 | 128 | 128 | 128 |
| **Maximum Memory Speed (MT/s)*, DDR5 RDIMM** | DDR5-6400 | | | | | |
| **Memory Channels** | 8 | 8 | 8 | 8 | 8 | 8 |
| **Maximum Memory Capacity (TB)** | 4 | 4 | 4 | 4 | 4 | 4 |
| **Maximum Memory Capacity (TB)** | 350 | 350 | 300 | 275 | 270 | 250 |
| **Reliability, Availability & Serviceability (RAS) Technologies** | ECC, Standard RAS | | | | | |
| **Intel vPro® Enterprise Support** | Yes | | | | | |
| **Boxed** | - | Yes | Yes | Yes | - | Yes |

For numbered references, see Notices & Disclaimers section.

# Intel® Xeon® **600** Processors for Workstation

| | Intel® Xeon® 656 Processor | Intel® Xeon® 654 Processor | Intel® Xeon® 638 Processor | Intel® Xeon® 636 Processor | Intel® Xeon® 634 Processor |
|---|---|---|---|---|---|
| Processor Cores | 20 | 18 | 16 | 12 | 12 |
| Processor Threads | 40 | 36 | 32 | 24 | 24 |
| Intel® Smart Cache (L3, MB) | 72 | 72 | 72 | 48 | 48 |
| Intel® Turbo Boost Max Technology 3.0 Frequency (GHz) | 4.8 | 4.8 | 4.8 | 4.7 | 4.6 |
| Intel® Turbo Boost Technology 2.0 Maximum Turbo Frequency (GHz) | 4.6 | 4.6 | 4.6 | 4.5 | 4.4 |
| Processor Base Frequency (GHz) | 2.9 | 3.1 | 3.2 | 3.5 | 2.7 |
| Unlocked* | - | - | - | - | - |
| CPU PCIe Lanes | 128 | 128 | 80 | 80 | 80 |
| Maximum Memory Speed (MT/s)*, DDR5 RDIMM | DDR5-6400 | | | | |
| Memory Channels | 8 | 8 | 4 | 4 | 4 |
| Maximum Memory Capacity (TB) | 4 | 4 | 2 | 2 | 2 |
| Maximum Memory Capacity (TB) | 210 | 200 | 180 | 170 | 150 |
| Reliability, Availability & Serviceability (RAS) Technologies | ECC, Standard RAS | | | | |
| Intel vPro® Enterprise Support | Yes | | | | |
| Boxed | - | Yes | - | - | - |

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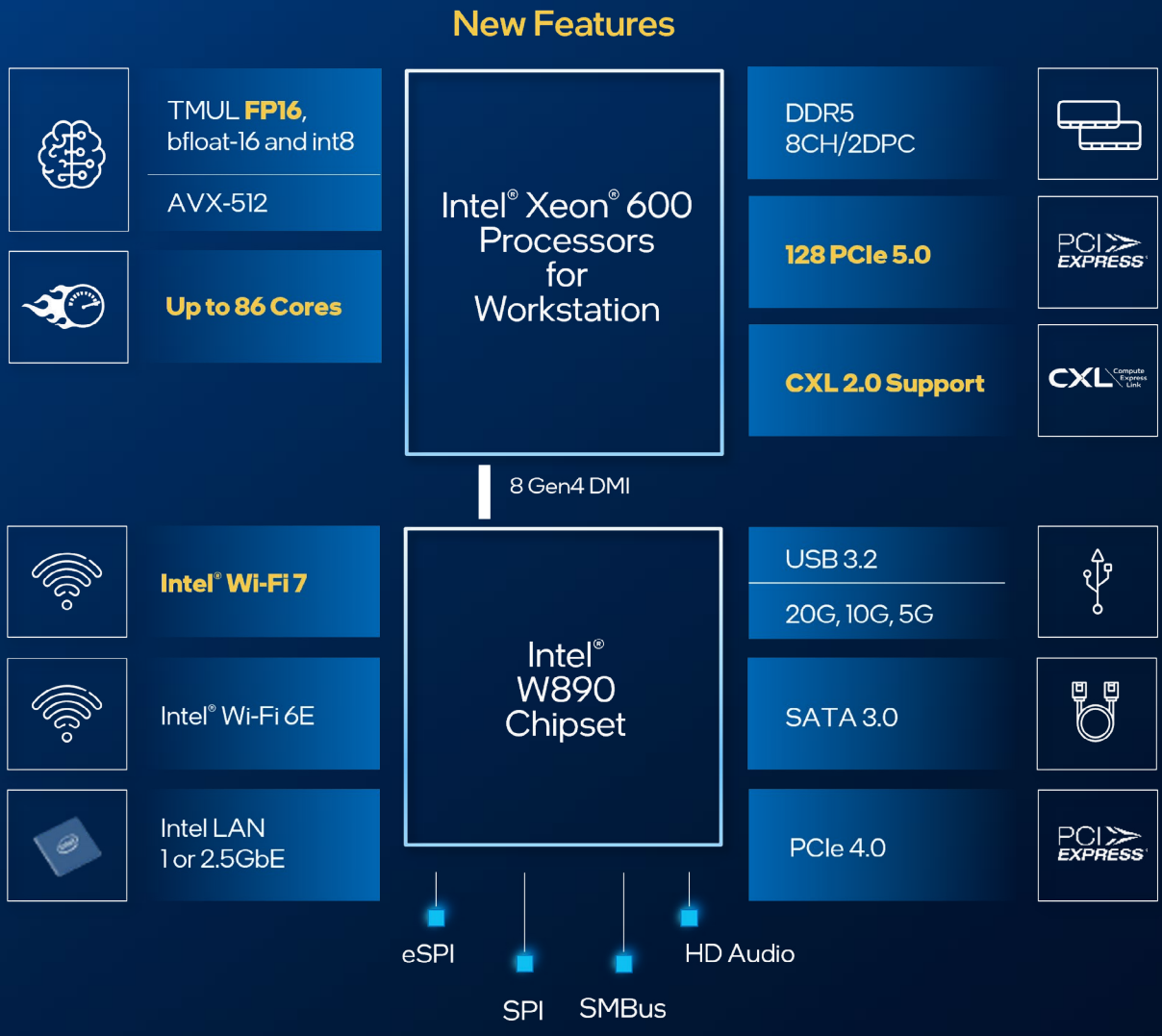
# Intel® Xeon® **600** Processors for Workstation



# Notices & Disclaimers

1. Intel® Wi-Fi 7: Greater-than 5 Gbps Wi-Fi 7 2x2 client speed" is based on the current draft of the 802.11be specification, which specifies the theoretical maximum data rate for a 2x2 device that supports 320 MHz channels, 4096 QAM, and Multi-Link Operation is 5.76 Gbps. Based on an industry-standard assumption of 90% efficiency for new Wi-Fi products operating in the exclusive 6 GHz band, the resulting estimated maximum over-the-air 2x2 client speed would be 5.19 Gbps.
2. Intel® One-Click Recovery: "Intel® One-Click Recovery for remote recovery of a disabled compute endpoint" - Requires Intel® Active Management Technology (AMT) activation.
3. Overclocking: Altering clock frequency or voltage may void any product warranties and reduce stability, security, performance, and life of the processor and other components. Check with system and component manufacturers for details. Learn more at intel.com/overclocking.
4. Maximum memory speeds are associated with 1 DIMM per Channel (1DPC) configurations. Additional DIMM loading on any channel may impact maximum memory speed. Maximum memory capacity is achievable with 2DPC configurations.
5. Memory Capacity: "Up to 4TB memory support" is supported by DDR5 RDIMM at 256GB with 8 Memory Channels at 2DIMM Per Channel (256GB x 8 x 2 = 4096GB)

All versions of the Intel vPro® platform require an eligible Intel processor, a supported operating system, Intel® LAN and/or WLAN silicon, firmware enhancements, and other hardware and software necessary to deliver the manageability use cases, security features, system performance, and stability that define the platform. See intel.com/performance-vpro for details.

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

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

No product or component can be absolutely secure.

Your costs and results may vary.