Introducing Intel® Xeon® W-1300 Processors

Intel® Xeon® W-1300 Processors elevate all the most important aspects of your workstation, with powerful performance, immersive visuals, and enterprise-grade security and reliability. These processors are expressly designed to power the most intensive applications for the most demanding professionals, from game and VR development to complex engineering and architecture to health and life sciences modelling. Whether you need to visualize, simulate, create, or analyze, Intel® Xeon® W-1300 Processors provide the tools to work faster, dive deeper, and get more done.

intel®
XEON®

Reimagine Workstation Performance

Intel® Xeon® W-1300 Processors reimagine workstation performance for better productivity and faster creation. The new processor core architecture supercharges rendering, raytracing, design, and other compute-intensive tasks, so you can increase efficiency and get time back. For heavy AI workloads, Intel® Deep Learning Boost is expected to deliver up to 3X average machine learning inference performance gains,[1] while Intel® Turbo Boost Max Technology 3.0 identifies the best cores for increased performance. Expand your workstation with up to x20 PCIe Gen 4.0 lanes and twice the DMI connect throughput for the fastest graphics and storage,[2,3,4] as well as support for USB 3.2 Gen 2x2 (20G) and new Intel® Thunderbolt™ 4 for fast data transfers and a streamlined setup.[5] Plus, Intel Optane™ memory H20 support with and Intel® Optane™ 905P SSDs speed application and file load times, so you're never left waiting.[6,7]

Ensure Security and Reliability

Enjoy peace of mind and stable, smooth workflows with a range of technologies for security, reliability, and manageability. Error Correcting Code (ECC) memory support reduces errors and protects your system from potential bit-flip errors that can cause system instability or loss of data-integrity, especially for data-intensive applications. Xeon W-1300 Processors+ W580 motherboards support Intel vPro® platform technologies, providing businesses and IT teams even greater security, with identity protection technologies and Intel® Hardware Shield to reduce each platform's attach surface.[8] The vPro platform also offers Intel® Active Management Technology (Intel® AMT) powered by Intel® Endpoint Management Assistant (EMA) and Intel® Remote Secure Erase for easy, secure remote management, inside or outside the corporate firewall.[9]

intel vPRO PLATFORM

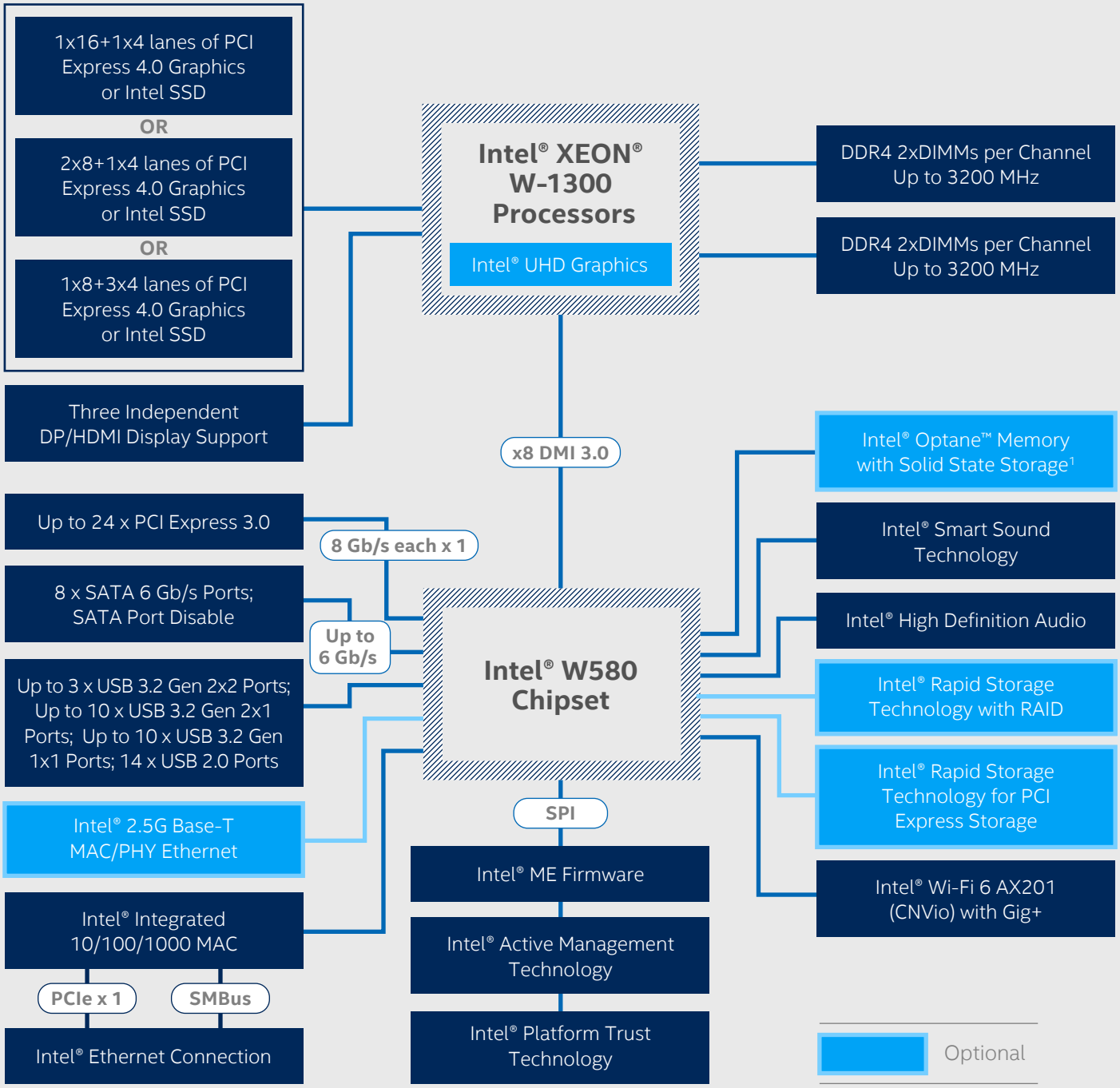
Immerse in Visual Workflows

When your work centers on rich, detailed visuals, turn to Intel® Xeon® W-1300 Processors for advanced design tools, media-rich experiences, and optimized workflows. Enhanced UHD Graphics featuring the Intel® Xᵉ graphics architecture enable you to dive into the virtual world across the most advanced displays, with Integrated HDMI 2.0 and HBR3 for up to three simultaneous 4K HDR displays at 60Hz or a pair of 5K HDR displays at 60Hz. For media and videos, 12bit AV1 decode / HEVC and E2E compression support enhance quality and efficiency, while Intel® Quick Sync Video supports hardware acceleration across the latest video codecs, including for discrete GPUs.

INTEL® W580 CHIPSET FEATURES AT A GLANCE

FEATURE	BENEFIT
New processor core architecture	IPC improvements transform hardware and software efficiency and increase real-world performance for smooth gameplay, immersive productivity, and fast creation.
Intel Deep Learning Boost (VNNI)	Accelerates AI inference—vastly improving performance for iterative deep learning workloads.[10] Extends Intel® AVX-512 to accelerate AI/ML inference.
Intel® UHD Graphics featuring Intel® Xᵉ graphics architecture	Rich media and intelligent graphics capabilities enable amplified visual complexity, enhanced 3D performance, and faster image processing.
Enhanced Display (Integrated HDMI 2.0, HBR3)	Immerse in up to three simultaneous 4K displays at 60Hz or a pair of 5K displays at 60Hz[11] with increased connectivity to enhance display support.
Enhanced Media (12bit AV1/HEVC, E2E compression)	Greater system-wide performance and support for enhanced quality of media encode and decode, efficiently.[12]
x20 CPU PCIe 4.0 lanes	Additional lanes (compared to previous generations) increase PCIe throughput and flexibility for fast connection of next gen PCIe devices.[13]
Intel® Active Management Technology and Intel® Endpoint Management Assistant	Allows hardware-based cloud manageability for your entire PC fleet. Lower Total Cost of Ownership with remote management of devices.
Intel® Hardware Shield	Provides built-in platform protection features that helps prevent malware attacks—now with advanced threat detection and extended protection beyond system memory to help protect critical resources.
Intel® Transparent Supply Chain	Enables the traceability and authenticity of PC components.
Intel® Platform Trust Technology	Integrated chipset hardware and firmware solution that delivers a trusted element of the platform execution to provide enhanced security by verifying the boot portion of the boot sequence which helps protect against viruses and malicious SW attacks. Federal Information Protection Standard 140-2 L1 certified.
Intel® Trusted Device Setup	Enables more secure drop-ship provisioning capability (direct ship from OEM to end-user).
Intel® Optane™ Memory H20 support	Utilize a Optane™ Memory drive to increase storage performance of frequently used files when combined with a slower Hard-Disk Drive.
Integrated USB 3.2 Gen 2x2 (20G)	Up to twice the USB bandwidth (vs USB 3.2 Gen 1x1 (10G)) for fast data transfers.
Discrete Intel® Thunderbolt™ 4 Support (USB4 compliant)	Universal cable connectivity for a simple, reliable connection that provides incredible performance.
Intel® Wi-Fi 6E (GIG+)	Wi-Fi connection that is 3 times faster[14] and with 40% higher peak data rates[15] compared to the standard 802.22ac 2x2 and dual spatial stream 802.11ac, respectively.

Intel® W580 Chipset Block Diagram



PROCESSORS SKU

PROCESSOR NUMBER	Socket 1200 125W with cTDP to 95W: Performance	Socket 1200 80W: Mainstream			Socket 1200 35W with cTDP to 25W: Mainstream			
	INTEL® XEON® W-1390P	INTEL® XEON® W-1370P	INTEL® XEON® W-1350P		INTEL® XEON® W-1390	INTEL® XEON® W-1370	INTEL® XEON® W-1350	INTEL® XEON® W-1390T
Base Frequency (GHz)	3.5	3.6	4.0		2.8	2.9	3.3	1.5
Intel® Smart Cache	16M	16M	12M		16M	16M	12M	Up to 5.0
Cores / Threads	8 / 16	8 / 16	6 / 12		8 / 16	8 / 16	6 / 12	8 / 16
Intel® Single-Core Turbo Frequency (GHz)	Up to 5.1	Up to 5.1	Up to 5.1		Up to 5.0	Up to 5.0	Up to 5.0	Up to 4.8
Intel® Turbo Boost Max Technology 3.0 Turbo Frequency (GHz)	Up to 5.2	Up to 5.2	–		Up to 5.1	Up to 5.1	–	Up to 4.9
Intel® Thermal Velocity Boost Technology Single / All-Core Turbo Frequency (GHz)[16]	Up to 5.3 / 4.8	–	–		Up to 5.2 / 4.7	–	–	–
Intel® All-Core Turbo Frequency (GHz)	Up to 4.7	Up to 4.6	Up to 4.7		Up to 4.6	Up to 4.5	Up to 4.4	Up to 3.7
Processor Graphics	Intel® UHD Graphics P750	Intel® UHD Graphics P750	Intel® UHD Graphics P750		Intel® UHD Graphics P750	Intel® UHD Graphics P750	Intel® UHD Graphics P750	Intel® UHD Graphics P750
Featuring Intel Xᵉ Graphics Architecture	√	√	√		√	√	√	√
PCIe Lanes	20	20	20		20	20	20	20
Memory Speed[17]	DDR4-3200	DDR4-3200	DDR4-3200		DDR4-3200	DDR4-3200	DDR4-3200	DDR4-3200
Memory Channels	Dual Channels	Dual Channels	Dual Channels		Dual Channels	Dual Channels	Dual Channels	Dual Channels
Maximum Memory Capacity	128GB	128GB	128GB		128GB	128GB	128GB	128GB
Reliability, Availability, and Serviceability	ECC	ECC	ECC		ECC	ECC	ECC	ECC
TDP (W)	125	125	125		80	80	80	35
Intel vPro® Platform Compatibility[18]	√	√	√		√	√	√	√

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).

[1]As measured by the geo mean across multiple deep learning framework workloads (Apache MXNet, TensorFlow, PyTorch, and Caffe). Results for 11th Gen Intel® Core™ desktop processors have been estimated based on measured data comparing 2-socket Intel® Xeon® Platinum 8280 processor using 8-bit integer operations with Intel® Deep Learning Boost on ResNet-50 vs. 2-socket Intel® Xeon® Platinum 8180 processor using 32-bit floating point operations. Test done by Intel as of 3/1/2019.

[2]CPU PCIe lanes are only validated for discrete graphics (x16) and PCIe storage or Intel® Optane™ memory (1x4).

[3]Intel Hybrid Storage devices such as Pyramid Glacier (H20) can't attach to CPU PCIe due to PCIe 2x2 requirement.

[4]Versus previous generation.

[5]Discrete Intel® Thunderbolt™ 4 (Maple Ridge) is only validated and supported from Intel® 500 Series Chipset PCIe.

[6]Intel Hybrid Storage devices such as Pyramid Glacier (H20) can't attach to CPU PCIe due to PCIe 2x2 requirement.

[7]Intel® Optane™ memory requires specific hardware and software configuration. Visit intel.com/OptaneMemory for configuration requirements.

[8]OEMs must enable Intel vPro® and be vPro certified. Not all Intel® Xeon® processor-based systems are vPro certified.

[9]OEMs must enable Intel vPro® and be vPro certified. Not all Intel® Xeon® processor-based systems are vPro certified.

[10]Results have been estimated or simulated based on internal Intel® analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance. All dates and plans are subject to change without notice. For more complete information about performance and benchmark results, visit intel.com/benchmarks. Performance results are based on testing as of the date set forth in the configurations and may not reflect all publicly available updates.

[11]Available only on 11th Gen Intel® Core™ processors featuring integrated graphics.

[12]Available only on 11th Gen Intel® Core™ processors featuring integrated graphics.

[13]CPU PCIe lanes are only validated for discrete graphics (x16) and PCIe storage or Intel® Optane™ memory (1x4).

[14]802.11ax 2x2 160MHz enables 2402Mbps maximum theoretical data rates, ~3X (2.8X) faster than standard 802.11ac 2x2 80MHz (867Mbps) as documented in IEEE 802.11 wireless standard specifications, and require the use of similarly configured 802.11ax wireless network routers.

[15]Intel® Wireless-AX claims are based on the comparison (39%) of the expected maximum theoretical data rates for dual spatial stream 802.11ax 80 MHz (1201 Mbps) vs. dual spatial stream 802.11ac 80 MHz (867 Mbps) Wi-Fi solutions as documented in IEEE 802.11ax draft 2.0 spec and IEEE 802.11 wireless standard specifications, and require the use of similarly configured 802.11ax wireless network routers.

[16]Intel® Thermal Velocity Boost feature is opportunistic at a temperature of 70°C or lower and when turbo power budget is available. The frequency gain and duration is dependent on the workload (best for bursty workloads), capabilities of the individual processor, and the processor cooling solution. Frequencies may reduce over time and longer workloads may start at the max frequency but drop as processor temperature increases.

[17]S-Processor DDR4 2DPC is supported when channel is populated with the same DIMM part number. Symmetric configurations are required for 2DPC within one channel (e.g. 1R/1R, 2R/2R). DDR4-3200 runs at Gear 2 and requires a 6 layer Intel® 500 Series board (DDR4-3200 is not supported on Intel® 400 Series boards). All DDR4-3200 DIMM slots need to be fully populated whether it's a 2DPC or 1DPC designed board. Only single rank (1R) DDR4-3200 DIMMs are supported. DDR4-2933 runs at Gear 1 or Gear 2.

[18]When paired with the eligible Intel® W580 Series chipset SKU. Intel vPro® platform includes Intel® TXT, Intel® AMT, Intel® Hardware Shield.