PLATFORM BRIEF
Intel® Xeon® Processor E3-1200v2 Series and Intel® C216 Chipset
Intelligent Systems

Intel® Xeon® Processor E3-1200v2 Series-based Platforms for Intelligent Systems

Ideal for Intelligent Systems—context-aware, securely managed embedded and communications devices that connect seamlessly to networks, clouds and each other.

Product Overview

Manufactured on industry-leading 22nm process technology with 3D Tri-Gate transistors, the Intel® Xeon® processor E3-1200v2 series delivers quad-core processing and intelligent performance capabilities, including Intel® Turbo Boost Technology[1] and Intel® Hyper-Threading Technology.[2] Featuring superior performance, enhanced media and graphics capabilities and flexibility, these processors are ideal for a wide range of intelligent systems including network appliance and other communication devices, gaming platforms, digital security surveillance applications, and industrial control and automation equipment.

Next-generation Intel® graphics engines significantly improve graphics and media performance compared to prior-generation platforms. This platform supports three independent displays, which enables one system to deliver multiple displays without the need for a discrete graphics card. Built-in visual features, including Intel® Clear Video HD technology and Intel® Quick Sync Video, mean smoother visual quality, improved ability to decode and transcode simultaneous video streams, and outstanding HD media playback. Additionally, the platform supports next-generation graphics APIs, such as Microsoft DirectX* 11.

When paired with the Intel® C216 chipset, this platform supports Error Correcting Code (ECC) memory, providing improved data integrity and system reliability through automatic data correction. The platform also supports faster connectivity with integrated next-generation I/O technologies such as PCI Express* Gen 3.0 and USB 3.0. For dual-core processing, the Intel C216 chipset can also be paired with the Intel® Core™ i3-3220Δ processor or Intel® Pentium® processor G2120Δ.

A high-speed, 1600 MHz dual-channel DDR3 memory controller, integrated into the processor, provides lower memory latency in a two-chip solution with board real estate savings over previous three-chip platforms. Support for DDR3L memory improves power efficiency, while Intel® Rapid Start Technology provides increased system responsiveness.

Intel® vPro™ technology[3] supports operating system-absent manageability and down-the-wire security even when the system is powered off, the operating system is unresponsive, or software agents are disabled. While incorporating advanced technology, these processors remain software-compatible with previous IA-32 processors.

The Intel Xeon processor E3-1200v2 series, Intel Core i3-3220 processor and Intel Pentium processor G2120, paired with the Intel C216 chipset, are pin and package compatible with previous generations. Developers can create one board design and easily scale a product line, or meet a variety of design needs with different processors, using the same socket.

Product Highlights

(Features vary with SKU. Please see page 4 for details.)

ECC: Delivers a high level of data integrity, reliability, and system uptime.

Intel® HD Graphics P4000[4]: Supports enhanced, high-end media and graphics capabilities and performance.

Intel® Quick Sync Video 2.0: Significantly improves decode and transcode performance and frees up the CPU for other tasks.

Intel® Advanced Vector Extensions: Accelerates floating-point compute performance for signal and image processing applications.

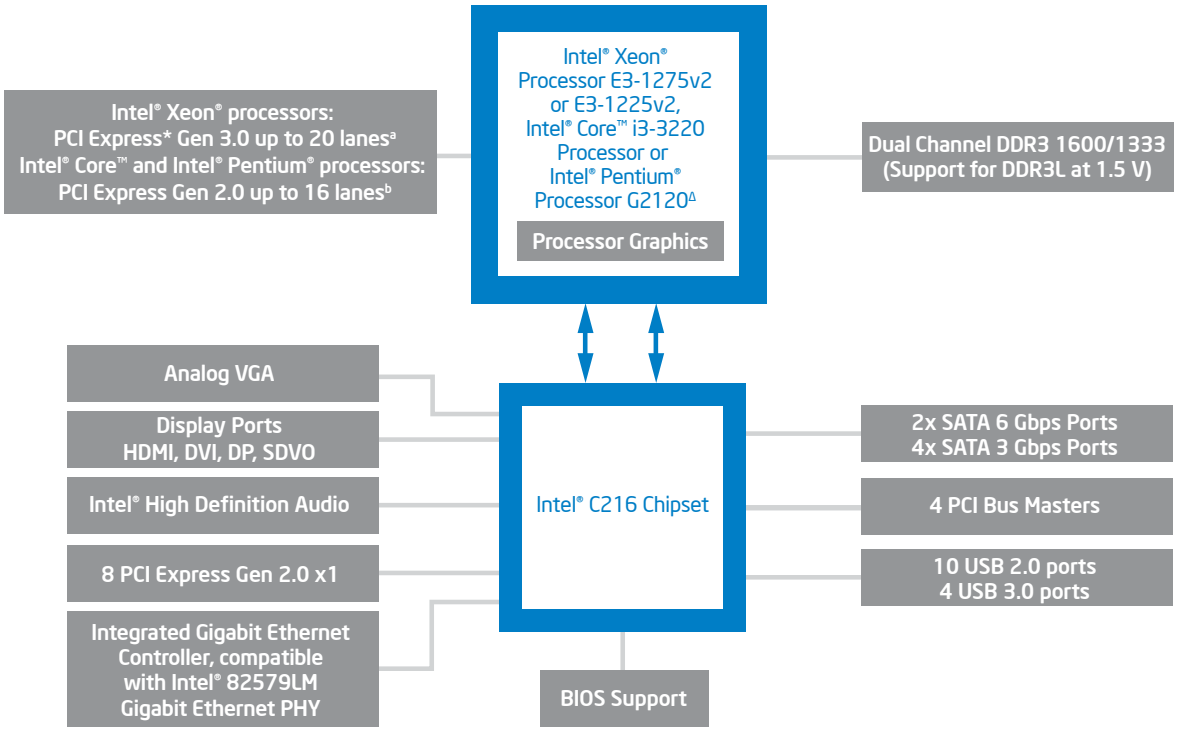
Intel® AES New Instructions[5] (Intel® AES-NI): Improves security without slowing response times.

Intel® Turbo Boost Technology 2.0: Allows individual processor cores to run at a higher frequency. Applications take advantage of higher speed execution on demand by using available processor thermal headroom.

Intel® Hyper-Threading Technology: Enables simultaneous processing of two threads per core, significantly improving performance and efficiency of multi-threaded applications.

Intel® vPro™ Technology: Delivers unprecedented hardware support for vital security and management functions with Intel® Active Management Technology,[6] Intel® Virtualization Technology,[7] and Intel® Trusted Execution Technology.[8]

Intel® Intelligent Power Technology[9]: Reduces idle power consumption through architectural improvements such as integrated power gates and automated low-power states.



[a]1x16 + 1x4; 2x8 + 1x4; 1x8 + 3x4
[b]1x16; 2x8; 1x8 + 2x4

Software Overview

The following independent operating system and BIOS vendors provide support for these platforms.

OPERATING SYSTEM	CONTACT
Microsoft Windows* 8	Intel provides drivers[10]
Microsoft Windows 7	Intel provides drivers[10]
Microsoft Windows XP SP3	Intel provides drivers[10]
Microsoft Windows 2008 Server	Intel provides drivers[10]
Microsoft Windows Embedded Standard 7	Intel provides drivers[10]
Microsoft Windows Embedded Standard 2009	Intel provides drivers[10]
Microsoft Windows Embedded POSReady 7	Intel provides drivers[10]
Microsoft Windows Embedded POSReady (WEPOS)	Intel provides drivers[10]
Red Hat Enterprise Linux* 6.1	Red Hat
SUSE SLE* 11 SP1	Novell
Wind River Linux* 5.0	Wind River
Wind River VxWorks* 6.9	Wind River

BIOS
American Megatrends
Insyde Software
Phoenix Technologies
Byosoft

Platform Features and Benefits

FEATURES	BENEFITS
Key Embedded Support	
Extended life cycle product support	▪ Protects system investment by enabling extended product availability for embedded customers.
Ecosystem support	▪ Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Intelligent Systems Alliance (intel.com/go/intelligentsystems-alliance), Intel helps to cost-effectively meet development challenges and speed time-to-market.
Built-In Visuals	
Intel® HD Graphics	▪ Delivers enhanced visual experiences, including excellent 3D performance, for a broad range of intelligent systems. ▪ Provides support for dual LVDS, three independent displays, and hybrid multi-monitor configurations. ▪ Integrated processor graphics help minimize power consumption while maximizing performance for decoding, encoding, and transcoding workloads with hardware acceleration of video codecs.
Intel® Quick Sync Video 2.0	▪ Improved ability to decode and transcode simultaneous video streams for intelligent systems that include medical imaging and video surveillance functions.
Intel® Clear Video HD Technology	▪ Provides visual quality and color fidelity enhancements for spectacular HD media playback for applications such as digital signs and gaming platforms.
Security	
Intel® AES New Instructions (Intel® AES-NI)[5] and Intel® Secure Key	▪ Helps protect media, data and assets from loss. ▪ Intel AES-NI accelerates data encryption/decryption and improves performance.
Intel® OS Guard	▪ Helps detect and prevent malware.
Performance (Select SKUs)	
Intel® Advanced Vector Extensions	▪ Faster performance on digital signal and image processing workloads for compute-intensive applications such as radar detection, hurricane command center, ruggedized navigation systems and remote medical image processing.
Intel® Turbo Boost Technology[1] 2.0	▪ Boosts performance for specific workloads by increasing processor frequency.
Intel® Hyper-Threading Technology[2]	▪ Enables simultaneous multi-threading within each processor core, up to two threads per core; reduces computational latency, making optimal use of every clock cycle.
Intel® Smart Cache Technology	▪ Large on-die shared Last-Level Cache reduces latency to data, improving performance and power efficiency.
Error Correcting Code	▪ Detects multiple-bit memory errors; locates and corrects single-bit errors to keep the system up and running.
Power Efficiency	
Intel® Intelligent Power Technology[9]	▪ Automated energy efficiency to reduce power consumption.
Automated low-power states	▪ Adjusts system power consumption based on real-time processor loads.
Intel® Rapid Start Technology	▪ Improves OS boot time and wakes up from deep sleep state more quickly than previous generations for better system responsiveness.
Intel® vPro™ Technology[3] (Select SKUs)	
Intel® Active Management Technology 8.0[6]	▪ The 8.0 version of Intel's remote management and maintenance capabilities enables vendors to roll back firmware image; remote host-based provisioning helps to ease provisioning of end device.
Intel® Virtualization Technology[7]	▪ Speeds the transfer of platform control and movement of data between the virtual machine monitor (VMM) and other platform agents (including guest operating systems and I/O devices). By lowering the workload on the VMM, this technology addresses many embedded system design challenges, like migrating legacy software, increasing real-time performance, and making applications more secure.
Intel® Trusted Execution Technology[8]	▪ Protects embedded devices and virtual environments against rootkit and other system-level attacks. Using an industry-standard TPM 1.2 to store keys and other protected data, this portion of Intel vPro technology boots the BIOS, operating system, and software into a "trusted" execution state, verifying the integrity of the virtual machine and protecting the platform from unauthorized access.

Intel® Xeon® Processor E3-1200v2 Series for Intelligent Systems

PROCESSOR NUMBER[Δ]	CORES/ THREADS	CORE FREQUENCY (GHz)		INTEL® SMART CACHE	THERMAL DESIGN POWER	PACKAGE	ERROR CORRECTING CODE
		BASE FREQUENCY	1 CORE TURBO (MAX)				
Intel® Xeon® processor E3-1275v2	4/8	3.5	3.9	8 MB	95 W	LGA1155	Yes
Intel® Xeon® processor E3-1225v2	4/4	3.2	3.6	8 MB	95 W	LGA1155	Yes
Intel® Core™ i3-3220 processor	2/4	3.3	N/A	3 MB	65 W	LGA1155	Yes
Intel® Pentium® processor G2120	2/2	3.1	N/A	3 MB	65 W	LGA1155	Yes

PROCESSOR NUMBER[Δ]	INTEL® TURBO BOOST TECHNOLOGY	INTEL® HYPER-THREADING TECHNOLOGY	INTEL® vPRO™ TECHNOLOGY		
			INTEL® VIRTUALIZATION TECHNOLOGY	INTEL® ACTIVE MANAGEMENT TECHNOLOGY 8.0	INTEL® TRUSTED EXECUTION TECHNOLOGY
Intel® Xeon® processor E3-1275v2	Yes	Yes	Yes	Yes	Yes
Intel® Xeon® processor E3-1225v2	Yes	No	Yes	Yes	Yes
Intel® Core™ i3-3220 processor	No	Yes	Yes	No	No
Intel® Pentium® processor G2120	No	No	Yes	No	No

Intel® C216 Chipset for Intelligent Systems

PRODUCT	PRODUCT CODE	PACKAGE	FEATURES
Intel® BD82C216 Platform Controller Hub	BD82C216	942 FCBGA	Supports ECC and Intel® Active Management Technology 8.0; six SATA ports; four USB 3.0 ports; ten USB 2.0 ports; eight PCI Express* I/O ports; Integrated Gigabit Ethernet Controller compatible with Intel® 82579LM Gigabit Ethernet PHY

Intel in Intelligent Systems: **intel.com/intelligentsystems**

[Δ] Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families: Go to: http://www.intel.com/products/processor_number.

[1] Requires a system with Intel® Turbo Boost Technology. Intel Turbo Boost Technology and Intel Turbo Boost Technology 2.0 are only available on select Intel® processors. Consult your PC manufacturer. Performance varies depending on hardware, software, and system configuration. For more information, visit http://www.intel.com/go/turbo.

[2] Requires an Intel® HT Technology-enabled system, check with your PC manufacturer. Performance will vary depending on the specific hardware and software used. Not available on Intel® Core™ i5-750 processor. For more information including details on which processors support HT Technology, visit http://www.intel.com/info/hyperthreading.

[3] Intel® vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software and IT environment. To learn more visit: http://www.intel.com/technology/vpro/.

[4] Optimized Intel® HD Graphics P4000 only available on select models of the Intel® Xeon® processor E3 family. To learn more about Intel® Xeon® processors for workstations, visit www.intel.com/go/workstation.

[5] Intel® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on Intel® Core™ i5-600 Desktop Processor Series, Intel® Core™ i7-600 Mobile Processor Series, and Intel® Core™ i5-500 Mobile Processor Series. For availability, consult your reseller or system manufacturer. For more information, see http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/.

[6] Requires activation and a system with a corporate network connection, an Intel® AMT-enabled chipset, network hardware and software. For notebooks, Intel AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating or powered off. Results dependent upon hardware, setup & configuration. For more information, visit http://www.intel.com/technology/platform-technology/intel-amt.

[7] Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM). Functionality, performance or other benefits will vary depending on hardware and software configurations. Software applications may not be compatible with all operating systems. Consult your PC manufacturer. For more information, visit http://www.intel.com/go/virtualization..

[8] No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer system with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules and an Intel TXT-compatible measured launched environment (MLE). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit http://www.intel.com/technology/security.

[9] Intel® Intelligent Power Technology requires a computer system with an enabled Intel® processor, chipset, BIOS, and, for some features, an operating system enabled for it. Functionality or other benefits may vary depending on hardware implementation and may require a BIOS and/or operating system update. Please check with your system vendor for details.

[10] Drivers available at: downloadcenter.intel.com (enter chipset name).

Performance results are based on certain tests measured on specific computer systems. Any difference in system hardware, software or configurations will affect actual performance. For more information go to http://www.intel.com/performance.

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