



Intel® Xeon™ Processor E3-1200

Key Features: Intel Xeon E3-1200 CPU on the Intel C200 Series Chipset
(formerly codenamed “Bromolow”)

Platform	Processor	Socket	Chipset
E3-1200 CPU + C200 Chipset <i>(formerly codenamed “Bromolow”)</i>	E3-1200 Product Family <i>(codenamed “Sandy Bridge”)</i>	H2	C200 Series <i>(codenamed “Cougar Point”)</i>

- Intel® Core™ Microarchitecture (“Sandy Bridge”)**
The E3-1200 processor (Socket H2) in conjunction with the C200 chipset (formerly codenamed “Cougar Point”) offers users the benefits of the latest technology – Sandy Bridge architecture – in an entry-level, single-processor configuration. This tightly integrated microarchitecture unifies processor cores, memory controller, and last-level cache (LLC).
- SATA ports**
Support for up to two 6Gb/s ports and four 3Gb/s ports enables faster hard drive cache transfers, and helps solid state drives take full advantage of higher bandwidth to speed boot times and application load times.
- Intel® Turbo Boost Technology 2.0**
Next-generation Turbo Boost Technology delivers additional performance automatically when needed by taking advantage of the processor’s power and thermal headroom. Turbo Boost 2.0 offers new power averaging algorithms which enable lower energy consumption, creating additional thermal headroom.
- Intel® Hyper-Threading Technology**
Hyper-Threading Technology allows thread-level parallelism, resulting in more efficient use of processor resources. With higher processing throughput, you enjoy substantially improved performance.
- Advanced Instruction Sets**
Intel® AES-NI (Advanced Encryption Standard New Instructions) accelerates encryption and decryption speeds, allowing broader use of encryption to improve data security.
Intel® Advanced Vector Extensions (AVX) Instructions deliver improved performance on floating point-intensive applications.

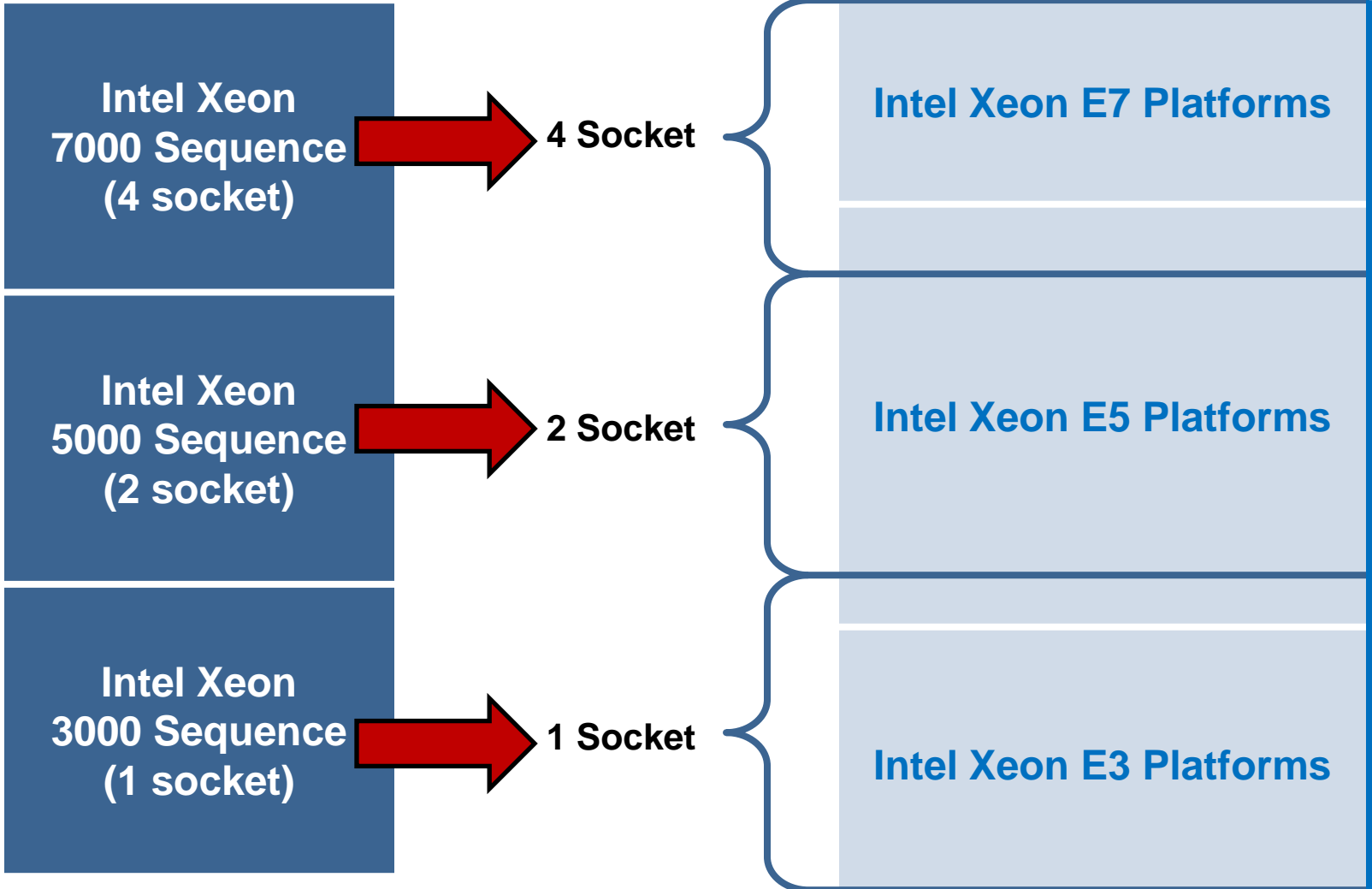
Features that optimize performance uptime and security

Expert included.



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Transitions: Intel Xeon Server Roadmap



Expert included.



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Product Specifications

Process	TDP ¹	CPU Number	Frequency	Cores / Threads	Cache	Max Mem Speed	Turbo Boost ²	HT
32 nm	95W	E3-1280	3.50 GHz	4 / 8	8MB	1333	1 / 2 / 3 / 4	Yes
	80W	E3-1270	3.40 GHz	4 / 8	8MB	1333	1 / 2 / 3 / 4	Yes
		E3-1240	3.30 GHz				1 / 2 / 3 / 4	
		E3-1230	3.20 GHz				1 / 2 / 3 / 4	
		E3-1220	3.10 GHz				1 / 2 / 3 / 4	
LOW POWER	45W	E3-1260L ³	2.40 GHz	4 / 8	8MB	1333	1 / 4 / 8 / 9	Yes
	20W	E3-1220L	2.20 GHz	2 / 4			0 / 10	

Economical and dependable general purpose processors for 1P systems

- 1 TDP is Thermal Design Power
- 2 Max Turbo Boost frequency based on number of 100-MHz increments above base frequency (+2 = .2 GHz, +3 = .3 GHz). See pages 7 and 8 for information about interpreting the Turbo Boost specification.
- 3 The E3-1260L has integrated graphics engine HD2000, which is not supported with the C204 chipset.

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Memory Overview

Platform capability:

- Up to 2 channels per CPU
- Up to 2 DIMMs per channel

Memory types supported:

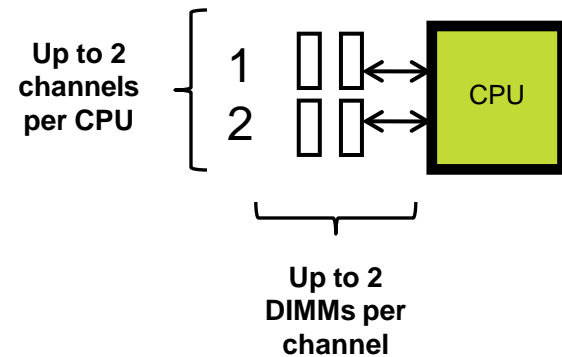
- DDR3 1333 and 1066
- Unbuffered ECC (UDIMM)
- Single-rank (SR) or dual-rank (DR)
- Static Closed Loop Thermal Throttling support via BMC requires ECC DIMMs with thermal sensor.

Memory Restrictions

- No RDIMM support
- Non-ECC UDIMMs not supported on server platforms
- No LV-DIMM support at 1.35V. LV-DIMMs plugged into the platform will run at 1.5V.

Both channels in a system will run at the fastest *common* frequency:

- Example: If you populate 1 DIMM at 1333 MHz in Channel 1, and 1 DIMM at 1066 MHz in Channel 2, both DIMMs will run at 1066 MHz.



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UDIMM Support

DIMM Slots per Channel	DIMMs populated per Channel	DIMM Type	POR Speeds	Ranks per DIMM (any combination)
2	1	Unbuffered DDR3 ECC	1066MHz, 1333 MHz	Single Rank, Dual Rank
2	2	Unbuffered DDR3 ECC	1066MHz, 1333 MHz	Single Rank, Dual Rank

Max Memory Possible*	1Gb DRAM Technology	2Gb DRAM Technology	4Gb DRAM Technology
Single Rank UDIMMs	4GB (4x 1GB DIMMs)	8GB (4x 2GB DIMMs)	16GB (4x 4GB DIMMs)
Dual Rank UDIMMs	8 GB (4x 2GB DIMMs)	16 GB (4x 4GB DIMMs)	32 GB (4x 8GB DIMMs)

Enables cost-optimized value platforms with 8GB / core

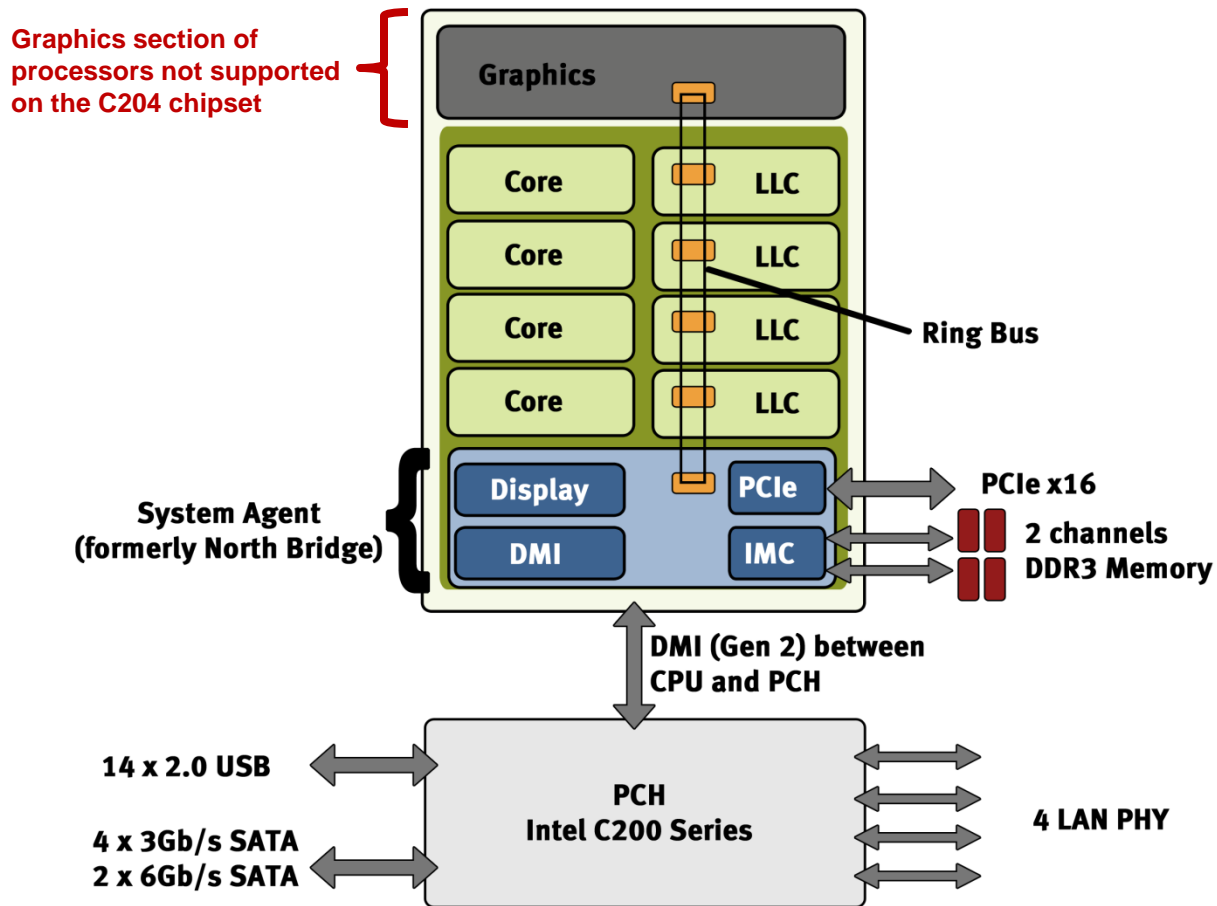
* All configurations are with x8 devices

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Chip Diagram



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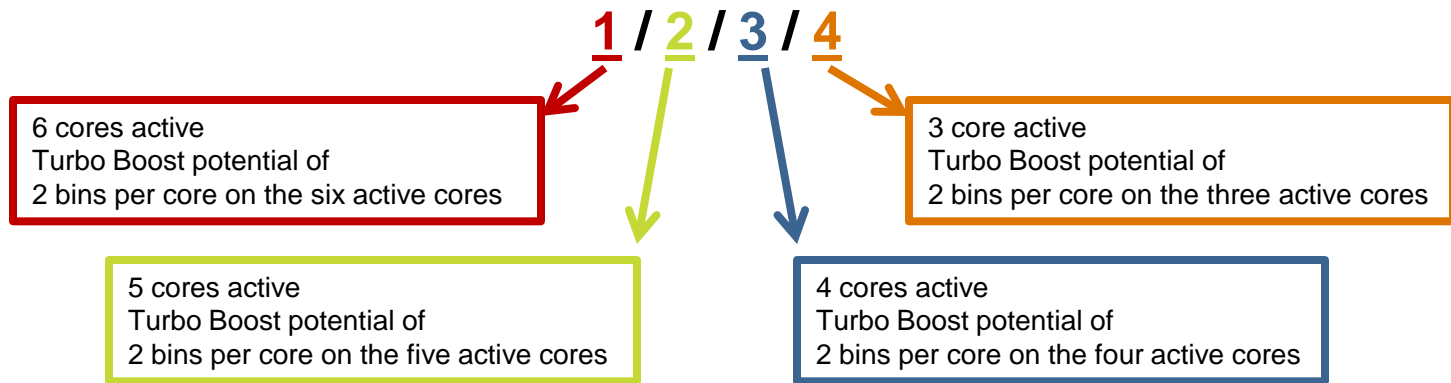


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About Turbo Boost 2.0

Turbo Boost 1.0 dynamically increased the frequency of active cores based on temperature, current, power consumption, and operating system states. It did not, however, exceed programmed power limits. Turbo Boost 2.0 allows the processor to exceed its power ceiling in a burst, until it reaches its thermal limit, at which point it reduces power to conform to those same programmed limits.

Interpreting the Turbo Boost Specification



- This example is based on the Intel Xeon processor E3-1270: 4 cores, 3.40 GHz, with a Turbo Boost specification of 1 / 2 / 3 / 4.
- When thermal headroom exists or a core is idle, Turbo Boost increases the base frequency of the cores.
- The frequency increases take place in increments (“bins”) of 100 MHz (.1 GHz).
- The first number corresponds to the boost potential of 1 bin per core when all four cores are active. The second number refers to the boost potential of 2 bins per core when three cores are active. The third number refers the boost potential of 3 bins per core when two cores are active. The fourth number refers to the boost potential of 4 bins per core when one core is active.

Expert included.

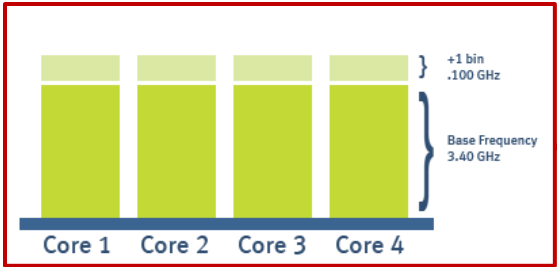


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Interpreting the Turbo Boost Specification

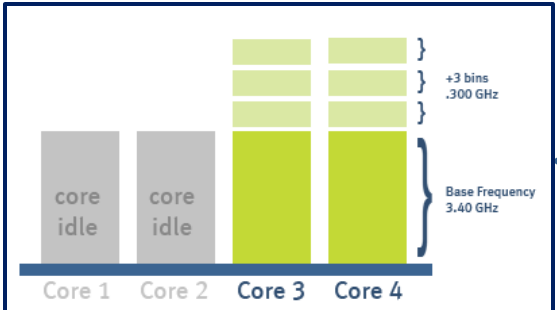
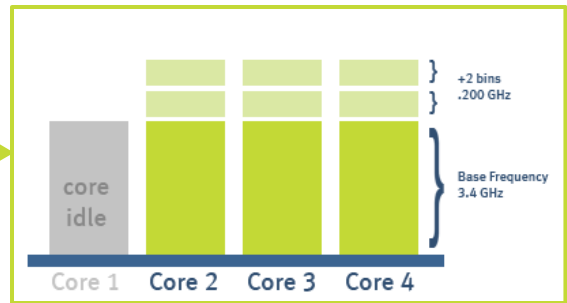
1 / 2 / 3 / 4

Base Frequency: 3.40 GHz
Incremental Increase: .10 GHz



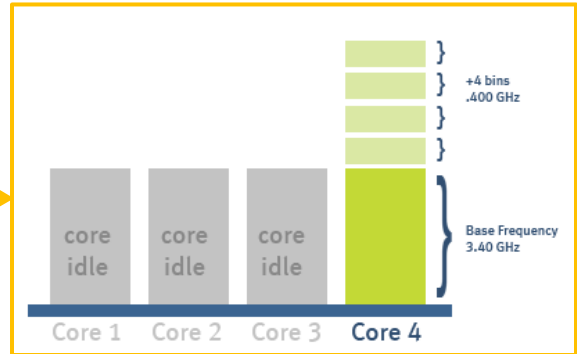
In Use: 4 cores
Turbo Boost: 1 bin
Boosted Frequency: 3.5 GHz

In Use: 3 cores
Turbo Boost: 2 bins
Boosted Frequency: 3.6 GHz



In Use: 2 cores
Turbo Boost: 3 bins
Boosted Frequency: 3.7 GHz

In Use: 1 core
Turbo Boost: 4 bins
Boosted Frequency: 3.8 GHz



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Silicon Mechanics Products with Intel® Xeon® Processor E3-1200 CPUs

1U Rackmount Servers

- [Rackform iServ R101](#) – 1U with 4 DDR3 UDIMMS and 2 fixed SATA drives
- [Rackform iServ R133](#) – 1U with 4 DDR3 UDIMMS and 4 hot-swap SAS / SATA drives
- [Rackform iServ R135](#) – 1U with 4 DDR3 UDIMMS and 4 hot-swap 2.5-inch SAS / SATA drives

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Contact Silicon Mechanics

For answers regarding processor selection
or other questions you may have,
contact one of the Experts at Silicon Mechanics:

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Expert included.