

Comparison between Intel® Core™ i7 and Intel® Xeon E5-2600 for 3D Rendering

This document comparing **Intel® Core™ i7** to **Intel® Xeon E5-2600** when use for 3D rendering, be it single workstation or deploy as render farms. All references can be found at the end of this document. Opinions/thoughts/discussion are welcomed. One may send email to 3dfx@myrds.com.my or log on our facebook [Robust Computer Rep](#) or [Robust™ Technology](#)

	i7 3770k / 3930k / 3960x	Xeon E5-2630 to E5-2690
Maximum RAM	32GB / 64GB (Extreme Edition)	750GB
Type of RAM	Non-ECC	ECC (Error-correcting Code)
Power Consumption	Standard	Low (More energy efficient)
Price	Affordable	Expensive
No. of socket	1	2
L3 Cache	8 / 12 / 15MB	15 / 20MB
Bus Type	DMI	QPI
Integrated Graphics	Yes	Yes
Intel® Demand Based Switching	No	Yes
Intel® Trusted Execution Technology	No	Yes
Intel® VT-d	No	Yes
Overclock	Yes	No
Top model speed	3.9Ghz	3.8Ghz
Top model # of cores	6	8
SAS drives support	via External Controller	Supported on almost all workstation motherboard

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Advantages Comparison	
i7 Processor / i7 Extreme Processor	Xeon E5-2600
<ol style="list-style-type: none"> 1. Can be overclocked to run stable @ 4.5ghz - 4.8ghz 2. Very affordable price with great performance 3. Wide range of motherboard available 4. Motherboard possess better multimedia function 5. Motherboard is cheaper 6. Higher performance in term of price/performance ratio 7. Performance per single core is unmatched by any Xeon processors, making it super fast for any programs that utilize single processing thread 	<ol style="list-style-type: none"> 1. Very easy to expand in small spaces due to its 2 sockets configuration, which available in 1U/2U/3U/4U or Tower. 2. Widely available in rack mount form provides stackable and portable space saving design 3. Centralized cable and server management 4. IPMI (Intelligent Platform Management Interface) is generally found on major motherboard 5. ECC memory provide better system stability 6. Easier to manage as more computing power is being packed into single workstation 7. Cost-saving for OS / Software licenses. Less licenses are required for mass deployment due to its dual socket configuration 8. RAM support up to 750GB 9. Energy efficient 10. Bigger L3 Cache 11. Tremendous memory bandwidth 12. Vast data calculation is faster 13. Link between two processors via QPI Links, which is unmatched by Gigabit LAN 14. Unmatched multi-threads performance. Even an overclocked i7-3960X running at 4.8Ghz is slower. (legit reviews, wPrime) 15. Unmatched rendering performance when i7 & Xeon running at stock speed



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Disadvantages Comparison	
i7 Processor / i7 Extreme Processor	Xeon E5-2600
<ol style="list-style-type: none"> 1. Only single socket configuration available 2. Consume more space and power when building up render farm 3. No ECC RAM support 4. More software costs incurred due to only single socket configuration available. Compared to dual Xeon E5-2600 workstation, 4 units of i7-3770k has to be built to run on 16 cores, mean 4 OS licenses needed 5. Rack mount solution is rarely found 6. Link between two processors via Ethernet, which depend vastly on network speed and other factors 	<ol style="list-style-type: none"> 1. Expensive 2. In smaller scale setup, such as 50ghz - 150ghz, slower performance in term of price/performance ratio when compared to overclocked i7 3. Performance maybe slower or merely on par with overclocked i7, regardless of dual socket configuration 4. Operating noise is too loud when configured in rack mount, a dedicated server room is needed 5. x264 first pass encoding is slower due to single thread limitation

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References & External Links

1. 3dsmax and Vray working experiences of Tecsun Yeep - Technical director of Lightfeel
<http://www.linkedin.com/pub/tecsun-yeep/9/99b/21> | www.Lf.com.my
2. Intel Xeon E5-2600: Doing Damage With Two Eight-Core CPUs
<http://www.tomshardware.com/reviews/xeon-e5-2687w-benchmark-review,3149.html>
3. Intel Core i7-3960X Review: Sandy Bridge-E And X79 Express
<http://www.tomshardware.com/reviews/core-i7-3960x-x79-sandy-bridge-e,3071.html>
4. Intel Xeon E5-2670 vs Core i7-3960X review
<http://www.theinquirer.net/inquirer/review/2157358/intel-xeon-e5-2670-vs-core-i7-3960x-review>
5. The Tech Report - Intel unveils the Xeon E5-2600 series
<http://techreport.com/discussions.x/22583>
6. Legit Reviews - Intel Xeon E5-2600 & R2000GZ Sandy Bridge-EP Server Review
<http://www.legitreviews.com/article/1871/1/>

Future Studies

We are planning to include the few other topics listed below, hopefully one who has experiences on those area can give us their feedback on the hardware systems they are using now:

1. How is the speed of RAM improve After Effects work and is the big RAM capacity offered by Xeon taking advantages?
2. What is Intel® Hyper-Threading influences to production work, 3D and post-editing.
3. Does electricity bill kill when overclocking for production work?