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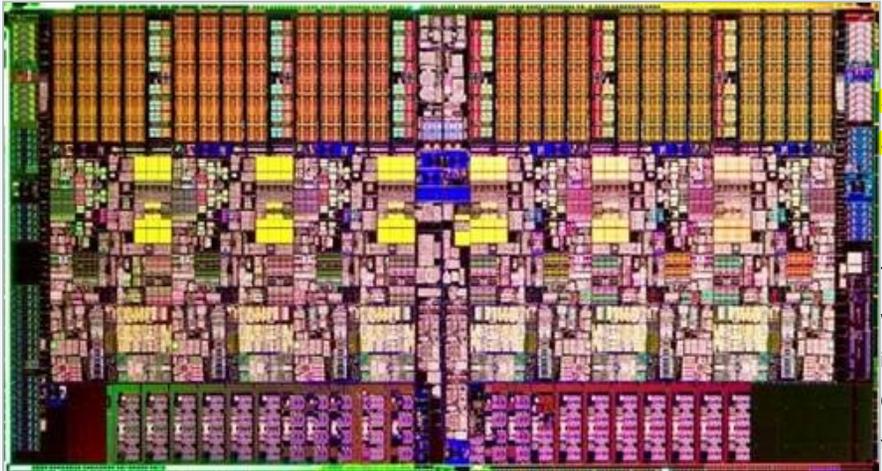
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Tip Your Editors:

The Fastest Gaming Processors for Any Budget



If you don't have the time to research the benchmarks, fear not. **Tom's Hardware** has come to your aid with a simple list of the best gaming CPUs offered at each and every pricepoint.

Before You Read the List

The big news in March was the introduction of the worlds first hexa-core CPU for the desktop, Intel's Core i7-980X Extreme Edition processor. With six physical CPU cores and capable of running 12 threads thanks to Hyper-Threading, the 32nm Gulltown core is the

most powerful desktop CPU on the planet, taking that top spot from the Core i7-975 Extreme processor. At \$1,090 it's not a wise choice from a budgetary perspective, but we have to give it props for being the best gaming CPU money can buy. **You can read more about the Core i7-980X Extreme here.**

This list is for gamers who want to get the most for their money. If you don't play games, then the CPUs on this list may not be suitable for your particular needs. **Pricing is based on some of the lowest US prices from online retailers.** In other countries or at retail stores, your mileage will most certainly vary. Of course, these are retail CPU prices. We do not list used or OEM CPUs. With that in mind, let the list begin:

Best Gaming CPU: Under \$90

Best Gaming CPU for ~\$65:

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Athlon II X2 245

Athlon II X2 245	
Codename:	Regor
Process:	45nm
CPU Cores:	2
Clock Speed:	2.9 GHz
Socket:	AM2+/AM3
L1 Cache:	2 x 64KB
L2 Cache:	2 x 1MB
HyperTransport:	4,000 MHz
Thermal Envelope:	65W

With better CPUs encroaching on the Athlon II X2 250's price point, we shed a few dollars and reinstated the 245 as our choice for a gaming CPU on a rock-bottom budget.

This chip allows the flexibility to go one of two different ways: either drop it in as an upgrade for your Socket AM2+-based platform or build a brand new, low-cost Socket AM3 machine based on it. With a high 2.9 GHz clock speed, the Athlon II X2 245 offers excellent gaming performance at the price. Moreover, its 65W thermal design power is great for electricity- and heat-conscious enthusiasts.

Best Gaming CPU for ~\$75:**Athlon II X3 435**

Athlon II X3 435	
Codename:	Rana
Process:	45nm
CPU Cores:	3
Clock Speed:	2.9 GHz
Socket:	AM2+/AM3
L1 Cache:	3 x 64KB
L2 Cache:	3 x 512KB
HyperTransport:	4,000 MHz
Thermal Envelope:	95W

The Athlon II X3 435 boasts three execution cores. And, compared to a dual-core processor, that extra core will make a notable difference in multi-tasking performance, as well as game play. This model also has good overclocking headroom if you want to push it a little further. On top of everything else, it recently dropped in

price now that the new Athlon II X3 440 model has arrived.

Read our review of the Athlon II X3 435, [right here](#).

Best gaming CPU for ~\$85:

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Athlon II X3 440

Athlon II X3 440	
Codename:	Rana
Process:	45nm
CPU Cores:	3
Clock Speed:	3.0 GHz
Socket:	AM2+/AM3
L1 Cache:	3 x 64KB
L2 Cache:	3 x 512KB
HyperTransport:	4,000 MHz
Thermal Envelope:	95W

From a stock performance standpoint, the Athlon II X3 440 only offers a 100 MHz speed bump over the Athlon II X3 435. However, the higher multiplier might help if your ultimate goal is overclocking.

When you consider the big picture, this CPU really offers an attractive combination of multiple CPU cores, high clock speed, low price, and overclockability. It is such a great gaming CPU, in fact, that it almost renders most of the CPUs in the \$100 to \$130 range redundant. As a result, most of our recommendations in this range are aimed specifically at overclockers and users upgrading an older platform.

Best Gaming CPU: \$90-\$105

Best gaming CPU for \$100: None

As mentioned previously, the Athlon II X3 440 features such value-oriented (and yet wholly solid) gaming performance that it is difficult to recommend spending \$100 to \$130 for similar results. Having said that, other factors can come into play. For these reasons, the following CPUs are being given honorable mentions.

Honorable Mention:

Athlon II X4 630

Athlon II X4 630	
Codename:	Propus
Process:	45nm
CPU Cores:	4
Clock Speed:	2.8 GHz
Socket:	AM3
L1 Cache:	4 x 128KB
L2 Cache:	4 x 512KB
HyperTransport:	4,000 MHz

Frankly, the high clock rate of the Athlon II X3 440 allows it to perform better than an Athlon II X4 630 at stock frequencies in a great majority of games.

However, there are a few titles out there that will take advantage of a fourth CPU core, making the Athlon II X4 a potentially attractive choice to buyers who want all four CPU cores and are willing to overclock this processor. Moreover, as a general-purpose CPU (during the hours you don't spend gaming, of course), the quad-core solution is going to be superior. Now found as low as \$100, true quad-core CPUs are well within the grasp of the budget gamer.

Read our review of the Athlon II X4, [right here](#).

Honorable Mention:

Phenom II X2 555 Black Edition

Phenom II X2 555 Black Edition

Although the dual-core Phenom II X2

Thermal Envelope:	95W	Codename:	Callisto
		Process:	45nm
		CPU Cores:	2
		Clock Speed:	3.1 GHz
		Socket:	AM3
		L1 Cache:	2 x 128KB
		L2 Cache:	2 x 512KB
		L3 Cache:	6MB
		HyperTransport:	4,000 MHz
		Thermal Envelope:	80W

555 Black Edition might be a bit slower than the less-expensive Athlon II X3 440 when it comes to gaming, it offers something that the Athlon II X3 doesn't have: an unlocked clock multiplier. Like all of AMD's Black Edition processors, the Phenom II X2 555 can be easily overclocked by

simply upping its multiplier in the motherboard BIOS of your choice, earning this CPU a place on our recommended list for overclocking fans. Found online at \$100, this CPU offers high-end overclocking features for a budget price.

Increased availability over the past few weeks cements our honorable mention status for this chip, which, again, is best suited to the enthusiasts willing to finesse its clock rate as high as possible.

Read our overclocking review of the Phenom II X2 555 Black Edition, [right here](#).

Best Gaming CPU: \$110-\$125

Best gaming CPU for \$110: None

Honorable Mention:

Core 2 Duo E7500

Core 2 Duo E7500	
Codename:	Wolfdale-3M
Process:	45nm
CPU Cores:	2

At 2.93 GHz, the Core 2 Duo E7500 remains a good match-up against the Phenom II X3 720 Black Edition. Even without an unlocked multiplier, the E7500 is an excellent overclocker and won't disappoint. And the \$110 price point is easy to swallow for upgraders.

It has a high clock rate, but its dual-core design won't be as nimble as AMD's triple-core offerings when it comes to multi-threaded apps. Most folks considering this CPU

Clock Speed:	2.93 GHz
Socket:	LGA 775
L2 Cache:	3MB
Front Side Bus:	1,066 MHz
Thermal Envelope:	65W

are probably trying to squeeze longevity from an older LGA 775 platform. If you're looking to upgrade your motherboard as well, it'd be best to consider a Phenom II or Core i3 instead.

Best gaming CPU for \$120: 3-Way Tie

Athlon II X4 635

Athlon II X4 635	
Codename:	Propus
Process:	45nm
CPU Cores:	4
Clock Speed:	2.9 GHz
Socket:	AM3
L1 Cache:	4 x 128KB
L2 Cache:	4 x 512KB
HyperTransport:	4,000 MHz
Thermal Envelope:	95W

Offering a 100 MHz speed boost over the Athlon II X4 630, the new Athlon II X4 635 cannot be denied as a good option for overclockers who want four true execution cores.

This model isn't unlocked (it's not one of AMD's Black Edition chips), but it does sport a higher multiplier than the Athlon II X4 630, making it a solid

quad-core processor with (ideally) a bit of scalability on the cheap. With a \$120 asking price, there is a lot of value here.

Core i3-530

Core i3-530	
Codename:	Clarkdale
Process:	32nm
CPU Cores/Threads:	2/4
Clock Speed:	2.93 GHz
Socket:	LGA 1156

The Core i3-530 is a promising gaming CPU, despite its two physical cores. More importantly, it opens up a viable budget alternative to the AM3 platform. At \$120, this CPU is a great starting point.

Stock performance is usually quite good from what we've seen, although you can't expect Hyper-Threading to yield the same performance gains as an additional physical core or two.

If you don't believe us, check out Thomas Soderstrom's [look at gaming performance on a Core i3-530](#).

L1 Cache:	4 x 32KB
L2 Cache:	2 x 256KB
L3 Cache:	4MB
Thermal Envelope:	73W

Phenom II X3 720 Black Edition

Phenom II X3 720 Black Edition	
Codename:	Heka
Process:	45nm
CPU Cores:	3
Clock Speed:	2.8 GHz
Socket:	AM3
L1 Cache:	3 x 128KB
L2 Cache:	3 x 512KB
L3 Cache:	6MB
HyperTransport:	4,000 MHz
Thermal Envelope:	95W

We try and stick to retail processors when it comes to CPU recommendations because the costs of a cooler introduces a sizable variable. But in the case of the Phenom II X3 720, flagging retail availability forces us to make an exception.

The OEM version of this CPU is now \$105. Add a \$15

aftermarket cooler (such as the Cooler Master Hyper TX3), and you have a triple-core unlocked CPU on your hands for \$120.

We're a bit torn here. On the one hand, we know that overclocking is the surest way to negate your warranty coverage. However, the Phenom II X3 720 Black Edition not only has that unlocked multiplier, but we've also had **some luck unlocking the fourth core** on a handful of samples. The chance may or may not be worth the extra money you drop in this chip. Bear in mind, though, that it's an "expensive" model for AMD to sell, and its starting to disappear fast. The retail version has all but disappeared.

Best Gaming CPU: \$130-\$190

Best gaming CPU for \$140:

Core i3-540

Core i3-540	
Codename:	Clarkdale
Process:	32nm
CPU Cores/Threads:	2/4

Another one of Intel's new Core i3 processors, the gaming data we have seen for this i3-540 looks promising. While it isn't going to perform all that much better than the i3-530, its higher multiplier will be a boon for overclockers, and the price might be justified for some.

Bear in mind that, although Intel launched this processor alongside the H55 and H57

Clock Speed:	3.06 GHz
Socket:	LGA 1156
L1 Cache:	4 x 32KB
L2 Cache:	2 x 256KB
L3 Cache:	4MB
Thermal Envelope:	73W

chipsets, gamers are likely going to want to stick with P55 when they shop for an LGA 1156-equipped motherboard, even if it means ignoring the integrated graphics core built onto the Core i3-540. When used with Clarkdale-based processors, Intel's H55 and H57 chipsets aren't able to divide on-package PCI Express connectivity between CrossFire and SLI graphics configurations.

Best gaming CPU for \$160:

Phenom II X4 955 Black Edition

Phenom II X4 955 Black Edition	
Codename:	Deneb
Process:	45nm
CPU Cores:	4
Clock Speed:	3.2 GHz
Socket:	AM3
L1 Cache:	4 x 128KB
L2 Cache:	4 x 512KB
L3 Cache:	6MB
HyperTransport:	4,000 MHz
Thermal Envelope:	125W

A former flagship of AMD's Phenom II family, the Phenom II X4 955 BE has been relegated to second-place status by the newer Phenom II X4 965 BE model. Now at \$160, it offers a very compelling price/performance ratio for a true quad-core unlocked processor with gobs of cache. We should also mention that the 955 is now available in

the newer C3 stepping like its 965 brother.

Read our review of the Phenom II X4 955 Black Edition, [right here](#).

Best gaming CPU for \$180:

Phenom II X4 965 Black Edition

Phenom II X4 965 Black Edition (C3 Stepping)	
Codename:	Deneb
Process:	45nm
CPU Cores:	4

While the Phenom II X4 955 and 965 both share an unlocked multiplier, the new revision 965 model's C3 stepping has been shown to be quite overclock-friendly compared to previous models. If you're looking for an AMD processor with the maximum overclocking headroom, just make sure you're buying the new 125 watt C3

Clock Speed:	3.4 GHz
Socket:	AM3
L1 Cache:	4 x 128KB
L2 Cache:	4 x 512KB
L3 Cache:	6MB
HyperTransport:	4,000 MHz
Thermal Envelope:	125W

Read our review of the new Phenom II X4 965 Black Edition, [right here](#).

Best gaming CPU for \$190: None

Honorable Mention:
Core 2 Quad Q9400

Core 2 Quad Q9400	
Codename:	Yorkfield
Process:	45nm
CPU Cores:	4
Clock Speed:	2.66 GHz
Socket:	LGA 775
L2 Cache:	2 x 3MB
Front Side Bus:	1,333 MHz
Thermal Envelope:	95W

The Core 2 Quad line isn't as strong as Intel's lone Lynnfield-based Core i5 model, but the older processors certainly aren't slouches either. On a clock-for-clock basis, the Core 2 Quad tends to perform a little bit better than AMD's Phenom II X4.

This CPU is a strong competitor for the Phenom II X4 955

and will overclock well, despite its locked CPU multiplier. Even in the face of a somewhat low stock clock, 6MB of shared L2 cache and a speedy 1,333 MHz front side bus help the chip compete aggressively for less than \$200. With the Phenom II X4 965 and Core i5-750 priced so close, this one should only really be a consideration for the gamer upgrading an LGA 775-based machine. This is as far as I'd recommend taking a 775 platform however, anything more expensive than this is better spent on a platform with a better upgrade path.

Best gaming CPU for \$200:

Core i5-750

Core i5-750	
Codename:	Lynnfield
Process:	45nm
CPU Cores:	4

The new Core i5 brings top-of-the-line Nehalem-class performance at a \$200 price point. We recently awarded it our Recommended Buy honor after seeing it stand up to more expensive CPUs in games and other demanding apps.

For those desiring the best possible performance, the Core i5-750 can be

Clock Speed:	2.66 GHz
Socket:	LGA 1156
L2 Cache:	4 x 256KB
L3 Cache:	8MB
QuickPath Interconnect (QPI):	-
Thermal Envelope:	95W

overclocked to great effect, performing similarly to the \$1,000 Core i7-975 Extreme at its stock settings when pushed a bit.

Read our review of the Core i5-750, [right here](#).

Past the Point of Reason:

With rapidly-increasing prices over \$200 offering smaller and smaller performance boosts in games, we have a hard time recommending anything more expensive than the Core i5-750. This is especially the case since the Core i5-750 can be overclocked to great effect if more performance is desired, easily surpassing the stock clock rate of the \$1,000 Core i7-975 Extreme.

Perhaps the only performance-based justification we can think of for moving up from a Core i5-750 is that LGA 1156 processors have an inherent limit of 16 PCIe lanes for graphics use. This is an architectural detail that the LGA 1156-based Core i5 and Core i7 processors share, so **if a gamer plans to use more than two graphics cards in CrossFire or SLI, the LGA 1366 Core i7-900-series processors are the way to go.**

To summarize, while **we recommend against purchasing any CPU that retails for more than \$200 from a value point of view**, there are those of you for whom money might not be much of an object and who require the best possible performance money can buy. If you're buying several hundred dollars worth of graphics and are worried about a potential platform bottleneck, we recommend the following CPUs:

Best gaming CPU for \$295:

Core i7-930

Core i7-930	
Codename:	Bloomfield
Process:	45nm
CPU Cores/Threads:	4/8
Clock Speed:	2.8 GHz
Socket:	LGA 1366
L2 Cache:	4 x 256KB
L3 Cache:	8MB
QuickPath Interconnect (QPI):	4.8 GT/s
Thermal Envelope:	130W

Intel's Core i7 has proven itself to be the most powerful gaming CPU option available, based on the data we have gathered. The Core i7-930 is a great choice for systems coupled with multiple graphics cards in an SLI or CrossFire configuration.

The motherboards and DDR3 RAM that the i7 architecture requires will bring the total platform cost higher than other systems, but the resulting performance should be worth the purchase price.

While the Core i5 performs similarly, there are a few applications and games that can take advantage of the Core i7 900-series' Hyper-Threading and triple-channel memory features, so spending the extra money on the Core i7-930 can pay off, particularly if you plan to overclock.

In addition, LGA 1156-based Core i5 and Core i7 processors are limited to 16 PCIe 2.0 lanes, but the LGA 1366-based Core i7-900s do not share this limitation, since they get their PCI Express connectivity from the X58 chipset. This makes the LGA 1366 Core i7 processors a good choice for CrossFire or SLI configurations with more than two graphics cards.

Best gaming CPU for \$1090:**Core i7-980X Extreme**

Core i7-980X Extreme	
Codename:	Gulftown
Process:	32nm
CPU Cores/Threads:	6/12
Clock Speed:	3.33 GHz
Socket:	LGA 1366
L2 Cache:	6 x 256KB
L3 Cache:	12MB
QPI:	6.4 GT/s
Thermal Envelope:	130W

This six-core monster has stolen the bragging rights for the world's fastest CPU from the Core i7-975 Extreme. Despite the fact that **most games don't utilize more than three CPU cores**, this is the fastest gaming CPU currently available for purchase as our tests have shown. **Is it worth \$1,090? If you have money growing on trees**, are afraid to try to overclock the Core i7-930, want the ease of overclocking that the Extreme Edition's unlocked multiplier provides, and are willing to pay for the bragging rights of having six CPU cores capable of running 12 threads, then it just might be.

Otherwise, the Core i7-980X Extreme is a hard sell from a value standpoint; you'd be better off investing more in graphics or solid state storage.

CPU Hierarchy Chart

What about this other CPU that's not on the list? How do I know if it's a good deal or not?

This will happen. In fact, it's guaranteed to happen because availability and prices change quickly. So how do you know if that CPU you've got your eye on is a good

buy in its price range?

Here is a resource to help you judge if a CPU is a good buy or not: the gaming CPU hierarchy chart, which groups CPUs with similar overall gaming performance levels into tiers. The top tier contains the highest-performing gaming CPUs available and gaming performance decreases as you go down the tiers from there.

However, a word of caution: this **hierarchy is based on the average performance each CPU achieved in our charts test suite using only four game titles: Crysis, Unreal Tournament 3, World in Conflict, and Supreme Commander**. While we feel this represents an acceptable cross-section of typical gaming scenarios, **a specific game title will likely perform differently**. Some games, for example, will be severely graphics subsystem-limited, while others may react positively to more CPU cores, larger amounts of CPU cache, or even a specific architecture. We also did not have access to every CPU on the market, so some of the CPU performance estimates are based on the numbers similar architectures deliver. Indeed, this hierarchy chart is useful as a general guideline, but certainly not as a gospel one-size-fits-all perfect CPU comparison resource.

You can use this hierarchy to compare the pricing between two processors, to see which one is a better deal, and also to determine if an upgrade is worthwhile. **I don't recommend upgrading your CPU unless the potential replacement is at least three tiers higher. Otherwise, the upgrade is somewhat parallel and you may not notice a worthwhile difference in game performance.**

Gaming CPU Hierarchy Chart	
Intel	AMD
Core i7-965, -975 Extreme, -980X Extreme Core i7-860, -870, -920, -930, -940, -950 Core i5-750 Core 2 Extreme QX9775, QX9770, QX9650 Core 2 Quad Q9650	
Core 2 Extreme QX6850, QX6800 Core 2 Quad Q9550, Q9450, Q9400 Core i5-650, -660, -661, -670	Phenom II X4 Black Edition 955, 965
Core 2 Extreme QX6700 Core 2 Quad Q6700, Q9300, Q8400, Q6600, Q8300 Core 2 Duo E8600, E8500, E8400, E7600 Core i3 -530, -540	Phenom II X4 945, 940, 920, 910, 910e, 810 Phenom II X3 720 Black Edition Athlon II X4 635, 630 Athlon II X3 440, 435
Core 2 Extreme X6800 Core 2 Quad Q8200 Core 2 Duo E8300, E8200, E8190, E7500, E7400, E6850, E6750	Phenom II X4 905e, 805 Phenom II X3 710, 705e Phenom II X2 555 BE, 550 BE, 545 Phenom X4 9950 Athlon II X4 620 Athlon II X3 425
Core 2 Duo E7200, E6550, E7300, E6540, E6700 Pentium Dual-Core E6300, E6500, E6600 Pentium G9650	Phenom X4 9850, 9750, 9650, 9600 Phenom X3 8850, 8750 Athlon 64 X2 6400+
Core 2 Duo E4700, E4600, E6600, E4500, E6420 Pentium Dual-Core E5400, E5300, E5200	Phenom X4 9500, 9550, 9450e, 9350e Phenom X3 8650, 8600, 8550, 8450e, 8450, 8400, 8250e Athlon II X2 240, 245, 250 Athlon X2 7850, 7750 Athlon 64 X2 6000+, 5600+
Core 2 Duo E4400, E4300, E6400, E6320 Celeron E3300	Phenom X4 9150e, 9100e Athlon X2 7550, 7450, 5050e, 4850e/b Athlon 64 X2 5400+, 5200+, 5000+, 4800+
Core 2 Duo E6300 Pentium Dual-Core E2220, E2200, E2210 Celeron E3200	Athlon X2 6550, 6500, 4450e/b, Athlon X2 4600+, 4400+, 4200+, BE-2400
Pentium Dual-Core E2180 Celeron E1600	Athlon 64 X2 4000+, 3800+ Athlon X2 4050e, BE-2300
Pentium Dual-Core E2160, E2140 Celeron E1500, E1400, E1200	

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Summary

There you have it folks: the best gaming CPUs for the money this month. Now all that's left to do is to find and purchase them.

Also remember that the stores don't follow this list.

Things will change over the course of the month and you'll probably have to adapt your buying strategy to deal with fluctuating prices. Good luck!

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