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Ars System Guide: January 2006 edition

3 – Hot Rod

By [Brian Won](#)

Monday, January 30, 2006

Hot Rod

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Motherboard

EPoX EP-9NPA+Ultra

PCI-Express has spread rapidly through the market at all levels. Contemporary AGP-based Athlon 64 chipsets such as nVidia's nForce3-250Gb had a fairly short reign at the top of the heap, as PCI-Express chipsets such as the nForce4 and ATI Xpress200 are now used by almost all major motherboard manufacturers. While PCI-Express is not a necessity at this point, the additional cost of PCI-e is relatively minimal and the better upgrade path it offers is a welcome thing.

Socket 939, PCI-Express, SATA II, gigabit Ethernet, Firewire, eight-channel audio... most major motherboard makers make a board with these features. The pick this time is the Epox [EP-9NPA+Ultra](#), based off the nForce4 Ultra chipset.

Cost: US\$93.50 (1/30/2006) [[Comparison shop for this item](#)]

Processor

AMD Athlon 64 3700+ Retail

Here's the central question for the Hot Rod: how much performance do we *need*? As much as we can afford? A little less in favor of looking for better performance in the other components?

The answer this time is the Athlon 64 3700+ on the San Diego core. It is an excellent value for the money with the complete list of performance-enhancing goodies such as a dual channel memory controller, 1MB L2 cache, and 64-bit support. Overclockers may save a little money with a slightly slower processor such as the 3000+, since most 90nm Athlon64 chips overclock nicely regardless of the speed rating.

Dual core is not yet a performance advantage for most games, but it is affordable enough to consider for the Hot Rod. Those who tend to build a system and leave it alone for a few years should seriously consider the [Athlon64 X2 3800+](#) and a quality heatsink to go with it for optimal future performance.

Enthusiasts may want an aftermarket heatsink such as the Thermalright [XP-120](#) or Zalman CNPS7700AICu for better overclocking than the retail solution, although they should consider that the price of the XP-120 will go a fair way towards a faster processor or faster video card. For the ultimate in cooling, the XP-120 is worth thinking about.

Cost: US\$215 (1/30/2006) [[Comparison shop for this item](#)]

Shop: AMD Athlon 64 3700

Store	Rating	Price
		\$223.53
		\$220.99
		\$241.92

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RAM

2GB PC3200 DDR SDRAM

One gigabyte of memory is the realistic minimum today for a performance user. Most games can eat up 1GB with little trouble, as well as day-to-day multitasking for most power users. Two gigabytes of memory is cheap enough that we now recommend it.

Those seeking the ultimate in overclocking should look for premium lines from Corsair, Mushkin, and Crucial's Ballistix. We save a lot of money by not pushing for the last little bit of that overclock with more standard PC3200 memory, although if you can find it, a few extra dollars for slightly faster CAS2 or CAS2.5 memory does net some performance gains, even at stock speeds.

Be careful when choosing memory for your Athlon 64 boards and run quality, AMD-approved stuff when possible. You'll have fewer headaches that way.

Cost: US\$165 (1/30/2006) [[Comparison shop for this item](#)]

Video

eVGA GeForce 7800GT

Performance increases seem to keep coming and coming in the video card market. Increased parallelism and increasing clock rates have kept ATI and nVidia busy. Last year's release of the nVidia 6800 and ATI X800 chips have meant 18 months of solid performance increases in mid-range and high-end graphics leading to today's NVIDIA 7800 and ATI X1900 chips.

The nVidia 6800GS is an excellent card if the 7800GT is not affordable; at the price point of the Hot Rod, the performance gains that the 7800GT makes are *well worth the money*. If you want to break the bank, go for the new GeForce [7800GTX 512MB](#) or ATI Radeon [X1900XTX](#)—if you can find one.

Those who need less can get by much more modestly and still maintain decent gaming performance. The slower ATI Radeon X800 series and NVIDIA Geforce 6600-series are much cheaper, but more than adequate for 2D work and most gaming.

Cost: US\$295 (1/30/2006) [[Comparison shop for this item](#)]

Sound

Chaintech AV-710

If you intend to game hardcore and nothing else with your Hot Rod, *seriously consider* the [Creative Audigy2ZS](#) or [X-fi](#). Competing cards based on the Envy24PT, Envy24HT, and other chips are excellent in most regards, but none have the 3D surround acceleration abilities that can match the Audigy2ZS and current X-Fi cards from Creative. The M-Audio [Revolution 7.1](#), [Audiotrak Prodigy 7.1](#), and the cheaper Chaintech AV-710 are all solid competitors for contention in the Hot Rod if the performance hit due to less sophisticated 3D sound support is acceptable.

[Audio/Video forum](#) members on Ars Technica are essentially split down the middle between the Creative cards such as the Audigy2 and the non-Creative competition for the Hot Rod. It can swing either way depending on your needs, so if you choose to emulate the Hot Rod recommendation for your own build, do not feel compelled to stick with the M-Audio just because it is *our* recommendation. Again, buy what suits you best, be it the Revolution 7.1, Audiotrak Prodigy 7.1, [Audigy 2ZS](#), or the previous favorite, the Turtle Beach [Santa Cruz](#).

Cost: US\$24.99 (1/30/2006) [[Comparison shop for this item](#)]

Communications

Network card—none (on-board)

Home networking is a given today among computer enthusiasts. High-speed Internet access almost always requires a NIC of some sort. Onboard 10/100/1000 Mbit Ethernet is readily available today.

Wireless cards and access points are affordable and may be of interest to those with wireless devices, or those who simply do not want to run wireless for their new home network. They are not for everyone though and are not a part of the recommendation, but 802.11g may be worth considering for many. Linksys, Netgear, D-Link, and many others do 802.11g gear.

Cost: n/a

Hard drive

Hitachi Deskstar T7K250 250GB

Given frequent rebates and sales on hard drives, keep an eye out for good deals; we have seen very good pricing on drives as large as 300GB at recent sale + rebate prices on several occasions. With the unpredictability of sales and rebates we choose not to consider them here, but as an end-user, *you should!*

For ultimate performance, the 10,000rpm Western Digital [Raptor 150GB](#) is the drive to pick, and it finally has the capacity it needs to satisfy most users. Given that we do have to make some compromises in the Hot Rod, the Raptor's price premium is not quite justifiable in our minds when weighed against the benefits of a faster video card or more memory. However, the Raptor still warrants thinking about.

SATA/300 speeds and excellent performance describe the Hitachi T7K250 and its later 7K400 and 7K500 siblings; the Seagate Barracuda 7200.9 is better for low noise and is known for Seagate's 5-year warranty, while the Samsung Spinpoint P120 is the lowest-noise 3.5" drive around.

Cost: US\$104.99 (1/30/2006) [[Comparison shop for this item](#)]

Shop: Hitachi T7K250 250GB Hard Drive

Store	Rating	Price
	★★★★☆	\$105.00
	★★★★☆	\$155.00
	★★★★☆	\$99.90

[More offers...](#)

Shop: eVGA GeForce 7800GT

Store	Rating	Price

Optical drive

DVD±/CD-RW: NEC ND-3550A

DVD-writers are too cheap not to have, and performance continues to improve every few months. While burn speeds seem to indicate that 16x is the limit, dual-layer performance continues to grow, from 2x to 8x in under 18 months. Quality burners from NEC, BenQ (e.g. DW1640, DW1655), Pioneer (DVR-110), Sony, Lite-On, and others make the choice easy by making all of your choices good ones.

High-speed media, both single and dual layer, is still scarce in the US, but with the relatively small price difference between 8x and 16x units, the extra money for 16x is worth it.

Cost: \$38.95 (1/30/2006) [[Comparison shop for this item](#)]

Shop: NEC ND-3540A

Store	Rating	Price
	★★★★☆	\$36.45
	★★★★☆	\$39.90
	★★★★☆	\$39.99

[More offers...](#)

DVD-ROM: Lite-On 16X DVD-ROM

It doesn't cost much more than a CD-ROM, and you need a second drive for CD-to-CD copying. We would prefer Pioneer's DVD-120 if we could still find it, but the current Sony and Lite-On and most of the competition are pretty close in performance and features.

Cost: US\$21.99 (1/30/2006) [[Comparison shop for this item](#)]

Case

Antec SLK3800B

The move to PCI-Express comes at the same time as the ATX12V specification evolves from 1.3 to 2.0, marking a

Shop: Antec SLK3800B

Store	Rating	Price

shift from the older 20-pin main power connector to a 24-pin connector. A PCI-Express 6-pin (2x3 pin) video power connector also appears on some video cards now. Finding a power supply beefy enough to support these features is doable, but not always easy. Making things even more difficult is the release of updated power supplies under the same part numbers from many manufacturers, including Antec.

Check carefully and you will find that most enthusiast-targeted components do not yet require 24-pin power connectors and that PCI-Express video power connectors may not be required yet. The Antec SLK3800B has a 400W ATX12V 2.0 power supply and represents an excellent value in a chassis setup that meets our needs.

Plenty of other alternatives remain. Those who want more power, more cooling, and more capacity can look at offerings such as the Enermax [EG-495P](#) (485W, ATX12V 2.0) and Sparkle/Fortron-Source [Blue Storm AX500A](#) (500W, ATX12V 2.0) for power, and the extremely-well-done [coolcases](#) D8000 and [mnpctech](#) SC195. Even larger chassis such as the Chenbro Gaming Bomb 2, Lian-Li V1000, Lite-On FS020, and Chenbro Genie exist as well. Going smaller is also a viable option, with chassis such as the Antec [SLK2650](#). *Keep in mind that 350W is plenty for most of today's systems, including the Hot Rod.* The 400W unit in the SLK3800B is there simply because it costs so little more to get it—and it's already overkill.

Cost: US\$88.19 (1/30/2006) [[Comparison shop for this item](#)]

Shop:	Antec SLK3800B	Store	Rating	Price
				\$79.00
	Rating of 0.00 out of 5			\$129.00
				\$79.97

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Monitor

Hyundai L90D+

[Audio/Visual forum](#) members have been big on LCDs for a long while, and prices have dropped considerably from just a few years ago. Response times and color reproduction have improved considerably from even a year ago, with 24-bit, 16.7 million color fast-response time units becoming very affordable, particularly in the last few months as 8ms and 12ms PVA technology panels enter high volume production.

The Hyundai L90D+ is one example of a nice 19" 8ms 16.7 million color PVA panel. The extra cost over a 17" unit may or may not be worthwhile to some, while others may prefer to step up directly to the [20" 2001FP](#), which is a very good monitor for an *excellent* price when it is on sale. Other competitors in the 19" market, competitors such as the [Viewsonic VP930b](#), [Samsung 930B](#), and [Samsung 940T](#) are worth considering, along with the 17" [Viewsonic VP730b](#).

CRTs still have some advantages, namely color gamut and refresh rates. With the monitor being a key interface with your computer, buying something that suits your needs best is critical. The limited color gamut and the response time limitations of LCDs are a very real issue for many. Of the CRTs, the [Viewsonic P95f/P95f+](#), [Samsung 997MB](#), and [NEC FE992](#) are all excellent choices.

Cost: US\$309.99 (1/30/2006) [[Comparison shop for this item](#)]

Speakers

Logitech Z-5300e

5.1 sound is done fairly well by the Z-5300e, particularly for gamers. Those who want something a little different should also look at Altec Lansing, Klipsch, Cambridge Soundworks, and others; around this price, plenty of decent stuff can be found.

If we had to go with a nicer 2 or 2.1 setup we would switch our recommendation to the Diva M200s or something else, perhaps from [Cambridge SoundWorks](#).

Cost: US\$135.99 (1/30/2006) [[Comparison shop for this item](#)]

Mouse

Microsoft Wheel Mouse Optical

Buy what you like! We stick with the de facto two button + wheel recommendation, in this case a Microsoft, and leave the more-capable mice out of the recommendation for the moment.

Gamers should look at the Logitech [G5](#) laser mouse, while those who want the top-of-the-line should look at the [G7](#). The Microsoft Intellimouse with the tilt wheel is worth considering for those who don't like the feel of Logitech mice. Don't forget about wireless mice and keyboards combinations if you do shop for a wireless mouse.

Cost: US\$13.29 (1/30/2006) [[Comparison shop for this item](#)]

Shop:	Logitech G5 Laser Mouse	Store	Rating	Price
				\$62.96
	FREE SHIPPING & NO SALES TAX			\$59.98
	FREE SHIPPING NO SALES TAX			\$59.98

[More offers...](#)

Keyboard

Microsoft Internet Keyboard

If you like natural keyboards, the Microsoft Natural Multimedia Keyboard is a favorite around the Ars Orbiting Headquarters. Older "click" models such as the IBM Model M are favorites for many, while some of us prefer quiet units such as Dell's Quietkey.

Keyboards are personal preference, so we pick a fairly safe conventional recommendation in the Guide, and you can pick and choose as you like from what you prefer—not necessarily what we prefer.

Cost: US\$11.99 (1/30/2006) [[Comparison shop for this item](#)]

Floppy

Mitsumi 1.44MB

A floppy drive is still a basic tool for system construction, especially for pesky new pieces of hardware which aren't supported by the bootable CD you're using. Teac is another name brand we like, but in reality, a random pull from a vendor is likely to be a quality Sony, Teac, Mitsumi, or other unit.

USB flash drives are a viable alternative to a floppy replacement for many. The floppy drive will probably be around for a long time, although some are counting the days until it disappears from the System Guide. Knowing the staying power of old hardware, we most emphatically will *not* predict when that day is.

Cost: US\$4.88 (1/30/2006) [[Comparison shop for this item](#)]

Total price: US\$1523.75, not including shipping and handling (1/30/2006, no OS)

Recommended operating systems

We can recommend them all, because they will all run well on this box, but you do not need them all!

Windows XP Professional x64 Edition

64-bit extensions arrive to Windows XP. Take advantage of performance improvements with programs that support 64-bit instructions enabled on the Athlon 64, Opteron, Xeon, and Pentium 4. When deciding between Windows XP in the (conventional) 32-bit and the newer x64 edition, keep in mind that hardware drivers for x64 edition are less mature and often as a result, slower.

Cost: US\$139 (1/30/2006) [[Comparison shop for this item](#)]

Windows XP Professional

Windows 2000 with a lot more glitz and a few improvements. Gaming support is further improved over Windows 2000, and while some quirks due to the high level of feature integration remain, XP Professional is a choice many want to make.

Cost: US\$128.82 (1/30/2006) [[Comparison shop for this item](#)]

Linux

Any computer enthusiast worth his salt boots more than one OS. Linux is a wonderful choice for the Hot Rod: powerful, cool, and cheap. Take your pick of distributions and go nuts! Ubuntu, Debian, Suse, and Mandrake, try [Linuxiso.org](#) or [Cheapbytes.com](#), or others.

Cost: Free, or around US\$50 for a prepackaged distribution like Debian's (1/30/2006)

FreeBSD

probably better hardware support than other BSDs, which is important for us. Try [FreeBSD.org](#) or other sites such as [BSDMall](#) or [FreeBSDMall](#) to purchase FreeBSD, or FTP it from a site like [FreeBSD.org's FTP](#).

Cost: Free, or around US\$50 for a prepackaged distribution (1/30/2006)

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