BOXX

Insider's Guide to Buying a Digital Media Workstation

How to Research, Evaluate and Purchase a High-End Workstation

BOXX Technologies, Inc. | 1.877.877.BOXX | 512.835.0400 | www.boxxtech.com

Copyright © 2004-2005 BOXX Technologies, Inc. All rights reserved.

Insider's Guide to Buying a Digital Media Workstation

IF YOU ARE A DIGITAL CONTENT CREATOR (Artist, architect, animator, editor, engineer, producer, director, modeler, designer, compositor, game developer, visual effects supervisor, and so on) in the market for a professional, high-end workstation, you may be overwhelmed by the sheer number of vendors and configurations to choose from. How much memory and storage do I need? What graphics card will suit me best? Do I have to compromise performance for upgradeability? Do I buy from an established brand, or am I better served by a smaller, more-focused manufacturer?

This buyer's guide will help you sort through the maze of options by examining what third-party research lists as the five most important considerations you need to take into account when purchasing a new graphics workstation: **Performance, Upgradeability, Compatibility, Support** and **Supplier Reputation**. Each one is important in its own right, but they all add up to an informed buying decision that will increase your productivity as well as your peace of mind.

You may wonder why cost isn't included as a main consideration. The truth is that digital media professionals buy workstations over high-end PCs because, even though they are generally more expensive, the higher reliability and increased performance far outweigh the extra cost of a solid, dependable workstation. The value of a workstation is not in its low cost, but in its ability to help you to do your job better, faster and with less downtime.

Performance

In the world of marketing personal computers, performance is often measured by sheer horsepower – is it one processor or two, what is the speed of the processors, how much memory does the system include, what graphics card is used? The truth is, most vendors have access to the same array of available components and are all on a level playing field. System performance, as measured through industry standard benchmarks, rarely varies from vendor to vendor.

Copyright © 2004 Boxx Technologies, Inc. All rights reserved

In the real world, where performance really matters, digital artists are running digital media software packages that demand processing power and compatibility. Having your workstation configuration perfectly aligned with the applications it will be running is most important factor in determining the true performance (and productivity benefits) of a workstation. The key to this perfect alignment is to work with a workstation manufacturer that understands the vast number of content creation applications and can build your machine with the appropriate number of processors, memory, graphics cards and storage to help you utilize every ounce of performance from your software applications.

Number of Processors:

Some applications in the digital media market are single threaded, meaning the software underlying the user interface is written to take advantage of one processor. Other applications are multi-threaded, meaning the underlying software is written to take advantage of multiple processors and hence derive better performance from a dual-processor workstation. You will need to know if the applications you plan to use are single threaded or multi-threaded. Examples of multi-threaded applications include Discreet 3ds max, Softimage XSI, Newtek Lightwave 3D and Alias Maya.

Real-Life Advice:
A digital artist purchased a workstation from a Tier 1 vendor and discovered it was sluggish when running his primary software package. It turns out that the system configuration included a graphics card which was inadequate for the software application.

Memory:

Most digital media applications are memory hungry. In a 32-bit operating system, the practical memory usage limit is 4GB. For multi-threaded applications the basic recommendation is 2GB of memory, adding more as budget allows. For single-threaded applications the basic recommendation is 1GB of memory, again adding more memory as budget allows.

Graphics Cards:

Choosing a professional workstation-class graphics card can be a daunting task. With multiple vendors, GPUs, RAM configurations, and the recent introduction of PCI-Express, there is a lot of information to digest. You may find yourself wondering why two cards with the same memory configuration have a price difference of several hundred dollars, or if buying a card with more RAM will give you a subsequent performance boost. The questions are many, but the answers are simple.

The best workstation vendors help you select the appropriate graphics card based on the digital media applications you will be using on a daily basis. It is almost as bad to spend too much on a card with features you don't need as it is to get a card that underperforms. When comparing vendors ask about fill rate (faster is better), amount of memory, application-specific and approved drivers and whether the card offers DVI (or, even better, dual-DVI) output for connection to multiple high-end monitors.

Copyright © 2004-2005 BOXX Technologies, Inc. All rights reserved

Storage:

When it comes to storage, not all applications are equivalent. Some require massive amounts of storage for swap files and scratch disks, and others benefit from extremely fast access. Storage requirement considerations include reliability, type of drive, SCSI or SATA, and amount of storage.

Drive reliability is determined by the dependability of the moving parts that comprise the platform. Be sure your vendor uses only high-performance SCSI or SATA drives from a reputable manufacturer. Although for enterprise-level applications SCSI has long been the gold standard, the SATA interface has most of the performance benefits of SCSI, but at a lower price. Recently an independent authority published an in-depth performance comparison between the SATA enterprise to SCSI. Visit the URL below to view the complete story:

http://www.storagereview.com/articles/200406/20040625TCQ_1.html

Finally, for critical data that cannot be easily backed up, a RAID array is recommended. RAID is short for ***R**edundant **A**rray of **I**ndependent **D**isks,* a category of disk drives that employ two or more drives in combination for fault tolerance and performance. RAID 1 is appropriate for a system drive or single data drive configuration. RAID 5 is best for higher performance and large storage volumes.

Upgradeability

Digital media creation is usually project-based. You purchase a workstation today based on the type of work you have to accomplish and the budget you have to spend. Take into consideration the circumstances that may lead you to upgrade your workstation. One scenario is a month or two after you purchase your workstation you land a project that will require more performance and functionality of workstation—will you have the room to increase memory capacity if necessary? In most cases you don't have the benefit of planning for these occurrences. Therefore, you should consider the overall expandability of the workstation you are interested in before purchasing. It will give you peace of mind and increase your system longevity for a much better return on investment.

Real-Life Advice:
Hard-drive storage is cheap these days, but external enclosures add an extra expense that is unnecessary if your machine has a sufficient number of drive bays to accommodate all future storage needs.

The main considerations for upgradeability are memory, storage and power. Many vendors ship workstations with either two or four memory slots, often with all slots occupied. Bigger memory modules can be purchased, but the buyer is often left with extra memory because there is not enough room on the motherboard for expansion. Consider a system with eight or more slots for memory to safeguard your workstation for the future.

Copyright © 2004-2005 BOXX Technologies, Inc. All rights reserved

Storage upgradeability often comes into play when a new project is launched. Most workstations ship with two internal drives, with room to add a few more drives if necessary. Beyond that, the user has to resort to external drives, which are cumbersome, noisy and expensive. A few select manufacturers ship systems with six or more extra internal drive bays for added expandability. Make sure that your system has sufficient accommodation for additional hard drives to accommodate the addition of new software and large files.

Finally, when upgrading components, make sure the power supply is sufficient to handle the additional load. Most vendors ship the bare minimum power supply to handle the installed components and some chassis have a custom structure that won't accept a more robust off-the-shelf power supply. For single-processor systems a 350W power supply is generally sufficient. For dual-processor machines look for 460W or greater to accommodate the needs of any high-end third-party components you may add in the future.

Another consideration that can greatly impact upgradeability is whether or not the motherboard will accept additionally third-party components. Research whether the chassis is large enough to accommodate full-length PCI cards and still leave easy access to the memory slots and drive bays. Also, ask if the warranty will be voided if you add third-party components. Asking the right questions beforehand can save you a great deal of frustration in the future.

Compatibility

Real-Life Advice:
A good benchmark for compatibility is whether software manufacturers allow a vendor to bundle their software packages with the workstations they sell. Only software that has been tested for compatibility and high-performance will be licensed for bundling on a specific workstation. Ask your workstation vendor about bundled software packages.

If the biggest reason professional media artists purchase workstations is increased productivity, then the single greatest threat to productivity is downtime. Workstation reliability depends on the quality of the system. Incompatibility can stem from graphics cards or driver issues, inadequate power supplies, insufficient memory or other third-party components, which can cause you to experience substantial downtime and lost income.

Think of compatibility as certifications, optimization and architecture. The developer of each digital media application you use should maintain a list of certified hardware vendors that meet the minimum system requirements for their application. Look for a workstation manufacturer that builds to these specifications. Additionally, some vendors go the extra mile with performance testing that is not required by the software developers to give you an added performance boost.

Check to see if a vendor's workstations are optimized for the particular components installed in the system. Some drivers work better with specific graphics cards, especially if the card manufacturer has written drivers for their card that perform better than the generic drivers that

Copyright © 2004-2005 BOXX Technologies, Inc. All rights reserved

are often provided by the chipset manufacturer. Make sure the best possible drivers are delivered with your system and that the vendor does not have a "one size fits all" approach to software configurations.

It all comes down to architecture. Many Tier 1 workstation vendors create their own motherboards that are designed to fit into their unique case design. These motherboards offer a minimum set of features and are cost-effective, but they can be incompatible with some third-party components. Make sure the workstation you choose uses an off the shelf, feature-rich motherboard that has been validated with a wide array of third-party components and is optimized for digital media content creation.

Support

Real-Life Advice:
Many Tier-1 vendors outsource their technical support to third parties who may have very little domain expertise with digital media software packages.

Quality support starts with the purchase of your system. It can be measured by the depth of knowledge that a vendor has of the digital media market and should be readily recognizable throughout the organization—from the receptionist, sales and marketing, manufacturing and technical support.

There are a few questions you need to ask yourself to determine whether the vendor considers support a priority. Does the sales representative understand your business? Do they ask you abut the type of work or projects you will be creating or the applications you will be running? Are you offered logical recommendations for system configurations that are within your budget? Do they respect the fact that you will use this system to make your living? When you run into trouble and call technical support, will they understand and be able to successfully troubleshoot the software applications you are using? Is the technical support team in-house, fulfilled by an outside agency or redirected to an overseas call center? And finally, are they empowered to solve your problems quickly, without having to go to a manager or a higher-level company representative?

The best service and support comes from companies with extensive knowledge in digital media creation and editing. Their support personnel understand the day-to-day lives of their customers and can successfully help configure software, drivers and third-party equipment for maximum performance and efficiency.

It is not too hard to determine which companies offer great support. Visit user forums and digital media hardware review sites and read the horror stories people tell, or the rare good experience. Visit user group and industry trade shows and ask your colleagues and friends about their support scenarios and get their recommendations to help you make an informed choice.

Copyright © 2004-2005 BOXX Technologies, Inc. All rights reserved

Supplier Reputation

People buy the brands they know—it's human nature. Billion-dollar companies spend millions getting their name out there, and for the vast majority of consumer-level goods, brand loyalty is a good idea. You know you'll get a decent quality product. Many workstation manufacturers have very well known brands because their consumer-level PCs are in a lot of homes, schools and offices. And for what they do, they tend to be quality products.

But for digital media workstations, the biggest manufacturer is not necessarily the best. Many of the big-name vendors have limited experience in workstation manufacturing, which requires a level of precision that is not a priority on the assembly for many Tier 1 vendors; the workstation line often represents only a small portion of their overall business.

Tier 1 manufacturers also don't offer customers much expertise in the full range of software applications that their customers use on a daily basis, especially as they relate to digital media content creation. It is worthwhile to explore the domain knowledge of the lesser-known vendors to see if their approach is more focused on your specific type of work.

Finally, talk with artists who have used the brands on your short list and see what they have to say about the total experience with the products as well as the companies. It may be that the big-name brands did not live up to their reputation and a smaller, more-focused workstation manufacturer has proven to be the better choice.

Conclusion

The bottom line is that all these considerations add up to a workstation that will allow you to focus on your work, not your hardware. The ideal system for you will be built to derive every ounce of power out of the software applications you move from project to project. You need a system built by a manufacturer with intimate knowledge of the digital media creation market, offering exceptional support before, during and after your purchase. If you can find a vendor who incorporates all of these considerations into their products, you will be comfortable with your purchase and satisfied with your workstation investment for years to come.

Copyright © 2004-2005 BOXX Technologies, Inc. All rights reserved

BOXX Technologies, Inc.
1.877.877.BOXX | 512.835.0400
www.boxxtech.com | sales@boxxtech.com

BOXX is a registered trademark of BOXX Technologies, Inc. registered in the U.S. Patent and Trademark Office.
Other trademarks and registered trademarks herein are the property of their respective owners.