

Mac Pro: Performance and Productivity for Creative Pros

Productivity and workflow efficiency of the Mac Pro with the Adobe Creative Suite 3

Accelerating the Creative Workflow

The Mac Pro is a significant hardware platform for the Macintosh environment. Not only did its arrival mark the completion of Apple's transition to Intel processors, but it also **pushes the limits of processing power by offering a maximum of eight processing cores.**

This coincides with the availability of the Adobe Creative Suite 3, the first native release of Adobe's software to fully take advantage of Apple's Intel-based Macintosh computers. **This means that now all major software applications for creative professionals are running at maximum speed on the new hardware platform,** as well as on older, PowerPC based Macintosh models.

This is an important step. Over the years, creative workflows have evolved considerably, moving from mainly print-centric production environments to multiple media and increasingly diverse output channels. **As a result, the hardware requirements for the creative workstation have grown dramatically** in terms of media diversity as well as concerning quantity and size of the files that need to be managed and processed.

About this Report

This report analyzes the results of a benchmark project conducted by Pfeiffer Consulting for Apple, **comparing performance and workflow productivity of the quad-core and 8-core Mac Pro with earlier Macintosh models** ranging from the dual 1.25GHz Power Mac G4 introduced in 2002 to the Power Mac G5 Quad introduced in late 2005. To find out more about the benchmarks and hardware configurations, please refer to the *Methodology* sidebar on page 3.

The project included system benchmarks as well as performance and productivity measures conducted with Adobe Creative Suite 3 as well as QuarkXPress 7.2. Productivity benchmarks cover **workflow productivity and inter-application integration measures.**

In addition, this report presents data from the **Mac Pro Multi-Processing Benchmarks**, an independent benchmark project conducted by Pfeiffer Consulting that analyzes the impact of multiple processing cores on performance and productivity. (See page 6.)

If you are interested in a detailed discussion of hardware configurations and benchmark methodology, as well as complete results of all benchmarks, please download the complete **Mac Pro—Creative Suite 3 Benchmark Report** at www.pfeifferreport.com.

Major Findings

- Based on the benchmarks conducted for this project, **the Mac Pro offers a clear increase in performance and productivity over the Power Mac G5** and older Macintosh computers.
- Performance of the quad-core and 8-core Mac Pro in widely used applications such as Photoshop CS3 **is significantly better than on the Power Mac G5 Quad** and older Power Mac models.
- **Multiple processors can significantly increase productivity and performance,** even if individual applications are not fine-tuned for parallel processing.

About Pfeiffer Consulting

- Pfeiffer Consulting is an **independent technology research institute and consulting operation** focused on the needs of publishing, digital content production, and new media professionals.
- Download the complete **Mac Pro—Creative Suite 3 Benchmark Report** at www.pfeifferreport.com.

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Mac Pro: Key Performance Data

Major Points

- Based on the benchmarks conducted for this project, **the Mac Pro represents a highly optimized computing platform that increases performance and productivity** over previous Macintosh models.
- The Mac Pro offers a clear increase in performance over the Power Mac G5** and older Macintosh computers in basic system benchmarks, as well as in application-based performance measures.
- Efficiency of key applications such as Photoshop CS3 **is significantly better on the quad-core and 8-core Mac Pro** than on older models.

Performance vs. Productivity

Performance and productivity are completely different notions and rely on different aspects of a computing platform. Processor frequency, memory speed and bandwidth, disk performance and, of course, the operating system all play together to deliver a satisfying and efficient user experience. **Only if all hardware and software components are fine-tuned to work together in an optimal way can we expect maximum efficiency and productivity.**

In other words, number-crunching prowess is not the only factor that counts. A computer can be very powerful at complex computations such as 3D rendering, yet deliver a poor overall productivity profile. **It is for this reason that the benchmarks conducted for this project are comprised of a wide variety of tests and efficiency measures** ranging from aspects such as application launch and file copy to pure performance measures of cutting-edge applications such as Photoshop CS3, as well as workflow productivity measures of common tasks.

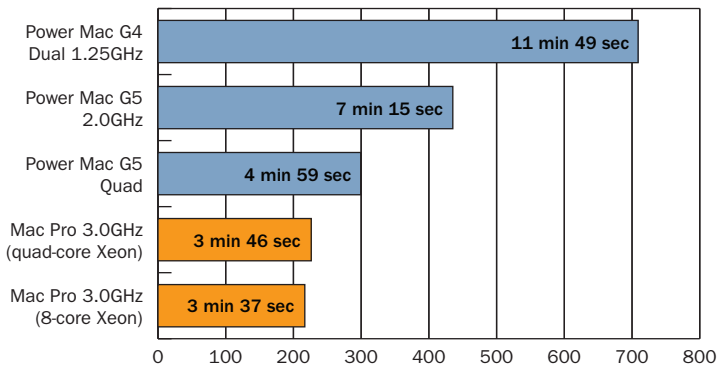
How Does the Mac Pro Stack Up?

The benchmarks conducted for this report compare the 3.0GHz Mac Pro (both quad-core and 8-core configurations were tested) with the Power Mac G5 Quad, as well as older Power Mac models. The test results **clearly show the increase in performance** that the new hardware platform procures.

Photoshop CS3 and InDesign CS3: Key Performance Data

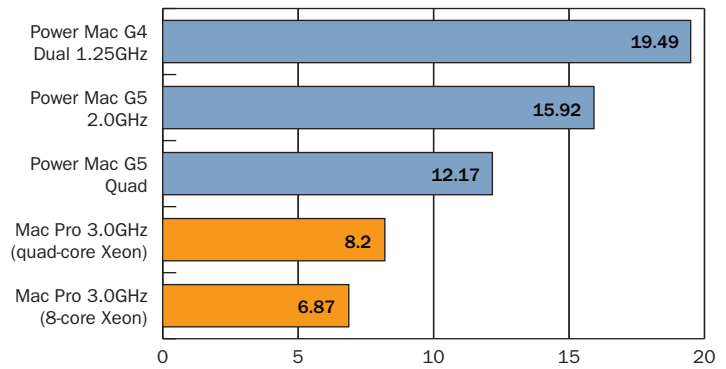
Photoshop CS3 Performance (Total Time)

Time scale in seconds. Shorter is better.



InDesign CS3 Performance: Export PDF

Time scale in seconds. Shorter is better.



Performance increases in frequently performed, time-consuming operations are very important in deadline-driven work environments. The chart on the left shows the cumulated times of all Photoshop performance benchmarks in this benchmark project, including common operations such as unsharp masking,

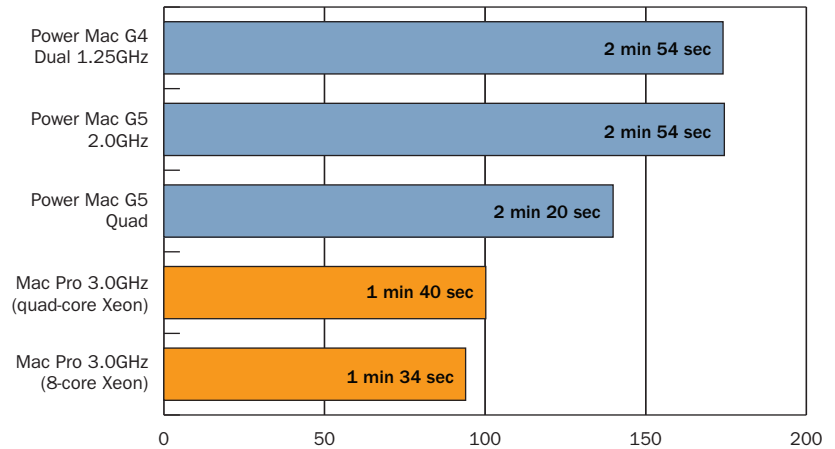
resampling and image rotation performed with files of varying sizes. The chart on the right shows the time necessary to export a PDF file from a complex InDesign CS3 document. Both sets of data show a clear performance increase of both the quad-core and 8-core Mac Pro over older Macintosh models.

Methodology

- This benchmark project was conducted by Pfeiffer Consulting for Apple. It analyzes the performance and productivity of the **quad-core and 8-core 3.0GHz Mac Pro**, as compared with the **2.5GHz Power Mac G5 Quad**, released in the Fall of 2005, the first-generation **dual 2.0GHz Power Mac G5** introduced in 2003 and the **dual 1.25GHz Power Mac G4** introduced in 2002.
- **Productivity benchmarks** were conducted using a set of workflow and application integration measures executed with Adobe Creative Suite 3 and QuarkXPress 7.2.
- **Benchmarks were conducted on standard hardware configurations.** All computers were equipped with 4GB of RAM. The Power Mac G4 was equipped with 2GB of RAM, the maximum amount of RAM supported by this model.
- All systems were equipped with the **standard hard drives shipped with the computer.** All hard drives were reformatted using a single partition before testing.
- All benchmarks were run on a **standard, unmodified installation of Mac OS X 10.4.9 Tiger.**
- For complete results and descriptions of the benchmark methodology, as well as a detailed system configuration, please download the complete benchmark report from <http://www.pfeifferreport.com>.
- For more information, please contact research@pfeifferreport.com.

Basic System Tests (Total Time)

Time scale in seconds. Shorter is better.



Basic system benchmarks measure the time necessary for frequent system tasks such as application launch and re-launch. The Mac Pro is clearly more efficient in these tests: the 8-core model is almost twice as fast as the 2.0GHz Power Mac G5.

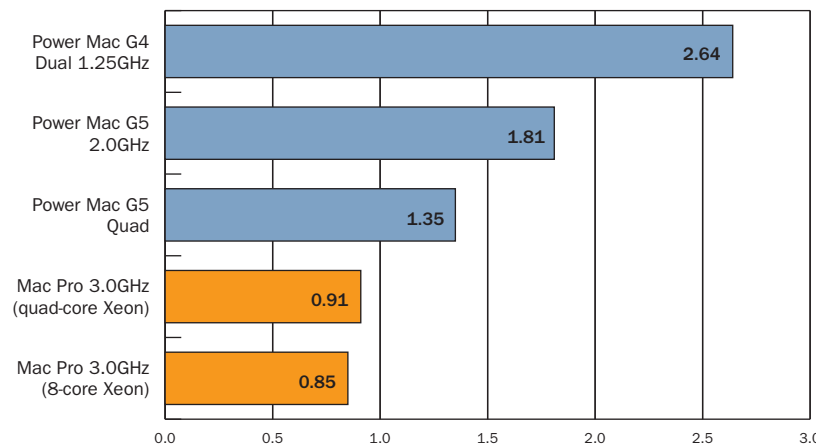
It is interesting to note that **the quad-core Mac Pro is significantly faster than the Power Mac G5 Quad**, the fastest PowerPC based Macintosh model Apple has ever produced.

A good example for this is the Photoshop Filter Index benchmark. Different Photoshop filters draw upon varying hardware aspects; for example, some use mainly floating point calculations, others rely on integer performance, yet others mainly on memory bandwidth. This makes the Photoshop Filter Index a good indicator of the overall performance of a computer. **The quad-core Mac Pro performed significantly better than older models, scoring 0.91 seconds per filter, compared with 1.35 seconds for the Power Mac G5 Quad.**

In other words, Apple's transition of the Macintosh computer to the Intel hardware platform is yielding very tangible benefits in terms of performance and productivity. Combined with the Adobe Creative Suite 3, the quad-core and 8-core Mac Pro offer a measurably faster and more productive hardware platform than older Macintosh models, and **contribute to redefining the creative workflow in terms of efficiency and performance.**

Photoshop Filter Index (Average)

Time scale in seconds. Shorter is better.



The Photoshop Filter Index benchmark measures the time necessary to compute 103 Photoshop filters in succession on a 10MB image file. The times displayed in this chart show the average time per filter.

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Workflow Productivity For Creative Professionals

Major Points

- **Creative workflows have become extremely complex over the years:** The size of the files that are commonly used has grown considerably, and the number of documents in the typical project has soared. This has created a number of new processing and management challenges for users.
- In all workflow benchmarks conducted for this project, **the Mac Pro offers clear productivity advantages** over older Macintosh models.
- The **8-core Mac Pro can offer an efficiency advantage over the quad-core model** in overall workflow productivity.

An Increasingly Complex Work Environment

Over the years, creative workflows have become increasingly complex. Designers now have to routinely handle a variety of different media types, as assignments span a growing number of potential output channels for content and media.

Even seemingly straightforward market segments such as digital imaging have reached a level of maturity that requires a set of sophisticated and diversified tools. **As different media types are increasingly interconnected, the sophistication and the complexity of the workflow-reality creative professionals face in their average project has evolved dramatically.**

As a result, efficiency has to some extent displaced features as the main driver for tool adoption. As everyday deadline pressure increases, **productivity has become a predominant concern for creative professionals around the globe.**

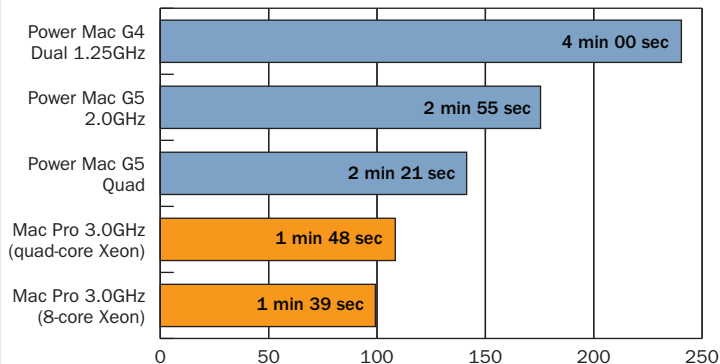
The Challenges

The size of the files we create and use has grown enormously over the years, image files can easily weigh several hundred mega-bytes, a complete project can take several gigabyte of data. **And size is not the only issue,** we also have a seemingly ever-increasing number of documents we need to manage, store, open, sort and access. And all of this needs to be done as fast as possible...

Design Workflow: InDesign CS3 and QuarkXPress 7.2

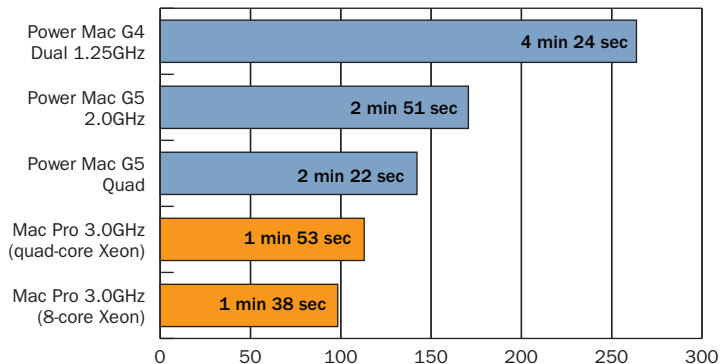
InDesign CS3 Workflow Benchmarks: Total Time

Time scale in seconds. Shorter is better.



QuarkXPress 7.2 Workflow Benchmarks: Total Time

Time scale in seconds. Shorter is better.



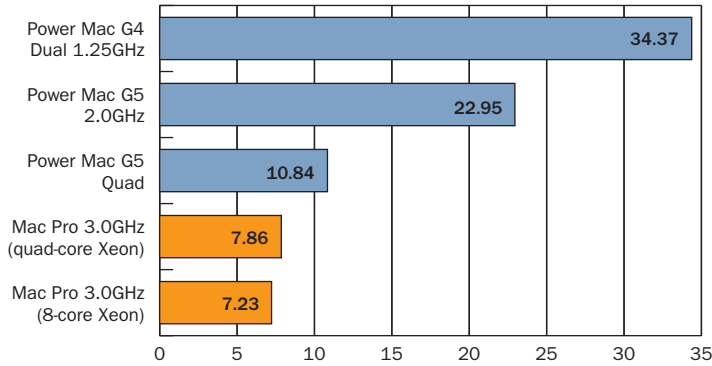
Design workflow benchmarks measured a variety of common workflow steps and procedures, such as the time to execute a Photoshop round-trip between a page layout program and the imaging application. Results for these tests show the speed of the applications as well as the fluidity of the inter-application

integration. Both Mac Pro models were clearly more efficient in these tests than older Macintosh computers, and the 8-core Mac Pro can offer a productivity advantage over the quad-core model. Tests were conducted with InDesign CS3, QuarkXPress 7.2, Photoshop CS3 and Illustrator CS3.

Photoshop Expert Options

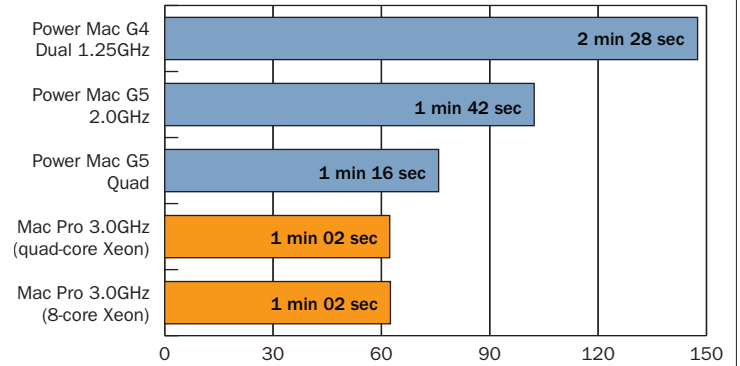
Rotate Canvas (300MB Multi-Layered File)

Time scale in seconds. Shorter is better.



Photoshop CS3 Expert Options (Total Time)

Time scale in seconds. Shorter is better.



Photoshop is one of the most widely used software packages for creative professionals, and offers a considerable breadth of features targeting a wide variety of users. Some of these specialized options have become the backbone of specific creative workflows, and their efficiency can have a strong impact on

the overall productivity. Several such actions or tasks (such as manipulating complex, multi-layered image files, or the conversion of increasingly widely used Raw files from digital cameras) were covered in this benchmark project. The chart on the right shows the total of all expert options tested.

About the Workflow Benchmarks

The workflow efficiency measures conducted for this benchmark project included a variety of common steps and workflow sequences frequently encountered in creative workflows.

Workflow integration benchmarks covered **the time necessary to perform a round-trip between a page layout application and Photoshop CS3 and Illustrator CS3**, measuring the time necessary to switch between programs, open a file, apply a simple modification, save the changes, and switch back to update the design document.

The Basic Imaging Workflow benchmark focuses on efficiency within Photoshop CS3, and measures the time necessary to open a file, resample it to a specific size, apply RGB to CMYK color conversion, perform an Unsharp Mask filter, and save the file under another name.

Workflow efficiency measures include the time necessary for the operator to perform menu selection and other user interface operations required to complete the tasks. This means that **workflow benchmarks cover not only program efficiency, but also measure overall fluidity of the computing environment.**

The Importance of Integration

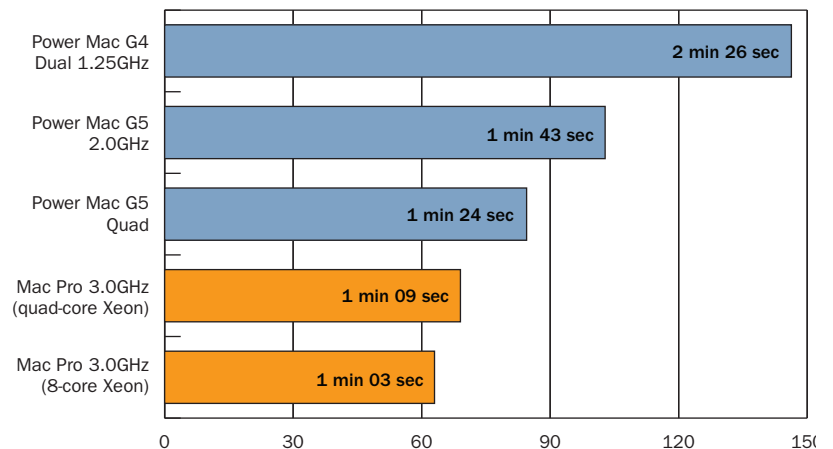
Integration is one of the most important aspects of workflow productivity on any computer: Most creative professionals use a variety of different tools together, rather than individually, moving back and forth between several applications. **In this process, the fluidity and speed of integration is at least as important as the processing speed of one particular program.**

So how does the Mac Pro compare with older Macintosh models in productivity measures where the complexity of the individual task is not the predominant factor? **The workflow benchmarks conducted for this project show that the Mac Pro is clearly more productive than any Power Mac G5:** For example, the 8-core Mac Pro managed to complete the entire suite of InDesign workflow measures in 1 min. 39 seconds, almost twice as fast as the dual 2.0GHz Power Mac G5. Other benchmarks show comparable results: workflow productivity measures for QuarkXPress 7.2 show the Mac Pro as over 2.5 times faster in these tests than the dual 1.25GHz Power Mac G4.

Basic Imaging Workflow

Basic Imaging Workflow Benchmark (Total Time)

Time scale in seconds. Shorter is better.



This benchmark measures the time necessary to complete a set of basic image processing operations common in design and publishing workflows.

The True Potential of Multi-Processing

Major Points

- Multi-processor architectures are **increasingly common** in mainstream computing.
- The operating system's capacity to spread the total workload over several processors **can provide productivity gains even if individual applications are not fine-tuned** for multi-processing.
- The potential of multiple processors is **to allow users to work at full speed while complex tasks are computed in the background**.
- In independent tests, **four complex tasks could be executed on an 8-core Mac Pro in less than one third of the time** that it would take with a single processing core.

Productivity Gains of Multiple Processors

The trend towards multiple processor architectures is becoming pervasive: Dual-core, quad-core and even 8-core architectures are becoming increasingly commonplace in mainstream computing.

But how important are the productivity gains linked to multiple processor architectures really? Today, only some applications take advantage of multi-processing architectures; more developers need to adapt their programs to fully use available processing power.

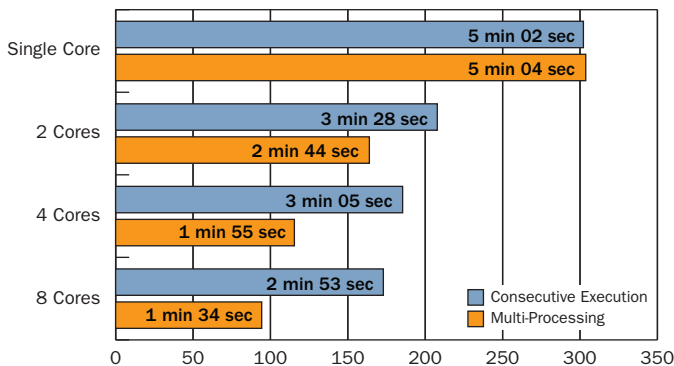
Nevertheless, **modern multi-processor architectures are already offering productivity benefits as soon as several tasks need to be completed in parallel.** If one combines the sheer number-crunching power of multiple processors with operating system services that manage to spread the overall workload over all the available hardware, the productivity increase can be impressive.

In other words, one of the benefits of multi-processing architectures is **to allow the user to continue working at full speed while high performance tasks are running in the background.** For example, a creative professional can continue working at normal speed on a design in one program, while Photoshop is processing a complex filter, and another program is converting hundreds of digital pictures in the background. This kind of work scenario is increasingly common in today's creative workflows, yet **on older hardware, each individual task would have monopolized the available processing power almost completely.**

Key Multi-Processing Measures

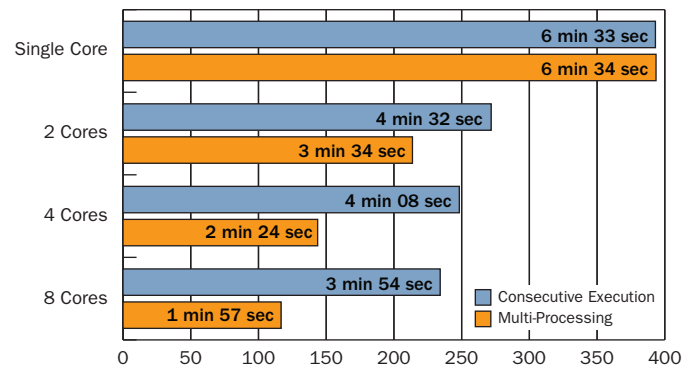
Multi-Processing Benchmark: 3 Tasks

Time scale in seconds. Shorter is better.



Multi-Processing Benchmark: 4 Tasks

Time scale in seconds. Shorter is better.



Several time-consuming tasks (PDF export, Raw conversion, Photoshop filter and video encoding) were executed first consecutively, then in parallel. While on a single-core configuration, execution in parallel takes as long as executing one task after the other, adding processor-cores increases the overall throughput

considerably: On the 8-core Mac Pro, executing all four tasks in parallel took less than on third of the time necessary with a single processor core. For more information on these benchmarks, download the complete Mac Pro Multi-Processing Benchmarks at www.pfeifferreport.com.