


Client:	Apple
Document:	Benchmark Report
Mac Pro - Creative Suite 3 Benchmark Report	
 Pfeiffer Consulting 01001011	

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About the Benchmarks

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About the Benchmark Project

Aim of the benchmark project

This benchmark project was defined to measure the performance and productivity of the quad-core and 8-core Mac Pro, as compared to older Macintosh models ranging from the 2.5GHz Power Mac G5 Quad, released in the Fall of 2005, to the dual 1.25GHz Power Mac G4 introduced in 2002.

The benchmarks conducted for this project were composed of system benchmarks, performance benchmarks as well as workflow productivity measures.

Technical Details

Computer models tested

- Dual 1.25GHz **Power Mac G4** (Maximum RAM: 2GB)
- Dual 2.0GHz **Power Mac G5**
- 2.5GHz **Power Mac G5 Quad**
- 3.0GHz **Mac Pro** (quad-core Xeon)
- 3.0GHz **Mac Pro** (8-core Xeon)

System software and configuration

- The benchmark systems were completely re-initialized prior to the benchmarks, using a **standard installation of Mac OS X Tiger 10.4.9**.
- No external hard drives or other peripherals were connected during benchmarks.
- System functions accessing the network were disabled.
- **Configuration**
 - All benchmarks were conducted on a **standard configuration** workstations completely re-initialized for the benchmarks.
- **Memory**
 - All computers were equipped with **4GB of RAM** unless only lower memory configurations were supported by the hardware.
 - On systems that supported less than 4GB of RAM, **the highest supported amount of RAM** was installed.

Application software

The benchmarks were conducted using a **default installation of the Adobe Creative Suite 3** as well as **QuarkXPress 7.2**

Default settings were used in Photoshop for memory allocation and other settings; after each operation, **Photoshop's undo buffer was purged**.

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Benchmark Methodology

Benchmark Execution

- Benchmarks were executed **in exactly the same order**.
- **Each individual performance measure was conducted once**; after each complete series of benchmarks, the computer was restarted.
- **Three complete sets of benchmarks were conducted** in this fashion; the figures published in this report are **the average of the three individual measures** recorded for each test.

Performance Benchmarks

Basic System Benchmarks

- Application launch (first and second launch after a restart)
- File copy (local): single file, 200MB
- File copy (local): single file, 400MB
- File copy (local): single file, 600MB
- File copy (local): folder 200MB (20,000 small files)
- Open 300MB Tiff file (Photoshop CS3)
- Save 300MB Tiff file (Photoshop CS3)

Photoshop CS3 Performance Benchmarks

- **Standard Imaging Benchmarks**

Photoshop standard imaging benchmarks comprised a variety of common operations, drawing on different aspects of computer performance. All tests were performed on files of three different sizes: 100MB, 200MB, and 400MB. After each test, the Undo buffer was purged.

Functions tested:

- Gaussian Blur (radius 40 pixels)
- RGB-CMYK Conversion
- Unsharp Masking (50%, 10 pixels)
- Resample image (95%)
- Rotate image (3°)

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- **Photoshop CS3 Expert Options**

- Batch-convert 10 Raw images to DNG format using Camera Raw
- Open 300MB multi-layered Photoshop file
- Rotate 300MB multi-layered Photoshop file (3°)
- Save 300MB multi-layered Photoshop file

- **Photoshop Filter Index**

The Photoshop Filter Index consisted in the scripted execution of 103 filters available in Photoshop CS3. Execution was scripted using a Photoshop Action List. The Photoshop Undo buffer was purged after each individual filter.

Workflow Benchmarks

Basic Imaging Workflow Benchmark

The Basic Imaging Workflow consists in the execution of the of a multi-step imaging workflow sequence commonly performed in preparing images for output. The time necessary for the complete workflow sequence was measured. Two series of benchmarks were conducted, one with a 100MB file, another one with a 200MB file.

The operations covered in this workflow benchmark were:

- Open file
- Resample file
- Apply RGB-CMYK color conversion
- Apply Unsharp Masking filter
- Save image file under different name for output

Design Performance and Workflow Benchmarks

Design Performance and Workflow Benchmarks consisted in several common time-consuming tasks and workflow sequences, conducted with both InDesign CS3 as well as QuarkXPress 7.2.

Functions tested:

- Export PDF
- Switch to high-resolution display (complex file)
- Photoshop round-trip, 100MB Tiff file (Photoshop already launched)
- Photoshop round-trip, 200MB Tiff file (Photoshop already launched)
- Photoshop round-trip, multi-layered Photoshop file (Photoshop already launched)
- Illustrator round-trip, complex graphic (Illustrator already launched)

About the Benchmarks

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Complete Results: Tables

Power Mac G4 Dual 1.25GHz	Power Mac G5 Dual 2.0GHz	Power Mac G5 Quad	Mac Pro 3.0GHz (quad-core Xeon)	Mac Pro 3.0GHz (8-core Xeon)
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Basic System Benchmarks

System Startup	42.81	45.89	59.36	29.98	25.97
App Launch A. Illustrator CS3	37.09	35.75	31.52	28.03	22.66
Relaunch	11.35	16.28	7.18	4.07	4.66
App Launch A. Photoshop CS3	13.64	10.27	12.62	7.91	7.66
Relaunch	5.97	4.29	3.87	2.29	2.27
App Launch A. InDesign CS3	29.16	37.15	26.34	20.53	20.26
Relaunch	9.17	16.31	5.38	4.86	4.50
App Launch QuarkXPress	47.63	38.74	41.23	26.00	25.69
Relaunch	20.06	15.67	11.71	6.52	6.23
Total	174.06	174.46	139.84	100.21	93.93
Average	21.76	21.81	17.48	12.53	10.44

File Copy (Local)

200MB File	12.18	7.79	7.89	8.68	5.85
400MB File	20.07	14.10	14.01	14.93	11.03
600MB File	29.09	20.41	17.86	22.14	16.31
Folder Copy (200MB Small Files)	48.02	50.57	23.73	18.74	29.86
Total	109.37	92.86	63.49	64.49	63.05
Average	27.34	23.22	15.87	16.12	15.76

File Open/Save

Open 200MB File	12.18	8.00	6.88	6.46	5.23
Save 200MB File	9.73	6.09	5.21	5.16	4.83
Open 400MB File	19.01	12.39	11.38	10.06	8.53
Save 400MB File	17.92	10.28	8.08	8.56	8.19
Total	58.84	36.76	31.54	30.25	26.78
Average	14.71	9.19	7.88	7.56	6.69

Photoshop CS3 Performance (100MB File)

Gaussian Blur (radius 40)	6.93	4.35	2.60	1.75	1.73
RGB -> CMYK	5.89	3.90	2.03	1.67	1.66
Unsharp Mask (50%, 10 pix)	6.89	3.63	2.00	1.49	1.29
Lighting Effects (default values)	5.22	3.23	2.06	2.14	1.84
Resample 150%	6.00	3.19	2.30	1.95	2.03
Total	30.94	18.30	10.99	9.00	8.54
Average	6.19	3.66	2.20	1.80	1.71

Photoshop CS3 Performance (200MB File)

Gaussian Blur (radius 40)	12.02	7.13	3.83	2.56	2.71
RGB -> CMYK	10.48	6.90	3.41	2.65	2.70
Unsharp Mask (50%, 10 pix)	12.63	6.71	3.43	2.28	2.38
Lighting Effects (default values)	9.24	5.28	3.07	3.52	2.98
Resample 150%	12.43	6.46	4.22	3.56	3.59
Total	56.79	32.48	17.96	14.58	14.36
Average	11.36	6.50	3.59	2.92	2.87

Photoshop CS3 Performance (400MB File)

Gaussian Blur (radius 40)	28.47	13.71	7.46	4.78	5.03
RGB -> CMYK	19.63	12.78	5.82	4.73	4.84
Unsharp Mask (50%, 10 pix)	31.35	12.79	6.55	4.12	4.21
Lighting Effects (default values)	18.19	10.12	5.63	6.65	5.50
Resample 150%	50.06	10.65	6.90	6.16	6.84
Total	147.71	60.04	32.36	26.43	26.43
Average	29.54	12.01	6.47	5.29	5.29

Time scale in seconds. Shorter is better.

Complete Results: Tables

Power Mac G4 Dual 1.25GHz	Power Mac G5 Dual 2.0GHz	Power Mac G5 Quad	Mac Pro 3.0GHz (quad-core Xeon)	Mac Pro 3.0GHz (8-core Xeon)
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Photoshop CS3 Performance: Expert Options

Open Multi-layered file (300MB)	21.49	16.31	13.88	10.13	9.99
Rotate Canvas Multi-layered file (300MB)	34.37	22.95	10.84	7.86	7.23
Save Multi-layered file (300MB)	91.68	63.04	51.13	44.32	45.28
RAW Conversion (10*13MP file)	54.02	36.32	23.31	20.35	17.69
Photoshop CS3 Expert Options: Total	147.54	102.30	75.84	62.30	62.50
Average	36.89	25.58	18.96	15.58	15.62

Photoshop CS3 Filter Index (10MB File)

Compute all PS filters (Script)	271.94	185.92	138.88	93.63	87.30
Average	2.64	1.81	1.35	0.91	0.85

Photoshop CS3 Performance (all tests)

Total	708.94	435.36	299.34	226.30	216.81
Average	5.81	3.57	2.45	1.85	1.78

Basic Imaging Workflow

100MB File	62.16	42.52	38.91	31.46	27.96
200MB File	84.16	60.32	45.60	37.60	35.03
Total	146.31	102.83	84.50	69.05	63.00
Average	73.16	51.42	42.25	34.53	31.50

InDesign CS3 Workflow Benchmarks

High-resolution Preview	5.26	3.14	2.93	2.13	2.01
Photoshop CS3 Round-trip (100MB File)	27.22	17.51	16.11	15.00	12.24
Photoshop CS3 Round-trip (200MB File)	32.04	22.90	23.47	19.10	14.61
Photoshop CS3 Round-trip (Multi-layered File)	48.18	34.77	24.04	21.84	20.43
Illustrator CS3 Round-trip	108.26	81.21	62.64	42.15	43.07
InDesign CS3 Performance: Export PDF	19.49	15.92	12.17	8.20	6.87
Total	240.44	175.45	141.36	108.42	99.24
Average	40.07	29.24	23.56	18.07	16.54

QuarkXPress Workflow Benchmarks

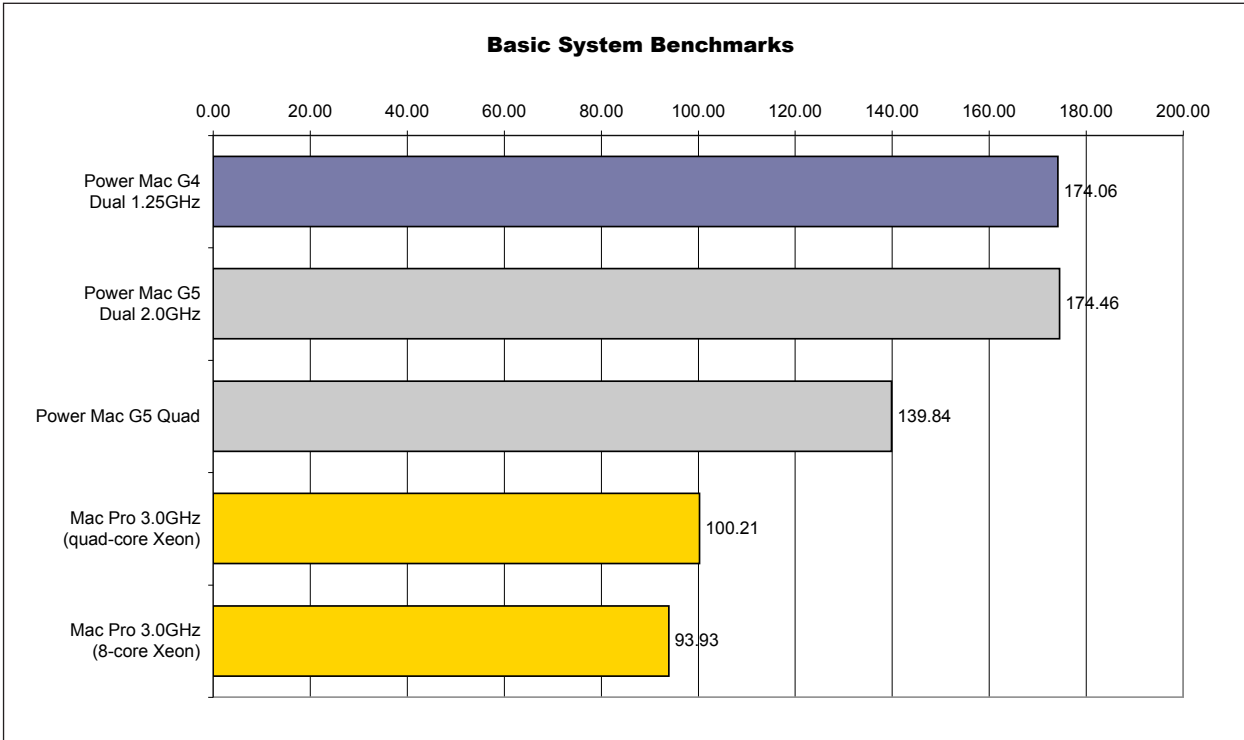
High-resolution Preview	10.50	6.14	5.61	3.68	3.44
Photoshop CS3 Round-trip (100MB File)	23.95	13.13	12.32	13.13	10.01
Photoshop CS3 Round-trip (200MB File)	31.09	17.05	18.50	18.45	13.12
Photoshop CS3 Round-trip (Multi-layered File)	48.35	28.59	22.54	20.17	17.98
Illustrator CS3 Round-trip	112.46	78.75	60.70	38.96	37.97
Export PDF	37.36	26.99	22.51	18.55	15.78
Total	263.71	170.64	142.18	112.95	98.30
Average	43.95	28.44	23.70	18.82	16.38

Time scale in seconds. Shorter is better.

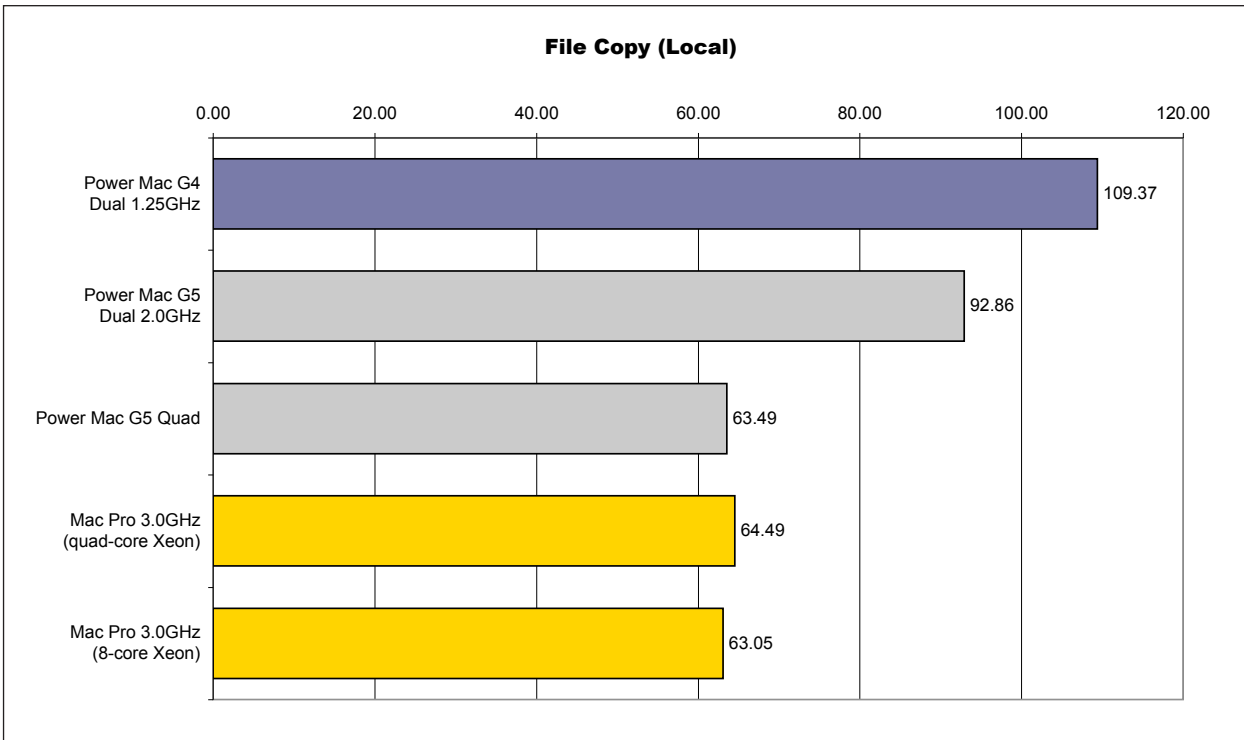
Complete Results: Tables

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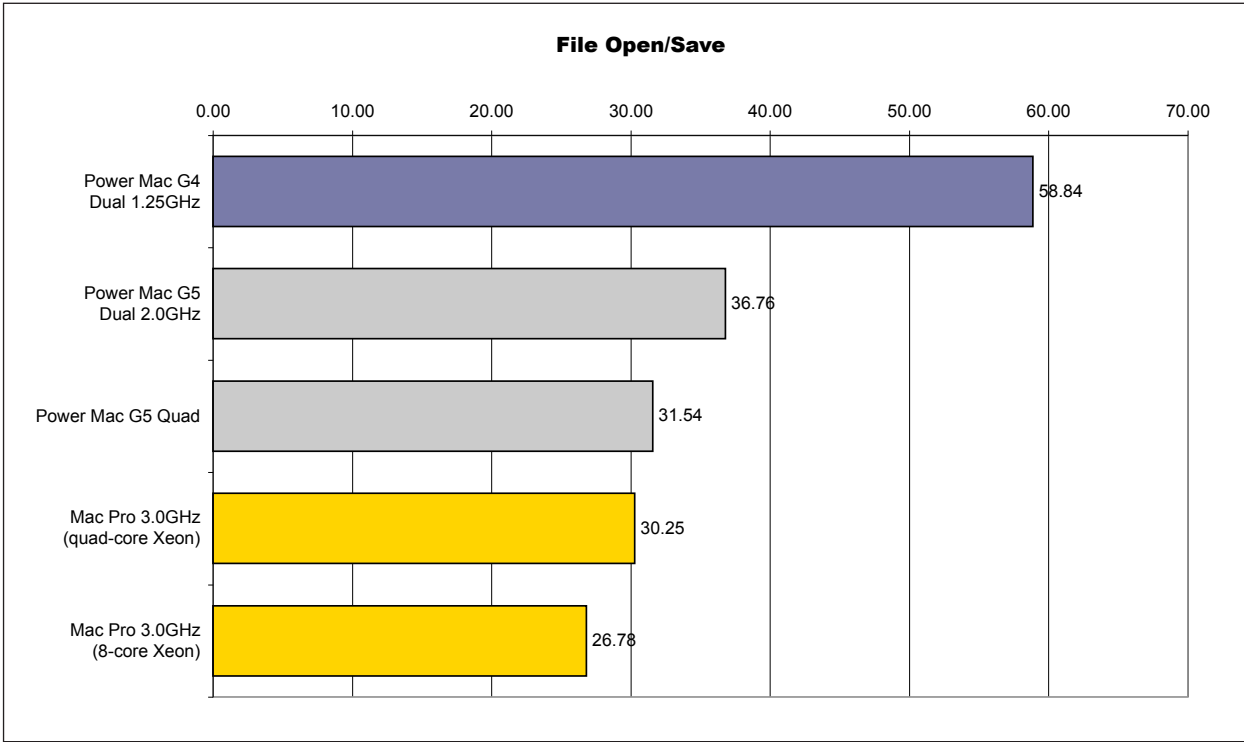
Charts: Performance Benchmarks



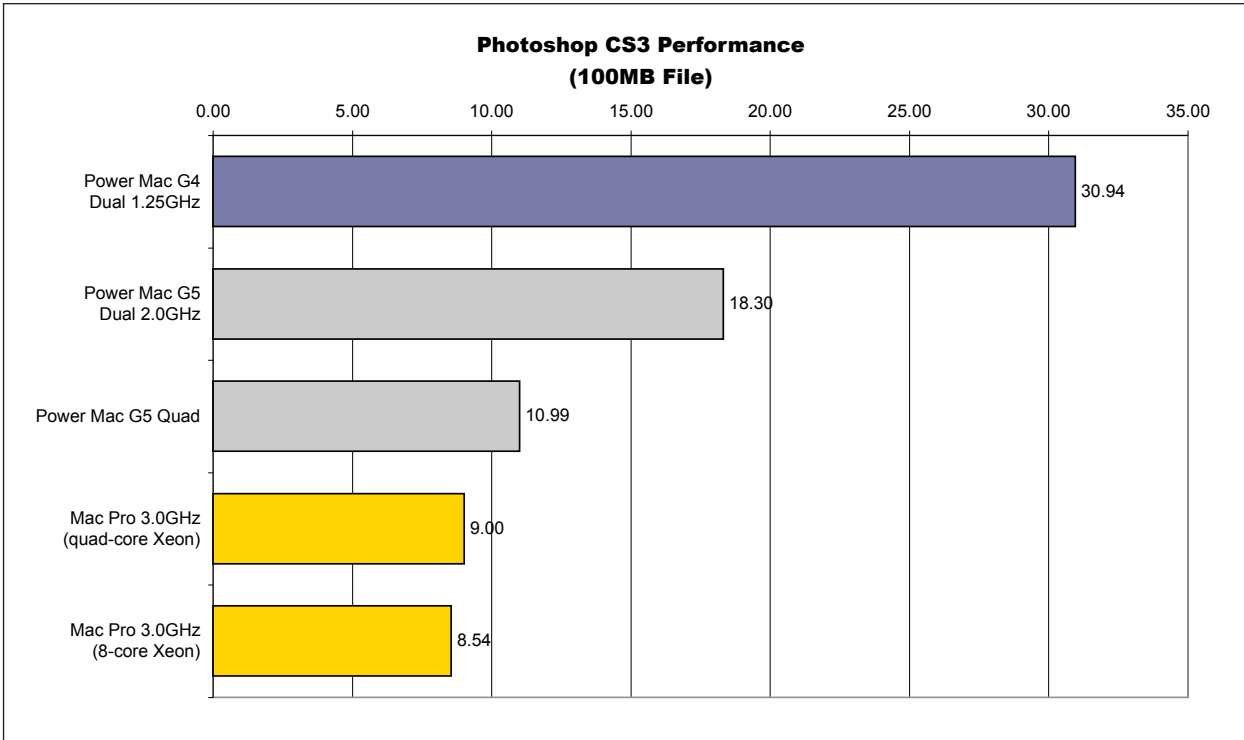
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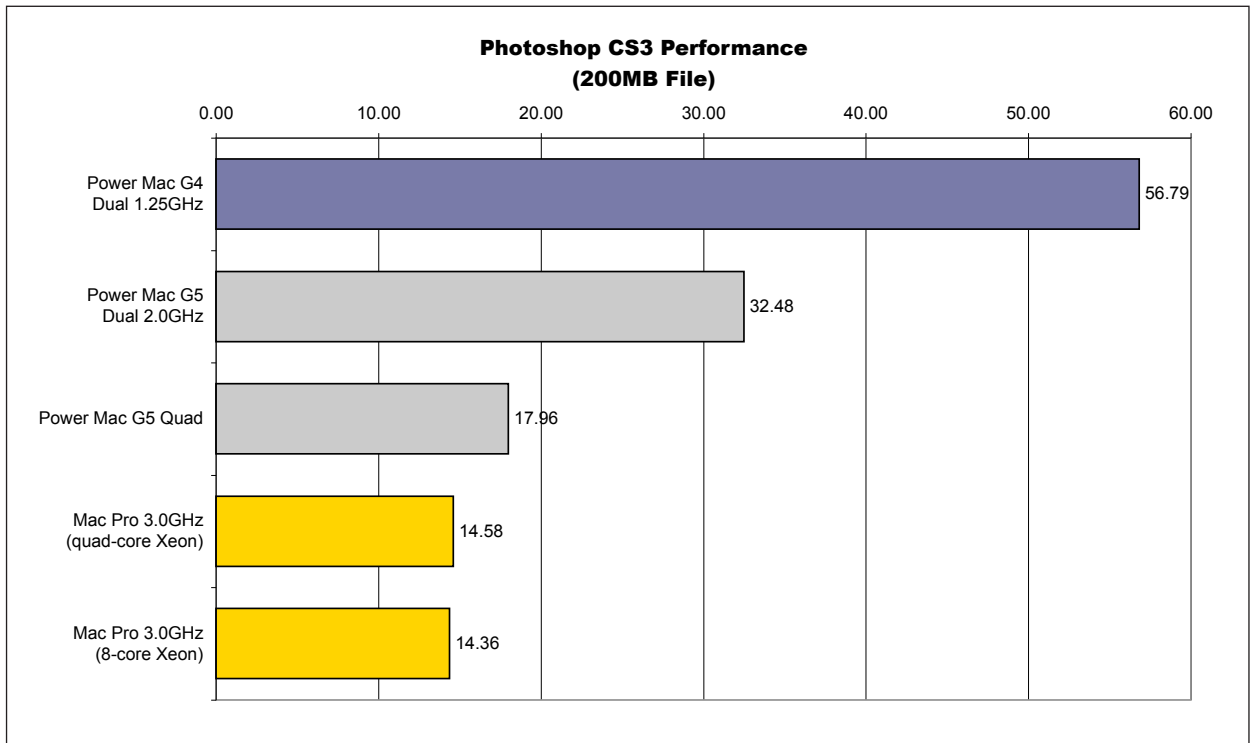
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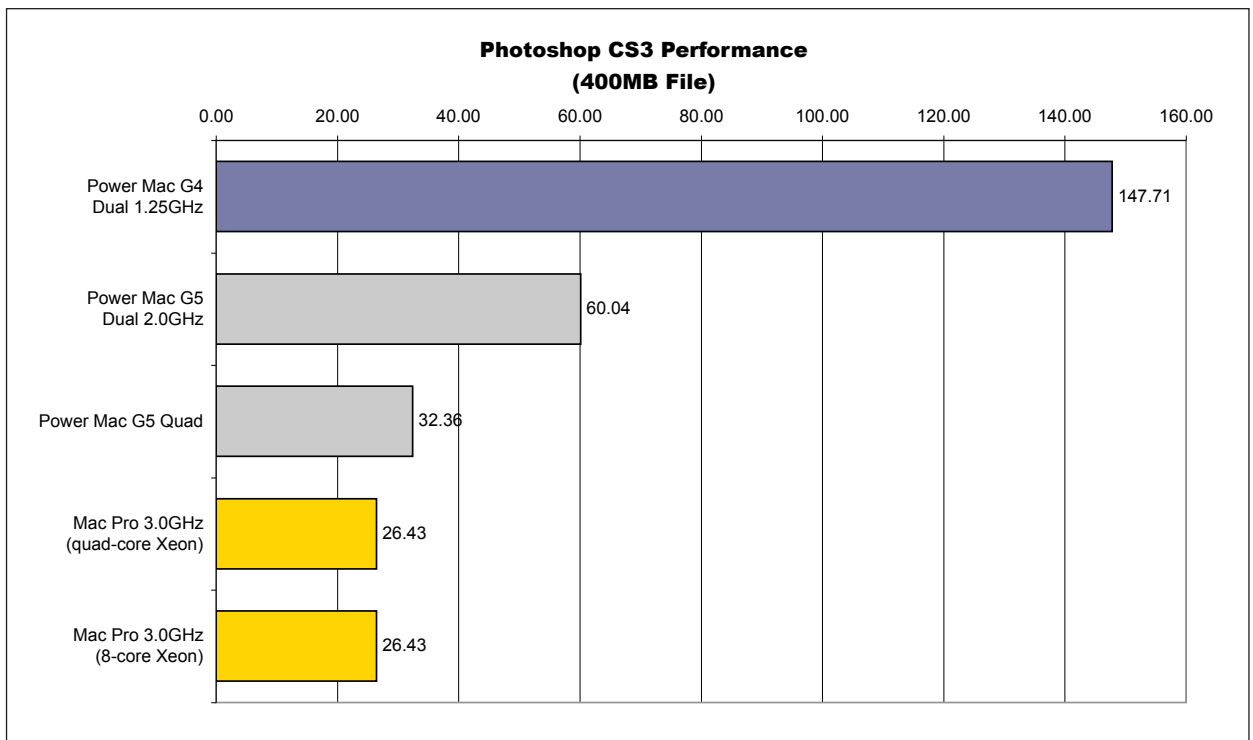
Time scale in seconds. Shorter is better.



Time scale in seconds. Shorter is better.

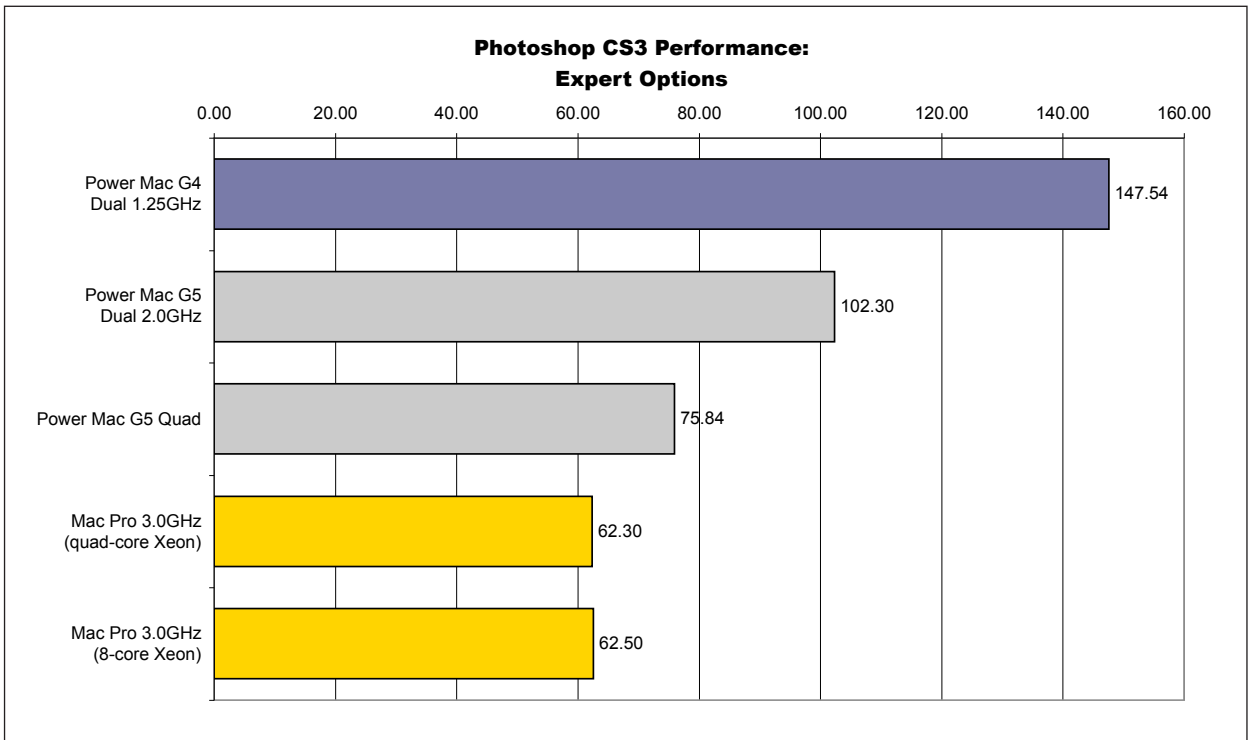


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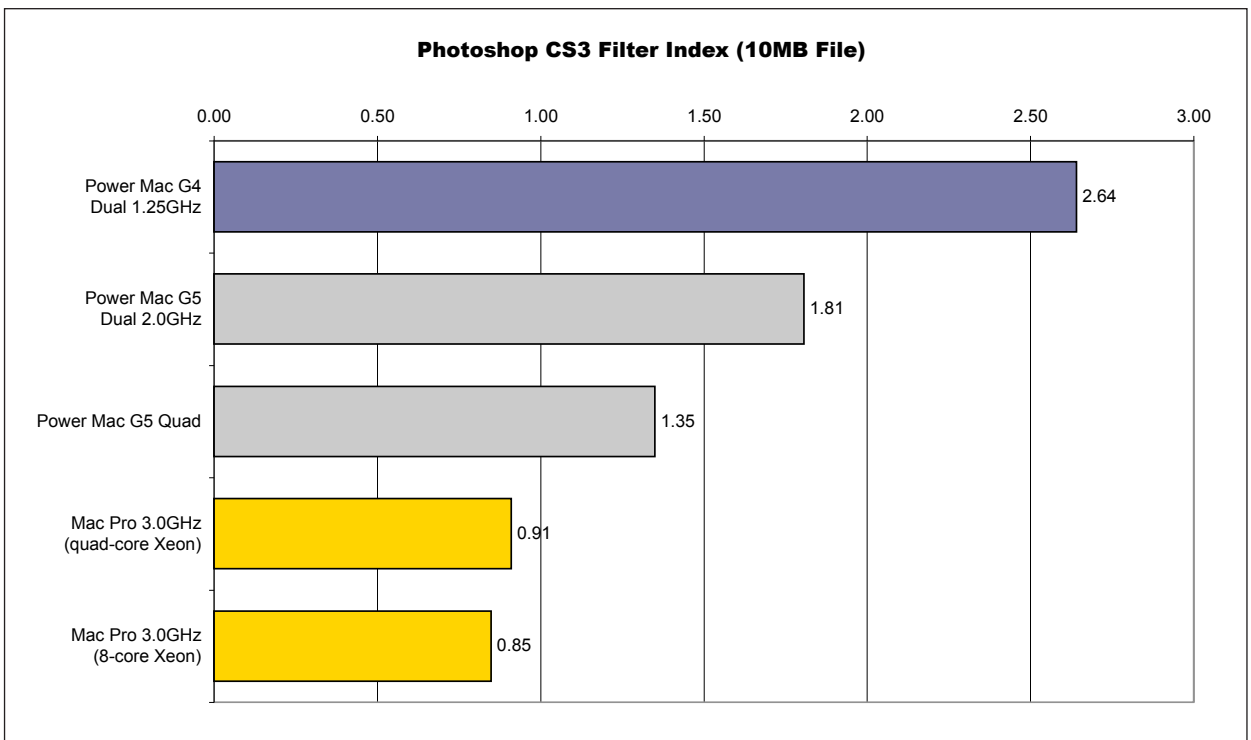


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Charts: Performance Benchmarks

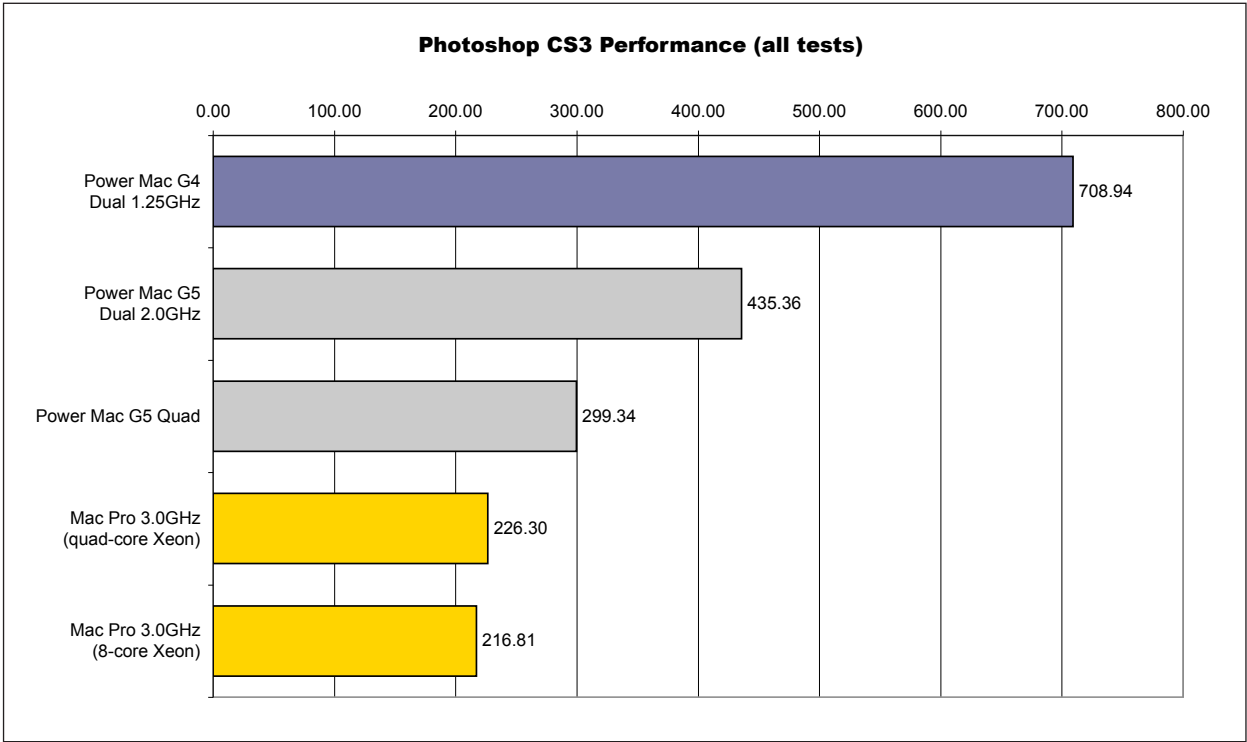


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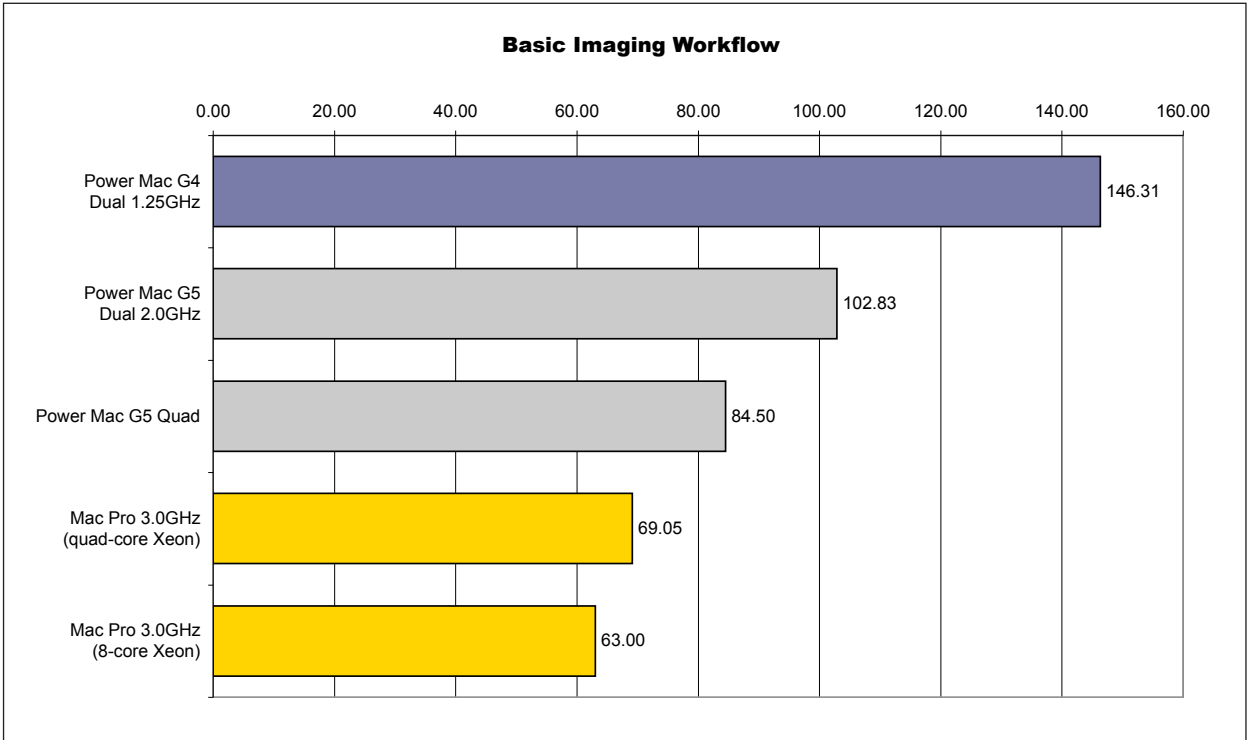
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Charts: Performance Benchmarks

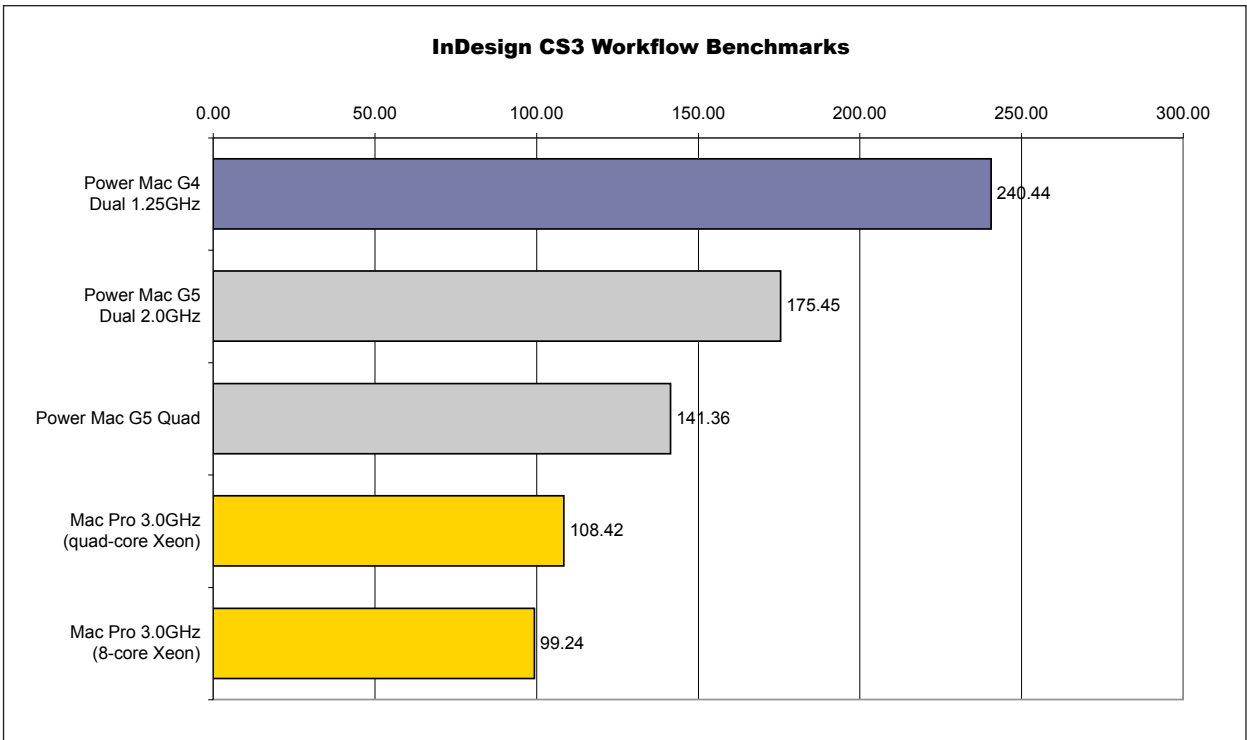


Time scale in seconds. Shorter is better.

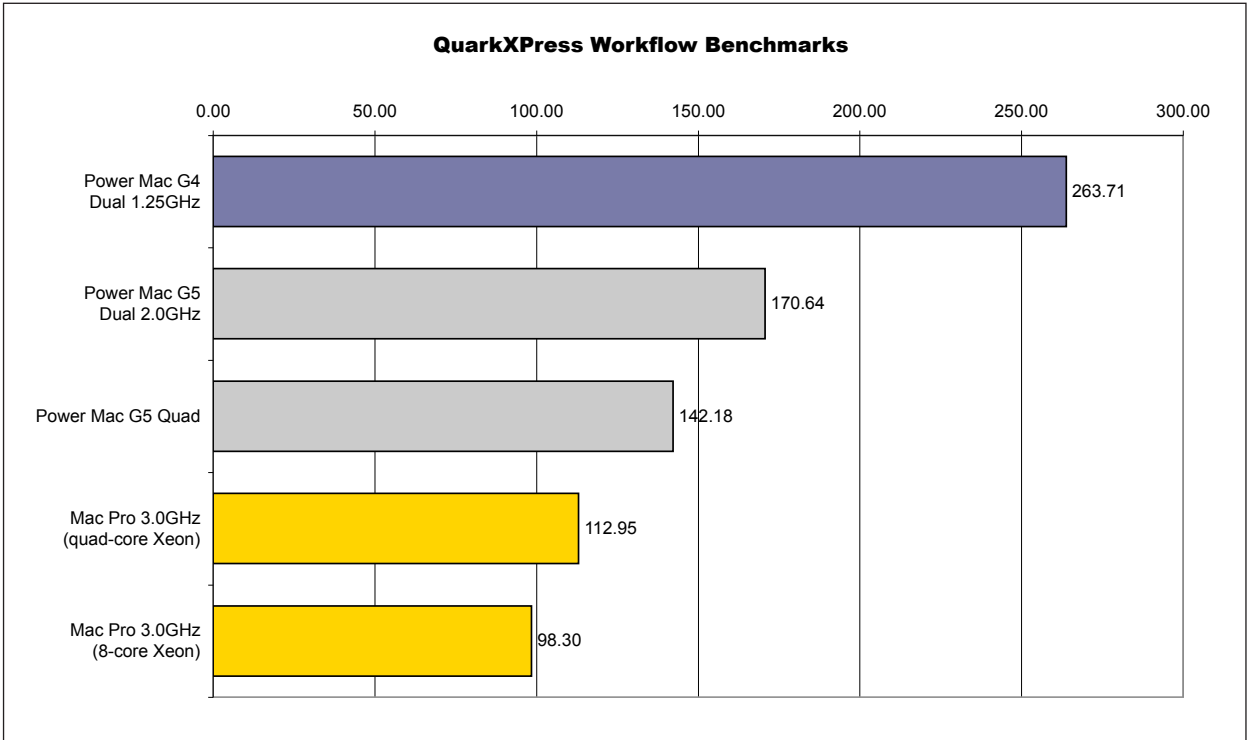
Charts: Workflow Benchmarks



Time scale in seconds. Shorter is better.



Time scale in seconds. Shorter is better.



Time scale in seconds. Shorter is better.