


Client:	Apple
Document:	Benchmark Report
Mac Pro 2008 Benchmark Report	
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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 8-core 2.8GHz and 3.2GHz Mac Pro released in early 2008, as compared with the quad-core and 8-core 3.0GHz Mac Pro released in 2006 and 2007, 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.

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, first generation)
- 3.0GHz **Mac Pro** (8-core first generation)
- 2.8GHz **Mac Pro** (8-core, early 2008)
- 3.0GHz **Mac Pro** (8-core, early 2008)

System software and configuration


- The benchmark systems were completely re-initialized prior to the benchmarks, using a **standard installation of Mac OS X Leopard 10.5.1**.
- 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 7.3.1**.

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 PSD 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 7.3.1.

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)

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Complete Results: Tables

	Power Mac G5 Dual 2.0GHz	Power Mac G5 Quad	Mac Pro 3.0GHz 4-core first gen.	Mac Pro 3.0GHz 8-core first gen.	Mac Pro 2008 2.8GHz 8-core	Mac Pro 2008 3.2GHz 8-core
Basic System Benchmarks						
System Startup	56.60	75.61	36.91	66.40	32.22	30.08
Application Launch Adobe Illustrator CS3	32.67	30.40	25.81	24.83	22.59	21.77
Relaunch	11.48	7.88	5.62	5.00	5.02	4.28
Application Launch Adobe Photoshop CS3	12.08	11.49	8.48	7.59	7.14	7.06
Relaunch	5.01	3.60	2.79	2.10	2.29	2.02
Application Launch Adobe InDesign CS3	24.77	25.93	19.38	19.52	17.91	17.23
Relaunch	9.61	7.35	5.18	4.63	4.84	4.20
Application Launch QuarkXPress 7.3.1	29.88	25.43	17.50	17.24	15.77	15.54
Relaunch	13.39	9.75	5.31	5.03	5.19	4.60
Total	138.88	121.83	90.08	85.93	80.75	76.68
Average	17.36	15.23	11.26	10.74	10.09	9.59

File Copy (Local)

200MB File	8.54	9.35	8.53	7.53	7.76	7.32
400MB File	15.91	15.91	12.43	12.64	12.99	12.64
600MB File	23.24	23.53	20.06	18.77	20.27	19.63
Folder Copy (200MB Small Files)	47.43	30.75	28.29	28.93	25.71	25.67
Total	95.12	79.54	69.31	67.87	66.73	65.25
Average	23.78	19.89	17.33	16.97	16.68	16.31

File Open/Save

Open 200MB File	9.56	9.85	6.37	6.58	6.53	6.34
Save 200MB File	6.34	5.76	4.55	4.33	4.34	3.99
Open 400MB File	10.93	10.90	7.62	9.00	9.02	8.37
Save 400MB File	11.19	10.08	6.86	7.19	7.43	6.96
Total	38.02	36.60	25.40	27.11	27.31	25.66
Average	9.51	9.15	6.35	6.78	6.83	6.42

Photoshop CS3 Performance (100MB File)

Gaussian Blur (radius 40)	3.62	2.07	1.56	1.41	1.25	1.21
RGB -> CMYK	4.22	2.12	1.80	1.64	1.50	1.44
Unsharp Mask (50%, 10 pix)	3.70	2.22	1.67	1.32	1.36	1.14
Lighting Effects (default values)	3.37	2.07	2.18	1.96	1.78	1.53
Resample 150%	2.88	2.12	1.94	1.86	1.44	1.39
Total	17.79	10.60	9.15	8.19	7.34	6.71
Average	3.56	2.12	1.83	1.64	1.47	1.34

Photoshop CS3 Performance (200MB File)

Gaussian Blur (radius 40)	6.27	3.57	2.38	2.24	1.92	1.74
RGB -> CMYK	6.73	3.27	2.72	2.68	2.41	2.22
Unsharp Mask (50%, 10 pix)	6.55	3.53	2.37	2.13	1.97	1.70
Lighting Effects (default values)	5.32	3.22	3.69	3.11	2.58	2.43
Resample 150%	4.88	2.90	3.11	2.82	2.32	2.30
Total	29.76	16.50	14.27	12.98	11.20	10.39
Average	5.95	3.30	2.85	2.60	2.24	2.08

Photoshop CS3 Performance (400MB File)

Gaussian Blur (radius 40)	12.36	6.33	4.28	3.98	3.35	3.23
RGB -> CMYK	12.87	5.71	5.01	4.80	4.27	3.87
Unsharp Mask (50%, 10 pix)	13.24	6.55	3.88	3.63	3.36	2.89
Lighting Effects (default values)	10.07	5.51	6.63	5.70	4.76	4.30
Resample 150%	7.50	5.13	5.70	5.20	4.59	4.43
Total	56.03	29.23	25.49	23.30	20.32	18.71
Average	11.21	5.85	5.10	4.66	4.06	3.74

Time scale in seconds. Shorter is better.

Complete Results: Tables

	Power Mac G5 Dual 2.0GHz	Power Mac G5 Quad	Mac Pro 3.0GHz 4-core first gen.	Mac Pro 3.0GHz 8-core first gen.	Mac Pro 2008 2.8GHz 8-core	Mac Pro 2008 3.2GHz 8-core
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Photoshop CS3 Performance Expert Options

Open Multilayered file (300MB)	14.54	11.88	10.58	9.56	10.71	9.55
Rotate Canvas Multilayered file (300MB)	17.90	9.93	8.01	7.01	6.27	5.70
Save Multilayered file (300MB)	62.12	46.67	39.70	39.31	41.22	35.65
RAW Conversion (10*13MP file)	64.80	40.56	29.45	27.31	25.37	23.44
Total	94.56	68.48	58.29	55.88	58.20	50.89
Average	23.64	17.12	14.57	13.97	14.55	12.72

Photoshop CS3 Filter Index (10MB File)

Compute all PS filters (Script)	181.20	128.91	87.91	82.55	84.47	74.07
Average	1.76	1.25	0.85	0.80	0.82	0.72

Photoshop CS3 Performance (all tests)

Total	367.48	235.73	174.28	161.35	154.97	139.03
Average	3.06	1.96	1.45	1.34	1.29	1.16

Basic Imaging Workflow

100MB File	40.49	40.74	37.61	34.22	35.13	31.17
200MB File	61.18	49.87	44.59	41.25	38.16	33.79
Total	101.67	90.62	82.20	75.46	73.29	64.96
Average	50.84	45.31	41.10	37.73	36.65	32.48

InDesign CS3 Workflow

High-resolution Preview	3.60	2.77	2.21	2.16	2.04	1.83
Photoshop Round-trip (100MB File)	16.42	13.95	12.59	11.95	10.90	10.11
Photoshop Round-trip (200MB File)	23.70	19.49	16.56	15.62	14.81	13.70
Photoshop Round-trip (Multi-layered File)	31.16	25.06	21.79	20.50	19.45	17.63
Illustrator Round-trip	79.26	61.82	41.37	39.47	40.47	34.03
Export PDF	24.87	16.49	11.32	11.27	11.32	10.19
Total	179.00	139.57	105.83	100.97	99.00	87.48
Average	29.83	23.26	17.64	16.83	16.50	14.58

QuarkXPress 7.3.1 Workflow

High-resolution Preview	26.47	26.21	17.26	17.24	14.68	15.48
Photoshop Round-trip (100MB File)	16.94	13.91	11.62	12.09	11.37	9.75
Photoshop Round-trip (200MB File)	19.74	17.92	15.03	13.65	13.34	11.55
Photoshop Round-trip (Multi-layered File)	31.07	26.98	24.39	23.55	21.98	20.30
Illustrator Round-trip	72.79	59.63	42.41	42.43	41.10	35.13
Export PDF	120.94	111.57	78.79	78.60	80.08	74.10
Total	287.96	256.22	189.49	187.57	182.54	166.30
Average	47.99	42.70	31.58	31.26	30.42	27.72

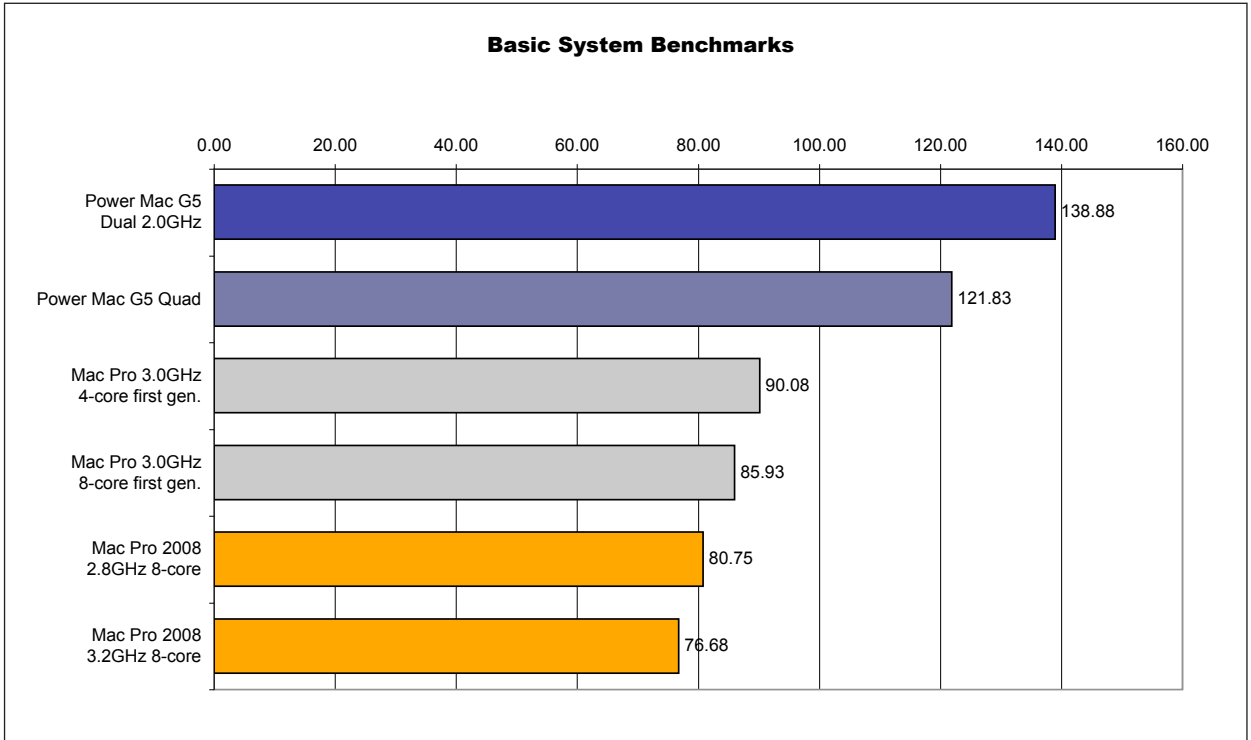
Workflow Productivity (all tests)

Total	568.63	486.41	377.53	364.00	354.83	318.74
Average	40.62	34.74	26.97	26.00	25.35	22.77

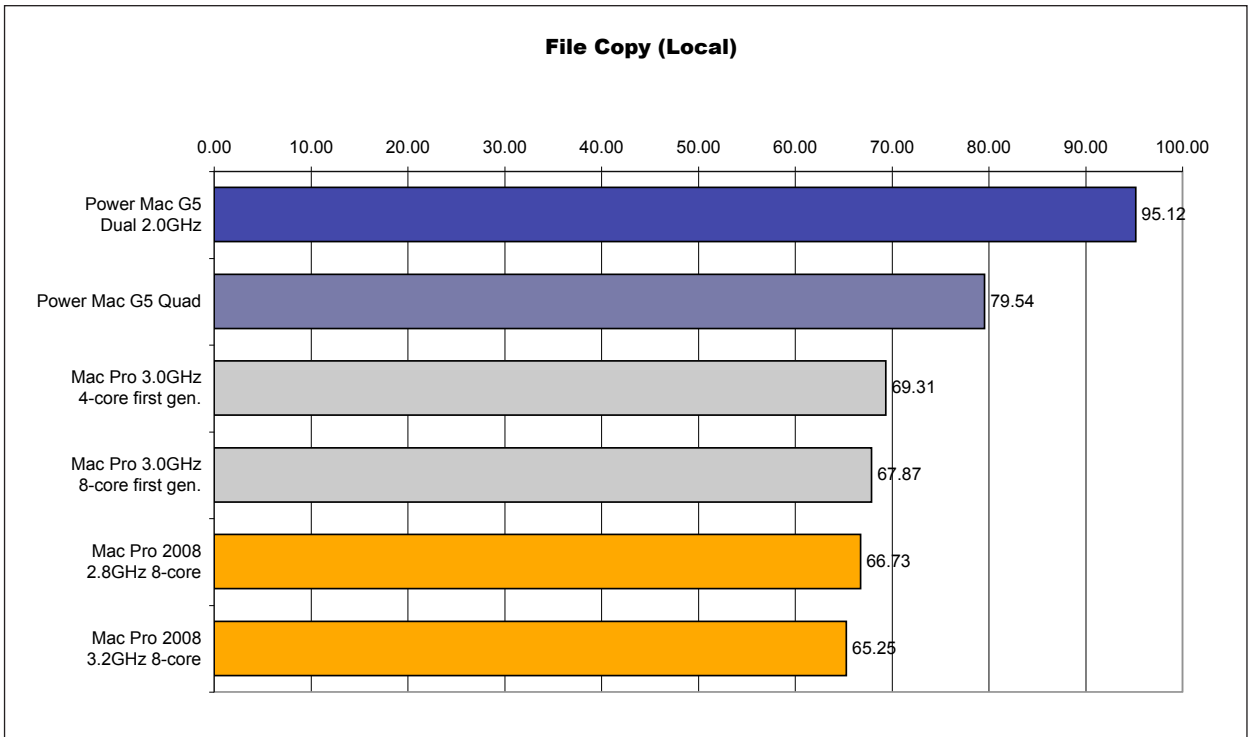
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Charts: Performance Benchmarks

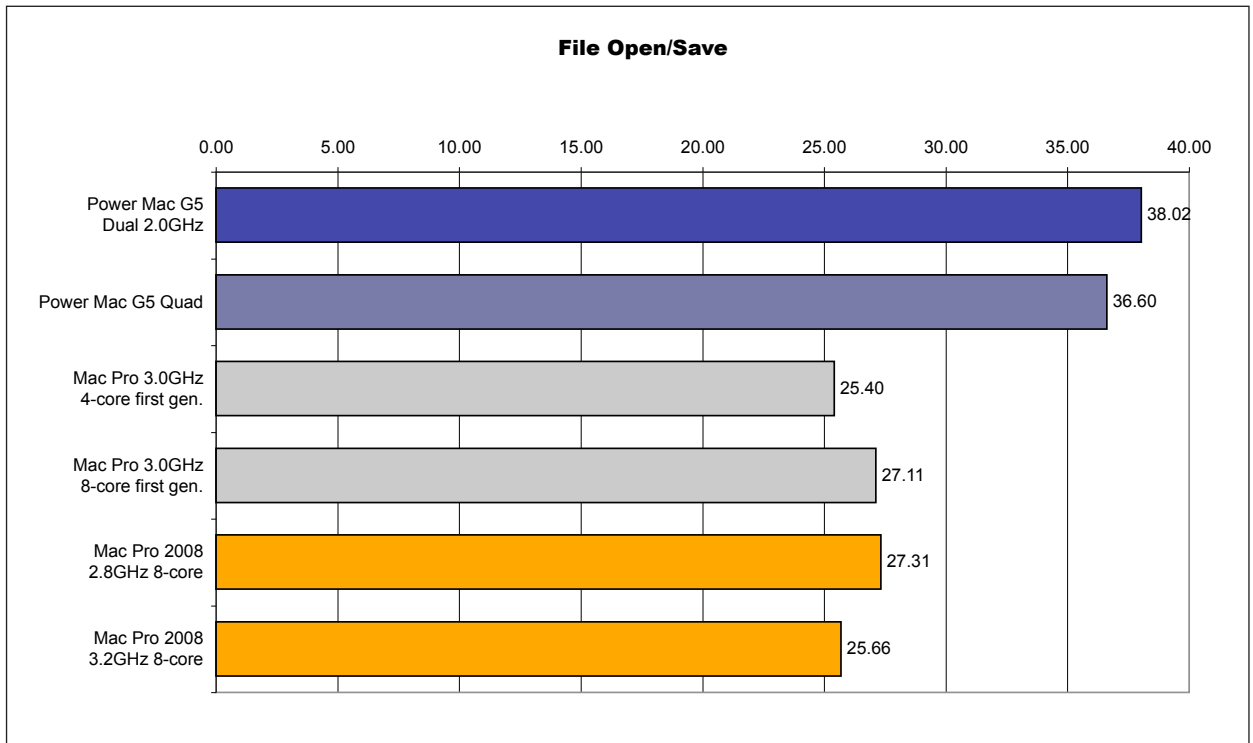


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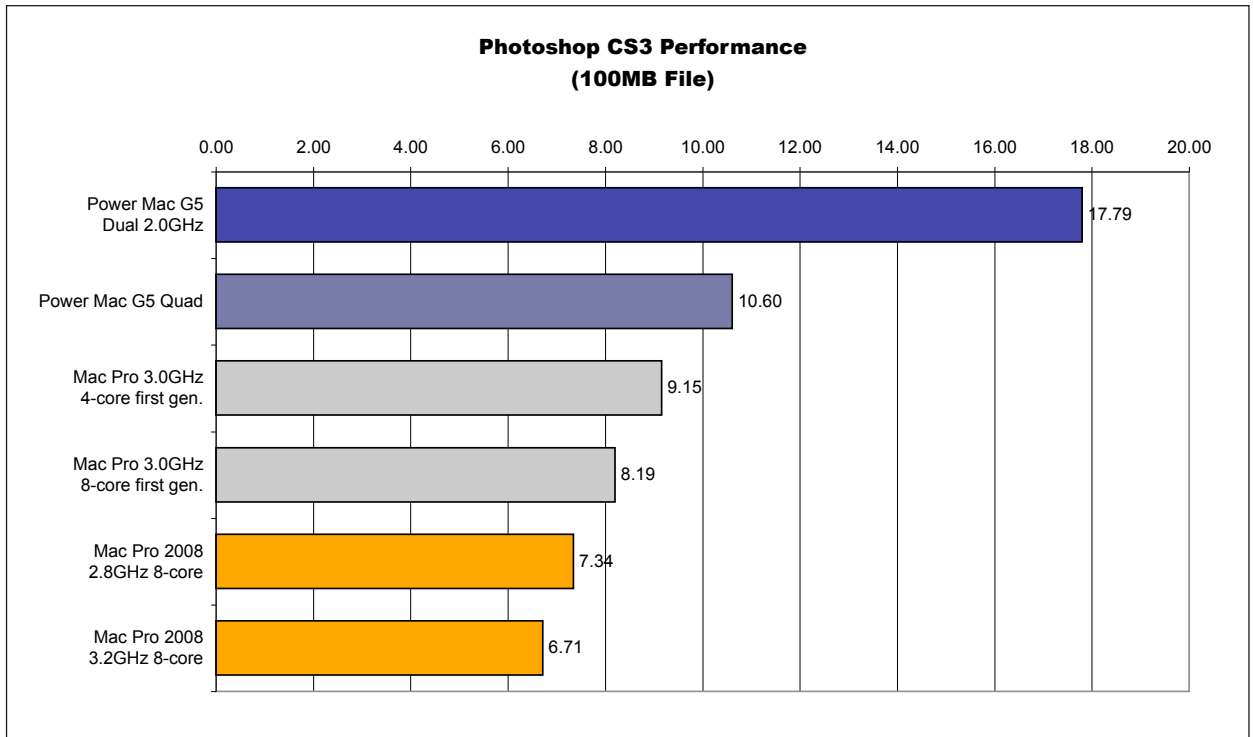


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Charts: Performance Benchmarks

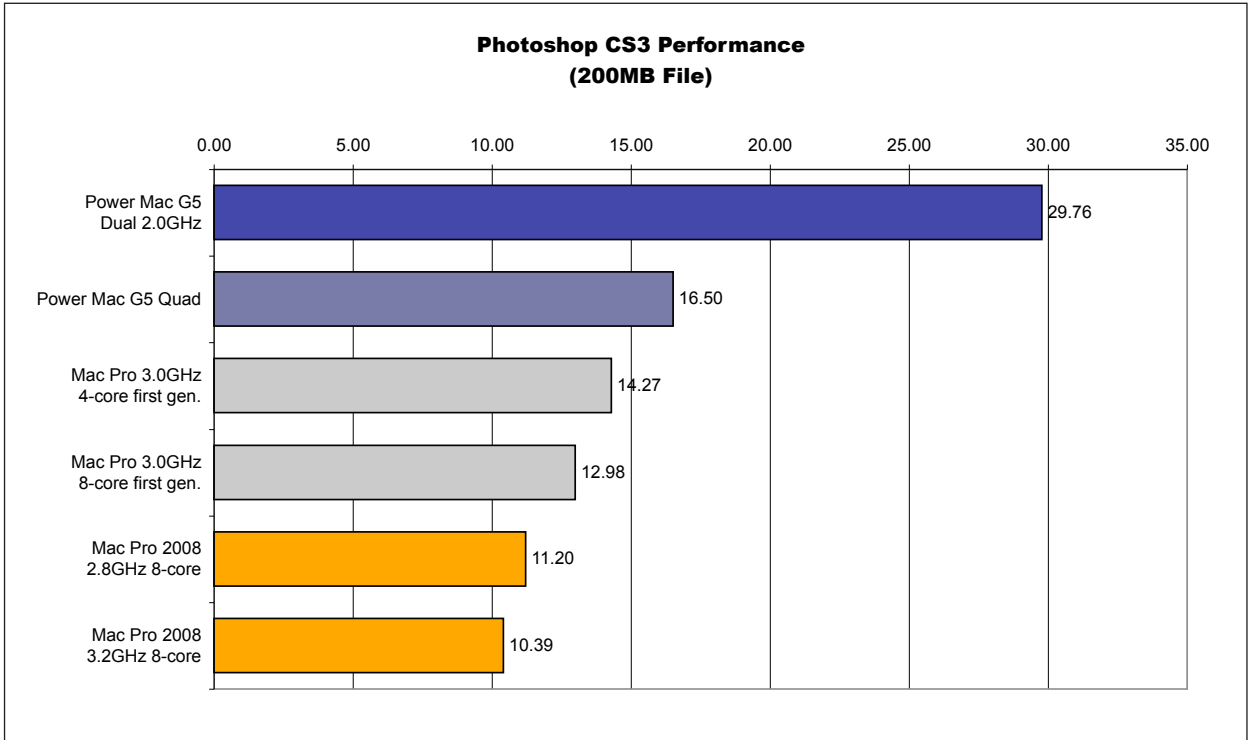


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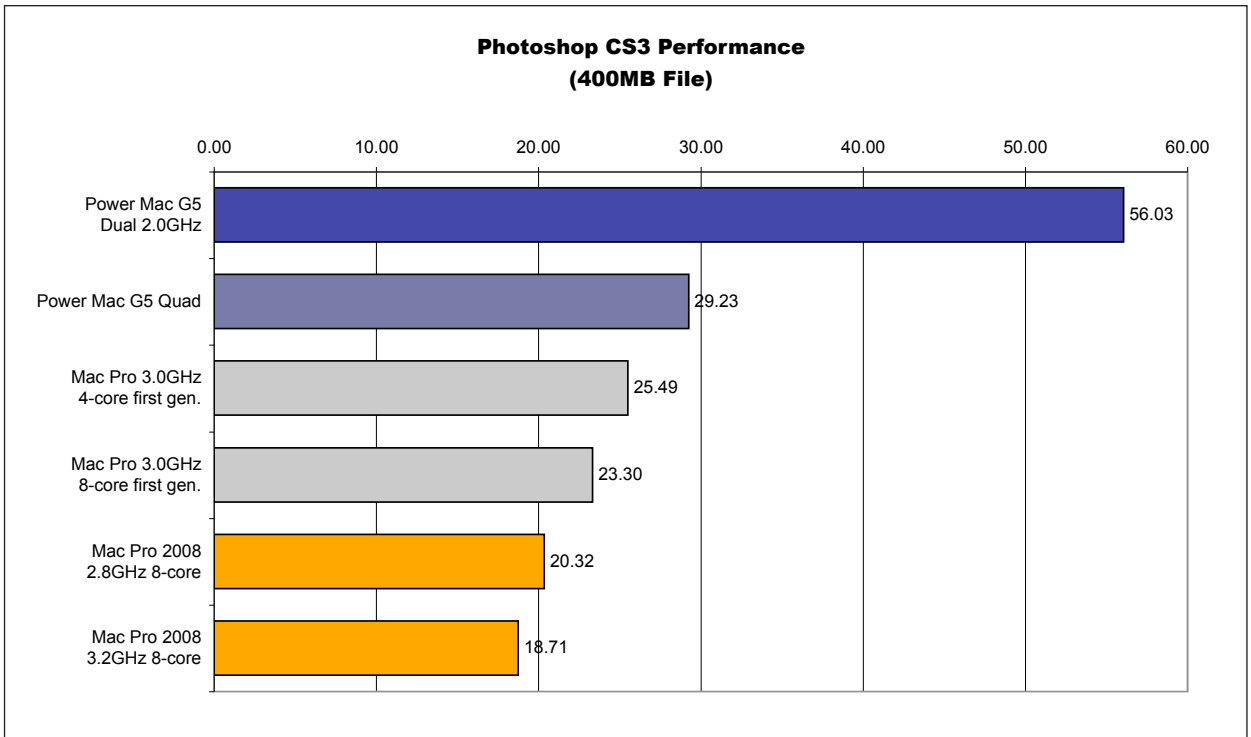


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Charts: Performance Benchmarks

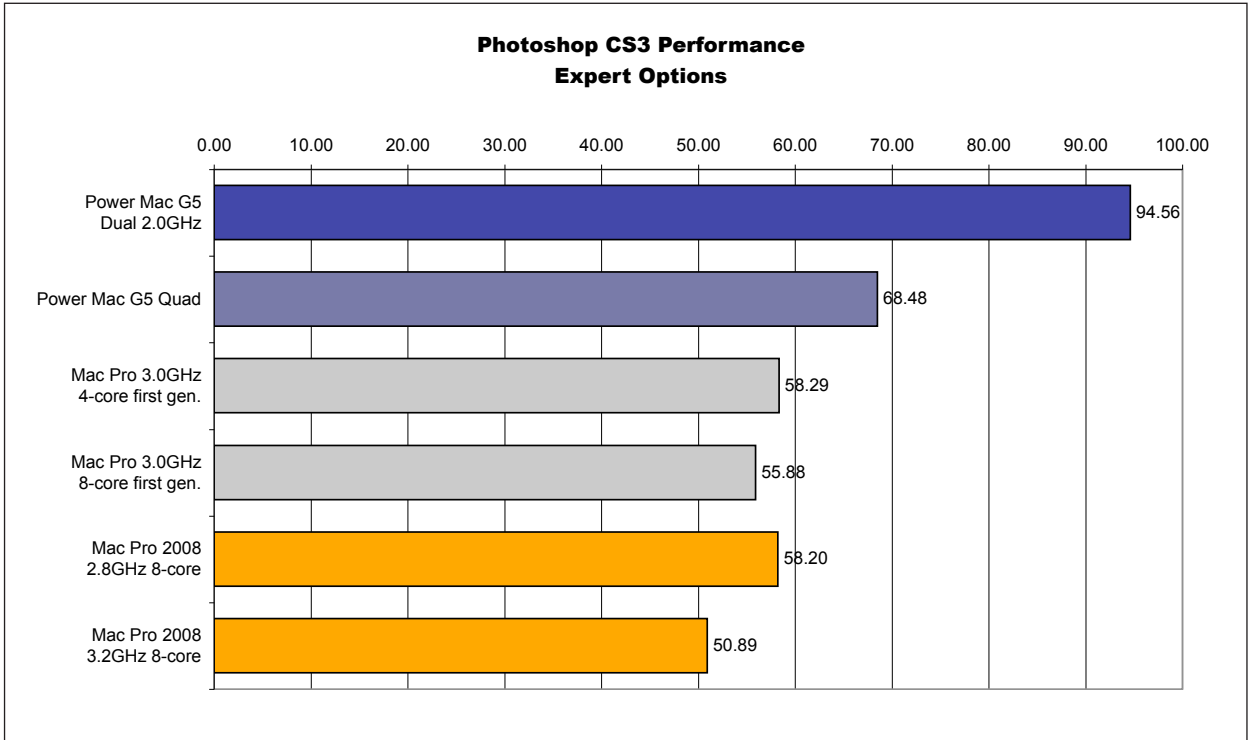


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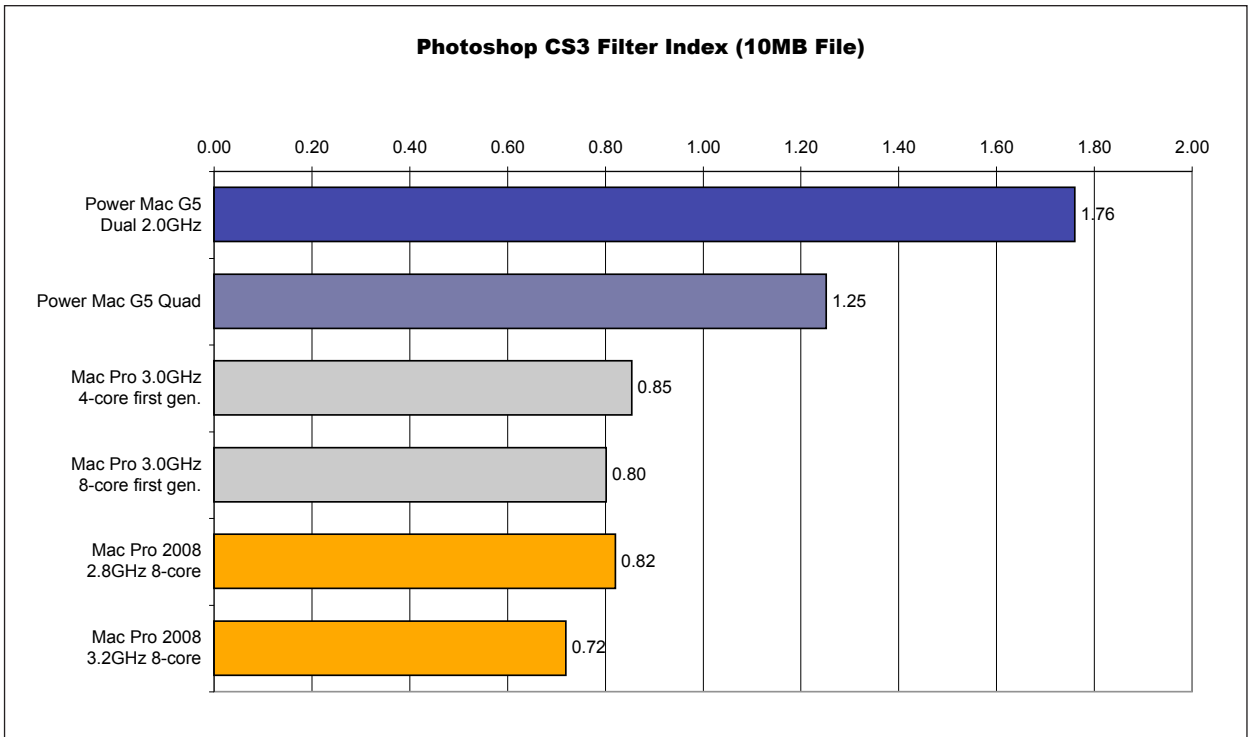


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Charts: Performance Benchmarks

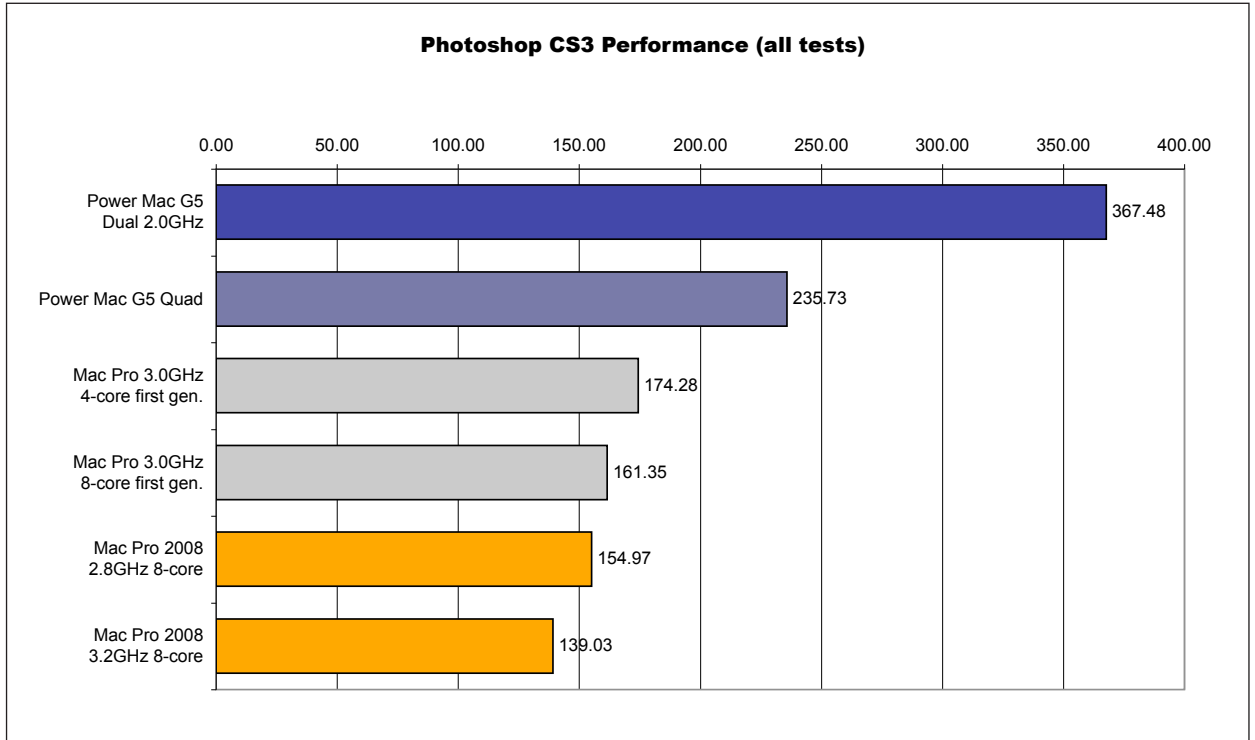


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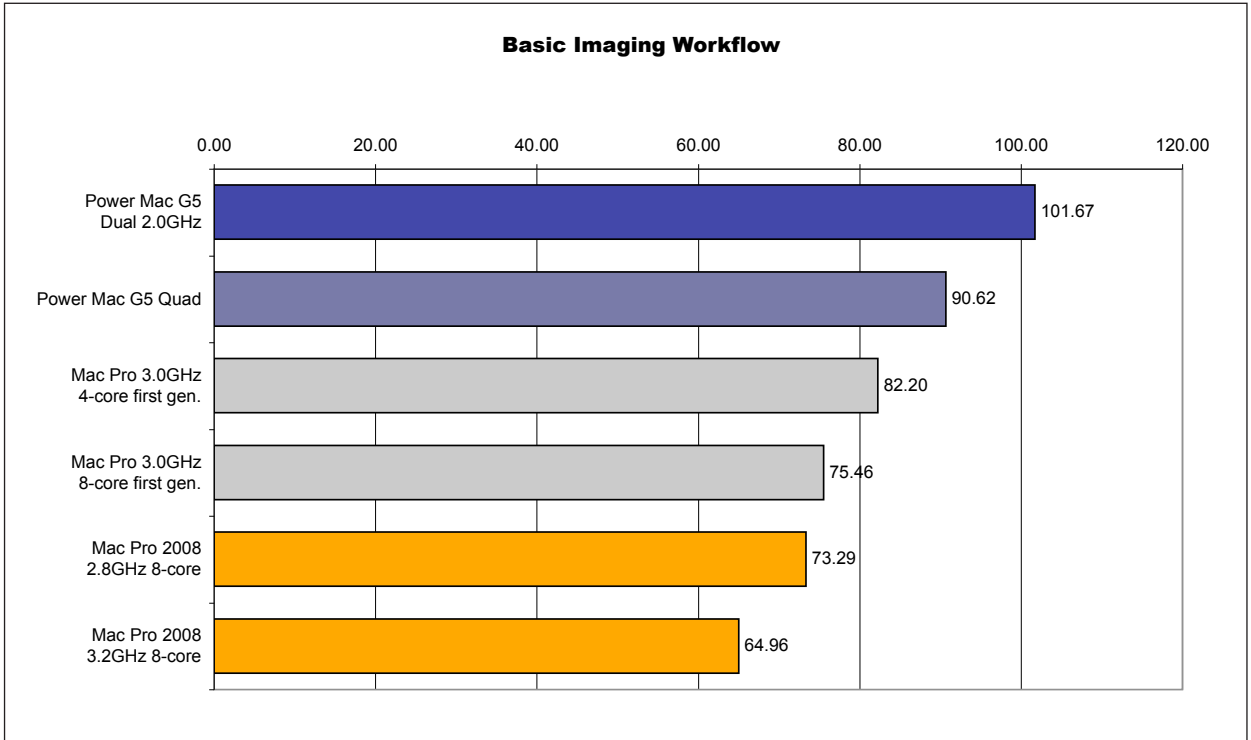


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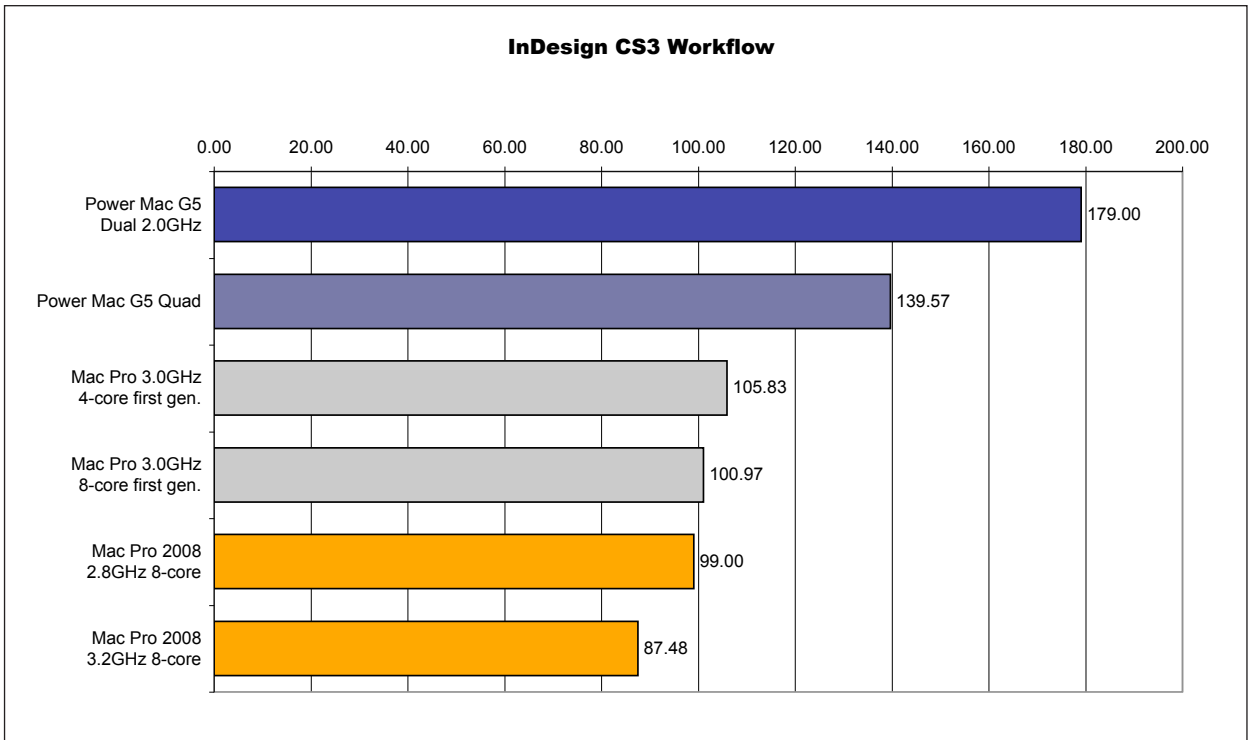
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Charts: Workflow Benchmarks

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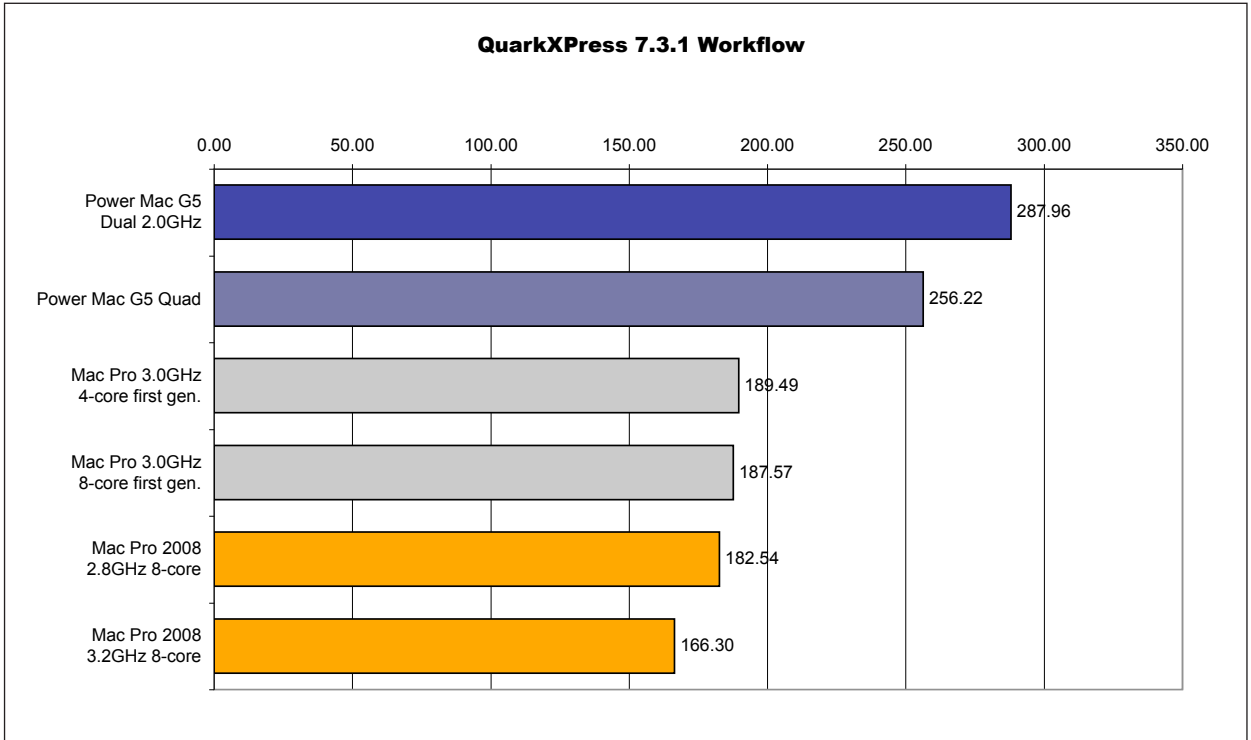


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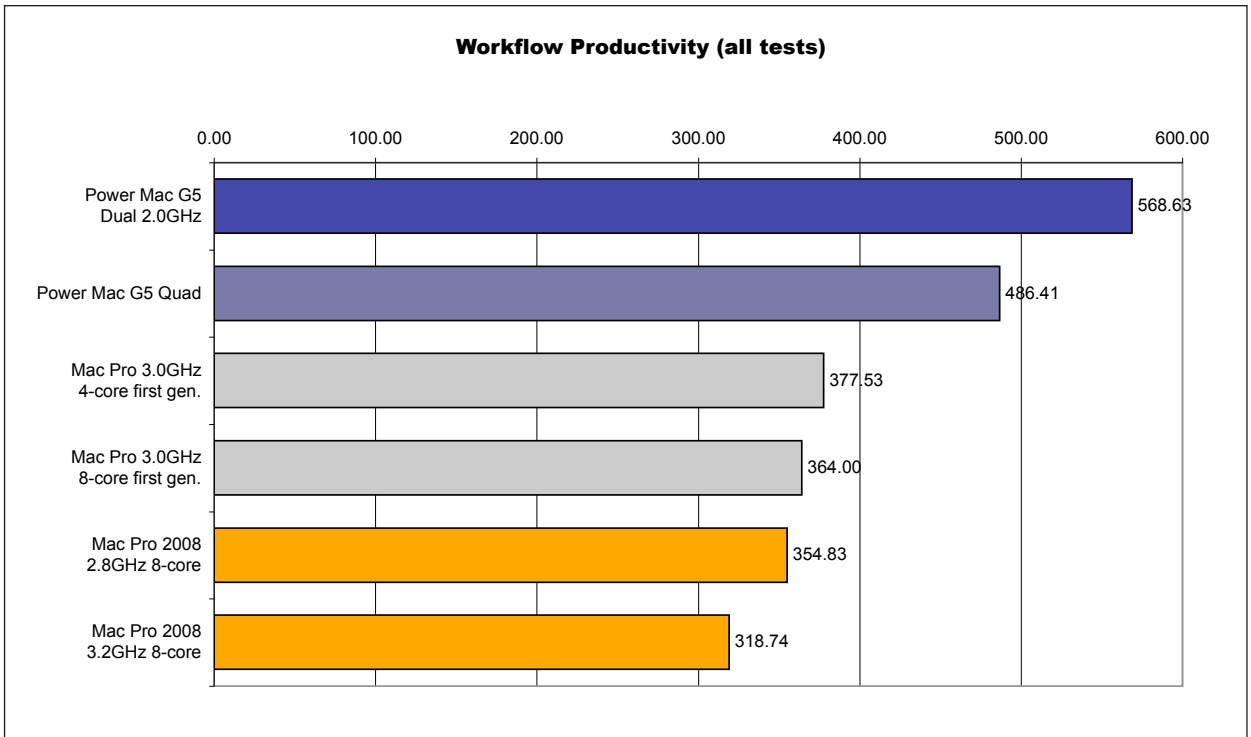


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Charts: Workflow Benchmarks



Time scale in seconds. Shorter is better.



Time scale in seconds. Shorter is better.

Charts: Workflow Benchmarks