

Client: Adobe

Project: Adobe CS5 Production Premium Benchmarks



Complete 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 increases in video production linked to features and user interface improvements introduced by the Adobe CS5 Production Premium, released in early 2010, as compared with the CS4 release of the software suite. Specifically, benchmarks focussed on performance and productivity of Premiere Pro CS5 and After Effects CS5, and compared them with the previous releases of these applications.

Technical Details

Computer Models Used for Benchmarking

Mac:

- **2.8GHz Mac Pro (8-core)**
- **System software and configuration**
 - The benchmark systems were completely re-initialized prior to the benchmarks, using a standard installation of Mac OS X Snow Leopard 10.6.3.
- **Memory**
 - All Mac computers were equipped with 4 to 32GB of RAM.
- **Video:**
 - NVIDIA Quadro FX 4800

Windows:

- **Two identical 2.8GHz Dell Precision Windows 7 workstations**

Benchmarks were conducted on two identical Dell Precision T7400 workstations factory-configured respectively for 32-bit and 64-bit Windows operating systems. The workstations were equipped with 2.83GHz quad-core Intel Xeon processors and with 4 to 32 GB of RAM.
- **Memory**
 - The 64-bit workstation was equipped with 32GB of RAM.
 - The 32-bit workstation was equipped with 4GB of RAM
- **Video:**
 - NVIDIA Quadro FX 4800

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Application Software

The benchmarks were conducted using **a default installation of the Adobe Creative Suite 5** Master Collection. **Default settings** were used for memory allocation and other settings unless otherwise stated.

Benchmark Methodology

The Pfeiffer Consulting Methodology for Productivity Benchmarks

The *Pfeiffer Consulting Methodology for Productivity Benchmarks* is based on **real world tasks and assignments executed by operators**, rather than relying on computer scripting. These highly perfected measures provide a reliable way to document the impact of technology on productivity in a way no simple performance benchmark can. More importantly, these productivity measures document the impact of user interface efficiency as well as hardware performance.

The basic aim of the methodology is simple: to emulate **the real-world productivity achieved by an experienced operator**. Benchmarks are defined and executed in such a way that only the actual time necessary to achieve a given result is measured.

The *Pfeiffer Consulting Methodology for Productivity Benchmarks* is extremely flexible, and has been used over the last decade to measure aspects as diverse as workflow productivity of creative software; the impact of screen-size on operator efficiency; real-world productivity increases linked to different computing platforms; or hard to quantify aspects such as menu latency and user interface friction. Please visit www.pfeifferreport.com for more information and a wide variety of benchmark reports.

Benchmark Definition and Execution

All benchmarks conducted **were specifically defined for this project by experienced professionals** with a deep understanding of the workflows in question.

In order to assess productivity gains that a new release or a different product may (or may not) bring, **we start by analyzing the minimum number of steps necessary to achieve a given result in each of the applications** that have to be compared.

Once this list of actions has been clearly established, we start to execute the operation or workflow in each program, with the help of seasoned professionals who have long-standing experience in the field and with the programs that are tested.

In order to be certain that no lag or operator-induced delays are included in the productivity measures, **each benchmarked example is cut down into small segments of three or four steps each**.

After an initial training phase, **each segment is executed 3 times, and the average time is used as a result**. The cumulative times for all segments that form a complete workflow example are then used as benchmark results.

No scripting was used for the execution of the benchmarks.

The use of **common keyboard shortcuts and contextual menus** was authorized.

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Complete List of Benchmarks

Introduction

The benchmarks have **been grouped by application software and type of benchmark**. For each benchmark, the list shows the feature that was tested first, followed by a short description of the benchmark.

For any additional questions regarding the benchmarks or the methodology, please contact research@pfeifferreport.com

- For any question regarding the features in Adobe Creative Suite 5 please visit www.adobe.com

Benchmarks

- **Premiere Pro CS5**

The specific areas of focus for these benchmarks were the impact of the Mercury Playback Engine and 64-bit support in Adobe Premiere Pro CS5, as well as other productivity improvements in the latest release of the software on both Windows and Mac platforms.

- **Benchmark Details**

- ▶ **Quick Export:** P2 Sequence without effects
- ▶ **Quick Export:** XDCAM Sequence without effects
- ▶ **Quick Export:** AVCHD Sequence without effects
- ▶ **Quick Export:** H.264 Sequence without effects
- ▶ **Quick Export:** P2 Sequence with color correction
- ▶ **Quick Export:** XDCAM Sequence with color correction
- ▶ **Quick Export:** AVCHD Sequence with color correction
- ▶ **Quick Export:** R3D 4K Tests
- ▶ **Quick Export:** AVC-Intra sequence
- ▶ **Chroma Keying:** Remove greenscreen from P2 Footage
- ▶ **Quick Export:** P2 with multiple effects
- ▶ **Quick Export:** XDCAM with multiple effects
- ▶ **Quick Export:** AVCHD with multiple effects
- ▶ **Quick Export:** H.264 with multiple effects
- ▶ **The Impact of CUDA:** XDCAM Footage
- ▶ **Workflow Benchmark:** XDCAM Footage
- ▶ **Media Encoder Export:** P2 Sequence without effects
- ▶ **Media Encoder Export:** XDCAM Sequence without effects
- ▶ **Media Encoder Export:** AVCHD Sequence without effects

About the Benchmarks

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- ▶ **Media Encoder Export:** H.264 Sequence without effects
- ▶ **Media Encoder Export:** P2 Sequence with color correction
- ▶ **Media Encoder Export:** XDCAM Sequence with color correction
- ▶ **Media Encoder Export:** AVCHD Sequence with color correction
- ▶ **Media Encoder Export:** R3D 4K Tests
- ▶ **Media Encoder Export:** AVC-Intra sequence

- **After Effects CS5**

- Benchmarks of After Effects CS5 focused on performance improvements transcoding un-treated footage; performance improvements on complex 3D compositions; as well as the impact of 64-bit support on RAM previews while working on After Effects compositions. Specific benchmarks were conducted for the new Rotobrush tool, which alleviates the normally tedious and time consuming task of rotoscoping.
 - ▶ **Transcode:** AVCHD 1080p to H.264
 - ▶ **Transcode:** AVCHD 1080p to QuickTime
 - ▶ **Transcode:** R3D 4k RAW to QuickTime
 - ▶ **Transcode:** P2 1080p to QuickTime
 - ▶ **Transcode:** XD 1080p to QuickTime
 - ▶ **Transcode:** 5D 1080p to QuickTime
 - ▶ **Transcode:** Complex project
 - ▶ **RAM preview:** Preview 400 frames of Complex Project at high resolution. RAM preview in CS5, Export preview in CS4
 - ▶ **RAM preview:** Preview 400 frames of Simple Project at high resolution. RAM preview in CS5, Export preview in CS4.
 - ▶ **RAM preview:** Preview 1500 frames of Simple Project at high resolution. RAM preview in CS5, Export preview in CS4
 - ▶ **RAM preview:** Maximum number of frames that can be previewed from RAM
 - ▶ **Rotobrush:** Extract slowly moving figure from background, Rotobrush vs. After Effects CS4 method
 - ▶ **Rotobrush:** Extract slowly moving figure from background (5-second clip), Rotobrush vs. After Effects and Photoshop CS4

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Complete Results

CS5 + CUDA (Mac)	CS5 (Mac)	CS4 (Mac)
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Premiere Pro Performance: Quick Export 1080p P2 Sequence (1 Min., No Effects)

2 video streams	118.61	144.46	140.95
3 video streams	125.18	174.81	192.16
4 video streams	129.47	195.61	189.79

Premiere Pro Performance: Quick Export 1080p XDCAM Sequence (1 Min., No Effects)

2 video streams	127.22	143.87	187.98
3 video streams	134.22	159.25	200.40
4 video streams	139.94	173.49	223.93

Premiere Pro Performance: Quick Export 1080p AVCHD Sequence (1 Min., No Effects)

2 video streams	149.60	142.29	218.48
3 video streams	172.07	167.38	246.17
4 video streams	195.56	186.13	297.11

Premiere Pro Performance: Quick Export 1080p H.264 Sequence (1 Min., No Effects)

2 video streams	119.99	116.69	444.95
3 video streams	163.73	161.16	855.50
4 video streams	178.33	169.37	903.99

Premiere Pro Performance: Quick Export 1080p P2 Sequence (30 sec., Color Correction)

2 video streams	63.93	310.58	262.50
3 video streams	60.81	188.54	199.58
4 video streams	64.26	645.08	505.66

Premiere Pro Performance: Quick Export 1080p XDCAM Sequence (30 sec., Color Correction)

2 video streams	59.08	290.25	233.43
3 video streams	66.72	462.82	359.33
4 video streams	64.65	553.85	400.55

Premiere Pro Performance: Quick Export 1080p AVCHD Sequence (30 sec., Color Correction)

2 video streams	76.06	105.82	137.79
3 video streams	88.04	316.49	225.53
4 video streams	102.57	493.43	356.00

Time in seconds. Lower is better.

CS5 + CUDA (Mac)	CS5 (Mac)	CS4 (Mac)
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Premiere Pro CS5 Benchmarks: Quick Export (R3D, 4K, 2:1, 24fps)

Export simple footage	151.27	57.22	195.64
Export 20 seconds with zoom and 2 keyframes to 1080p	153.10	58.60	213.14
Export 2 video streams	276.15	88.75	349.65
Export footage with color correction	150.25	102.58	549.21
Export footage with Black & White effect	145.26	53.54	198.58

Premiere Pro Performance: Quick Export 1080p AVC-Intra sequence (15 sec., No Effects)

2 video streams	44.03	39.25	61.36
3 video streams	53.49	41.67	82.65
4 video streams	59.29	47.12	105.87

Premiere Pro CS5 Benchmarks: Chroma Keying (P2 Footage)

Quick Export 30 second P2 sequence with Ultra Keyer (CS5) and color Key (CS4)	30.79	41.02	211.82
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Premiere Pro Workflow Benchmark: Quick Export Work Area (30 sec., P2)

1 video stream, no effects	68.73	76.99	168.62
2 video streams, color correction, brightness & contrast	72.85	178.59	378.35
3 video streams, multiple effects and color corrections	78.80	196.87	466.61
4 video streams, multiple effects and color corrections	81.74	230.00	574.17

Premiere Pro Workflow Benchmark: Quick Export Work Area (30 sec., XDCAM)

1 video stream, no effects	81.66	75.02	204.18
2 video streams, color correction, brightness & contrast	98.74	173.87	394.34
3 video streams, multiple effects and color corrections	105.83	183.73	491.09
4 video streams, multiple effects and color corrections	117.34	206.87	591.56

Premiere Pro Workflow Benchmark: Quick Export Work Area (30 sec., AVCHD)

1 video stream, no effects	80.12	71.47	274.51
2 video streams, color correction, brightness & contrast	94.30	172.37	383.63
3 video streams, multiple effects and color corrections	107.23	186.20	475.15
4 video streams, multiple effects and color corrections	110.40	209.59	573.60

Premiere Pro Workflow Benchmark: Quick Export Work Area (30 sec., H.264)

1 video stream, no effects	53.10	44.41	177.79
2 video streams, color correction, brightness & contrast	75.58	171.27	343.19
3 video streams, multiple effects and color corrections	85.25	175.89	459.91
4 video streams, multiple effects and color corrections	90.83	190.59	543.19

Time in seconds. Lower is better.

CS5 + CUDA (Mac)	CS5 (Mac)	CS4 (Mac)
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Premiere Pro CS5 Benchmarks: The Impact of CUDA (Quick Export, XDCAM Footage)

Render composition with Brightness & contrast effect (Simple)	20.55	44.50	62.82
Render composition with Brightness & contrast effect (Complex)	29.45	66.09	96.70
Render composition with Extract and Levels effects (Simple)	21.73	35.01	180.71
Render composition with Extract and Levels effects (Complex)	31.35	37.70	189.09
Render composition with Sharpen and Tint effects (Simple)	23.78	95.91	158.22
Render composition with Sharpen and Tint effects (Complex)	35.70	177.47	276.39
Render composition with Basic 3D with keyframed movement + Drop Shadow	27.55	548.57	127.50

Premiere Pro: Workflow Benchmark (XDCAM Footage)

Import Footage	4.98	4.49	6.15
Render Effects and transitions	0.00	57.92	69.22
Quick Export sequence to H.264 720p	15.90	57.82	69.60
Workflow total (Import footage, render effects and transitions, export sequence)	20.88	120.24	144.97

Time in seconds. Lower is better.

CS5 + CUDA (Mac)	CS5 (Mac)	CS4 (Mac)
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Premiere Pro Performance: Media Encoder Export 1080p P2 Sequence (1 Min., No Effects)

2 video streams	138.14	146.93	140.95
3 video streams	146.58	163.91	192.16
4 video streams	150.80	173.14	189.79

Premiere Pro Performance: Media Encoder Export 1080p XDCAM Sequence (1 Min., No Effects)

2 video streams	143.78	149.25	187.98
3 video streams	152.29	163.90	200.40
4 video streams	163.91	171.18	223.93

Premiere Pro Performance: Media Encoder Export 1080p AVCHD Sequence (1 Min., No Effects)

2 video streams	167.86	176.80	218.48
3 video streams	194.50	217.24	246.17
4 video streams	221.04	254.64	297.11

Premiere Pro Performance: Media Encoder Export 1080p H.264 Sequence (1 Min., No Effects)

2 video streams	145.56	154.45	444.95
3 video streams	190.38	204.26	855.50
4 video streams	211.10	241.47	903.99

Premiere Pro Performance: Media Encoder Export 1080p P2 Sequence (30 sec., Color Correction)

2 video streams	70.09	242.44	262.50
3 video streams	69.01	152.24	199.58
4 video streams	75.56	487.47	505.66

Premiere Pro: Media Encoder Export 1080p XDCAM Sequence (30 sec., Color Correction)

2 video streams	65.48	223.93	233.43
3 video streams	76.77	344.37	359.33
4 video streams	74.22	415.36	400.55

Premiere Pro Performance: Media Encoder Export 1080p AVCHD Sequence (30 sec., Color Correction)

2 video streams	86.87	109.18	137.79
3 video streams	102.48	228.14	225.53
4 video streams	112.51	359.96	356.00

Time in seconds. Lower is better.

CS5 + CUDA (Windows)	CS5 (Windows)	CS4 (Windows)
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Premiere Pro Performance: Quick Export 1080p P2 Sequence (1 Min., No Effects)

2 video streams	161.80	223.85	267.19
3 video streams	180.02	273.38	366.13
4 video streams	188.95	312.39	384.76

Premiere Pro Performance: Quick Export 1080p XDCAM Sequence (1 Min., No Effects)

2 video streams	180.88	209.62	281.81
3 video streams	210.96	258.43	308.73
4 video streams	208.93	282.52	358.94

Premiere Pro Performance: Quick Export 1080p AVCHD Sequence (1 Min., No Effects)

2 video streams	229.73	210.36	362.28
3 video streams	276.23	256.60	435.49
4 video streams	384.95	302.75	577.84

Premiere Pro Performance: Quick Export 1080p P2 Sequence (30 sec., Color Correction)

2 video streams	77.05	210.56	251.87
3 video streams	81.41	291.86	291.64
4 video streams	96.00	367.09	421.14

Premiere Pro Performance: Quick Export 1080p XDCAM Sequence (30 sec., Color Correction)

2 video streams	72.10	168.68	209.60
3 video streams	98.81	257.24	313.41
4 video streams	87.66	266.57	336.22

Premiere Pro Performance: Quick Export 1080p AVCHD Sequence (30 sec., Color Correction)

2 video streams	113.47	125.64	225.96
3 video streams	138.06	177.49	324.95
4 video streams	157.99	239.76	476.53

Premiere Pro CS5 Benchmarks with Quick Export (R3D, 4K, 2:1, 24fps)

Export simple footage	391.94	92.29	939.55
Export 20 seconds with zoom and 2 keyframes to 1080p	438.22	100.70	1056.21
Export 2 video streams	762.61	154.79	1236.11
Export footage with color correction	391.19	150.30	1571.65
Export footage with Black & White effect	383.76	91.52	1000.06

Time in seconds. Lower is better.

CS5 + CUDA (Windows)	CS5 (Windows)	CS4 (Windows)
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Premiere Pro Performance: Quick Export 1080p AVC-Intra sequence (15 sec., No Effects)

2 video streams	54.00	57.81	123.48
3 video streams	61.92	72.83	167.64
4 video streams	73.76	90.55	259.18

Premiere Pro CS5 Benchmarks: The Impact of CUDA (Quick Export, XDCAM Footage)

Render composition with Brightness & contrast effect (Simple)	35.07	85.17	122.35
Render composition with Brightness & contrast effect (Complex)	53.05	137.14	213.17
Render composition with Extract and Levels effects (Simple)	39.04	58.41	94.90
Render composition with Extract and Levels effects (Complex)	56.79	80.39	114.75
Render composition with Sharpen and Tint effects (Simple)	38.83	181.95	271.80
Render composition with Sharpen and Tint effects (Complex)	59.52	321.31	480.00
Render composition with Basic 3D with keyframed movement + Drop Shadow	61.84	1114.79	643.10

Time in seconds. Lower is better.

After Effects CS4 (Mac)	After Effects CS5 (Mac)
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After Effects: Simple Transcoding

AVCHD 1080p, transcode to H.264 (20 sec)	125.06	32.81
AVCHD 1080p, transcode to QuickTime (20 sec)	79.23	32.43
R3D 4k RAW, transcode to Quicktime (20 sec)	856.40	256.30
P2 1080p, transcode to QuickTime (20 sec)	42.38	25.36
XD 1080p, transcode to QuickTime (20 sec)	58.01	34.72
5D 1080p, transcode to QuickTime (10 sec)	91.90	19.75

After Effects: Transcoding of Complex Composition

Transcode complex project (5 seconds, default settings)	148.20	70.10
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After Effects: Preview project - RAM Preview vs Export

Preview 400 frames of Complex Project at high resolution: RAM preview in CS5, Export preview in CS4	481.50	103.21
Preview 400 frames of Simple Project at high resolution: RAM preview in CS5, Export preview in CS4	51.55	30.48
Preview 1500 frames of Simple Project at high resolution: RAM preview in CS5, Export preview in CS4	178.28	133.31

After Effects: RAM Preview of Complex Compositions

Maximum number of frames that can be previewed from RAM	24.00	470.00
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Rotoscoping Workflow: Roto Brush vs. After Effects CS4 Rotoscoping

Make initial selection with pen tool + Roto Bezier (CS4 only)	161.45	0.00
Make corrections to selection in one key frame (average) (CS4 only)	143.46	0.00
Make corrections to 5 seconds of footage (CS4 only)	2700.00	0.00
Extract slowly moving figure from background (5-second clip)	2843.46	241.67

Rotoscoping Workflow: Roto Brush vs. Photoshop Frame-byFrame

PhotoShop Phase 1: Rotoscope individual frame	21.28	0.00
Extract slowly moving figure from background (5-second clip)	2553.69	257.19

Time in seconds. Lower is better.