



Avaliação de Desempenho SPEC Graphics and Workspace

Edson da Silva O. Junior
Otávio A. Alves Silva
Marden Ferreira
Luiz Henrique

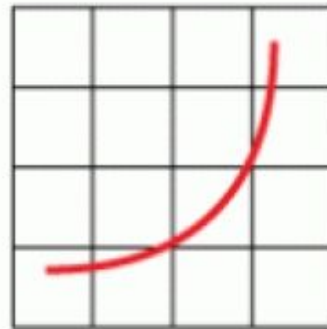
24 de Outubro de 2017

Agenda

- Introdução
 - SPEC - *Standard Performance Evaluation Corporation*
 - História
 - *Benchmarks*
- *Graphics and Workstations*
 - Descrição
 - Especificação
 - Exemplos
- Conclusão
- Dúvidas
- Referências

Introdução

- SPEC - *Standard Performance Evaluation Corporation*
 - Fundada em 1988, com o
 - Objetivo de “produzir, estabelecer, manter e endossar um conjunto padronizado” de benchmarks de desempenho para computadores.
 - Os resultados dos testes são publicados no site do SPEC.
- História
 - Idealizada por um pequeno número de fornecedores de *workstation*.
 - Perceberam que o mercado necessitava desesperadamente de testes de desempenho padronizados.
 - Evoluiu e tornou-se um dos organismos de padronização de desempenho mais bem-sucedidos com mais de 60 empresas associadas.



spec

SPEC - Standard Performance Evaluation Corporation

- Benchmarks

- Cloud
- CPU
- Graphics/Workstations
- ACCEL/MPI/OMP
- Java Client/Server
- Mail Servers
- Storage
- Power
- Virtualization
- Web Servers

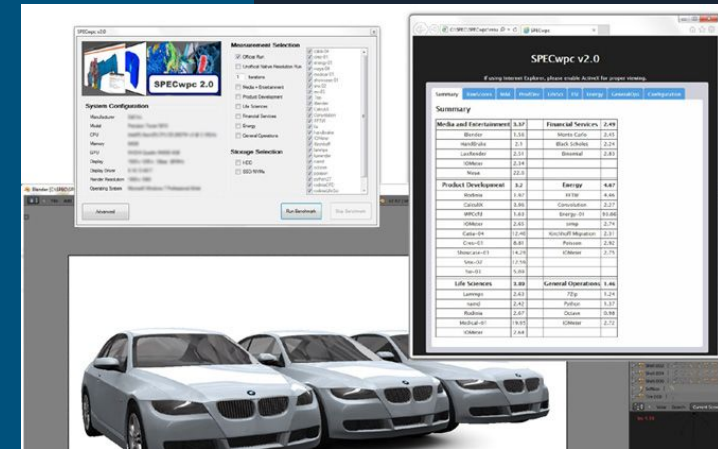
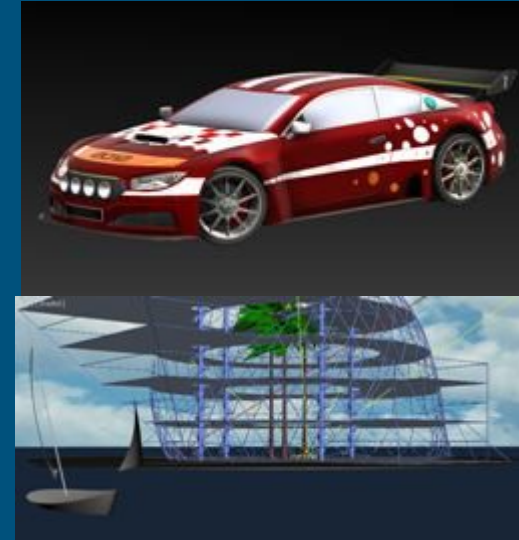


Graphics and Workstations

- SPEC/GWPG
 - Organização que agrupa os projetos que desenvolvem benchmarks de performance e procedimentos de relatórios gráficos e de *workstations* consistentes e repetíveis.
 - Os benchmarks de SPEC/GWPG são padrões mundiais para avaliar o desempenho de forma a refletir as experiências dos usuários com aplicativos populares.
- SPECviewperf® 12.1
- SPECwpc V2.1
- SPECapcSM for 3ds Max™ 2015
- SPECapcSM for PTC Creo 3.0
- SPECapcSM for Siemens NX 9.0 and 10.0
- SPECapcSM for SolidWorks 2015

Graphics and Workstations

- SPECviewperf® 12.1
 - Padrão mundial para medir desempenho gráfico baseado em aplicações profissionais.
 - Mede o desempenho de gráficos 3D de sistemas executados nas interfaces de programação de aplicativos OpenGL e Direct X.
- SPECwpc V2.1
 - Mede todos os aspectos-chave do desempenho da *workstation* com base em diversas aplicações profissionais.



SPECviewperf® 12.1

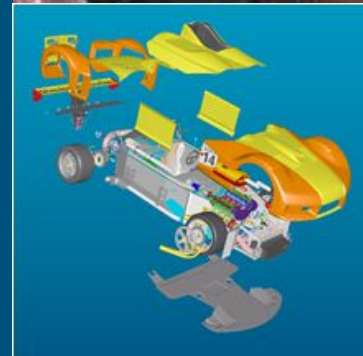
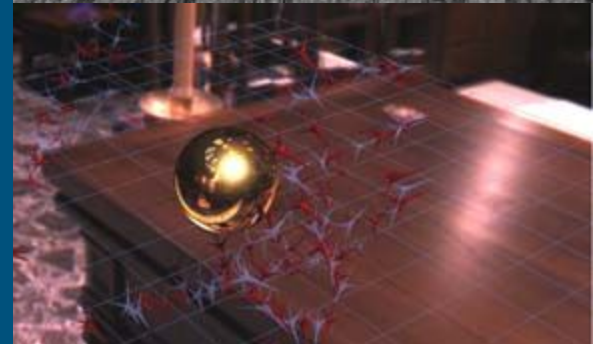
Company/Product	Submitter	O/S	Virtualized	Resolution	Test Date	Version	Sus Max Mean	Catia Mean	Creo Mean	Energy Mean	Maya Mean
Dell Precision Tower 5810 AMD FirePro W2100 (FireGL V) Graphics Adapter	Dell	Microsoft Windows 7 Professional 64-bit	No	1920x1080	8/20/2014	12.0.1		14.86	15.52	0.26	14.56
Dell Precision Tower 5810 AMD FirePro W4100 (FireGL V) Graphics Adapter	Dell	Microsoft Windows 7 Professional 64-bit	No	1920x1080	2/13/2015	12.0.2		17.81	20.78	0.36	20.66
Dell Precision Tower 5810 AMD FirePro W4100 (FireGL V) Graphics Adapter	Dell	Microsoft Windows 7 Professional 64-bit	No	1920x1080	8/21/2014	12.0.1		18.24	18.94	0.36	20.91
Dell Precision Tower 5810 AMD FirePro W5100 (FireGL V) Graphics Adapter	Dell	Microsoft Windows 7 Professional 64-bit	No	1920x1080	2/12/2015	12.0.2		38.50	38.91	1.75	34.30
Dell Precision Tower 5810 AMD FirePro W5100 (FireGL V) Graphics Adapter	Dell	Microsoft Windows 7 Professional 64-bit	No	1920x1080	8/21/2014	12.0.1		33.84	35.86	1.58	31.84
Dell Precision Tower 5810 AMD FirePro W7100 (FireGL V)	Dell	Microsoft Windows 7 Professional 64-bit	No	1920x1200	6/5/2015	12.0.1		56.58	49.20	3.24	57.00

SPECwpc V2.1

[illegible]

Graphics and Workstations

- SPECapcSM for 3ds Max[™] 2015
 - Software de avaliação de desempenho para sistemas que executam o Autodesk 3ds Max 2015.
 - Contém 48 testes para medição abrangente de modelagem, gráficos interativos, efeitos visuais, CPU e GPU.
- SPECapcSM for PTC Creo 3.0
 - Fornece oito fluxos de trabalho que exercem todos os aspectos do desempenho do sistema ao executar o popular aplicativo de design.



SPECapcSM for 3ds MaxTM 2015

4096x2048 screen resolution

4x AA

Company / Product ¹	Submitted By	System Config		Test Date	CPU Composite	GPU Composite	Large Model Composite
		RAM	CPU				
Supermicro X9DR3-F - NVIDIA Quadro K6000	Nvidia	34.3 GigaBytes (1333 MHz)	Intel(R) Xeon(R) CPU E5-2687W 0 @ 3.10GHz	Jul 31, 2014	5.11	2.53	2.86

0x AA (default)

Company / Product ¹	Submitted By	System Config		Test Date	CPU Composite	GPU Composite	Large Model Composite
		RAM	CPU				
Supermicro X9DR3-F - NVIDIA Quadro K6000	Nvidia	34.3 GigaBytes (1333 MHz)	Intel(R) Xeon(R) CPU E5-2687W 0 @ 3.10GHz	Jul 31, 2014	5.12	3.19	2.97

1920x1024 screen resolution

8x AA

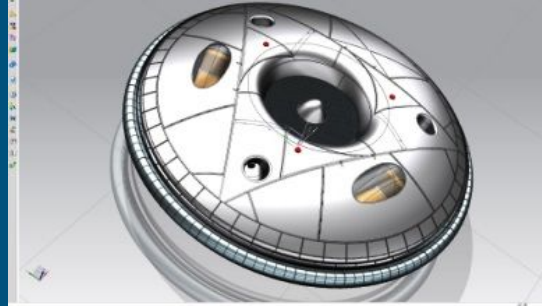
Company / Product ¹	Submitted By	System Config		Test Date	CPU Composite	GPU Composite	Large Model Composite
		RAM	CPU				
Dell Inc. Precision M4800 - NVIDIA Quadro K2100M	Dell	17.1 GigaBytes (1600 MHz)	Intel(R) Core(TM) i7-4800MQ CPU @ 2.70GHz	Aug 04, 2014	4.18	1.2	1.4

SPECapcSM for PTC Creo 3.0

Company / Product1	Submitted By	API	System Config			Test Date	Graphics Composite	CPU Composite	I/O Composite
			OS	Memory	CPU				
T5810 Intel 3.50 GHz AMD FirePro W2100	Dell	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB DDR4-2133 ECC RAM	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	01/14/2015	1.67	2.62	1.87
T5810 Intel 3.50 GHz AMD FirePro W4100	Dell	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB DDR4-2133 ECC RAM	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	01/16/2015	2.23	1.52	1.23
T5810 Intel 3.50 GHz AMD FirePro W5100	Dell	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB DDR4-2133 ECC RAM	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	01/14/2015	5.41	2.54	1.90
T5810 Intel 3.50 GHz Nvidia Quadro K2200	Dell	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB DDR4-2133 ECC RAM	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	01/16/2015	3.96	1.44	1.22
T5810 Intel 3.50 GHz Nvidia Quadro K4200	Dell	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB DDR4-2133 ECC RAM	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	01/14/2015	6.78	2.48	1.83
HP Z440 Intel Xeon E5-1650 v3 3.5 GHz AMD FirePro W5100	DEVELOP3D.COM	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB 8GB DDR4-2133 ECC	Intel Xeon E5-1650 v3 3.5 GHz	07/05/2015	5.74	2.49	2.02
HP Z440 Intel Xeon E5-1650 v3 3.5 GHz Nvidia Quadro K2200	DEVELOP3D.COM	OpenGL	Microsoft Windows7 Professional 64-bit	32 GB 8GB DDR4-2133 ECC	Intel Xeon E5-1650 v3 3.5 GHz	07/15/2015	5.45	2.70	2.02
HP Z230 Workstation Intel E3-1280V3 3.60GHz AMD FirePro W5100	Hewlett Packard Company	OpenGL	Microsoft Windows7 Professional 64-bit	8 GB DDR3-1333 ECC RAM	Intel(R) Xeon(R) CPU E3-1280 v3 @ 3.60GHz	01/12/2015	5.40	2.76	2.17
HP Z230 Workstation Intel E3-1280V3 3.60GHz NVIDIA K2200	Hewlett Packard Company	OpenGL	Microsoft Windows7 Professional 64-bit	8 GB DDR3-1333 ECC RAM	Intel(R) Xeon(R) CPU E3-1280 v3 @ 3.60GHz	12/08/2014	4.73	2.74	2.15
Whitebox Xeon 3.1 GHz NVIDIA Quadro QK620	NVIDIA	OpenGL	Microsoft Windows 7 Enterprise 64-bit	34.3 GB DDR3-1333 ECC RAM	Intel(R) Xeon(R) CPU E5-2687W @ 3.10GHz	12/16/2014	3.72	2.11	1.71
Whitebox Xeon 3.1 GHz NVIDIA Quadro QK5200	NVIDIA	OpenGL	Microsoft Windows 7 Enterprise 64-bit	34.3 GB DDR3-1333 ECC RAM	Intel(R) Xeon(R) CPU E5-2687W @ 3.10GHz	12/16/2014	6.24	2.15	1.66

Graphics and Workstations

- SPECapcSM for Siemens NX 9.0 and 10.0
 - Sete modelos que representam casos de uso comum estão incluídos no SPECapc para NX 9/10.
 - O benchmark executa testes gráficos que incluem rotação, pan, zoom e recorte para cada modelo.
- SPECapcSM for SolidWorks 2015
 - Consiste de nove testes gráficos e dois testes de CPU.
 - Os testes orientados a gráficos usam três configurações de exibição do SolidWorks - RealView, oclusão ambiental e sombras - em combinação com estilos de exibição sombreados e sombreados com bordas.
 - Dois testes de CPU dentro do benchmark executam tessellation e renderização PhotoView360.



SPECapcSM for Siemens NX 9.0 and 10.0

Company / Product ¹	Submitted By	System Config		Test Date	Graphics Composite	Shaded with Edges Sub-composite	Shaded Sub-composite	Wireframe Sub-composite	True Shading Sub-composite	Advanced Studio Sub-composite	Graphics Face Analysis Sub-composite	CPU Composite
		CPU	GPU									
Dell Inc. Precision 3510	Dell, Inc.	Intel(R) Core(TM) i7-6820HQ CPU @ 2.70GHz	Intel(R) HD Graphics 530, AMD FirePro W5130M	2016-07-13	3.37	3.13	3.73	3.46	3.28	3.84	3.07	2.69
Dell Inc. Precision 5510	Dell, Inc.	Intel(R) Xeon(R) CPU E3-1505M v5 @ 2.80GHz	NVIDIA Quadro M1000M	2016-07-13	3.57	3.25	3.40	3.22	4.10	6.45	2.96	3.03
Dell Inc. Precision 7710	Dell, Inc.	Intel(R) Core(TM) i7-6920HQ CPU @ 2.90GHz	AMD FirePro W7170M	2016-06-28	4.50	3.97	4.99	4.18	4.54	7.29	3.80	3.49
Dell Inc. Precision 7710	Dell, Inc.	Intel(R) Core(TM) i7-6920HQ CPU @ 2.90GHz	AMD FirePro W7170M	2016-07-13	4.52	4.02	5.14	4.12	4.48	7.01	3.84	3.31
Dell Inc. Precision 7710	Dell, Inc.	Intel(R) Core(TM) i7-6920HQ CPU @ 2.90GHz	NVIDIA Quadro M5000M	2016-06-28	5.18	4.77	4.46	4.46	5.64	13.60	3.57	3.51
Dell Inc. Precision 7710	Dell, Inc.	Intel(R) Core(TM) i7-6920HQ CPU @ 2.90GHz	NVIDIA Quadro M5000M	2016-07-13	5.18	4.78	4.47	4.32	5.66	13.72	3.58	3.56
Dell Inc. Precision Tower 3620	Dell, Inc.	Intel(R) Xeon(R) CPU E3-1275 v5 @ 3.60GHz	AMD FirePro W7100 (FireGL V)	2016-07-14	4.99	4.50	5.40	4.65	4.87	8.23	3.99	3.44
Dell Inc. Precision Tower 3620	Dell, Inc.	Intel(R) Xeon(R) CPU E3-1275 v5 @ 3.60GHz	NVIDIA Quadro M2000	2016-07-13	3.97	3.62	3.09	3.79	3.97	10.63	3.65	3.30
Dell Inc. Precision Tower 3620	Dell, Inc.	Intel(R) Xeon(R) CPU E3-1275 v5 @ 3.60GHz	NVIDIA Quadro M4000	2016-07-13	3.95	3.63	3.02	3.60	4.11	10.73	3.78	3.14
HP HP Z240 Tower Workstation	HP	Intel(R) Xeon(R) CPU E3-1245 v5 @ 3.50GHz	AMD FirePro W4300 (FireGL V)	2016-07-19	4.33	4.00	4.91	4.26	4.33	5.23	3.69	3.46
HP HP Z240 Tower Workstation	HP	Intel(R) Xeon(R) CPU E3-1245 v5 @ 3.50GHz	NVIDIA Quadro M2000	2016-07-20	4.78	4.38	4.49	4.15	5.12	10.31	3.61	3.48

SPECapcSM for SolidWorks 2015

Company / Product ¹	Submitted By	System Config			Test Date	CPU Composite	Graphics Composite
		CPU	RAM	OS			
Dell Inc. Precision Tower 5810 Intel E5-1650 v3 @ 3.50GHz NVIDIA Quadro K6000	Dell Inc.	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	32GB DDR3 2133 MHz	Microsoft Windows7 Professional	06/26/2015	5.19	6.86
Dell Inc. Precision Tower 5810 Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz AMD FirePro W7100 (FireGL V)	Dell Inc.	Intel(R) Xeon(R) CPU E5-1650 v3 @ 3.50GHz	32GB DDR3 2133 MHz	Microsoft Windows7 Professional	07/13/2015	5.60	6.75
Scan GW HT20 (Skylake) Intel(R) Core(TM) i7-6700K CPU @ 4.40GHz AMD FirePro W5100 (FireGL V)	DEVELOP3D.COM	Intel(R) Core(TM) i7-6700K CPU @ 4.40GHz	16 GB DDR3 2667 MHz	Microsoft Windows 7 Professional	08/09/2015	6.54	7.47
Scan GW HT20 (Skylake) Intel(R) Core(TM) i7-6700K CPU @ 4.40GHz NVIDIA Quadro K2200	DEVELOP3D.COM	Intel(R) Core(TM) i7-6700K CPU @ 4.40GHz	16 GB DDR3 2667 MHz	Microsoft Windows 7 Professional	08/09/2015	6.19	5.38
Hewlett-Packard HP Z230 Tower Workstation Intel(R) Xeon(R) CPU E3-1281 v3 @ 3.70GHz NVIDIA Quadro K2200	Hewlett Packard	Intel(R) Xeon(R) CPU E3-1281 v3 @ 3.70GHz	16 GB DDR3 1600 MHz	Microsoft Windows 7 Professional	07/28/2015	5.10	5.92
Hewlett-Packard HP ZBook 17 G2 Intel(R) Core(TM) i7-4910MQ CPU @ 2.90GHz Intel(R) HD Graphics 4600, NVIDIA Quadro K2200M	Hewlett Packard	Intel(R) Core(TM) i7-4910MQ CPU @ 2.90GHz	16 GB DDR3 1600 MHz	Microsoft Windows 7 Professional	07/28/2015	4.57	4.75

Conclusão

- SPEC - *Standard Performance Evaluation Corporation*.
- Regras de projeto.
- *Benchmarks*.
- Submissões.
- Gratuito para usuários comuns e pago para empresas.



Dúvidas?

Referências

- <https://www.spec.org/> - Standard Performance Evaluation Corporation



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