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Debian Linux GCC OPM Performance Compilers

Testing Open Porous Media (OPM) performance on different GCC compiler releases under Debian stable and Debian testing. Benchmarks by Michael Larabel. Same system under all tests.

Test Systems:

Debian 8.4 - GCC 4.8.4

Processor: Intel Xeon E5-2687W v3 @ 3.50GHz (20 Cores), Motherboard: MSI X99S SLI PLUS (MS-7885) v1.0, Chipset: Intel Haswell-E DMI2, Memory: 16384MB, Disk: PNY CS1211 120GB + 80GB INTEL SSDSCKGW08, Graphics: AMD FirePro V7900 2048MB, Audio: Intel Wellsburg HD Audio, Monitor: ASUS PB278, Network: Intel Connection

OS: Debian 8.4, Kernel: 3.16.0-4-amd64 (x86_64), Desktop: GNOME Shell 3.14.4, Display Server: X Server 1.16.4, Display Driver: radeon 7.5.0, OpenGL: 3.3 Mesa 10.3.2 Gallium 0.4, Compiler: GCC 4.8.4, File-System: ext4, Screen Resolution: 2560x1440

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-libmudflap --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes

--enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i586 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate powersave

Debian 8.4 - GCC 4.9.2

Processor: Intel Xeon E5-2687W v3 @ 3.50GHz (20 Cores), Motherboard: MSI X99S SLI PLUS (MS-7885) v1.0, Chipset: Intel Haswell-E DMI2, Memory: 16384MB, Disk: PNY CS1211 120GB + 80GB INTEL SSDSCKGW08, Graphics: AMD FirePro V7900 2048MB, Audio: Intel Wellsburg HD Audio, Monitor: ASUS PB278, Network: Intel Connection

OS: Debian 8.4, Kernel: 3.16.0-4-amd64 (x86_64), Desktop: GNOME Shell 3.14.4, Display Server: X Server 1.16.4, Display Driver: radeon 7.5.0, OpenGL: 3.3 Mesa 10.3.2 Gallium 0.4, Compiler: GCC 4.9.2, File-System: ext4, Screen Resolution: 2560x1440

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i586 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate powersave

Debian Testing - GCC 5.3.1

Processor: Intel Xeon E5-2687W v3 @ 3.50GHz (20 Cores), Motherboard: MSI X99S SLI PLUS (MS-7885) v1.0, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: PNY CS1211 120GB + 80GB INTEL SSDSCKGW08, Graphics: AMD FirePro V7900 2048MB, Audio: Realtek ALC892, Monitor: ASUS PB278, Network: Intel Connection

OS: Debian testing, Kernel: 4.5.0-1-amd64 (x86_64), Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 3.3 Mesa 11.1.3 Gallium 0.4, Compiler: GCC 5.3.1 20160409, File-System: ext4, Screen Resolution: 2560x1440

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i586 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate powersave

Debian Testing - GCC 6.1.0

Processor: Intel Xeon E5-2687W v3 @ 3.50GHz (20 Cores), Motherboard: MSI X99S SLI PLUS (MS-7885) v1.0, Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: PNY CS1211 120GB + 80GB INTEL SSDSCKGW08, Graphics: AMD FirePro V7900 2048MB, Audio: Realtek ALC892, Monitor: ASUS PB278, Network: Intel Connection

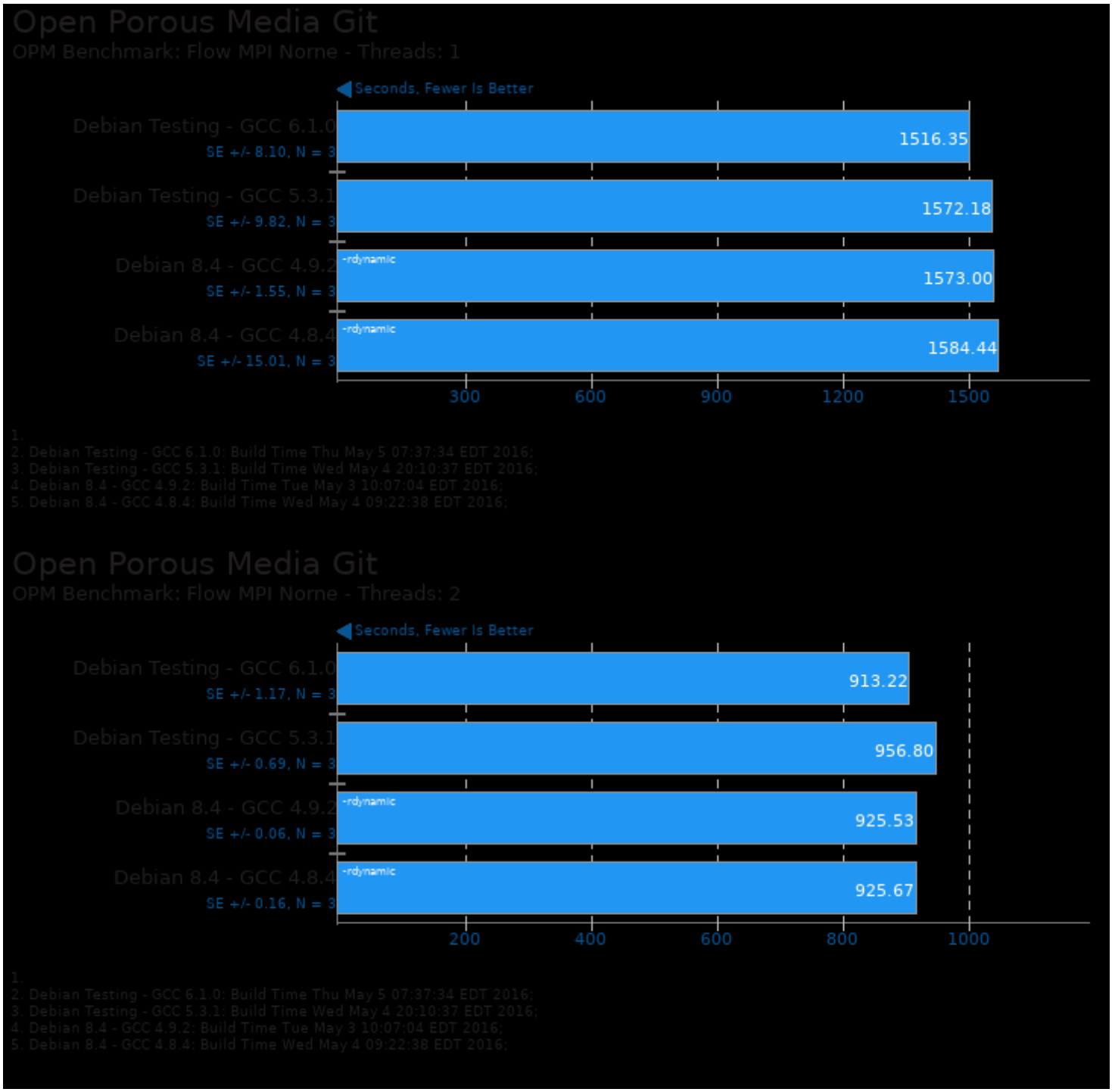
OS: Debian testing, Kernel: 4.5.0-1-amd64 (x86_64), Display Server: X Server 1.18.3, Display Driver: modesetting 1.18.3, OpenGL: 3.3 Mesa 11.1.3 Gallium 0.4, Compiler: GCC 6.1.0, File-System: ext4, Screen Resolution: 2560x1440

Compiler Notes: --disable-multilib --enable-checking=release
Processor Notes: Scaling Governor: intel_pstate powersave

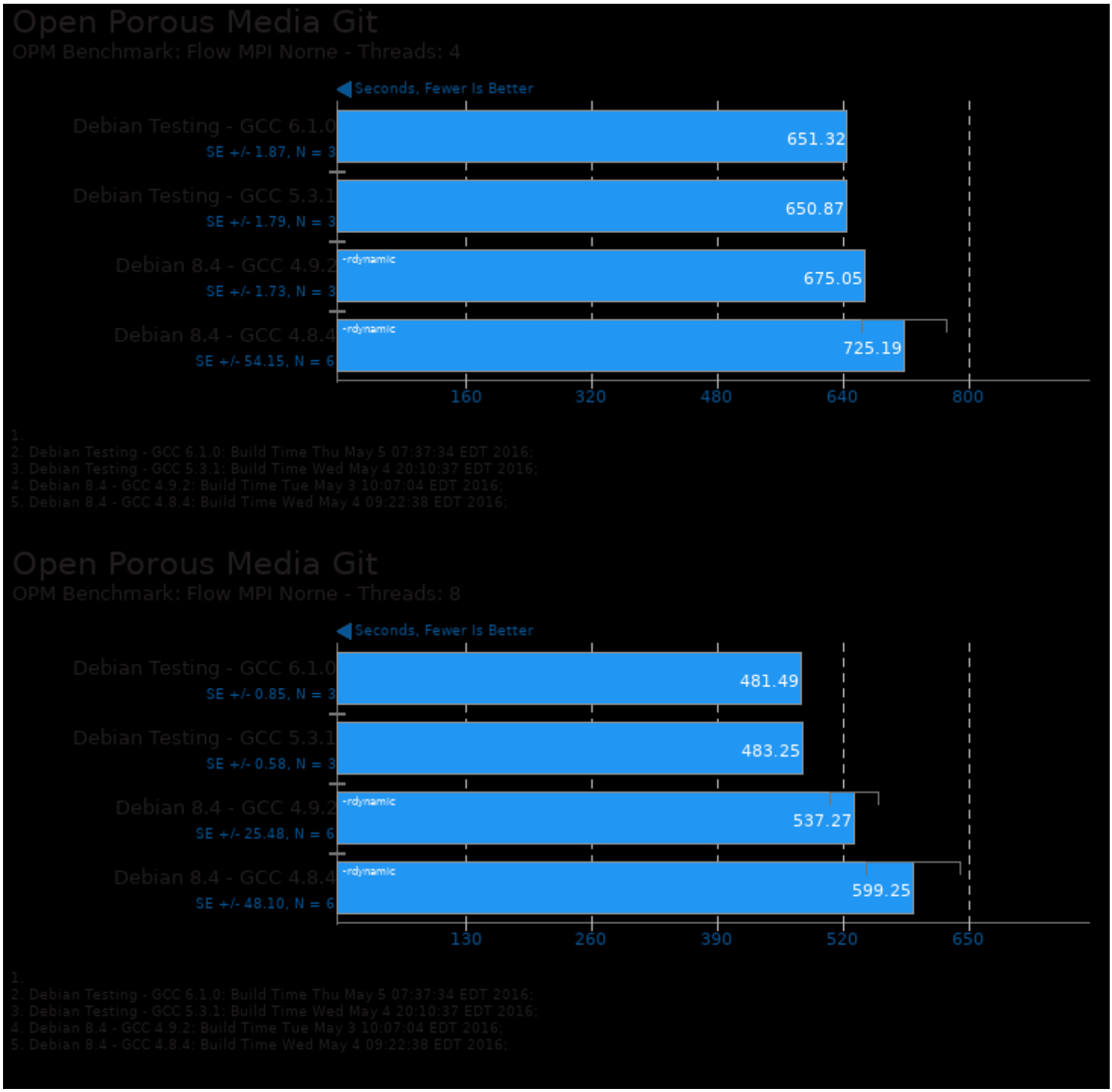
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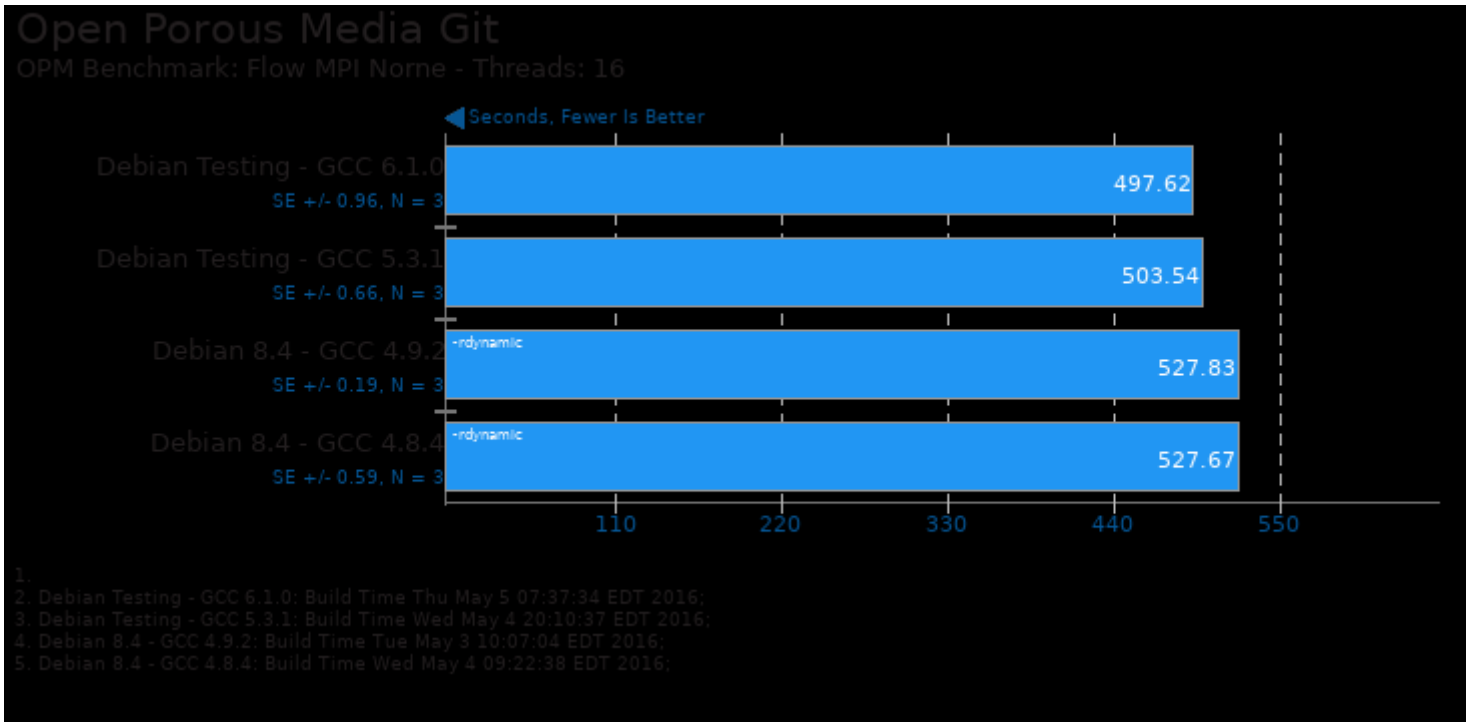
	Debian 8.4 - GCC 4.8.4	Debian 8.4 - GCC 4.9.2	Debian Testing - GCC 5.3.1	Debian Testing - GCC 6.1.0
Open Porous Media Git - Flow MPI Norne - 1 (sec)	1584	1573	1572	1516
Normalized	95.7%	96.4%	96.45%	100%
Standard Deviation	1.6%	0.2%	1.1%	0.9%
Open Porous Media Git - Flow MPI Norne - 2 (sec)	925.67	925.53	956.80	913.22
Normalized	98.66%	98.67%	95.45%	100%
Standard Deviation	0%	0%	0.1%	0.2%
Open Porous Media Git - Flow MPI Norne - 4 (sec)	725.19	675.05	650.87	651.32
Normalized	89.75%	96.42%	100%	99.93%
Standard Deviation	18.3%	0.4%	0.5%	0.5%
Open Porous Media Git - Flow MPI Norne - 8 (sec)	599.25	537.27	483.25	481.49
Normalized	80.35%	89.62%	99.64%	100%
Standard Deviation	19.7%	11.6%	0.2%	0.3%
Open Porous Media Git - Flow MPI Norne - 16 (sec)	527.67	527.83	503.54	497.62
Normalized	94.31%	94.28%	98.82%	100%
Standard Deviation	0.2%	0.1%	0.2%	0.3%

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