



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp<sup>®</sup>\_rate2006 = 1840

SPECfp\_rate\_base2006 = 1790

CPU2006 license: 9017

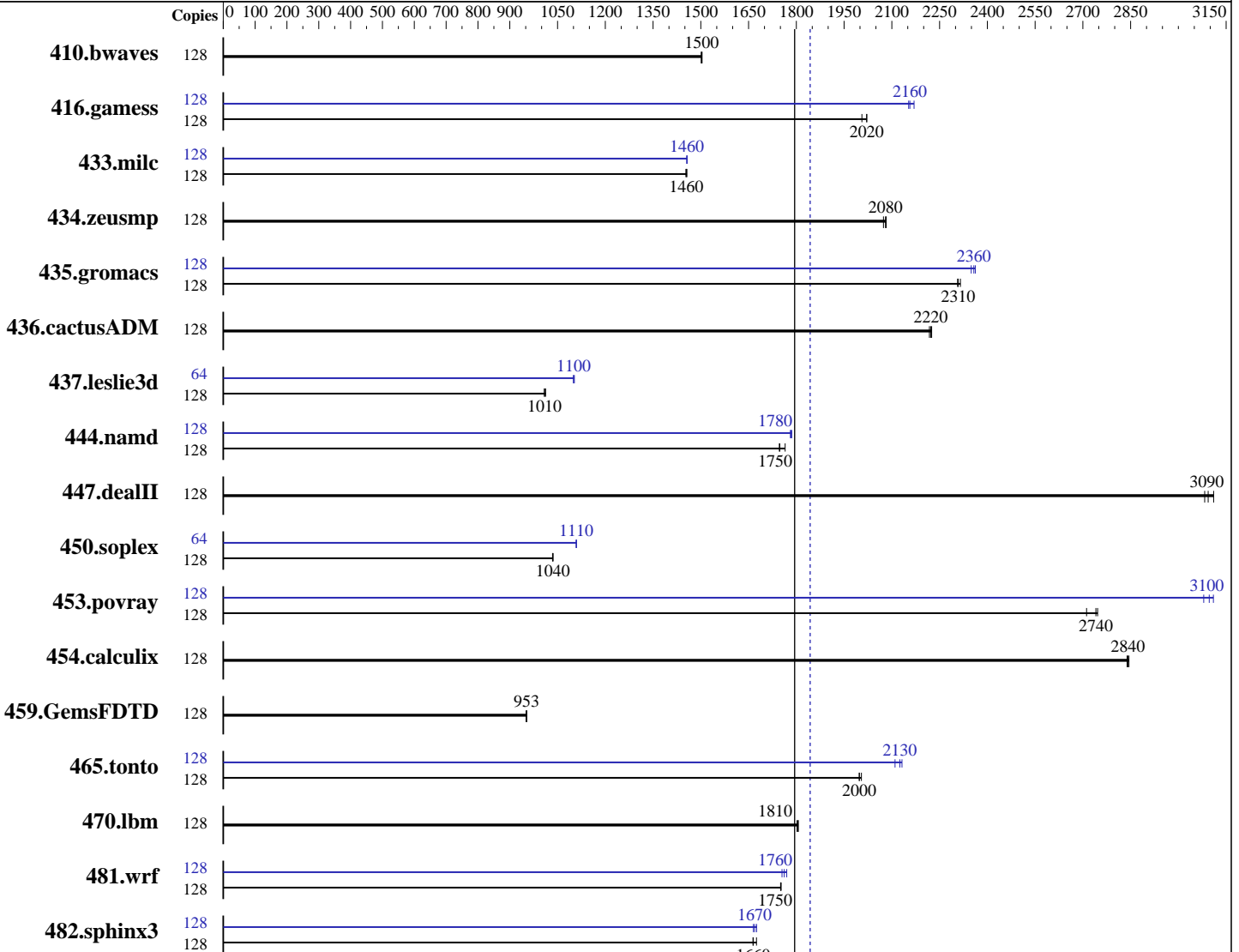
Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Jun-2015

Hardware Availability: Jul-2015

Software Availability: Oct-2014



SPECfp\_rate\_base2006 = 1790

SPECfp\_rate2006 = 1840

### Hardware

CPU Name: Intel Xeon E7-8860 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 64 cores, 4 chips, 16 cores/chip, 2 threads/core  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

Continued on next page

### Software

Operating System: SUSE Linus Enterprise Server 12 (x86\_64)  
 3.12.28-4-default  
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
 Auto Parallel: No  
 File System: xfs  
 System State: Run level 3 (multi-user)

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp\_rate2006 = 1840

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp\_rate\_base2006 = 1790

CPU2006 license: 9017

Test date: Jun-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Jul-2015

Tested by: Lenovo Group Limited

Software Availability: Oct-2014

L3 Cache: 40 MB I+D on chip per chip  
Other Cache: None  
Memory: 1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
Disk Subsystem: 1 x 400 GB SSD  
Other Hardware: None

Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	128	<b>1158</b>	<b>1500</b>	1157	1500	1159	1500	128	<b>1158</b>	<b>1500</b>	1157	1500	1159	1500
416.gamess	128	<b>1240</b>	<b>2020</b>	1240	2020	1249	2010	128	1155	2170	1164	2150	<b>1162</b>	<b>2160</b>
433.milc	128	807	1460	<b>808</b>	<b>1460</b>	809	1450	128	<b>807</b>	<b>1460</b>	807	1460	807	1460
434.zeusmp	128	<b>560</b>	<b>2080</b>	562	2070	559	2080	128	<b>560</b>	<b>2080</b>	562	2070	559	2080
435.gromacs	128	396	2310	<b>396</b>	<b>2310</b>	395	2320	128	387	2360	389	2350	<b>388</b>	<b>2360</b>
436.cactusADM	128	687	2230	690	2220	<b>688</b>	<b>2220</b>	128	687	2230	690	2220	<b>688</b>	<b>2220</b>
437.leslie3d	128	1193	1010	<b>1192</b>	<b>1010</b>	1188	1010	64	<b>547</b>	<b>1100</b>	545	1100	547	1100
444.namd	128	588	1750	582	1760	<b>587</b>	<b>1750</b>	128	<b>576</b>	<b>1780</b>	575	1790	576	1780
447.dealII	128	<b>473</b>	<b>3090</b>	475	3080	471	3110	128	<b>473</b>	<b>3090</b>	475	3080	471	3110
450.soplex	128	<b>1031</b>	<b>1040</b>	1031	1040	1032	1030	64	481	1110	<b>481</b>	<b>1110</b>	481	1110
453.povray	128	<b>248</b>	<b>2740</b>	248	2750	251	2710	128	219	3110	<b>220</b>	<b>3100</b>	221	3080
454.calculix	128	372	2840	<b>372</b>	<b>2840</b>	371	2840	128	372	2840	<b>372</b>	<b>2840</b>	371	2840
459.GemsFDTD	128	1425	953	1428	951	<b>1426</b>	<b>953</b>	128	1425	953	1428	951	<b>1426</b>	<b>953</b>
465.tonto	128	628	2000	<b>630</b>	<b>2000</b>	631	2000	128	597	2110	<b>593</b>	<b>2130</b>	591	2130
470.lbm	128	976	1800	974	1810	<b>974</b>	<b>1810</b>	128	976	1800	974	1810	<b>974</b>	<b>1810</b>
481.wrf	128	816	1750	<b>816</b>	<b>1750</b>	817	1750	128	815	1760	808	1770	<b>811</b>	<b>1760</b>
482.sphinx3	128	1490	1670	<b>1499</b>	<b>1660</b>	1499	1660	128	<b>1494</b>	<b>1670</b>	1489	1680	1498	1660

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp\_rate2006 = 1840

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp\_rate\_base2006 = 1790

CPU2006 license: 9017

Test date: Jun-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Jul-2015

Tested by: Lenovo Group Limited

Software Availability: Oct-2014

### Platform Notes

```

Operating Mode set to Custom in BIOS
Cstates disabled in BIOS
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-w3yn Tue Jun 9 04:07:47 2015

```

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: <http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

```

From /proc/cpuinfo
model name      : Intel(R) Xeon(R) CPU E7-8860 v3 @ 2.20GHz
 4 "physical id"s (chips)
128 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores      : 16
siblings       : 32
physical 0:    cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1:    cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 2:    cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 3:    cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
cache size     : 40960 KB

```

```

From /proc/meminfo
MemTotal:      1058524636 kB
HugePages_Total: 0
Hugepagesize:  2048 kB

```

```

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 0
# This file is deprecated and will be removed in a future service pack or
release.
# Please check /etc/os-release for details about this release.
os-release:
NAME="SLES"
VERSION="12"
VERSION_ID="12"
PRETTY_NAME="SUSE Linux Enterprise Server 12"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12"

```

```

uname -a:
Linux linux-w3yn 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
Continued on next page

```



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp\_rate2006 = 1840

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp\_rate\_base2006 = 1790

CPU2006 license: 9017

Test date: Jun-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Jul-2015

Tested by: Lenovo Group Limited

Software Availability: Oct-2014

## Platform Notes (Continued)

(9879bd4) x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 5 Jun 8 14:59

SPEC is set to: /home/cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	331G	114G	217G	35%	/home

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS IBM -[A9E121SUS-1.00]- 03/13/2015

Memory:

64x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 1600 MHz  
32x NO DIMM Unknown

(End of data from sysinfo program)

## General Notes

Environment variables set by runspec before the start of the run:

LD\_LIBRARY\_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent\_hugepage/enabled

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop\_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECfp\_rate2006 = 1840

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp\_rate\_base2006 = 1790

CPU2006 license: 9017

Test date: Jun-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Jul-2015

Tested by: Lenovo Group Limited

Software Availability: Oct-2014

## Base Portability Flags

```

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

```

## Base Optimization Flags

C benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

```

## Peak Compiler Invocation

C benchmarks:

```

icc -m64

```

C++ benchmarks (except as noted below):

```

icpc -m64

```

```

450.soplex: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECfp\_rate2006 = 1840**

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

**SPECfp\_rate\_base2006 = 1790**

**CPU2006 license:** 9017

**Test date:** Jun-2015

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jul-2015

**Tested by:** Lenovo Group Limited

**Software Availability:** Oct-2014

## Peak Compiler Invocation (Continued)

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64  
 416.gamess: -DSPEC\_CPU\_LP64  
 433.milc: -DSPEC\_CPU\_LP64  
 434.zeusmp: -DSPEC\_CPU\_LP64  
 435.gromacs: -DSPEC\_CPU\_LP64 -nofor\_main  
 436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main  
 437.leslie3d: -DSPEC\_CPU\_LP64  
 444.namd: -DSPEC\_CPU\_LP64  
 447.dealII: -DSPEC\_CPU\_LP64  
 453.povray: -DSPEC\_CPU\_LP64  
 454.calculix: -DSPEC\_CPU\_LP64 -nofor\_main  
 459.GemsFDTD: -DSPEC\_CPU\_LP64  
 465.tonto: -DSPEC\_CPU\_LP64  
 470.lbm: -DSPEC\_CPU\_LP64  
 481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX  
 482.sphinx3: -DSPEC\_CPU\_LP64

## Peak Optimization Flags

C benchmarks:

433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2)  
 -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
 -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3  
 -unroll2

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
 -O3(pass 2) -no-prec-div(pass 2)  
 -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias  
 -auto-ilp32

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECfp\_rate2006 = 1840

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp\_rate\_base2006 = 1790

CPU2006 license: 9017

Test date: Jun-2015

Test sponsor: Lenovo Group Limited

Hardware Availability: Jul-2015

Tested by: Lenovo Group Limited

Software Availability: Oct-2014

## Peak Optimization Flags (Continued)

447.deallI: basepeak = yes

450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll14  
-ansi-alias

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll12  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll14  
-auto -inline-calloc -opt-malloc-options=3

### Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Default-Platform-Flags.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Default-Platform-Flags.xml>



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo System x3850 X6  
(Intel Xeon E7-8860 v3, 2.20 GHz)

SPECfp\_rate2006 = 1840

SPECfp\_rate\_base2006 = 1790

**CPU2006 license:** 9017

**Test sponsor:** Lenovo Group Limited

**Tested by:** Lenovo Group Limited

**Test date:** Jun-2015

**Hardware Availability:** Jul-2015

**Software Availability:** Oct-2014

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Mon Aug 10 10:51:12 2015 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 10 August 2015.