

# Spec CPU 2006

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The SPEC CPU 2006 benchmark by Standard Performance Evaluation Corporation (SPEC) is a proprietary Benchmark used until September 2017. The Benchmark suite includes SPECint® benchmarks and SECfp® benchmarks. The SPECint® 2006 benchmark contains 12 different benchmark tests and the SPECfp® 2006 benchmark contains 19 different benchmark tests. It can be used to measure computer speed or throughput.

{{% pageinfo %}}

This benchmark has been replaced with SPEC CPU® 2017.

{{% /pageinfo %}}

# 1 Some Hints For Intel Clusters

## 1.1 Preparation Before Running

As root:

```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
echo 1 > /proc/sys/vm/drop_caches
```

As user:

```
cd /cpu2006
source /opt/intel/bin/compilervars.sh intel64
#source /cm/shared/apps/intel-ics-2013/bin/compilervars.sh intel64
source shrc
ulimit -s unlimited
```

## 1.2 Running The Long Time Benchmark

```
bin/runspec -c intel2 --action=run --define external --rate 24 --define
↪ smt \
--define cores=24 --define physicalfirst --define invoke_with_interleave \
--define drop_caches --define THP_enabled -T all --reportable -o all fp
```

# 2 Minimal Install On CentOS 7

Spec CPU 2006 need to be purchased.

## 2.1 Dependencies

```
yum install dmidecode vim screen tree zsh rsync openssh-clients wget
yum install gcc-gfortran.x86_64 numactl libgfortran.i686
↪ libgfortran.x86_64 \
compat-gcc-34-g77.x86_64 compat-libf2c-34.i686 compat-libf2c-34.x86_64 \
kernel-devel make
```

## 2.2 Configuration

```
useradd -s /bin/bash -U -m -c HPC -d /home/hpc hpc
mkdir /cpu2006
```

```
chown hpc:hpc /cpu2006
su - hpc
ssh-keygen
```

Copy ISO image to `/home/hpc/src`

```
mkdir /home/hpc/src
wget ../cpu2006-1.2.iso
mkdir /home/hpc/mnt
mount -o loop /home/hpc/src/cpu2006-1.2.iso /home/hpc/mnt
```

As user `hpc`

```
cd /home/hpc/mnt/
./install.sh
```

Enter the directory you wish to install to (e.g. `/usr/cpu2006` )

```
/cpu2006
yes
```

As root

```
umount /home/hpc/mnt
```

## 2.3 More Configuration

```
cd /cpu2006/config
wget http://www.spec.org/cpu2006/results/res2013q4/cpu2006-20131007-
  ↪ 26551.cfg
cp cpu2006-20131007-26551.cfg
  ↪ aurora-E5-2697v2-f1.2.ic14.0.linux64.avx.rate.cfg

cd /cpu2006/Docs
mv sysinfo sysinfo.6775
wget http://www.spec.org/cpu2006/Docs/sysinfo
mv sysinfo sysinfo.6818
chmod +x sysinfo.6818
ln -s sysinfo.6818 sysinfo
```

## 2.4 Intel Compiler

The `URL` depend on the compiler you want to use

```
#wget http://registrationcenter-  
  ↪ download.intel.com/akdlm/irc_nas/2871/l_ics_2013.0.028.tgz  
wget http://registrationcenter-  
  ↪ download.intel.com/akdlm/irc_nas/3471/l_ics_2013.1.039.tgz
```

## 2.5 Running

As root:

```
echo 1 > /proc/sys/vm/drop_caches  
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled  
ulimit -s unlimited  
/root/tools/setmaxturbofreq.sh
```

As user `hpc` :

```
source /cpu2006/shrc  
source /opt/intel/composer_xe_2013/bin/compilervars.sh intel64  
ulimit -s unlimited  
  
bin/runspec -c aurora --action=run --define external --rate=40 --define  
  ↪ smt \  
--define cores=20 --define physicalfirst --define invoke_with_interleave \  
--define drop_caches --define THP_enabled -T all --reportable -o all fp  
  
bin/runspec -c aurora --action=run --define external --rate=40 --define  
  ↪ smt \  
--define cores=20 --define physicalfirst --define invoke_with_interleave \  
--define drop_caches --define THP_enabled -T all --reportable -o all fp \  
--nobuild
```

## 2.6 Power Measurement

A power measurement example can be as follows (assuming the logic of power measurement is provided in the script `query`). The content of this script is not provided as the way of measurement is very much architecture dependent. The loop queries the power supply for 21600 seconds every second, that is 6 hours.

```
for i in {1..21600}; do ./query $i >> 2013-10-22-1900.log; sleep 1; done
```

### 3 Links

- [Spec CPU 2006](#)
- [Spec CPU 2017](#)

### 4 History

| Version | Date       | Notes                     |
|---------|------------|---------------------------|
| 0.1.3   | 2022-06-16 | History, shell->bash      |
| 0.1.2   | 2020-12-27 | Typos, more explanations  |
| 0.1.1   | 2020-05-03 | Typos, replacement remark |
| 0.1.0   | 2016-02-17 | Initial release           |

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