

# Performance Benchmark for Server, Cluster and Virtual Machines

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[Http://trac.nchc.org.tw/cloud](http://trac.nchc.org.tw/cloud)

# Performance Benchmark Tools

Type	Tool	License	Cost	Win	Linux	URLs	Last Version
CPU	POV-RAY	自訂授權	Free	V	V	<a href="http://www.povray.org/">http://www.povray.org/</a>	0.7.1 (2011-03)
CPU	CoreMark	EEMBC	?	-	-	<a href="http://www.coremark.org/">http://www.coremark.org/</a> Microprocessor Benchmark	
CPU/GPU / Memory	Sandra	商業授權	?	V	-	<a href="http://www.sisoftware.net/">http://www.sisoftware.net/</a>	Sandra 2011
Memory	STREAM	自訂授權	Free	V	V	<a href="http://www.cs.virginia.edu/stream/">http://www.cs.virginia.edu/stream/</a>	(2010/10)
Disk	iozone	自訂授權	Free	V	V	<a href="http://www.iozone.org/">http://www.iozone.org/</a>	3.373 (2010/10)
Disk	boine++	GPL	Free	-	V	<a href="http://www.coker.com.au/bonnie++/">http://www.coker.com.au/bonnie++/</a>	1.96 (2009/07)
Disk	iometer	Intel	Free	V	V	<a href="http://www.iometer.org">http://www.iometer.org</a>	(2006/07)
Disk	Hd Tach	??	Free	V	X	<a href="http://www.simplisoftware.com/Public/index.php?request=HdTach">http://www.simplisoftware.com/Public/index.php? request=HdTach</a>	3.0
NAS	NPB	NASA	Free	-	V	<a href="http://www.nas.nasa.gov/Software/NPB/">http://www.nas.nasa.gov/Software/NPB/</a>	3.3.1
SMB / NFS	dbench	GPL	Free	X	V	<a href="http://dbench.samba.org/">http://dbench.samba.org/</a>	4.0 (2008/02)
<b>Disk</b>	<b>ioblazer</b>	<b>MIT</b>	<b>Free</b>	<b>V</b>	<b>V</b>	<a href="http://labs.vmware.com/flings/ioblazer">http://labs.vmware.com/flings/ioblazer</a>	<b>1.01 (2011/01)</b>
Network	netperf	HP 授權	Free	V	V	<a href="http://www.netperf.org">http://www.netperf.org</a>	2.4.5 (2009/06)
Network	iperf	自訂授權	Free	-	V	<a href="http://iperf.sourceforge.net/">http://iperf.sourceforge.net/</a>	2.0.5 (2010/07)
Network	iptraf	自訂授權	Free	-	V	<a href="http://iptraf.seul.org/">http://iptraf.seul.org/</a>	3.0.0 (2005/09)
Suite	PTS	??	Free	-	V	<a href="http://www.phoronix-test-suite.com">http://www.phoronix-test-suite.com</a>	3.0.1 (2011-03)
Suite	HPCC	自訂授權	Free	-	V	<a href="http://icl.cs.utk.edu/hpcc/">http://icl.cs.utk.edu/hpcc/</a>	1.4.1 (2010/06)
<b>Suite</b>	<b>VMmark</b>	<b>商業授權</b>	<b>??</b>	<b>V</b>	<b>V</b>	<a href="http://www.vmware.com/products/vmmark">http://www.vmware.com/products/vmmark</a>	<b>2.1 (2011/02)</b>

# POV-Ray – 3D 繪圖 Ray Tracing

## POV-Ray-related News

### Y.A.P.R.M. 0.7.1 released

A new release of Y.A.P.R.M., "[Yet Another POV-Ray Modeller](#)", has been released. 0.7.1 is a bug fix release to correct many small issues and to introduce some enhancements for usability. Joëlle Cornavin has contributed a French translation and Debian packages will follow in the next few days.

[March 03, 2011] [[Permalink](#)]

### HTTPOv updated

[HTTPOv](#), a distributed rendering system for POV-Ray which runs over HTTP, has been updated to include new features and a new Python client. Also supports the POV-Ray 3.7 beta.

[January 08, 2011] [[Permalink](#)]

### Blender Project Needs Help

Some of you may not know this, but the latest release of [Blender](#) has a POV-Ray exporter. Interested POV veterans that know how to program in Python should consider getting involved. This could be a great way to raise POV-Rays profile, by exposing it to more users. See their [wiki](#) for more details.

[January 04, 2011] [[Permalink](#)]

### Leveller 4.0 Available

The [Leveller](#) heightfield modeler has been updated. Version 4.0 (Windows ONLY) includes true 3D scene objects, contour lines, elevation labeling, cut/fill analysis, cross section reporting, shape texturing, etc. and exports formats suitable for use with the POV-Ray height\_field object.

[December 04, 2010] [[Permalink](#)]

### LionSnake v1.7.16

New version of LionSnake ... [[read more](#)]

## Hall of Fame



"Bonsai Life"





# POV-Ray 安裝

```
~$ sudo apt-get install povray # 先加 non-free 套件庫
```

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[ 原始碼: [povray](#) ] [ [lenny](#) ] [ **squeeze** ] [ [wheezy](#) ] [ [sid](#) ]

## 套件: povray (1:3.6.1-12 以及其他的) [ [non-free](#) ]

### Persistence of vision raytracer (3D renderer)

POV-Ray is a full-featured ray tracer. Ray tracers simulate objects and light sources of the real world to calculate photorealistic, computer generated images. Because of the nature of ray tracing, this process is quite CPU-intensive, at the benefit of more realistic images compared to real time rendering techniques. For example, in POV-Ray, you can model a glass prism, and you will see a spectrum in the resulting image.

POV-Ray by itself is a command-line utility that will take scene descriptions, written in a special easy-to-understand language, to produce ray-traced images (or even a sequence of images, for animations). You can either write those scene-descriptions by hand, or use external tools to generate (parts of) the scene.

povray-includes is highly recommended in addition to this package.

#### povray 的相關超連結

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Debian 的資源:

- [報告問題](#)
- [開發者資訊\(PTS\)](#)
- [Debian Changelog](#)
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- [Debian Patch Tracker](#)

下載原始碼套件 povray:

- [\[povray\\_3.6.1-12.dsc\]](#)
- [\[povray\\_3.6.1.orig.tar.gz\]](#)
- [\[povray\\_3.6.1-12.diff.gz\]](#)

維護小組:

- [Clément Stenac \(QA 頁面\)](#)

# MPI-POVRay 範例 - 看執行時間

```
1  #!/bin/bash
2  # Program:
3  #    MPI-POVRay scenes rendering demo
4  # History:
5  # 2008/03/21 VER.1
6
7  PATH=/bin:/sbin:/usr/bin:/usr/sbin:/usr/local/bin:/usr/local/sbin~/bin
8  export PATH
9
10 for file in $HOME/povray_demo/performance_demo/*.pov
11 do
12 mpirun -machinefile ~/machine_file -nolocal -np 28
/opt/povray31/source/mpi-unix/mpi-x-povray -i$file +L/opt/povray31/include
+w1024 +h768
13 done
14 exit 0
```

參考：[http://trac.nchc.org.tw/grid/wiki/krg\\_performance](http://trac.nchc.org.tw/grid/wiki/krg_performance)

# 用 MPI-POVRay 執行時間當效能依據

```
node2:4  
node3:4  
node4:4  
node5:4  
node6:4  
node7:4  
# End of Machinefile
```

```
case1.1: Resolution 1024 x 768: Running 5 *.pov continuously with np7 takes 16 secs to finish rendering  
case2.1: Resolution 2048 x 1536: Running 5 *.pov continuously with np7 takes 62 secs to finish rendering  
case3.1: Resolution 4096 x 3072: Running 5 *.pov continuously with np7 takes 241 secs to finish rendering  
case4.1: Resolution 8192 x 6144: Running 5 *.pov continuously with np7 takes 935 secs to finish rendering
```

```
case1.2: Resolution 1024 x 768: Running 5 *.pov continuously with np14 takes 10 secs to finish rendering  
case2.2: Resolution 2048 x 1536: Running 5 *.pov continuously with np14 takes 43 secs to finish rendering  
case3.2: Resolution 4096 x 3072: Running 5 *.pov continuously with np14 takes 161 secs to finish rendering  
case4.2: Resolution 8192 x 6144: Running 5 *.pov continuously with np14 takes 601 secs to finish rendering
```

```
case1.3: Resolution 1024 x 768: Running 5 *.pov continuously with np28 takes 13 secs to finish rendering  
case2.3: Resolution 2048 x 1536: Running 5 *.pov continuously with np28 takes 50 secs to finish rendering  
case3.3: Resolution 4096 x 3072: Running 5 *.pov continuously with np28 takes 185 secs to finish rendering  
case4.3: Resolution 8192 x 6144: Running 5 *.pov continuously with np28 takes 695 secs to finish rendering
```

## **MPI-POVRAY - MPI + Kerrighed**

```
#MPI+Kerrighed Machinefile  
node1:4  
node1:4  
node1:4  
node1:4
```



# IOzone - 測試檔案系統 I/O 效能

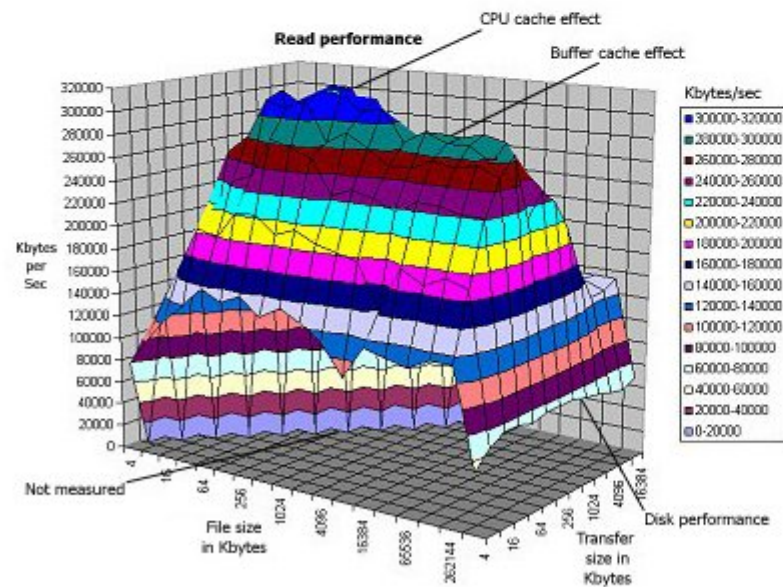
## IOzone Filesystem Benchmark



**IOzone** is a filesystem benchmark tool. The benchmark generates and measures a variety of file operations. IOzone has been ported to many machines and runs under many operating systems.

IOzone is useful for performing a broad filesystem analysis of a vendor's computer platform. The benchmark tests file I/O performance for the following operations:

*Read, write, re-read,  
re-write, read backwards,  
read strided, fread, fwrite,  
random read, pread, mmap,  
aio\_read, aio\_write*



# iozone 安裝

~\$ **sudo apt-get install iozone3** # 先加 **non-free** 套件庫

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搜尋 套件名  [全部搜尋項](#)

[ 原始碼: [iozone3](#) ] [ [lenny](#) ] [ **squeeze** ] [ [wheezy](#) ] [ [sid](#) ]

## 套件: iozone3 (308-1) [ [non-free](#) ]

### Filesystem and Disk Benchmarking Tool

iozone is useful for determining a broad benchmark of filesystem performance. The benchmark tests file I/O performance for the following operations: Read, write, re-read, re-write, read backwards, read strided, fread, fwrite, random read/write, pread/pwrite variants.

**標籤:** 系統管理: [效能評估](#), 使用者介面: [命令行](#), 角色: [程式](#), Purpose: [Checking](#)

### 其他與 iozone3 有關的套件

● 依賴 ■ 推薦 ◆ 建議

**iozone3 的相關超連結**



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下載原始碼套件 iozone3:

[\[iozone3 308-1.dsc\]](#)

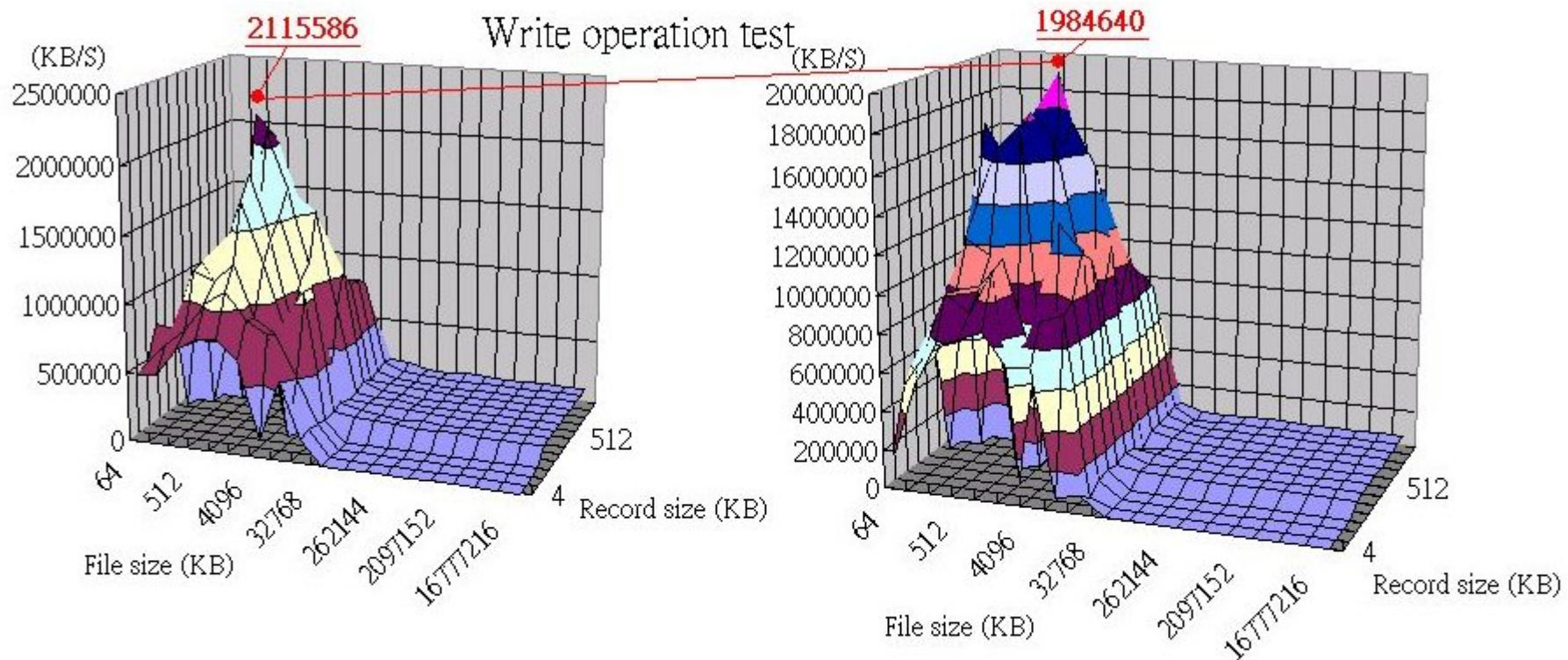


# iozone 執行與範例結果

```
~$ sudo iozone -g 16g -aRb test.wks
```

## 3. Comapre

The following six diagrams show the testing results using IOzone as the benchmark to evaluate how GPFS works with and without data-replication. The six IO operations we have done for performance evaluation are write, re-write, read, re-read, random read, and random write operation, respectively. The left surface chart of each diagram represents the testing with data-replication enable, and the right one is opposite.



參考：[http://trac.nchc.org.tw/grid/wiki/GPFS\\_Per\\_iozone](http://trac.nchc.org.tw/grid/wiki/GPFS_Per_iozone)

# bonnie++ 測試檔案系統效能

etbe – Russell Coker

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**Released Bonnie++ 1.96** 05 JUL

I have released version 1.96 of Bonnie++ in the experimental branch [1]. The main changes are: Made it compile on Solaris again (version 1.95 broke that) Now supports more files for the small file creation test (16^10 files is the limit), and it handles an overflow better. Incidentally this will in some situations change the [...]

Posted in Benchmark by: etbe  
5 Comments

**Vibration and Strange SATA Performance** 22 APR

Almost two years ago I blogged about a strange performance problem with SATA disks [1]. The problem was that certain regions of a disk gave poor linear read performance on some machines, but performed well on machines which appeared to be identical. I discovered what the problem was shortly after that but was prevented from [...]

Posted in Benchmark by: etbe  
8 Comments

**New version of Bonnie++ and Violin Memory** 10 DEC

I have just released version 1.03e of my Bonnie++ benchmark [1]. The only change is support for direct IO in Bonnie++ (via the -D command-line parameter). The patch for this was written by Dave Murch of Violin Memory [2]. Violin specializes in 2PB+ storage arrays based on DRAM and/or Flash storage. One of their

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作者部落格：<http://etbe.coker.com.au/category/benchmark/>



# bonnie++ 安裝

```
~$ sudo apt-get install bonnie++
```

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[ 原始碼: [bonnie++](#) ] [ [lenny](#) ] [ [lenny-backports](#) ] [ **squeeze** ] [ [wheezy](#) ] [ [sid](#) ]


## 套件: bonnie++ (1.96)

### Hard drive benchmark suite.

It is called Bonnie++ because it was based on the Bonnie program. This program also tests performance with creating large numbers of files. Now includes zcav raw-read test program. A modern hard drive will have more sectors in the outer tracks because they are longer. The hard drive will have a number (often more than 8) of zones where each zone has the same number of sectors (due to the need for an integral number of sectors per track). This program allows you to determine the levels of performance provided by different zones and store them in a convenient format for gnuplot.

This is the experimental version. It's not ready to replace the 1.x series in time for Lenny but will be for Lenny+1. The extra features (large file support, better bon\_csv2html, and support for zcav tests on multiple devices) will make it worth using for some people.

#### bonnie++ 的相關超連結



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- [Debian Changelog](#)
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下載原始碼套件 bonnie++:

- [\[bonnie++\\_1.96.dsc\]](#)
- [\[bonnie++\\_1.96.tar.gz\]](#)

維護者:

- [Russell Coker \(QA 頁面\)](#)

相似套件:

- [gddrescue](#)

# bonnie++ 執行

```
# bonnie++ -d /home/gpfs_mount/ -s 16000:1048576  
-r 1024 -u root
```

- -d 要測試的目錄
- -s 測試的檔案大小 (MB)
- -n 測試的檔案數 (Byte)
- -m 機器的名稱，自行命名，只會顯示在螢幕上，不影響結果
- -r 指定記憶體大小 (MB)
- -x 測試次數
- -u 你所要使用的 user-id，不建議使用 root
- -g 你所要使用的 group-id
- -q 安靜模式，只會顯示結果，其它額外的訊息會被隱藏
- -f 快速模式，會跳過 per-char IO 測試
- -b 不要寫入緩衝，fsync (即時寫入)
- -p 有多少的 processes 要來服務 semaphores
- -y 在每次測試前等待 semaphore



# bonnie++ 執行結果

```
bonnie++ -d /home/gpfs_mount/ -s 16000:1048576 -r 1024 -u root
Using uid:0, gid:0.
Writing with putc()...done
Writing intelligently...done
Rewriting...done
Reading with getc()...done
Reading intelligently...done
start 'em...done...done...done...
Create files in sequential order...done.
Stat files in sequential order...done.
Delete files in sequential order...done.
Create files in random order...done.
Stat files in random order...done.
Delete files in random order...done.
Version 1.03      -----Sequential Output----- --Sequential Input- --Random-
                  -Per Chr- --Block-- -Rewrite- -Per Chr- --Block-- --Seeks--
Machine   Size:chnk K/sec %CP K/sec %CP K/sec %CP K/sec %CP K/sec %CP /sec %CP
gpfs-s 16000M:1024k 52540 84 52879 4 20592 3 53244 91 79776 8 51.4 5
                  -----Sequential Create----- -----Random Create-----
                  -Create-- --Read--- -Delete-- -Create-- --Read--- -Delete--
                  files /sec %CP /sec %CP /sec %CP /sec %CP /sec %CP /sec %CP
                  16 317 1 1171 1 658 1 366 1 1657 2 427 1
gpfs-server,16000M:1024k,52540,84,52879,4,20592,3,53244,91,79776,8,51.4,5,16,317,1,117
```

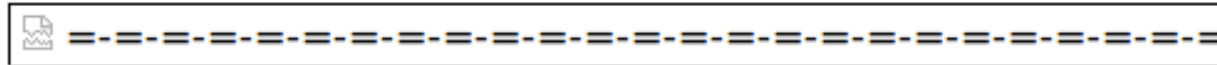
參考：<http://trac.nchc.org.tw/grid/wiki/bonnie%2B%2B>

# dbench 網路儲存效能分析 \*

- [home](#)
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- [manual page](#)
- [NFS-Loadfiles](#)
- [SMB-Loadfiles](#)
- [iSCSI-Loadfiles](#)



## Welcome to the DBENCH web pages

DBENCH is a tool to generate I/O workloads to either a filesystem or to a networked CIFS or NFS server. It can even talk to an iSCSI target. DBENCH can be used to stress a filesystem or a server to see which workload it becomes saturated and can also be used for prediction analysis to determine "How many concurrent clients/applications performing this workload can my server handle before response starts to lag?"

DBENCH provides a similar benchmarking and client emulation that is implemented in SMBTORTURE using the BENCH-NBENCH test for CIFS, but DBENCH can play these loadfiles onto a local filesystem instead of to a CIFS server. Using a different type of loadfiles DBENCH can also generate and measure latency for NFS.

# dbench 網路儲存效能分析 \*

- dbench 包含三隻主要程式：
  - dbench、tdench、smbtorture
- dbench 只提供檔案系統 I/O 的負載，它將 samba server 的實際執行的動作以文字檔記錄後，由 dbench 程式依其內容對 samba server 作相同的檔案系統 I/O 呼叫藉此模擬實際的存取情況，但 dbench 程式並沒有實際執行的網路呼叫動作。
- tdench 工具則在執行 samba 網路傳輸方面的 TCP 負載測試，和 NetBench 的動作相同但卻沒有執行檔案系統 I/O 呼叫動作，因此執行 tdench 後將得到一個模擬 NetBench 測試的最大網路傳輸值。

參考：測試認證環境建置之測試流程，  
<http://www.oss.org.tw/doc/94doc/2e.pdf>

# iperf 網路頻寬效能測試

## Iperf

Iperf was developed by NLANR/DAST as a modern alternative for measuring maximum TCP and UDP bandwidth performance. Iperf allows the tuning of various parameters and UDP characteristics. Iperf reports bandwidth, delay jitter, datagram loss.

### Latest News

**[JPerf 2.0.0 Released](#)** 2008-03-19 18:16 - [Iperf](#)

Nicolas Richasse has resurrected the jperf code base and brought it up to date. This is a binary

[Read More »](#)

**[Iperf 2.0.3 released](#)** 2008-03-18 21:41 - [Iperf](#)

Iperf 2.0.3 addresses several issues with Iperf. This release is a bug fix release and does not add any significant new functionality.

Bugs fixed in 2.0.3:

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# iperf 安裝

```
~$ sudo apt-get install iperf
```

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[ 原始碼: [iperf](#) ] [ [lenny](#) ] [ **[squeeze](#)** ] [ [wheezy](#) ] [ [sid](#) ]

## 套件: iperf (2.0.4-5)

### Internet Protocol bandwidth measuring tool

Iperf is a modern alternative for measuring TCP and UDP bandwidth performance, allowing the tuning of various parameters and characteristics.

Features:

- \* Measure bandwidth, packet loss, delay jitter
- \* Report MSS/MTU size and observed read sizes.
- \* Support for TCP window size via socket buffers.
- \* Multi-threaded. Client and server can have multiple simultaneous connections.
- \* Client can create UDP streams of specified bandwidth.
- \* Multicast and IPv6 capable.
- \* Options can be specified with K (kilo-) and M (mega-) suffices.

**iperf 的相關超連結**

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- [\[iperf\\_2.0.4-5.dsc\]](#)
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維護者:

# iperf 執行

```
@140.110.240.192 當 Server
```

```
~$ sudo iperf -s -u
```

```
-----  
@ 任意台當 Client
```

```
~$ sudo iperf -c 140.110.240.192 -u
```

```
-----  
Client connecting to 140.110.240.192, UDP port 5001
```

```
Sending 1470 byte datagrams
```

```
UDP buffer size: 122 KByte (default)
```

```
-----  
[ 3] local 172.21.253.152 port 33083 connected with 140.110.240.192 port 5001
```

```
[ ID] Interval          Transfer          Bandwidth
```

```
[ 3] 0.0-10.0 sec    1.25 MBytes    1.05 Mbits/sec
```

```
[ 3] Sent 892 datagrams
```

```
[ 3] Server Report:
```

```
[ ID] Interval          Transfer          Bandwidth          Jitter    Lost/Total Datagrams
```

```
[ 3] 0.0- 9.9 sec    1.25 MBytes    1.05 Mbits/sec    2.526 ms     0/ 891 (0%)
```

```
[ 3] 0.0- 9.9 sec    1 datagrams received out-of-order
```

# iptraf 即時網路封包流量統計

```
patrik@tribble2: ~  
File Edit View Search Terminal Help  
IPTraf  
TCP Connections (Source Host:Port) Packets Bytes Flags IFace  
192.168.1.73:57182 = 6 999 CLOSED wlan0  
74.125.79.83:80 = 4 1255 CLOSED wlan0  
192.168.1.73:52913 > 1 52 --A- wlan0  
74.125.79.101:80 = 0 0 ---- wlan0  
192.168.1.73:42039 = 17 3597 CLOSED wlan0  
91.201.61.14:80 = 15 12520 CLOSED wlan0  
74.125.77.147:80 = 0 0 ---- wlan0  
192.168.1.73:52701 > 1 52 --A- wlan0  
192.168.1.73:45136 = 21 3194 CLOSED wlan0  
66.102.13.97:443 = 16 14341 DONE wlan0  
192.168.1.73:45841 = 6 763 --A- wlan0  
74.125.77.118:80 = 5 3217 -PA- wlan0  
TCP: 40 entries  
UDP (160 bytes) from 192.168.1.254:53 to 192.168.1.73:5433  
UDP (75 bytes) from 192.168.1.73:47037 to 192.168.1.254:53  
UDP (160 bytes) from 192.168.1.254:53 to 192.168.1.73:4703  
UDP (75 bytes) from 192.168.1.73:40942 to 192.168.1.254:53  
UDP (262 bytes) from 192.168.1.254:53 to 192.168.1.73:4094  
Bottom Elapsed time: 0:02  
Pkts captured (all interfaces): 4326 | TCP flow rate  
Up/Dn/PgUp/PgDn-scroll M-more TCP info W-chg actv win S
```

```
IPTraf  
Statistics for eth1  
Total Total Incoming Incoming Outgoing Outgoing  
Packets Bytes Packets Bytes Packets Bytes  
Total: 32450 31974599 11010 735109 21440 31239490  
IP: 32450 31520293 11010 580963 21440 30939330  
TCP: 32380 31512666 11002 579887 21378 30932779  
UDP: 70 7627 8 1076 62 6551  
ICMP: 0 0 0 0 0 0  
Other IP: 0 0 0 0 0 0  
Non-IP: 0 0 0 0 0 0  
Total rates: 35440.7 kbits/sec Broadcast packets: 8  
4429.2 packets/sec Broadcast bytes: 1188  
Incoming rates: 791.1 kbits/sec  
1492.6 packets/sec IP checksum errors: 0  
Outgoing rates: 34649.7 kbits/sec  
2936.6 packets/sec
```

# iptraf 安裝與執行

```
~$ sudo apt-get install iptraf
```

```
~# iptraf
```

**PACKAGES**

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[/ 套件 / squeeze \(stable\) / net / iptraf](#)

搜尋 套件名  [全部搜尋項](#)

[ 原始碼: [iptraf](#) ] [ [lenny](#) ] [ **squeeze** ] [ [wheezy](#) ] [ [sid](#) ]

## 套件: iptraf (3.0.0-7)

### Interactive Colorful IP LAN Monitor

IPtraf is an ncurses-based IP LAN monitor that generates various network statistics including TCP info, UDP counts, ICMP and OSPF information, Ethernet load info, node stats, IP checksum errors, and others.

標籤: 系統管理: [監看](#), 使用者介面: [文字模式](#), Network Protocol: [IP](#), 角色: [程式](#), 範圍: [實用程式](#), Interface Toolkit: [Ncurses TUI](#), Purpose: [監看](#)

### 其他與 iptraf 有關的套件

● 依賴 ■ 推薦 ◆ 建議

- **dep: libc6 (>= 2.3)** [amd64, i386, mips, mipsel]

#### iptraf 的相關超連結



#### Debian 的資源:

- [報告問題](#)
- [開發者資訊\(PTS\)](#)
- [Debian Changelog](#)
- [版權文件](#)
- [Debian Patch Tracker](#)

#### 下載原始碼套件 iptraf:

- [[iptraf\\_3.0.0-7.dsc](#)]
- [[iptraf\\_3.0.0.orig.tar.gz](#)]
- [[iptraf\\_3.0.0-7.diff.gz](#)]



# Phoronix Test Suite : 推薦 !!

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## Download

The only hard dependency for the Phoronix Test Suite on Linux, OpenSolaris, \*BSD, Windows 7, and Mac OS X operating systems is PHP5 CLI (packages for it are usually called *php5-cli* or *php-cli* or just *php*). Note that only PHP5 is needed and not a web server or other packages commonly associated with PHP. Many of the benchmarking profiles do require the standard Linux development tools/libraries (GCC, etc) and other common programs. However, on many Linux distributions and operating systems the Phoronix Test Suite is able to use the software's package management system for installing these additional dependencies. On a clean Ubuntu installation, it's as easy as first running `sudo apt-get install php5-cli` and then setting up the Phoronix Test Suite.

There is a GTK2 interface written for the Phoronix Test Suite that can be used by running *phoronix-test-suite gui*. In order to use the GTK user interface, the PHP GTK module must be installed and loaded. This PHP module can be found at [gtk.php.net](http://gtk.php.net) for source and Windows binaries. PHP GTK for Mac OS X can be found [here](#). Some Linux distributions do offer *php-gtk/php5-gtk* packages for easy setup as well.

**The detailed installation instructions can be found in the [online documentation](#).**

It is recommended all users use the latest release available. The git repository for the latest development code can be obtained using `git-clone http://www.phorogit.com/repo/phoronix-test-suite.git` ([web-based viewer](#) / [.zip snapshot](#) / [.tar.gz snapshot](#)).

## Phoronix Test Suite 3.0 (Official)

Latest Release: 3.0.1-Iceland (15 March 2011)

**Download Phoronix Test Suite - Generic Package MD5:** 3c426a297b4ed8e77aad914f3e35a812

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# Phoronix Test Suite 安裝

```
~$ sudo apt-get install php5-cli
```

```
~$ wget http://www.phoronix-test-suite.com/releases/phoronix-test-suite-3.0.1.tar.gz
```

```
~$ tar zxvf phoronix-test-suite-3.0.1.tar.gz
```

```
~$ cd phoronix-test-suite/
```

```
~/phoronix-test-suite$ sudo ./install-sh
```



# Phoronix Test Suite 執行

```
phoronix@ubuntu: ~  
File Edit View Terminal Tabs Help  
phoronix@ubuntu:~$ phoronix-test-suite benchmark universe-x  
  
The following dependencies will be installed:  
- libfreeimage3  
- libfreeimage-dev  
  
This process may take several minutes.  
Reading package lists...  
Building dependency tree...  
Reading state information...  
The following NEW packages will be installed:  
  libfreeimage-dev libfreeimage3  
0 upgraded, 2 newly installed, 0 to remove and 101 not upgraded.  
Need to get 2754kB of archives.  
After this operation, 7496kB of additional disk space will be used.  
Get:1 http://us.archive.ubuntu.com hardy/universe libfreeimage3 3.9.3-3 [1243kB]  
Get:2 http://us.archive.ubuntu.com hardy/universe libfreeimage-dev 3.9.3-3 [1511  
kB]  
Fetched 2754kB in 18s (153kB/s)  
Selecting previously deselected package libfreeimage3.  
(Reading database ... 103367 files and directories currently installed.)  
Unpacking libfreeimage3 (from .../libfreeimage3_3.9.3-3_i386.deb) ...  
Selecting previously deselected package libfreeimage-dev.
```



# Phoronix Test Suite 結果

## 【測試案例】

### 1. CPU 效能比較

	Xen-PV	Xen-HVM	KVM-HVM	Help
Phoronix Test Suite - Kernel Compilation	⇒ 2304.17 secs	⇒ 2885.10 secs	⇒ 3228.48 secs	Fewer are better
Phoronix Test Suite - FFmpeg	⇒ 20.87 secs	⇒ 20.96 secs	⇒ 21.79 secs	Fewer are better
Phoronix Test Suite - Wavpack	⇒ 17.34 secs	⇒ 18.16 secs	⇒ 18.78 secs	Fewer are better

**XenPV01** 規格 = 1 CPU + 10GB HD + 1GB RAM + 500MB SWAP (說明: 虛擬機器數量一台: Xen Para-Virtualization)

**XenHVM01** 規格 = 1 CPU + 10GB HD + 1GB RAM + 500MB SWAP (說明: 虛擬機器數量一台: Xen Full Virtualization)

**KVMhvm01** 規格 = 1 CPU + 10GB HD + 1GB RAM + 500MB SWAP (說明: 虛擬機器數量一台: KVM Full Virtualization)

小結: Xen Para-Virtualization 有最佳的效能, Full Virtualization 也是 Xen-HVM 最佳 (Xen-PV > Xen-HVM > KVM-HVM)

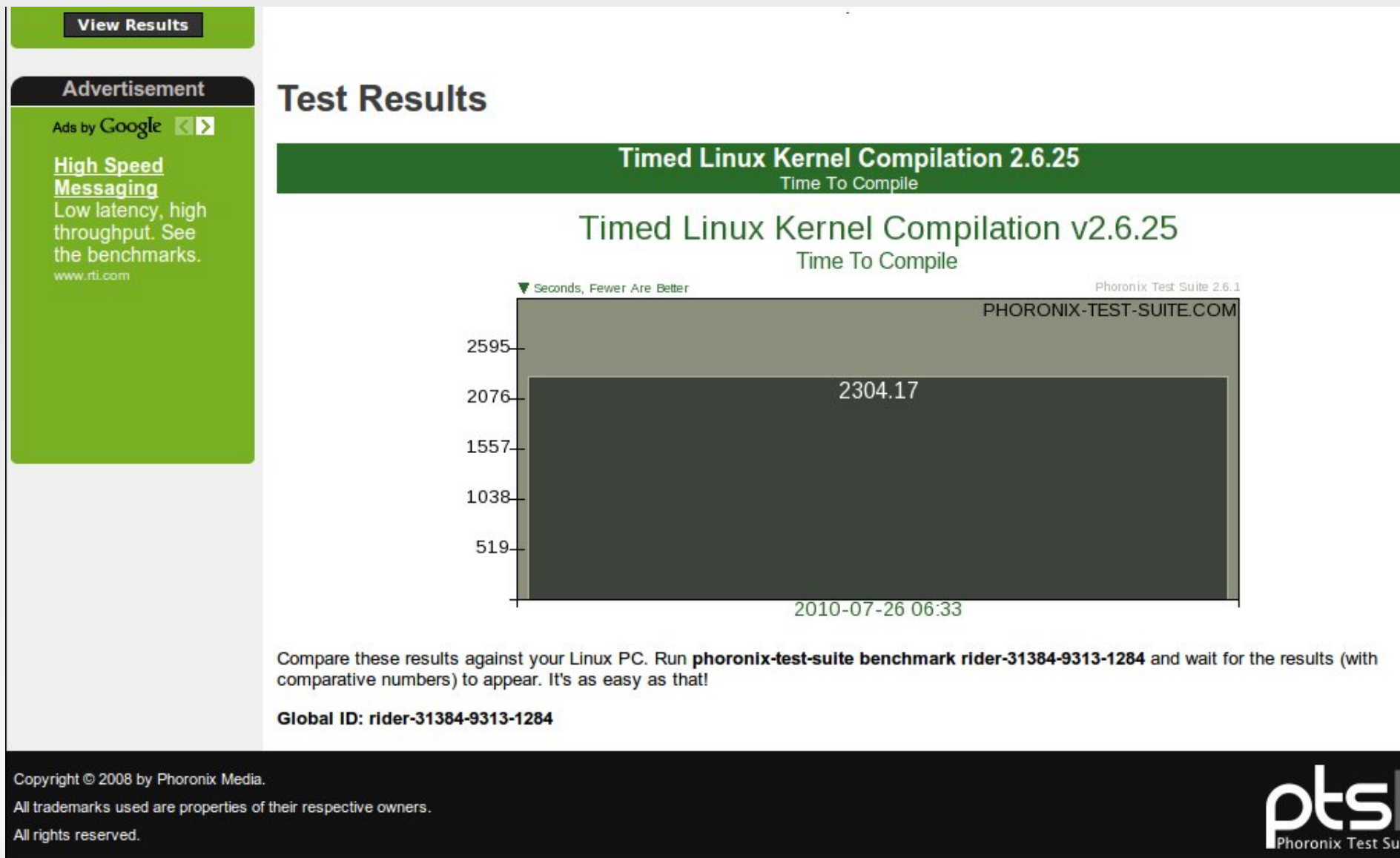
### 2. Memory 效能比較

	Xen-PV	Xen-HVM	KVM-HVM	Help
Phoronix Test Suite - CacheBench	⇒ Read: 2026.32 MB/s ⇒ Write: 7995.89 MB/s ⇒ Read/Modify/Write: 16612.87 MB/s	⇒ Read: 2020.17 MB/s ⇒ Write: 8338.78 MB/s ⇒ Read/Modify/Write: 16564.89 MB/s	⇒ Read: 2008.86 MB/s ⇒ Write: 7940.70 MB/s ⇒ Read/Modify/Write: 16436.59 MB/s	More is better
Phoronix Test Suite - RAMspeed	⇒ Integer: 3934.79 MB/s ⇒ Floating Point: 3961.87 MB/s	⇒ Integer: 3663.37 MB/s ⇒ Floating Point: 3688.82 MB/s	⇒ Integer: 3872.83 MB/s ⇒ Floating Point: 3910.84 MB/s	More is better

**XenPV01** 規格 = 1 CPU + 10GB HD + 1GB RAM + 500MB SWAP (說明: 虛擬機器數量一台: Xen Para-Virtualization)

參考: [http://trac.nchc.org.tw/grid/wiki/KVM\\_vs\\_Xen](http://trac.nchc.org.tw/grid/wiki/KVM_vs_Xen)

# Phoronix Test Suite 結果

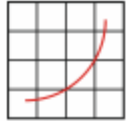


參考：[http://trac.nchc.org.tw/grid/wiki/KVM\\_vs\\_Xen](http://trac.nchc.org.tw/grid/wiki/KVM_vs_Xen)

# Benchmark 工業標準

- Embedded Microprocessor Benchmark Consortium (EEMBC)
- Standard Performance Evaluation Corporation (SPEC)

# SPEC



spec®

## Standard Performance Evaluation Corporation

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**The Standard Performance Evaluation Corporation (SPEC)** is a non-profit corporation formed to establish, maintain and endorse a standardized set of relevant benchmarks that can be applied to the newest generation of high-performance computers. SPEC develops benchmark suites and also reviews and publishes submitted results from our [member organizations](#) and other benchmark licensees.

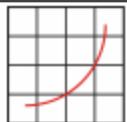
**The SPEC office will be relocating beginning March 29, and order fulfillment for orders placed between noon Eastern March 25 and March 31 will be delayed. Normal operations will resume on Friday, April 1.**

### What's New:

**03/15/2011** - SPEC's [Research Group](#) has been formed to develop standard scenarios and workloads for emerging technologies and applications. It is designed to encourage exchange among representatives from industry, academia and research institutes. For further information, see



# SPECvirt\_sc2010



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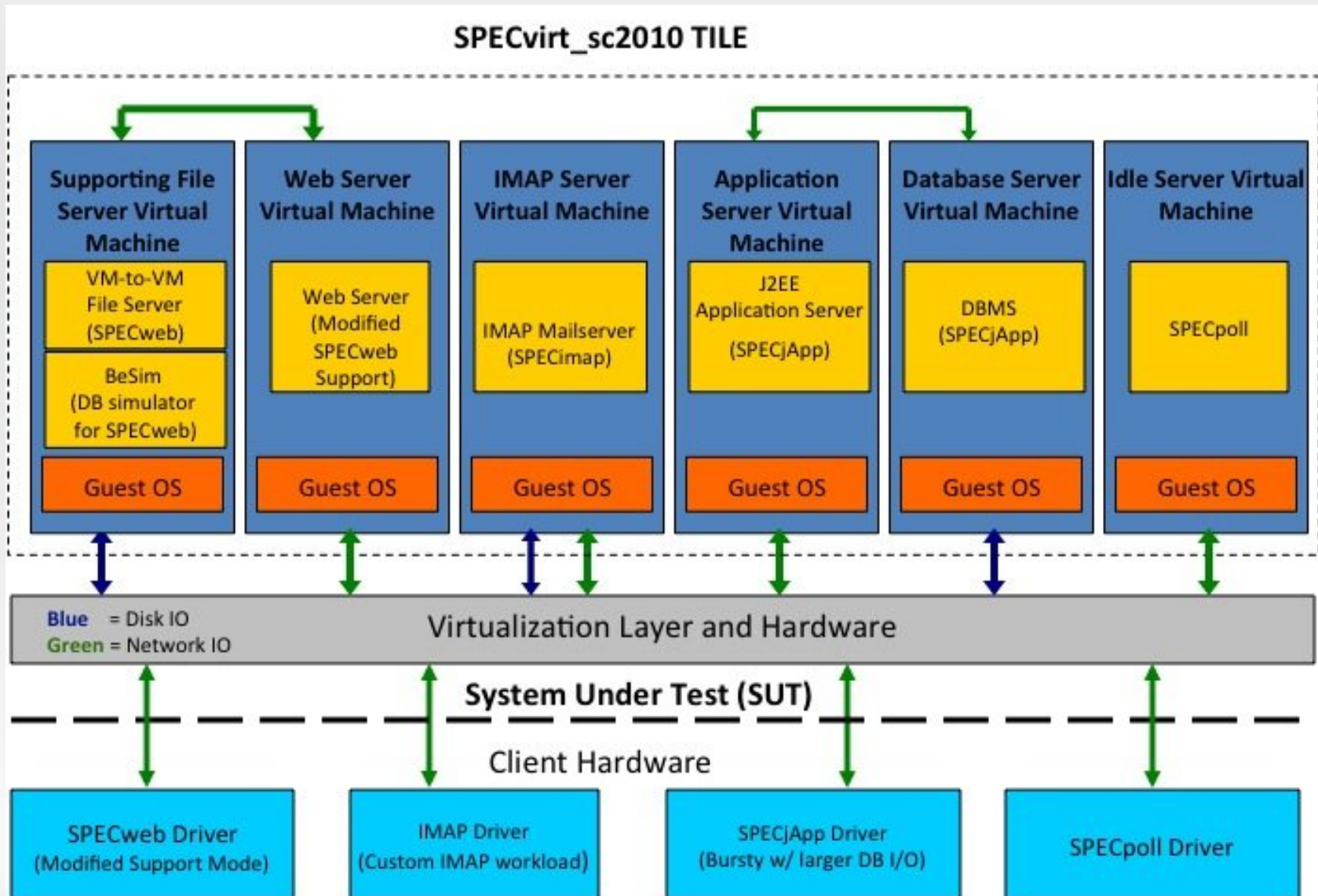
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## SPECvirt\_sc2010

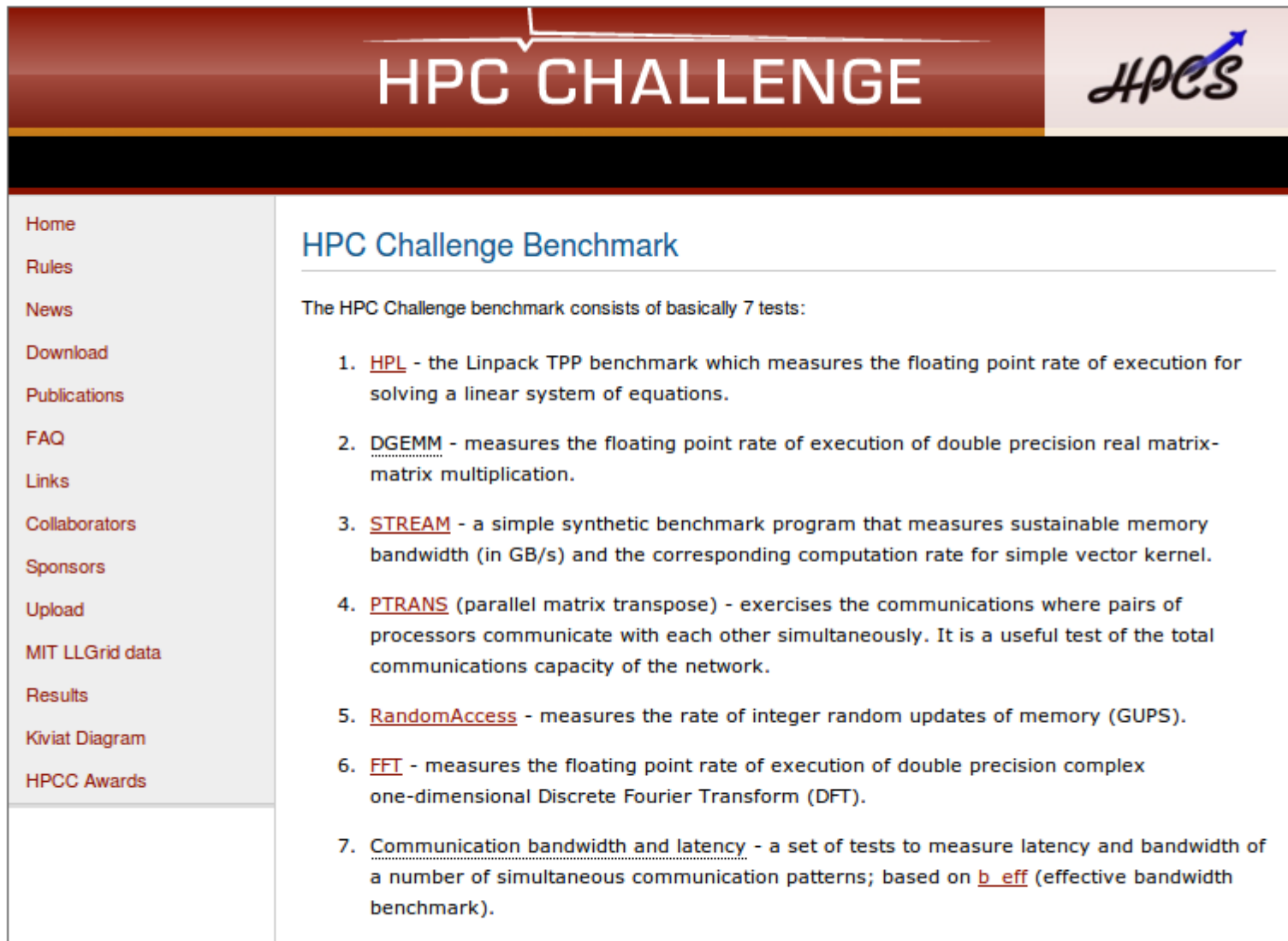
**SPECvirt\_sc2010** is SPEC's first benchmark addressing performance evaluation of datacenter servers used in virtualized server consolidation. SPECvirt\_sc2010 measures the end-to-end performance of all system components including the hardware, virtualization platform, and the virtualized guest operating system and application software. The benchmark supports hardware virtualization, operating system virtualization, and hardware partitioning schemes.


The benchmark utilizes several SPEC workloads representing applications that are common targets of virtualization and server consolidation. We modified each of these standard workloads to match a typical server consolidation scenario of CPU resource requirements, memory, disk I/O, and network utilization for each workload. These workloads are modified versions of SPECweb2005, SPECjAppServer2004, and SPECmail2008. The client-side SPECvirt\_sc2010 harness controls the workloads. Scaling is achieved by running additional sets of virtual machines, called "tiles", until overall throughput reaches a peak. All VMs must continue to meet required quality of service (QoS) criteria.

# SPECvirt sc2010 測試架構



# HPC Challenge Benchmark



**HPC CHALLENGE** 

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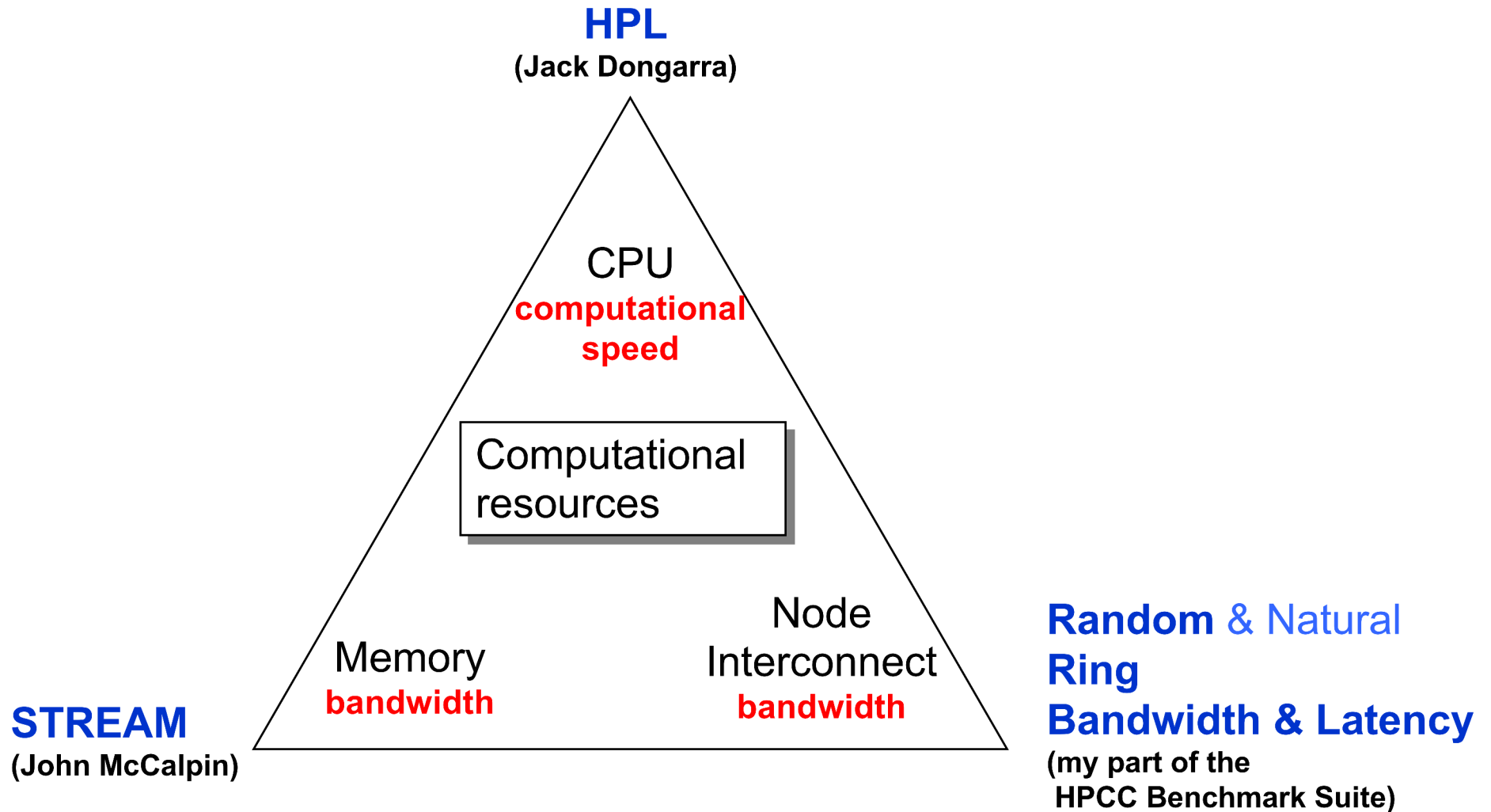
## HPC Challenge Benchmark

The HPC Challenge benchmark consists of basically 7 tests:

1. [HPL](#) - the Linpack TPP benchmark which measures the floating point rate of execution for solving a linear system of equations.
2. [DGEMM](#) - measures the floating point rate of execution of double precision real matrix-matrix multiplication.
3. [STREAM](#) - a simple synthetic benchmark program that measures sustainable memory bandwidth (in GB/s) and the corresponding computation rate for simple vector kernel.
4. [PTRANS](#) (parallel matrix transpose) - exercises the communications where pairs of processors communicate with each other simultaneously. It is a useful test of the total communications capacity of the network.
5. [RandomAccess](#) - measures the rate of integer random updates of memory (GUPS).
6. [FFT](#) - measures the floating point rate of execution of double precision complex one-dimensional Discrete Fourier Transform (DFT).
7. [Communication bandwidth and latency](#) - a set of tests to measure latency and bandwidth of a number of simultaneous communication patterns; based on [b\\_eff](#) (effective bandwidth benchmark).

<http://icl.cs.utk.edu/hpcc/>

# HPCC 是 TOP500 叢集的評分標準





# HPCC 安裝

```
~$ sudo apt-get install hpcc
```

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[ 原始碼: [hpcc](#) ] [ [squeeze](#) ] [ [wheezy](#) ] [ [sid](#) ]

## 套件: hpcc (1.4.1-1)

### HPC Challenge benchmark

The High Performance Computing (HPC) Challenge benchmark runs a suite of 7 tests that measure the performance of CPU, memory and network for HPC clusters. Amongst others, it includes the High-Performance LINPACK (HPL) benchmark, used by the Top500 ranking (<http://www.top500.org/>).

#### 其他與 hpcc 有關的套件

● 依賴 ■ 推薦 ◆ 建議

- **dep:** [libatlas3gf-base](#) [除 mips]

Automatically Tuned Linear Algebra Software, open-source

#### hpcc 的相關超連結

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下載原始碼套件 hpcc:

[[hpcc\\_1.4.1-1.dsc](#)]