

2014

# PC SECURITY LABS

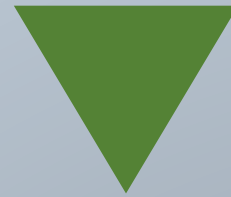
Desktop Browser



Performance Review

CPU USAGE

RAM USAGE



# Power Consumption

CANVASMARK 2013



GUIMARK - VECTOR CHARTING TEST

**PCSE**  
IT CONSULTING INSTITUTE

# Octane

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## 1. BACKGROUND

Any excessive or inappropriate consumption of system resources by software installed on computers and mobility devices will seriously impact the user's experience. Desktop browser, which is a kind of software we use every day, its consumption and occupation of system resources should be paid attention to. Hardware, e.g. CPU, RAM, Power Supply, Battery, supports software for any internet activities. So by monitoring hardware, we can directly evaluate the consumption of system resources and influence to the whole system performance by software. The higher load of hardware, the slower system running speed and higher power consumption will be. Code optimization will enhance the software efficiency, lower power consumption, improve power utilization, which is environmental friendly. We will use professional equipment and software to record the status of hardware and then we can evaluate the performance of software. We are willing to provide a new perspective for evaluating and choosing software.

## 2. INTRODUCTION

Just take desktop browser for example, suppose that every computer user uses web browser 5 hours per day, a browser whose power consumption is 10 watt above the industry averages, will cost computer users an extra amount of 18.25 kilowatt hour electricity per year, which is \$1.5 extra money depending on the price of electricity in China. If 100 million people install and use this browser every day, a total extra amount of 150 million us dollar will be paid.

We are willing to see the combination of lower system resource consumption and higher performance which is really a big challenge for the software programmers. Moreover, we will also use three third party tools for doing the benchmark of browser performance. The final score will be the combination of system resource consumption and also browser performance.

### 3. REVIEW PROCESS

The updated image of windows 8.1 x64 system will be prepared. Everfine power meter will provide the electricity to the computer.

The detailed hardware is as follows:

CPU: AMD A4-3300 2.5GHz/SOCKET FM1/1M/65w

RAM: 8GB DDR3

Six sets of data will be recorded, which is average CPU usage, average RAM usage, average power consumption usage, CanvasMark 2013, GUIMark Vector Charting Test, and Octane. Full mark for each set is 16.66666667 and the total weighted score indicates the performance of the browser. When we are evaluating the power consumption, CPU usage, RAM usage, we will use browser to visit five same clean pages and one same flash video during a period of time of 15 minutes. We install 2048MB Ramdisk in the system.

### 4. SOFTWARE INFORMATION

Software	Version
360Safety Browser	7.0.0.143
Google Chrome	34.0.1847.131
Internet Explorer	11.0.9600.16521
Mozilla Firefox	29.0.0.5224
Opera	21.0.1432.57
Maxthon CloudBrowser	4.4.0.3000
Sogou Highspeed Browser	4.2.6.11794
The Cheetah Security Browser	4.6.50.7737
Baidu Browser	6.2.0.48213

## 5. RESULT

### 5.1 AVERAGE POWER CONSUMPTION

Software	Power Consumption: watt	Ranking	Score
The Cheetah Security Browser	49.274	1	16.66666667
360Safety Browser	49.345	2	16.57845038
Internet Explorer	49.691	3	16.14855126
Opera	50.129	4	15.60434372
Maxthon CloudBrowser	52.267	5	12.94791511
Mozilla Firefox	55.020	6	9.52735948
Sogou Highspeed Browser	56.427	7	7.77918593
Google Chrome	56.482	8	7.71084936
Baidu Browser	62.688	9	0.00000000

### 5.2 AVERAGE CPU USAGE

Software	CPU Usage: %	Ranking	Score
Internet Explorer	16.779	1	16.66666667
360Safety Browser	20.657	2	15.42165890
The Cheetah Security Browser	23.119	3	14.63124912
Opera	25.841	4	13.75736795
Mozilla Firefox	26.936	5	13.40582502
Maxthon CloudBrowser	34.506	6	10.97552362
Sogou Highspeed Browser	44.679	7	7.70954527
Google Chrome	57.023	8	3.74658088
Baidu Browser	68.693	9	0.00000000

### 5.3 AVERAGE RAM USAGE

Software	RAM Usage: %	Ranking	Score
Mozilla Firefox	47.293	1	16.66666667
Maxthon CloudBrowser	47.371	2	16.31273255
360Safety Browser	47.428	3	16.05408839
Internet Explorer	47.484	4	15.79998185
Opera	48.521	5	11.09447318
Google Chrome	48.937	6	9.20682458
The Cheetah Security Browser	49.033	7	8.77121336
Baidu Browser	49.825	8	5.17742082
Sogou Highspeed Browser	50.966	9	0.00000000

### 5.4 CANVASMARX 2013 (HIGHER, BETTER)

Software	CanvasMark 2013	Ranking	Score
360Safety Browser	8197	1	16.66666667
The Cheetah Security Browser	7560	2	13.90694047
Internet Explorer	6214	3	8.07555671
Mozilla Firefox	6205	4	8.03656529
Opera	5839	5	6.45091413
Google Chrome	5524	6	5.08621437
Baidu Browser	5231	7	3.81682696
Sogou Highspeed Browser	4786	8	1.88891777
Maxthon CloudBrowser	4350	9	0.00000000

### 5.5 GUIMARK - VECTOR CHARTING TEST (HIGHER, BETTER)

Software	GUIMark: fps	Ranking	Score
Internet Explorer	36.47	1	16.66666667
Mozilla Firefox	35.5	2	15.83547558
Opera	20.23	3	2.75064267
Baidu Browser	18.96	4	1.66238218
Sogou Highspeed Browser	18.7	5	1.43958869
Google Chrome	18.38	6	1.16538132
Maxthon CloudBrowser	17.47	7	0.38560411
The Cheetah Security Browser	17.18	8	0.13710368
360Safety Browser	17.02	9	0.00000000

### 5.6 OCTANE (HIGHER, BETTER)

Software	Octane	Ranking	Score
Google Chrome	11918	1	16.66666667
Opera	11632	2	15.61604585
The Cheetah Security Browser	10584	3	11.76621850
360Safety Browser	10390	4	11.05355962
Maxthon CloudBrowser	10309	5	10.75600617
Mozilla Firefox	9804	6	8.90088899
Sogou Highspeed Browser	9078	7	6.23392844
Baidu Browser	8403	8	3.75431636
Internet Explorer	7381	9	0.00000000

## 5.7 FINAL SCORE

Software	Final Score
360Safety Browser	75.77442395
Internet Explorer	73.35742316
Mozilla Firefox	72.37278101
The Cheetah Security Browser	65.87939180
Opera	65.27378751
Maxthon CloudBrowser	51.37778157
Google Chrome	43.58251717
Sogou Highspeed Browser	25.05116610
Baidu Browser	14.41094632

## 6. TESTER INTRODUCTION

JIAXING CHENXIANG INFORMATION TECHNOLOGY CO., LTD., is an IT product test and consulting company located in Jiaxing, Zhejiang Province, China. As a professional tester of desktop security products and also mobility security solutions, we are willing to provide references to the endpoint users for choosing security solutions. Not only we test security solutions for different environment and customers, but also we provide test and consulting reports of other IT products, e.g. battery, mobility devices, computer power, etc.



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