

Endpoint Protection Performance Benchmarks

GFI Software conducted objective performance testing on four, publically available business endpoint protection security software products on Windows® 7 Professional during the first quarter of 2011.



Performance Metrics Summary

GFI Software selected a set of objective metrics which provide a comprehensive and realistic indication of the areas in which endpoint protection products may impact system performance for end users. Our metrics test the impact of the software on common tasks that end users would perform on a daily basis.

All of the test methods can be replicated by third parties using the same environment to obtain similar benchmark results. Detailed descriptions of the methodologies used in the tests are available in the **Methodology Description** of this report.

Testing was performed on all products using eight performance metrics:

- » **Installation time**
- » **Boot time**
- » **Average CPU usage during idle**
- » **Average CPU usage during scan**
- » **Memory usage during system idle**
- » **Memory usage during scan**
- » **Internet Explorer open time**
- » **File compression and decompression**

Benchmark 1 – Installation Time

This metric measures the minimum installation time required by the product to be fully functional and ready for use by the end user. Lower installation times represent products which are quicker for a user to install.

Benchmark 2 – Boot Time

This metric measures the amount of time taken for the machine to boot into the operating system. Security software is generally launched at Windows startup, adding an additional amount of time and delaying the startup of the operating system. Shorter boot times indicate that the product has had less impact on machine operations.

Benchmark 3 – Average CPU Usage during Idle

This metric measures the amount of CPU used when the system and product are idle.

Benchmark 4 – Average CPU Usage during Scan

This metric measures the amount of CPU used when the product performs a scan.

Benchmark 5 – Memory Usage during System Idle

This metric measures the amount of memory (RAM) used by the product while it and the machine are in an idle state. The amount of memory used while the machine is idle provides a good indication of the amount of system resources being consumed by the product on a permanent basis.

Benchmark 6 – Memory Usage during Scan

This metric measures the amount of memory (RAM) used by the product while performing a system scan.

Benchmark 7 – Internet Explorer Open Time

This metric measures how responsive Internet Explorer appears to the user by calculating the amount of time it takes for the browser to launch from Windows. To allow for caching effects by the operating system, both the initial launch time and the subsequent launch times were measured. Our final result is an average of these two measurements.

Benchmark 8 – File Compression and Decompression

This metric measures the amount of time taken to compress and decompress different types of files. Files formats used in this test included documents, images and audio files.

Test Environment

- » Dell OptiPlex™ 360 - Windows 7 professional (32-bit) Endpoint System
- » CPU: Intel® Core™ 2 Duo E7500 (2.93 GHz, 2.92 GHz)
- » Video Card: ATI Radeon™ HD 2400 (1522 MB)
- » RAM: 4 GB DDR2
- » HDD: WD Caviar Blue WD1600AAJS (SATA 3 GB/s, 160 GB)

Products and Versions

In this report, we have tested the following versions of endpoint protection software*:

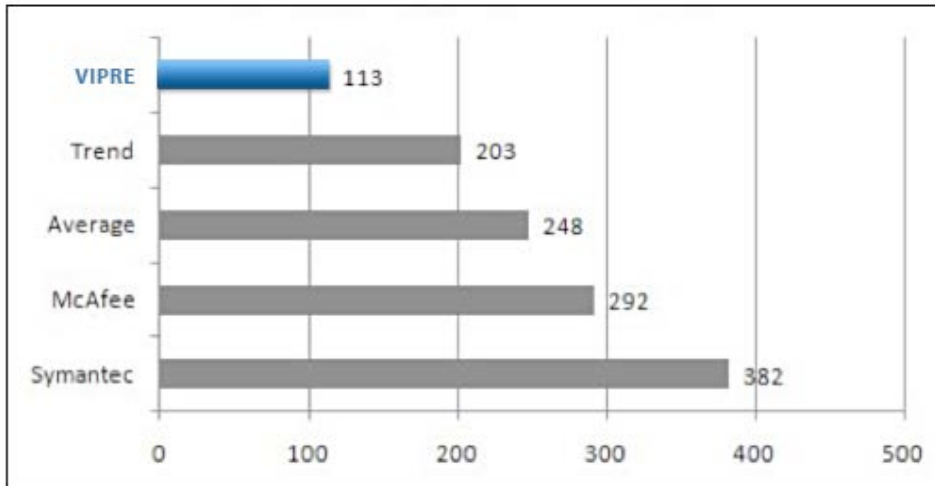
Vendor	Product	Version
GFI VIPRE	Antivirus Business Premium	4.0.3907
Symantec	Endpoint Protection	11.06200.754
Trend Micro	OfficeScan	10.5.1083
McAfee	VirusScan Enterprise + AntiSpyware Enterprise	8.8

*All products were tested using their default settings

Test Results

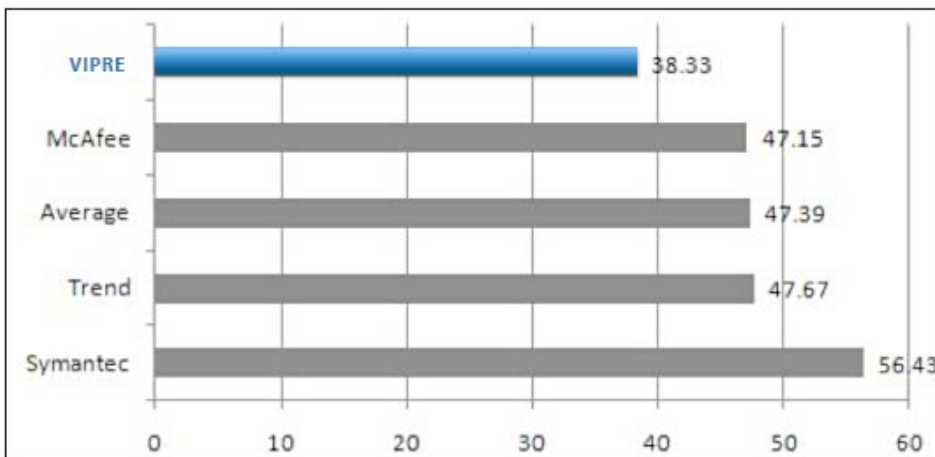
Benchmark 1 – Installation Time (seconds)

Products with faster installation times are considered better performers in this category.



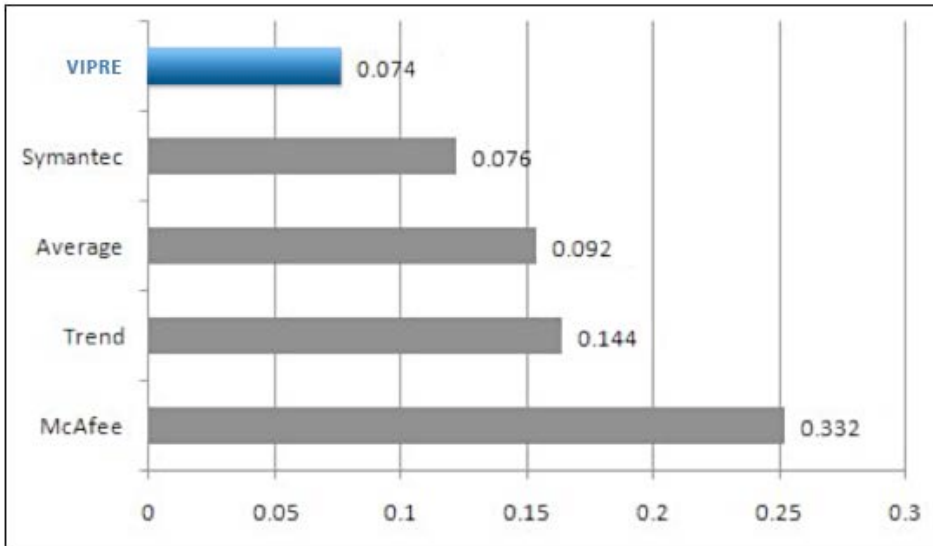
Benchmark 2 – Boot Time (seconds)

Products with faster boot times are considered better performers in this category.



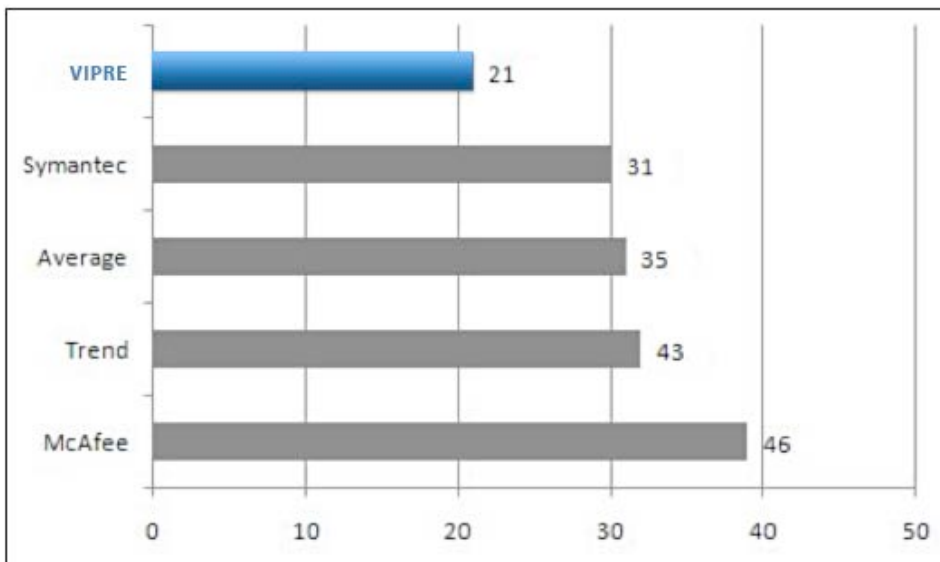
Benchmark 3 – CPU Usage during Idle (percent)

Products with lower CPU usage are considered better performers in this category.



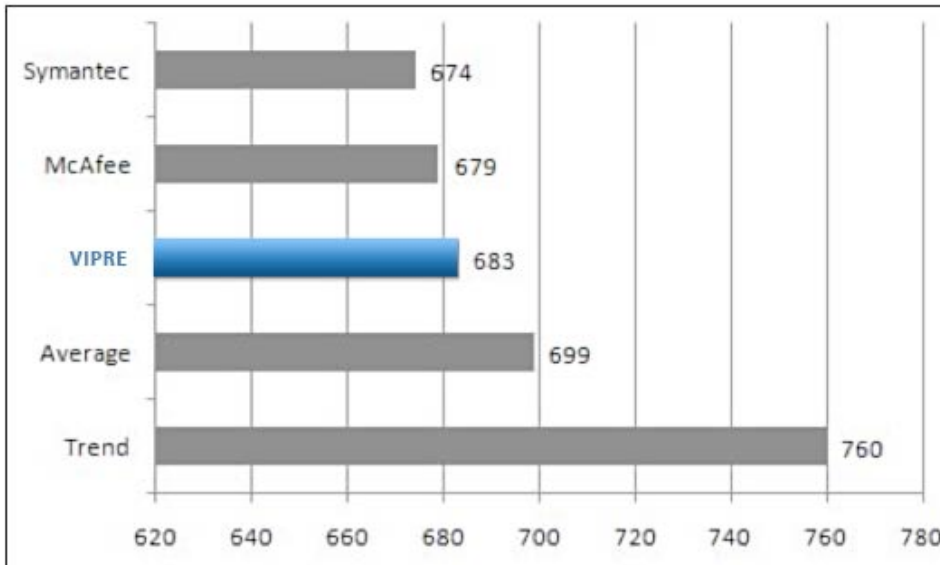
Benchmark 4 – CPU Usage during Scan (percent)

Products with lower CPU usage are considered better performers in this category.



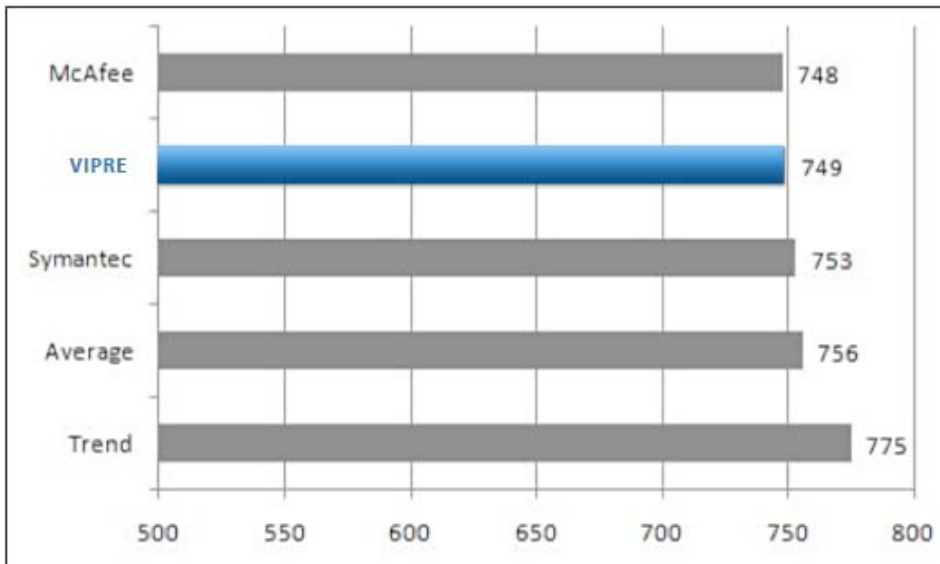
Benchmark 5 – Memory Usage during System Idle (megabytes)

Products with lower idle RAM usage are considered better performers in this category.



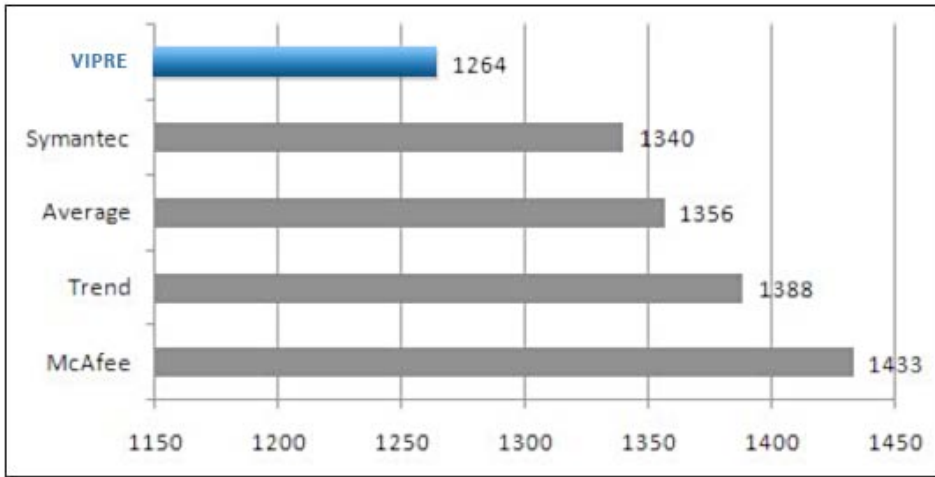
Benchmark 6 – Memory Usage during Scan (megabytes)

Products with lower RAM usage are considered better performers in this category.



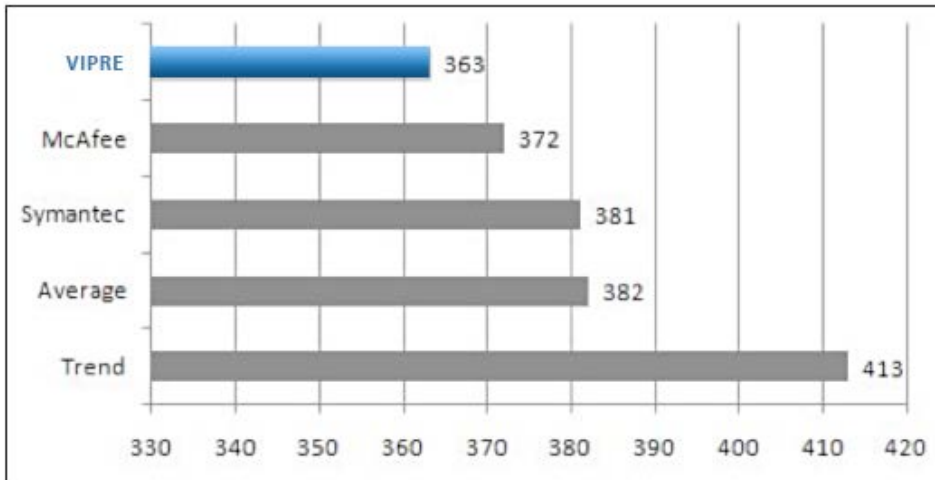
Benchmark 7 – Internet Explorer Launch Time (milliseconds)

Products with faster launch times are considered better performers in this category.



Benchmark 8 – File Compression and Decompression (seconds)

Products with faster file compression/decompression times are considered better performers in this category.



Methodology Description

Windows 7 Image Creation

The goal was to create a baseline image with the smallest possible footprint and to reduce the possibility of variation caused by external operating system factors. Norton Ghost was used to create a clean baseline image prior to testing. The baseline image was restored before the testing of each product to ensure that all products were installed and tested on the same, clean machine.

Steps taken to establish base Windows 7 image:

1. Installed and activated Windows 7 Professional
2. Installed all available Windows updates
3. Disabled Automatic Updates
4. Changed User Account Control settings to "Never Notify"
5. Disabled Windows Defender automatic scans to avoid unexpected background activity
6. Disabled Windows Firewall to avoid interference with security software
7. Disabled SuperFetch
8. Set up Windows Performance Monitor for performance testing
9. Disabled Internet Explorer 8 updates, accelerators and compatibility view
10. Created a baseline image using Norton Ghost

Benchmark 1 – Installation Time

This test measured the minimum installation time a product required to be fully functional and ready for use by the end user. Installation time can usually be divided in three major phases:

1. **Extraction and setup.** File extraction, EULA prompt, product activation and configuration
2. **File copy.** Product installation, usually indicated by a progress bar
3. **Post installation.** Varies widely between products – may require a reboot or additional time

To reduce the impact of disk drive variables, each product was copied to the desktop before initializing installation. Each step of the installation process was manually timed with a stopwatch and recorded in as much detail as possible. Where input was required by the end user, the stopwatch was paused.

Where possible, all requests by products to pre-scan or post-install scan were declined or skipped. Where it was not possible to skip a scan, the time to scan was included as part of the installation time. Where an optional component of the installation formed a reasonable part of the functionality of the software, it was also installed (e.g., website-link checking software).

Installation time included the time taken by the product installer to download components required in the installation. This may have included mandatory updates or the delivery of the application itself from a download. Product activation times were excluded due to network variability in contacting vendor servers or time taken in account creation.

Benchmark 2 – Boot Time

Boot timer was used to obtain more precise and consistent boot-time results on the Windows 7 platform. Testing began when Windows started loading and the test results are an average of five system boots.

Boot timer is available for download here: www.planetsoft.org

Benchmark 3 – CPU Usage during Idle

For each product, the system was clean booted and left idle. Windows Performance Monitor (PerfMon) tool was run for five minutes to calculate CPU usage results.

Benchmark 4 – CPU Usage during Scan

For each product, the system was clean booted and left idle. A virus scan was run on a pre-defined set of files while the PerfMon tool calculated CPU usage results.

Benchmark 5 – Memory Usage during System Idle

For each product, the system was clean booted and left idle. The PerfMon tool was run for five minutes to calculate memory usage.

Benchmark 6 – Memory Usage during Scan

For each product, the system was clean booted and left idle. A virus scan was run on a pre-defined set of files while the PerfMon tool calculated memory usage.

Benchmark 7 – Internet Explorer Open Time

AppTimer was used to calculate the average Internet Explorer 8 (IE8) open time. Twenty samples from four sets of five IE8 launches were taken for each product, with a reboot before every set. The first result of each set was separated out to provide a set of values for the initial open time and a set for subsequent open times. The final results were an average of these two measurements.

Benchmark 8 – File Compression and Decompression

A stopwatch was used to record the time required for 7zip.exe to compress files into *.zip and then decompress these created files. Five samples from each product were taken, with a reboot between every sample, to obtain the average file compression/decompression speed. The test comprised 2,941 files with a total size of 1.02 GB. The breakdown of the file type, file number and total size is shown here:

File type	File number	Total size
.ANI	34	202 KB
.CHM	328	48.1 MB
.COM	15	354 KB
.DLL	608	133 MB
.EXE	415	77.8 MB
.GIF	322	11.7 MB
.GZIP	10	29.2 KB
.HLP	147	4.83 MB
.HTM	52	969 KB
.ISO	1	410 MB
.JPG	131	248 MB

File type	File number	Total size
.OCX	25	12.3 MB
.PDF	27	62.7 MB
.PPT	3	304 KB
.RAR	7	2.17 MB
.RTF	24	2.34 MB
.SCR	12	2.79 MB
.SYS	234	16.4 MB
.TXT	21	352 KB
.WAV	147	6.73 MB
.WMF	353	4.82 MB
.XML	17	668 KB

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