

The Ultimate Endurance Test for Internet Security Suites

Over the past 22 months, all of the well-known security suites available on the German market have had to undergo laboratory tests and prove just how secure they really are. Germany's largest test laboratory for anti-virus software, AV-TEST GmbH, examined the market leaders with regard to their security when used with Windows operating systems.

Markus Selinger

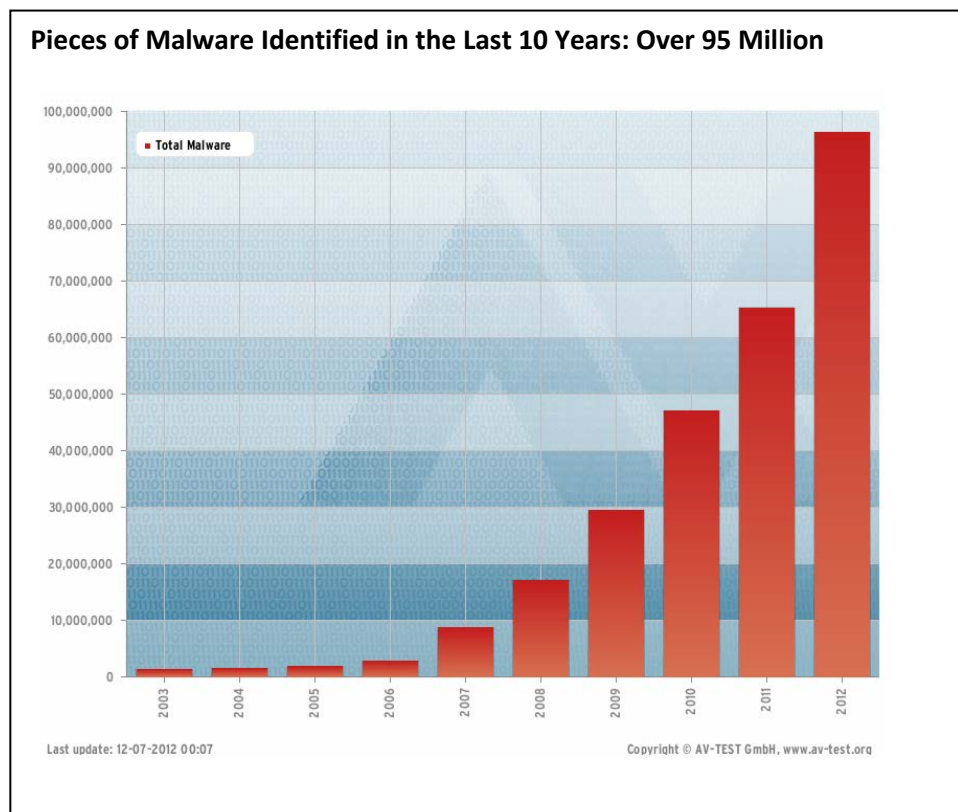
Nowadays, anyone who uses a Windows PC online without any protection software can expect to be attacked by malware at any time. If you don't believe this, you should take a look at the following figures:

Over 95 million pieces of malware are currently active on the Internet and are joined by 100,000 new threats every day. The fact that a year contains around 31.5 million seconds means that you could capture three different pieces of malware every second and have still never found the same piece twice by the end of the year.

If you use a good Internet security suite, however, you normally

won't even notice such malware attacks because they simply bounce off the protective barrier and are immediately isolated. Protection programs usually only inform users that such incidents have already been dealt with.

In this report, we will tell you which Internet security suite will provide you with the best protection and explain why this is the case. While other tests in magazines or on online portals are only based on data recorded at a given moment in time, the test results presented in this report were obtained from an endurance test run on 27 security products by Germany's



largest anti-virus test laboratory at AV-TEST GmbH. In this endurance test, 17 security programs had to undergo up to ten tough laboratory tests over a period of 22 months. Another 10 products were also involved in the endurance test but were either only recently introduced to the test environment or have not yet completed many individual tests. These products are therefore listed in a separate table later on in the report.

Only the best products are awarded the AV-TEST certificate for certified security and allowed to display it on their product packaging or website.

What was actually tested?

All of the protection programs were tested in the AV-TEST laboratory. An essential aspect of the test was the fact that all products always had to be tested simultaneously. By doing so, we were able to ensure that the status of all update files and similar factors was on the same timescale as that of all of the other products being tested. The test was also divided up into three categories:

- Protection
- Repair
- Usability

The test procedure in each of these categories was as follows:

In the “Protection” category, the Internet security suite from Bitdefender was able to gain a very narrow victory over its rivals after undergoing 10 tests in 22 months. Its competitors are, however, just a hair’s breadth behind.

Which program versions were tested?

The fact that the ultimate endurance test was carried out between January 2011 and October 2012 meant that different versions of the well-known protection programs were tested.

You can access and read about all of the individual tests on the AV-TEST GmbH website at www.av-test.org/en/tests/home-user. The product version tested is specified for each of these tests together with the Windows test platform used, which varied between Windows XP and Windows 7.

Protection: This test category contains a number of different sub-categories, the most important of which is the test against current online threats from so-called 0-day malware. These threats concern malware that has only just been discovered and is therefore brand new. Around 150,000 pieces of malware from the last two months are also used to test the software against the test laboratory’s reference set. On top of this, they are also tested with the top dogs of the malware world: around 1500 to 5000 extremely widespread and malicious files.

You can also read about the precise test procedure used in this category online at www.av-test.org/en/test-procedures/test-modules/protection.



Repair: Although this category was disregarded for a long time, it is now one of the most important areas tested. After all, a completely new and unique piece of malware (0-day malware) may well succeed in slipping through even the best protection program available. If this does occur but the malware is detected and removed shortly afterwards, the protection software needs to be able to repair any damage caused. Our tests in this category involved repeatedly infecting a system with a deactivated protective function with a variety of different types of malware around 40 times before completely cleaning the system. We then compared the cleaned system with a clean system backup that had been made before the test in order to find out whether any dangerous remnants had been left behind.

You can also find a very detailed description of this test procedure at www.av-test.org/en/test-procedures/test-modules/repair.

Usability: Some users may consider this test category to be unimportant, but this is not the case. After all, if, for example, a security suite displays a message that its user is unable to understand but that requires the user to make a decision, this could have severe consequences. On top of this, a product that constantly produces false positives may irritate users so

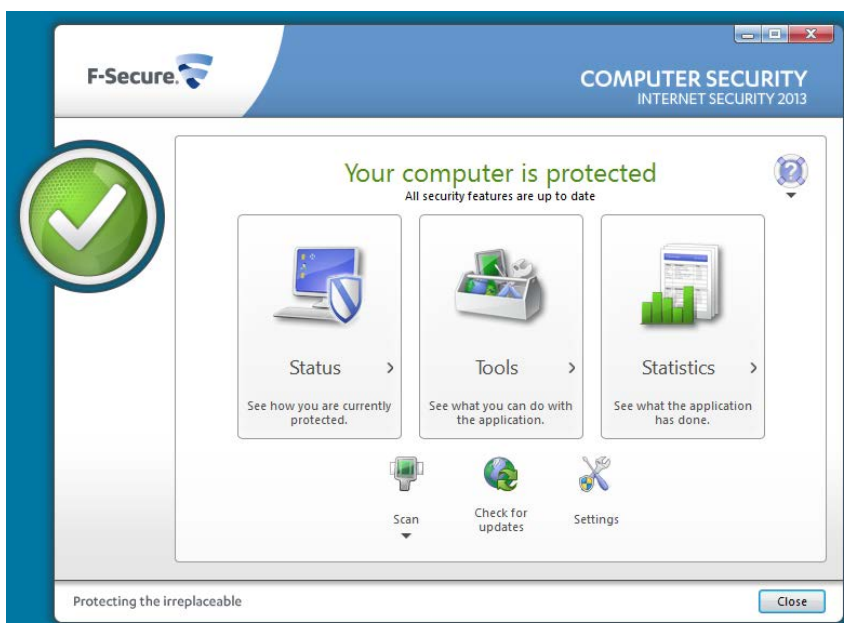
much that they ignore a genuine warning and expose their systems to malware. In the worst-case scenario, users may even have to deal with a security program that slows down their Windows system so much that they chose to carry out a dangerous security program tuning measure that deactivates important protective components. We examine all of these issues in a separate test in our laboratory.

A detailed explanation of the test procedure used in this category can also be found online at www.av-test.org/en/test-procedures/test-modules/usability.

27 Security Products Put to the Test

The market currently offers around 27 security products that can be taken seriously. Some of these are free, while others normally cost between 30 and 60 Euros for a package for up to three Windows PCs.

17 of these 27 security programs were thoroughly examined in a total of 10 tests that took place between January 2011 and the final test in October 2012. You can find a list of these protection programs in the table of overall results on page 8 of this report. The table includes a large number of well-known brands such as Avira, Bitdefender, Kaspersky, Symantec,



No subjective aspects like the appearance or design of the protection programs were evaluated in the "Usability" category. It can, however, be noted that all providers now use the signal colours of red, amber and green, with green signalling that everything is in order, amber indicating "please pay attention" and red warning of an alarm status.

ESET or F-Secure, to name but a few providers of security products available for purchase. The ultimate endurance test also examined the free Security Essentials package available from Microsoft and the free protection program offered by Avast. The table below therefore also enables you to compare these products and decide whether a free protection program would suit your needs if necessary.

The remaining 10 of the 27 products tested were either not available on the market at the start of the test or did not offer a version suitable for use in the test during the test period. These products are therefore compared in a separate table at the end of the report, in which you can also see the number of tests that were carried out in order to obtain the results displayed, which varies between one to eight tests.

The Test Category of "Protection"

In the major category of "Protection", tests were run on 17 protection programs from Avast, AVG, Avira, Bitdefender, BullGuard, ESET, F-Secure, G Data, GFI, Kaspersky, McAfee, Microsoft, Norman, PC Tools, Symantec, Trend Micro and Webroot. The Avast and Microsoft programs tested are available to users for free.

A maximum of 6.0 points were up for grabs in the "Protection" category. The top 3 products in this category were those from Bitdefender, F-Secure and G Data, all of which achieved an average of 5.8 of the maximum total of 6.0 points over the 10 tests that were carried out. These

three products are listed alphabetically in the table below.

Malware identification test 1: A large number of other products from well-known brands also achieved an excellent average points value in this category despite the fact that the test requirements were a tough obstacle to overcome. All candidates initially had to withstand attacks by 0-day malware. Although this only involved a selection of around 70 to 100 pieces of malware, these were the newest and toughest threats around. While the top-placed programs managed to identify between 98 and 100 percent of these threats, the Security Essentials from Microsoft allowed an

Endurance Test Results

The Best Products in the "Protection" Category

The best software packages in the "Protection" category are those from the manufacturers Bitdefender, F-Secure and G Data, all of which achieved 5.8 of the maximum of 6.0 points. These products are very closely followed by the security packages from BullGuard, Kaspersky and Symantec with 5.7 or 5.6 points. These 6 protection programs were able to continuously achieve the best results in the "Protection" category in 10 tests run between January 2011 and October 2012 as part of the endurance test carried out by AV-TEST.

Place	Company	Product	Points	Number of Tests
1	Bitdefender	Internet Security	5.8	10
1	F-Secure	Internet Security	5.8	10
1	G Data	Internet Security	5.8	10
2	BullGuard	Internet Security	5.7	10
2	Kaspersky	Internet Security	5.7	10
3	Symantec	Norton Internet Security	5.6	10
4	AVG	Internet Security	5.2	10
5	Webroot	SecureAnywhere Complete	4.9	10
5	Trend Micro	Titanium Maximum Security	4.9	10
6	PC Tools	Internet Security	4.7	10
7	Avast	Free Antivirus	4.6	10
7	Avira	Internet Security	4.6	10
7	GFI	Vipre Antivirus Premium	4.3	10
8	McAfee	Total Protection	4.1	10
9	Norman	Security Suite Pro	3.8	10
10	ESET	Smart Security	3.6	10
11	Microsoft	Security Essentials	2.3	10

For more information, visit www.av-test.org

Germany's largest and independent test laboratory for anti-virus products also values transparency. You can therefore find a precise description of all of our test methods on our website at: www.av-test.org/en/test-procedures/test-modules.

This area of our website constantly provides you with free access to the latest test results obtained in our laboratory.

unacceptable total of up to 32 percent of the attacks to slip through to the system. Although the protection program from Microsoft is free, these results indicate that it only offers users deceiving security.

Malware identification test 2: All of the test candidates achieved better results in the second part of the test, which involved a scan of the AV-TEST reference set which comprises around 150,000 pieces of malware. Most of the products performed excellently and were able to identify 100 percent of the threats, meaning that they constantly achieved a large number of points throughout the 10 tests in 22 months. Only the last five products in the results table were unable to perform consistently well in the "Protection" category. They achieved good results in some of the 10 tests and unacceptable results in others and therefore ended up with a poor average value on the whole.

Malware identification test 3: The last part of the test required the products to identify the

crème de la crème of malware: around 1500 to 5000 extremely widespread and malicious files. Given that these pieces of malware are, however, extremely well known, almost all of the programs had no trouble identifying them. This part of the test is therefore primarily used to check that the manufacturers also constantly maintain their products.

Protection Summary

The "Protection" category table displays very clear results. While the top seven spots are occupied by the protection programs from Bitdefender, F-Secure, G Data, BullGuard, Kaspersky, Symantec and AVG, which achieved consistent results of 5.8 to 5.2 points and were therefore not far off the top mark of 6.0 points, the products in the middle of the table are somewhat less impressive. These packages from Webroot, Trend Micro, PC Tools, Avast, Avira, GFI and McAfee achieved less convincing results of between 4.9 and 4.1 points.

When it comes to these mid-table programs, the free product from Avast should, however, receive some credit for its total of 4.6 of a maximum of 6.0 points, which makes it a sufficient solution for quick protection. Nevertheless, the products in the top 7 in the table do indeed provide much better protection.

The lower area of the table contains the products from ESET, Norman and Microsoft. These programs achieved values of 3.8, 3.6 and the worst value of 2.3 points (of a maximum of 6.0) and therefore only provide half of the protection provided by the top products in some cases.

The Test Category of "Repair"

The second major category of "Repair" tested the same 17 products from the "Protection"



The protection program from Kaspersky achieved particularly impressive results in the "Repair" category alongside the Bitdefender Software.

category, namely those from Avast, AVG, Avira, Bitdefender, BullGuard, ESET, F-Secure, G Data, GFI, Kaspersky, McAfee, Microsoft, Norman, PC Tools, Symantec, Trend Micro and Webroot. The Avast and Microsoft programs are available to users for free.

The maximum points total in this category was also 6.0 points. The top two products in these tests come from Bitdefender and Kaspersky. Bitdefender managed to achieve an average of 5.8 over the ten tests carried out to measure the products' repair performance, while Kaspersky came in a very close second place with 5.6 of a maximum of 6.0 points.

The repair performance test: In this test, the test system is repeatedly contaminated with

active malware such as a rootkit or Trojan around 40 times. The protection program being tested is then activated and has to both identify the malware and completely remove it. Complete removal of the malware involves the deletion of all active malware components, including auxiliary files and other altered data. The protection program is also expected to remove entries in the Windows Registry and repair any other files in the system that may have been altered or damaged by the malware.

Before being contaminated, the test system is backed up using the AV-TEST's own special software "Sunshine" (more information available at www.av-test.org/en/products). This backup is later used for a comparison of the cleaned system. In an ideal scenario, all aspects of the tested and backed-up system should be identical in this comparison. Points are deducted for any deviations.

Repair Summary

The top two products in the category are without a doubt the Internet security suites from Bitdefender and Kaspersky, which achieved 5.8 and 5.6 points out of 6.0 respectively. Although the winners in the "Repair" category are clear, not much separates the products in the middle of the table. Microsoft came in third place with a total of 4.7 points and was followed by F-Secure, AVG and Avira, all of which achieved 4.6 of a maximum total of 6.0 points. The products from G Data, Symantec and Avast also have points totals of over 4.0. Although Security Essentials from Microsoft is the best free

Endurance Test Results

The Best Products in the "Repair" Category

The best software in the "Repair" category comes from the manufacturer Bitdefender, very closely followed by Kaspersky. These two protection programs achieved an average of 5.8 and 5.6 points respectively of the total of 6.0 points on offer in 10 tests run between January 2011 and October 2012 as part of the AV-TEST endurance test.

Place	Company	Product	Points	Number of Tests
1	Bitdefender	Internet Security	5.8	10
2	Kaspersky	Internet Security	5.6	10
3	Microsoft	Security Essentials	4.7	10
4	F-Secure	Internet Security	4.6	10
4	AVG	Internet Security	4.6	10
4	Avira	Internet Security	4.6	10
5	G Data	Internet Security	4.5	10
6	Symantec	Norton Internet Security	4.4	10
7	Avast	Free Antivirus	4.1	10
8	Webroot	SecureAnywhere Complete	3.9	10
9	Trend Micro	Titanium Maximum Security	3.8	10
10	Norman	Security Suite Pro	3.6	10
11	GFI	Vipre Antivirus Premium	3.5	10
11	BullGuard	Internet Security	3.5	10
12	PC Tools	Internet Security	3.2	10
13	McAfee	Total Protection	3.0	10
14	ESET	Smart Security	2.6	10

product in terms of repair performance, the fact that it came in last when identifying malware shows that its repair ability is not actually very useful.

The product totals start to decrease to less than 4.0 points at as high as eighth place in the table. Although the protection program from Webroot almost makes the 4.0 point mark with its total of 3.9 points, the other products from Trend Micro, Normal, GFI, BullGuard, PC Tools and McAfee lower down in the table only achieved totals of between 3.8 and 3.0 points, while ESET's software brings up the rear in this category with just 2.6 points.

The Test Category of "Usability"

Our laboratory tests the usability of protection programs by examining how they influence a Windows PC, namely how much they slow down the system or what messages they display to the user. The ten tests in this major category were again carried out on the same 17 protection programs from Avast, AVG, Avira, Bitdefender, BullGuard, ESET, F-Secure, G Data, GFI, Kaspersky, McAfee, Microsoft, Norman, PC Tools, Symantec, Trend Micro and Webroot over a period of 22 months.

A maximum of 6.0 points were also up for grabs in this category. The top two products in terms of usability are the packages from Microsoft and ESET, which achieved 5.4 and 5.3 points respectively. Although these results are impressive, the two programs only achieved

substandard points totals in the "Protection" and "Repair" categories. The products in third, fourth and (joint) fifth place, namely those from F-Secure, Bitdefender, Avast and Symantec, also achieved very good results of between 5.2 and 5.0 out of 6.0.

Usability test 1: We first took a pre-defined test system with a Windows operating system and measured its overall performance and a number of different individual factors such as how long it took to copy data. We then installed the protection programs on the system and re-measured the individual factors. This test was repeated several times in order to calculate an average value for the evaluation.

Usability test 2: Every security suite occasionally

Endurance Test Results

The Best Products in the "Usability" Category

Although the packages from Microsoft and ESET did indeed achieve the best results in this category, their results in the "Protection" category are rather poor. The third-placed package from F-Secure and the protection program from Bitdefender both achieved excellent results, scoring an average of 5.2 and 5.1 points respectively of the maximum total of 6.0 points on offer in 10 tests run between January 2011 and October 2012 as part of the AV-TEST endurance test.

Place	Company	Product	Points	Number of Tests
1	Microsoft	Security Essentials	5.4	10
2	ESET	Smart Security	5.3	10
3	F-Secure	Internet Security	5.2	10
4	Bitdefender	Internet Security	5.1	10
5	Avast	Free Antivirus	5.0	10
5	Symantec	Norton Internet Security	5.0	10
6	Kaspersky	Internet Security	4.9	10
7	BullGuard	Internet Security	4.7	10
8	GFI	Vipre Antivirus Premium	4.6	10
8	McAfee	Total Protection	4.6	10
8	AVG	Internet Security	4.6	10
8	Webroot	SecureAnywhere Complete	4.6	10
8	Trend Micro	Titanium Maximum Security	4.6	10
9	G Data	Internet Security	4.5	10
10	Norman	Security Suite Pro	4.2	10
11	Avira	Internet Security	4.1	10
12	PC Tools	Internet Security	3.9	10

displays warning messages to users when they open harmless software such as a web browser. Nevertheless, it is important that all security programs are able to distinguish between ‘friends and foes’ in order to avoid false positives because too many of these would unsettle users.

Usability test 3: The third test in this category involved installing a large list of safe tools and programs and recording how the protection software responds. The fact that all of the software installed is good and free of malware means that none of the programs is allowed to be blocked or, in the worst-case scenario, classified as malware.

Usability Summary

The protection programs from Microsoft and

ESET produced the lowest number of false positives. These were closely followed by the Internet security suites from Bitdefender and F-Secure, which provided consistently good ‘friend or foe’ identification throughout the test and only slightly slowed down the Windows systems. The top five programs from Microsoft, ESET, F-Secure, Bitdefender, Avast and Symantec all achieved good results of between 5.4 and 5.0 points. The products Avast and Symantec reached the same points average and therefore share fifth place.

Although they only achieved places six to eleven in the results table, the programs from Kaspersky, BullGuard, GFI, McAfee, AVG, Webroot, Trend Micro, G Data, Norman and

Endurance Test Results

The Best Protection Programs in All Categories after 10 Tests in 22 Months

The final table shows that the protection program from Bitdefender achieved an average of 5.6 of a maximum of 6.0 points in 10 tests run between January 2011 and October 2012 as part of AV-TEST’s ultimate endurance test. The Internet security packages from Kaspersky, F-Secure and Symantec also performed extremely well and are very close behind Bitdefender with average values of 5.4, 5.2 and 5.0 of a maximum of 6.0 points. The best free product, the protection program from Avast, finished in eighth position with an average of 4.6 points, while the second free software tested, namely Security Essentials from Microsoft, only managed twelfth place together with GFI.

Place	Company	Product	Protection	Repair	Usability	Points Total	Average Points Values	Number of Tests
1	Bitdefender	Internet Security	5.8	5.8	5.1	16.8	5.6	10
2	Kaspersky	Internet Security	5.7	5.6	4.9	16.2	5.4	10
3	F-Secure	Internet Security	5.8	4.6	5.2	15.6	5.2	10
4	Symantec	Norton Internet Security	5.6	4.4	5.0	15.0	5.0	10
5	G Data	Internet Security	5.8	4.5	4.5	14.7	4.9	10
6	AVG	Internet Security	5.2	4.6	4.6	14.4	4.8	10
7	BullGuard	Internet Security	5.7	3.5	4.7	13.9	4.6	10
8	Avast	Free Antivirus	4.6	4.1	5.0	13.8	4.6	10
9	Webroot	SecureAnywhere Complete	4.9	3.9	4.6	13.4	4.5	10
10	Avira	Internet Security	4.6	4.6	4.1	13.3	4.4	10
11	Trend Micro	Titanium Maximum Security	4.9	3.8	4.6	13.2	4.4	10
12	GFI	Vipre Antivirus Premium	4.3	3.5	4.6	12.4	4.1	10
12	Microsoft	Security Essentials	2.3	4.7	5.4	12.4	4.1	10
13	PC Tools	Internet Security	4.7	3.2	3.9	11.7	3.9	10
14	McAfee	Total Protection	4.1	3.0	4.6	11.6	3.9	10
14	Norman	Security Suite Pro	3.8	3.6	4.2	11.6	3.9	10
15	ESET	Smart Security	3.6	2.6	5.3	11.5	3.8	10

Avira still produced acceptable scores of between 4.9 and 4.1 points.

The last product listed in the table, the package from PC-Tools, achieved an average of 3.9 points and therefore only just missed out on the middle range of 4.0 or more of a maximum total of 6.0 points.

The Best Protection Programs in the Endurance Test

After the 10 tests of Internet security suites carried out by AV-TEST as part of its ultimate endurance test in a 22-month period between January 2011 and October 2012, the Bitdefender protection program achieved the best score with an average of 5.6 of a maximum of 6.0 points. This product constantly performed extremely well in the "Protection" and "Repair" categories and was only relegated to fourth place in the "Usability" category.

The Bitdefender program was closely followed by the products from Kaspersky, F-Secure and Symantec in second, third and fourth place, which achieved almost equally solid results of 5.4, 5.2 and 5.0 of the maximum possible total of 6.0 points.

The middle of the table, namely places 5 to 12, contains the products from G Data, AVG, BullGuard, Avast, Webroot, Avira, Trend Micro, GFI and Microsoft, all of which achieved average totals of 4.9 to 4.1 points. The protection

programs from Avast and Microsoft were the free products tested in this group.

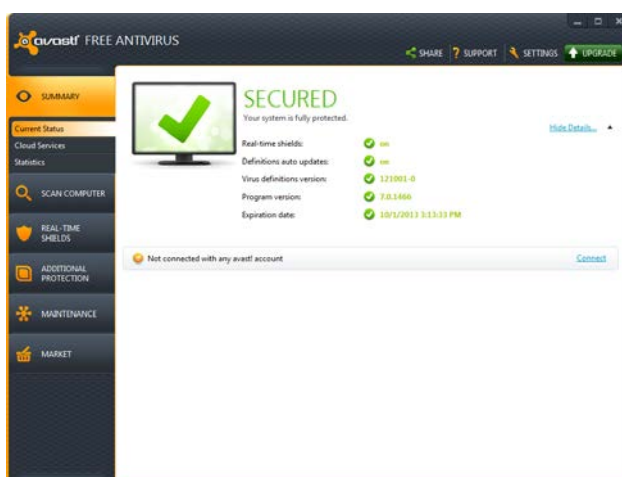
The last four places in the ultimate endurance test carried out by AV-TEST GmbH go to the protection programs from PC Tools, McAfee, Normal and ESET, which achieved points totals of 3.8 and 3.9.

The overall points totals were calculated from the points achieved by the products in the "Protection", "Repair" and "Usability" categories. A maximum of 6.0 points were available in each category, meaning that the maximum overall points total available to the products was 18 points.

AV-TEST GmbH awards every product that achieves at least 11 or more points in a test a certificate containing a unique and distinctive number. Most of the products achieved such a certificate in virtually all of the 10 tests carried out during the 22-month test period.

11 Sporadic Visitors to the Test Laboratory

Another 10 security programs were also repeatedly tested in the laboratory throughout the duration of the test, which lasted from the beginning of 2011 to October 2012. These programs did not, however, always have a new or testable product available for the fixed test periods. We therefore summarised the results of these individual tests in a separate table in which you can find products from Lavasoft, Ahnlab, AVG (Free Antivirus), Total Defense, Check Point, Fortinet, K7 Computing and Qihoo and both the free and purchasable software available from Panda.



The best free protection program in the ultimate endurance test run by AV-TEST is available from Avast. The program, which achieved 8th place overall, is an ideal solution for those looking for quick and free protection. It is above all better than the free package available from Microsoft.

These products were subjected to the same test procedure as the programs in the endurance test and were also evaluated in the categories of “Protection”, “Repair” and “Usability”.

The Test Results

The results of the test candidates that did not participate in the endurance tests cannot be compared directly because one product underwent 8 tests in a period of 22 months whilst others were only tested in the laboratory once, twice or four or five times.

The Internet security suite from Panda completed a total of eight tests and achieved an average points total of 4.6 out of a maximum of 6.0 points. The purchasable version of the Panda software would therefore make it into the top 8 of the table of products that completed the endurance test.

The free product available from Check Point

achieved a good average value of 5.2 points in its three tests, while the free product version available from AVG managed to score an average of 4.7 points in five tests.

These results cannot, however, be directly compared with those achieved by the participants in the endurance test, which indeed completed a total of 10 tests. This separate table of sporadically tested products therefore does not contain a product ranking.

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Laboratory Test Results

Protection Programs Sporadically Tested between January 2011 and October 2012

Some of the protection programs performed extremely well in the laboratory tests. The purchasable version of the Panda software, one of the better-known products in the sporadic tests, completed a total of eight tests and is one of the top products in the middle of the table when compared with the endurance test results. The other products in the table below only completed one, two, four or five tests and therefore cannot be directly compared to the programs in the endurance test and have also not been ranked.

Company	Product	Protection	Repair	Usability	Points Total	Average Points Values	Number of Tests
Check Point	ZoneAlarm Free Antivirus + Firewall	5.3	5.0	5.2	15.5	5.2	3
AVG	Anti-Virus Free Edition	5.0	4.2	4.9	14.1	4.7	5
Panda	Internet Security	5.1	4.3	4.4	13.8	4.6	8
Fortinet	FortiClient Lite	4.0	3.8	5.3	13.0	4.3	2
K7 Computing	Total Security	5.0	4.0	4.0	13.0	4.3	1
Panda	Cloud Antivirus Free Edition	4.6	3.1	5.0	12.7	4.2	5
Qihoo	360 Antivirus	5.4	2.6	4.4	12.4	4.1	5
Lavasoft	Ad-Aware Free Antivirus+	3.3	3.7	4.7	11.7	3.9	3
AhnLab	V3 Internet Security	2.0	4.4	4.2	10.6	3.5	5
Total Defense (CA)	Internet Security Suite	2.6	3.1	3.3	9.0	3.0	5