

2022 TOP3 metric description

TOP3 metric reflects how successful a vendor was in independent comparative tests within a calendar year.

The main characteristic of success is a **TOP3 score** that shows how many times a vendor with its products gained the first, second, or third place in independent tests they participated in within a reported period. **The TOP3 score** is calculated by dividing a vendor's **TOP3 counter** by a vendor's **Participation counter**.

The TOP3 score is determined for each participating vendor separately and then compared to each other.

- Depending on a test, final test results may vary from giving awards for participating vendors to providing only a list of their detection rates and false positives.
A vendor's **TOP3 counter** is incremented either for winning an award or ranking in the first three places in a test. It cannot be incremented both for receiving the award and one of the first three places.
Several vendors can achieve equal results in detection rates, or summary results, or win awards of the same grade. In this case, the vendors share the same place in the same test.
In case of detection rates or summary results, the place of a vendor with the lower result is calculated as "number of higher ranked vendors + 1". For instance, the sequence "1,1,2,3" is not possible, whilst "1,1,3,4", or "1,2,2,4", or "1,1,1,1,6" are. In the latest sequences TOP3 counter will be incremented for bolded vendors only.
In regards with awards, refer to rule clarifications listed in the tests description below.
- A vendor's Participation counter is incremented each time one of its products participates in a test/review/overview.
In some tests several products of one vendor can participate in the same test. In those cases, since all products increment the vendor's Participation counter, the Participation counter can be higher than a total number of tests.

Only those who participate in 35% or more of the total number of tests have their results represented in the chart.

The deadline for submitting scores attained during period 2013-2022 was February 1st, 2023, with no option to add any test/review after this date.

Among the security vendors participating in the TOP3 measurements are: Avast, AVG, Avira, Bitdefender, Broadcom (Symantec), BullGuard, CrowdStrike, ESET, F-Secure, G DATA, Kaspersky, Microsoft, NortonLifeLock, Palo Alto, Panda, Sentinel One, Sophos, Trellix (McAfee), Trend Micro, Quick Heal and VMWare (Carbon Black). A complete list of participants appears at the end of this document.

	No of tests entered	No of TOP3 places	Score of TOP3 places (%)	No of 1st places
Kaspersky	86	73	85%	69
AVG	46	38	83%	36
Avast	78	63	81%	55
Avira	48	35	73%	32
NortonLifeLock	46	33	72%	32
G DATA	47	32	68%	32
Microsoft	57	38	67%	31
Bitdefender	86	55	64%	54
Trend Micro	54	32	59%	31
AhnLab	41	23	56%	23
ESET	42	23	55%	21
Trellix (McAfee)	63	31	49%	30
Malwarebytes	46	15	33%	15
Broadcom (Symantec)	24	13	54%	13

* Broadcom (Symantec) participated only in 21% of the total number of tests, but we consider valuable to have the vendor's results represented in the chart.

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These tests were performed against various types of malware, including advanced threats, as well as false positives

SPECIFIC THREATS

APT

- AV-Comparatives. Advanced Threat Protection Test: Consumer and Business
- AV-Comparatives. Endpoint Prevention and Response (EPR) test
- AV-Comparatives. LSASS credential-dumping security test
- AV-TEST. Advanced Threat Protection Test: Consumer and Business
- ICSA. Advanced Threat Detection Certification
- SE Labs. Enterprise Advanced Security (EDR) Test – Detection

RANSOMWARE

- AV-Comparatives. Advanced Threat Protection Test: Consumer and Business
- AV-Comparatives. Business Security Test
- AV-Comparatives. Malware Protection Test
- AV-Comparatives. Real-World Protection Test
- AV-TEST. Advanced Threat Protection Test: Consumer and Business
- AV-TEST. Bi-Monthly Certification: Consumer and Business
- MRG Effitas. 360 Assessment & Certification
- SE Labs. Enterprise Advanced Security (EDR) Test - Detection
- SE Labs. Enterprise Endpoint Protection Test
- SE Labs. Home Anti-Malware Protection Test
- SE Labs. Small Business Endpoint Protection Test

FILELESS

- AV-Comparatives. Endpoint Prevention and Response (EPR) test

- AV-Comparatives. Advanced Threat Protection Test: Consumer and Business
- MRG Effitas. 360 Assessment & Certification
- SE Labs. Enterprise Endpoint Protection Test
- SE Labs. Home Anti-Malware Protection Test
- SE Labs. Small Business Endpoint Protection Test

EXPLOITS

- AV-Comparatives. Advanced Threat Protection Test: Consumer and Business
- MRG Effitas. 360 Assessment & Certification
- SE Labs. Enterprise Advanced Security (EDR) Test - Detection
- SE Labs. Enterprise Endpoint Protection Test
- SE Labs. Home Anti-Malware Protection Test
- SE Labs. Small Business Endpoint Protection Test

PHISHING

- AV-Comparatives. Anti-Phishing Test

REAL-WORLD TESTS

- AV-Comparatives. Advanced Threat Protection Test: Consumer and Business
- AV-Comparatives. Business Security Test
- AV-Comparatives. Real-World Protection Test
- AV-TEST. Advanced Threat Protection Test: Consumer and Business
- AV-TEST Bi-Monthly Certification Consumer and Business
- CyberRatings. Endpoint Protection Comparative Test

- MRG Effitas. 360 Assessment & Certification
- SE Labs. Enterprise Endpoint Protection Test
- SE Labs. Home Anti-Malware Protection Test
- SE Labs. Small Business Endpoint Protection Test

ANDROID TESTS

- AV-Comparatives. Mobile Security Review
- AV-TEST. Android Mobile Security Products Test: Consumer and Business
- MRG Effitas. Android 360 Assessment Programme
- Testing Ground Labs. Android Malware Detection Test: Consumer and Business

MAC TESTS

- AV-Comparatives. Mac Security Test & Review
- AV-TEST. Mac Detection & Performance Test: Consumer and Business

DEDICATED TESTS

- AV-Comparatives. Parental Control Certification
- AV-TEST. Parental Control Certification
- AV-TEST. VPN Test

FALSE POSITIVES (FP)

- All the tests mentioned above include FP measurements

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The following tests were performed in 2022 and used to calculate the metric. The test labs and tests are listed in alphabetical mode.

AV-Comparatives

- **Product of the Year**

At the end of the year, this annual award is given to the Consumer related product which attained the highest awards in an entire year's testing cycle, involving the following tests: two Malware Protection Tests (MPT) + two Real-World Protection Tests (RWPT) + two Performance Tests + Advanced Threat Protection Test (ATP, formerly known as Enhanced Real-World Test). According to AV-Comparatives' rules, in cases where two or more products receive the same maximum score, the award goes to the product which gained the highest individual scores and did not receive it the previous year. The seal is counted as a first place in the TOP3 metric.

Products which were nominated, but did not receive the 'Product of the Year' award, are given the 'Outstanding Product' rank for their vendors, which counts as a second place in the TOP3 metrics. Products which achieved at least 90 points across the entire test cycle are awarded the 'Top Rated' rank for their vendors, which counts as a third place in the TOP3 metric. Products that fail to score any points in, at least, one of the tests are excluded.

At the end of the year, medals ('Gold', 'Silver', 'Bronze') are also given for the best results in specific tests: MPT, RWPT, Performance, ATP . As these test results have already contributed to overall TOP3 metrics, the medals themselves do not count towards it since 2015.

Only awards can contribute towards TOP3 counters in AV-Comparatives tests.

- **Malware Protection Test**

This test is a successor of the File Detection Test and includes execution of the tested files. It is conducted twice a year and, correspondingly, is counted two times in the metrics. The test consists of two parts: Detection Rate and False Positives.

Products receive the following awards: "Advanced+", "Advanced", "Standard" or "Tested". Only products with "Advanced+" gain an increment of TOP3 counters for their vendor.

- **Real-World Protection Test**

The test lasts for four months and is finalized in a half-year report using mainly current, visible, and relevant malicious websites/malware. The test is conducted twice a year and, correspondingly, counted two times in the metrics. Because all product components contribute a significant role in overall protection, results achieved in this category are a good indicator of anti-malware product efficiency in real-world scenarios.

Products receive the following awards: "Advanced+", "Advanced", "Standard" or "Tested". Only products with "Advanced+" gain an increment of TOP3 counters for their vendor.

- **Advanced Threat Protection Test: Consumer and Business**

This test uses hacking and penetration techniques that allow attackers to target specific external computer systems, and evaluates how well security products protect against such attacks. This test checks protection against targeted advanced threats, such as exploits and fileless attacks.

Despite all products from consumer Main-Test-Series are expected to be tested by default, the vendors were given the

opportunity to opt out of this test before the test started, which is why not all vendors are included in this test. This test is conducted and counted in the metrics once a year. Consumer and Business related products are assessed separately.

Consumer products receive the following awards: "Advanced+", "Advanced", "Standard" or "Tested". Only products with "Advanced+" gain an increment of TOP3 counters for their vendor.

Business products which block at least 8 of the 15 attacks used in the test, without blocking non-malicious operations, are certified by the test lab and gain an increment of TOP3 counters for their vendor.

- **Endpoint Prevention & Response (EPR) Test**

This test is performed and counted once a year and evaluates security solutions response capabilities (active response, passive response) to targeted attacks, ability to take remedial action, investigate the nature of an attack, collect and show information on indicators of compromise in an easily accessible form. The effectiveness of each product at preventing breaches, the calculated savings resulting from this, the purchase costs of the product, and the product's accuracy costs are factored by Enterprise EPR CyberRisk Quadrant.

Products receive one of the following three certification levels: "Strategic Leaders", "CyberRisk Visionaries", and "Strong Challengers", or they are not certified. Only products with "Strategic Leader" gain an increment of TOP3 counters for their vendor.

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The following tests were performed in 2022 and used to calculate the metric. The test labs and tests are listed in alphabetical mode.

- **LSASS Credential-Dumping Security Test**

This test is performed and counted in the metrics one time a year. It evaluates how well business security products determine their hardening measures protected against attacks on Windows' Local Security Authority Subsystem Service (LSASS).

Products placing in the highest three positions based on the Protection Rate gain an increment of TOP3 counters for their vendor.

- **Business Security Report**

This report is published twice a year. Correspondingly, it is counted two times in the metrics. The report includes a review of various business security products and evaluates the protection efficiency in categories such as Protection Rate on different malware sets, websites, and exploits, and a False Positive level.

Products achieving, at least, 90 percent Protection Rate with no False Positives on common business software in the Malware Protection Test and, at least, 90 percent Protection Rate with less than 100 False Positives on any clean software/websites in the overall Real-World Protection Test, with no major performance issues, are certified by the test lab, and gain an increment of TOP3 counters for their vendor.

- **Anti-Phishing Test**

This test is performed and counted in the metrics once a year and simulates a common situation: users rely on the anti-phishing protection provided by their security products while browsing the web. The test consists of two parts: Detection Rate and False Positives.

If all products achieve zero False Positives, the products achieving

the highest three places based on Protection Rate, gain an increment of TOP3 counters for their vendor.

If any of participating products achieve any False Positives, only certified products gain an increment of TOP3 counters for their vendor.

- **Mobile Security Review**

This review is done and counted in the metrics once a year and includes a malware protection test along with an overview of additional features (theft protection, battery consumption, etc.).

If all products achieve zero False Positives, the products achieving the highest three places based on Protection Rate, gain an increment of TOP3 counters for their vendor.

If any of participating products achieve any False Positives, only certified products gain an increment of TOP3 counters for their vendor.

- **Mac Security Test & Review**

This review is done and counted in the metrics once a year and evaluates various Mac protection products against a product feature list and measures protection levels in categories such as Detection Rate on separate Mac- & Windows-related malware sets and a False Positive level.

If all products achieve zero False Positives, the products achieving the highest three places based on Protection Rate, gain an increment of TOP3 counters for their vendor.

If any of participating products achieve any False Positives, only certified products gain an increment of TOP3 counters for their vendor.

- **Parental Control Certification**

This test is performed and counted in the metrics once a year and evaluates efficiency of security products to prevent children from visiting unwanted web sites.

Only products blocking at least 98% of pornographic websites with zero False Positives on child-friendly websites, and having no severe unresolved bugs (or design flaws) discovered during the review, are certified and gain an increment of TOP3 counters for their vendor.

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The following tests were performed in 2022 and used to calculate the metric. The test labs and tests are listed in alphabetical mode.

AV-TEST

- **Best Protection Award: Consumer and Business**

This annual award is given once a year for perfect results in the Protection category over the course of an entire year, during which bi-monthly certification takes place. Consumer and Business related products are assessed separately.

Only products that receive this award gain a TOP3 counter increment for their vendor.

- **Best Usability Award: Consumer and Business**

This annual award is given once a year for perfect results in the Usability category over the course of an entire year, during which bi-monthly certification takes place. Consumer and Business related products are assessed separately.

Only products that receive this award gain a TOP3 counter increment for their vendor.

- **Best Android Security: Consumer**

This annual award is given once a year for perfect results in the Android security testing over the course of a whole year. Consumer and Business related products are assessed separately.

Only products that receive this award gain a TOP3 counter increment for their vendor.

- **Best Mac Security: Consumer and Business**

This annual award is given once a year for perfect results in the Mac security testing over the course of a whole year. Consumer and Business related products are assessed separately.

Only products that receive this award gain a TOP3 counter increment for their vendor.

- **Best Advanced Threat Protection: Consumer and Business**

This annual award is given once a year for perfect results in the Advanced Threat Protection testing over the course of a whole year. Consumer and Business related products are assessed separately.

Only products that receive this award gain a TOP3 counter increment for their vendor.

- **Bi-Monthly Certification: Consumer and Business**

This year-long certification series consists of Consumer and Business segments, each divided into six separate, two-month-long tests, which results are published every even months, i.e. this test is counted 6 times in the metrics. Consumer and Business related products are assessed separately. All participating products are evaluated and receive points in Protection, Performance and Usability categories. The sum of the points gained in each category makes up the overall score; products in the top three have their TOP3 counters incremented.

- **Advanced Threat Protection Test: Consumer and Business**

This test is counted six times in the metrics ([November](#), [December](#), [February](#), [April](#), [June](#), [August](#)). Consumer and Business related products are assessed separately. It assesses detection and threat prevention capabilities of end-point solutions against APT attacks deploying ransomware without generating False Positives on normal operations. The executed attack chains are split into separate stages attributed to different TTPs from MITRE ATT&CK. The sum of the points gained in each stage makes up the overall score; products in the top three have their TOP3 counters incremented.

- **Android Mobile Security Products Test: Consumer and Business**

This year-long certification series evaluates various security protection products for Android and consists of Consumer and Business segments, each divided into six separate tests. Their results are published every odd months, i.e. this test is counted 6 times in the metrics. Consumer and Business related products are assessed separately. All participating products are evaluated and receive points in Protection, Performance and Usability categories. The sum of the points gained in each category makes up the overall score; products in the top three have their TOP3 counters incremented.

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The following tests were performed in 2022 and used to calculate the metric. The test labs and tests are listed in alphabetical mode.

- **Mac Detection & Performance Test:**
Consumer and Business

This test evaluates various security protection products for Mac OS X and consists of Consumer and Business segments, which results are published and counted in the metrics four times a year. Consumer and Business related products are assessed separately. All participating products receive points in Protection, Performance and Usability categories. The sum of the points gained in each category makes up the overall score; products in the top three have their TOP3 counters incremented.

- **VPN Test**

The test is performed and counted in the metrics once a year. It assesses and compares VPN solutions by separate topics of usability, security, privacy, speed, and transparency.

Each product that passes the certification gains an increment of TOP3 counter for their vendor.

- **Parental Control Certification**

This vendor-commissioned test is performed and counted in the metrics once a year and evaluates protection efficiency of security products on Windows, Android and iOS platforms to protect children from visiting unwanted web sites.

Only certified products gain an increment of TOP3 counters for their vendor.

CyberRatings

- **Endpoint Protection Comparative Test**

This test is performed once a year and evaluates each participated product's ability to block malware as quick as possible. Products placing in the highest three positions based on the Average Block Rate (Over Time) gain an increment of TOP3 counters for their vendor.

ICSA Labs

- **Advanced Threat Defense Certification¹**

This assessment is performed every quarter, i.e. four times a year, and aims to evaluate the efficiency of security solutions to detect new and little-known threats while minimizing false positives. Each product that passes the certification gains an increment of TOP3 counter for their vendor.

MRG Effitas

- **360 Assessment & Certification**

This test is conducted and published four times a year and evaluates both the ability to block initial infection and time taken to detect and remediate malware on a compromised system. This test replaces the older "Time to Detect & Remediate Assessment" test and includes Online Banking part since second quarter of 2020 that assesses the efficiency of products against financial malware. Only certified products gain an increment of TOP3 counters for their vendor.

- **Android 360 Degree Assessment Programme**

This test is conducted and published four times a year and evaluates both the ability to block initial infection while copying it to the device, so called the Early Stage Detection, and while running it, the Installation Stage. The test also includes a false positive subtest.

Products placing in the highest three positions based on the combined of two stages Detection Rate gain an increment of TOP3 counters for their vendor.

¹ In the fourth quarter of 2022 Verizon Inc. have made decision to close ICSA Labs on December 31st 2022, so only first three quarter reports are published and taken into account in TOP3 metric.

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The following tests were performed in 2022 and used to calculate the metric. The test labs and tests are listed in alphabetical mode.

SE Labs (formerly known as Dennis Technology Labs)

- **Enterprise Endpoint Protection Test**
- **Small Business Endpoint Protection Test**
- **Home Anti-Malware Protection Test**

These quarterly-long tests are published and counted in the metrics four times a year. These tests aim to compare the effectiveness of anti-malware products provided by well-known security companies. Enterprise, Home, and Small Business products are evaluated separately. The products are exposed to live Internet threats during the test period. This exposure is carried out in a very realistic way, closely reflecting the customer experience. The results reflect how products perform under real-life, customer-use-case scenarios, i.e. what happens when a user visits an infected website. The tests include a detection subtest and a false positive one.

Three products with the highest Total Accuracy Rating scores (calculated as a combination of points of the two subtests) gain an increment of TOP3 counters for their vendor.

- **Enterprise Advanced Security (EDR) Test - Detection**

This test is published and counted in the metrics one time this year. It is also known as Breach Resonse Test and evaluates effectiveness of a tested product against a range of hacking attacks designed to compromise systems and penetrate target networks in the same way as criminals and other attackers breach systems and networks. The tests include a detection subtest and a false positive one.

Three products with the highest Total Accuracy Ratings scores (calculated as a combination of points of the two subtests) gain an increment of TOP3 counters for their vendor.

- **Email Security Services Protection Test**

This test is performed and counted in the metrics one time a year and assesses how effectively the email hosted protection services for the Office365 platform are at detecting and/or protecting against threats in real time, including phishing, BEC (business e-mail compromise), social engineering and real world spam. The test includes a detection subtest and a false positive one.

Three products with the highest Total Accuracy Rating scores (calculated as a combination of points of the two subtests) gain an increment of TOP3 counters for their vendor.

Testing Ground Labs

- **Android Malware Detection Test: Consumer and Business**

This test evaluates how effectively mobile products can protect users' Android-based devices from threats. It includes a detection subtest and a false positives one. Consumer and Business related products are assessed separately and are published four and two times this year, correspondingly. Starting from June 2022, each test of the testing lab is compliant with the AMTSO Testing Protocol Standard and confirmed by AMTSO.

Three products with the highest Total Scores (calculated as a combination of the two subtests results) gain an increment of TOP3 counters for their vendor.

VirusBulletin

- **VB100 Certification**

These tests are held every month to evaluate different types of products (before that, these tests were held every even months); the reports are published twelve times this year.

Each product that passes the certification gains an increment of TOP3 counter for their vendor.

2022 TOP3 metric description

A complete list of participants in tests registered in TOP3-2022.

- 1E
- Acronis
- AhnLab
- Anonimous
- Antiy Labs
- ArcaBit
- Avast
- AVG
- Avira
- Bitdefender
- BlackBerry (Cylance)
- Broadcom (Symantec)
- Bullguard
- Check Point
- CHOMAR
- Cisco
- ClamXav
- Clario
- CMC Cyber Security
- Combo
- Comodo
- CrowdStrike
- Cybereason
- Cynet
- CyRadar
- Data443
- Deep Instinct
- Defenx
- Dr.Web
- Elastic
- EmsiSoft
- ESET
- ESTsecurity
- Exosphere
- Faronics
- Fortinet
- F-Secure
- G DATA
- Google
- GoSecure
- Hammock
- Ikarus
- Intego
- IronNet
- Juniper
- K7
- Kaspersky
- Lavasoft
- LINE
- Malwarebytes
- Microsoft
- Microworld
- NortonLifeLock
- NSHC
- Palo Alto
- Panda
- PC Pitstop
- PCProtect
- Perception-Point
- Private Internet Access Inc.
- Qi-ANXIN
- Quick Heal
- RevBits
- Rising
- Sangfor
- Scanguard
- Securion
- SentinelOne
- Seqrite
- Sequaretec
- Shield Antivirus
- SonicWall
- Sophos
- Surfshark
- Tabidus
- Tencent
- TGSoft
- ThreatBook
- Total Defense
- TotalAV
- Trellix (McAfee)
- Trend Micro
- Tweaking Technologies
- Vendor A (AVC-EPR)
- Vendor B (AVC-EPR)
- Vendor C (AVC-EPR)
- Vendor D (AVC-EPR)
- Vendor E (AVC-EPR)
- Vendor A (AVC-PC)
- Vendor B (AVC-PC)
- Vendor C (AVC-PC)
- Vendor D (AVC-PC)
- Viettel Security
- VIPRE
- VMware (Carbon Black)
- Webroot
- WithSecure
- Zemana
- Zoner