SE Labs

INTELLIGENCE-LED TESTING

Endpoint Security

Enterprise

Oct - Dec 2022

EPS PROTECTION

SE Labs tested a variety of anti-malware (aka ‘anti-virus’; aka ‘endpoint security’) products from a range of well-known vendors in an effort to judge which were the most effective.

Each product was exposed to the same threats, which were a mixture of targeted attacks using well-established techniques and public email and web-based threats that were found to be live on the internet at the time of the test.

The results indicate how effectively the products were at detecting and/or protecting against those threats in real time.

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INTRODUCTION

Choose Your Reviews Carefully

Why our security tests are the most trustworthy

This security report compares anti-malware products. Its job is to help you make informed buying decisions. We applied advanced testing techniques to ensure that the results are meaningful. The same cannot be said for many other tests. I'd say you've picked a good one to read, here. Let's prove that.

There are a few questions you should ask when you look at a security report. These are all very important but in random order here they are:

1. **Is the test realistic?**
2. **Does the tester explain how they tested?**
3. **Does the tester explain how they make money from the report?**

There are all sorts of other little details to consider, which are often things security vendors get anxious about. These include technical details relating to the testing environment and the threats used to test the products. But ultimately, as a reader, you should care most about the list above.

Get Real

Realistic tests are good for a couple of reasons. Firstly, you want to know how security products handle real, current threats. Testing with vague simulations, future concepts or ancient and broken malware files doesn't tell you how effective the product is in a practical sense.

The second reason might shock you. Some security vendors cheat in tests. They can sometimes detect when their products are being tested by certain test labs and either program or manually interfere to achieve different results. The more realistic the test, the harder it is for vendors to cheat.

There's actually a third reason why realistic testing is useful. Vendors can use the results to help improve their products. Most vendors work with us because they see the value in fixing problems that we uncover. At the end of this process, you buy better products and everyone wins (except the bad guys).

How We Test

Our test reports are packed with information about how we ran the tests. We know you're probably not going to dig into all the detail in this report, but it's there for two reasons. Some people want to see it, plus it's reassuring that it's there. If you have any questions, the answer is probably in the report. And if it's not, please contact us and ask.

Show Me The Money

We don't make money from affiliate links. If you buy any of the products in this report we don't make a penny. And we don't accept advertising. Our business is based on helping security vendors improve. This consultancy side to things brings in enough money to support the testing that we run, and allows us to publish reports like this for free.

If you see a security report that isn't realistic and transparent treat it with extra care. For more information about **fake anti-virus reviews** please see our blog post on the subject.

If you spot a detail in this report that you don't understand, or would like to discuss, please **contact us**. SE Labs uses current threat intelligence to make our tests as realistic as possible. To learn more about how we test, how we define 'threat intelligence' and how we use it to improve our tests please visit our **website** and follow us on **LinkedIn**.

Executive Summary

Product Names

It is good practice to stay up to date with the latest version of your chosen endpoint security product. We made best efforts to ensure that each product tested was the very latest version running with the most recent updates to give the best possible outcome.

For specific build numbers, see **Appendix C: Product Versions** on page 19.

Executive Summary			
Products Tested	Protection Accuracy Rating (%)	Legitimate Accuracy Rating (%)	Total Accuracy Rating (%)
Broadcom Endpoint Security Enterprise Edition	100%	100%	100%
ESET Endpoint Security	100%	100%	100%
Kaspersky Endpoint Security	100%	100%	100%
Microsoft Defender Antivirus (enterprise)	100%	100%	100%
Sophos Intercept X	100%	100%	100%
Trellix Endpoint Security	100%	100%	100%
VIPRE Endpoint Security	99%	100%	100%
CrowdStrike Falcon	99%	100%	99%
Fortinet FortiEDR	100%	99%	99%

Products highlighted in green were the most accurate, scoring 85 per cent or more for Total Accuracy. Those in yellow scored less than 85 but 75 or more. Products shown in red scored less than 75 per cent.

For exact percentages, see **1. Total Accuracy Ratings** on page 6.

- **The endpoints were generally effective at handling general threats from cyber criminals...**

All of the products were very capable of handling public email- and web-based threats such as those used by criminals to attack Windows PCs, tricking users into running malicious files or running scripts that download and run malicious files.

- **... but targeted attacks caused problems for a couple of the products.**

Only seven of the nine products provided complete protection against the targeted attacks used in this test. While the two products were only compromised by a single targeted attack each, this is still a concerning result since it only takes one targeted attack to breach an organisation.

- **False positives were not an issue for the products.**

Almost all the products were perfectly good at correctly classifying legitimate applications and websites. Only one product advised its users to block a legitimate application or website.

- **Which products were the most effective?**

Products from **Broadcom**, **ESET**, **Kaspersky**, **Microsoft**, **Sophos** and **Trellix** produced extremely good results due to a combination of their ability to block malicious URLs, handle exploits and correctly classify legitimate applications and websites. All products performed well enough to achieve AAA awards.

1. Total Accuracy Ratings

Judging the effectiveness of an endpoint security product is a subtle art, and many factors are at play when assessing how well it performs. To make things easier we've combined all the different results from this report into one easy-to-understand graph.

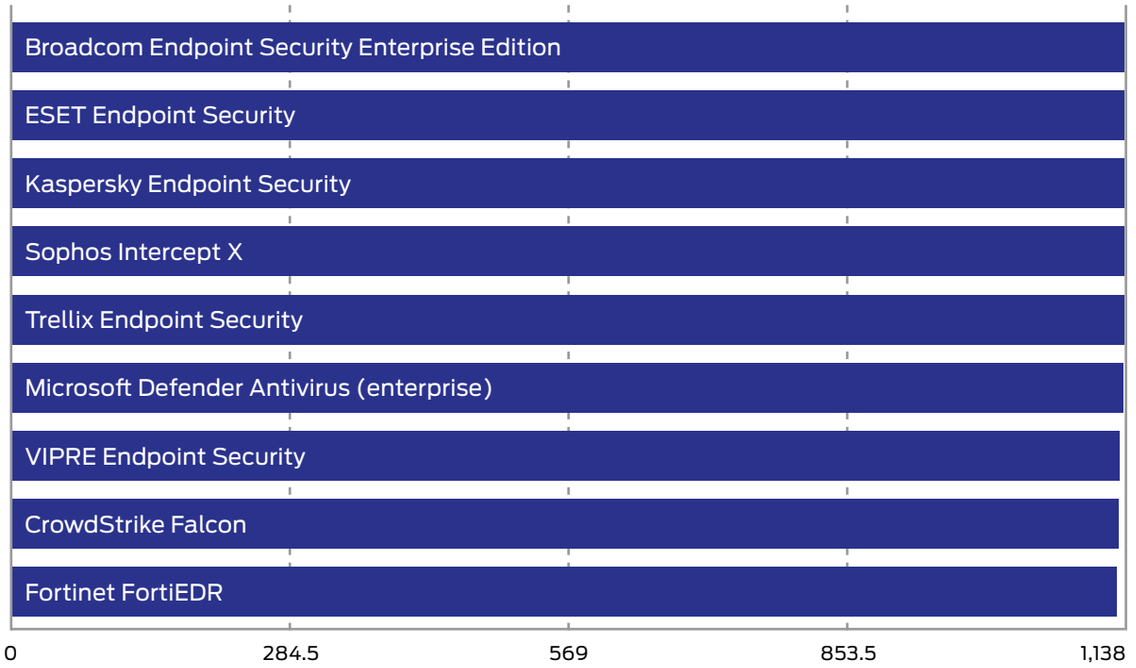
The graph below takes into account not only each product's ability to detect and protect against threats, but also its handling of non-malicious objects such as web addresses (URLs) and applications.

Not all protections, or detections for that matter, are equal. A product might completely block a URL, which stops the threat before it can even start its intended series of malicious events. Alternatively, the product might allow a web-based exploit to execute but prevent it from downloading any further code to the target. In another case malware might run on the target for a short while before its behaviour is detected and its code is deleted or moved to a safe 'quarantine' area for future analysis. We take these outcomes into account when attributing points that form final ratings.

For example, a product that completely blocks a threat is rated more highly than one that allows a threat to run for a while before eventually evicting it. Products that allow all malware infections, or that block popular legitimate applications, are penalised heavily.

Categorising how a product handles legitimate objects is complex, and you can find out how we do it in **6. Legitimate Software Ratings** on page 14.

Total Accuracy Ratings			
Product	**Total Accuracy Rating**	**Total Accuracy (%)**	**Award**
Broadcom Endpoint Security Enterprise Edition	1,138	100%	AAA
ESET Endpoint Security	1,138	100%	AAA
Kaspersky Endpoint Security	1,138	100%	AAA
Sophos Intercept X	1,138	100%	AAA
Trellix Endpoint Security	1,138	100%	AAA
Microsoft Defender Antivirus (enterprise)	1,137	100%	AAA
VIPRE Endpoint Security	1,133	100%	AAA
CrowdStrike Falcon	1,132	99%	AAA
Fortinet FortiEDR	1,130	99%	AAA



Total Accuracy Ratings combine protection and false positives

Enterprise Endpoint Security Awards

The following products win SE Labs awards:

- **ESET** Endpoint Security
- **Kaspersky** Endpoint Security
- **Sophos** Intercept X
- **Trellix** Endpoint Security
- **Broadcom** Endpoint Security Enterprise Edition
- **Microsoft** Defender Antivirus (enterprise)
- **VIPRE** Endpoint Security
- **CrowdStrike** Falcon
- **Fortinet** FortiEDR

2. Threat Responses

Full Attack Chain: Testing every layer of detection and protection

Attackers start from a certain point and don't stop until they have either achieved their goal or have reached the end of their resources (which could be a deadline or the limit of their abilities).

This means, in a test, the tester needs to begin the attack from a realistic first position, such as sending a phishing email or setting up an infected website, and moving through many of the likely steps leading to actually stealing data or causing some other form of damage to the network.

If the test starts too far into the attack chain, such as executing malware on an endpoint, then many products will be denied opportunities to use the full extent of their protection and detection abilities.

If the test concludes before any 'useful' damage or theft has been achieved, then similarly the product may be denied a chance to demonstrate its abilities in behavioural detection and so on.

Attack Stages

The illustration below shows some typical stages of an attack. In a test each of these should be

Attack Chain: How Hackers Progress

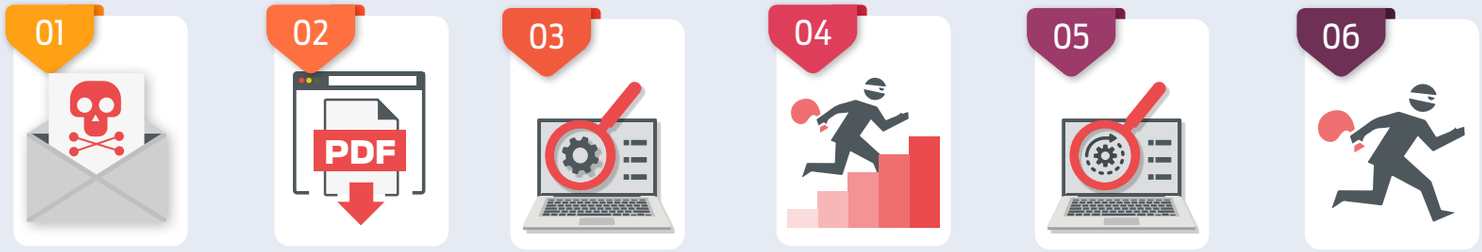


Figure 1. A typical attack starts with an initial contact and progresses through various stages, including reconnaissance, stealing data and causing damage.

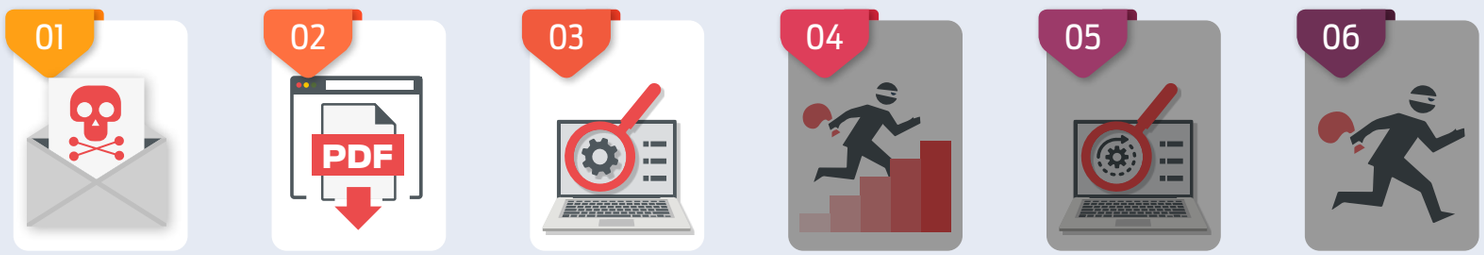


Figure 2. This attack was initially successful but only able to progress as far as the reconnaissance phase.

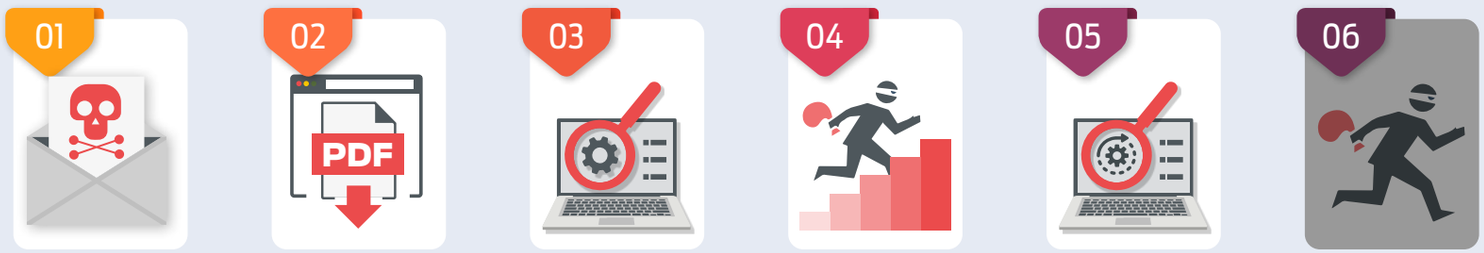


Figure 3. A more successful attack manages to steal passwords but wholesale data theft and destruction was blocked.

attempted to determine the security solution's effectiveness. This test's results record detection and protection for each of these stages.

We measure how a product responds to the first stages of the attack with a detection and/ or protection rating. Sometimes products allow threats to run but detect them. Other times they might allow the threat to run briefly before neutralising it. Ideally they detect and block the threat before it has a chance to run. Products may delete threats or automatically contain them in a 'quarantine' or other safe holding mechanism for later analysis.

Should the initial attack phase succeed we then measure post-exploitation stages, which are represented by steps two through to seven below. We broadly categorise these stages as: Access (step 2); Action (step 3); Escalation (step 4); and Post-escalation (step 5).

In figure 1. you can see a typical attack running from start to end, through various 'hacking' activities. This can be classified as a fully successful breach.

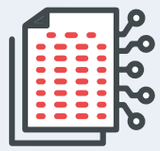
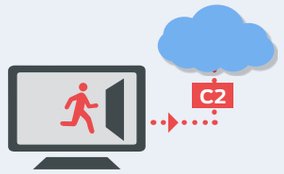
In figure 2. a product or service has interfered with the attack, allowing it to succeed only as far as stage 3, after which it was detected and neutralised. The attacker was unable to progress through stages 4 and onwards.

It is possible that attackers will not cause noticeable damage during an attack. It may be that their goal is persistent presence on the systems to monitor for activities, slowly steal information and other more subtle missions.

In figure 3. the attacker has managed to progress as far as stage five. This means that the system has been seriously compromised. The attacker has a high level of access and has stolen passwords. However, attempts to exfiltrate data from the target were blocked, as were attempts to damage the system.

The table below shows how a typical way in which security testers illustrate attackers' behaviour. It is largely the same as our images above, but more detailed.

MITRE Example Attack Chain Details

Initial Access	Execution	Privilege Escalation	Credential Access	Discovery	Collection	Command and Control	Exfiltration
Spearphishing via Service	Command-Line Interface	Bypass UAC	Input Capture	File and Directory Discovery	Input Capture	Data Encoding	Exfiltration Over C2 Channel
Spearphishing Link	PowerShell		OS Credential Dumping	Process Discovery	Data from Local System	Data Obfuscation	
	Scripting			System Information Discovery			
	User Execution						
 Spearphishing Link	 Scripting	 Bypass UAC	 OS Credential Dumping	 Process Discovery	 Data from Local System	 Data Obfuscation	 Exfiltration Over C2 Channel

3. Protection Ratings

The results below indicate how effectively the products dealt with threats. Points are earned for detecting the threat and for either blocking or neutralising it.

Detected (+1)
If the product detects the threat with any degree of useful information, we award it one point.

Blocked (+2)
Threats that are disallowed from even starting their malicious activities are blocked. Blocking products score two points.

Complete Remediation (+1)
If, in addition to neutralising a threat, the product removes all significant traces of the attack, it gains an additional one point.

Neutralised (+1)
Products that kill all running malicious processes 'neutralise' the threat and win one point.

Persistent Neutralisation (-2)
This result occurs when a product continually blocks a persistent threat from achieving its aim, while not removing it from the system.

Compromised (-5)
If the threat compromises the system, the product loses five points. This loss may be reduced to four points if it manages to detect the threat (see Detected, above), as this at least alerts the user, who may now take steps to secure the system.

Rating Calculations

We calculate the protection ratings using the following formula:

Protection Rating =
(1x number of Detected) +
(2x number of Blocked) +
(1x number of Neutralised) +
(1x number of Complete remediation) +
(-5x number of Compromised)

The 'Complete remediation' number relates to cases of neutralisation in which all significant traces of the attack were removed from the target.

These ratings are based on our opinion of how important these different outcomes are. You may have a different view on how seriously you treat a 'Compromise' or 'Neutralisation without complete remediation'. If you want to create your own rating system, you can use the raw data from **5. Protection Details** on page 13 to roll your own set of personalised ratings.

Targeted Attack Scoring

The following scores apply only to targeted attacks and are cumulative, ranging from -1 to -5.

Access (-1)
If any command that yields information about the target system is successful this score is applied. Examples of successful commands include listing current running processes, exploring the file system and so on. If the first command is attempted and the session is terminated by the product without the command being successful the score of Neutralised (see above) will be applied.

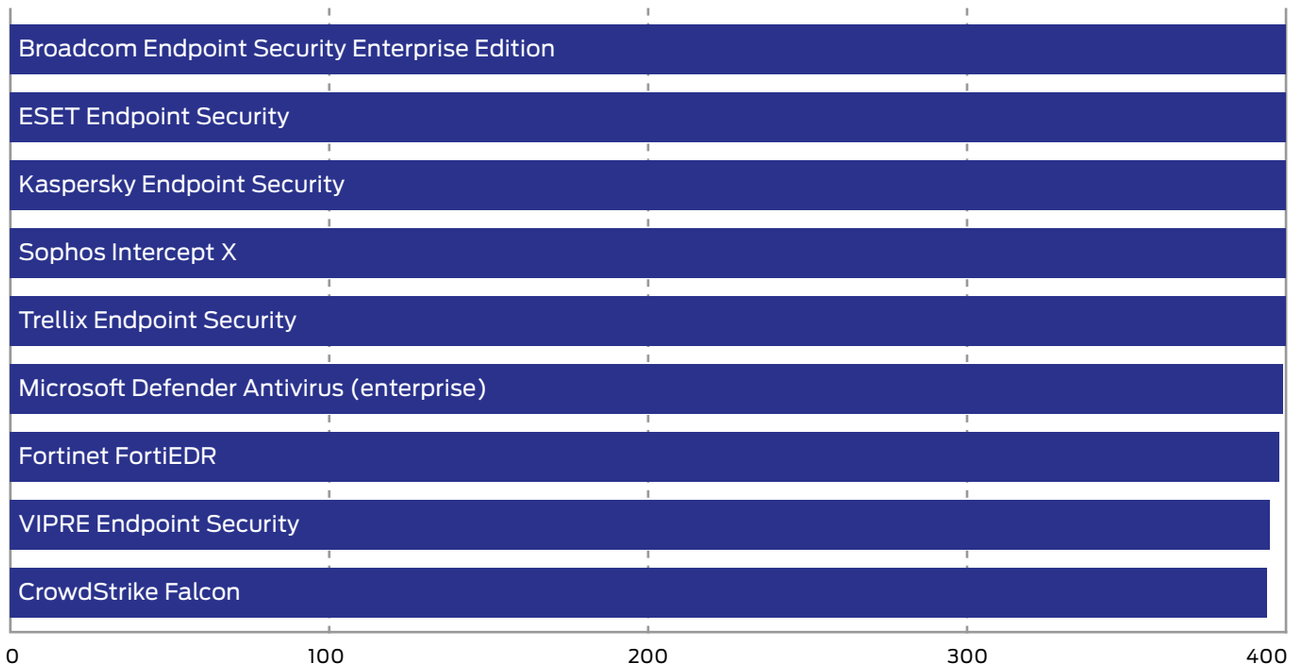
Action (-1)
If the attacker is able to exfiltrate a document from the target's Desktop of the currently logged in user then an 'action' has been successfully taken.

Escalation (-2)
The attacker attempts to escalate privileges to NT Authority/System. If successful, an additional two points are deducted.

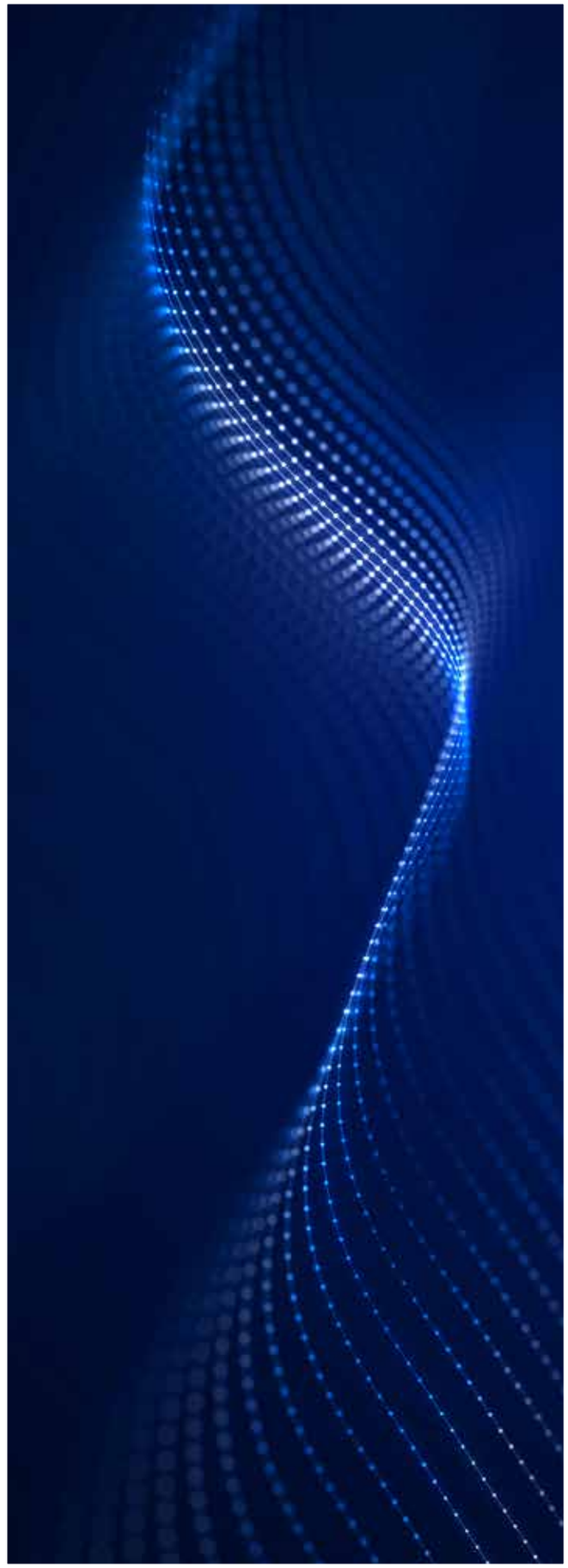
Post-Escalation Action (-1)
After escalation the attacker attempts actions that rely on escalated privileges. These include attempting to steal credentials, modifying the file system and recording keystrokes. If any of these actions are successful then a further penalty of one point deduction is applied.

Protection Accuracy		
Product	Protection Accuracy	Protection Accuracy (%)
Broadcom Endpoint Security Enterprise Edition	400	100%
ESET Endpoint Security	400	100%
Kaspersky Endpoint Security	400	100%
Sophos Intercept X	400	100%
Trellix Endpoint Security	400	100%
Microsoft Defender Antivirus (enterprise)	399	100%
Fortinet FortiEDR	398	100%
VIPRE Endpoint Security	395	99%
CrowdStrike Falcon	394	99%

Average 100%



Protection Ratings are weighted to show that how products handle threats can be subtler than just 'win' or 'lose'.

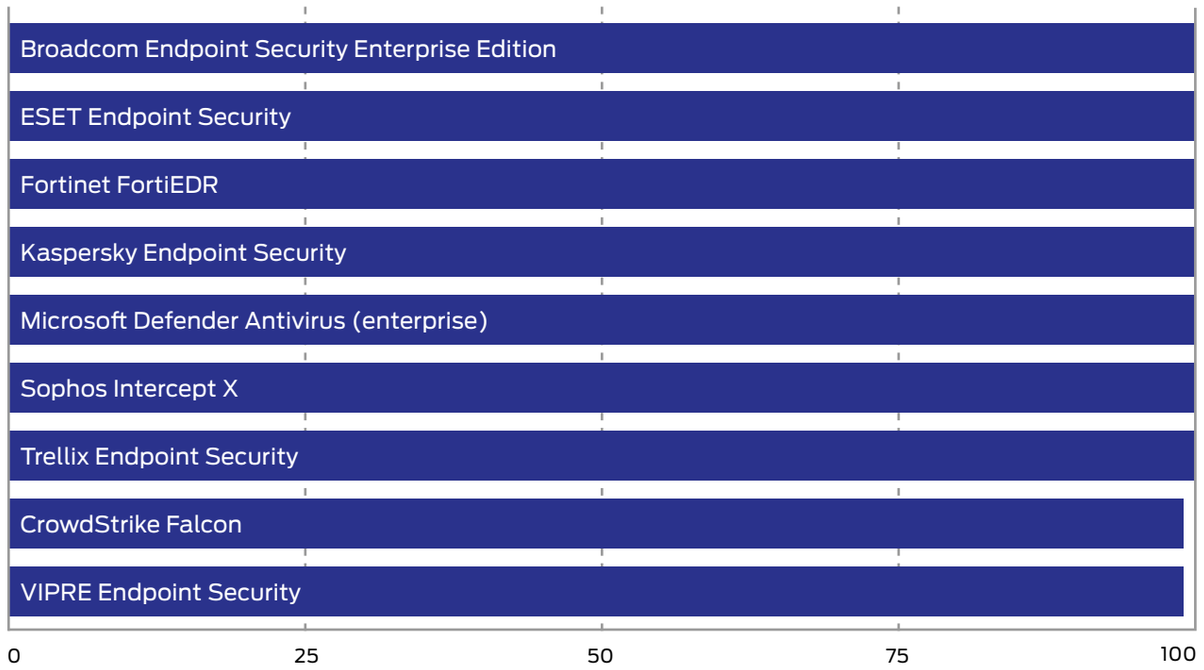


4. Protection Scores

This graph shows the overall level of protection, making no distinction between neutralised and blocked incidents.

For each product we add Blocked and Neutralised cases together to make one simple tally.

Protection Scores	
Product	**Protection Score**
Broadcom Endpoint Security Enterprise Edition	100
ESET Endpoint Security	100
Fortinet FortiEDR	100
Kaspersky Endpoint Security	100
Microsoft Defender Antivirus (enterprise)	100
Sophos Intercept X	100
Trellix Endpoint Security	100
CrowdStrike Falcon	99
VIPRE Endpoint Security	99



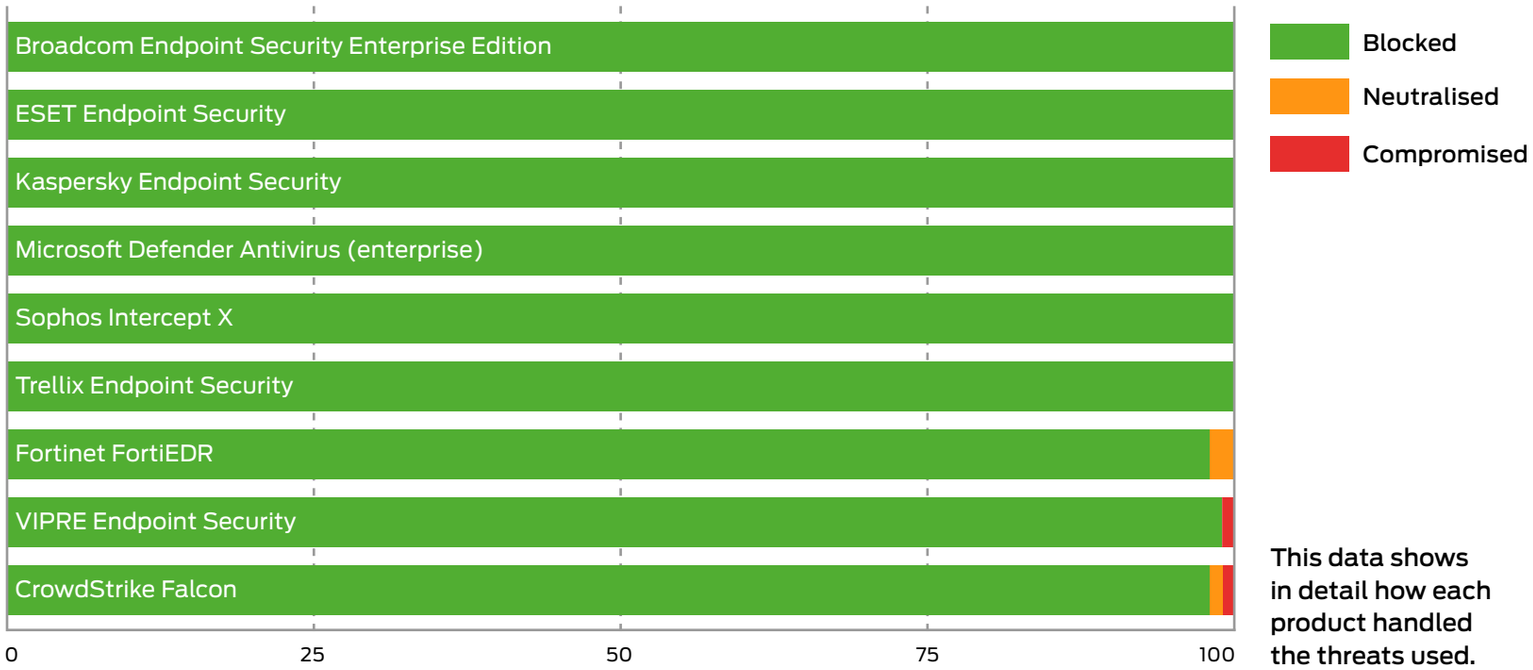
Protection Scores are a simple count of how many times a product protected the system.

5. Protection Details

These results break down how each product handled threats into some detail. You can see how many detected a threat and the levels of protection provided.

Products sometimes detect more threats than they protect against. This can happen when they recognise an element of the threat but aren't equipped to stop it. Products can also provide protection even if they don't detect certain threats. Some threats abort on detecting specific endpoint protection software.

Protection Details					
Product	Detected	Blocked	Neutralised	Compromised	Protected
Broadcom Endpoint Security Enterprise Edition	100	100	0	0	100
ESET Endpoint Security	100	100	0	0	100
Kaspersky Endpoint Security	100	100	0	0	100
Microsoft Defender Antivirus (enterprise)	100	100	0	0	100
Sophos Intercept X	100	100	0	0	100
Trellix Endpoint Security	100	100	0	0	100
Fortinet FortiEDR	100	98	2	0	100
VIPRE Endpoint Security	100	99	0	1	99
CrowdStrike Falcon	100	98	1	1	99



This data shows in detail how each product handled the threats used.

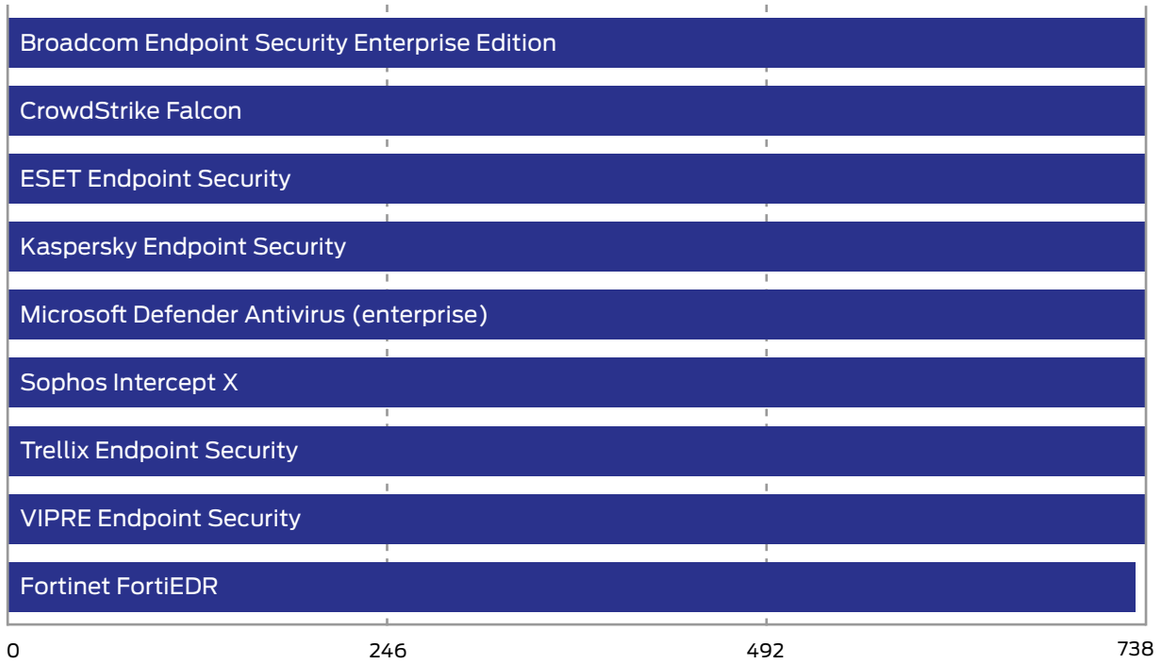
6. Legitimate Software Ratings

These ratings indicate how accurately the products classify legitimate applications and URLs, while also taking into account the interactions that each product has with the user. Ideally a product will either not classify a legitimate object or will classify it as safe. In neither case should it bother the user.

We also take into account the prevalence (popularity) of the applications and websites used in this part of the test, applying stricter penalties for when products misclassify very popular software and sites.

To understand how we calculate these ratings, see **6.3 Accuracy Ratings** on page 16.

Legitimate Software Ratings		
Product	**Legitimate Accuracy Rating**	**Legitimate Accuracy (%)**
Broadcom Endpoint Security Enterprise Edition	738	100%
CrowdStrike Falcon	738	100%
ESET Endpoint Security	738	100%
Kaspersky Endpoint Security	738	100%
Microsoft Defender Antivirus (enterprise)	738	100%
Sophos Intercept X	738	100%
Trellix Endpoint Security	738	100%
VIPRE Endpoint Security	738	100%
Fortinet FortiEDR	732	99%



Legitimate Software Ratings can indicate how well a vendor has tuned its detection engine.

6.1 Interaction Ratings

It's crucial that anti-malware endpoint products not only stop – or at least detect – threats, but that they allow legitimate applications to install and run without misclassifying them as malware. Such an error is known as a 'false positive' (FP).

In reality, genuine FPs are quite rare in testing. In our experience it is unusual for a legitimate application to be classified as 'malware'. More often it will be classified as 'unknown', 'suspicious' or 'unwanted' (or terms that mean much the same thing).

We use a subtle system of rating an endpoint's approach to legitimate objects, which takes into account how it classifies the application and how it presents that information to the user. Sometimes the endpoint software will pass the buck and demand that the user decide if the application is safe or not. In such cases the product may make a recommendation to allow or block. In other cases, the product will make no recommendation, which is possibly even less helpful.

If a product allows an application to install and run with no user interaction, or with simply a brief notification that the application is likely to be safe, it has achieved an optimum result. Anything else is a Non-Optimal Classification/Action (NOCA). We think that measuring NOCAs is more useful than counting the rarer FPs.

	None (allowed)	Click to Allow (default allow)	Click to Allow/Block (no recommendation)	Click to Block (default block)	None (blocked)	
Object is Safe	2	1.5	1			A
Object is Unknown	2	1	0.5	0	-0.5	B
Object is not Classified	2	0.5	0	-0.5	-1	C
Object is Suspicious	0.5	0	-0.5	-1	-1.5	D
Object is Unwanted	0	-0.5	-1	-1.5	-2	E
Object is Malicious				-2	-2	F
	1	2	3	4	5	

Interaction Ratings

Product	None (allowed)	None (blocked)
Broadcom Endpoint Security Enterprise Edition	100	0
CrowdStrike Falcon	100	0
ESET Endpoint Security	100	0
Kaspersky Endpoint Security	100	0
Microsoft Defender Antivirus (enterprise)	100	0
Sophos Intercept X	100	0
Trellix Endpoint Security	100	0
VIPRE Endpoint Security	100	0
Fortinet FortiEDR	99	1

Products that do not bother users and classify most applications correctly earn more points than those that ask questions and condemn legitimate applications.

6.2 Prevalence Ratings

There is a significant difference between an endpoint product blocking a popular application such as the latest version of Microsoft Word and condemning a rare Iranian dating toolbar for Internet Explorer 6. One is very popular all over the world and its detection as malware (or something less serious but still suspicious) is a big deal. Conversely, the outdated toolbar won't have had a comparably large user base even when it was new. Detecting this application as malware may be wrong, but it is less impactful in the overall scheme of things.

With this in mind, we collected applications of varying popularity and sorted them into five separate categories, as follows:

1. Very High Impact
2. High Impact
3. Medium Impact
4. Low Impact
5. Very Low Impact

Incorrectly handling any legitimate application will invoke penalties, but classifying Microsoft Word as malware and blocking it without any way for the user to override this will bring far greater penalties than doing the same for an ancient niche toolbar. In order to calculate these relative penalties, we assigned each impact category with a rating modifier, as shown in the table above.

Legitimate Software Prevalence Rating Modifiers	
Impact Category	**Rating Modifier**
Very High Impact	5
High Impact	4
Medium Impact	3
Low Impact	2
Very Low Impact	1

Applications were downloaded and installed during the test, but third-party download sites were avoided and original developers' URLs were used where possible. Download sites will sometimes bundle additional components into applications' install files, which may correctly cause anti-malware products to flag adware. We remove adware from the test set because it is often unclear how desirable this type of code is.

The prevalence for each application and URL is estimated using metrics such as third-party download sites and the data from Tranco.com's global traffic ranking system.

6.3 Accuracy Ratings

We calculate legitimate software accuracy ratings by multiplying together the interaction and prevalence ratings for each download and installation:

Accuracy rating = Interaction rating x Prevalence rating

If a product allowed one legitimate, Medium impact application to install with zero interaction with the user, then its Accuracy rating would be calculated like this:

Accuracy rating = 2 x 3 = 6

This same calculation is made for each legitimate application/site in the test and the results are summed and used to populate the graph and table shown under **6. Legitimate Software Ratings** on page 14.

6.4 Distribution of Impact Categories

Endpoint products that were most accurate in handling legitimate objects achieved the highest ratings. If all objects were of the highest prevalence, the maximum possible rating would be 1,000 (100 incidents x (2 interaction rating x 5 prevalence rating)).

In this test there was a range of applications with different levels of prevalence. The table below shows the frequency:

Legitimate Software Category Frequency	
Prevalence Rating	**Frequency**
Very High Impact	32
High Impact	33
Medium Impact	15
Low Impact	12
Very Low Impact	8

7. Conclusions

Attacks in this test included threats that affect the wider public and more closely targeted individuals and organisations. You could say that we tested the products with 'public' malware and full-on hacking attacks.

We introduced the threats in a realistic way such that threats seen in the wild on websites were downloaded from those same websites, while threats caught spreading email were delivered to our target systems as emails.

All the products tested are well-known and should do well in this test. While we do 'create' threats by using publicly available free hacking tools, we do not write unique malware so there is no technical reason why any vendor being tested should do poorly.

Six products stopped all of the attacks this quarter. In fact, all of them provided excellent protection by primarily blocking public email- and web-based threats. In the few instances when **Fortinet**, **VIPRE** and **CrowdStrike** neutralised a general threat instead of blocking it outright, they were successful in doing so. This contributed to all the products achieving excellent protection scores against general threats since the tally does not distinguish between blocking threats and neutralising them effectively.

Seven out of nine products successfully protected against targeted threats. **CrowdStrike** and **VIPRE** each missed a single targeted attack, but they were still strong enough to make it into the AAA rating zone.

Almost all the products handled the legitimate applications correctly, with no mistakes. In one instance, **Fortinet** advised its users to block a safe application or website. All of the products were straightforward with their advice to allow the installation of legitimate applications as none of them left the decision as to their safety to their end-users.

All of the products in this test won AAA awards. The strongest, from **Broadcom**, **ESET**, **Kaspersky**, **Microsoft**, **Sophos** and **Trellix** stopped all threats and allowed all legitimate applications. **VIPRE**, **CrowdStrike** and **Fortinet** received total ratings of 99%.

Appendices

Appendix A: Terms Used

Term	Meaning
Compromised	The attack succeeded, resulting in malware running unhindered on the target. In the case of a targeted attack, the attacker was able to take remote control of the system and carry out a variety of tasks without hindrance.
Blocked	The attack was prevented from making any changes to the target.
False positive	When a security product misclassifies a legitimate application or website as being malicious, it generates a 'false positive'.
Neutralised	The exploit or malware payload ran on the target but was subsequently removed.
Complete Remediation	If a security product removes all significant traces of an attack, it has achieved complete remediation.
Target	The test system that is protected by a security product.
Threat	A program or sequence of interactions with the target that is designed to take some level of unauthorised control of that target.
Update	Security vendors provide information to their products in an effort to keep abreast of the latest threats. These updates may be downloaded in bulk as one or more files, or requested individually and live over the internet.

Appendix B: FAQs

A **full methodology** for this test is available from our website.

- The products chosen for this test were selected by SE Labs.
- The test was unsponsored.
- The test was conducted between 21st September and 16th November 2022.
- All products were configured according to each vendor's recommendations, when such recommendations were provided.
- Malicious URLs and legitimate applications and URLs were independently located and verified by SE Labs.
- Targeted attacks were selected and verified by SE Labs.
- Malicious and legitimate data was provided to partner organisations once the test was complete.
- The web browser used in this test was Google Chrome. When testing Microsoft products Chrome was equipped with the Windows Defender Browser Protection browser extension (**https://browserprotection.microsoft.com**). We allow other browser extensions when a tested product requests a user install one or more.

Q What is a partner organisation? Can I become one to gain access to the threat data used in your tests?

A Partner organisations benefit from our consultancy services after a test has been run. Partners may gain access to low-level data that can be useful in product improvement initiatives and have permission to use award logos, where appropriate, for marketing purposes. We do not share data on one partner with other partners. We do not partner with organisations that do not engage in our testing.

Q I am a security vendor and you tested my product without permission. May I access the threat data to verify that your results are accurate?

A We are willing to share a certain level of test data with non-partner participants for free. The intention is to provide sufficient data to demonstrate that the results are accurate. For more in-depth data suitable for product improvement purposes we recommend becoming a partner.

Appendix C: Product Versions

The table below shows the service's name as it was being marketed at the time of the test.

Product Versions			
Vendor	**Product**	**Build Version (start)**	**Build Version (end)**
Broadcom	Endpoint Security Enterprise Edition	Version: 14 (14.3.RU5) Build: 8268 (14.3.8268.5000)	Version: 14 (14.3.RU5) Build: 8268 (14.3.8268.5000)
CrowdStrike	Falcon	6.45.15907.0	6.48.16207.0
ESET	Endpoint Security	9.0.2046.0	9.1.2060.0
Fortinet	FortiEDR	5.2.0.2068	5.2.0.2068
Kaspersky	Endpoint Security	11.9.0.351 AES256	11.10.0.399 AES256
Microsoft	Defender Antivirus (enterprise)	Antimalware Client: 4.18.2207.7 Engine: 1.1.19600.3 Antivirus: 1.375.449.0 Anti-spyware: 1.375.449.0	Antimalware Client: 4.18.2210.6 Engine: 1.1.19800.4 Antivirus: 1.379.508.0 Anti-spyware: 1.379.508.0
Sophos	Intercept X	Core Agent: 2022.2.1.9 Sophos Intercept X: 2022.1.1.22 Device Encryption: 2022.1.0.58	Core Agent: 2022.2.2.1 Sophos Intercept X: 2022.1.3.3 Device Encryption: 2022.3.0.21
Trellix	Endpoint Security	Endpoint Security: 10.7 Endpoint Security Platform: 10.7.0.3468 Adaptive Threat Protection: 10.7.0.3590 Threat Prevention: 10.7.0.3497 Firewall: 10.7.0.2298 Web Control: 10.7.0.2697	Endpoint Security: 10.7 Endpoint Security Platform: 10.7.0.3468 Adaptive Threat protection: 10.7.0.3590 Threat Prevention: 10.7.0.3497 Firewall: 10.7.0.2298 Web Control: 10.7.0.2697
VIPRE	Endpoint Security	VIPRE Software Version: 12.0.7874 Definitions: 104288 - 7.92839 VIPRE Engine: 0.0.0.0 - 3.0	VIPRE Software Version: 12.0.7874 Definitions: 105730 - 7.93340 VIPRE Engine: 0.0.0.0 - 3.0

Appendix D: Attack Types

The table below shows how each product protected against the different types of attacks used in the test.

Attack Types			
Product	**General Attack**	**Targeted Attack**	**Protected (%)**
Broadcom Endpoint Security Enterprise Edition	75	25	100%
ESET Endpoint Security	75	25	100%
Fortinet FortiEDR	75	25	100%
Kaspersky Endpoint Security	75	25	100%
Microsoft Defender Antivirus (enterprise)	75	25	100%
Sophos Intercept X	75	25	100%
Trellix Endpoint Security	75	25	100%
CrowdStrike Falcon	75	24	98%
VIPRE Endpoint Security	75	24	98%

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