

August 2014

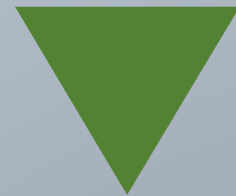
PC SECURITY LABS

COMPARATIVE TEST



Remote code execution exploit mitigations for popular applications

Microsoft Office



Flash

Silverlight

QuickTime



Internet Explorer

Java

Adobe

Content

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1. BACKGROUND

Exploit Kits and targeted attacks on home users and companies nowadays focus on exploiting popular applications such as browsers, browser add-ons such as Flash and Silverlight, Java, Acrobat Reader, Microsoft Office Word, Excel, PowerPoint, media players, etc. The objective is to remotely execute code, transparently to the user and without relying on user interaction, in order to infect the machine with undetected malware. This comparative study looks at the effectiveness of different proactive exploit mitigation technologies included in popular security vendors and specialized anti-exploit tools.

There are several methods to block malware infection via utilizing vulnerability exploits, one is to get the freshest patches and the other way is to install security products that include some form of exploit mitigation technologies. In order to test the exploit blocking capabilities, we used a Windows XP SP3 installation with IE8 and popular applications that are vulnerable to a number of exploits. Even though the test was performed under Windows XP SP3 it is worth noting that these tested applications may still be vulnerable to exploitation under more modern Operating Systems such as Windows 7 and Windows 8. In fact most of the exploits tested correspond to recent vulnerabilities from the last two (2) years.

This test is for reviewing exploit blocking capabilities only, and the result does not stand for the overall protection level for tested products.

This test was commissioned by Malwarebytes Corp. to test the exploit blocking capabilities of different products against relevant vulnerabilities (i.e. vulnerable applications which are targeted typically by Exploit Kits and targeted attacks). PCSL made the sole research and methodology decision of which CVEs to test and how to test. No exploit code samples were provided by Malwarebytes.

2. METHODOLOGY

- ✚ Most of the exploits are setup on Metasploit and some come from private sources.
- ✚ Exploits chosen are relevant in both prevalence as found in Exploit Kits in-the-wild and recent (less than two years old).
- ✚ Each exploit will be tested with different payload configurations. Payloads range from execute, download and execute, reverse shells, and other options found in Metasploit.
- ✚ We will shut down the on access file detection if the product detects the poc by signature so that the exploit can be launched to test the exploit detection capabilities. As exploits and payloads can be easily modified to bypass signature detection¹ this is a valid methodology to test for exploit blocking capabilities.
- ✚ If there is a detection by the product and no payload is executed then this will be counted as successful block. If the security product use some methods to shut down the backdoor connection after the payload is executed, we also count it as a successful block.
- ✚ All the tests are executed on Windows XP SP3 Operating System in English, without any other additional patches.
- ✚ All the tested security products are download from their official websites.

¹ <http://community.rapid7.com/community/metasploit/blog/2014/01/05/a-cat-and-mouse-game-between-exploits-and-antivirus>

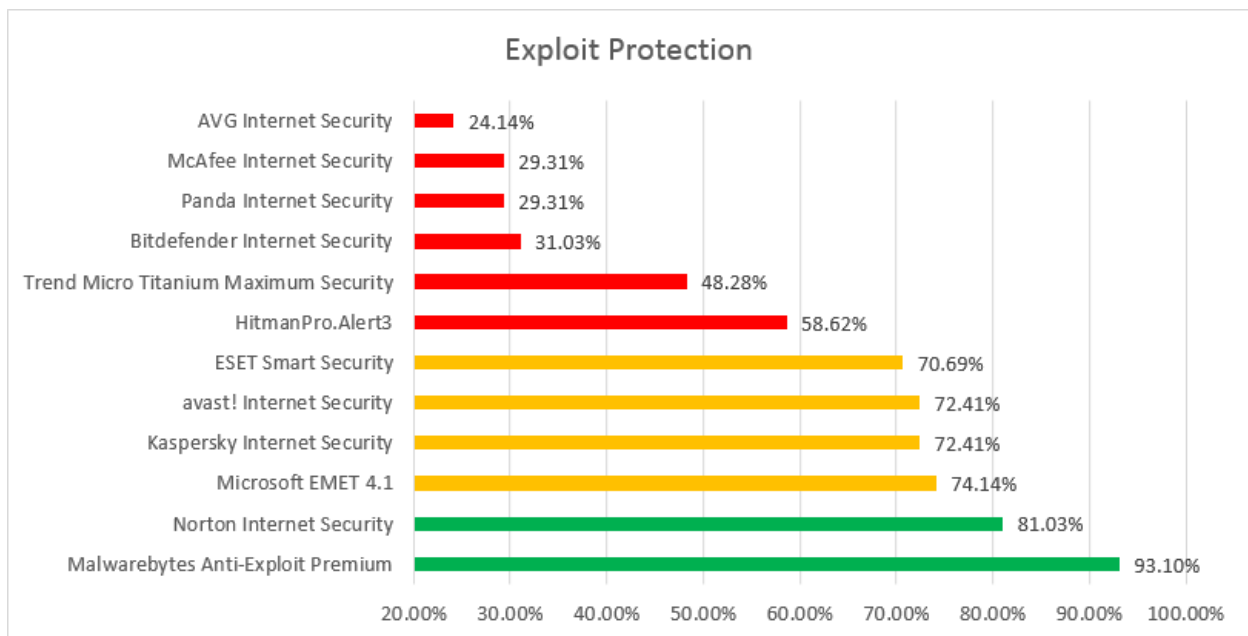
3. PRODUCT INFORMATION

| Software | Vendor | Version |
|---|---------------|----------------|
| avast! Internet Security | AVAST | 2014.9.0.2021 |
| AVG Internet Security | AVG | 14.0.0.4744 |
| Bitdefender Internet Security | Bitdefender | 17.28.0.1191 |
| Enhanced Mitigation Experience Toolkit ² | Microsoft | 4.1.5228.513 |
| ESET Smart Security | ESET | 7.0.317.4 |
| HitmanPro.Alert3 | SurfRight | 3.0.12.73 |
| Kaspersky Internet Security | Kaspersky Lab | 14.0.0.4651(g) |
| Malwarebytes Anti-Exploit Premium | Malwarebytes | 1.04.1.1006 |
| McAfee Internet Security | McAfee | 12.8.958 |
| Norton Internet Security | Symantec | 21.4.0.13 |
| Panda Internet Security | Panda | 19.01.01 |
| Trend Micro Titanium Maximum Security | Trend Micro | 7.0.1255 |

² EMET 4.1 was used as EMET 5.0 does not support Windows XP.

4. RESULT

We consider products which are only able to block less than 60% of the tested exploits as failed in terms of exploit blocking claims. Products which are able to block between 61% and 80% are considered as insufficient. Finally products which are able to block over 80% of the tests exploits are considered pass.



The following table details the results per product and per exploit and payload option.

| <i>Exploits</i> | <i>Payload</i> | <i>Malwarebytes</i> | <i>Symantec</i> | <i>Bitdefender</i> | <i>Kaspersky</i> | <i>Panda</i> | <i>ESET</i> |
|----------------------|----------------|---------------------|-----------------|--------------------|------------------|--------------|-------------|
| <i>CVE-2012-0663</i> | payload-a | pass | failed | failed | failed | failed | failed |
| | payload-b | pass | failed | failed | pass | failed | failed |
| | payload-c | pass | pass | failed | failed | failed | pass |
| <i>CVE-2013-1017</i> | payload-a | pass | pass | pass | pass | failed | failed |
| | payload-b | pass | pass | pass | pass | failed | failed |
| | payload-c | pass | pass | pass | pass | pass | failed |
| <i>CVE-2012-0158</i> | payload-a | pass | failed | failed | failed | failed | failed |
| | payload-b | pass | failed | failed | pass | failed | failed |
| | payload-c | pass | pass | failed | failed | failed | pass |
| <i>CVE-2012-1856</i> | payload-a | pass | failed | pass | failed | failed | failed |
| <i>CVE-2013-3897</i> | payload-a | pass | failed | failed | failed | failed | failed |
| | payload-b | pass | failed | failed | pass | failed | failed |
| | payload-c | pass | pass | pass | pass | pass | pass |
| <i>CVE-2013-3163</i> | payload-a | pass | pass | failed | failed | failed | failed |
| | payload-b | pass | pass | failed | failed | pass | pass |
| <i>CVE-2013-1347</i> | payload-a | pass | pass | failed | failed | failed | failed |
| | payload-b | pass | pass | pass | pass | failed | pass |
| | payload-c | pass | pass | pass | failed | pass | pass |
| <i>CVE-2012-4969</i> | payload-a | pass | failed | failed | failed | failed | failed |
| | payload-b | pass | pass | pass | pass | failed | pass |
| | payload-c | pass | pass | pass | pass | pass | pass |
| <i>CVE-2012-4792</i> | payload-a | pass | failed | pass | failed | failed | failed |
| | payload-b | pass | pass | failed | failed | failed | failed |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2013-3346</i> | payload-a | pass | failed | pass | pass | failed | failed |
| | payload-b | pass | failed | failed | pass | failed | failed |
| | payload-c | pass | pass | failed | pass | pass | pass |

| <i>Exploits</i> | <i>Payload</i> | <i>Malwarebytes</i> | <i>Symantec</i> | <i>Bitdefender</i> | <i>Kaspersky</i> | <i>Panda</i> | <i>ESET</i> |
|----------------------|----------------|---------------------|-----------------|--------------------|------------------|--------------|-------------|
| <i>CVE-2011-2110</i> | payload-a | pass | pass | failed | pass | failed | pass |
| | payload-b | pass | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2012-1535</i> | payload-a | pass | pass | pass | pass | pass | pass |
| | payload-b | pass | pass | pass | pass | failed | pass |
| | payload-c | pass | pass | pass | pass | failed | pass |
| <i>CVE-2013-0634</i> | payload-a | pass | pass | failed | pass | failed | pass |
| | payload-b | pass | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2014-0497</i> | payload-a | pass | pass | pass | pass | failed | pass |
| | payload-b | pass | pass | pass | failed | pass | pass |
| <i>CVE-2014-0515</i> | payload-a | pass | pass | pass | pass | failed | pass |
| | payload-b | pass | pass | pass | failed | failed | pass |
| <i>CVE-2012-0507</i> | payload-a | pass | pass | failed | pass | failed | pass |
| | payload-b | pass | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2013-1488</i> | payload-a | failed | pass | failed | pass | failed | pass |
| | payload-b | failed | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2013-2423</i> | payload-a | failed | pass | failed | pass | failed | pass |
| | payload-b | failed | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2013-2460</i> | payload-a | pass | pass | failed | pass | failed | pass |
| | payload-b | pass | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2013-2465</i> | payload-a | pass | pass | failed | pass | failed | pass |
| | payload-b | pass | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2013-0074</i> | payload-a | pass | pass | failed | failed | failed | pass |
| | payload-b | pass | pass | failed | pass | failed | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |

| <i>Exploits</i> | <i>Payload</i> | <i>AVG</i> | <i>AVAST</i> | <i>Trend Micro</i> | <i>McAfee</i> | <i>Hitmanpro.Alert3</i> | <i>EMET</i> |
|----------------------|----------------|------------|--------------|------------------------|---------------|-------------------------|-------------|
| <i>CVE-2012-0663</i> | payload-a | failed | failed | failed | failed | failed | pass |
| | payload-b | failed | failed | failed | failed | failed | pass |
| | payload-c | failed | failed | failed | failed | failed | pass |
| <i>CVE-2013-1017</i> | payload-a | failed | failed | failed | failed | pass | pass |
| | payload-b | failed | failed | failed | failed | pass | pass |
| | payload-c | failed | failed | failed | pass | pass | pass |
| <i>CVE-2012-0158</i> | payload-a | failed | failed | failed | failed | pass | pass |
| | payload-b | failed | failed | failed | failed | pass | pass |
| | payload-c | failed | failed | failed | failed | pass | pass |
| <i>CVE-2012-1856</i> | payload-a | failed | failed | failed | failed | pass | pass |
| <i>CVE-2013-3897</i> | payload-a | failed | pass | failed | failed | pass | pass |
| | payload-b | failed | failed | failed | failed | pass | pass |
| | payload-c | failed | pass | failed | pass | pass | pass |
| <i>CVE-2013-3163</i> | payload-a | failed | pass | failed | failed | failed | pass |
| | payload-b | failed | pass | failed | pass | pass | pass |
| <i>CVE-2013-1347</i> | payload-a | failed | failed | pass | failed | failed | pass |
| | payload-b | pass | pass | pass | failed | pass | pass |
| | payload-c | pass | pass | pass | pass | pass | pass |
| <i>CVE-2012-4969</i> | payload-a | failed | pass | failed | failed | pass | pass |
| | payload-b | pass | pass | pass | failed | pass | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2012-4792</i> | payload-a | pass | pass | pass | failed | pass | pass |
| | payload-b | failed | failed | pass | failed | failed | pass |
| | payload-c | failed | pass | pass | pass | pass | pass |
| <i>CVE-2013-3346</i> | payload-a | failed | pass | failed | failed | pass | pass |
| | payload-b | failed | pass | failed | failed | pass | pass |
| | payload-c | failed | pass | failed | pass | pass | pass |

| <i>Exploits</i> | <i>Payload</i> | <i>AVG</i> | <i>AVAST</i> | <i>Trend Micro</i> | <i>McAfee</i> | <i>Hitmanpro.Alert3</i> | <i>EMET</i> |
|----------------------|----------------|------------|--------------|--------------------|---------------|-------------------------|-------------|
| <i>CVE-2011-2110</i> | payload-a | pass | pass | failed | failed | pass | pass |
| | payload-b | pass | pass | failed | failed | pass | pass |
| | payload-c | pass | pass | failed | pass | pass | pass |
| <i>CVE-2012-1535</i> | payload-a | failed | pass | pass | not support | pass | pass |
| | payload-b | failed | pass | pass | not support | pass | pass |
| | payload-c | failed | pass | pass | not support | pass | pass |
| <i>CVE-2013-0634</i> | payload-a | failed | failed | pass | failed | failed | pass |
| | payload-b | failed | failed | pass | failed | pass | pass |
| | payload-c | failed | failed | pass | pass | pass | pass |
| <i>CVE-2014-0497</i> | payload-a | failed | pass | failed | failed | pass | pass |
| | payload-b | failed | pass | failed | pass | pass | pass |
| <i>CVE-2014-0515</i> | payload-a | failed | pass | pass | failed | pass | pass |
| | payload-b | failed | pass | pass | pass | pass | pass |
| <i>CVE-2012-0507</i> | payload-a | failed | pass | pass | failed | failed | failed |
| | payload-b | failed | pass | pass | failed | failed | failed |
| | payload-c | pass | pass | pass | pass | failed | failed |
| <i>CVE-2013-1488</i> | payload-a | failed | pass | failed | failed | failed | failed |
| | payload-b | failed | pass | failed | failed | failed | failed |
| | payload-c | pass | pass | pass | pass | failed | failed |
| <i>CVE-2013-2423</i> | payload-a | failed | pass | pass | failed | failed | failed |
| | payload-b | failed | pass | pass | failed | failed | failed |
| | payload-c | pass | pass | pass | pass | failed | failed |
| <i>CVE-2013-2460</i> | payload-a | failed | pass | pass | failed | failed | failed |
| | payload-b | failed | pass | pass | failed | failed | failed |
| | payload-c | pass | pass | pass | pass | failed | failed |
| <i>CVE-2013-2465</i> | payload-a | failed | pass | pass | failed | failed | failed |
| | payload-b | failed | pass | pass | failed | failed | failed |
| | payload-c | pass | pass | pass | pass | failed | failed |
| <i>CVE-2013-0074</i> | payload-a | failed | pass | failed | failed | failed | pass |
| | payload-b | failed | pass | failed | failed | pass | pass |
| | payload-c | pass | pass | failed | pass | failed | pass |

5. SUMMARY

| Vendor | Malwarebytes | Symantec | EMET | AVAST | Kaspersky | ESET | Hitman pro.Alert3 | Trend Micro | Bitdefender | Panda | McAfee | AVG |
|---------------|--------------|----------|--------|--------|-----------|--------|-------------------|-------------|-------------|--------|--------|--------|
| Pass | 54 | 47 | 43 | 42 | 42 | 41 | 34 | 28 | 18 | 17 | 17 | 14 |
| Failed | 4 | 11 | 15 | 16 | 16 | 17 | 24 | 30 | 40 | 41 | 38 | 44 |
| Not Supported | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| Score | 93.103 | 81.034 | 74.138 | 72.414 | 72.414 | 70.690 | 58.621 | 48.276 | 31.034 | 29.310 | 29.310 | 24.138 |

6. TESTER INTRODUCTION

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