JULY 2013

virus BULLETIN

Covering the global threat landscape

JULY 2013 VBSPAM COMPARATIVE REVIEW

INTRODUCTION

As I begin this review, the royal baby that has been keeping the United Kingdom guessing for almost nine months is reported to be on its way. And, with the world's attention focusing on the Duchess of Cambridge, security experts are anticipating the inevitable new scams that will exploit interest in the soon-to-be-born prince or princess.

Indeed, it is to be expected that millions of emails and social media posts will be sent using the royal baby as bait and promising some new angle on the story – leading to a survey scam at best, and downloading malware in a worse, but perhaps more likely, scenario.

One would thus be forgiven for believing that those tasked with developing spam filters are keeping a close eye on their spam traps – adding new rules as soon as royal-baby spam starts to arrive. However, this is unlikely to be the case.

Most spam filters block well over 99% of the spam contained in our corpus. Such high scores would not be achievable if new rules constantly needed to be added manually. Of course, in some cases manual intervention is necessary to make sure a particular campaign isn't missed, but most spam filtering happens fully automatically, based on a large number of sensors and algorithms. Spam filters are constantly being worked on, but this is to improve the algorithms that proactively block new spam campaigns, rather than to reactively block what has already been sent.

The VBSpam tests don't measure how quickly participating vendors are able to react to new campaigns, but rather how good their products are – which is what really matters. So even if the royal baby's arrival is accompanied by a billion-email spam run, some developers may not even notice these spam emails: they simply don't have to.

This month we tested 19 full anti-spam solutions, as well as two DNS-based blacklists. The results were a bit of a mixed bag: we handed out no fewer than eight VBSpam+ awards, while another eight full solutions achieved a standard VBSpam award. However, three full solutions failed to meet the standard for certification.

THE TEST SET-UP

The VBSpam test methodology can be found at http://www.virusbtn.com/vbspam/methodology/. As usual, emails were sent to the products in parallel and in real time, and products were given the option to block email pre-DATA – that is, based on the SMTP envelope and before the actual email was sent. Four products chose to make use of this option.

For the products that run on our equipment, we use *Dell PowerEdge* machines. As different products have different hardware requirements (not to mention those running on their own hardware, or those running in the cloud) there is little point comparing the memory, processing power or hardware the products were provided with; we followed the developers' recommendations and note that the amount of email we receive is representative of a small organization.

To compare the products, we calculate a 'final score', which is defined as the spam catch (SC) rate minus five times the false positive (FP) rate. Products earn VBSpam certification if this value is at least 98:

$SC - (5 \times FP) \geq 98$

Meanwhile, those products that combine a spam catch rate of 99.50% or higher with a lack of false positives earn a VBSpam+ award.

THE EMAIL CORPUS

The test ran for 16 consecutive days: two full weeks, plus an extra weekend. It started at 12am on Saturday 22 June and ended at the same time on Monday 8 July.

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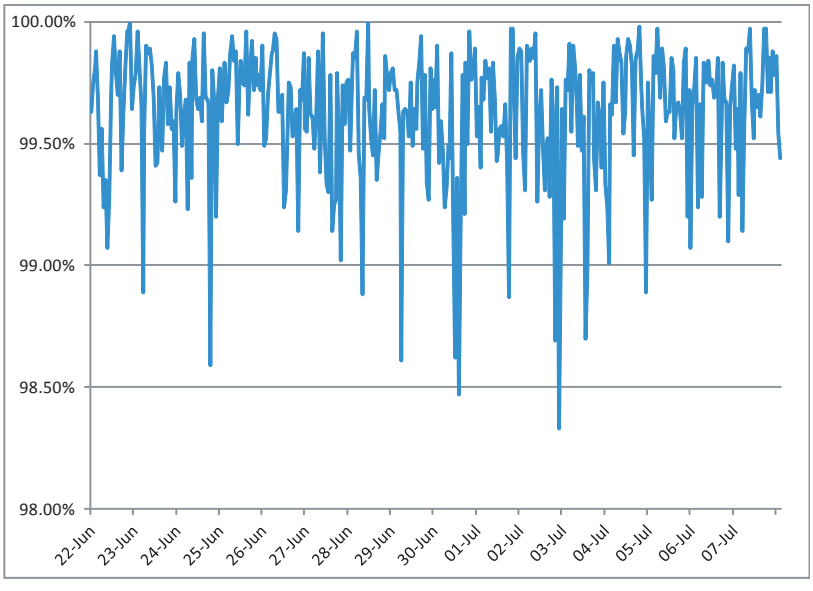


Figure 1: Spam catch rate of all complete solutions throughout the test period.

A total of 93,240 emails were sent as part of the test, 81,726 of which were spam. 70,610 of these were provided by *Project Honey Pot*, with the remaining 11,116 emails provided by *spamfeed.me*, a product from *Abusix*. They were all relayed in real time, as were the 11,136 legitimate emails ('ham') and 378 newsletters.

It is good to keep in mind that the spam we use is a random sample of two much larger feeds which cover the global spam landscape. Articles about spam tend to quote large numbers – sometimes millions of emails – nevertheless, the smaller number of emails in our corpus is a representative sample.

Figure 1 shows the catch rate of all full solutions throughout the test. To avoid the average being skewed by poorly performing products, the highest and lowest catch rates have been excluded for each hour.

Comparing this graph with that of the previous test, we notice that once again, there is a lot of variation without a clear trend. The average catch rate was slightly higher this time than in the previous test.

In the last review, we discussed how spam sent from (mostly) compromised hosts (which we defined as spam whose sending IP was listening on port 80) was significantly harder to filter. The same phenomenon was observed in this test.

RESULTS

In the text that follows, unless otherwise specified, 'ham' or 'legitimate email' refers to email in the ham corpus – which excludes the newsletters – and a 'false positive' is a message in that corpus that has been erroneously marked by a product as spam.

Because the size of the newsletter corpus is significantly smaller than that of the ham corpus, a missed newsletter will have a much greater effect on the newsletter false positive rate than a missed legitimate email will have on the false positive rate for the ham corpus (e.g. one missed email in the ham corpus results in an FP rate of less than 0.01%, while one missed email in the newsletter corpus results in an FP rate of more than 0.2%).

Bitdefender Security for Mail Servers 3.1.2

SC rate: 99.94%
FP rate: 0.00%
Final score: 99.94
Project Honey Pot SC rate: 99.96%
Abusix SC rate: 99.82%
Newsletters FP rate: 1.3%

Bitdefender retains its record for the highest number of VBSpam awards achieved, having won one in each of the 26 tests we have run. But the Romanian vendor also has another record: without having missed a single legitimate email in the whole of 2013, it has now won four VBSpam+ awards in a row. What is more, the product increased its catch rate once again, blocking well over 99.9% of the spam in our corpus. With the second highest final score, there should be plenty of reasons for *Bitdefender* to celebrate this month.

ESET Mail Security for Microsoft Exchange Server

SC rate: 99.68%
FP rate: 0.00%
Final score: 99.68
Project Honey Pot SC rate: 99.66%
Abusix SC rate: 99.84%
Newsletters FP rate: 0.3%

Since joining the VBSpam tests, *ESET* has always found itself among the higher ranked products. It has edged close to achieving a VBSpam+ award (its third) in each of the last two tests – but has been denied the higher level award on each occasion by just a single false positive. We were therefore pleased to find that the product didn't miss any of the more than 11,000 legitimate emails in this month's

	True negatives	False positives	FP rate	False negatives	True positives	SC rate	Final score
Bitdefender	11136	0	0.00%	49	81677	99.94%	99.94
ESET	11136	0	0.00%	259	81467	99.68%	99.68
FortiMail	11127	9	0.08%	138	81588	99.83%	99.43
GFI	11136	0	0.00%	229	81497	99.72%	99.72
Halon Security	11133	3	0.03%	603	81123	99.26%	99.13
IBM	11127	9	0.08%	1448	80278	98.23%	97.83
Kaspersky LMS	11136	0	0.00%	125	81601	99.85%	99.85
Libra Esva	11136	0	0.00%	50	81676	99.94%	99.94
Mailshell	11136	0	0.00%	169	81557	99.79%	99.79
McAfee Email Gateway	11131	5	0.04%	305	81421	99.63%	99.41
McAfee SaaS	11133	3	0.03%	274	81452	99.66%	99.53
Netmail Secure	11136	0	0.00%	177	81549	99.78%	99.78
NoSpamProxy	11100	36	0.32%	919	80807	98.88%	97.26
OnlyMyEmail	11135	1	0.01%	2	81724	99.998%	99.95
Scrollout	11099	37	0.33%	297	81429	99.64%	97.98
Sophos	11132	4	0.04%	327	81399	99.60%	99.42
SpamTitan	11135	1	0.01%	224	81502	99.73%	99.69
Symantec	11136	0	0.00%	320	81406	99.61%	99.61
ZEROSPAM	11134	2	0.02%	196	81530	99.76%	99.67
Spamhaus ZEN+DBL*	11135	1	0.01%	5589	76137	93.16%	93.12
SURBL*	11136	0	0.00%	56400	25326	30.99%	30.99

* *Spamhaus* and *SURBL* are both partial solutions and their performance is not to be compared with that of other products, neither should the performance of each be compared with the other.

(*Please refer to the text for full product names.*)

corpus – and with yet another good spam catch rate, this time *ESET* earns its third VBSpam+ award.

Fortinet FortiMail

SC rate: 99.83%
FP rate: 0.08%
Final score: 99.43
Project Honey Pot SC rate: 99.82%
Abusix SC rate: 99.93%
Newsletters FP rate: 0.3%

In May, *FortiMail* achieved a VBSpam+ award – which was well deserved based on its past performance in general, and that month's performance in particular. Unfortunately, it was not able to repeat the achievement in this test: while the appliance maintained a high catch rate (among the misses were a surprisingly large number of Japanese spam emails), we counted nine false positives, thus seeing the product drop down the rankings. Nevertheless, *Fortinet* maintains an unbroken run of 25 VBSpam awards in as many tests.

GFI MailEssentials

SC rate: 99.72%
FP rate: 0.00%
Final score: 99.72
Project Honey Pot SC rate: 99.69%
Abusix SC rate: 99.90%
Newsletters FP rate: 0.3%

In the last test, *GFI MailEssentials* saw its performance drop a little because of some difficulties with

the *Abusix* feed. We were thus pleased to see the product bounce back and catch 99.9% of *Abusix* spam – and 99.72% of all spam in general. Moreover, this improvement didn't affect *GFI*'s false positive rate, and in fact it managed to avoid false positives altogether – thus the Maltese *Windows*-based solution earns its 14th VBSpam award and its second VBSpam+ award.

Halon Security

SC rate: 99.26%
FP rate: 0.03%
Final score: 99.13
Project Honey Pot SC rate: 99.47%
Abusix SC rate: 97.92%
Newsletters FP rate: 0.3%

A small drop in *Halon*'s spam catch rate (among the false negatives we noticed quite a few emails in non-Latin character sets) came along with a drop in its false positive rate, and as a result, the Swedish solution's final score actually increased. *Halon Security* thus easily wins its 15th VBSpam award.

IBM Lotus Protector for Mail Security

SC rate: 98.23%
FP rate: 0.08%
Final score: 97.83
Project Honey Pot SC rate: 98.19%
Abusix SC rate: 98.45%
Newsletters FP rate: 2.4%

Almost half of the false negatives for *IBM* in this month's corpus were from a single spam campaign, promising 'Summer sale! Get 60% OFF'. While it didn't quite knock 60% off the product's catch rate, it did help push it down to not much more than 98%. As the product also missed nine legitimate emails, its final score dropped below the 98 threshold and thus the product was denied a VBSpam award on this occasion.

Kaspersky Linux Mail Security 8.0

SC rate: 99.85%
FP rate: 0.00%
Final score: 99.85
Project Honey Pot SC rate: 99.83%
Abusix SC rate: 99.94%
Newsletters FP rate: 0.0%

Kaspersky's *Linux Mail Security* product missed out on a VBSpam+ award in each of the last two tests – first because of a low spam catch rate, and then because of a single false positive. However, it's a case of third time lucky for the Russian solution, as this month it combined yet another high catch rate with a lack of false positives (including in the harder-to-filter newsletter corpus), achieving the fourth highest final score. Hence the seventh award for this particular *Kaspersky* product is its second VBSpam+ award.

Libra Esva 2.9

SC rate: 99.94%
FP rate: 0.00%
Final score: 99.94
Project Honey Pot SC rate: 99.94%
Abusix SC rate: 99.96%
SC rate pre-DATA: 91.50%
Newsletters FP rate: 1.3%

Since joining the VBSpam tests back in 2010, *Libra Esva* has consistently ranked among the top performers. This test was no exception, as the Italian product achieved the third highest catch rate, the third highest final score and – thanks to a lack of false positives – its third VBSpam+ award.

Mailshell Mail Agent

SC rate: 99.79%
FP rate: 0.00%
Final score: 99.79
Project Honey Pot SC rate: 99.76%
Abusix SC rate: 99.97%
Newsletters FP rate: 0.5%

In the last test, *Mailshell*'s *Mail Agent* (the new version of the company's SDK) came within an inch of earning a VBSpam+ award, which would have been the company's second. This time around, the product had better luck – managing to combine a lack of false positives with an increase in its spam catch rate, and thus achieving its second VBSpam+ award, along with the fifth highest final score.

McAfee Email Gateway 7.0

SC rate: 99.63%
FP rate: 0.04%
Final score: 99.41
Project Honey Pot SC rate: 99.61%
Abusix SC rate: 99.72%
Newsletters FP rate: 2.4%

This month's test was a good one for *McAfee*'s *Email Gateway* appliance, as the product saw an increase in its

	Newsletters		Project Honey Pot		Abusix		Web hosts		pre-DATA†		STDev‡
	False positives	FP rate	False negatives	SC rate	False negatives	SC rate	False negatives	SC rate	False negatives	SC rate	
Bitdefender	5	1.32%	29	99.96%	20	99.82%	30	99.88%			0.19
ESET	1	0.26%	241	99.66%	18	99.84%	83	99.67%			0.47
FortiMail	1	0.26%	130	99.82%	8	99.93%	102	99.59%			0.35
GFI	1	0.26%	218	99.69%	11	99.90%	115	99.54%			0.45
Halon Security	1	0.26%	372	99.47%	231	97.92%	245	99.03%			0.81
IBM	9	2.38%	1276	98.19%	172	98.45%	423	98.32%			6.28
Kaspersky LMS	0	0.00%	118	99.83%	7	99.94%	51	99.80%			0.35
Libra Esva	5	1.32%	45	99.94%	5	99.96%	31	99.88%	74780	91.50%	0.26
Mailshell	2	0.53%	166	99.76%	3	99.97%	62	99.75%			0.36
McAfee Email Gateway	9	2.38%	274	99.61%	31	99.72%	156	99.38%			0.57
McAfee SaaS	18	4.76%	202	99.71%	72	99.35%	119	99.53%			0.63
Netmail Secure	2	0.53%	169	99.76%	8	99.93%	89	99.65%	74795	91.52%	0.38
NoSpamProxy	21	5.56%	360	99.49%	559	94.97%	627	97.51%	66666	81.57%	1.32
OnlyMyEmail	15	3.97%	1	99.999%	1	99.99%	0	100.00%			0.03
Scrollout	46	12.17%	265	99.62%	32	99.71%	212	99.16%			0.61
Sophos	0	0.00%	317	99.55%	10	99.91%	186	99.26%			0.66
SpamTitan	6	1.59%	208	99.71%	16	99.86%	154	99.39%			0.52
Symantec	1	0.26%	283	99.60%	37	99.67%	159	99.37%			0.57
ZEROSPAM	50	13.23%	188	99.73%	8	99.93%	151	99.40%			0.53
Spamhaus ZEN+DBL	0	0.00%	2902	95.89%	2687	75.83%	3794	84.93%	74666	91.36%	4.23
SURBL	0	0.00%	49227	30.28%	7173	35.47%	18229	27.61%			17.48

* *Spamhaus* and *SURBL* are both partial solutions and their performance is not to be compared with that of other products, neither should the performance of each be compared with the other.

† pre-DATA filtering was optional and was applied on the full corpus. Ten of the false positives for NoSpamProxy occurred pre-DATA; the rest all occurred post-DATA.

‡ The standard deviation of a product is calculated using the set of its hourly spam catch rates.

(*Please refer to the text for full product names.*)

spam catch rate (we couldn't detect any pattern in the 300-odd spam emails it missed) while halving its false positive rate to just five missed legitimate emails. Its highest final score in a year earns *McAfee* another VBSpam award for this appliance.

McAfee SaaS Email Protection

SC rate: 99.66%
FP rate: 0.03%
Final score: 99.53
Project Honey Pot SC rate: 99.71%
Abusix SC rate: 99.35%
Newsletters FP rate: 4.8%

McAfee's hosted anti-spam solution missed more spam emails this month than in the previous test – half of which were written in a foreign character set – but at 99.66%, its spam catch rate is nothing to

Complete solutions sorted by final score	
OnlyMyEmail	99.95
Bitdefender	99.94
Libra Esva	99.94
Kaspersky LMS	99.85
Mailshell	99.79
Netmail Secure	99.78
GFI	99.72
SpamTitan	99.69
ESET	99.68
ZEROSPAM	99.67
Symantec	99.61
McAfee SaaS	99.53
FortiMail	99.43
Sophos	99.42
McAfee Email Gateway	99.41
Halon Security	99.13
Scrollout	97.98
IBM	97.83
NoSpamProxy	97.26

(*Please refer to the text for full product names.*)

be ashamed of. Nor are the three false positives (reduced from five in the last test), although they do of course get in the way of the product winning a VBSpam+ award. It easily earns another VBSpam award though.

Messaging Architects Netmail Secure

SC rate: 99.78%
FP rate: 0.00%
Final score: 99.78
Project Honey Pot SC rate: 99.76%
Abusix SC rate: 99.93%
SC rate pre-DATA: 91.52%
Newsletters FP rate: 0.5%

The *Netmail Secure* virtual appliance is another product that has narrowly missed out on achieving a VBSpam+ award in the last two tests. This time was different, however, and with a lack of false positives and fewer than one in 460 spam emails missed, the product from *Messaging Architects* earns it third VBSpam+ award.

Net At Work NoSpamProxy

SC rate: 98.88%
FP rate: 0.32%
Final score: 97.26
Project Honey Pot SC rate: 99.49%
Abusix SC rate: 94.97%
SC rate pre-DATA: 81.57%
Newsletters FP rate: 5.6%

In the last test, *Windows* solution *NoSpamProxy* from *Net At Work* made its VBSpam debut. It earned a VBSpam award with a final score that just scraped in above the VBSpam threshold. Unfortunately, its performance deteriorated in this test, with both a lower catch rate and a higher false positive rate recorded. The low catch rate was partly caused by some Chinese-language spam in the *Abusix* corpus, while most of the false positives were written in English. We will of course work with the developers at *Net At Work* and provide them with detailed feedback – hopefully this will help to improve the product's performance in time for the next test.

OnlyMyEmail's Corporate MX-Defender

SC rate: 99.998%
FP rate: 0.01%
Final score: 99.95
Project Honey Pot SC rate: 99.999%
Abusix SC rate: 99.99%
Newsletters FP rate: 4.0%

OnlyMyEmail missed just two spam emails in this test – one from each source, and both were emails that were missed by the majority of the products. While one would imagine that this is an achievement to be proud of, the fact that the hosted solution has not failed to block a spam email in our tests since November 2012 means that it may be seen as a slight disappointment from the developers' point of view. It shouldn't be though, and there is more reason to be pleased: with just a single false positive, the product ends up with a final score of 99.96, the highest in this test. *OnlyMyEmail* thus continues its unbroken run of VBSpam awards.

Scrollout F1

SC rate: 99.64%
FP rate: 0.33%
Final score: 97.98
Project Honey Pot SC rate: 99.62%
Abusix SC rate: 99.71%
Newsletters FP rate: 12.2%

Hosted solutions	Anti-malware	IPv6	DKIM	SPF	Multiple MX-records	Multiple locations
McAfee SaaS	McAfee	√	√	√	√	√
OnlyMyEmail	Proprietary (optional)		√	√	√	√
ZEROSPAM	ClamAV			√	√	√

(*Please refer to the text for full product names.*)

Local solutions	Anti-malware	IPv6	DKIM	SPF	Interface			
					CLI	Desktop GUI	Web GUI	API
Bitdefender	Bitdefender	√			√		√	
ESET	ESET Threatsense				√	√		
FortiMail	Fortinet	√	√	√	√		√	
GFI	Five anti-virus engines	√		√			√	
Halon Security	Commtouch; Kaspersky; ClamAV; HRPS	√	√	√			√	√
IBM	Sophos; IBM Remote Malware Detection			√	√		√	
Kaspersky LMS	Kaspersky	√		√	√		√	
Libra Esva	ClamAV; others optional		√	√	√		√	
McAfee Email Gateway	McAfee	√	√	√	√	√	√	
Netmail Secure	Proprietary	√	√	√	√		√	
NoSpamProxy	Commtouch			√		√		√
Scrollout	ClamAV			√	√		√	
Sophos	Sophos						√	
SPAMfighter	VIRUSfighter (optional)	√	√	√			√	
SpamTitan	Kaspersky; ClamAV	√	√	√	√		√	√
Symantec	Symantec	√	√	√	√		√	

(*Please refer to the text for full product names.*)

The free and open-source product *Scrollout F1* saw a nice increase in its spam catch rate, a lot of the spam it missed being in Japanese. Unfortunately, the product's false positive rate increased too: with 37 missed legitimate emails, *Scrollout* had more false positives than any other participating product. As a result, it saw its final score drop below the threshold of 98, and the product failed to earn its third VBSpam award.

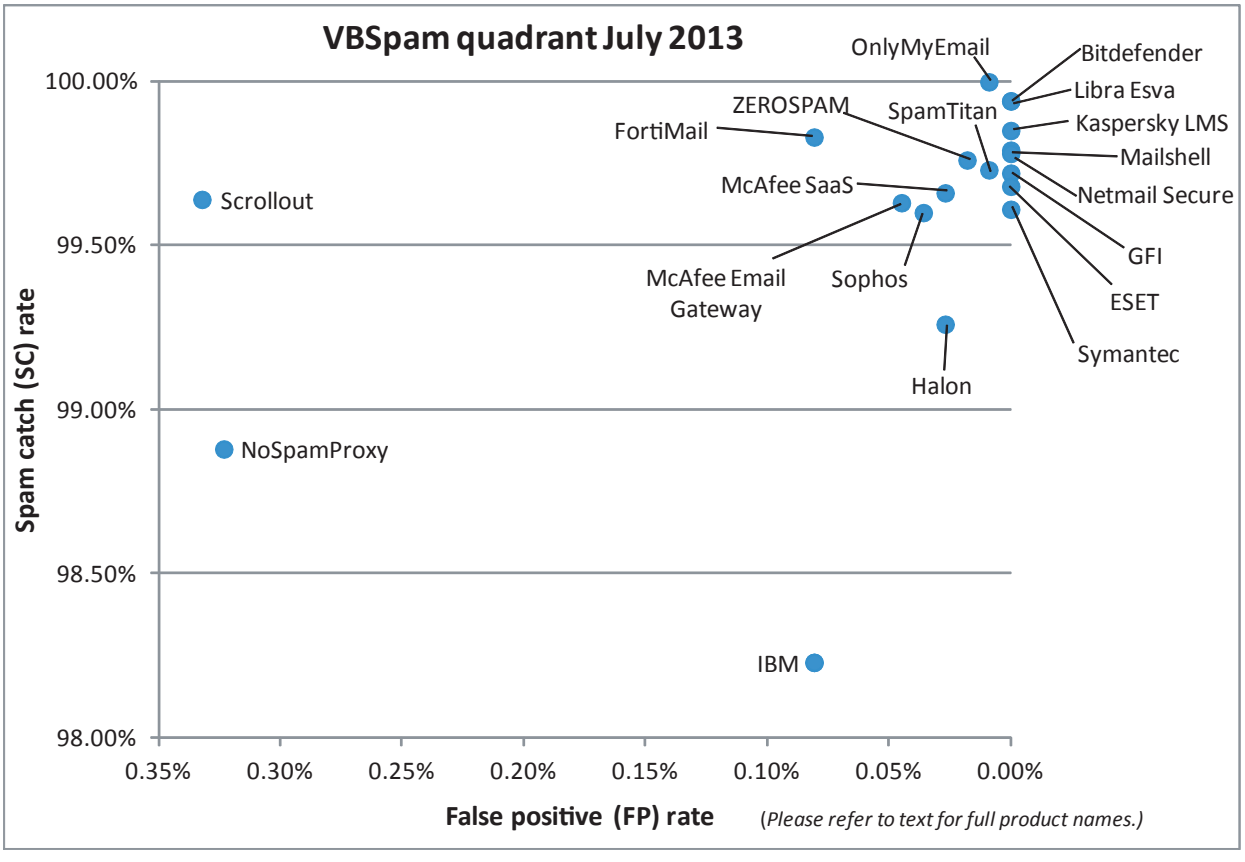
Sophos Email Appliance

SC rate: 99.60%
FP rate: 0.04%
Final score: 99.42
Project Honey Pot SC rate: 99.55%
Abusix SC rate: 99.91%
Newsletters FP rate: 0.0%

It was nice to see the results for *Sophos*'s *Email Appliance*: the product's catch rate was a lot higher than previously – the second highest increase of all products – while the false positive rate remained the same. On top of that, it was one of only three full solutions that didn't block any of the close to 400 newsletters. The vendor's 21st VBSpam award is thus well deserved.

SpamTitan 5.11

SC rate: 99.73%
FP rate: 0.01%
Final score: 99.69
Project Honey Pot SC rate: 99.71%
Abusix SC rate: 99.86%
Newsletters FP rate: 1.6%



There was a single legitimate email in this test that was incorrectly blocked by about half of all participating products. *SpamTitan* was one of them, which was a shame, as it was this that denied the vendor a VBSpam+ award. Still, there is no reason for the developers to be disappointed: an increased catch rate means the product easily wins its 23rd VBSpam award in as many tests.

Symantec Messaging Gateway 10.0

SC rate: 99.61%
FP rate: 0.00%
Final score: 99.61
Project Honey Pot SC rate: 99.60%
Abusix SC rate: 99.67%
Newsletters FP rate: 0.3%

In the last test, *Symantec*'s *Messaging Gateway* virtual appliance missed 10 legitimate emails. This turned out to be a temporary glitch, as this month the product didn't block any of the more than 11,000 legitimate emails. As the spam catch rate remained well above 99.5%, the security giant not only wins its 22nd VBSpam award but also its second VBSpam+ award.

ZEROSPAM

SC rate: 99.76%
FP rate: 0.02%
Final score: 99.67
Project Honey Pot SC rate: 99.73%
Abusix SC rate: 99.93%
Newsletters FP rate: 13.2%

Compared with the previous test, *ZEROSPAM*'s catch rate increased by 0.02%, while its number of false positives decreased from five to two. It was these two emails – both written in Russian – that stood in the way of *ZEROSPAM* earning another VBSpam+ award, but the product's ninth VBSpam award is still a good reason for the developers to celebrate.

Spamhaus ZEN+DBL

SC rate: 93.16%
FP rate: 0.01%
Final score: 93.12
Project Honey Pot SC rate: 95.89%

Spamhaus ZEN+DBL contd.

Abusix SC rate: 75.83%

SC rate pre-DATA: 91.36%

Newsletters FP rate: 0.0%

The *Spamhaus ZEN* and *DBL* blacklists (the former blocks based on the sending IP address, the latter on domains seen inside the email) missed a single legitimate email because it contained a domain that was listed on the *DBL*. There may well have been good reason for this action, but as the domain was included in a legitimate email, it was classed as a false positive. It is perhaps more important to note that after a disappointing score in the last test, *Spamhaus*'s catch rate bounced back to well over 93%.

SURBL

SC rate: 30.99%

FP rate: 0.00%

Final score: 30.99

Project Honey Pot SC rate: 30.28%

Abusix SC rate: 35.47%

Newsletters FP rate: 0.0%

A tendency among spammers to use links to compromised websites in the emails they send, rather than to domains they own themselves, is the likely explanation for the decline in the number of emails that contain a domain listed by *SURBL* (and hence the number of spam messages blocked by the product). The blacklist simply can't (easily) block the compromised sites, or it would cause false positives. So while the 31% of spam blocked 'by' *SURBL* is significantly lower than the percentage we saw last year, it is still a significant chunk – and *SURBL* once again had no false positives.

CONCLUSION

This month's results were a bit of a mixed bag. In the next test, many participants will want to prove that their good performance this month wasn't a one-off occurrence, while others will want to show that this month's glitch *was* only a one-off occurrence – perhaps caused by incorrect configuration, or some issues with a single spam campaign.

The next VBSpam test will run in August 2013, with the results scheduled for publication in September. Developers interested in submitting products should email martijn.grooten@virusbtn.com.

VIRUS BULLETIN

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