Fun with Firefox Extension Malware

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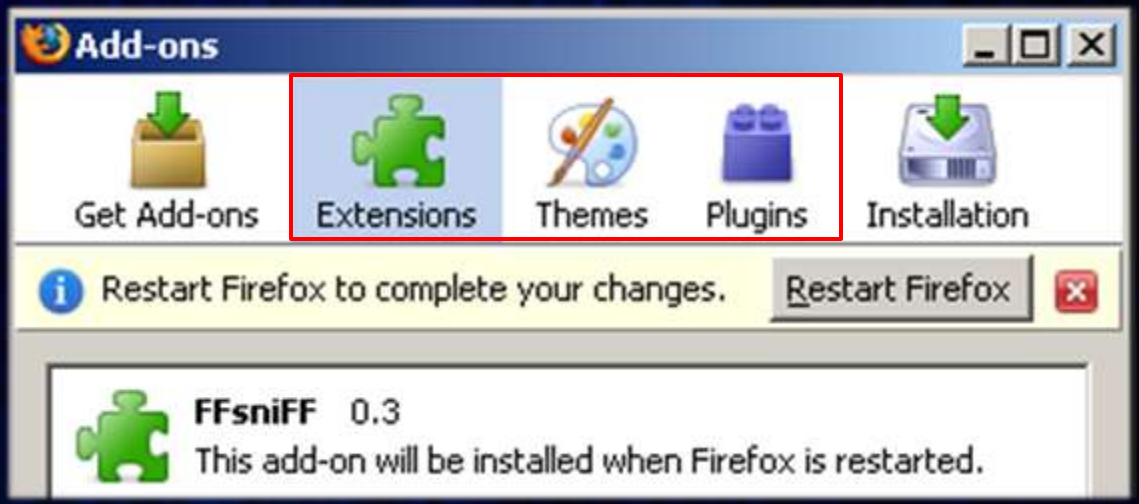
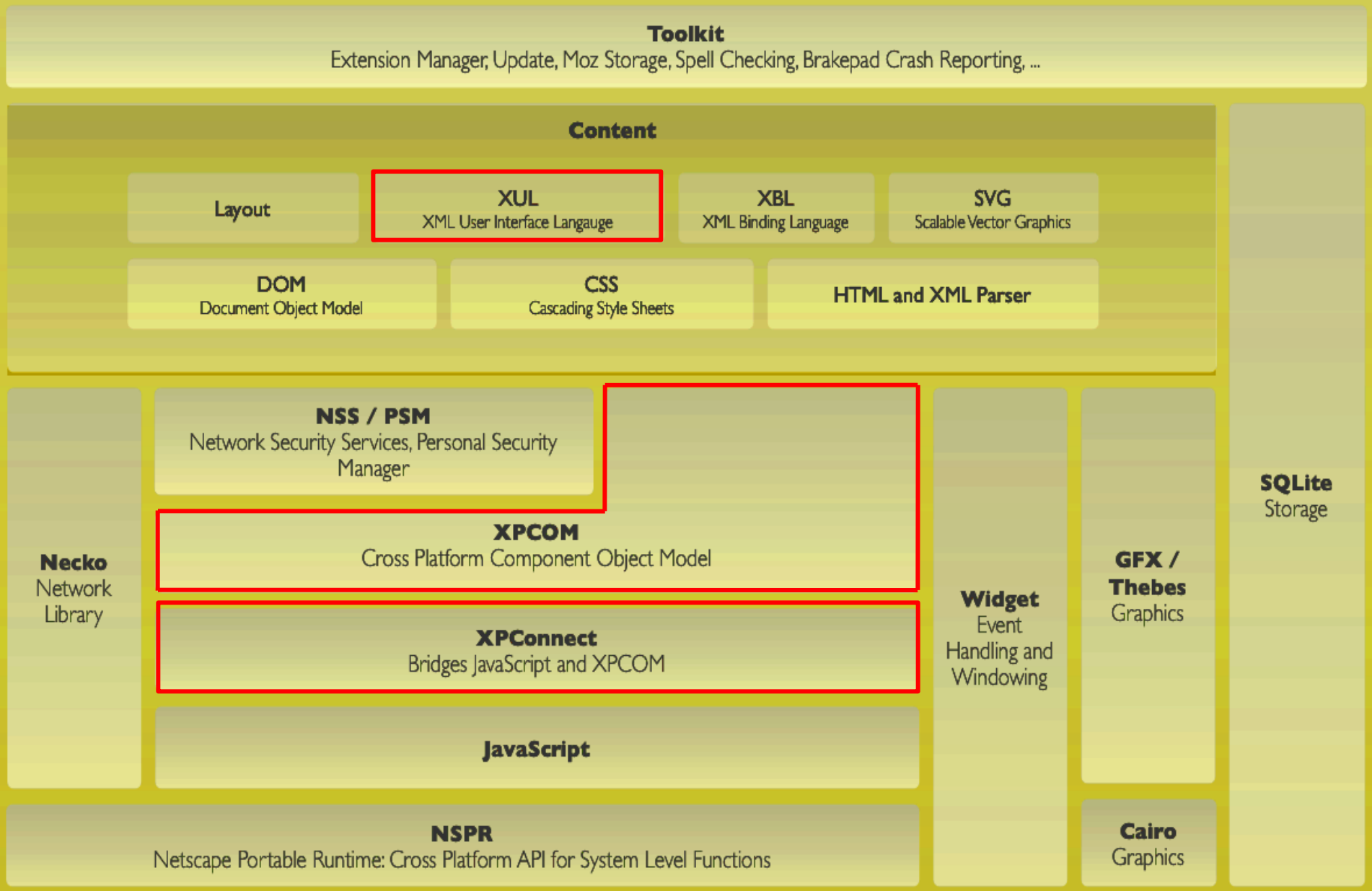
Sr. threat researcher

What are we talking about?

- Software add-ons for the Mozilla Firefox Browser
- Similar to ActiveX (history repeating?! Focus here on FF)
- Coded in JavaScript or C++ etc
- Cross plattform (if correctly implemented ;-)



The Mozilla Platform



Installation File

Distributed as XPI
cross plattform installer

Most XPI are unsigned

.XPI file (ZIP archive)

- Install.rdf
- Chrome.manifest

} Installer files

- Chrome*

Data files (*.JS)

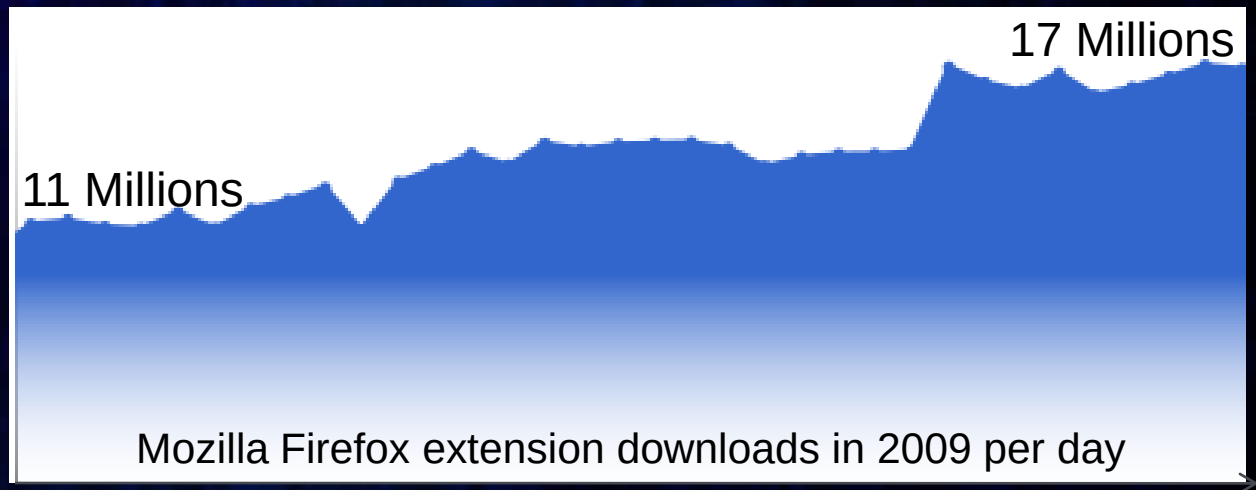
- …

Are there many Extensions?

Firefox 3.x - 22% market share

Firefox Extensions:

- 17 Million downloads / day (1.5 Billons total)
- 150 new / day
- 450 updated / day



Source: https://addons.mozilla.org/en-US/statistics

What can extensions do?

Everything

that Firefox could do

It is missing a granular privilege system

- Read/write file access
- Network sockets
- Control browser UI
- Control submitted information
- Control registry (on Windows)

Powerful Malware

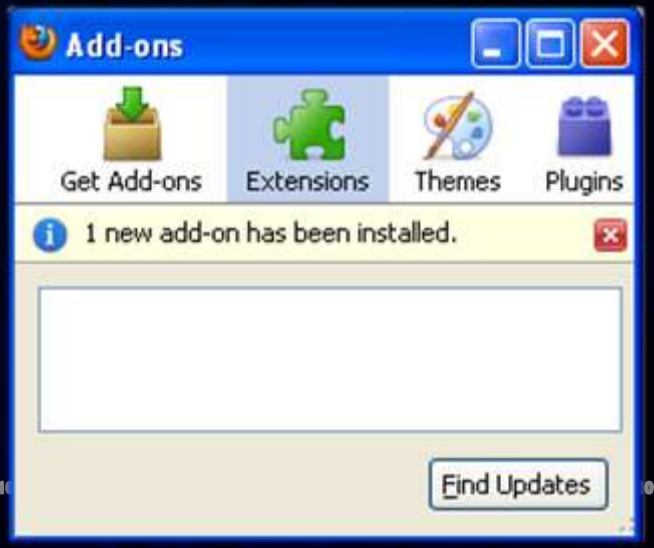
How do they get on the system

- **Malicious updates from trusted source**
  - As seen with NoScript or Vietnamese language pack
- **Dropped through vulnerabilities**
  - Talk by Roberto Suggi Liverani / Nick Freeman (Defcon 17)
  - JavaScript with Chrome privileges ➔ Game Over
- **Dropped by local malware**
  - Easy to build and hard to trace (Same as with IE BHO)
- **Social Engineering**
  - „you really need this cool extension!“

Hiding Extensions

Many ways to hide an extension on the system:

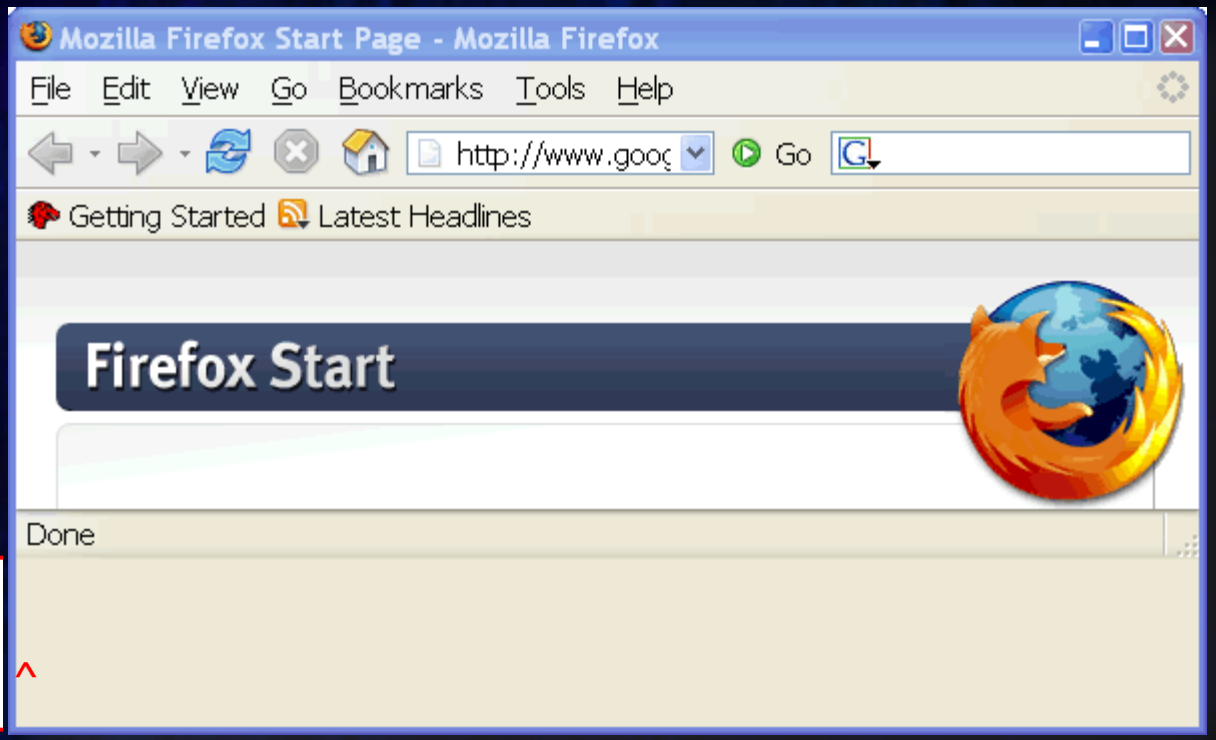
- „Hidden“ tag in *install.rdf*
- Set add-on type to zero in *install.rdf*
- Remove itself from the extension listing at runtime
- Modify *extension.rdf* file after installation
- Hijack other extensions (even signed ones!)
- Hijack Firefox core files



DEMO – 1

The Grey Bar Experience

- C:\Program Files\Mozilla Firefox\chrome\m3ffxtbr.manifest
- Dropped by MyWebSearch Toolbar
- Automatically removed by Firefox 1.5.0.2 and later

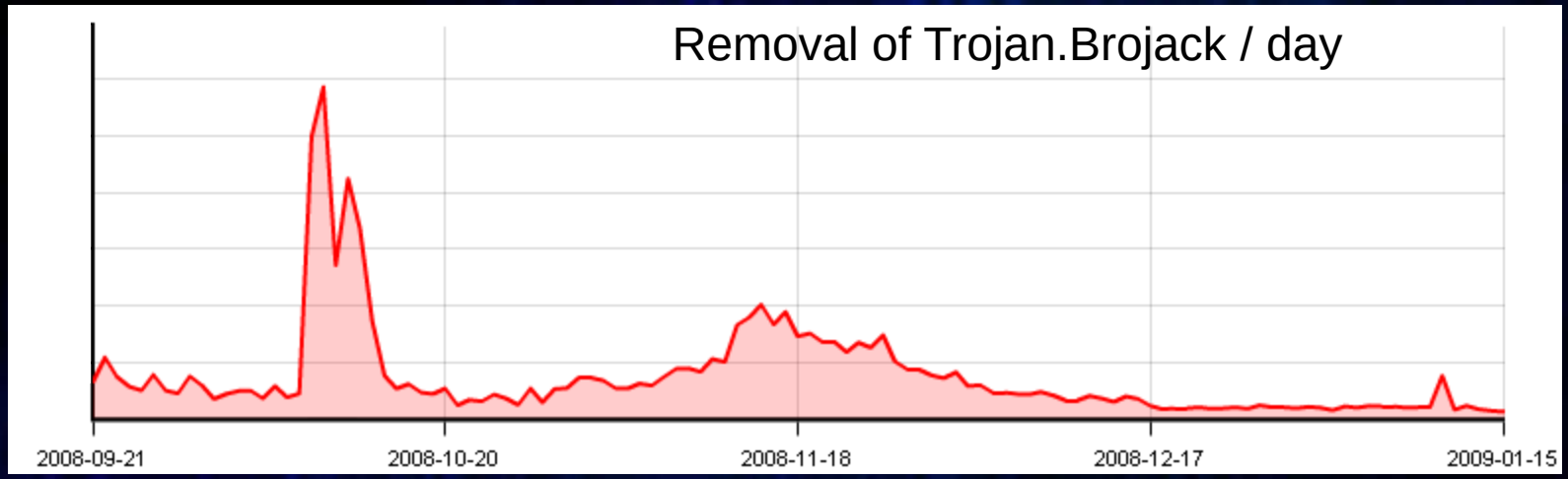


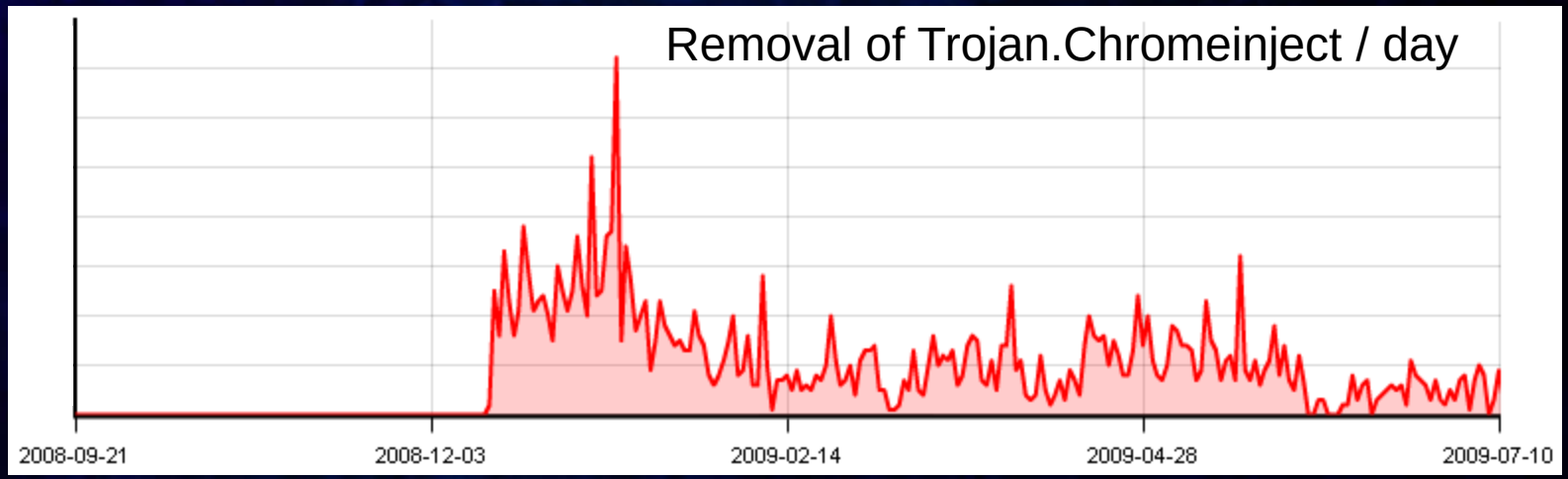
Generated by an error

^

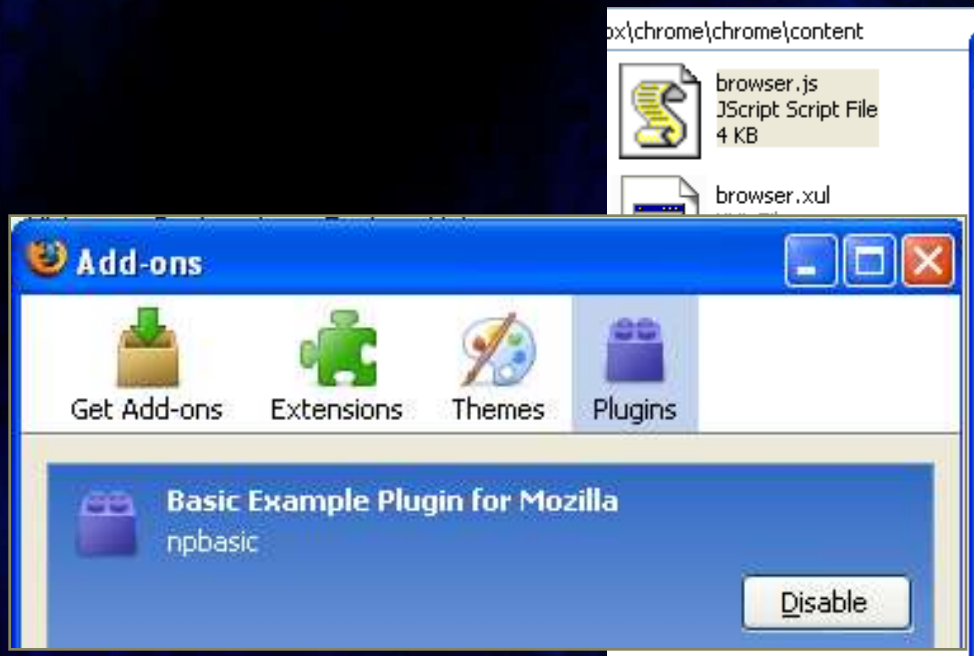
Source: http://kb.mozillazine.org/Gray_bar_below_status_bar

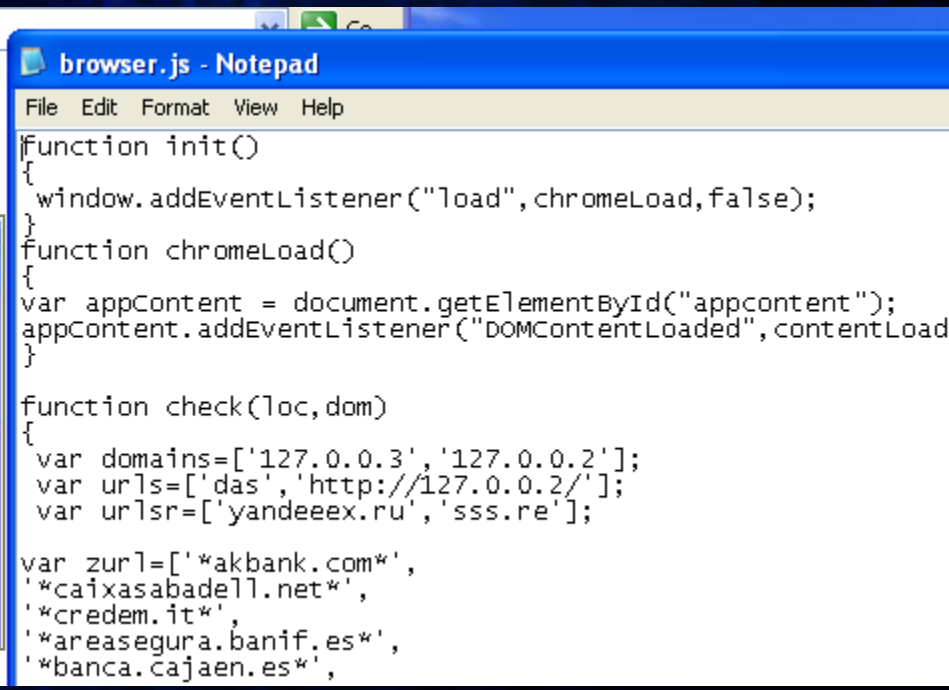
Prevalence


Removal of Trojan.Brojack / day
2008-09-21
2008-10-20
2008-11-18
2008-12-17
2009-01-15


Removal of Trojan.Chromeinject / day
2008-09-21
2008-12-03
2009-02-14
2009-04-28
2009-07-10

Examples





- Loads malicious dll for certain URLs
- Steals credentials for financial sites
- Hides from Extension Manager

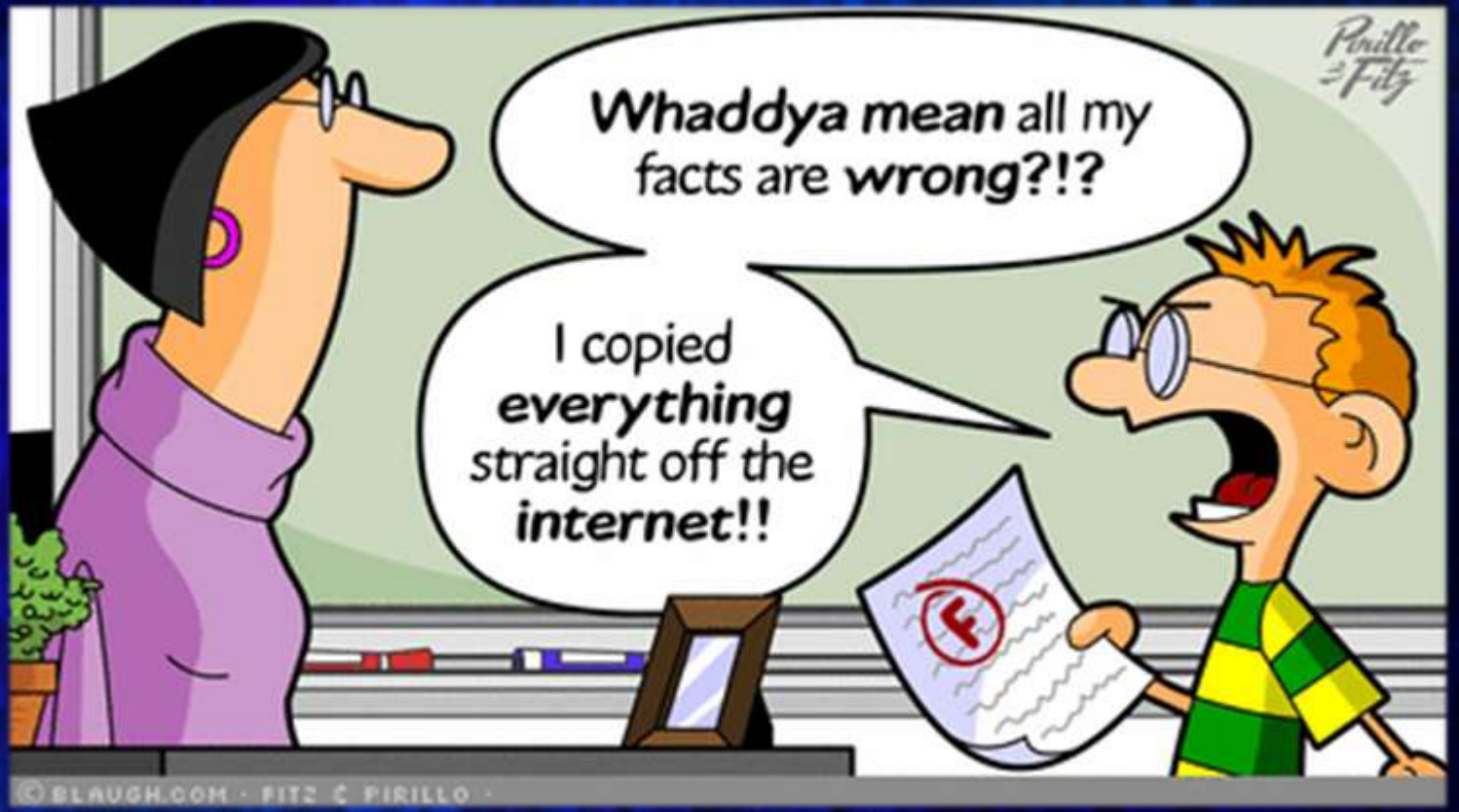
Trojan.Chromeinject

DEMO – Malware

Conclusion

- Firefox extensions are very powerful (like ActiveX)
- Firefox extensions have been misused for years
- Most users don‘t check what they install
- Adware is predestinated to use Firefox extensions
- Most security tools can not detect or remove them

? Questions


Whaddya mean all my facts are wrong?!?
I copied everything straight off the internet!!
F
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Thank you for listening

candid wüest

Thanks to co-author Elia Florio

The whitepaper can be found here:
http://www.symantec.com/business/security_response/whitepapers.jsp