Hacking the *Wordpress* Ecosystem

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About Me

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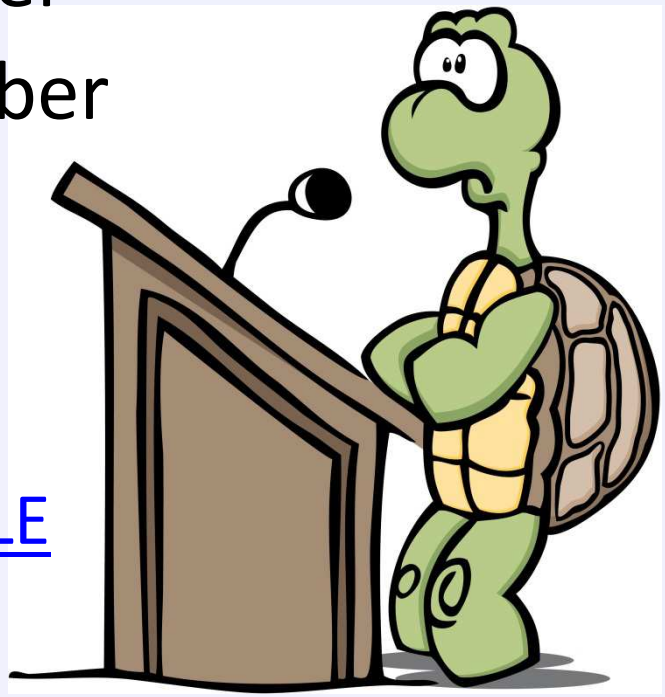
Dan Catalin VASILE

- Information Security Consultant
- Researcher / Writer / Presenter
- OWASP Romania Board Member



- Online presence
  - http://www.pentest.ro
  - dan@pentest.ro / @DanCVASILE

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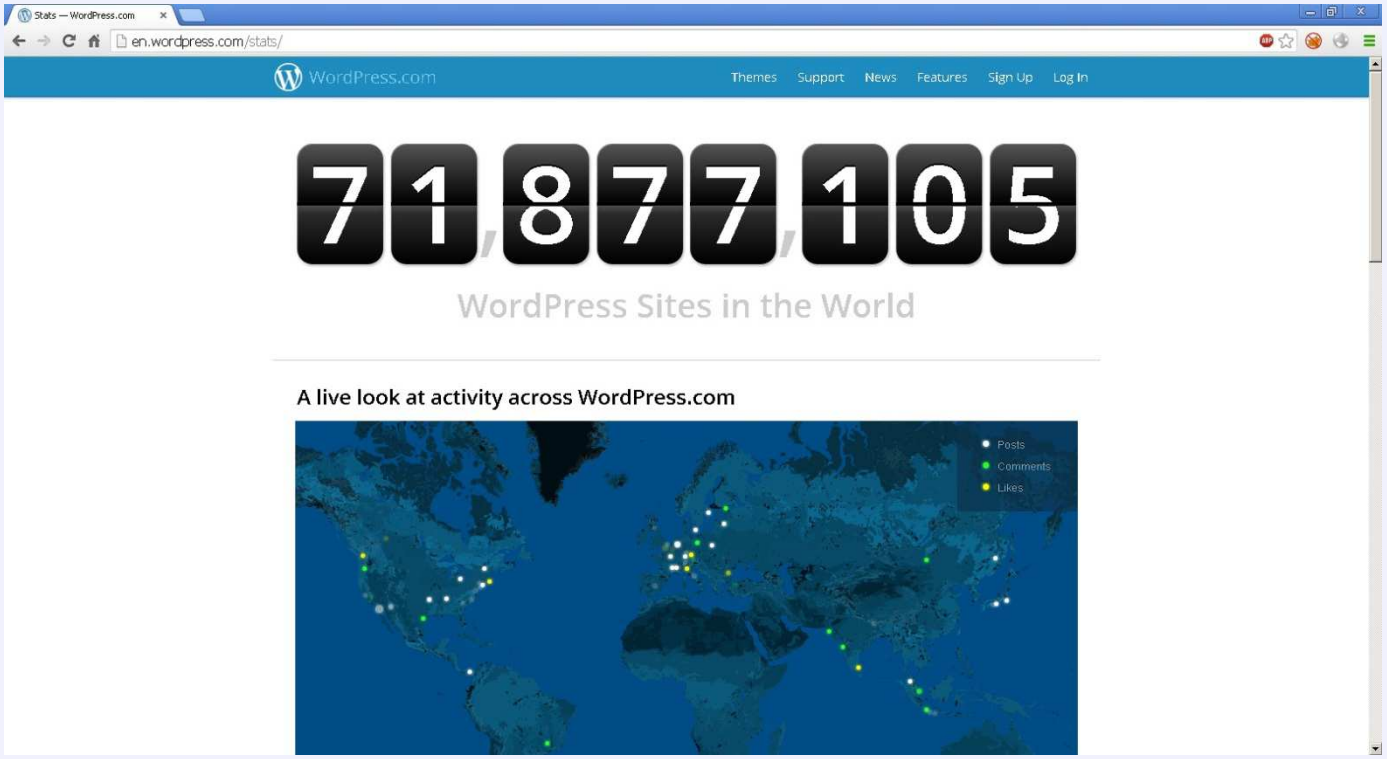
Hacking the Wordpress Ecosystem

WHY?



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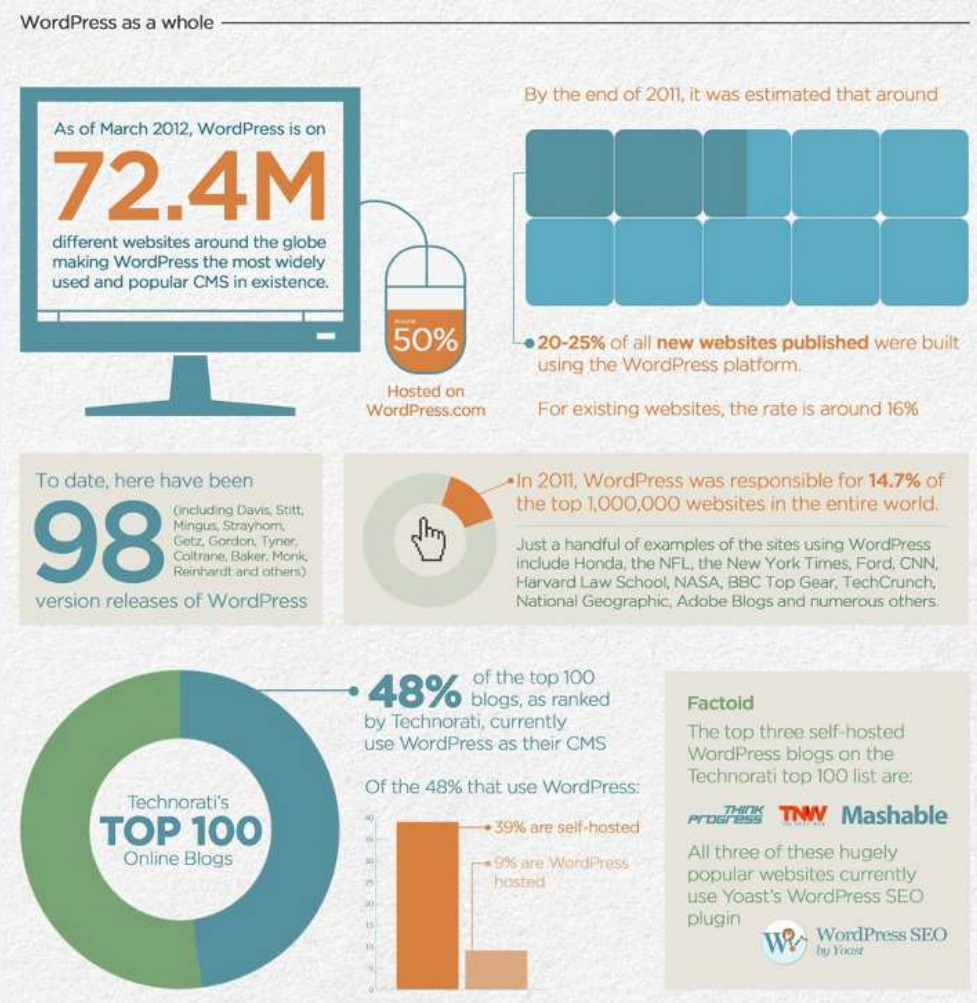
More numbers



About the talk

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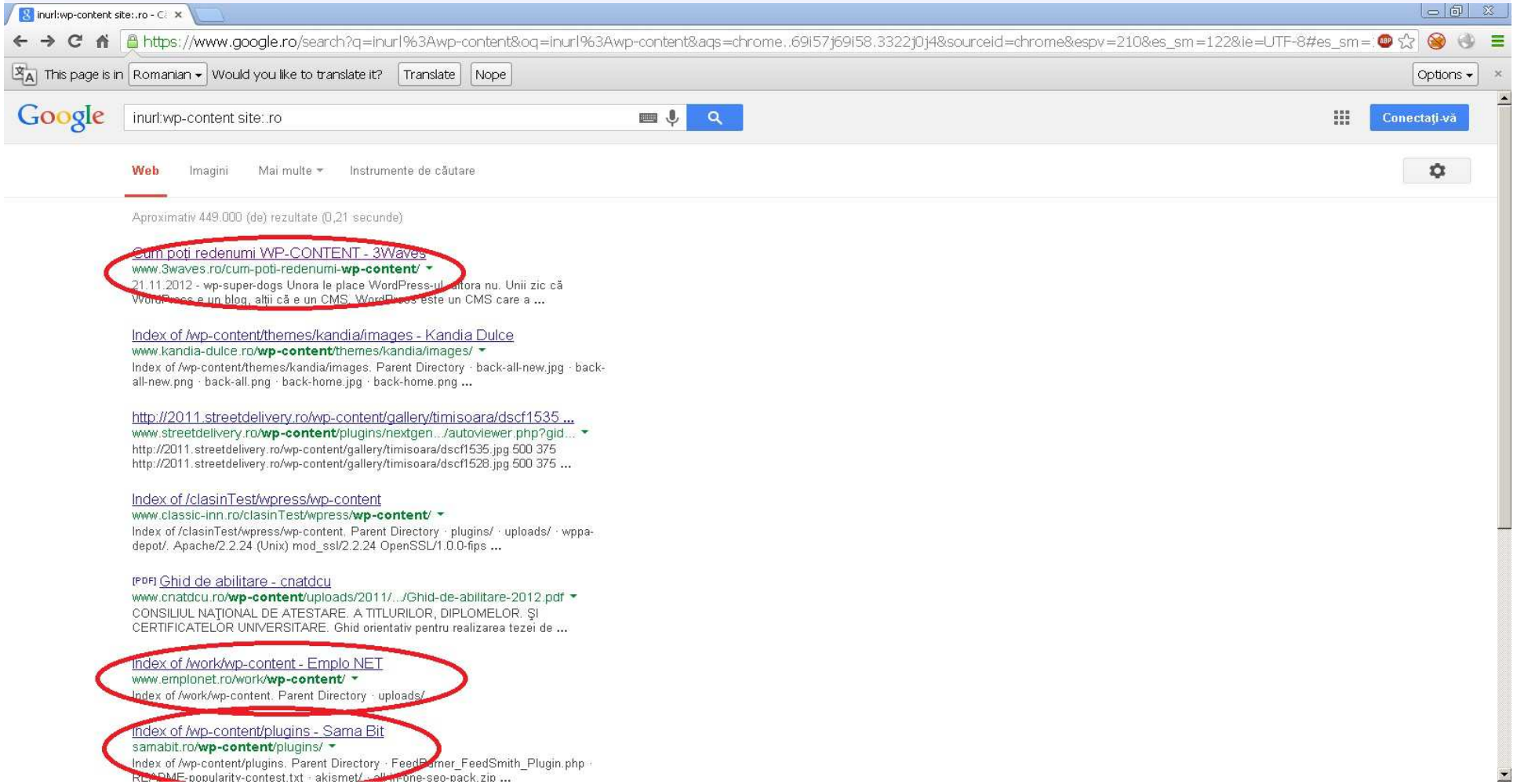
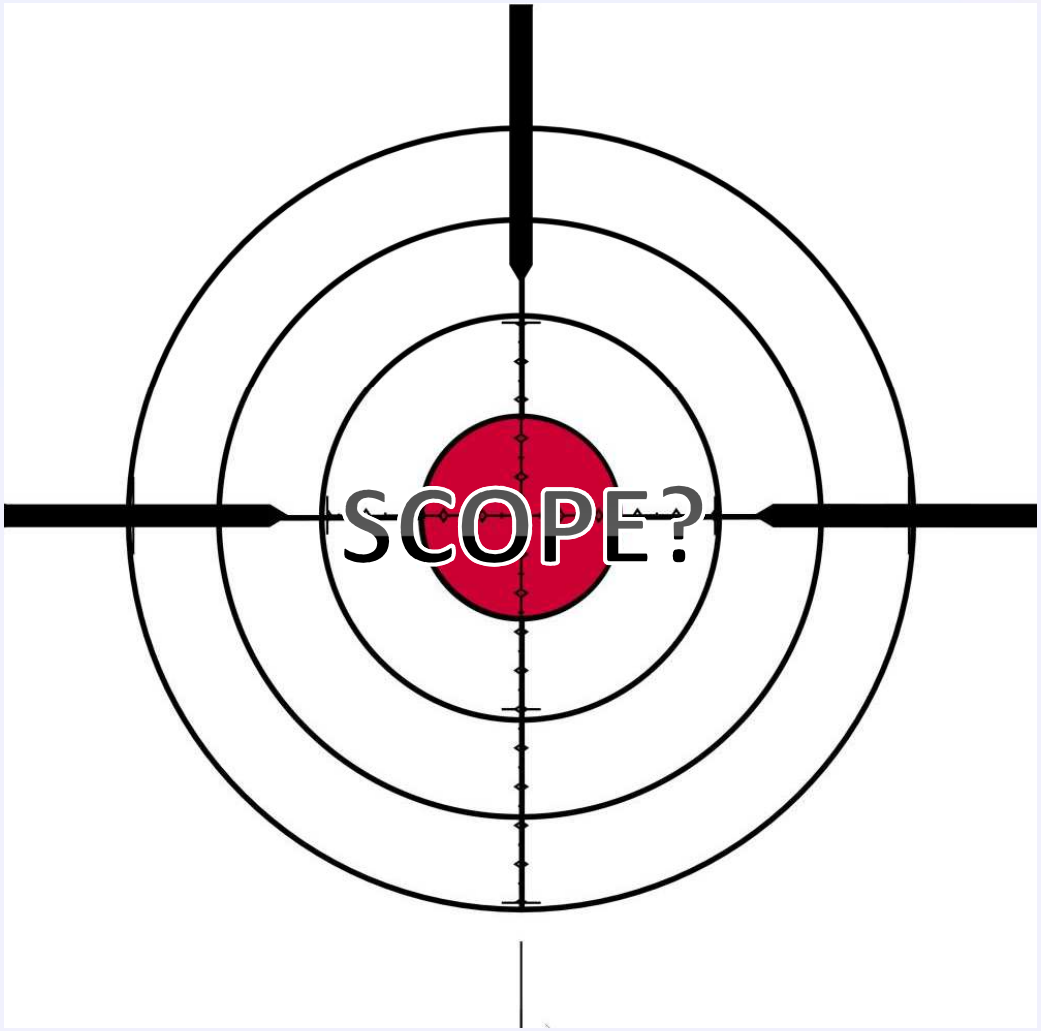
Finding Wordpress!



Scope



Scope

TO SCARE!!!!

Attacks on:

- The Worpress platform
- Plugins
- Themes
- Infrastructure
- Humans

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and TO REPAIR.

Focus on:

- Infrastructure
- Installation process
- Protective server side measures
- Protective client side measures
- Reviewing source code
- Maintenance

Wordpress Ecosystem

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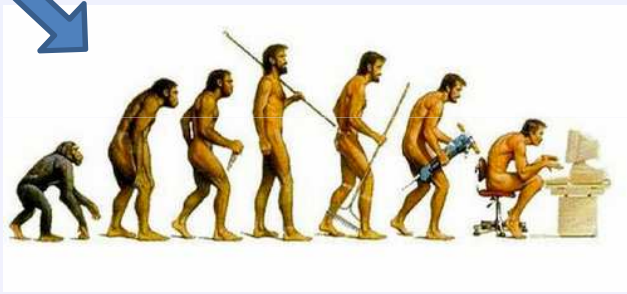
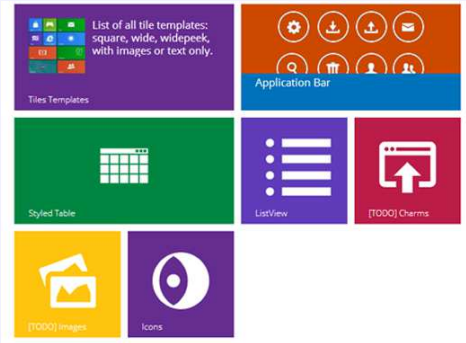
Infrastructure

Base platform



Users

Themes



Plugins

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Physical security

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Common web server vulnerabilities

- Overflows
- DoS
- Remote command execution
- XSS in internal tools
- Security Misconfiguration

… just no name a few

& more

http://httpd.apache.org/security/vulnerabilities_22.html

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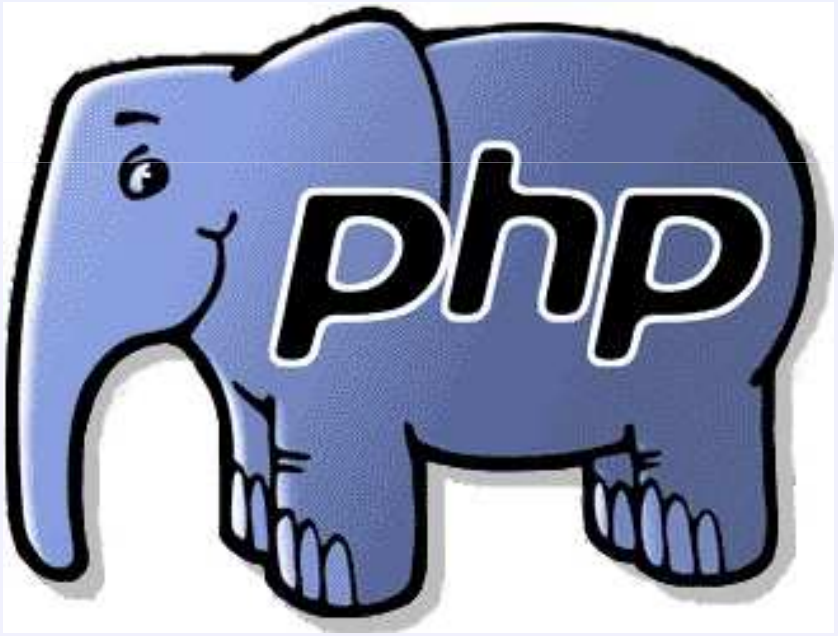
PHP vulnerabilities

- DoS
- Overflows
- Remote command execution

- SQL injection
- XSS
- Source code disclosure
- RFI
- CSRF

&more



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One example from the CVE Database

CVE-ID
CVE-2013-4338 Learn more at National Vulnerability Database (NVD) • Severity Rating • Fix Information • Vulnerable Software Versions • SCAP Mappings
Description
wp-includes/functions.php in WordPress before 3.6.1 does not properly determine whether data has been serialized, which allows remote attackers to execute arbitrary code by triggering erroneous PHP unserialize operations.
References
Note: References are provided for the convenience of the reader to help distinguish between vulnerabilities. The list is not intended to be complete.

- CONFIRM:http://codex.wordpress.org/Version_3.6.1
- CONFIRM:http://core.trac.wordpress.org/changeset/25325
- CONFIRM:http://wordpress.org/news/2013/09/wordpress-3-6-1/
- DEBIAN:DSA-2757
- URL:http://www.debian.org/security/2013/dsa-2757
- FEDORA:FEDORA-2013-16855
- URL:http://lists.fedoraproject.org/pipermail/package-announce/2013-September/116828.html
- FEDORA:FEDORA-2013-16895
- URL:http://lists.fedoraproject.org/pipermail/package-announce/2013-September/117118.html
- FEDORA:FEDORA-2013-16925
- URL:http://lists.fedoraproject.org/pipermail/package-announce/2013-September/116832.html

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How many plugins are there?

27,596 PLUGINS, 536,317,915 DOWNLOADS

(as of October 2013)

How many of them are vulnerable? ☺

Not as many as you've expected. CVE lists 'only' 164 vulnerabilities (not all related to plugins)

Fear not! New plugins everyday & new disclosures on old plugins.

Hacking the themes

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Themes can be vulnerable!

They sometimes come up with other plugins necessary to get the functionality needed

Think about TimThumb vulnerability!

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What is TimThumb?

A small php script for cropping, zooming and resizing web images (jpg, png, gif). Perfect for use on blogs and other applications.

The problem!

“TimThumb” essentially, caches even remote files locally, without doing any proper sanitization.

The problem for hackers

The file “timthumb.php” does however, check if to see if the target file is actually an image or not. This timthumb file is also quite often renamed to something else and is used in many themes.

TimThumb hack

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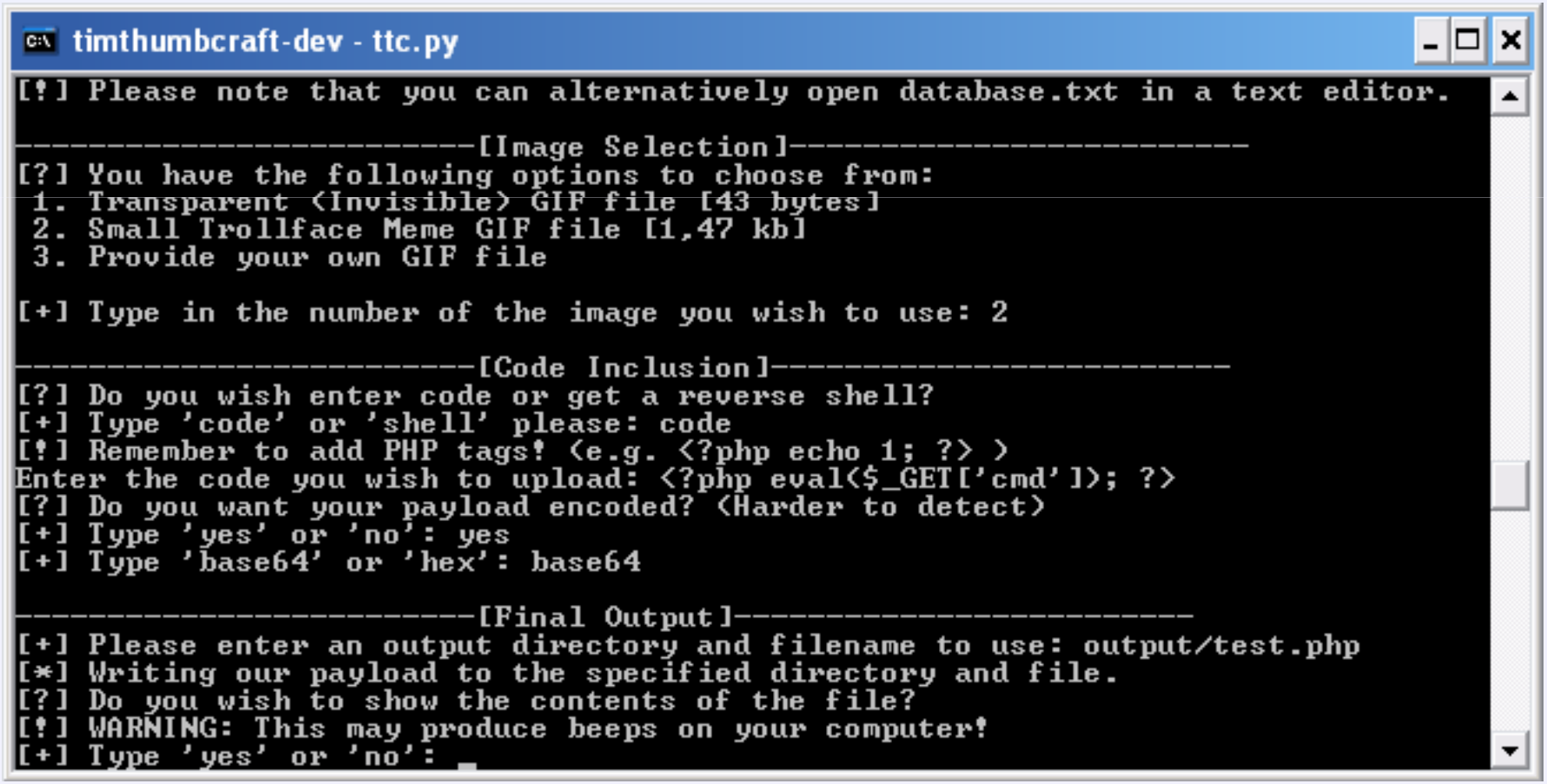
The easiest way to trick TimThumb into believing a remotely stored image (that also contains evil PHP code) is an actual image (with timthumbcraft)



TimThumb hack

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Uploading the file

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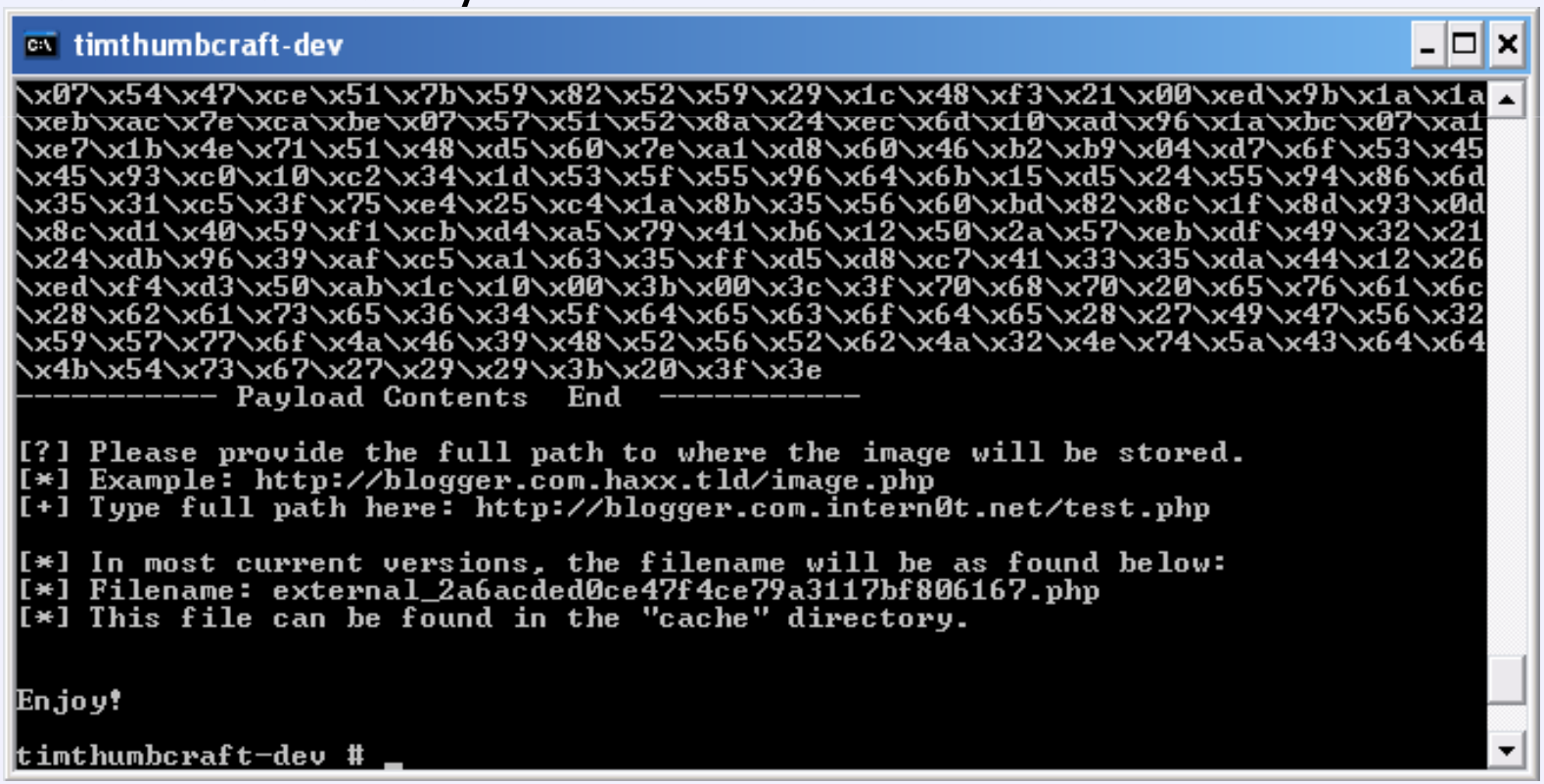
Additional problems with the TimThumb hack

- When uploading the image, the php script will be located in the cache directory with a ‘random’ name



TimThumb hack

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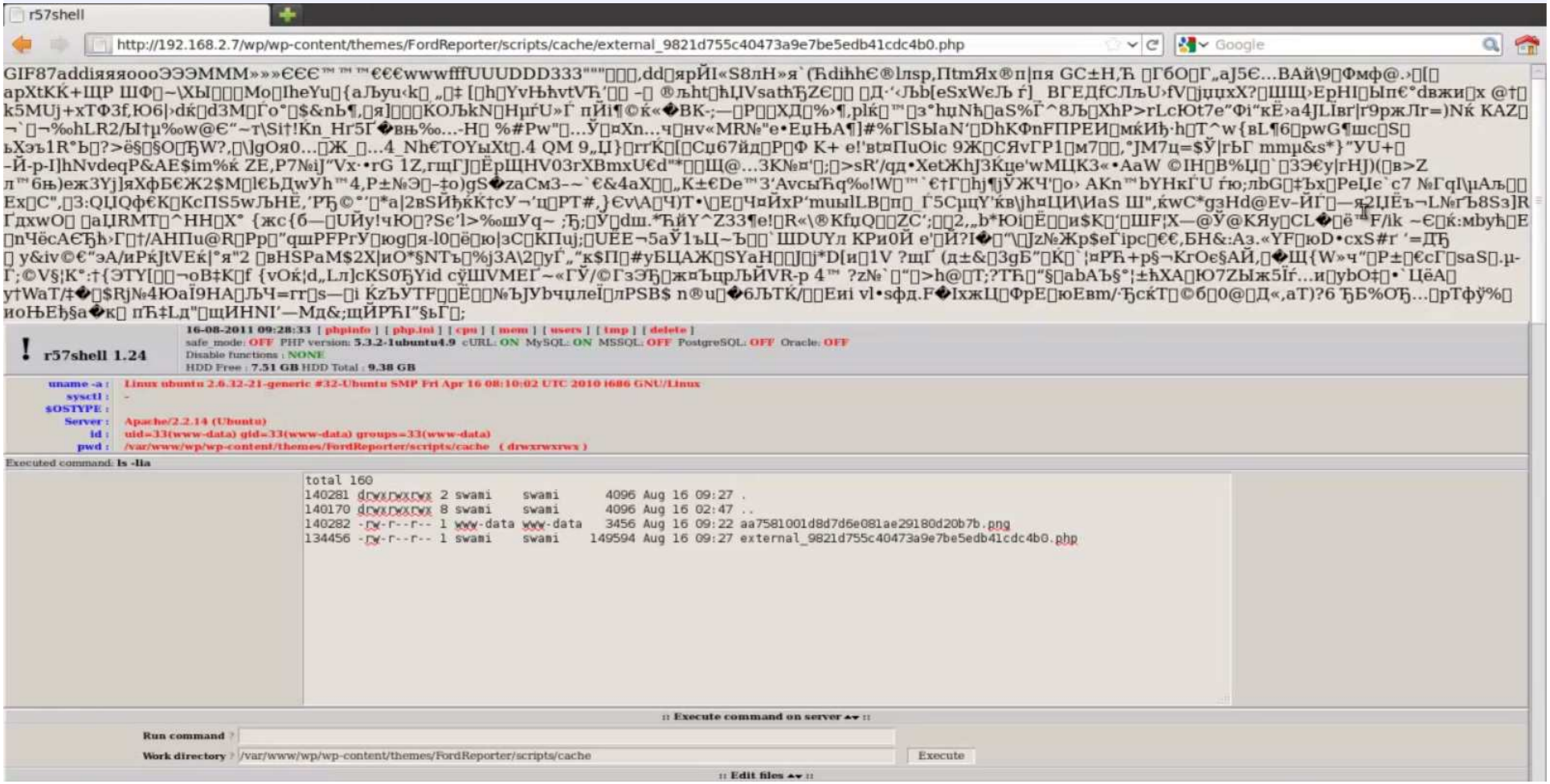
We're IN!



Hacking the users

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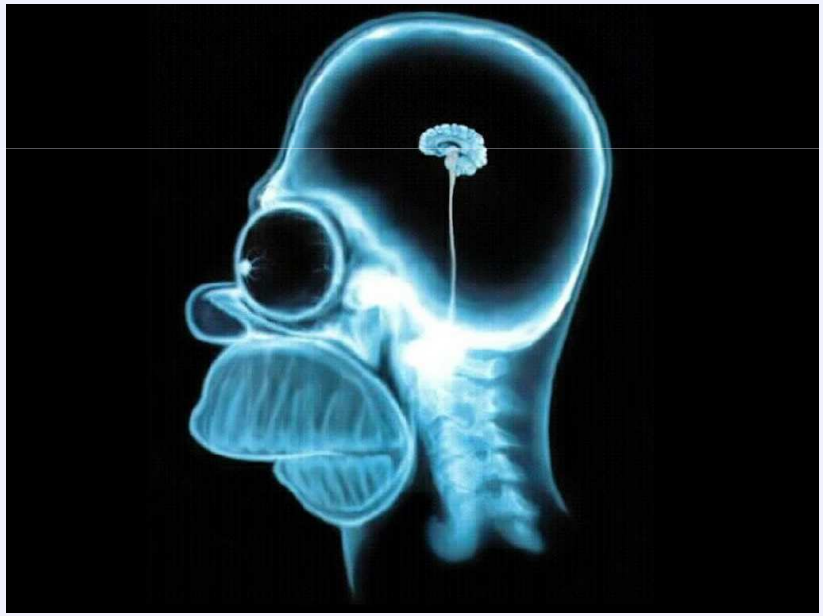
Last but not least, hacking the human element:

- Social engineering
- Phishing
- Exploiting bad habits



Let’s fix it

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Let’s start fixing the Wordpress Ecosystem

Short recap:

- Infrastructure
- Wordpress base platform
- Wordpress plugins
- Wordpress themes
- Users

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INFRASTRUCTURE

- Choose a decent data-center
- Use encryption for physical disks
- Use secure communication channels with the server (SSH, SFTP); do you still use FTP? You should be banned from the world.
- Keep the Web Server, PHP and Database updated to the latest version
- Secure configurations (disable directory listing, secure php.ini configuration, etc.)
- Log and analyze

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WORDPRESS PLATFORM - INSTALLATION

- Always download the platform from a trusted source; use https://wordpress.org/download/
- Change the default ‘admin’ username
- Set a strong password
- Change the default ‘wp_’ table prefix
- Set an insane database password
- Move wp-config.php outside /public_html

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WORDPRESS PLATFORM - MAINTENANCE

- BACKUP!!! (BackWPup plugin)
- Update!
- Use SSL for authentication
- Use CAPTCHA for logging in (Captcha on Login plugin)
- Limit the access to /wp-admin (form .htaccess)
- Source code audit

Fixing the themes

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THEMES

- Update
- Review the code

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PLUGINS

- Delete unused plugins
- Update
- Review ratings and user comments
- Source code audit

Fixing the users

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USERS

- Awareness
- Set user roles and give only the privileges they need
- Log & audit user actions (ARYO Activity Log plugin)
- Personal computer security
- Enforce the use of strong passwords (Minimum Password Strength plugin)

Further actions

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Install one or more security plugins

- Login Security Solution
- AntiVirus
- WP Security Scan
- WordPress File Monitor Plus
- OSE Firewall Security
- Block Bad Queries
- Wordfence

Further actions

Monitor the website from an external party

- WebsiteDefender
- Pingdom
- Change Detection

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Source code audit

Mark Forrester

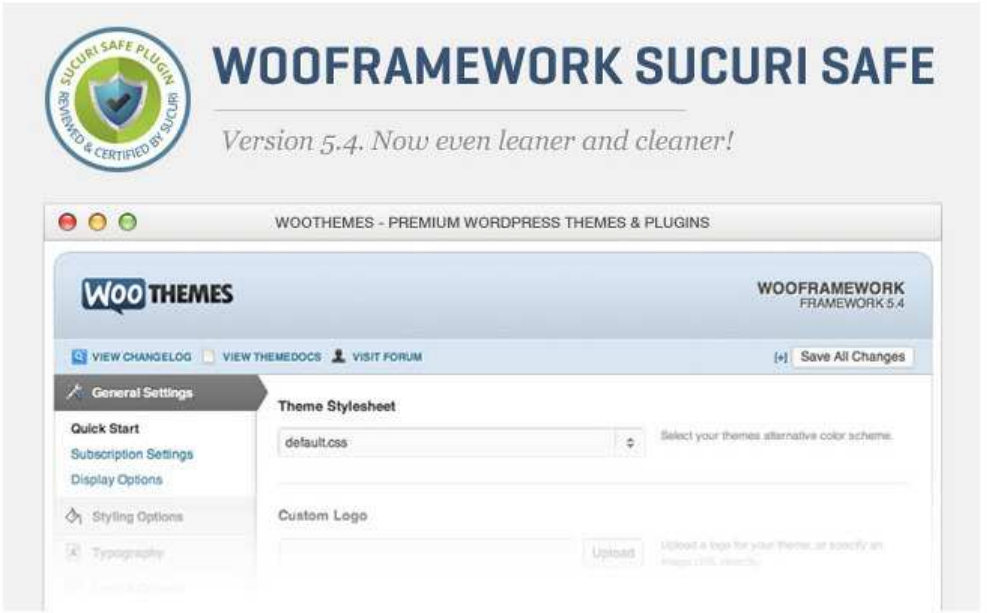
126

91

19

Every line of code audited

September 10, 2012 in Development, WooThemes News



Over the past few months we've been working very closely with the Sucuri Security team who we commissioned to do a full audit of our core products' codebase. We've already released WooSlider and WooDojo with Sucuri Security's stamp of approval, and today we are happy to announce that the WooFramework – the engine that powers each and every one of our WordPress themes -is now also Sucuri safe.

What to do

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If you know what you're doing, do the whole ecosystem yourself.

Otherwise go with a managed solution:

- Wordpress.org
- Wpengine.com
- Godaddy.com

Etc.

Goal

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Wordpress Security Checklist project on OWASP
https://www.owasp.org/index.php/OWASP_Wordpress_Security_Checklist_Project

My part:
- Establish the structure
- Contribute with content

I need help for:
- Content
- Plugin suggestions and reviews
- Source code audits

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Thank you!