VLC Security

Pass The Salt

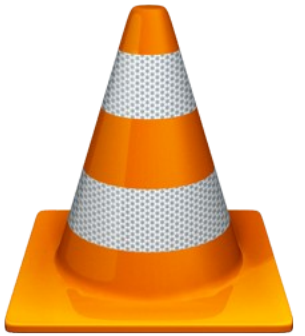
Jean-Baptiste Kempf

Tuesday, July 2, 2019


Jean
Baptiste-
Kempf
•VLC•
I'M EXCITED TO ANNOUNCE THE RELEASE OF VLC 1.0!

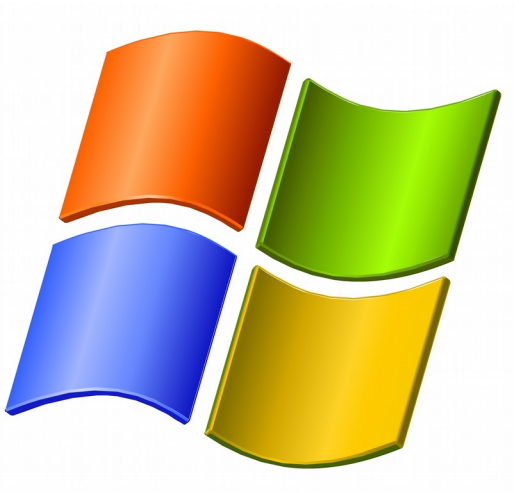

VideoLAN
ORGANIZATION






The Cone


DVD
AUDIO/VIDEO
MATROSKA
DIVX
VIDEO
SVCD
VIDEO
MPEG-II
COMPACT
disc
DIGITAL AUDIO
opus
mp3
dts
flac
free lossless audio codec
webm
xvid
codec
DOLBY
SURROUND
AVCHD
VCD
VIDEO COMPACT DISC
VLC

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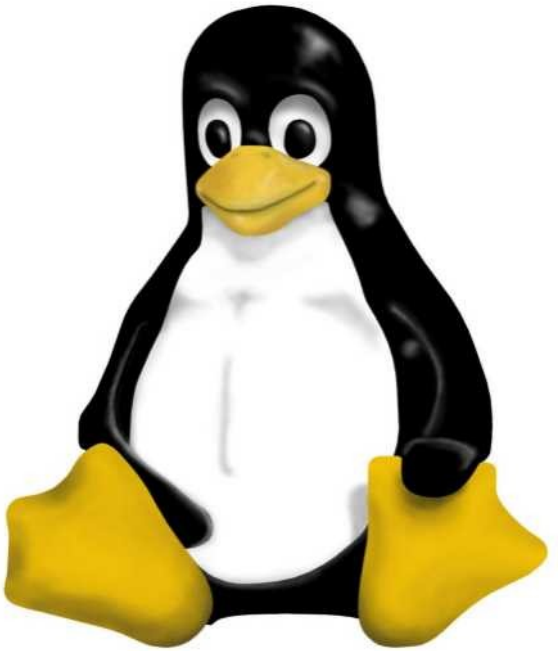
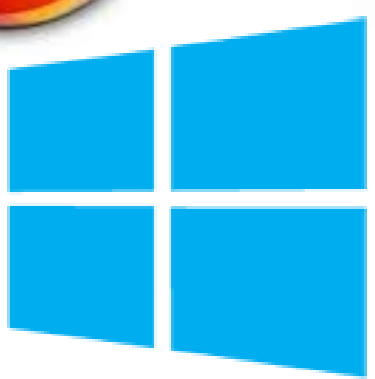


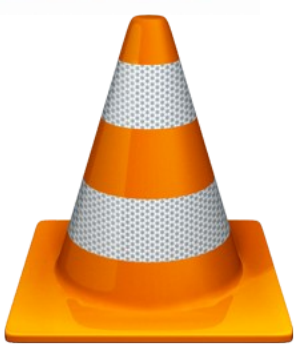

OS/2
OS/2
OS/2
OS/2

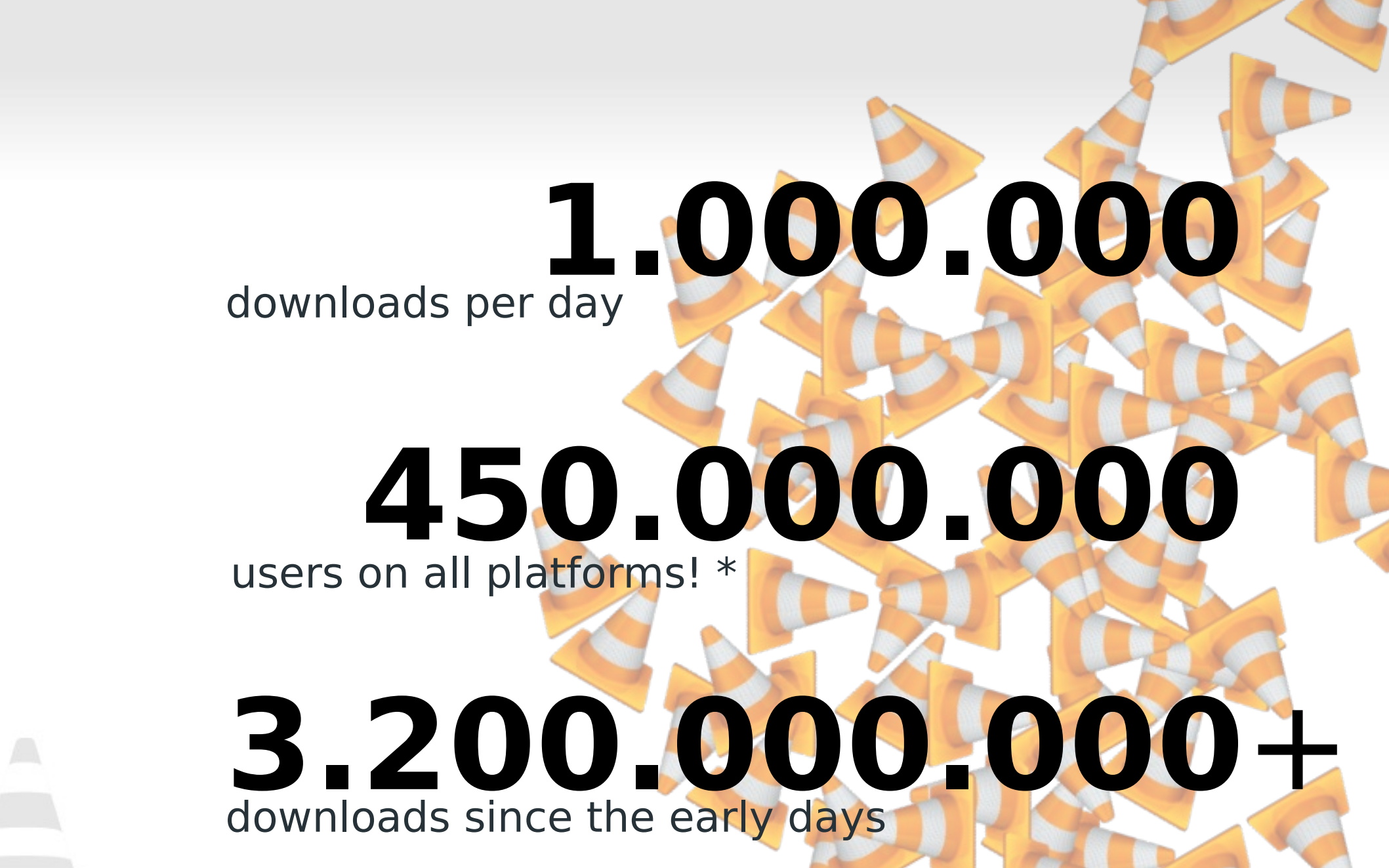

solaris


android


11






1.000.000
downloads per day
450.000.000
users on all platforms! *
3.200.000.000+
downloads since the early days


Dependencies
vimeo

Security

- Lots of code
  - 15 millions of LoC in C, C++, ASM *(handcrafted)*
  - 100+ dependencies
  - Code from the early 2000s
  - Quality is…
  - Many users
- Multiple answers
  - Reviewing
  - Analysis
  - Hardening
  - Signing
  - Bug bounties

Security answers

- Reviews
  - Difficult and long
  - Dependency selection
- Analysis
  - Daily static analysis
    - Coverity, LGTM, ...
    - Cppcheck, clang
  - Dynamic analysis
    - Most developers do now
  - Fuzzing
    - Oss-fuzz and our own
  - CI/CD

Answers, part 2

- Hardening *(3.0.x)*
  - Fewer warnings, more compilers
  - ASLR, HEASLR *(64bits)*
  - DEP/NX, SEH
  - SSP
    - Stack-Protection Strong
  - WinRT/UWP
  - PIE/PIC
    - Android

Answers, part 3

- Compiling & Signing
  - Compiling on clean virtual machines, destroyed after use
  - Compiling the toolchain from source, all dependencies, tools and then VLC
  - Taken by the maintainer, tested
  - Code Signing with HSM *(yubikeys)*, and GPG-signed *(maintainer)*
  - Uploaded to development server
  - Downloaded and checked by FTP-master
  - Signed with VideoLAN GPG keys
    - HSM *(Yubikeys)*, offline
  - Pushed on the release server

Bug Bounties

- EU-FOSSAv2 program
  - V1 was security analysis
- Personnaly Dislike
  - Money for finding bugs, not fixing them
  - Money for open source is a hot topic those days
- However
  - Prices for exploits on VLC are a bit high already
  - Want to help the EU to do more about open source
  - Try and see what happens
  - Extra bounties for patches provided

FOSSA results

- 31 security issues found in 3.0
  - 1 high
    - OOB write
    - *not in VLC*
  - 20 medium
    - OOB read, crash, Null deref, double-free
  - 10 low
    - Integer underflows, some OOB, parsing issues, busy-loops

- HackerOne team
    - OK-ish in communication
    - Price is high

FOSSA results 2

- Hackers
  - From the best to the worst
    - requesting answers and reproducibility in < 24h, and sending 10 mails in the mean time;
    - sending the same issue more than 10 times, because the stacktracs are slightly different; and *complain only one bounty awarded*;
    - refusing to read the guidelines, and refusing to test the good version, and then insulting us;
    - agressivity, or insults, to the point where the HackerOne team had to intervene several times;
    - plugging the output of their fuzzer to HackerOne without checking if it actually crashes or if it is a different bug;
    - submitting the same bug to a different program (Google Android Apps) to get 2 times the bounty, while the bug DID NOT apply on Android, but without checking;
    - …

nfoSec Hackers

VideoLAN @videolan · Jan 19
But thanks to @TheHackersNews and others from the InfoSec community, we'll get the insults for the whole next months...
10 18 198

Scott Helme @Scott_Helme · Jan 19
If you can justify your position then I think you're OK and might need to mute a thread.
2 31

VideoLAN @videolan · Jan 19
And waste one afternoon of coding...
Infosec is amazing...
2 10 85

Scott Helme @Scott_Helme · Jan 19
Hey come on, overall we're not bad are we?
3 19

VideoLAN
@videolan
Follow

Replying to @Scott_Helme @Sand_Pox and 5 others

Personal opinion: yes, you are overall very bad. We have only negative feedback from interacting with this community.
It is always insults, death threats and clueless people.
And never people who try to talk and discuss.

9:11 AM - 19 Jan 2019

76 Retweets **440** Likes

41 76 440

- Half of the reports we have are total crap
  - “I found the source code of VLC”
  - “I found the source code of your website”
  - “I found an open folder on your FTP/HTTP”
  - “Your jenkins|gitlab|trac is open”
  - “Those ports are open on your servers”

- So many reports are not signed, not to the right contact or just on our public tracker...

- Overblowing everything
  - A security issue is a bug.
    - We will fix it. But calm down
      It does not mean I will stop my life right now for it.
      It was a bug yesterday; most people will not update tomorrow.
  - Stop abusing CVSS
    - If all your security issues are > 9, the scale means nothing
    - Because your WinDbg scripts stays Exploitable does not mean it is
    - Every file can be on the internet with a playlist
      - This is not a remote execution…
    - We cannot get CVE…
- Extreme Clickbaiting

ClickBaiting

The Hacker News ✓
@TheHackersNews

Follow

Code Execution Flaw (CVE-2018-4013) Discovered in LIVE555 Media Streaming Library Leaves #VLC, Other Media Players and CCTV Streaming Applications Vulnerable to #Hacking

thehackernews.com/2018/10/critic …

#infosec #cybersecurity

7:18 AM - 19 Oct 2018

275 Retweets **294** Likes

Cisco Talos Intelligence Group, Cisco Security and Cisco

6 275 294

The Hacker News ✓ @TheHackersNews · 22 Oct 2018

UPDATE: While talking about the vulnerable LIVE555 library, researchers two times mentioned "it is used internally by well-known software such as VLC and MPlayer," without specifying if the vulnerable server-side component is being used by #VLC or not.

1 25 32

Beware! Playing Untrusted Videos On VLC Player Could Hack Your Computer

June 21, 2019 Swati Khandelwal

If you use VLC media player on your computer and haven't updated it recently, don't you even dare to play any untrusted, randomly downloaded video file on it.

Doing so could allow hackers to remotely take full control over your computer system.

That's because VLC media player software versions prior to 3.0.7 contain two high-risk security vulnerabilities, besides many other medium- and low-severity security flaws, that could potentially lead to arbitrary code execution attacks.

With more than 3 billion downloads, VLC is a hugely popular open-source media player software that is currently being used by hundreds of millions of users worldwide on all major platforms, including Windows, macOS, Linux, as well as Android and iOS mobile platforms.

Discovered by Symeon Paraschoudis from Pen Test Partners and identified as CVE-2019-12874, the first high-severity vulnerability is a double-free issue which resides in "zlib_decompress_extra" function of VideoLAN VLC player and gets triggered when it parses a malformed MKV file type within the Matroska demuxer.

The second high-risk flaw, identified as CVE-2019-5439 and discovered by another researcher, is a read-

Popular News


Exclusive: German Police Raid OmniRAT Developer and Seize Digital Assets


Two Florida Cities Paid $1.1 Million to Ransomware Hackers This Month

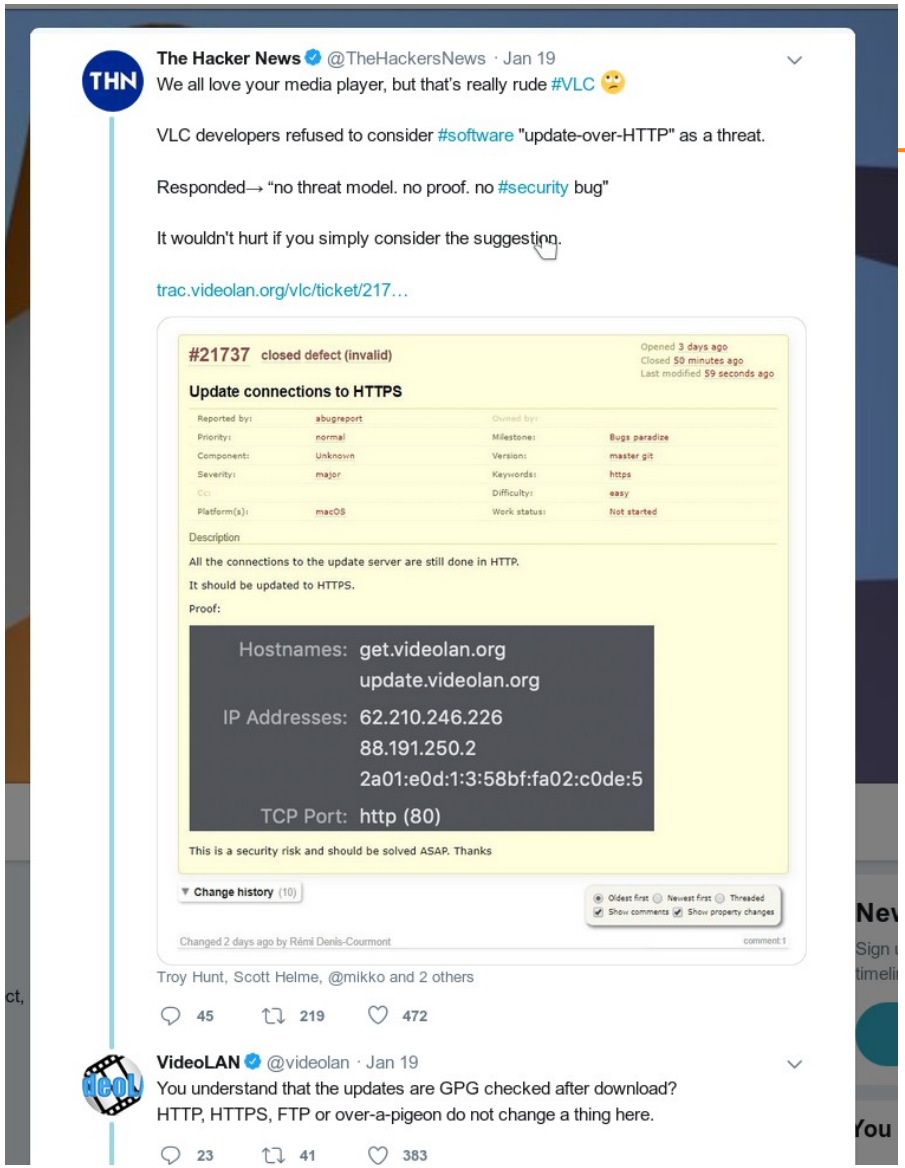

Account Takeover Vulnerability Found in Popular EA Games Origin Platform


'Legit Apps Turned into Spyware' Targeting Android Users in Middle East

- Mauvaise Foi
  - HTTP updates
- Always the same
  - “OMG, updates are over HTTP”
  - “OMG, VLC is insecure and trivial to replace the update”
  - Write articles or Twitter posts
  - “Well, no, the updates are GPG signed, so it does not matter how the updates are served”
  - “Oh, but what about…”

But

- Downgrade attacks
  - Managed in the installer
- Stay the same version
  - Same as blackholing update.videolan.org
- You should not use your own crypto
  - DSA/RSA are not “our own”
  - Gcrypt, GnuTLS
- VideoLAN website does not have the **right TLS**
  - Whatever TLS option some people want and fight about
- You update your .asc over HTTP
  - Yes, but it is signed
- You use sha1….
- But privacy!
  - You contact update.videolan.org, man…


The Hacker News @TheHackersNews · Jan 19
We all love your media player, but that's really rude #VLC
VLC developers refused to consider #software "update-over-HTTP" as a threat.
Responded→ "no threat model. no proof. no #security bug"
It wouldn't hurt if you simply consider the suggestion.
trac.videolan.org/vlc/ticket/217…
#21737 closed defect (invalid)
Opened 3 days ago
Closed 50 minutes ago
Last modified 59 seconds ago
Update connections to HTTPS
Reported by: abugreport
Owned by:
Priority: normal
Milestone: Bugs paradize
Component: Unknown
Version: master git
Severity: major
Keywords: https
Cc:
Difficulty: easy
Platform(s): macOS
Work status: Not started
Description
All the connections to the update server are still done in HTTP.
It should be updated to HTTPS.
Proof:
Hostnames: get.videolan.org
update.videolan.org
IP Addresses: 62.210.246.226
88.191.250.2
2a01:e0d:1:3:58bf:fa02:c0de:5
TCP Port: http (80)
This is a security risk and should be solved ASAP. Thanks
Change history (10)
Oldest first Newest first Threaded
Show comments Show property changes
Changed 2 days ago by Rémi Denis-Courmont
comment:1
Troy Hunt, Scott Helme, @mikko and 2 others
45 219 472
VideoLAN @videolan · Jan 19
You understand that the updates are GPG checked after download?
HTTP, HTTPS, FTP or over-a-pigeon do not change a thing here.
23 41 383

- And then we have the Italian InfoSec community
  - HTTPS update
  - Refused to discuss privately
  - Insults
  - Created github pages to doxx VLC developers
  - DDOS from Italy in the next days after
  - Go on every Social Media post to spit on VLC
    - “French Government”
  - No solution whatsoever

- **VLC.js**
  - Html5 video suxx
  - Flash Server + Player was nice
  - VLC inside a browser with WebAsm
  - Ads, more format support, fast, evolutive

- **Hardening VLC**
  - VLC security is hard
  - No hardened player
  - Better streaming solutions
  - Important cost


Thanks!
Questions?
VLC Security