Is Encryption Smuggling Exploits Into Your Company?

Keiron Shepherd – Snr Security Systems Engineer

Secure by default

"SSL Everywhere is a fundamental shift in the natural state of IT services, by which nothing is trusted and everything is encrypted."

Zero Trust

{Security Starts Here}

Robust encryption is the next step toward protecting our networks and data from unauthorized surveillance. The **Data Security Action Plan** offers 7 security-enhancing steps that every internet platform should take to safeguard our data.

HTTPS://ENCRYPTALLTHETHINGS.NET/

Industry trends

External pressures are mounting to move to SSL

Google using HTTPS as a ranking signal.

PCI DSS 3.1 requires TLS1.1+ for all new deployments.

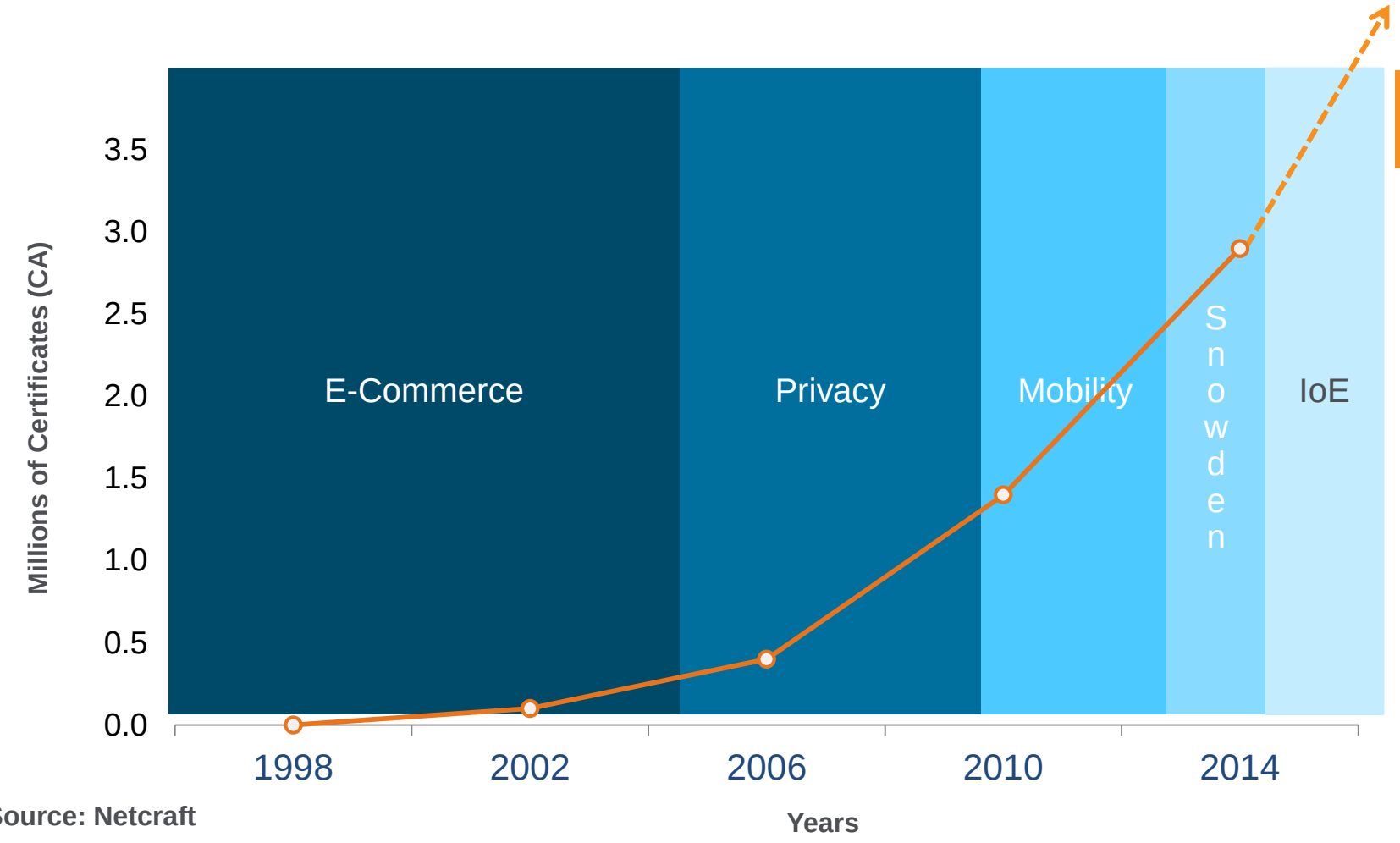
Firefox is deprecating HTTP!

HTTP/2 is only supported over TLS.

http://googlewebmastercentral.blogspot.com/2014/08/https-as-ranking-signal.html
https://www.pcisecuritystandards.org/documents/PCI_DSS_v3-1.pdf
https://blog.mozilla.org/security/2015/04/30/deprecating-non-secure-http/

Trajectory and Growth of Encryption

SSL growing ~30% annually. Entering the Fifth wave of transition (IoE)



Source: Netcraft

MARKET AMPLIFIERS

Customer Trends:

- Higher Security Standards
- Security more mobile

Emerging Standards:

- TLS 1.3, HTTP 2.0/SPDY
- RSA -> ECC

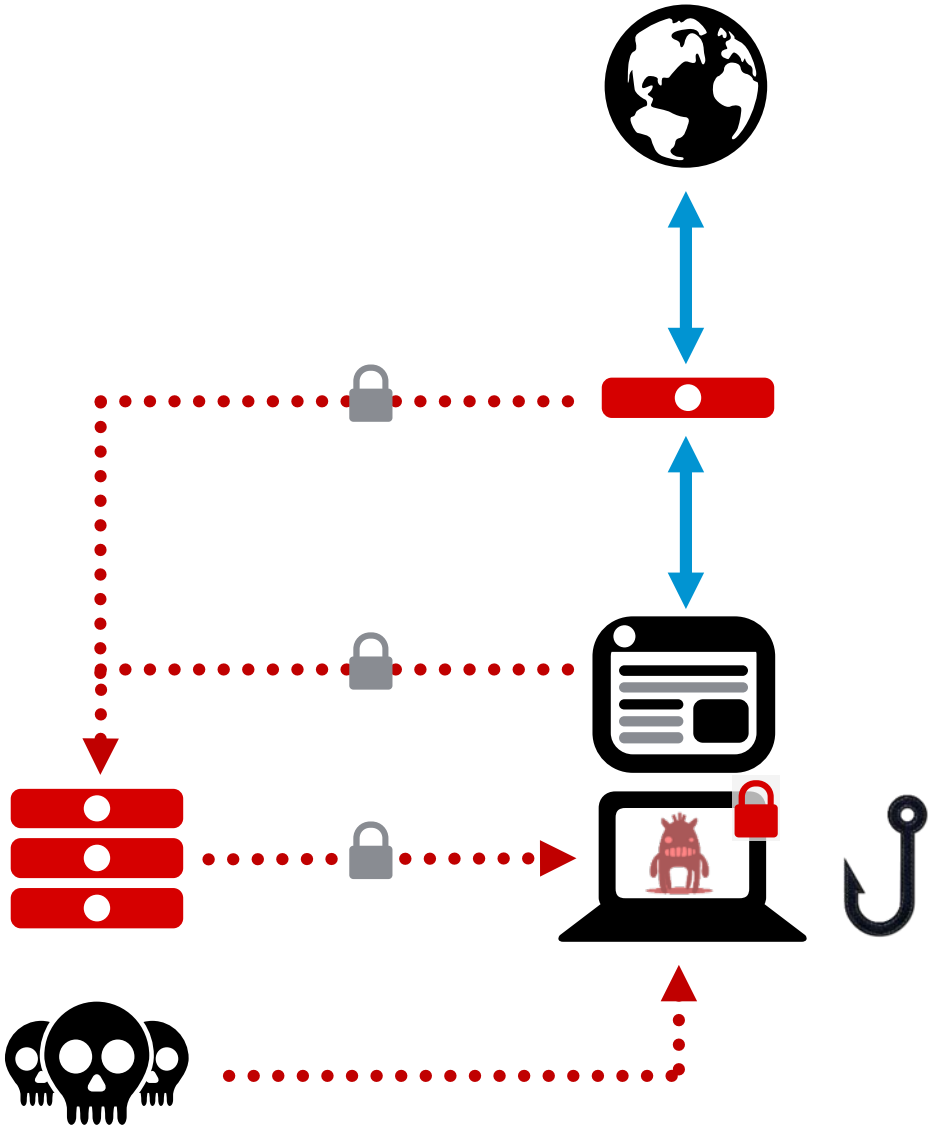
Thought Leaders and Influence:

- Google: SHA2, SPDY, Search Ranking by Encryption
- Microsoft: PFS Mandated

Sometimes those really are the droids you are looking for.

Trojan droppers using SSL

Two stage droppers contacts command & control servers for the rest of Malware… *Over SSL!*

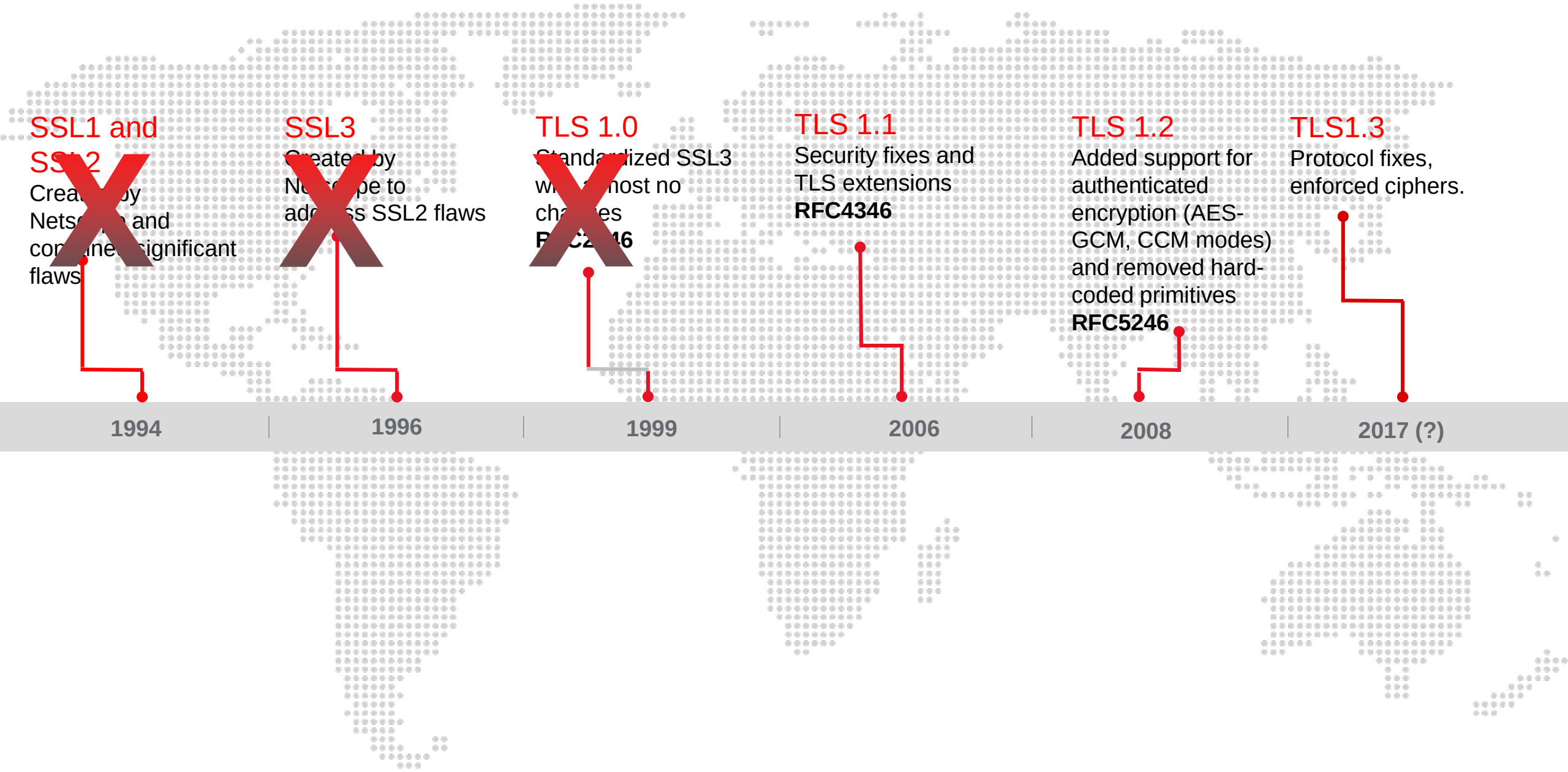


LESS THAN 20%

Of Organizations with a FW, IPS/IDS, or UTM decrypt SSL/TLS traffic

Gartner®

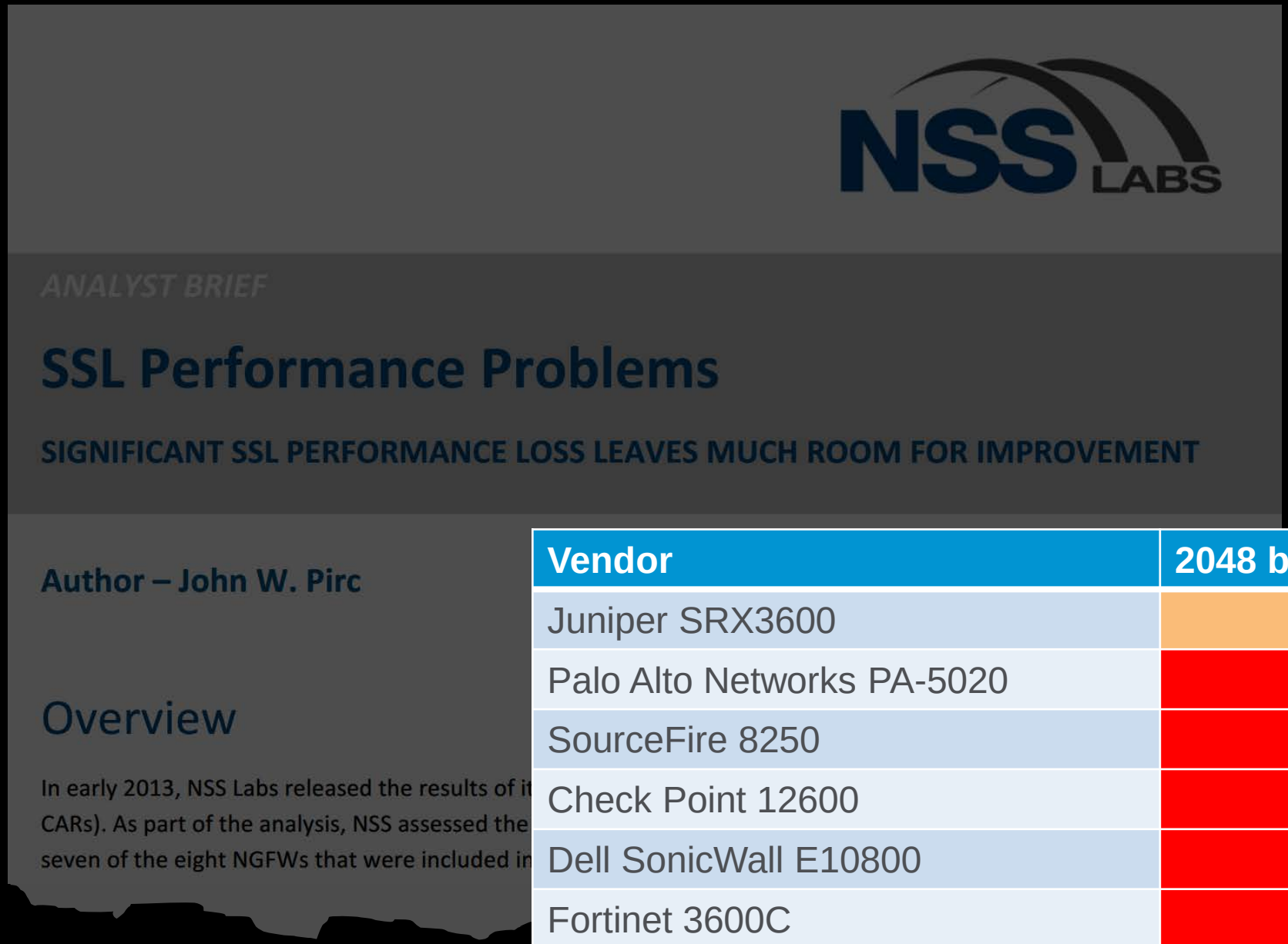

LINUX FOUNDATION COLLABORATIVE PROJECTS
Let's Encrypt
Blog
Technology
Contribute
Support
About
Let's Encrypt is a new Certificate Authority:
It's free, automated, and open.
Get Started
http://thehackernews.com/2016/01/free-ssl-certificate-malware.html



SSL (Its All In The Handshake)

- NO Forward Secrecy
  - Can be decrypted by passive devices
  - If private key compromised all data
  - Poor performance of passive decryption devices

- With Forward Secrecy
  - Browsers are preferring FS
  - No decryption on passive devices

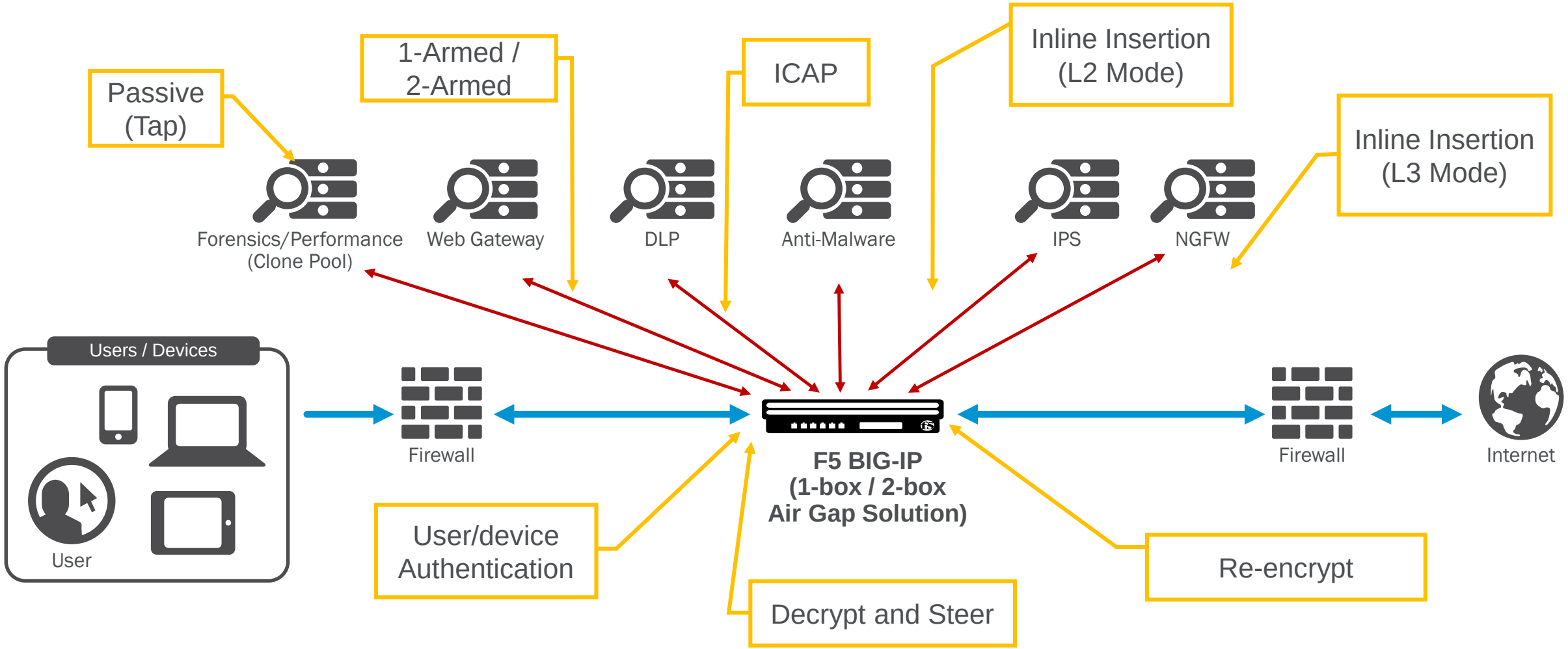


Vendor	2048 bit Cipher Performance Loss
Juniper SRX3600	36%
Palo Alto Networks PA-5020	79%
SourceFire 8250	83%
Check Point 12600	87%
Dell SonicWall E10800	94%
Fortinet 3600C	94%
SourceFire 8290	96%

https://library.nsslabs.com/sites/default/files/public-report/files/SSL%20Performance%20Problems.pdf

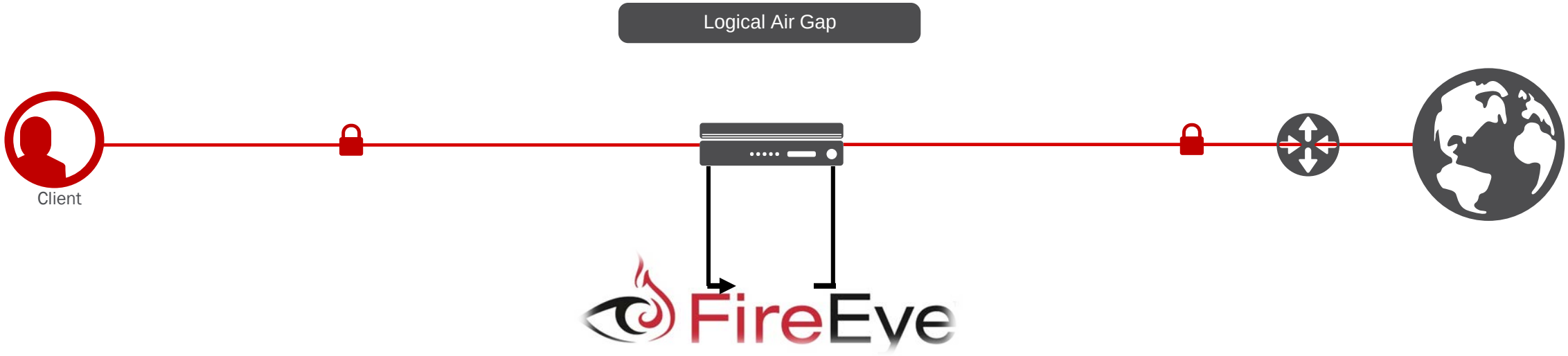
SSL/TLS Visibility and Security Service Chaining

Robust Traffic Steering Options



SSL visibility and inspection

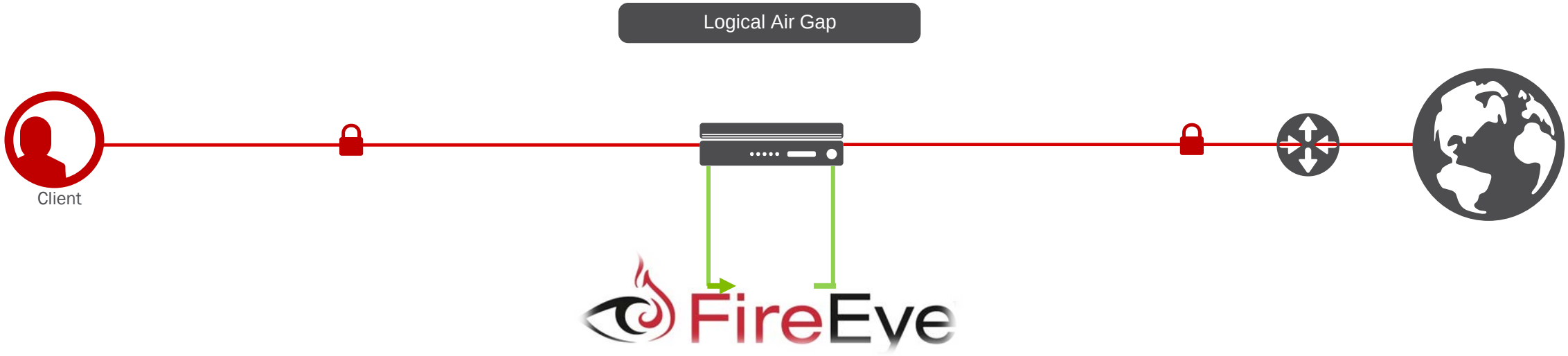
Active mode or “inline” visibility



Demo

SSL visibility and inspection

Active mode or “inline” visibility

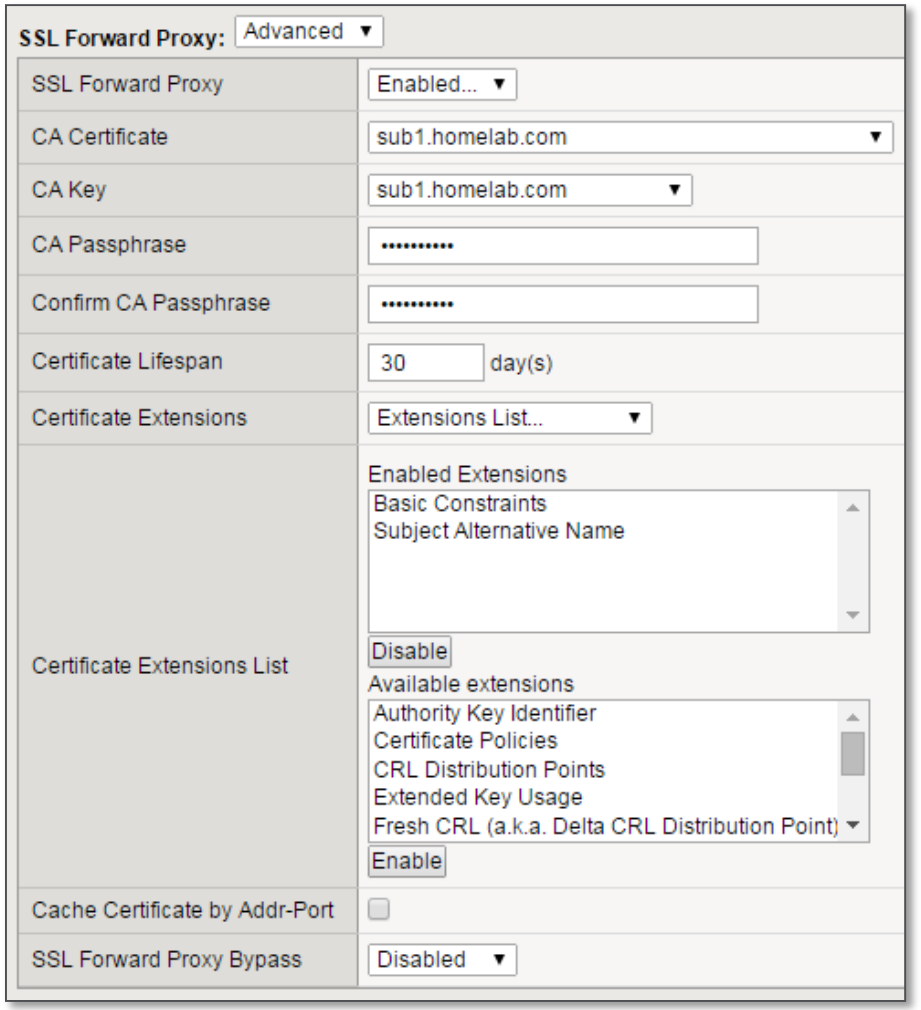


SSL visibility and inspection

Forward Proxy SSL protocol flow

SSL visibility and inspection

Forward Proxy SSL configuration



Issuer configuration

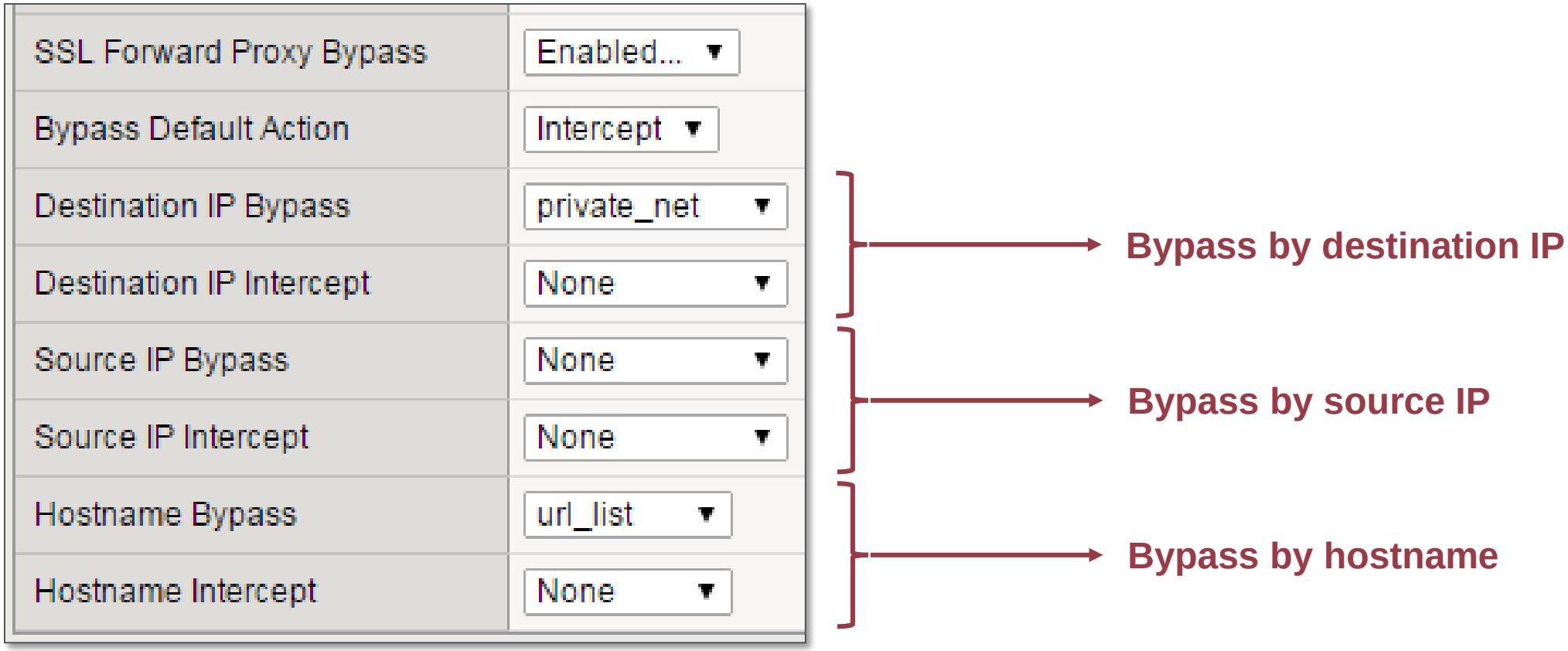
Lifespan

Transferred attributes

Caching

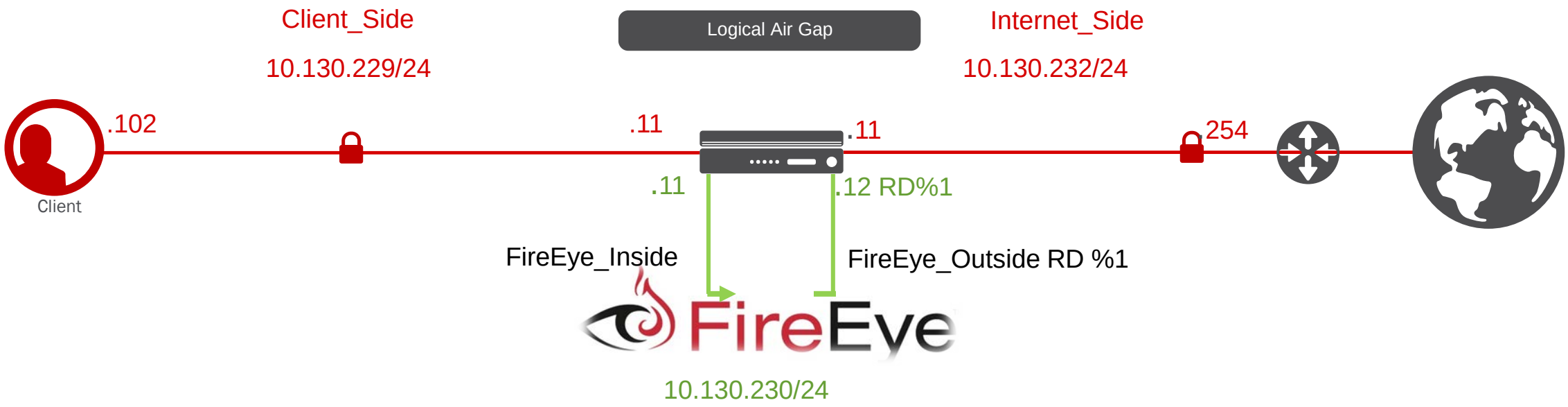
SSL visibility and inspection

Forward Proxy SSL bypass



SSL visibility and inspection

Active mode or “inline” visibility



The Malware

SHA256:	eb51d36ace1e480439e4ed14f9bf2fb8f40fe3cd9dc0f1973d24a94a7046162c
File name:	STOP_DONT_PUT_THIS_IN_DROPBOX_EXE.zip
Detection ratio:	2 / 56
Analysis date:	2016-04-19 17:13:54 UTC (0 minutes ago)

Analysis | File detail | Additional information | Comments | Votes

Antivirus	Result
VBA32	suspected of Trojan.Downloader.gen.h
Zillya	Trojan.Farfli.Win32.23199

SOLUTIONS FOR AN ~~APPLICATION~~ SSL WORLD