Legislating the Internet: ACTA and Beyond

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Getting Started: ACTA Background

- ACTA stands for the Anti-Counterfeiting Trade Agreement

- Negotiations began in secret in 2006.

- The Treaty was officially revealed in November 2010.

- The Treaty has already been signed.

ACTA Legalese

- 1) Section 41 of TRIPS constitutes baseline obligations.

    – Measures to "prevent infringements and remedies which constitute a deterrent..."

- 2) Limited Safe-Harbor Rules for ISPs, Third-Party liability.

    – Three Strikes/Graduated Response

- 3) DRM and Anti-Circumvention

    – No Fair-Use/Fair-Dealing exceptions

So what does it all mean?

- 1) - Inspection of all Network Traffic via Deep-Packet Inspection, DNS-block or similar technology, and a DMCA-style notice-and-takedown

- 2) - 3 Infringements result in an IP Ban and subscriber removal for up to 1 year.

- 3) - Non-commercial copying for personal use and storage, library DRM circumvention, creation of circumvention software all banned.

Deep-Packet Inspection

- Standard packet inspection only looks at headers

- Deep packet inspection may look at multiple layers – all the way to the application layer data.
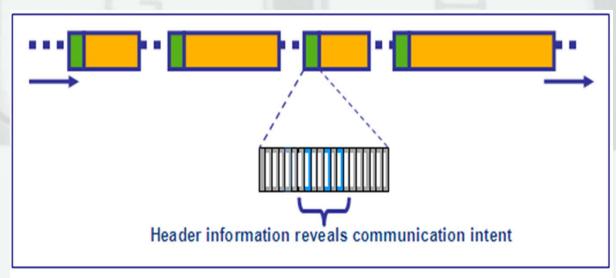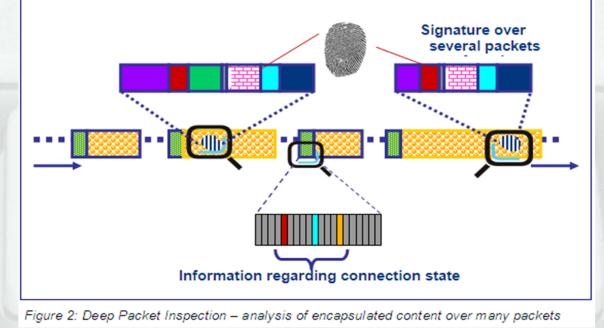

Header information reveals communication intent

Figure 1: Shallow packet inspection – data from packet headers

Application Detection for DPI

Figure 2: Deep Packet Inspection – analysis of encapsulated content over many packets
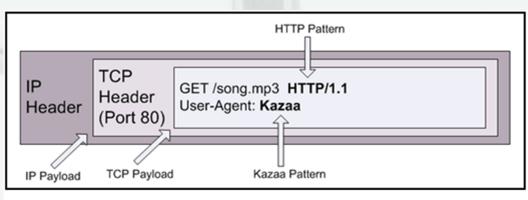
- DPI depends on application signatures – analysis by port, analysis by string match, analysis by numerical properties, and analysis by behavior and heuristics.

Analysis by Port and/or String

- By Port: Usually a default port is chosen for an application

- By String Analysis: Many applications display the application name within the protocol.

Figure 3: Kazaa string match analysis

Analysis by Numerical Properties

- Numerical properties are analyzed such as length of the payload, the number of packets sent in response to a transaction, and the offset of some fixed value within a packet.
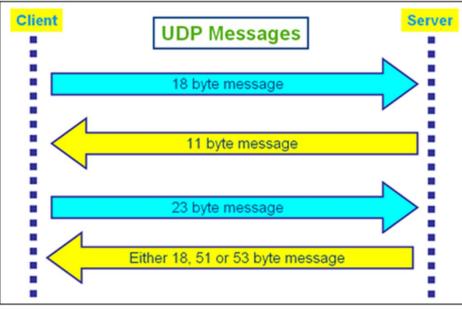
Client   **UDP Messages**   **Server**

18 byte message →

← 11 byte message

23 byte message →

← Either 18, 51 or 53 byte message

Figure 4: Skype (versions prior to 2.0) numerical properties analysis

Analysis by Behavior and Heuristics

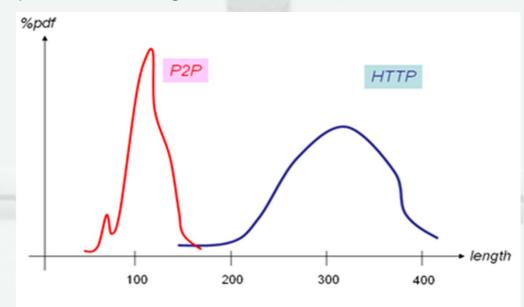- Typically different protocols can be differentiated statistically and recognized with patterns.

Figure 5: HTTP vs. P2P

Defeating DPI

- Encryption – Add encryption to the data to confuse DPI systems.

- Obfuscation – Scrambling communications (examples: BitTorrent, eMule, Skype)

Beyond ACTA

- SOPA and PIPA are dead, and the fight to kill ACTA is still continuing.

- Next Challenger: The Trans-Pacific Partnership – "*The agreement exports (nearly verbatim) the DMCA's rules on digital locks, ISP liability, and subscriber disconnections, with a few extra goodies on the side.*" - Ars-Technica

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