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# Evading Client Honeypots

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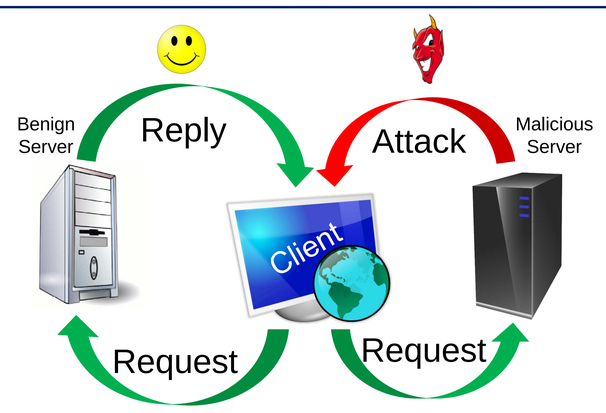
## Client-side Attacks

- Client makes a request to a malicious or compromised server
- Server acts to infect the client, targeting some of many vulnerabilities in applications
- Increasing number of exploits due to better server-side security
- Large number of opportunities (apps, plug-ins…) are vulnerable to exploits or attacks




## Client Honeypots

- Client honeypots have detected and analyzed thousands of attacks
- Easily detect drive-by downloads and browser or application exploits
- Check of system changes (registry changes, process creation/termination)
- Actively seek to be attacked opposed to traditional honeypots

## Targeting Real Users by Hiding Malicious Intent

We observed that malicious websites employ social engineering to convince users of legitimate interaction.

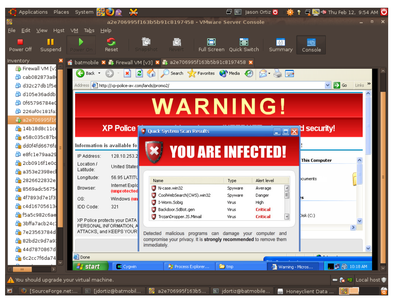
**Methodology**

We surveyed approximately 5000 websites using Honeyclient and manual navigation

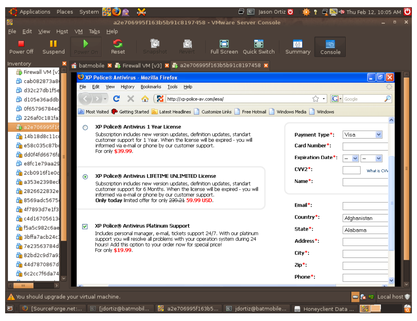
**Observations**

We found 43 attacks, many of them using a form of social engineering to gain user's trust

**Example** Rogue Applications




- Application appears as an *antivirus* software
- It is actually malware (usually spyware)
- A forged thread report informs the user their computer is infected with malware
- User is tricked into running a 'scan' of their system to find the infections

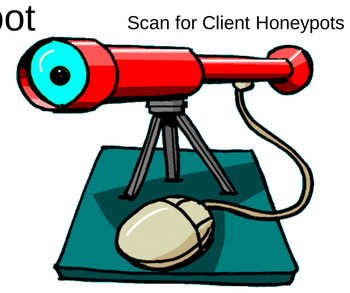


- 'Scan' finds hundreds of problems
- Application informs the user they must register and purchase the full version of the software to remove the threats
- User effectively pays for malware *and* disclosure of personal info

## Evading Honeypots by Hiding Malicious Content

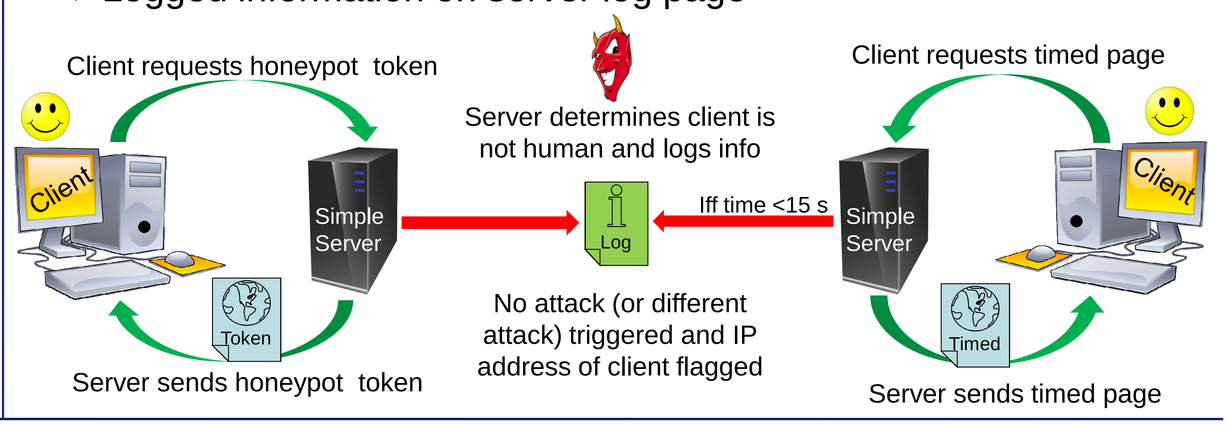
We hypothesize that malicious websites could employ several techniques designed to evade client honeypots.

- The client honeypot is unaware of the *existence* of the content
- Actively and passively detect a client honeypot
  - Detect presence of VM (active)
  - Detect automated clicks (active)
  - Detection using time restraints (active)
  - Use forms and CAPTCHA (passive)
- But how difficult is it?




## Proof of Concept

- Built a simple HTML Server
- Created a page designed to detect automation (clicking)
- Created a script which launched only after 15 seconds
- Logged information on server log page




## Future Plans: Preventing Evasion

- Bare-Metal Implementation of client honeypots
  - Traditional honeypots use virtual environments to contain attacks experienced
  - Malicious entities can detect presence of virtual environment (See proof of concept above)
- Requires computer we can reimage
- Requires remote logging of events
  - Data might get corrupted from attack
  - Attack might destroy its own trail

- Implementing a model of user interaction
  - Vary amount of time spend on a single page (time attacks not prevented but harder)
  - Parse for hidden links and avoid clicking them
  - Be able to fill out forms and defeat CAPTCHA

## References

MITRE Data Set, Kathy Wang

Detecting the Presence of Virtual Machines Using the Local Data Table, Danny Quist, Val Smith

Ask for others and more details!

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