New Techniques in Application Intrusion Detection

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May 2010

Today

- Who am I?
  - Director of Product Management, Mykonos
  - 11 years experience marketing Web-based products and technologies
  - Canadian. Eh.
- The Agenda
  - The problem of Web application abuse
  - Current options
  - Application intrusion detection and response
  - AppSensor vs. Mykonos Security Appliance

The Problem

The Cost of Web Application Abuse

Fraud!

Defacement!

Identify Theft!

Loss of business!

Brand damage!

Economic Growth!

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How Big is the Problem?

Big, and Getting Bigger

- **$4.0B** in Fraud
  (2008 Cybersource)
- **$50B** in Identity Theft
  (2009 FTC)
- **$16B** Credit Card Fraud
  (2008 Mercator Advisory Group)
- **$204** - Cost of Data Breach per Customer Record
  (Ponemon Institute 2009)
- **$1T** - Global Cost of Cyber Crime
  (McAfee 2008)

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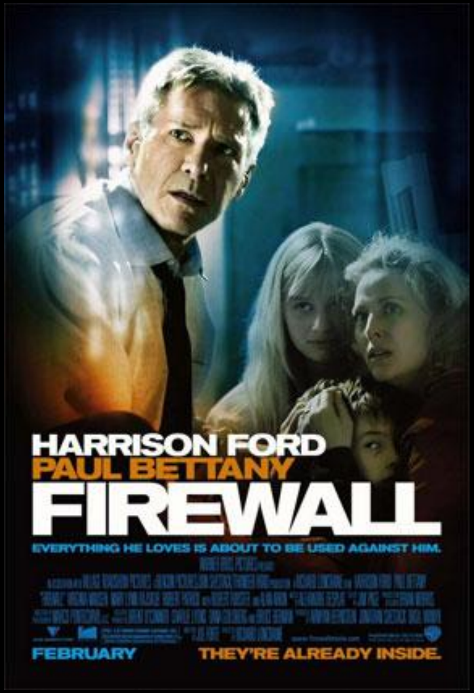
The Challenge

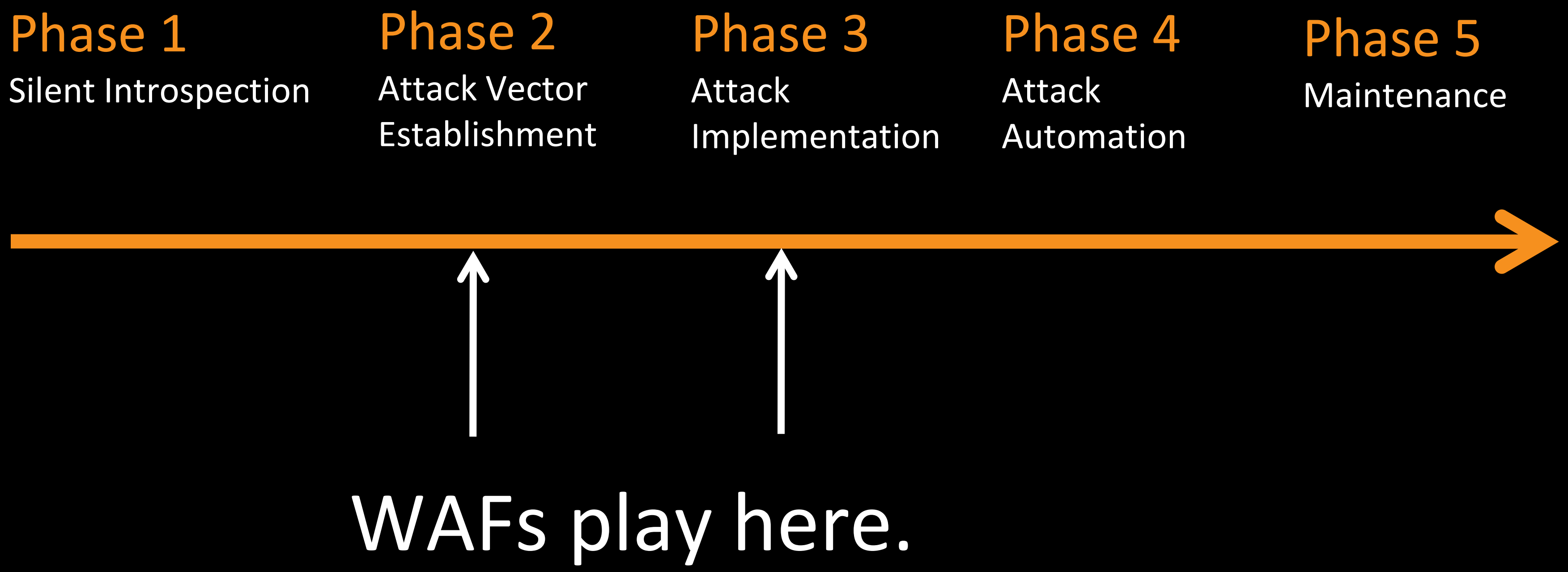
How to Secure Legacy Apps from Abuse

Fix It.



Firewall It.

The Anatomy of a Web Attack



Phase 1
Silent Introspection

Phase 2
Attack Vector Establishment

Phase 3
Attack Implementation

Phase 4
Attack Automation

Phase 5
Maintenance

WAFs play here.

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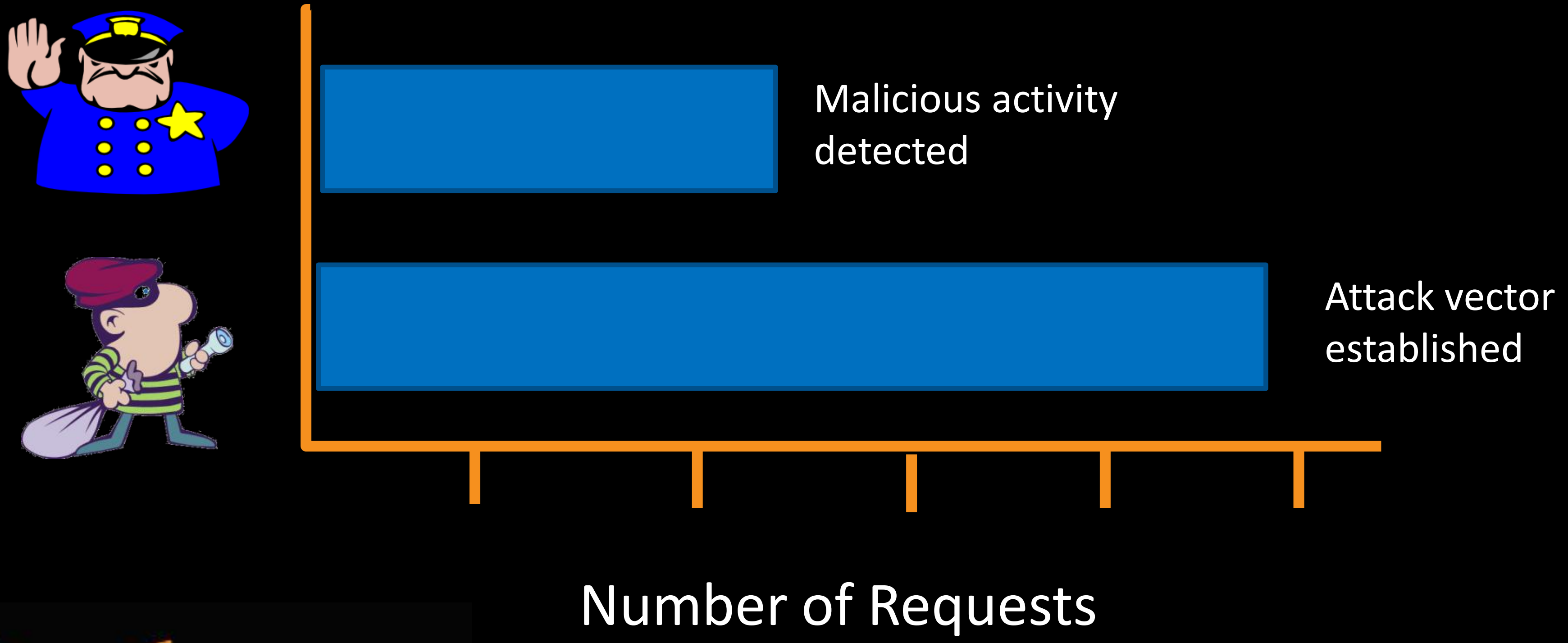
Early Detection

What about all the requests before an attack is delivered?



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Is there another way?

Add Security Logic to the App

- Can you extend legacy apps to detect malicious activity from within the app itself, before a user is able to identify and exploit a vulnerability?
  - E.g. Manipulating cookies, query parameters, input fields…

Approaches

OWASP AppSensor Project

A conceptual framework for implementing intrusion detection capabilities into existing applications

http://www.owasp.org/index.php/Category:OWASP_AppSensor_Project

AppSensor

42 Detection Points

Exception	# Detection Points
Request	4
Authentication	11
Access Control	6
Session	4
Input	2
Encoding	2
Command Injection	4
File IO	2
User Trend	4
System Trend	3

AppSensor

How is it implemented?

- A little unclear…
- Two recommendations
  - At the business layer (aka in code), preferably using the OWASP ESAPI
  - As a ‘cross-cutting concern’ in an Aspect-Oriented Programming approach (e.g. Java Filters)

AppSensor

Strengths and Challenges

Strengths

- It’s smart
- A great reference for determining malicious intent, categorizing and rating incidents

Challenges

- Takes development time
- No tools or pre-fab solutions yet
- Project advances very slowly

Approaches

The Mykonos Security Appliance

A high speed HTTP processing engine that extends Web application code with intrusion detection and response capabilities at serve time.

http://www.mykonossoftware.com

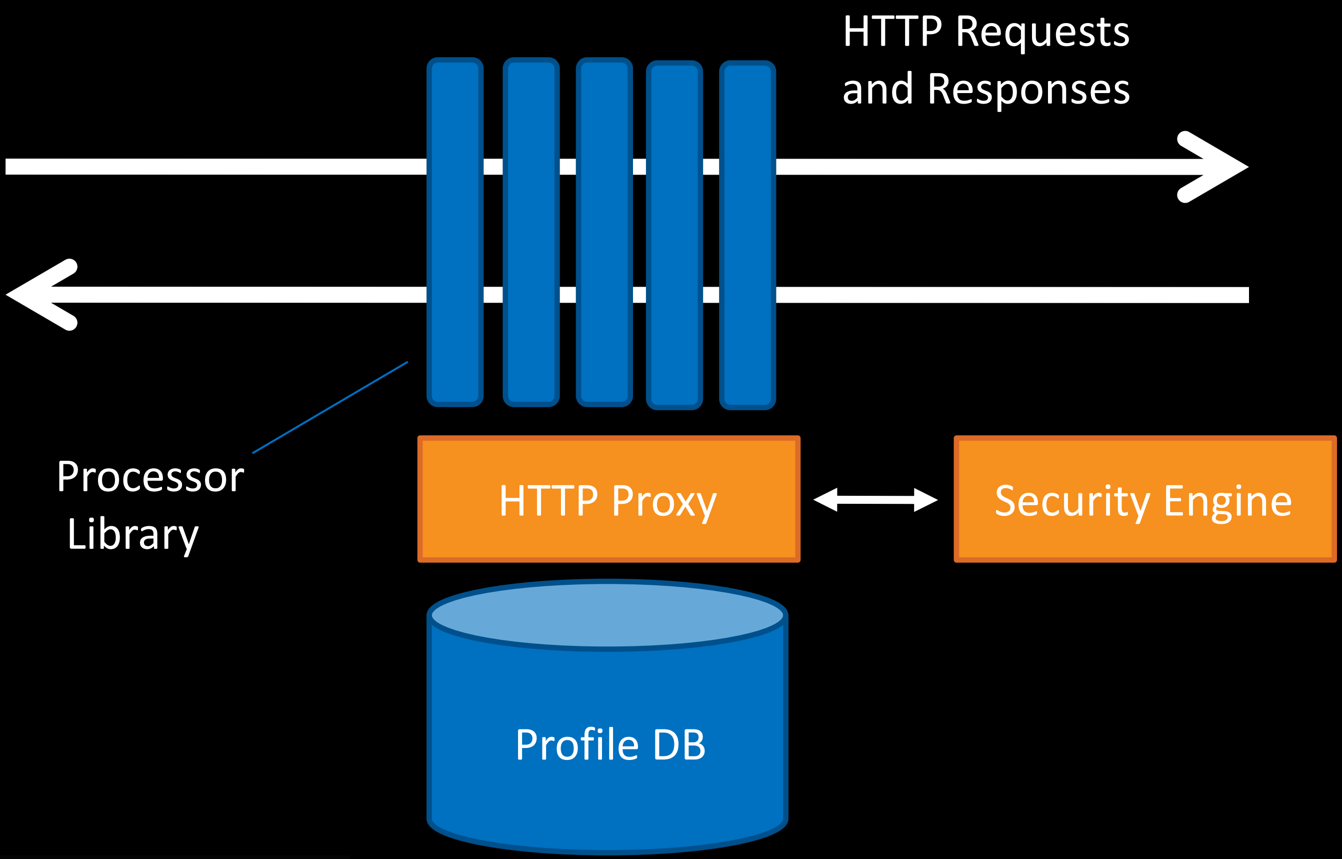
The Mykonos Security Appliance

26 Detection Points

Processor	# Detection Points
Authentication	4
Cookies	1
Errors	2
Files	2
Headers	7
Inputs	1
Links	3
Request Methods	3
Query Parameters	1
Spiders	2

The Mykonos Security Appliance

How is it implemented?



The Mykonos Security Appliance

Strengths and Challenges

Strengths

- It’s smart
- Code-aware w/o dev participation
- Easy to configure

Challenges

- Inline proxy
- Throughput and latency
- Transparency – don’t break the app!

The Mykonos Security Appliance

Demo