

Minimum Necessary Implementation: Reducing Attack Surface to Increase Security

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The Open Web Application Security Project
Long Island Chapter
Hempstead, New York



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If it makes a sound, **SET IT ON SILENT**
(e.g., mobiles, pagers, PDA, smartphone)

Web Application Security

- many components
- many vulnerabilities
- What this talk does not cover:
 - Encryption
 - Communications
 - Applications Design

Today's topic:

- Attack Surface
 - Unnecessary technology vulnerabilities

A matter of trust –

- Multilateral trust is a danger
 - Scripts/applets trust browser environment
 - Client/server both trust communications
 - Servers trust clients

Poorly-placed trust is **THE** problem –

- Malevolent clients
- Compromised servers
- Unfaithful intermediaries

Foundation:

- “... maintain maximum security by minimizing distribution”
 - Office of Naval Operations, circa 1941
- a simple principle
 - What one does not have, cannot be leaked.
 - “Once three people know it, it is not a secret”

In Operating Systems –

- protected access modes
- “minimum necessary privilege”
- The basis of ALL multiuser environments
 - What is prohibited cannot be abused.

What does this mean for Web Applications?

- Consider different hazards/attacks
 - SQL Injection
 - Business Logic errors

A common thread:

- excessive trust/capability
 - more access/authority than needed
 - escalation

The role of technologies –

- capability vs. need
 - Different technologies
 - Different capabilities
 - Match technology, capabilities to need

Example:

- Changes in visual appearance
 - CSS: mouseover event
 - JavaScript: mouseover event
 - Java: mouseover event
 - Each has different capabilities, vulnerabilities

A Deeper Look: CSS

- Limited to stylistic issues
- Cannot be used as a springboard

A Deeper Look: JavaScript

- Full access to the DOM
- If signed: Potential full access to the machine
- A question of trust
- No Public/Private methods

A Deeper Look: Java

- Full access to the DOM
- If Signed: Potential full access to the machine
- A question of trust
- Private methods; FINAL

Different potentials

- CSS: very constrained
- Java/JavaScript: more capable; also exploitable

SQL Injection

- an example of “excessive capability”
- server excessively trusts client
 - `http://xyz.com?user=fred&...`
 - `http://xyz.com?user=charlie&...`
 - Why grant trust?

Attack surface: A matter of trust

- Minimize trust
- Up front efforts far cheaper than remediation
- VERY fat tail for compromises

Questions?

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Session Notes & Materials:

<http://www.rlgsc.com/owasp/longisland/2011/index.html>