Defending ASP.Net apps against XSS

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The OWASP Foundation
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Agenda

- Short history of XSS
- XSS defined
- Defence
- Resources
- Q&A

Short history of XSS

- XSS is at least 15 years old (was born somewhere around 1996)
- Back then You could with use of Javascript create iframe, load another page inside it and script it anyway You like :)
- SOP was introduced in Netscape Navigator 2.0
- 2005 –Samy – first XSS worm, hit MySpace – it finally went offline, 1 000 000 infections in less than 24 hours

XSS defined

- „XSS flaw occurs when application includes user supplied data in a page sent to the browser without properly validating or escaping that content" – from OWASP TOP 10
- XSS can be
  - Stored
  - Reflected
  - Dom based <- no server side interaction
- Some (bad) statistics:
  - OWASP TOP 10 2010: A2
  - 2011 CVE/SANS Top 25 Most Dangerous Software Errors: 4

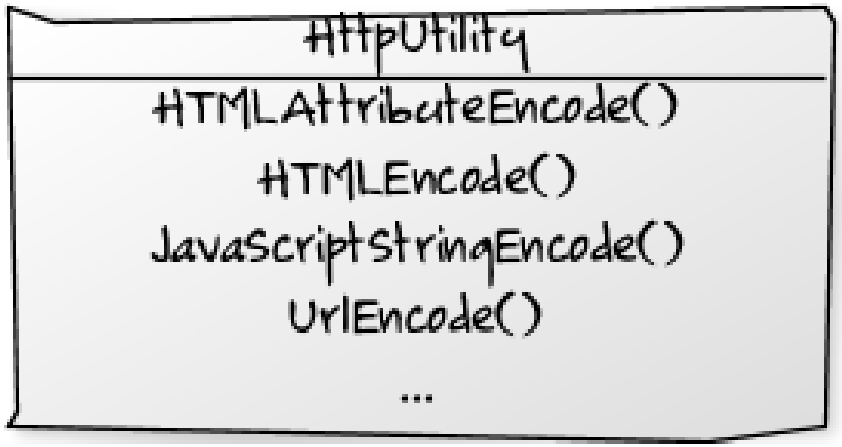
XSS defined

- What can happen?
  - Site defacement
  - Identity theft, data theft
  - Force user action
  - Redirect to hostile content
  - User tracking
  - …
- More:
  - https://www.owasp.org/index.php/Cross-site_Scripting_%28XSS%29
  - http://www.youtube.com/watch?v=_Z9RQSnf8-g

Defence

- Input Validation
  - Simple and straightforward
  - **Blacklist** approach
  - ASP.Net use request validation mechanism(when it is turn on)
  - when first time HttpRequest.Form collection getter is called, all form fields are validated
  - **CrossSiteScriptingValidation** class and IsDangerousString method
- More about request validation:
  - http://alexsmolen.com/blog/?p=15

Defence



- Output Encoding
  - **HTTPUtility** class
  - but when to use what?
  - MSDN doesn't help much…

HttpUtility.JavaScriptStringEncode Method (String)

.NET Framework 4

Encodes a string.

  - …but we have OWASP XSS Prevention Cheat Sheet !

Defence

- AntiXSS:
  - **Whitelist** approach (better)
  - Can be easily plugged as .Net encoder for http runtime
  - There is brand new version due to some recent vulnerability ;)
- XSS Detect? OWASP ESAPI ??
- More:
  - http://wpl.codeplex.com/
  - https://www.owasp.org/index.php/XSS_%28Cross_Site_Scripting%29_Prevention_Cheat_Sheet

Q & A

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Resources

- Books:
  - XSS Attacks, J.Grossman, R.Hansen and others
  - Web application obfuscation, M.Heiderich
  - The Tangled Web, M.Zalewski
- Online:
  - http://ha.ckers.org/xss.html
  - http://www.troyhunt.com/2011/12/free-ebook-owasp-top-10-for-net.html
  - http://code.google.com/p/browsersec/wiki/Main
  - http://caught-in-a-web.blogspot.com/2007/01/httputilityhtmlencode-and-server.html

Resources

- Blogs:
  - http://samy.pl
  - http://jeremiahgrossman.blogspot.com/
  - http://heideri.ch/
  - http://www.thespanner.co.uk/
  - http://threats.pl/bezpieczenstwo-aplikacji-internetowych
  - http://blog.kotowicz.net/

Resources

- Recent:
  - http://lcamtuf.coredump.cx/postxss/
  - http://www.jtmelton.com/2012/01/11/review-of-scriptgard-microsoft-research-paper
  - http://idunno.org/archive/2012/01/10/vulnerability-in-antixss-library-could-allow-information-disclosure.aspx