WEB APPLICATION SECURITY STATISTICS 2008
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1. INTRODUCTION

Web Application Security Consortium (WASC) presents web application vulnerability statistics for 2008 (WASC Web Application Security Statistics Project 2008) and expresses gratitude to the experts and the companies that have contributed to the development of the project:

Sergey Gordeychik* (POSITIVE TECHNOLOGIES)
Jeremiah Grossman (WHITEHAT SECURITY)
Mandeep Khera (CENZIC)
Matt Lantinga (HP APPLICATION SECURITY CENTER)
Chris Wysopal (VERACODE)
Chris Eng (VERACODE)
Shreeraj Shah (BLUEINFY)
Lawson Lee (dns)
Campbell Murray (ENCRIPTION LIMITED)
Dmitry Evteev (POSITIVE TECHNOLOGIES)

*Project Leader
2. PROJECT GOALS

The Web Application Security Consortium (WASC) is pleased to announce the WASC Web Application Security Statistics Project 2008. This initiative is a collaborative industry wide effort to pool together sanitized website vulnerability data and to gain a better understanding about the web application vulnerability landscape. We ascertain which classes of attacks are the most prevalent regardless of the methodology used to identify them. Industry statistics such as those compiled by Mitre CVE project provide valuable insight into the types of vulnerabilities discovered in open source and commercial applications, this project tries to be the equivalent for custom web applications.

The main Project goals are:

- Identify the prevalence and probability of different vulnerability classes
- Compare testing methodologies against what types of vulnerabilities they are likely to identify

3. METHODOLOGY

This article contains Web application vulnerability statistics which was collected during penetration testing, security audits and other activities made by companies which were members of WASC in 2008. The statistics includes data about 12186 sites with 97554 detected vulnerabilities.

As a result, we now have 4 data sets:

- Overall statistics by all kinds of activities;
- Automatic scanning statistics;
- Black box method security assessment statistics;
- White box method security assessment statistics.

Automatic scanning data is collected in fully automated scanning process without any preliminary settings (with standard profile) of hosting provider sites. Remember that not all the sites include interactive elements, and additional settings made by an expert considering certain Web application, allows to greatly improve the efficiency of vulnerability detection.

Black box method security assessment statistics includes the results of manual and automated Web application analysis without any preliminary known data about the application. As a rule, this includes scanning with standard settings and manual search of vulnerabilities unavailable for automatic scanners.

White box method security assessment statistics includes the results of the deep Web application analysis which contains application analysis done as an authorized user. It also includes static source code and binary analysis. Detected vulnerabilities are classified according to Web Application Security Consortium Web Security Threat Classification (WASC WSTCv2). Vulnerability risk level is determined by contributors or assessed according to CVSSv2 (Common Vulnerability Scoring System version 2). Then the level was brought to PCI DSS (Payment Card Industry Data Security Standard) risk levels as described in the methodology (see appendix 1).
4. SUMMARY

The statistics includes data about 12186 web applications with 97554 detected vulnerabilities of different risk levels. The analysis shows that more than 13% of all reviewed sites can be compromised completely automatically. About 49% of web applications contain vulnerabilities of high risk level (Urgent and Critical) detected during automatic scanning (T. 1). However, detailed manual and automated assessment by white box method allows to detect these high risk level vulnerabilities with probability up to 80-96%. The probability to detect vulnerabilities with risk level more than medium (PCI DSS compliance level) is more than 86% by any method. At the same time, detailed analysis shows that 99% of web applications are not compliant with PCI DSS standard (T. 6, P. 13).

The following conclusions can be drawn based on the analysis:

- The most wide spread vulnerabilities are Cross-site Scripting, different types of Information Leakage, SQL Injection, HTTP Response Splitting;
- The probability to detect a urgent or critical error in dynamic web application is about 49% by automatic scanning and 96% by comprehensive expert analysis (white box method);
- Administration issues are 20% more frequent cause of a vulnerability than system development errors;
- 99% of web application are not compliant with PCI DSS standard requirements, and 48% of web applications are not compliant with criteria of ASV scanning by PCI DSS;
- Detailed white box method analysis allows to detect up to 91 vulnerabilities per web application, while automatic scanning – only 3;
- Compared to 2007, the number of sites with wide spread SQL Injection and Cross-site Scripting vulnerabilities fell by 13% and 20%, respectively, however, the number of sites with different types of Information Leakage rose by 24%. On the other hand, the probability to compromise a host automatically rose from 7 to 13 %.

5. DATA ANALYSIS

5.1. General analysis

T. 1 and P. 1 show the probability to detect vulnerabilities of different risk levels detected during audits and automatic scanning.

Thus, automatic scanning detected up to 86% sites with one or some vulnerabilities of medium (or higher) risk level (Urgent-High). Black box and white box analysis methods increase it to 92-98%, respectively.

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These results are greatly depend on the fact that detailed risk assessment analysis is more adequate and consider not only vulnerability type but its exploitation consequences and application design and implementation. Another important fact is that automatic scanning was made for hosting provider sites which in some cases have no active content, while security assessment is usually done for application with complicated business logic. That is that automatic scanning results can be interpret as typical Internet site scanning results, while black box and white box methods results are scanning results of interactive corporate web applications.

![Bar chart](chart.png)

**P. 1.** The probability to detect vulnerabilities of different risk levels

<table>
<thead>
<tr>
<th></th>
<th>ALL</th>
<th>Scans</th>
<th>BlackBox</th>
<th>WhiteBox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent</td>
<td>18.77%</td>
<td>16.70%</td>
<td>19.69%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Critical</td>
<td>45.22%</td>
<td>39.25%</td>
<td>74.76%</td>
<td>92.00%</td>
</tr>
<tr>
<td>High</td>
<td>72.27%</td>
<td>73.09%</td>
<td>58.51%</td>
<td>62.00%</td>
</tr>
<tr>
<td>Medium</td>
<td>36.56%</td>
<td>40.19%</td>
<td>12.05%</td>
<td>24.00%</td>
</tr>
<tr>
<td>Low</td>
<td>29.69%</td>
<td>34.45%</td>
<td>0.10%</td>
<td>4.00%</td>
</tr>
<tr>
<td>U+C</td>
<td>55.50%</td>
<td>49.40%</td>
<td>79.73%</td>
<td>96.00%</td>
</tr>
<tr>
<td>U+C+H</td>
<td>87.66%</td>
<td>86.38%</td>
<td>91.59%</td>
<td>98.48%</td>
</tr>
</tbody>
</table>
The most widespread vulnerabilities are Cross-Site Scripting, Information Leakage, SQL Injection, Insufficient Transport Layer Protection, Fingerprinting и HTTP Response Splitting (P. 2). As a rule, Cross-Site Scripting, SQL Injection and HTTP Response Splitting vulnerabilities are caused by design errors, while Information Leakage, Insufficient Transport Layer Protection and Fingerprinting are often caused by insufficient administration (e.g., access control).

P. 2. The most widespread vulnerabilities in web applications (% Vulns ALL)

P. 3. The probability to detect the most widespread vulnerabilities in web applications (% Sites ALL)
If we consider vulnerability origin as a whole (according to classification in Appendix 2) we’ll see that vulnerabilities caused by insufficient administration are 20% more frequent (P. 5). At the same time, there are up to 4 issues per site caused by administration flaws and up to 8 vulnerabilities caused by design errors (T. 2).

<table>
<thead>
<tr>
<th>Vulnerability in administration</th>
<th>41859</th>
<th>10347</th>
<th>42.91%</th>
<th>84.91%</th>
<th>4.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vulnerability in code</td>
<td>55695</td>
<td>7023</td>
<td>57.09%</td>
<td>57.63%</td>
<td>7.93</td>
</tr>
</tbody>
</table>
P. 5. The probability to detect vulnerabilities depending on their origin

Detailed web application analysis by black box and white box methods shows that appreciable percent of sites are vulnerable to Content Spoofing and Path Traversal (P. 6), and the probability to detect a vulnerability of SQL Injection type reaches 19% in this approach (P. 7).

P. 6. The most widespread vulnerabilities in web applications (% Vulns BlackBox & WhiteBox)
P. 7. The probability to detect the most widespread vulnerabilities in web applications (% Sites BlackBox & WhiteBox)

If we consider the prevalence of high risk level vulnerabilities in detailed web application analysis (P. 9) we’ll see that the most widespread is Credential/Session Prediction errors. SQL Injection, Path Traversal and implementation and configuration errors in authentication and authorization systems are also widespread.
P. 9. The probability to detect the most risky vulnerabilities in Web applications (% Sites BlackBox & WhiteBox)

If we consider the probability to detect vulnerabilities in terms of web resource visitors and web server impact (according to classification in appendix 2), the server-side vulnerabilities are the most widespread (P. 10). But the vulnerability distribution by impact type per site is irregular and greatly depends on used vulnerability search method (P. 11).

P. 10. The probability to detect vulnerability by impact type
P. 11. Vulnerabilities per site by different search methods (No. Vulns on Site)

### T. 3 Vulnerabilities by impact

<table>
<thead>
<tr>
<th>Method</th>
<th>No. of Vulns</th>
<th>No. of Sites</th>
<th>% Vulns</th>
<th>% Sites</th>
<th>No. Vulns on Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL Stat (Server-Side)</td>
<td>50856</td>
<td>10125</td>
<td>52.13%</td>
<td>83.09%</td>
<td>5.02</td>
</tr>
<tr>
<td>ALL Stat (Client-Side)</td>
<td>46698</td>
<td>7580</td>
<td>47.87%</td>
<td>62.20%</td>
<td>6.16</td>
</tr>
<tr>
<td>Scans (Server-Side)</td>
<td>19746</td>
<td>8922</td>
<td>55.60%</td>
<td>85.40%</td>
<td>2.21</td>
</tr>
<tr>
<td>Scans (Client-Side)</td>
<td>15767</td>
<td>6607</td>
<td>44.40%</td>
<td>63.24%</td>
<td>2.39</td>
</tr>
<tr>
<td>BlackBox (Server-Side)</td>
<td>4260</td>
<td>804</td>
<td>23.77%</td>
<td>76.86%</td>
<td>5.30</td>
</tr>
<tr>
<td>BlackBox (Client-Side)</td>
<td>13665</td>
<td>747</td>
<td>76.23%</td>
<td>71.41%</td>
<td>18.29</td>
</tr>
<tr>
<td>WhiteBox (Server-Side)</td>
<td>17700</td>
<td>145</td>
<td>63.73%</td>
<td>96.67%</td>
<td>122.07</td>
</tr>
<tr>
<td>WhiteBox (Client-Side)</td>
<td>10072</td>
<td>117</td>
<td>36.27%</td>
<td>78.00%</td>
<td>86.09</td>
</tr>
</tbody>
</table>
5.2. Data analysis according to PCI DSS requirements

If we consider data sets about vulnerable Web applications according to PCI DSS requirements, we can easily sort (T. 4) those that are about certain vulnerability elimination in Web applications. In addition, PCI DSS Technical and Operational Requirements for Approved Scanning Vendors (ASVs) includes similar requirements but affects only ASV scanning by PCI (T. 5).

T. 4 PCI DSS requirements for Web application security

<table>
<thead>
<tr>
<th>PCI DSS v.1.2 requirements</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5 Develop all web applications (internal and external, and including web administrative access to application) based on secure coding guidelines such as the Open Web Application Security Project Guide. Cover prevention of common coding vulnerabilities in software development processes, to include the following:</td>
<td>-</td>
</tr>
<tr>
<td>6.5.1 Cross-site scripting (XSS)</td>
<td>6.5.1 Cross-site scripting (XSS) (Validate all parameters before inclusion.)</td>
</tr>
<tr>
<td>6.5.2 Injection flaws, particularly SQL injection. Also consider LDAP and Xpath injection flaws as well as other injection flaws.</td>
<td>6.5.2 Injection flaws, particularly SQL injection (Validate input to verify user data cannot modify meaning of commands and queries.)</td>
</tr>
<tr>
<td>6.5.3 Malicious file execution</td>
<td>6.5.3 Malicious file execution (Validate input to verify application does not accept filenames or files from users.)</td>
</tr>
<tr>
<td>6.5.5 Cross-site request forgery (CSRF)</td>
<td>6.5.5 Cross-site request forgery (CSRF) (Do not reply on authorization credentials and tokens automatically submitted by browsers.)</td>
</tr>
<tr>
<td>6.5.6 Information leakage and improper error handling</td>
<td>6.5.6 Information leakage and improper error handling (Do not leak information via error messages or other means.)</td>
</tr>
<tr>
<td>6.5.7 Broken authentication and session management</td>
<td>6.5.7 Broken authentication and session management (Properly authenticate users and protect account credentials and session tokens.)</td>
</tr>
<tr>
<td>6.5.9 Insecure communications</td>
<td>6.5.9 Insecure communications (Properly encrypt all authenticated and sensitive communications.)</td>
</tr>
</tbody>
</table>
6.6 For public-facing web applications, address new threats and vulnerabilities on an ongoing basis and ensure these applications are protected against known attacks by either of the following methods:
- Reviewing public-facing web applications via manual or automated application vulnerability security assessment tools or methods, at least annually and after any changes.
- Installing a web-application firewall in front of public-facing web applications.

### T. 5 PCI DSS Technical and Operational Requirements for Approved Scanning Vendors (ASVs) for WEB

<table>
<thead>
<tr>
<th>Technical and Operational Requirements for Approved Scanning Vendors (ASVs) v.1.1</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Web Server Check</strong></td>
<td>The ASV scanning solution must be able to test for all known vulnerabilities and configuration issues on web servers. New exploits are routinely discovered in web server products. The ASV scanning solution must be able to detect and report known exploits.</td>
</tr>
<tr>
<td>Browsing of directories on a web server is not a good practice. The ASV scanning solution must be able to scan the web site and verify that directory browsing is not possible on the server.</td>
<td></td>
</tr>
<tr>
<td>The ASV scanning solution must be able to detect all known CGI vulnerabilities.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Custom Web Application Check</strong></th>
<th>The ASV scanning solution must be able to detect the following application vulnerabilities and configuration issues:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Unvalidated parameters which lead to SQL injection attacks</td>
<td></td>
</tr>
<tr>
<td>- Cross-site scripting (XSS) flaws</td>
<td></td>
</tr>
</tbody>
</table>

Assessing collected data statistics by criteria from T. 4 and T. 5, we conclude the following (see T. 6 and P. 12 – 14).
<table>
<thead>
<tr>
<th>PCI DSS v.1.2 requirement</th>
<th>Non compliant. ALL (% Sites)</th>
<th>Non compliant. Scans (% Sites)</th>
<th>Non compliant. BlackBox (% Sites)</th>
<th>Non compliant. WhiteBox (% Sites)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5.1 Cross-site scripting (XSS)</td>
<td>38.45%</td>
<td>37.66%</td>
<td>56.41%</td>
<td>58.67%</td>
</tr>
<tr>
<td>6.5.2 Injection flaws. particularly SQL injection. Also consider LDAP and Xpath injection flaws as well as other injection flaws.</td>
<td>14.55%</td>
<td>12.70%</td>
<td>19.31%</td>
<td>64.00%</td>
</tr>
<tr>
<td>6.5.3 Malicious file execution</td>
<td>0.94%</td>
<td>0.08%</td>
<td>1.05%</td>
<td>8.67%</td>
</tr>
<tr>
<td>6.5.5 Cross-site request forgery (CSRF)</td>
<td>1.32%</td>
<td>0.02%</td>
<td>7.93%</td>
<td>0.67%</td>
</tr>
<tr>
<td>6.5.6 Information leakage and improper error handling</td>
<td>66.67%</td>
<td>74.05%</td>
<td>38.24%</td>
<td>54.00%</td>
</tr>
<tr>
<td>6.5.7 Broken authentication and session management</td>
<td>7.62%</td>
<td>0.52%</td>
<td>30.98%</td>
<td>71.33%</td>
</tr>
<tr>
<td>6.5.9 Insecure communications</td>
<td>34.42%</td>
<td>39.96%</td>
<td>0.00%*</td>
<td>17.33%</td>
</tr>
</tbody>
</table>

Technical and Operational Requirements for Approved Scanning Vendors (ASVs) v.1.1

| Web Server Check | Inapplicable | 5.73% | Inapplicable | Inapplicable |
| Custom Web Application Check | Inapplicable | 44.92% | Inapplicable | Inapplicable |

* Vulnerability of this class are not included into reports during web application security assessment by black box method.
P 12. The distribution of sites non compliant to PCI DSS

P 13. Compliance level of Web application to PCI DSS (QSA) requirements
P 14. Compliance level of Web application to PCI DSS (ASV) requirements

Thus, more than 48% of scanned Web applications are not compliant to PCI DSS requirements by ASV scanning. Meanwhile, deeper analysis shows that 99% of Web applications are not complaint to the standard requirements.
6. PARTICIPATION

If you represent an organization that performs vulnerability assessments on websites, particular in those in custom web applications, through a manual or automated process and would like to participate please let us know. Once statistics are compiled, a report will be distributed, and all contributors will receive a logo on the project pages as well as on other deliverables in appreciate of their contribution. Please contact Sergey Gordeychik (gordey@ptsecurity.ru).
# APPENDIX 1: RISK ASSESSMENT METHODOLOGY

## T. 8 Risk level assessment routine

<table>
<thead>
<tr>
<th>Threat Classification</th>
<th>Basic CVSS Score</th>
<th>PCI DSS Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abuse of Functionality</td>
<td>4 (AV:N/AC:H/Au:N/C:P/I:P/A:N)</td>
<td>Medium</td>
</tr>
<tr>
<td>Buffer Overflow</td>
<td>10 (AV:N/AC:L/Au:N/C:C/I:C/A:C)</td>
<td>Urgent</td>
</tr>
<tr>
<td>Content Spoofing</td>
<td>5 (AV:N/AC:L/Au:N/C:N/I:P/A:N)</td>
<td>High</td>
</tr>
<tr>
<td>Credential/Session Prediction</td>
<td>6.8 (AV:N/AC:M/Au:N/C:P/I:P/A:P)</td>
<td>Critical</td>
</tr>
<tr>
<td>Cross-Site Request Forgery</td>
<td>5 (AV:N/AC:L/Au:N/C:N/I:P/A:N)</td>
<td>High</td>
</tr>
<tr>
<td>Denial of Service</td>
<td>7.8 (AV:N/AC:L/Au:N/C:N/I:N/A:C)</td>
<td>High</td>
</tr>
<tr>
<td>Format String Attack</td>
<td>10 (AV:N/AC:L/Au:N/C:C/I:C/A:C)</td>
<td>Urgent</td>
</tr>
<tr>
<td>HTTP Request Smuggling</td>
<td>6.4 (AV:N/AC:L/Au:N/C:P/I:P/A:N)</td>
<td>Critical</td>
</tr>
<tr>
<td>Integer Overflow</td>
<td>10 (AV:N/AC:L/Au:N/C:C/I:C/A:C)</td>
<td>Urgent</td>
</tr>
<tr>
<td>LDAP Injection</td>
<td>10 (AV:N/AC:L/Au:N/C:C/I:C/A:C)</td>
<td>Urgent</td>
</tr>
<tr>
<td>Mail Command Injection</td>
<td>5 (AV:N/AC:L/Au:N/C:N/I:P/A:N)</td>
<td>High</td>
</tr>
<tr>
<td>OS Commanding</td>
<td>10 (AV:N/AC:L/Au:N/C:C/I:C/A:C)</td>
<td>Urgent</td>
</tr>
<tr>
<td>Path Traversal</td>
<td>7.8 (AV:N/AC:L/Au:N/C:C/I:N/A:N)</td>
<td>Critical</td>
</tr>
<tr>
<td>Predictable Resource Location</td>
<td>5 (AV:N/AC:L/Au:N/C:P/I:N/A:N)</td>
<td>High</td>
</tr>
<tr>
<td>Threat</td>
<td>Score</td>
<td>Rating</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Remote File Inclusion</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>Routing Detour</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>SOAP Array Abuse</td>
<td>7.8</td>
<td>High</td>
</tr>
<tr>
<td>SSI Injection</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>Session Fixation</td>
<td>6.8</td>
<td>Critical</td>
</tr>
<tr>
<td>SQL Injection</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>URL Redirectors</td>
<td>2.6</td>
<td>Medium</td>
</tr>
<tr>
<td>XPath Injection</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>XML Attribute Blowup</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>XML External Entity</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>XML Entity Expansion</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>XML Injection</td>
<td>7.5</td>
<td>Critical</td>
</tr>
<tr>
<td>XQuery Injection</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>Application Misconfiguration</td>
<td>5.1</td>
<td>Medium</td>
</tr>
<tr>
<td>Directory Indexing</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>Fingerprinting</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td>Improper Parsing</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>Improper Permissions</td>
<td>10</td>
<td>Urgent</td>
</tr>
<tr>
<td>Information leakage</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>Insecure Indexing</td>
<td>5</td>
<td>High</td>
</tr>
<tr>
<td>Insufficient Anti-automation</td>
<td>4</td>
<td>Medium</td>
</tr>
<tr>
<td>Insufficient Authentication</td>
<td>6.8</td>
<td>Critical</td>
</tr>
<tr>
<td>Insufficient Authorization</td>
<td>6.8</td>
<td>Critical</td>
</tr>
<tr>
<td>Vulnerability</td>
<td>Impact</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>Insufficient Data Protection</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Insufficient Process Validation</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Insufficient Session Expiration</td>
<td>Critical</td>
<td></td>
</tr>
<tr>
<td>Insufficient Transport Layer Protection</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Server Misconfiguration</td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>

8. APPENDIX 2: ADDITIONAL VULNERABILITY CLASSIFICATION

T. 9 Vulnerability classification by origin and impact

<table>
<thead>
<tr>
<th>Threat Classification</th>
<th>Vulnerability in</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abuse of Functionality</td>
<td>code</td>
<td>server-side</td>
</tr>
<tr>
<td>Brute Force Attack</td>
<td>administration</td>
<td>server-side</td>
</tr>
<tr>
<td>Buffer Overflow</td>
<td>code</td>
<td>server-side</td>
</tr>
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<tr>
<td>Directory Indexing</td>
<td>administration</td>
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<tr>
<td>Fingerprinting</td>
<td>administration</td>
<td>server-side</td>
</tr>
<tr>
<td>Improper Parsing</td>
<td>code</td>
<td>server-side</td>
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Improper Permissions  administration  server-side
Information leakage  administration  server-side
Insecure Indexing  administration  server-side
Insufficient Anti-automation  code  server-side
Insufficient Authentication  code  server-side
Insufficient Authorization  code  server-side
Insufficient Data Protection  administration  server-side
Insufficient Process Validation  code  server-side
Insufficient Session Expiration  code  server-side
Insufficient Transport Layer Protection  administration  client-side
Server Misconfiguration  administration  server-side

9. APPENDIX 3: STATISTICS

Overall Data

<table>
<thead>
<tr>
<th>Threat Classification</th>
<th>N of Vulns</th>
<th>N of Sites</th>
<th>% Vulns</th>
<th>% Sites</th>
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<td>0.00%</td>
</tr>
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<td>0.01%</td>
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### T. 11 Vulnerabilities distribution by risk

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<th>N of Sites</th>
<th>% Sites</th>
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<td>45.22%</td>
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### Automatic scans

### T. 12 General statistics

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<th>N of Sites</th>
<th>% Vulns</th>
<th>% Sites</th>
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<td>0.01%</td>
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<td>0.05%</td>
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<td>0.09%</td>
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<td>0.00%</td>
<td>0.00%</td>
<td></td>
</tr>
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<td>0.00%</td>
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</tr>
<tr>
<td>Mail Command Injection</td>
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<td>0.00%</td>
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<td>XML External Entity</td>
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<td>0.00%</td>
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</tr>
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</tr>
<tr>
<td>XQuery Injection</td>
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<td>0.00%</td>
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<tr>
<td>Application Misconfiguration</td>
<td>48</td>
<td>0.14%</td>
<td>0.35%</td>
<td></td>
</tr>
</tbody>
</table>
Directory Indexing | 12 | 11 | 0.03% | 0.11%
Fingerprinting | 3604 | 3587 | 10.15% | 34.34%
Improper Parsing | 1463 | 523 | 4.12% | 5.01%
Improper Permissions | 2 | 2 | 0.01% | 0.02%
Information leakage | 11134 | 7593 | 31.35% | 72.68%
Insecure Indexing | 8 | 7 | 0.02% | 0.07%
Insufficient Anti-automation | 0 | 0 | 0.00% | 0.00%
Insufficient Authentication | 24 | 15 | 0.07% | 0.14%
Insufficient Authorization | 14 | 14 | 0.04% | 0.13%
Insufficient Data Protection | 10 | 10 | 0.03% | 0.10%
Insufficient Process Validation | 12 | 11 | 0.03% | 0.11%
Insufficient Session Expiration | 1 | 1 | 0.00% | 0.01%
Insufficient Transport Layer Protection | 4194 | 4175 | 11.81% | 39.96%
Server Misconfiguration | 22 | 22 | 0.06% | 0.21%
Total | 35513 | 10447

T. 13 Vulnerabilities distribution by risk Threat rank

<table>
<thead>
<tr>
<th>Threat rank</th>
<th>N of Vulns</th>
<th>N of Sites</th>
<th>% Sites</th>
<th>% Sites</th>
</tr>
</thead>
<tbody>
<tr>
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<td>32.89%</td>
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Page 28 of 35
## T. 14 General statistics Threat Classification

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<td>0.10%</td>
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<td>0.10%</td>
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**White Box**

T. 15 Vulnerabilities distribution by risk Threat rank

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<th>N of Sites</th>
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T. 16 General statistics Threat Classification
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<td>0.00%</td>
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T. 17 Vulnerabilities distribution by risk Threat rank

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<th>N of Sites</th>
<th>N of Sites</th>
<th>% Sites</th>
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<td>0.03%</td>
<td>4.00%</td>
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