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**SUBJECT: Recent Attacks on Government Websites by NullCrew**

The MS-ISAC has been made aware of attacks against multiple state government websites. The group claiming responsibility for these attacks is known as "NullCrew". NullCrew has been actively involved in attacking the databases of corporations, government agencies, and universities, including Sony Mobile, the European Space Agency, and the FBI. In the most recent attacks, the group was able to obtain and subsequently publish information on the Internet from state government websites that had been breached. Information released as a result of these breaches included database and table names as well as the data contained within the tables such as usernames, clear-text passwords, and user e-mail addresses.

The MS-ISAC has been in communication with the states affected by these breaches. One state reported that the breach may have been the result of a SQL injection vulnerability. Analysis of other website breaches indicate that they may be linked to exploitation of vulnerabilities in content management system (CMS) software which have not had the latest vendor patches or code revisions applied.

These recent attacks on state websites and the use of web applications as the primary attack vector, has once again underscored the continued prevalence of the exploitation of vulnerabilities in web applications as a viable means of data exfiltration.

The best way to protect your web applications from SQL injection is to ensure developers do not allow client-supplied data the ability to modify SQL statement syntax. **All user-supplied data *must be validated*** before it is sent to a backend database. Examples of input attributes that should be checked are type, length, and format.

There are typically two ways that a developer or administrator can prevent invalid user input to be processed by the application: either disallow bad characters (black listing) or only allow required characters (white listing). The second option is generally considered to be more secure because it is possible that filters may fail due to new attack methods, different character encoding, and other attack variables. It is preferable to take the time to determine exactly what input is needed and then to reject any incoming request that does not adhere to the requirements.

There are a number of online resources to assist developers in performing input sanitization. Please refer to the references below for links to these secure programming resources.

#### **RECOMMENDATIONS:**

The following actions should be considered:

- Validate and escape all user provided input before passing it to the backend database.

- Avoid using dynamic SQL whenever possible. Dynamic SQL refers to any situation in which user-supplied input is concatenated with pre-defined SQL. Stored procedures or parameterized SQL can be used as a safer alternative.

- Apply the principle of least-privilege to web applications that interact with your database. It is a good idea to create an account for your web applications that has as few data access rights as possible to limit

the scope of damage in the event that a system is compromised.  
Turn off debugging information as it is often used to gather data for subsequent attacks.  
Review server applications for possible SQL injection vulnerabilities, and apply all necessary code revisions and appropriate vendor patches after appropriate testing.  
Consider implementing Web Application Firewall (WAF) technology on the web servers.  
Consider encrypting the sensitive information in the database.  
Apply all necessary code revisions and appropriate vendor patches to content management system (CMS) software after appropriate testing.

If you believe you are experiencing an attack involving SQL injection or related to your CMS software, please contact the MS-ISAC if you need any additional assistance.

#### **REFERENCES:**

##### **Open Web Application Security Project (OWASP)**

[http://www.owasp.org/index.php/SQL\\_injection](http://www.owasp.org/index.php/SQL_injection)

##### **Web Application Security Consortium (WASC)**

[http://www.webappsec.org/projects/threat/classes/sql\\_injection.shtml](http://www.webappsec.org/projects/threat/classes/sql_injection.shtml)

##### **Microsoft**

<http://blogs.iis.net/nazim/archive/2008/04/28/filtering-sql-injection-from-classic-asp.aspx>

##### **CodePlex**

<http://www.codeplex.com/IIS6SQLInjection>

##### **Information Week**

<http://www.informationweek.com/news/security/attacks/229900111>

##### **InfoSecurity**

<http://www.infosecurity-us.com/view/18265/another-comodo-partner-attacked-using-sql-injection/>