QUALYS ENTERPRISE

NCSA - NDS Labs Lvl543

November 29, 2016

Report Summary	
User Name:	Chris Clausen
Login Name:	ncsa_cc
Company:	NCSA
User Role:	Unit Manager
Address:	1205 W. Clark St
City:	Urbana
State:	Illinois
Zip:	61801
Country:	United States of America
Created:	11/29/2016 at 14:16:59 (GMT)
Template Title:	Level 543 confirmed - exclude non-running kernels
Asset Groups:	NCSA - NDS Labs
IPs:	-
Sort by:	Host
Trend Analysis:	Last 1 week
Date Range:	November 22, 2016 - November 29, 2016
Active Hosts:	3
Hosts Matching Filters:	2

Summary of Vulnerabilities

Vulnerabilities Total	6 (0) -	Security Risk (Avg)	3.0	Business Risk	9/100

by Status

Status	Confirmed	Potential	Total
New	0	0	0
Active	6	0	6
Re-Opened	0	0	0
Total	6	0	6
Fixed	0	0	0
Changed	0	0	0

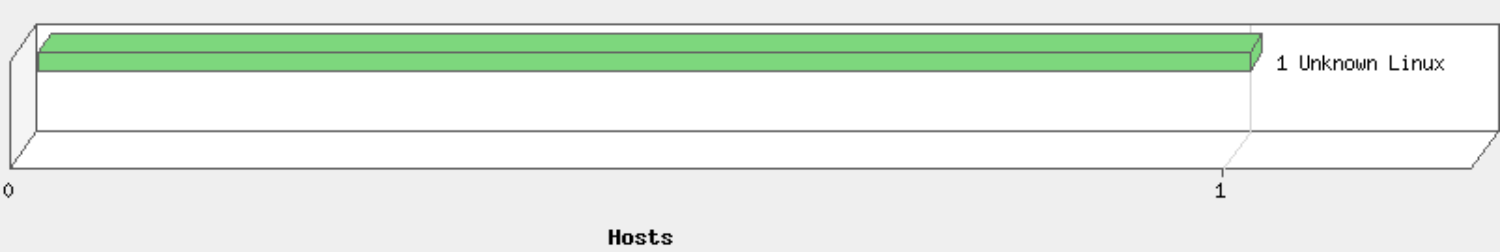
by Severity

Severity	Confirmed	(Trend)	Potential	(Trend)	Information Gathered	Total	(Trend)
5	0	(0) -	0	(0) -	-	0	(0) -
4	0	(0) -	0	(0) -	-	0	(0) -
3	6	(0) -	0	(0) -	-	6	(0) -
2	0	(0) -	0	(0) -	-	0	(0) -
1	0	(0) -	0	(0) -	-	0	(0) -
Total	6	(0) -	0	(0) -	-	6	(0) -

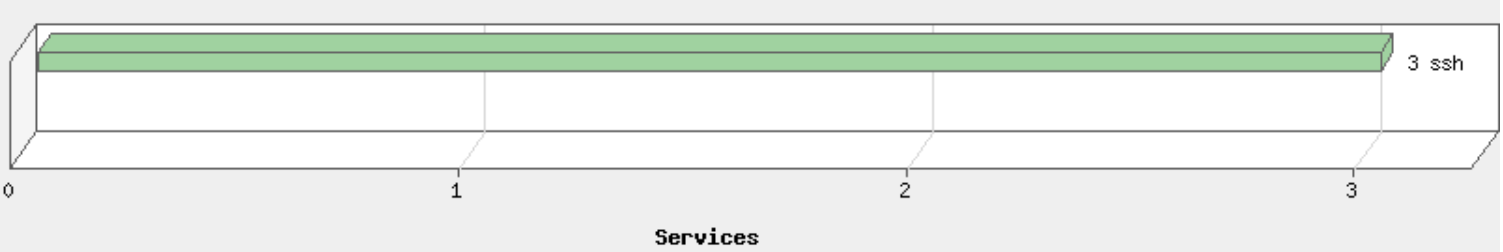
5 Biggest Categories

Category	Confirmed	(Trend)	Potential	(Trend)	Information Gathered	Total	(Trend)
General remote services	5	(0) -	0	(0) -	-	5	(0) -
Local	1	(0) -	0	(0) -	-	1	(0) -
Total	6	(0) -	0	(0) -	-	6	(0) -

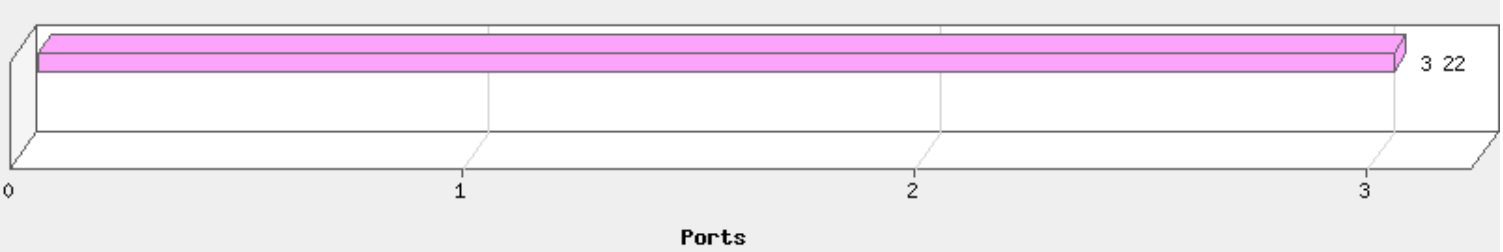
Operating Systems Detected



Services Detected



Ports Detected



Detailed Results

141.142.210.100 (*.workbench.nationaldataservice.org, -) Unknown Linux

Vulnerabilities (2)

3 cURL Multiple Security Vulnerabilities Active

QID:	370198
Category:	Local
CVE ID:	CVE-2016-8615, CVE-2016-8616, CVE-2016-8617, CVE-2016-8618, CVE-2016-8619, CVE-2016-8620, CVE-2016-8621, CVE-2016-8622, CVE-2016-8623, CVE-2016-8624, CVE-2016-8625
Vendor Reference:	cURL 7.51.0
Bugtraq ID:	-
Service Modified:	11/29/2016
User Modified:	-
Edited:	No
PCI Vuln:	Yes
Ticket State:	

First Detected: 11/08/2016 at 13:06:08 (GMT)

Last Detected: 11/29/2016 at 13:10:18 (GMT)

Times Detected: 4

Last Fixed: N/A

THREAT:

cURL is a computer software project providing a library and command-line tool for transferring data using various protocols.
cURL contains the following vulnerabilities:
CVE-2016-8615: If cookie state is written into a cookie jar file that is later read back and used for subsequent requests, a malicious HTTP server can inject new cookies for arbitrary domains into said cookie jar.
CVE-2016-8616: When re-using a connection, curl was doing case insensitive comparisons of user name and password with the existing connections.
CVE-2016-8617: In libcurl's base64 encode function, the output buffer is allocated as follows without any checks on insize: malloc(insize * 4 / 3 + 4). On systems with 32-bit addresses in userspace (e.g. x86, ARM, x32), the multiplication in the expression wraps around if insize is at least 1GB of data. If this happens, an undersized output buffer will be allocated, but the full result will be written, thus causing the memory behind the output buffer to be overwritten.
CVE-2016-8618: The url_maprintf() function doubles an allocated memory area with realloc() and allows the size to wrap and become zero and when doing so realloc() returns NULL and frees the memory - in contrary to normal realloc() fails where it only returns NULL - causing libcurl to free the memory again in the error path.
CVE-2016-8619: In curl's implementation of the Kerberos authentication mechanism, the function read_data() in security.c is used to fill the necessary krb5 structures. When reading one of the length fields from the socket, it fails to ensure that the length parameter passed to realloc() is not set to 0. This would lead to realloc() getting called with a zero size and when doing so realloc() returns NULL and frees the memory - in contrary to normal realloc() fails where it only returns NULL - causing libcurl to free the memory again in the error path.
CVE-2016-8620: Glob parser write/read out of bounds when working on a numerical range through which curl will iterate.
CVE-2016-8621: If instead the piece of time that was sent in had the final digit cut off, thus ending with a single-digit, the date parser code would advance its read pointer one byte too much and end up reading out of bounds.
CVE-2016-8622: The URL percent-encoding decode function in libcurl is called curl_easy_unescape. Internally, even if this function would be made to allocate a unscape destination buffer larger than 2GB, it would return that new length in a signed 32 bit integer variable, thus the length would get either just truncated or both truncated and turned negative. That could then lead to libcurl writing outside of its heap based buffer.
CVE-2016-8623: When cookies to be sent to a server are collected, the matching function collects all cookies to send and the cookie lock is released immediately afterwards. That function however only returns a list with references back to the original strings for name, value, path and so on. Therefore, if another thread quickly takes the lock and frees one of the original cookie structs together with its strings, a use-after-free can occur and lead to information disclosure.
CVE-2016-8624: curl doesn't parse the authority component of the URL correctly when the host name part ends with a '#' character, and could instead be tricked into connecting to a different host.
CVE-2016-8625: When curl is built with libidn to handle International Domain Names (IDNA), it translates them to puny code for DNS resolving using the IDNA 2003 standard, while IDNA 2008 is the modern and up-to-date IDNA standard. This misalignment causes problems, leading to users potentially and unknowingly issuing network transfer requests to the wrong host.
Affected Versions:
cURL versions prior to 7.51.0

IMPACT:

Depending on the vulnerability being exploited, an attacker could cause a denial of service condition, execute arbitrary code or access sensitive information.

SOLUTION:

Customers are advised to upgrade to cURL 7.51.0 (https://curl.haxx.se/download.html) or later versions to remediate these vulnerabilities.
Patch:
Following are links for downloading patches to fix the vulnerabilities:
cURL 7.51.0 or later (https://curl.haxx.se/download.html)

COMPLIANCE:

Not Applicable

EXPLOITABILITY:

There is no exploitability information for this vulnerability.

ASSOCIATED MALWARE:

There is no malware information for this vulnerability.

RESULTS:

curl 7.50.1 (x86_64-cros-linux-gnu) libcurl/7.50.1 OpenSSL/1.0.2h zlib/1.2.8
Protocols: dict file ftp ftps gopher http https imap imaps pop3 pop3s rtsp smtp smtps telnet tftp
Features: IPv6 Largefile NTLM SSL libz TLS-SRP UnixSockets

3 SSL/TLS Server supports TLSv1.0 port 443/tcp over SSL Active

QID:	38628
Category:	General remote services
CVE ID:	-
Vendor Reference:	-
Bugtraq ID:	-
Service Modified:	07/14/2016
User Modified:	-
Edited:	No

PCI Vuln: No
Ticket State:

First Detected: 10/07/2016 at 15:08:07 (GMT)
Last Detected: 11/28/2016 at 16:06:15 (GMT)
Times Detected: 50
Last Fixed: N/A

THREAT:
TLS is capable of using a multitude of ciphers (algorithms) to create the public and private key pairs.
For example if TLSv1.0 uses either the RC4 stream cipher, or a block cipher in CBC mode.
RC4 is known to have biases and the block cipher in CBC mode is vulnerable to the POODLE attack.
TLSv1.0, if configured to use the same cipher suites as SSLv3, includes a means by which a TLS implementation can downgrade the connection to SSL v3.0, thus weakening security.
A POODLE-type (https://blog.qualys.com/ssllabs/2014/12/08/poodle-bites-tls) attack could also be launched directly at TLS without negotiating a downgrade.
This QID will be marked as a Fail for PCI as of November 1st, 2016 in accordance with the new standards. For existing implementations, Merchants will be able to submit a PCI False Positive / Exception Request and provide proof of their Risk Mitigation and Migration Plan, which will result in a pass for PCI up until June 30th, 2018.
Further details can be found at: NEW PCI DSS v3.2 and Migrating from SSL and Early TLS v1.1 (https://community.qualys.com/message/34120)

IMPACT:
An attacker can exploit cryptographic flaws to conduct man-in-the-middle type attacks or to decryption communications.
For example: An attacker could force a downgrade from the TLS protocol to the older SSLv3.0 protocol and exploit the POODLE vulnerability, read secure communications or maliciously modify messages.
A POODLE-type (https://blog.qualys.com/ssllabs/2014/12/08/poodle-bites-tls) attack could also be launched directly at TLS without negotiating a downgrade.

SOLUTION:
Disable the use of TLSv1.0 protocol in favor of a cryptographically stronger protocol such as TLSv1.2.

COMPLIANCE:
Not Applicable

EXPLOITABILITY:
There is no exploitability information for this vulnerability.

ASSOCIATED MALWARE:
There is no malware information for this vulnerability.

RESULTS:
TLSv1.0 is supported

141.142.210.172 (*.test.nationaldataservice.org, -)

Vulnerabilities (4)

3 SSL/TLS Server supports TLSv1.0 port 443/tcp over SSL Active

QID: 38628
Category: General remote services
CVE ID: -
Vendor Reference: -
Bugtraq ID: -
Service Modified: 07/14/2016
User Modified: -
Edited: No
PCI Vuln: No

Ticket State:

First Detected: 10/04/2016 at 16:08:12 (GMT)

Last Detected: 11/28/2016 at 16:06:15 (GMT)

Times Detected: 54

Last Fixed: N/A

THREAT:

TLS is capable of using a multitude of ciphers (algorithms) to create the public and private key pairs.
For example if TLSv1.0 uses either the RC4 stream cipher, or a block cipher in CBC mode.
RC4 is known to have biases and the block cipher in CBC mode is vulnerable to the POODLE attack.
TLSv1.0, if configured to use the same cipher suites as SSLv3, includes a means by which a TLS implementation can downgrade the connection to SSL v3.0, thus weakening security.
A POODLE-type (https://blog.qualys.com/ssllabs/2014/12/08/poodle-bites-tls) attack could also be launched directly at TLS without negotiating a downgrade.
This QID will be marked as a Fail for PCI as of November 1st, 2016 in accordance with the new standards. For existing implementations, Merchants will be able to submit a PCI False Positive / Exception Request and provide proof of their Risk Mitigation and Migration Plan, which will result in a pass for PCI up until June 30th, 2018.
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For example: An attacker could force a downgrade from the TLS protocol to the older SSLv3.0 protocol and exploit the POODLE vulnerability, read secure communications or maliciously modify messages.
A POODLE-type (https://blog.qualys.com/ssllabs/2014/12/08/poodle-bites-tls) attack could also be launched directly at TLS without negotiating a downgrade.

SOLUTION:

Disable the use of TLSv1.0 protocol in favor of a cryptographically stronger protocol such as TLSv1.2.

COMPLIANCE:

Not Applicable

EXPLOITABILITY:

There is no exploitability information for this vulnerability.

ASSOCIATED MALWARE:

There is no malware information for this vulnerability.

RESULTS:

TLSv1.0 is supported

3 SSL/TLS Server supports TLSv1.0 port 10250/tcp over SSL Active

QID:	38628
Category:	General remote services
CVE ID:	-
Vendor Reference:	-
Bugtraq ID:	-
Service Modified:	07/14/2016
User Modified:	-
Edited:	No
PCI Vuln:	No

Ticket State:

First Detected: 10/04/2016 at 16:08:12 (GMT)

Last Detected: 11/28/2016 at 16:06:15 (GMT)

Times Detected: 54

Last Fixed: N/A

THREAT:

TLS is capable of using a multitude of ciphers (algorithms) to create the public and private key pairs.
For example if TLSv1.0 uses either the RC4 stream cipher, or a block cipher in CBC mode.
RC4 is known to have biases and the block cipher in CBC mode is vulnerable to the POODLE attack.
TLSv1.0, if configured to use the same cipher suites as SSLv3, includes a means by which a TLS implementation can downgrade the connection to SSL v3.0, thus weakening security.
A POODLE-type (https://blog.qualys.com/ssllabs/2014/12/08/poodle-bites-tls) attack could also be launched directly at TLS without negotiating a downgrade.
This QID will be marked as a Fail for PCI as of November 1st, 2016 in accordance with the new standards. For existing implementations, Merchants will be able to submit a PCI False Positive / Exception Request and provide proof of their Risk Mitigation and Migration Plan, which will result in a pass for PCI up until June 30th, 2018.
Further details can be found at: NEW PCI DSS v3.2 and Migrating from SSL and Early TLS v1.1 (https://community.qualys.com/message/34120)

IMPACT:

An attacker can exploit cryptographic flaws to conduct man-in-the-middle type attacks or to decryption communications.
For example: An attacker could force a downgrade from the TLS protocol to the older SSLv3.0 protocol and exploit the POODLE vulnerability, read secure communications or maliciously modify messages.
A POODLE-type (https://blog.qualys.com/ssllabs/2014/12/08/poodle-bites-tls) attack could also be launched directly at TLS without negotiating a downgrade.

SOLUTION:

Disable the use of TLSv1.0 protocol in favor of a cryptographically stronger protocol such as TLSv1.2.

COMPLIANCE:

Not Applicable

EXPLOITABILITY:

There is no exploitability information for this vulnerability.

ASSOCIATED MALWARE:

There is no malware information for this vulnerability.

RESULTS:

TLSv1.0 is supported

3 SSL/TLS use of weak RC4 cipher port 10250/tcp over SSL Active

QID:	38601
Category:	General remote services
CVE ID:	CVE-2013-2566, CVE-2015-2808
Vendor Reference:	-
Bugtraq ID:	91787
Service Modified:	01/29/2016
User Modified:	-
Edited:	No
PCI Vuln:	No
Ticket State:	

First Detected: 10/04/2016 at 16:08:12 (GMT)

Last Detected: 11/28/2016 at 16:06:15 (GMT)

Times Detected: 54

Last Fixed: N/A

THREAT:

Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS) protocols provide integrity, confidentiality and authenticity services to other protocols that lack these features.
SSL/TLS protocols use ciphers such as AES,DES, 3DES and RC4 to encrypt the content of the higher layer protocols and thus provide the confidentiality service. Normally the output of an encryption process is a sequence of random looking bytes. It was known that RC4 output has some bias in the output. Recently a group of researchers has discovered that the there is a stronger bias in RC4, which make statistical analysis of ciphertext more practical.
The described attack is to inject a malicious javascript into the victim's browser that would ensure that there are multiple connections being established with a target website and the same HTTP cookie is sent multiple times to the website in encrypted form. This provides the attacker a large set of ciphertext samples, that can be used for statistical analysis.

NOTE: On 3/12/15 NVD changed the CVSS v2 access complicity from high to medium. As a result Qualys revised the CVSS score to 4.3 immediately. On 5/4/15 Qualys is also revising the severity to level 3.

IMPACT:

If this attack is carried out and an HTTP cookie is recovered, then the attacker can use the cookie to impersonate the user whose cookie was recovered.
This attack is not very practical as it requires the attacker to have access to millions of samples of ciphertext, but there are certain assumptions that an attacker can make to improve the chances of recovering the cleartext from cihpertext. For examples HTTP cookies are either base64 encoded or hex digits. This information can help the attacker in their efforts to recover the cookie.

SOLUTION:

RC4 should not be used where possible. One reason that RC4 was still being used was BEAST and Lucky13 attacks against CBC mode ciphers in SSL and
TLS. However, TLSv 1.2 or later address these issues.

COMPLIANCE:

Not Applicable

EXPLOITABILITY:

There is no exploitability information for this vulnerability.

ASSOCIATED MALWARE:

There is no malware information for this vulnerability.

RESULTS:

CIPHER	KEY-EXCHANGE	AUTHENTICATION	MAC	ENCRYPTION(KEY-STRENGTH)	GRADE
TLSv1 WITH RC4 CIPHERs IS SUPPORTED					
RC4-SHA	RSA	RSA	SHA1	RC4(128)	MEDIUM
TLSv1.1 WITH RC4 CIPHERs IS SUPPORTED					
RC4-SHA	RSA	RSA	SHA1	RC4(128)	MEDIUM
TLSv1.2 WITH RC4 CIPHERs IS SUPPORTED					
RC4-SHA	RSA	RSA	SHA1	RC4(128)	MEDIUM

3 SSLv3.0/TLSv1.0 Protocol Weak CBC Mode Server Side Vulnerability (BEAST) port 10250/tcp over SSL Active

QID:	42366
Category:	General remote services
CVE ID:	CVE-2011-3389
Vendor Reference:	-
Bugtraq ID:	49388, 49778
Service Modified:	07/22/2015
User Modified:	-
Edited:	No
PCI Vuln:	No
Ticket State:	

First Detected: 10/04/2016 at 16:08:12 (GMT)

Last Detected: 11/28/2016 at 16:06:15 (GMT)

Times Detected: 54

Last Fixed: N/A

THREAT:

SSLv 3.0 and TLS v1.0 protocols are used to provide integrity, authenticity and privacy to other protocols such as HTTP and LDAP. They provide these services by using encryption for privacy, x509 certificates for authenticity and one-way hash functions for integrity. To encrypt data SSL and TLS can use block ciphers, which are encryption algorithms that can encrypt only a fixed block of original data to an encrypted block of the same size. Note that these ciphers will always obtain the same resulting block for the same original block of data. To achieve difference in the output the output of encryption is XORed with yet another block of the same size referred to as initialization vectors (IV). A special mode of operation for block ciphers known as CBC (cipher block chaining) uses one IV for the initial block and the result of the previous block for each subsequent block to obtain difference in the output of block cipher encryption.
In SSLv3.0 and TLSv1.0 implementation the choice CBC mode usage was poor because the entire traffic shares one CBC session with single set of initial IVs. The rest of the IV are as mentioned above results of the encryption of the previous blocks. The subsequent IV are available to the eavesdroppers. This allows an attacker with the capability to inject arbitrary traffic into the plain-text stream (to be encrypted by the client) to verify their guess of the plain-text preceding the injected block. If the attackers guess is correct then the output of the encryption will be the same for two

blocks.
For low entropy data it is possible to guess the plain-text block with relatively few number of attempts. For example for data that has 1000 possibilities the number of attempts can be 500.
For more information please see a paper by Gregory V. Bard. (http://eprint.iacr.org/2006/136.pdf)
NOTE:
The CVSS access complexity assigned by NIST to CVE-2011-3389 is 'Medium' which makes the base score 4.3. But Qualys has assigned access complexity to 'High' for server side, because Javascipt injection and MiTM capabilities and a vulnerable client are required to exploit this vulnerability. Therefore the Qualys CVSS score is 2.6.

IMPACT:

Recently attacks against the web authentication cookies have been described which used this vulnerability. If the authentication cookie is guessed by the attacker then the attacker can impersonate the legitimate user on the Web site which accepts the authentication cookie.

SOLUTION:

This attack was identified in 2004 and later revisions of TLS protocol which contain a fix for this. If possible, upgrade to TLSv1.1 or TLSv1.2. If upgrading to TLSv1.1 or TLSv1.2 is not possible, then disabling CBC mode ciphers will remove the vulnerability.
Setting your SSL server to prioritize RC4 ciphers mitigates this vulnerability. Microsoft has posted information including workarounds for IIS at KB2588513 (http://technet.microsoft.com/en-us/security/advisory/2588513).
Using the following SSL configuration in Apache mitigates this vulnerability:
SSLHonorCipherOrder On
SSLCipherSuite RC4-SHA:HIGH:!ADH
Qualys SSL/TLS Deployment Best Practices can be found here (https://www.ssllabs.com/projects/best-practices/).
Note: RC4 recommendation is only in situations where upgrade to TLSv1.2 is not possible. RC4 in TLS v1.0 has output bias problem as described in QID 38601. Therefore it is recommended to upgrade to TLS v1.2 or later.

COMPLIANCE:

Not Applicable

EXPLOITABILITY:

There is no exploitability information for this vulnerability.

ASSOCIATED MALWARE:

There is no malware information for this vulnerability.

RESULTS:

Available non CBC cipher	Server's choice	SSL version
RC4-SHA	ECDHE-RSA-DES-CBC3-SHA	TLSv1