

Moxa Command Injection / Cross Site Scripting / Vulnerable Software

Authored by T. Weber | Site [sec-consult.com](#)

Posted Sep 1, 2021

Many Moxa devices suffer from command injection, cross site scripting, and outdated software vulnerabilities.

tags | [exploit](#), [vulnerability](#), [xss](#)

advisories | [CVE-2013-1914](#), [CVE-2013-7423](#), [CVE-2015-0235](#), [CVE-2015-7547](#), [CVE-2016-1234](#), [CVE-2021-39278](#), [CVE-2021-39279](#)
SHA-256 | [91e5218cfa2c2452c1da0918b3b85328aad5bcf76352c949affc7a9a10a95a39](#) [Download](#) | [Favorite](#) | [View](#)

Related Files

Share This

Like

Twee

LinkedIn

Reddit

Digg

StumbleUpon

[Change Mirror](#)[Download](#)

SEC Consult Vulnerability Lab Security Advisory < 20210901-0 >

title: Multiple vulnerabilities
product: see "Vulnerable / tested versions"
vulnerable version: see "Vulnerable / tested versions"
fixed version: see "Solution"
CVE number: CVE-2021-39278, CVE-2021-39279
impact: High
homepage: <https://www.moxa.com/>
found: 2020-08-31
by: T. Weber (Office Vienna)
SEC Consult Vulnerability Lab

An integrated part of SEC Consult, an Atos company
Europe | Asia | North America

<https://www.sec-consult.com>

Vendor description:

"Together, We Create Change

Moxa is committed to making a positive impact around the world. We put our all behind this commitment--from our employees, to our products and supply chain.

In our local communities, we nurture and support the spirit of volunteering. We encourage our employees to contribute to community development, with an emphasis on ecology, education, and health.

In our products, we invest in social awareness programs and environment-friendly policies at every stage of the product lifecycle. We make sure our manufacturing meets the highest standards with regards to quality, ethics, and sustainability."

Source: <https://www.moxa.com/en/about-us/corporate-responsibility>

Business recommendation:

SEC Consult recommends to immediately apply the available patches from the vendor. A thorough security review should be performed by security professionals to identify further potential security issues.

Vulnerability overview/description:

1) Authenticated Command Injection (CVE-2021-39279)
An authenticated command injection vulnerability can be triggered by issuing a GET request to the "/forms/web_importTFTP" CGI program which is available on the web interface. An attacker can abuse this vulnerability to compromise the operating system of the device. This issue was found by emulating the firmware of the device.

2) Reflected Cross-Site Scripting via Manipulated Config-File (CVE-2021-39278)
Via a crafted config-file, a reflected cross-site scripting vulnerability can be exploited in the context of the victim's browser. This config-file can be uploaded to the device via the "Config Import Export" tab in the main menu.

3) Known GNU glibc Vulnerabilities (CVE-2015-0235)
The used GNU glibc in version 2.9 is outdated and contains multiple known vulnerabilities. One of the discovered vulnerabilities (CVE-2015-0235, gethostbyname "GHOST" buffer overflow) was verified by using the MEDUSA scalable firmware runtime.

4) Multiple Outdated Software Components
Multiple outdated software components containing vulnerabilities were found by the IoT Inspector.

The vulnerabilities 1), 2) and 3) were manually verified on an emulated device by using the MEDUSA scalable firmware runtime.

Proof of concept:

1) Authenticated Command Injection (CVE-2021-39279)
The vulnerability can be triggered by navigating in the web interface to the tab:

"Main Menu" -> "Maintenance" -> "Config Import Export"

The "TFTP Import" menu is prone to command injection via all parameters. To exploit the vulnerability, an IP address, a configuration path and a filename must be set.
If the filename is used to trigger the exploit, the payload in the interceptor proxy would be:

http://192.168.1.1/forms/web_importTFTP?serverIP=192.168.1.1&configPath=/&fileName=name'ping localhost -c 100'

2) Reflected Cross-Site Scripting via Manipulated Config-File (CVE-2021-39278)
The vulnerability can be triggered by navigating in the web interface to the tab:

"Main Menu" -> "Maintenance" -> "Config Import Export"

The "Config Import" menu is prone to reflected cross-site scripting via the upload of config files. Example of malicious config file:

[board]
deviceName="WAC-2004_0000<script>alert(document.cookie)</script>"
deviceLocation=""
[...]

Uploading such a crafted file triggers cross-site scripting as the erroneous value is displayed without filtering characters.

3) Known GNU glibc Vulnerabilities (CVE-2015-0235)
GNU glibc version 2.9 contains multiple CVEs like:
CVE-2016-1234, CVE-2015-7547, CVE-2013-7423, CVE-2013-1914, and more.

The gethostbyname buffer overflow vulnerability (GHOST) was checked with the help of the exploit code from <https://seclists.org/oss-sec/2015/q1/274>. It was compiled and executed on the emulated device to test the system.

4) Multiple Outdated Software Components
The IoT Inspector recognized multiple outdated software components with known vulnerabilities:

BusyBox 1.18.5 06/2011

File Archive: December 2022 <

Su	Mo	Tu	We	Th	Fr
Sa					
				1	2
3					
4	5	6	7	8	9
10					
11	12	13	14	15	16
17					
18	19	20	21	22	23
24					
25	26	27	28	29	30
31					

Top Authors In Last 30 Days

Red Hat 157 files
Ubuntu 76 files
LiquidWorm 23 files
Debian 21 files
nu11security 11 files
malvuln 11 files
Gentoo 9 files
Google Security Research 8 files
Julien Ahrens 4 files
T. Weber 4 files

File Tags

ActiveX (932)	December 2022
Advisory (79,754)	November 2022
Arbitrary (15,694)	October 2022
BBS (2,859)	September 2022
Bypass (1,619)	August 2022
CGI (1,018)	July 2022
Code Execution (8,926)	June 2022
Conference (673)	May 2022
Cracker (840)	April 2022
CSRF (3,290)	March 2022
DoS (22,602)	February 2022
Encryption (2,349)	January 2022
Exploit (50,359)	Older
File Inclusion (4,165)	
File Upload (946)	

File Archives

December 2022
November 2022
October 2022
September 2022
August 2022
July 2022
June 2022
May 2022
April 2022
March 2022
February 2022
January 2022
Older

Systems

Firewall (821)	AIX (426)
Info Disclosure (2,660)	Apple (1,926)
Intrusion Detection (867)	BSD (370)
Java (2,899)	CentOS (55)
JavaScript (821)	Cisco (1,917)
Kernel (6,291)	Debian (6,634)
Local (14,201)	Fedora (1,600)
Magazine (586)	FreeBSD (1,242)
Overflow (12,419)	Gentoo (4,272)
Perl (1,418)	HPUX (878)
PHP (5,093)	IOS (330)
Proof of Concept (2,291)	iPhone (108)
Protocol (3,435)	IRIX (220)
Python (1,467)	Juniper (67)
Remote (30,044)	Linux (44,315)
Root (3,504)	Mac OS X (684)
Ruby (594)	Mandriva (3,105)
Scanner (1,631)	NetBSD (255)
Security Tool (7,777)	OpenBSD (479)
Shell (3,103)	RedHat (12,469)
Shellcode (1,204)	Slackware (941)
Sniffer (886)	Solaris (1,607)

```
Dropbear SSH      2011.54  11/2011
GNU glibc         2.9      02/2009
Linux Kernel      2.6.27   10/2008
OpenSSL           0.9.7g   04/2005
Only found in the program "fw director"
OpenSSL           1.0.0     03/2010

Vulnerable / tested versions:
-----
The following firmware versions for various devices have been identified
to be vulnerable:
* WAC-2004           / 1.7
* WAC-1001          / 2.1
* WAC-1001-T         / 2.1
* OnCell G3470A-LTE-EU / 1.7
* OnCell G3470A-LTE-EU-T / 1.7
* TAP-323-EU-CT-T    / 1.3
* TAP-323-US-CT-T    / 1.3
* TAP-323-JP-CT-T    / 1.3
* WDR-3124A-EU       / 2.3
* WDR-3124A-EU-T     / 2.3
* WDR-3124A-US       / 2.3
* WDR-3124A-US-T     / 2.3

Vendor contact timeline:
-----
2020-10-09: Contacting vendor through moxa.crt@moxa.com.
2020-10-12: Contact sends PGP key for encrypted communication and asks for the
detailed advisory. Sent encrypted advisory to vendor.
2020-11-06: Status update from vendor regarding technical analysis. Vendor
requested more time for fixing the vulnerabilities as more products
are affected.
2020-11-09: Granted more time for fixing to vendor.
2020-11-10: Vendor asked for next steps regarding the advisory publication.
2020-11-11: Asked vendor for an estimation when a public disclosure is possible.
2020-11-16: Vendor responded that the product team can give a rough feedback.
2020-11-25: Asked for a status update.
2020-11-25: Vendor responded that the investigation is not done yet.
2020-12-14: Vendor provided a list of potential affected devices and stated
that full investigation may take until January 2021 due to the list
of CVEs that were provided with the appended IoT Inspector report.
The patches may be available until June 2021.
2020-12-15: Shifted next status update round with vendor on May 2021.
2020-12-23: Vendor provided full list of affected devices.
2021-02-05: Vendor sieved out the found issues from 4) manually and provided a
full list of confirmed vulnerabilities. WAC-2004 phased-out in
2019.
2021-02-21: Confirmed receive of vulnerabilities, next status update in May
2021.
2021-06-10: Asking for an update.
2021-06-15: Vendor stated, that the update will be provided in the next days.
2021-06-21: Vendor will give an update in the next week as Covid gets worse in
Taiwan.
2021-06-23: Vendor stated, that patches are under development. Vendor needs more
time to finish the patches.
2021-06-24: Set release date to 2021-09-01.
2021-07-02: Vendor provides status updates.
2021-08-16: Vendor provides status updates.
2021-08-17: Vendor asks for CVE IDs and stated, that WDR-3124A has phased-out.
2021-08-20: Sent assigned CVE-IDs to vendor. Asked for fixed version numbers.
2021-08-31: Vendor provides fixed firmware version numbers and the advisory
links.
2021-09-01: Coordinated release of security advisory.

Solution:
-----
According to the vendor the following patches must be applied to fix issues:
* WAC-1001           / 2.1.5
* WAC-1001-T         / 2.1.5
* OnCell G3470A-LTE-EU / 1.7.4
* OnCell G3470A-LTE-EU-T / 1.7.4
* TAP-323-EU-CT-T    / 1.8.1
* TAP-323-US-CT-T    / 1.8.1
* TAP-323-JP-CT-T    / 1.8.1

The Moxa Technical Support must be contacted for requesting the security
patches.

The corresponding security advisories for the affected devices are available on
the vendor's website:
TAP-323/WAC-1001/WAC-2004
https://www.moxa.com/en/support/product-support/security-advisory/tap-323-wac-1001-2004-wireless-ap-bridge-
client-vulnerabilities
OnCell G3470A-LTE/WDR-3124A
https://www.moxa.com/en/support/product-support/security-advisory/oncell-g3470a-wdr-3124a-cellular-gateways-
router-vulnerabilities

The following device models are EOL and should be replaced:
* WAC-2004
* WDR-3124A-EU
* WDR-3124A-EU-T
* WDR-3124A-US
* WDR-3124A-US-T

Workaround:
-----
None.

Advisory URL:
-----
https://sec-consult.com/vulnerability-lab/

-----

SEC Consult Vulnerability Lab

SEC Consult, an Atos company
Europe | Asia | North America

About SEC Consult Vulnerability Lab
The SEC Consult Vulnerability Lab is an integrated part of SEC Consult, an
Atos company. It ensures the continued knowledge gain of SEC Consult in the
field of network and application security to stay ahead of the attacker. The
SEC Consult Vulnerability Lab supports high-quality penetration testing and
the evaluation of new offensive and defensive technologies for our customers.
Hence our customers obtain the most current information about vulnerabilities
and valid recommendation about the risk profile of new technologies.

-----
Interested to work with the experts of SEC Consult?
Send us your application https://sec-consult.com/career/

Interested in improving your cyber security with the experts of SEC Consult?
Contact our local offices https://sec-consult.com/contact/
-----

Mail: research at sec-consult dot com
Web: https://www.sec-consult.com
Blog: http://blog.sec-consult.com
Twitter: https://twitter.com/sec_consult

EOF Thomas Weber / @2021
```

Spoof (2,166) SUSE (1,444)

SQL Injection (16,102) Ubuntu (8,199)

TCP (2,379) UNIX (9,159)

Trojan (686) UnixWare (185)

UDP (676) Windows (6,511)

Virus (662) Other

Vulnerability (31,136)

Web (9,365)

Whitepaper (3,729)

x86 (946)

XSS (17,494)

Other

Login or Register to add favorites

Site Links

News by Month
News Tags
Files by Month
File Tags

About Us

History & Purpose
Contact Information
Terms of Service
Privacy Statement

Hosting By

Rokasec

Follow us on Twitter

Subscribe to an RSS Feed

