

SSA-265688: Vulnerabilities in the additional GNU/Linux subsystem of the SIMATIC S7-1500 TM MFP V1.1

Publication Date: 2024-04-09
Last Update: 2024-04-09
Current Version: V1.0
CVSS v3.1 Base Score: 7.8

SUMMARY

Multiple vulnerabilities have been identified in the additional GNU/Linux subsystem of the SIMATIC S7-1500 TM MFP V1.1.

Siemens is preparing fix versions and recommends specific countermeasures for products where fixes are not, or not yet available.

AFFECTED PRODUCTS AND SOLUTION

| Affected Product and Versions | Remediation |
|---|---|
| SIMATIC S7-1500 TM MFP - GNU/Linux subsystem: All versions affected by all CVEs | Currently no fix is available See recommendations from section Workarounds and Mitigations |

WORKAROUNDS AND MITIGATIONS

Siemens has identified the following specific workarounds and mitigations that customers can apply to reduce the risk:

- Only build and run applications from trusted sources

Please follow the [General Security Recommendations](#).

GENERAL SECURITY RECOMMENDATIONS

As a general security measure, Siemens strongly recommends to protect network access to devices with appropriate mechanisms. In order to operate the devices in a protected IT environment, Siemens recommends to configure the environment according to Siemens' operational guidelines for Industrial Security (Download: <https://www.siemens.com/cert/operational-guidelines-industrial-security>), and to follow the recommendations in the product manuals. Additional information on Industrial Security by Siemens can be found at: <https://www.siemens.com/industrialsecurity>

PRODUCT DESCRIPTION

SIMATIC S7-1500 TM MFP is a Technology module Multi functional platform for SIMATIC S7-1500 PLCs based on SIMATIC Industrial OS

VULNERABILITY DESCRIPTION

This chapter describes all vulnerabilities (CVE-IDs) addressed in this security advisory. Wherever applicable, it also documents the product-specific impact of the individual vulnerabilities.

Vulnerability CVE-2023-5678

Issue summary: Generating excessively long X9.42 DH keys or checking excessively long X9.42 DH keys or parameters may be very slow. Impact summary: Applications that use the functions `DH_generate_key()` to generate an X9.42 DH key may experience long delays. Likewise, applications that use `DH_check_pub_key()`, `DH_check_pub_key_ex()` or `EVP_PKEY_public_check()` to check an X9.42 DH key or X9.42 DH parameters may experience long delays. Where the key or parameters that are being checked have been obtained from an untrusted source this may lead to a Denial of Service. While `DH_check()` performs all the necessary checks (as of CVE-2023-3817), `DH_check_pub_key()` doesn't make any of these checks, and is therefore vulnerable for excessively large P and Q parameters. Likewise, while `DH_generate_key()` performs a check for an excessively large P, it doesn't check for an excessively large Q. An application that calls `DH_generate_key()` or `DH_check_pub_key()` and supplies a key or parameters obtained from an untrusted source could be vulnerable to a Denial of Service attack. `DH_generate_key()` and `DH_check_pub_key()` are also called by a number of other OpenSSL functions. An application calling any of those other functions may similarly be affected. The other functions affected by this are `DH_check_pub_key_ex()`, `EVP_PKEY_public_check()`, and `EVP_PKEY_generate()`. Also vulnerable are the OpenSSL `pkey` command line application when using the `"-pubcheck"` option, as well as the OpenSSL `genpkey` command line application. The OpenSSL SSL/TLS implementation is not affected by this issue. The OpenSSL 3.0 and 3.1 FIPS providers are not affected by this issue.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 5.3 |
| CVSS Vector | CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:N/A:L/E:P/RL:O/RC:C |
| CWE | CWE-754: Improper Check for Unusual or Exceptional Conditions |

Vulnerability CVE-2023-6121

An out-of-bounds read vulnerability was found in the NVMe-oF/TCP subsystem in the Linux kernel. This issue may allow a remote attacker to send a crafted TCP packet, triggering a heap-based buffer overflow that results in `kmalloc` data being printed and potentially leaked to the kernel ring buffer (`dmesg`).

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 4.3 |
| CVSS Vector | CVSS:3.1/AV:N/AC:L/PR:L/UI:N/S:U/C:L/I:N/A:N |
| CWE | CWE-20: Improper Input Validation |

Vulnerability CVE-2023-6817

A use-after-free vulnerability in the Linux kernel's netfilter: `nf_tables` component can be exploited to achieve local privilege escalation.

The function `nft_pipapo_walk` did not skip inactive elements during set walk which could lead double deactivations of PIPAPO (Pile Packet Policies) elements, leading to use-after-free.

We recommend upgrading past commit `317eb9685095678f2c9f5a8189de698c5354316a`.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 7.8 |
| CVSS Vector | CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:H/A:H |
| CWE | CWE-416: Use After Free |

Vulnerability CVE-2023-6931

A heap out-of-bounds write vulnerability in the Linux kernel's Performance Events system component can be exploited to achieve local privilege escalation.

A perf_event's read_size can overflow, leading to an heap out-of-bounds increment or write in perf_read_group().

We recommend upgrading past commit 382c27f4ed28f803b1f1473ac2d8db0afc795a1b.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 7.8 |
| CVSS Vector | CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:H/A:H |
| CWE | CWE-787: Out-of-bounds Write |

Vulnerability CVE-2023-6932

A use-after-free vulnerability in the Linux kernel's ipv4: igmp component can be exploited to achieve local privilege escalation.

A race condition can be exploited to cause a timer be mistakenly registered on a RCU read locked object which is freed by another thread.

We recommend upgrading past commit e2b706c691905fe78468c361aaabc719d0a496f1.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 7.8 |
| CVSS Vector | CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:H/A:H |
| CWE | CWE-416: Use After Free |

Vulnerability CVE-2023-45898

The Linux kernel before 6.5.4 has an es1 use-after-free in fs/ext4/extents_status.c, related to ext4_es_insert_extent.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 7.8 |
| CVSS Vector | CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:H/A:H |
| CWE | CWE-20: Improper Input Validation |

Vulnerability CVE-2024-0584

A use-after-free issue was found in igmp_start_timer in net/ipv4/igmp.c in the network sub-component in the Linux Kernel. This flaw allows a local user to observe a refcnt use-after-free issue when receiving an igmp query packet, leading to a kernel information leak.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 5.5 |
| CVSS Vector | CVSS:3.1/AV:L/AC:L/PR:L/UI:N/S:U/C:H/I:N/A:N |
| CWE | CWE-416: Use After Free |

Vulnerability CVE-2024-0727

Issue summary: Processing a maliciously formatted PKCS12 file may lead OpenSSL to crash leading to a potential Denial of Service attack

Impact summary: Applications loading files in the PKCS12 format from untrusted sources might terminate abruptly.

A file in PKCS12 format can contain certificates and keys and may come from an untrusted source. The PKCS12 specification allows certain fields to be NULL, but OpenSSL does not correctly check for this case. This can lead to a NULL pointer dereference that results in OpenSSL crashing. If an application processes PKCS12 files from an untrusted source using the OpenSSL APIs then that application will be vulnerable to this issue.

OpenSSL APIs that are vulnerable to this are: PKCS12_parse(), PKCS12_unpack_p7data(), PKCS12_unpack_p7encdata(), PKCS12_unpack_authsafes() and PKCS12_newpass().

We have also fixed a similar issue in SMIME_write_PKCS7(). However since this function is related to writing data we do not consider it security significant.

The FIPS modules in 3.2, 3.1 and 3.0 are not affected by this issue.

| | |
|----------------------|--|
| CVSS v3.1 Base Score | 5.5 |
| CVSS Vector | CVSS:3.1/AV:L/AC:L/PR:N/UI:R/S:U/C:N/I:N/A:H |
| CWE | CWE-20: Improper Input Validation |

ADDITIONAL INFORMATION

For further inquiries on security vulnerabilities in Siemens products and solutions, please contact the Siemens ProductCERT:

<https://www.siemens.com/cert/advisories>

HISTORY DATA

V1.0 (2024-04-09): Publication Date

TERMS OF USE

Siemens Security Advisories are subject to the terms and conditions contained in Siemens' underlying license terms or other applicable agreements previously agreed to with Siemens (hereinafter "License Terms"). To the extent applicable to information, software or documentation made available in or through a Siemens Security Advisory, the Terms of Use of Siemens' Global Website (https://www.siemens.com/terms_of_use, hereinafter "Terms of Use"), in particular Sections 8-10 of the Terms of Use, shall apply additionally. In case of conflicts, the License Terms shall prevail over the Terms of Use.