SSA-108696: Multiple Vulnerabilities in SIDIS Prime before V4.0.400

Publication Date: 2024-02-13
Last Update: 2024-02-13
Current Version: V1.0
CVSS v3.1 Base Score: 7.5
CVSS v4.0 Base Score: 9.1

SUMMARY

SIDIS Prime before V4.0.400 is affected by multiple vulnerabilities in the components OPC UA and OpenSSL, that could allow an unauthenticated attacker with access to the network where SIDIS Prime is installed to reuse OPC UA client credentials, create a denial of service condition of the SIDIS Prime OPC UA client, or create a denial of service condition of the SIDIS Prime TLS service.

Siemens has released a new version of SIDIS Prime and recommends to update to the latest version.

AFFECTED PRODUCTS AND SOLUTION

Affected Product and Versions	Remediation
SIDIS Prime: All versions < V4.0.400 affected by all CVEs	Update to V4.0.400 or later version See further 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:

- CVE-2019-19135: Enable encrypted communication between the affected product (OPC UA client) and the OPC UA server(s)

Product-specific remediations or mitigations can be found in the section Affected Products and Solution. 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

SIDIS is a commissioning and test system for vehicle production that fulfills the demands of the digital assembly and testing of vehicle ECUs.

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-2019-19135

In OPC Foundation OPC UA .NET Standard codebase 1.4.357.28, servers do not create sufficiently random numbers in OPCFoundation.NetStandard.Opc.Ua before 1.4.359.31, which allows man in the middle attackers to reuse encrypted user credentials sent over the network.

CVSS v3.1 Base Score	7.4
CVSS Vector	CVSS:3.1/AV:N/AC:H/PR:N/UI:N/S:U/C:H/I:H/A:N
CVSS v4.0 Base Score	9.1
CVSS Vector	CVSS:4.0/AV:N/AC:L/AT:P/PR:N/UI:N/VC:H/VI:H/VA:N/SC:N/SI:N/SA:N
CWE	CWE-330: Use of Insufficiently Random Values

Vulnerability CVE-2020-1967

Server or client applications that call the SSL_check_chain() function during or after a TLS 1.3 handshake may crash due to a NULL pointer dereference as a result of incorrect handling of the “signature_algorithms_cert” TLS extension. The crash occurs if an invalid or unrecognised signature algorithm is received from the peer. This could be exploited by a malicious peer in a Denial of Service attack.

CVSS v3.1 Base Score	7.5
CVSS Vector	CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:N/A:H
CVSS v4.0 Base Score	8.7
CVSS Vector	CVSS:4.0/AV:N/AC:L/AT:N/PR:N/UI:N/VC:N/VI:N/VA:H/SC:N/SI:N/SA:N
CWE	CWE-476: NULL Pointer Dereference

Vulnerability CVE-2020-1971

The X.509 GeneralName type is a generic type for representing different types of names. One of those name types is known as EDIPartyName. OpenSSL provides a function GENERAL_NAME_cmp which compares different instances of a GENERAL_NAME to see if they are equal or not. This function behaves incorrectly when both GENERAL_NAMEs contain an EDIPARTYNAME. A NULL pointer dereference and a crash may occur leading to a possible denial of service attack. OpenSSL itself uses the GENERAL_NAME_cmp function for two purposes: 1) Comparing CRL distribution point names between an available CRL and a CRL distribution point embedded in an X509 certificate 2) When verifying that a timestamp response token signer matches the timestamp authority name (exposed via the API functions TS_RESP_verify_response and TS_RESP_verify_token) If an attacker can control both items being compared then that attacker could trigger a crash. For example if the attacker can trick a client or server into checking a malicious certificate against a malicious CRL then this may occur. Note that some applications automatically download CRLs based on a URL embedded in a certificate. This checking happens prior to the signatures on the certificate and CRL being verified. OpenSSL's s_server, s_client and verify tools have support for the "-crl_download" option which implements automatic CRL downloading and this attack has been demonstrated to work against those tools. Note that an unrelated bug means that affected versions of OpenSSL cannot parse or construct correct encodings of EDIPARTYNAME. However it is possible to construct a malformed EDIPARTYNAME that OpenSSL's parser will accept and hence trigger this attack.

CVSS v3.1 Base Score	5.9
CVSS Vector	CVSS:3.1/AV:N/AC:H/PR:N/UI:N/S:U/C:N/I:N/A:H
CVSS v4.0 Base Score	8.2
CVSS Vector	CVSS:4.0/AV:N/AC:H/AT:P/PR:N/UI:N/VC:N/VI:N/VA:H/SC:N/SI:N/SA:N
CWE	CWE-476: NULL Pointer Dereference

Vulnerability CVE-2022-0778

The BN_mod_sqrt() function in openSSL, which computes a modular square root, contains a bug that can cause it to loop forever for non-prime moduli. Internally this function is used when parsing certificates that contain elliptic curve public keys in compressed form or explicit elliptic curve parameters with a base point encoded in compressed form. It is possible to trigger the infinite loop by crafting a certificate that has invalid explicit curve parameters. Since certificate parsing happens prior to verification of the certificate signature, any process that parses an externally supplied certificate may thus be subject to a denial of service attack. The infinite loop can also be reached when parsing crafted private keys as they can contain explicit elliptic curve parameters.

CVSS v3.1 Base Score	7.5
CVSS Vector	CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:N/A:H
CVSS v4.0 Base Score	8.7
CVSS Vector	CVSS:4.0/AV:N/AC:L/AT:N/PR:N/UI:N/VC:N/VI:N/VA:H/SC:N/SI:N/SA:N
CWE	CWE-835: Loop with Unreachable Exit Condition ('Infinite Loop')

Vulnerability CVE-2022-29862

An infinite loop in OPC UA .NET Standard Stack 1.04.368 allows a remote attackers to cause the application to hang via a crafted message.

CVSS v3.1 Base Score	7.5
CVSS Vector	CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:N/A:H
CVSS v4.0 Base Score	8.7
CVSS Vector	CVSS:4.0/AV:N/AC:L/AT:N/PR:N/UI:N/VC:N/VI:N/VA:H/SC:N/SI:N/SA:N
CWE	CWE-835: Loop with Unreachable Exit Condition ('Infinite Loop')

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 (2024-02-13): Publication Date

TERMS OF USE