Advisory 2018-14

Security update for various CODESYS V3 products using the CODESYS communication protocol

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CONTENT

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1 Affected Products

All variants of the following CODESYS V3 products in all versions prior V3.5.14.0 containing the CmpRouter component are affected, regardless of the CPU type or operating system:

• CODESYS Control for BeagleBone
• CODESYS Control for emPC-A/iMX6
• CODESYS Control for IOT2000
• CODESYS Control for Linux
• CODESYS Control for PFC100
• CODESYS Control for PFC200
• CODESYS Control for Raspberry Pi
• CODESYS Control RTE V3
• CODESYS Control RTE V3 (for Beckhoff CX)
• CODESYS Control Win V3 (also part of the CODESYS Development System setup)
• CODESYS Control V3 Runtime System Toolkit
• CODESYS V3 Embedded Target Visu Toolkit
• CODESYS V3 Remote Target Visu Toolkit
• CODESYS V3 Safety SIL2
• CODESYS Gateway V3
• CODESYS HMI V3
• CODESYS OPC Server V3
• CODESYS PLCHandler SDK
• CODESYS V3 Development System

The issue does not concern the alternative component implementation CmpRouterEmbedded.

2 Vulnerability overview

2.1 Type

Improper communication address filtering

2.2 Management Summary

CODESYS routing protocol may disguise the source of crafted communication packets.

2.3 References

CVE: CVE-2018-20026 [6]

ICS-CERT: ICSA-18-352-04 [8]

CODESYS JIRA: CDS-62812

2.4 Severity Rating

3S-Smart Software Solutions GmbH has rated this vulnerability as medium.

The CVSS v3.0 base score of 5.8 has been assigned. The CVSS vector string is (CVSS:3.0/AV:N/AC:L/PR:N/UI:N/S:C/C:L/I:N/A:N). [7]

3 Vulnerability details

3.1 Detailed Description

CODESYS products support a routing protocol for the communication between clients (CODESYS Development System, OPC Server, PLCHandler, Remote Target Visu, etc.) and the CODESYS Control runtime system. Affected products may disguise the source of crafted communication packets.

3.2 Exploitability

This vulnerability could be exploited remotely.

3.3 Difficulty

An attacker with low skills would be able to exploit this vulnerability.

3.4 Existence of exploit

No known public exploits specifically target this vulnerability.

4 Available software updates

3S-Smart Software Solutions GmbH has released version V3.5.14.0 to solve the noted vulnerability issue for all affected CODESYS products.

Please visit the CODESYS update area for more information on how to obtain the software update [3].

5 Mitigation

Currently, 3S-Smart Software Solutions GmbH has not identified any workarounds for this vulnerability.

In general, 3S-Smart Software Solutions GmbH recommends as part of the mitigation strategy the following defensive measures to reduce the risk of exploitation of this vulnerability:

• Use controllers and devices only in a protected environment to minimize network exposure and ensure that they are not accessible from outside
• Use firewalls to protect and separate the control system network from other networks
• Use VPN (Virtual Private Networks) tunnels if remote access is required
• Activate and apply user management and password features
• Limit the access to both development and control system by physical means, operating system features, etc.
• Protect both development and control system by using up to date virus detecting solutions

For more information and general recommendations for protecting machines and plants, see also the CODESYS Security Whitepaper [1].

6 Acknowledgments

3S-Smart Software Solutions GmbH thanks those in the security community, who help us to improve our products and to protect customers and users through coordinated vulnerability disclosure.

We thank Alexander Nochvay from Kaspersky Lab ICS CERT for reporting this vulnerability following coordinated disclosure.

7 Further Information

For additional information regarding the CODESYS products, especially the above-mentioned versions, or about the described vulnerability please contact the 3S-Smart Software Solutions support team [5].

8 Disclaimer

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Note: Not all CODESYS features are available in all territories. For more information on geographic restrictions, please contact sales@codesys.com.

Bibliography

[1] 3S-Smart Software Solutions GmbH: CODESYS Security Whitepaper

[2] 3S-Smart Software Solutions GmbH: Coordinated Disclosure Policy

[3] 3S-Smart Software Solutions GmbH CODESYS update area: https://www.codesys.com/download

[4] 3S-Smart Software Solutions GmbH security information page: https://www.codesys.com/security

[5] 3S-Smart Software Solutions GmbH support contact site: https://www.codesys.com/support

[6] Common Vulnerabilities and Exposures (CVE): https://cve.mitre.org

[7] CVSS Calculator: https://www.first.org/cvss/calculator/3.0

[8] ICS-CERT: https://ics-cert.us-cert.gov

The latest version of this document can be found here:

https://customers.codesys.com/fileadmin/data/customers/security/2018/Advisory2018-14_CDS-62812.pdf

Change History

Version	Description	Date
1.0	First version	06.12.2018
2.0	Software update available, CVE number added	17.12.2018
3.0	Reference to ICS-CERT advisory added	19.12.2018

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