



SLOVENSKI STANDARD
oSIST prEN 304 627 V1.0.1:2026

01-september-2026

Kibernetska varnost (CYBER) - CRA - Zahteve za kibernetsko varnost za usmerjevalnike, modeme, namenjene za povezavo z internetom, in stikala

Cyber Security (CYBER) - CRA - Cybersecurity requirements for routers, modems intended for the connection to the internet, and switches

Sample Document

Ta slovenski standard je istoveten z: ETSI EN 304 627 V1.0.1 (2026-07)

ICS:

35.030

Informacijska varnost

IT Security

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**Cyber Security (CYBER);
CRA;
Cybersecurity requirements for routers, modems intended for
the connection to the internet and switches**

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Reference

DEN/CYBER-EUS-0013

Keywords

CRA, cybersecurity, modem, router, switch

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Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Cyber Security (CYBER), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI Standardisation Request deliverable Approval Procedure (SRdAP).

The present document has been prepared under the Commission's standardisation request C(2025) 618 final [i.3] to provide one voluntary means of conforming to the requirements of Regulation (EU) 2024/2847 of the European Parliament and of the Council of 23 October 2024 on horizontal cybersecurity requirements for products with digital elements and amending Regulations (EU) No 168/2013 and (EU) 2019/1020 and Directive (EU) 2020/1828 (Cyber Resilience Act) (CRA) [i.1].

Once the present document is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of the present document given in Table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding requirements of that Regulation and associated EFTA regulations.

Proposed national transposition dates	
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Modal verbs terminology

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Introduction

The present document covers cybersecurity for routers, modems intended for connection to the internet, and switches. These products are identified in Annex III, Class I, point 12 of Regulation (EU) 2024/2847 [i.1], known as the Cyber Resilience Act (CRA).

The present document provides a structured approach to identify the applicable cybersecurity requirements for the products in scope, following a risk-based approach. Security controls are therefore proportionate to the intended purpose, reasonably foreseeable use, deployment context, and threat exposure of the products.

Clause [4](#) describes the product architecture and intended purpose, and defines the use cases for the main deployment scenarios under reasonably foreseeable use.

Clause [5](#) specifies the technical cybersecurity requirements for the product to mitigate the identified risks.

Clause [6](#) specifies the assessment criteria and compliance verification procedures for the requirements of clause [5](#).

Annex [A](#) maps the technical requirements of the present document to the corresponding cybersecurity requirements of the CRA [i.1].

Annex [B](#) describes the methodology used to assess the security risks of the products in their context. Where a product does not clearly correspond to one of the use cases defined in clause [4](#), the risk assessment methodology of Annex [B](#) may be used to determine the applicable cybersecurity requirements.

1 Scope

The present document specifies vulnerability handling activities, technical requirements and corresponding assessment criteria for routers, modems intended for connection to the internet, and switches related to cybersecurity. The products with digital elements in scope:

- are specified within the "technical description" of the "category of product" in Class I, point 12 by the Commission Implementing Regulation (EU) 2025/2392 [i.2] of 28 November 2025 on the technical description of the categories of important and critical products with digital elements pursuant to Regulation (EU) 2024/2847 of the European Parliament and of the Council [i.1] as:
 - "Routers are products with digital elements that establish and control the flow of data between different networks by selecting paths or routes using routing protocol mechanisms and algorithms, typically operating at the network layer.

This category includes but is not limited to wired and wireless routers, virtual routers and routers with or without modems.";
 - "Modems intended for the connection to the Internet are hardware products with digital elements that use digital modulation and demodulation techniques to convert analogue signals from and to digital signals for IP-based communication.

This category includes but is not limited to fibre modems, Digital Subscriber Line (DSL) modems, cable (DOCSIS) modems, satellite modems and cellular modems.";
 - "Switches are products with digital elements that provide connectivity between networked devices through traffic forwarding mechanisms typically implemented at the data link layer.

This category includes but is not limited to managed switches, smart switches, multilayer switches, virtual security switches, programmable switches for software-defined networking and bridges such as wireless access points.";
- are only covered within the product context described in clause 4.

The present document covers those products to demonstrate compliance with the essential cybersecurity requirements of Regulation (EU) 2024/2847 [i.1], Annex I Part I, under the conditions identified in Annex A.

NOTE 1: The term "internet" refers to any public network accessible beyond organizational boundaries. Public networks are accessible to multiple organizations or the general public. Private networks operate under single organizational control.

Routers, modems intended for connection to the internet, and switches fall within the scope of the present document when they provide management capabilities. This applies to all deployment forms such as dedicated hardware, virtual machines, containerized applications, and cloud-native network functions. The intended purpose or reasonably foreseeable use is to process, forward, or manage network traffic between devices, network segments, or between public and private networks.

NOTE 2: Unmanaged products with fixed functionality and no configuration interface are excluded from scope, as they lack the interfaces needed to implement the security controls of the present document.

The present document does not specify protocol conformance requirements, performance specifications, QoS metrics, or interoperability testing. Security controls for protocol implementation and vulnerability management remain within scope.

NOTE 3: Products that integrate particular wireless or wired communication technologies, such as Wi-Fi®, cellular, DECT, and DECT-2020 NR remain within scope when they function as routers, modems intended for connection to the internet, or switches

Routers, modems intended for connection to the internet, and switches intended for use in the industrial Operational Technology (OT) domain are excluded from the scope of the present document, see prEN 50770-5 [i.14].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] [ENISA Report 1747792503](#) (version 2 - April 2025): "European Cybersecurity Certification Group Sub-group on Cryptography Agreed Cryptographic Mechanisms".
- [2] Canadian Centre for Cyber Security ITSP.40.062 (January 2025): "[Guidance on securely configuring network protocols \(ITSP.40.062\)](#)".
- [3] [ETSI TS 119 312](#): "Electronic Signatures and Trust Infrastructures (ESI); Cryptographic Suites".
- [4] [ETSI TS 133 210](#): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Network Domain Security (NDS); IP network layer security (3GPP TS 33.210)".
- [5] Arm Limited: "[Arm CCA Security Model 1.0](#)" (DEN0096).
- [6] [IRTF RFC 8439](#): "ChaCha20 and Poly1305 for IETF Protocols".
- [7] [IETF RFC 4418](#): "UMAC: Message Authentication Code using Universal Hashing".
- [8] [IETF RFC 9106](#): "Argon2 Memory-Hard Function for Password Hashing and Proof-of-Work Applications".
- [9] [IETF RFC 7914](#): "The scrypt Password-Based Key Derivation Function".
- [10] [IETF RFC 5295](#): "Specification for the Derivation of Root Keys from an Extended Master Session Key (EMSK)".
- [11] [IETF RFC 8410](#): "Algorithm Identifiers for Ed25519, Ed448, X25519, and X448 for Use in the Internet X.509 Public Key Infrastructure".
- [12] [IRTF RFC 8032](#): "Edwards-Curve Digital Signature Algorithm (EdDSA)".
- [13] [IETF RFC 8420](#): "Using the Edwards-Curve Digital Signature Algorithm (EdDSA) in the Internet Key Exchange Protocol Version 2 (IKEv2)".
- [14] [IETF RFC 8110](#): "Opportunistic Wireless Encryption".
- [15] Wi-Fi™ Alliance: "[Wi-Fi Easy Connect™ Specification](#)", version 3.0.
- [16] [IETF RFC 9000](#): "QUIC: A UDP-Based Multiplexed and Secure Transport".
- [17] [IETF RFC 3411](#): "An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks".
- [18] [IETF RFC 3412](#): "Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)".
- [19] [IETF RFC 8205](#): "BGPsec Protocol Specification".

- [20] [IETF RFC 5709](#): "OSPFv2 HMAC-SHA Cryptographic Authentication".
- [21] [IETF RFC 7166](#): "Supporting Authentication Trailer for OSPFv3".
- [22] [IETF RFC 5310](#): "IS-IS Generic Cryptographic Authentication".
- [23] [IETF RFC 5925](#): "The TCP Authentication Option".
- [24] [IETF RFC 8915](#): "Network Time Security for the Network Time Protocol".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding but are not required for conformance to the present document.

- [i.1] [Regulation \(EU\) 2024/2847](#) of the European Parliament and of the Council of 23 October 2024 on horizontal cybersecurity requirements for products with digital elements and amending Regulations (EU) No 168/2013 and (EU) 2019/1020 and Directive (EU) 2020/1828 (Cyber Resilience Act).
- [i.2] [Commission Implementing Regulation \(EU\) 2025/2392](#) of 28 November 2025 on the technical description of the categories of important and critical products with digital elements pursuant to Regulation (EU) 2024/2847 of the European Parliament and of the Council.
- [i.3] [Standardisation request M/606 - C\(2025\)618](#): "Commission Implementing decision of 3.2.2025 on a standardisation request to the European Committee for Standardisation (CEN), the European Committee for Electrotechnical Standardisation (Cenelec) and the European Telecommunications Standards Institute (ETSI) as regards products with digital elements in support of Regulation (EU) 2024/2847 of the European Parliament and of the Council of 23 October 2024 on horizontal cybersecurity requirements for products with digital elements and amending Regulations (EU) No 168/2013 and (EU) 2019/1020 and Directive (EU) 2020/1828 (Cyber Resilience Act)".
- [i.4] prEN 40000-1-1: "Cybersecurity requirements for products with digital elements - Vocabulary" (produced by CEN/CENELEC).

NOTE: Version and date to be added upon its publication by CEN/CENELEC.

- [i.5] [Directive \(EU\) 2022/2557](#) of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC.
- [i.6] [Regulation \(EU\) 2016/679](#) of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).
- [i.7] Recommendation ITU-T Y.2011 (2004): "General principles and general reference model for Next Generation Networks".
- [i.8] IETF RFC 7426 (2015): "Software-Defined Networking (SDN): Layers and Architecture Terminology".
- [i.9] NIST SP 800-133 Rev. 2 (June 2020): "Recommendation for Cryptographic Key Generation".
- [i.10] ISO/IEC/IEEE 24765:2017: "Systems and software engineering - Vocabulary".
- [i.11] IEEE Std 802.11™-2024: "IEEE Standard for Information Technology - Telecommunications and Information Exchange between Systems Local and Metropolitan Area Networks - Specific Requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".

- [i.12] Broadband Forum TR-069 Issue 1 Amendment 6 Corrigendum 1 (June 2020): "CPE WAN Management Protocol".
- [i.13] Broadband Forum TR-369 Issue 1 Amendment 4 Corrigendum 1 (June 2025): "User Services Platform (USP)".
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NOTE: Version and date to be added upon its publication by CEN/CENELEC.

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