

# Web of Science™

1 record(s) printed from Clarivate Web of Science

---

## Record 1 of 1

**Title:** Unidirectional Communications in Secure IoT Systems-A Survey

**Author(s):** Gaina, L (Gaina, Lucian); Stangaciu, CS (Stangaciu, Cristina Sorina); Stanescu, D (Stanescu, Daniela); Gusita, B (Gusita, Bianca); Micea, MV (Micea, Mihai Victor)

**Source:** SENSORS **Volume:** 24 **Issue:** 23 **Article Number:** 7528 **DOI:** 10.3390/s24237528 **Published Date:** 2024 DEC

**Times Cited in Web of Science Core Collection:** 0

**Total Times Cited:** 0

**Usage Count (Last 180 days):** 0

**Usage Count (Since 2013):** 0

**Cited Reference Count:** 71

**Abstract:** The security of Internet of Things (IoT) systems has consistently been a challenge, particularly in the context of critical infrastructure. One particular approach not yet employed in this domain is the unidirectional communication paradigm. This survey presents an analysis of the most prevalent unidirectional communication solutions, namely, data diodes, network pumps, unidirectional gateways, and unidirectional protocols. The objective of the survey is to present an analysis of the unidirectional communication methods that meet the requirements of IoT security. These methods are classified according to their implementation and operational mode. The survey analyzes the unidirectional communication solutions based on their performance, the level of security offered, the cost-effectiveness, and their cost of implementation. Additionally, it includes an analysis of the existing off-the-shelf unidirectional communication implementations found in the industry. Furthermore, it identifies some of the most important current issues and development directions.

**Accession Number:** WOS:001377712700001

**PubMed ID:** 39686065

**Language:** English

**Document Type:** Review

**Author Keywords:** security; Internet of Things (IoT); unidirectional communications; critical infrastructure; data diodes; network pumps; unidirectional gateways; unidirectional protocols

**KeyWords Plus:** PRIVACY; NETWORKS

**Addresses:** [Gaina, Lucian; Stangaciu, Cristina Sorina; Stanescu, Daniela; Gusita, Bianca; Micea, Mihai Victor] Politehn Univ Timisoara, Dept Comp & Informat Technol, Timisoara 300006, Romania.

**Corresponding Address:** Micea, MV (corresponding author), Politehn Univ Timisoara, Dept Comp & Informat Technol, Timisoara 300006, Romania.

**E-mail Addresses:** lucian.gaina@cs.upt.ro; cristina.stangaciu@cs.upt.ro; daniela.stanescu@cs.upt.ro; bianca.gusita@cs.upt.ro; mihai.micea@cs.upt.ro

**Affiliations:** Universitatea Politehnica Timisoara

**Publisher:** MDPI

**Publisher Address:** ST ALBAN-ANLAGE 66, CH-4052 BASEL, SWITZERLAND

**Web of Science Index:** Science Citation Index Expanded (SCI-EXPANDED)

**Web of Science Categories:** Chemistry, Analytical; Engineering, Electrical & Electronic; Instruments & Instrumentation

**Research Areas:** Chemistry; Engineering; Instruments & Instrumentation

**IDS Number:** P4O1U

**eISSN:** 1424-8220

**29-char Source Abbrev.:** SENSORS-BASEL

**ISO Source Abbrev.:** Sensors

**Source Item Page Count:** 28

**Open Access:** gold

**Output Date:** 2024-12-27

---

End of File

