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CYBER SECURITY ADVISORY

B&R Automation Runtime Improper Handling of Flooding conditions on ANSL Server

CVE ID: CVE-2025-11044

Notice

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Purpose

B&R has a rigorous internal cyber security continuous improvement process which involves regular testing with industry leading tools and periodic assessments to identify potential product issues. Occasionally an issue is determined to be a design or coding flaw with implications that may impact product cyber security.

When a potential product vulnerability is identified or reported, B&R immediately initiates our vulnerability handling process. This entails validating if the issue is in fact a product issue, identifying root causes, determining what related products may be impacted, developing a remediation, and notifying end users and governmental organizations.

The resulting Cyber Security Advisory intends to notify customers of the vulnerability and provide details on which products are impacted, how to mitigate the vulnerability or explain workarounds that minimize the potential risk as much as possible. The release of a Cyber Security Advisory should not be misconstrued as an affirmation or indication of an active threat or ongoing campaign targeting the products mentioned here. If B&R is aware of any specific threats, it will be clearly mentioned in the communication.

The publication of this Cyber Security Advisory is an example of B&R's commitment to the user community in support of this critical topic. Responsible disclosure is an important element in the chain of trust we work to maintain with our many customers. The release of an Advisory provides timely information which is essential to help ensure our customers are fully informed.

Affected products

Automation Runtime versions < 6.5.0 and < R4.93

Vulnerability IDs

CVE-2025-11044

Summary

An update is available that resolves a vulnerability in the product versions listed above.

An attacker who successfully exploited this vulnerability could cause the product to stop.

Recommended immediate actions

The problem is corrected in the following product versions:

Automation Runtime 6 versions >= 6.5

Automation Runtime 4 versions >= R4.93

B&R recommends that customers apply the update at earliest convenience.

The process to install updates is described in the user manual. The step to identify the installed product version is described in the user manual.

Vulnerability severity and details

A vulnerability exists in the ANSL server component included in the product versions listed above. An attacker could exploit the vulnerability by sending malicious network traffic to the system node, causing the node to stop.

The vulnerability cannot be exploited on all devices and with all customer applications, as successful exploitation requires winning a race condition.

What is a Race Condition?

A race condition happens when e.g. two processes try to access the same system resources at the same time. The outcome then depends on which process gets access first. In most cases, this has no impact, but in rare situations, it can be misused by an attacker to make the system behave in an unintended way.

The severity assessment has been performed by using the FIRST Common Vulnerability Scoring System (CVSS)[1] for both v3.1[2] and v4.0[3].

The indicated Common Weakness Enumerations (CWE) have been selected from the MITRE CWE list[4].

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An Allocation of Resources Without Limits or Throttling vulnerability in the ANSL-Server component of B&R Automation Runtime versions prior to 6.5 and prior to R4.93 could be exploited by an unauthenticated attacker on the network to win a race condition, resulting in permanent denial-of-service (DoS) conditions on affected devices.

CVSS

CVSS v3.1 Base Score:	6.8
CVSS v3.1 Temporal Score:	6.5
CVSS v3.1 Vector:	CVSS:3.1/AV:N/AC:H/PR:N/UI:N/S:C/C:N/I:N/A:H/RL:O/RC:C
CVSS v4.0 Score	8.9
CVSS v4.0 Vector:	CVSS:4.0/AV:N/AC:L/AT:P/PR:N/UI:N/VC:N/VI:N/VA:H/SC:N/SI:N/SA:H

[1] Common Vulnerability Scoring System (CVSS), Forum of Incident Response and Security Teams, Inc., https://www.first.org/cvss/.

[2] For the CVSS v3.1 scoring only the CVSS Base Score and the Temporal Score (if information is available) are considered in this advisory. The CVSS Environmental Score, which can affect the vulnerability severity, is not provided in this advisory since it reflects the potential impact of a vulnerability within the end-user organizations' computing environment; end-user organizations are therefore recommended to analyze their situation and specify the Environmental Score.

[3] For the CVSS v4.0 scoring only the CVSS Base Metrics and the CVSS Supplemental Metrics (if information is available) are considered in this advisory. The CVSS Environmental and Threat Metrics, which can affect the vulnerability severity, are not provided in this advisory since they reflect the potential impact of a vulnerability within the end-user organizations' computing environment and over time depending on the vulnerability exploit maturity. Therefore, end-user organizations are recommended to analyze their situation and specify the Environmental and Threat Metrics.

[4] Common Weakness Enumeration (CWE), The MITRE Corporation, https://cwe.mitre.org/.

CWE
CWE-770: Allocation of Resources Without Limits or Throttling

CVE
NVD Summary Link: https://nvd.nist.gov/vuln/detail/CVE-2025-11044

Mitigating factors

The vulnerability cannot be exploited on all devices or across all customer applications. Extensive investigations by B&R have determined that shorter cycle times in customer projects increase the likelihood of potential exploitation. For customers unable to transition to a patched version, adjusting their application configuration to longer cycle times may therefore be considered as a mitigating measure.

B&R Automation Runtime is designed to be operated on Level 1 of the ABB ICS Cyber Security Reference Architecture. Exploitation of the vulnerability from outside Level 1 would require an attacker to bypass the Control Network Firewall. Limiting the maximum data traffic and the maximum number of concurrent connections to the ANSL server of Automation Runtime on the Control Network Firewall, shall be considered to mitigate this vulnerability.

B&R further recommends, in alignment with its *Defense in Depth for B&R Products* guidelines, that customers:

- Test the maximum load capacity of their application under Automation Runtime before commissioning.
- Restrict the permitted data traffic to the device via the Control Network Firewall to no more than 80% of the measured peak traffic value.

Refer to section “General security recommendations” for further advise on how to keep your system secure.

Frequently asked questions

What causes the vulnerability?

The vulnerability is caused by insufficient throttling and limiting mechanism in the ANSL Server used the B&R Automation Runtime.

What might an attacker use the vulnerability to do?

An attacker who successfully exploited this vulnerability could cause the affected system node to stop.

How could an attacker exploit the vulnerability?

An attacker could try to exploit the vulnerability by creating a specially crafted message and sending the message to an affected system node. This would require that the attacker has access to the system network, by connecting to the network either directly or through a wrongly configured or penetrated firewall, or that he installs malicious software on a system node or otherwise infects the network with malicious software. Recommended practices help mitigate such attacks, see section Mitigating Factors above.

Could the vulnerability be exploited remotely?

Yes, an attacker who has network access to an affected system node could exploit this vulnerability. Recommended practices include that process control systems are physically protected, have no direct connections to the Internet, and are separated from other networks by means of a firewall system that has a minimal number of ports exposed.

What does the update do?

The update removes the vulnerability by limiting incoming network traffic that is handled by the ANSL server component.

When this security advisory was issued, had this vulnerability been publicly disclosed?

No, B&R discovered this vulnerability as a part of its own security analysis.

When this security advisory was issued, had B&R received any reports that this vulnerability was being exploited?

No, B&R had not received any information indicating that this vulnerability had been exploited when this security advisory was originally issued.

General security recommendations

For any installation of software-related B&R products we strongly recommend the following (non-exhaustive) list of cyber security practices:

- Isolate special purpose networks (e.g. for automation systems) and remote devices behind firewalls and separate them from any general-purpose network (e.g. office or home networks).
- Install physical controls so no unauthorized personnel can access your devices, components, peripheral equipment, and networks.
- Never connect programming software or computers containing programing software to any network other than the network for the devices that it is intended for.
- Scan all data imported into your environment before use to detect potential malware infections.
- Minimize network exposure for all applications and endpoints to ensure that they are not accessible from the Internet unless they are designed for such exposure and the intended use requires such.
- Ensure all nodes are always up to date in terms of installed software, operating system, and firmware patches as well as anti-virus and firewall.
- When remote access is required, use secure methods, such as Virtual Private Networks (VPNs). Recognize that VPNs may have vulnerabilities and should be updated to the most current version available. Also, understand that VPNs are only as secure as the connected devices.

More information on recommended practices can be found in the following documents:

Defense in Depth for B&R products

Support

For additional instructions and support please contact your local B&R service organization. For contact information, see https://www.br-automation.com/en/about-us/locations/.

Information about ABB's cyber security program and capabilities can be found at www.abb.com/cyber-security.

Version history

Rev. Ind.	Page (p) Chapter (c)	Change description	Version. date
1.0	all	Initial version	2026-01-19