
CYBER SECURITY ADVISORY

ABB Ability™ OPTIMAX®

Authentication Bypass in Single-Sign On with Azure Active Directory

CVE ID: CVE-2025-14510

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Purpose

ABB 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, ABB 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 ABB 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 ABB'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

Affected are ABB Ability OPTIMAX products that make use of the Azure Active Directory Single-Sign On integration and have been released before 20-11-2025. In specific, this includes the following products:

- ABB Ability OPTIMAX 6.1
- ABB Ability OPTIMAX 6.2
- ABB Ability OPTIMAX 6.3 in version before v6.3.1-251120
- ABB Ability OPTIMAX 6.4 in version before v6.4.1-251120

Vulnerability IDs

CVE-2025-14510

Summary

ABB identified a severe vulnerability in the affected products listed above if the optional integration with Azure Active Directory for Single-Sign On is enabled. We have not received any reports of this vulnerability being exploited.

An attacker who successfully exploits this vulnerability could bypass user authentication and potentially cause the product to:

- Shutdown the system,
- Modify the configuration of the system,
- Install and run arbitrary code.

Recommended immediate actions

The problem is corrected in the following product versions:

- ABB Ability OPTIMAX v6.4.1-251120 (see References 9AKK108472A0435) or later
- ABB Ability OPTIMAX v6.3.1-251120 (see References 9AKK108472A0437) or later

ABB recommends that customers using earlier versions of OPTIMAX v6.4 and OPTIMAX v6.3 apply an update of the operating system at earliest convenience. Customers still using the meanwhile unsupported OPTIMAX v6.2 or v6.1 shall contact ABB to identify the right way forward.

Vulnerability severity and details

A vulnerability exists in the OPTIMAX Azure Active Directory Single-Sign On integration included in the product versions listed above. An attacker could exploit the vulnerability by sending a specially crafted message to the system, allowing the attacker to bypass user authentication.

The severity assessment has been performed by using the FIRST Common Vulnerability Scoring System (CVSS)¹ for both v3.1² and v4.0³.

The indicated Common Weakness Enumerations (CWE) have been selected from the MITRE CWE list⁴.

CVE-2025-14510 ABB Ability OPTIMAX Authentication Bypass in Single-Sign On

The vulnerability allows an attacker to bypass user authentication on OPTIMAX installations that make use of the Azure Active Directory Single-Sign On integration.

CVSS

CVSS v3.1 Base Score: 8.1

CVSS v3.1 Temporal Score: 6.5

CVSS v3.1 Vector: **CVSS:3.1/AV:N/AC:H/PR:N/UI:N/S:U/C:H/I:H/A:H/E:U/RL:O/RC:U**

CVSS v4.0 Score: 9.2

CVSS v4.0 Vector: **CVSS:4.0/AV:N/AC:H/AT:P/PR:N/UI:N/VC:H/VI:H/VA:H/SC:N/SI:N/SA:N**

CWE

CWE-303: Incorrect Implementation of Authentication Algorithm

CVE

NVD Summary Link: <https://nvd.nist.gov/vuln/detail/CVE-2025-14510>

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/>.

Mitigating factors

Exploitation requires three preconditions:

- (1) OPTIMAX is configured to integrate with Azure Active Directory,
- (2) An attacker has a network communication channel with OPTIMAX,
- (3) An attacker knows a valid username on the OPTIMAX system other than the default username.

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

Workarounds

Workarounds are specific measures that a user can take to help block an attack, for example, temporarily disabling the vulnerable feature may remove the exposure with well-known impact on functionality. Although these workarounds will not correct the underlying vulnerability, they can help block known attack vectors.

A workaround is to deactivate the Azure Active Directory integration and fall back to OPTIMAX’s standard user authentication mechanism.

Frequently asked questions

What causes the vulnerability?

The vulnerability is caused by the possibility to inject code in the authentication script responsible for integration with Azure Active Directory.

What is ABB OPTIMAX?

OPTIMAX is a software suite that delivers energy management and optimization for energy, emissions, and processes. It provides coordinated control of multiple assets targeting energy efficiency and decarbonization. OPTIMAX is an optimization environment for solving all types of energy management and optimization challenges that industrial enterprises and energy provider face.

What might an attacker use the vulnerability to do?

An attacker who successfully exploited this vulnerability could run arbitrary code on OPTIMAX and modify the configuration of the system.

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 OPTIMAX system. 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 preventing injection vectors in the authentication script.

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

No, ABB discovered this vulnerability through internal testing.

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

No, ABB 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 ABB 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 programming 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.

References

- 9AKK108472A0435 OPTIMAX OS Update don_osupdate_v6.4.1-20251120
<https://library.abb.com/d/9AKK108472A0435>
- 9AKK108472A0437 OPTIMAX OS Update don_osupdate_v6.3.1-20251120
<https://library.abb.com/d/9AKK108472A0437>

Support

For additional instructions and support please contact your local ABB service organization. For contact information, see www.abb.com/contactcenters.

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

Revision history

Rev. Ind.	Page (p) Chapter (c)	Change description	Rev. date
A	all	Initial version	2025-12-18
B	all	Public version	2026-01-16