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CYBER SECURITY ADVISORY

## **OmniCore**

# **RobotWare Missing Authentication Vulnerability**

CVE ID: CVE-2021-22279

## **Notice**

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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

RobotWare 7 (all versions prior to 7.3.2)

## Vulnerability ID

CVE-2021-22279

## Summary

An update is available that resolves an internal reported vulnerability in the product versions listed above. A missing authentication vulnerability has been identified in RobotWare for OmniCore C30 robot controllers with Connected Services Gateway wired option. The vulnerability could lead to an attacker reading and modifying files on the OmniCore controller if the attacker has access to the Connected Services Gateway Ethernet port.

## Recommended immediate actions

The problem is corrected in the following product versions:

RobotWare version 7.3.2

ABB recommends that customers apply the update at earliest convenience.

The update is available for download from RobotStudio.

## Vulnerability severity and details

A vulnerability exists in RobotWare included in the product versions listed above. The vulnerability could lead to an attacker reading and modifying files on the robot controller. The vulnerability could be exploited by an unauthenticated attacker with network access to the Connected Services Gateway Ethernet port. No user interaction is required to exploit this vulnerability. The vulnerability impacts confidentiality, integrity, and availability of the controller.

The severity assessment has been performed by using the FIRST Common Vulnerability Scoring System (CVSS) v3.1<sup>1</sup>.

### CVE-2021-22279 Missing Authentication Vulnerability

CVSS v3.1 Base Score: 9.8  
CVSS v3.1 Temporal Score: 9.4  
CVSS v3.1 Vector: **CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H/E:H/RL:O/RC:C**

## Mitigating factors

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

## Workarounds

ABB has tested the following workarounds. Although these workarounds will not correct the underlying vulnerability, they can help block known attack vectors:

- Do not use Connected Services Ethernet port connection until the update has been applied, or
- Protect Connected Services Gateway Ethernet port with a firewall, which prevents inbound connections.

## Frequently asked questions

### What is the scope of the vulnerability?

A missing authentication vulnerability has been identified in RobotWare for the OmniCore robot controller. The vulnerability could lead to an attacker reading and modifying files on the robot controller if the attacker has access to the Connected Services Gateway Ethernet port.

This would require that the attacker has access to the port, by connecting directly to the port or to the network either directly or through a wrongly configured or penetrated firewall.

Note: This affects only Connected Services Gateway wired (DSQC1041).  
(Connected Services Gateway with Wi-Fi or Mobile connectivity are not affected).

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<sup>1</sup> 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.

### **What causes the vulnerability?**

The vulnerability is caused by missing authentication in RobotWare.

### **What is RobotWare?**

RobotWare is the software installed in the ABB robot controllers and designed to operate the robot.

### **What might an attacker use the vulnerability to do?**

An attacker who successfully exploited this vulnerability could read and modify files on the OmniCore robot controller.

### **How could an attacker exploit the vulnerability?**

The vulnerability could be exploited by an unauthenticated attacker with network access to the Connected Services Gateway Ethernet port. This would require that the attacker has access to the port, by connecting directly to the port or to the network either directly or through a wrongly configured or penetrated firewall. 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 the Connected Services Gateway Ethernet port could exploit this vulnerability. Recommended practices include that robot control systems are physically protected, have no direct connections to the Internet or factory wide networks without firewall protection, 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 authentication vulnerability.

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

No, ABB received information about this vulnerability internally.

### **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.
- Install physical controls so no unauthorized personnel can access your robot controllers, 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.

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

3HAC065037-001      Operating manual - Integrator's guide OmniCore RW 7

## Support

For additional instructions and support please contact your local ABB service organization. For contact information, see [www.abb.com/contactcenters](http://www.abb.com/contactcenters).

Information about ABB's cyber security program and capabilities can be found at [www.abb.com/cyber-security](http://www.abb.com/cyber-security).

## Revision history

Rev. Ind.	Page (p) Chapter (c)	Change description	Rev. date
A	all	Initial version	2021-12-01