Cyber Security Advisory #01/2021

B&R Products affected by WIBU CodeMeter Vulnerabilities

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Executive Summary

B&R is aware of six vulnerabilities in the CodeMeter Runtime software manufactured by WIBU Systems.

CodeMeter Runtime is included in the following B&R software products:
- APROL
- Technology Guarding

B&R Technology Guarding is included in the following B&R software products:
- Automation Studio
- PVI Development Setup
- Automation Studio Target for Simulink

When installing one of the software products mentioned above, CodeMeter Runtime gets installed on the target system. Installation of B&R software products containing vulnerable CodeMeter Runtime versions results in target systems affected by the vulnerabilities discussed in this advisory.

Affected Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Affected Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>APROL</td>
<td>All versions &lt;R 4.2-06P1</td>
</tr>
<tr>
<td>Technology Guarding</td>
<td>All versions &lt;1.2.1.5</td>
</tr>
<tr>
<td>Automation Studio</td>
<td>All versions &lt;4.10</td>
</tr>
<tr>
<td>PVI Development Setup</td>
<td>All versions &lt;4.10</td>
</tr>
<tr>
<td>Automation Studio Target for Simulink</td>
<td>Versions 6.0.0.x to 6.3.0.x</td>
</tr>
</tbody>
</table>

Vulnerability ID

- CVE-2020-14509 CodeMeter Runtime DoS due to Buffer Access with Incorrect Length Value
- CVE-2020-14513 Improper Input Validation of Update Files in CodeMeter Runtime
- CVE-2020-14515 Improper Signature Verification of Update Files in CodeMeter Runtime
- CVE-2020-14517 CodeMeter Runtime API: Inadequate Encryption Strength and Authentication
- CVE-2020-14519 CodeMeter Runtime WebSockets API: Missing Origin Validation
- CVE-2020-16233 CodeMeter Runtime API: Heap Leak
Vulnerability Severity

The severity assessment is based on the FIRST Common Vulnerability Scoring System (CVSS) v3.1.

CVE-2020-14509  CodeMeter Runtime DoS due to Buffer Access with Incorrect Length Value
CVSS v3.1 Base Score: 10.0 (Critical)

CVE-2020-14513  Improper Input Validation of Update Files in CodeMeter Runtime
CVSS v3.1 Base Score: 7.5 (High)

CVE-2020-14515  Improper Signature Verification of Update Files in CodeMeter Runtime
CVSS v3.1 Base Score: 7.4 (High)

CVE-2020-14517  CodeMeter Runtime API: Inadequate Encryption Strength and Authentication
CVSS v3.1 Base Score: 9.4 (Critical)

CVE-2020-14519  CodeMeter Runtime WebSockets API: Missing Origin Validation
CVSS v3.1 Base Score: 8.1 (High)

CVE-2020-16233  CodeMeter Runtime API: Heap Leak
CVSS v3.1 Base Score: 7.5 (High)
CVSS v3.1 Vector: AV:N/AC:L/PR:N/UI:N/S:C/H/I:N/A:N

Corrective Actions or Resolution

WIBU Systems has closed all six vulnerabilities in CodeMeter Runtime version 7.10a. B&R has integrated CodeMeter Runtime version 7.10b\(^1\) into the following product versions:

<table>
<thead>
<tr>
<th>Product</th>
<th>Corrected Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>APROL</td>
<td>R 4.2-06P1</td>
</tr>
<tr>
<td>Technology Guarding</td>
<td>1.2.1.5</td>
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</tbody>
</table>

A fixed Technology Guarding version has been integrated into the following product version:

<table>
<thead>
<tr>
<th>Product</th>
<th>Corrected Version</th>
<th>Release Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automation Studio Target for Simulink</td>
<td>6.3.1.79</td>
<td>2021-01-05</td>
</tr>
<tr>
<td>Automation Studio</td>
<td>4.10</td>
<td>2021-06-01</td>
</tr>
<tr>
<td>PVI Development Setup</td>
<td>4.10</td>
<td>2021-06-01</td>
</tr>
</tbody>
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\(^1\) CodeMeter Runtime for Windows version 7.10a contained a bug in the setup routine which was fixed in version 7.10b.
Important note:
Vulnerable CodeMeter Runtime versions installed by Automation Studio, PVI Development Setup or Automation Studio Target for Simulink can generally be upgraded to a fixed version by installing Technology Guarding 1.2.1.5 or higher on the target system. Feasibility of such an upgrade depends on various factors like the installed version of Automation Studio, PVI Development Setup or Automation Studio Target for Simulink. In case you want to upgrade, please approach your B&R service contact.

Vulnerability Details
The CodeMeter Runtime software included in vulnerable B&R product versions is affected by six vulnerabilities. An adversary could exploit these vulnerabilities by sending a specially crafted message to affected systems. Upon receipt of that message, the systems may stop working or may become inaccessible, allowing the adversary to take control of the system or to insert and run arbitrary code on it.

For details about each vulnerability, please consult the respective security advisory published on the WIBU Security Advisories page.

Supporting information and guidelines
The B&R Cyber Security webpage provides further information including Cyber Security guidelines. Please find these resources here: https://www.br-automation.com/en/service/cyber-security/

Document History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>2021-02-10</td>
<td>Initial version</td>
</tr>
<tr>
<td>1.1</td>
<td>2021-09-10</td>
<td>Update of release dates</td>
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