

CYBERSECURITY ADVISORY

Apache Log4j v1.x and v2.x Vulnerabilities in Hitachi Energy's nMarket Global I-SEM

CVE-2019-17571

CVE-2021-4104

CVE-2021-44228

CVE-2021-45046

CVE-2021-45105

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Summary

Hitachi Energy is aware of the vulnerabilities Apache Log4j v2.x and Apache Log4j v1.x that are used in the product versions listed below. The product versions listed in this document are affected by the vulnerabilities related to the Apache Log4j v1.x and v2.x as elaborated in the Section Vulnerability ID, Severity and Details.

For immediate mitigation/workaround information, please refer to the Mitigation Factors/Workaround Section below. Hitachi Energy will continue to investigate and update this advisory as more information becomes available.

Affected Products and Versions

List of affected products and product versions:

- nMarket Global I-SEM versions: 3.7.15, 3.7.16

Vulnerability ID, Severity and Details

The vulnerability's severity assessment is performed by using the FIRST Common Vulnerability Scoring System (CVSS) v3.1. The CVSS Environmental Score, which can affect the final vulnerability severity score, is not provided in this advisory as it reflects the potential impact of the vulnerability in the customer organizations' computing environment. Customers are recommended to analyze the impact of the vulnerability in their environment and calculate the CVSS Environmental Score.

Vulnerability ID	Detail Description
<p>CVE-2019-17571 CVSS v3.1 Base Score: 9.8 CVSS v3.1 Vector: /AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H Link to NVD: click here</p>	<p>A flaw in the affected Apache Log4j 1.x version's SocketServer class makes it vulnerable to deserialization of untrusted data which can be exploited to remotely execute arbitrary code when combined with a deserialization gadget when listening to untrusted network traffic for log data.</p>
<p>CVE-2021-4104 CVSS v3.1 Base Score: 8.1 CVSS v3.1 Vector: /AV:N/AC:H/PR:N/UI:N/S:U/C:H/I:H/A:H Link to NVD: click here</p>	<p>JMSAppender in Log4j 1.2 is vulnerable to deserialization of untrusted data when the attacker has written access to the Log4j configuration. The attacker can provide TopicBindingName and TopicConnectionFactoryBindingName configurations causing JMSAppender to perform JNDI requests that result in remote code execution in a similar fashion to CVE-2021-44228.</p>
<p>CVE-2021-44228 CVSS v3.1 Base Score: 10.0 CVSS v3.1 Vector: /AV:N/AC:L/PR:N/UI:N/S:U/C:L/I:L/A:L Link to NVD: click here</p>	<p>In the affected version of Apache Log4j, JNDI features used in configuration, log messages, and parameters do not protect against attacker-controlled LDAP and other JNDI related endpoints. An attacker who can control log messages or log message parameters can execute arbitrary code loaded from LDAP servers when message lookup substitution is enabled.</p>
<p>CVE-2021-45046 CVSS v3.1 Base Score: 9.0 CVSS v3.1 Vector: /AV:N/AC:H/PR:N/UI:N/S:C/C:H/I:H/A:H Link to NVD: click here</p>	<p>It was found that the fix to address CVE-2021-44228 in Apache Log4j 2.15.0 was incomplete in certain non-default configurations. This could allow attackers with control over Thread Context Map (MDC) input data when the logging configuration uses a non-default Pattern Layout with either a Context Lookup to craft malicious input data using a JNDI Lookup pattern resulting in an information leak and remote code execution in some environments and local code execution in all environments.</p>

CVE-2021-40105

CVSS v3.1 Base Score: 7.5

CVSS v3.1 Vector:

/AV:N/AC:L/PR:N/UI:N/S:U/C:N/I:N/A:H

Link to NVD: click [here](#)

Apache Log4j2 versions 2.0-alpha1 through 2.16.0 (excluding 2.12.3) did not protect from uncontrolled recursion from self-referential lookups. This allows an attacker with control over Thread Context Map data to cause a denial-of-service when a crafted string is interpreted.

Recommended Immediate Actions

The Table below shows the affected version and the recommended immediate actions.

Affected Version	Recommended Actions
nMarket Global I-SEM 3.7.15, 3.7.16	<p>Deploy a new Global I-SEM application 3.7.16.01 – applicable for both SaaS and on-premises customers. Deployment duration may take at about 1 hour during which the end-user will have no access to the core functionality. The patch version contains only the update to Apache Log4J library from version 1.x to the newest version 2.x available during change preparation.</p> <p>Please contact your customer experience team at your earliest convenience.</p>

Frequently Asked Questions

What is Hitachi Energy's nMarket Global I-SEM application?

Product nMarket Global I-SEM is a solution for wholesale electricity market participants for Ireland.

It's offered as a SaaS and on-prem solution.

What might an attacker use the vulnerability to do?

An attacker who successfully exploited this vulnerability can insert and run arbitrary code on the application.

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 process. 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 the attacker 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.

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

Yes, the Apache Log4j vulnerability has been disclosed.

When this security advisory was issued, had Hitachi Energy received any report that this vulnerability was being exploited?

While instances of exploits to the Apache Log4j vulnerability have been reported, Hitachi Energy does not have information to indicate Hitachi's Energy's products have been exploited.

References

1. Apache Log4j Security Vulnerabilities - <https://logging.apache.org/log4j/2.x/security.html>

Support

For additional information and support please contact your product provider or Hitachi Energy service organization. For contact information, see <https://www.hitachienergy.com/contact-us/> for Hitachi Energy contact-centers.

Publisher

Hitachi Energy PSIRT¹ – cybersecurity@hitachienergy.com

Revision

Date of the Revision	Revision	Description
2021-12-17	A	Initial public release.
2021-12-21	B	Added additional information relevant to CVE-2021-45046
2021-12-23	C	Added additional information relevant to CVE-2021-45105, CVE-2019-17571 and CVE-2021-4104

¹ Signature file of this PDF is available at <https://www.hitachienergy.com/cybersecurity/alerts-and-notifications>