

CYBERSECURITY ADVISORY

Apache Log4j v2.x Vulnerabilities in Hitachi Energy's MMS Product's Internal Facing Subcomponent

CVE-2021-44228

CVE-2021-45046

Notice

The information in this document is subject to change without notice and should not be construed as a commitment by Hitachi Energy. Hitachi Energy provides no warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, for the information contained in this document, and assumes no responsibility for any errors that may appear in this document. In no event shall Hitachi Energy or any of its suppliers be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, or from the use of any hardware or software described in this document, even if Hitachi Energy or its suppliers have been advised of the possibility of such damages. This document and parts hereof must not be reproduced or copied without written permission from Hitachi Energy and the contents hereof must not be imparted to a third party nor used for any unauthorized purpose. All rights to registrations and trademarks reside with their respective owners.

Summary

Hitachi Energy is aware of the vulnerabilities – CVE-2021-44228 and CVE-2021-45046 [1] in Apache Log4j v2.x that are used in the product versions listed below. The product versions listed in this document are affected by the vulnerabilities related only to the Apache Log4j 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:

- MMS Internal facing subcomponent

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-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> |

The internal facing subcomponent of MMS is configured by our customers' IT team, to be behind several firewall(s) typically, and is not accessible from the internet. However, if an attacker is able to gain internal access successfully then they can exploit this vulnerability to insert and run arbitrary code.

Recommended Immediate Actions

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

| Affected Version | Recommended Actions |
|----------------------------------|----------------------------------|
| MMS internal facing subcomponent | Patch is available and delivered |

General Mitigation Factors/Workarounds

Recommended security practices and firewall configurations can help protect a process control network from attacks that originate from outside the network. Such practices include that process control systems are physically protected from direct access by unauthorized personnel, 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, and others that have to be evaluated case by case. Process control systems should not be used for Internet surfing, instant messaging, or receiving e-mails. Portable computers and removable storage media should be carefully scanned for viruses before they are connected to a control system.

The internal facing subcomponent of MMS is configured by our customers' IT team, to be behind several firewall(s) typically, and is not accessible from the internet.

An MMS release, containing the patch upgrade from Apache addressing this vulnerability has been provided to our customers, and/or other mitigation steps have been provided directly to our MMS customers.

Frequently Asked Questions

What might an attacker use the vulnerability to do?

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

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?

Hitachi Energy has observed different reports that the Apache Log4j vulnerability is being exploited in the wild.

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 |
|----------------------|----------|--|
| 2021-12-16 | A | Initial public release. |
| 2021-12-21 | B | Add additional relevant CVE-2021-45046 |

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