



# CYBER ADVISORY

**Cal OES**  
GOVERNOR'S OFFICE  
OF EMERGENCY SERVICES

**CALIFORNIA CYBERSECURITY INTEGRATION CENTER**



CYBER ADVISORY

**TLP:CLEAR**

23 October 2024

## Pac4j Deserialization Vulnerability

Pac4j-core

Security Framework

Deserialization

RCE

The California Cybersecurity Integration Center (Cal-CSIC) has become aware of one critical vulnerability under active exploitation known as CVE-2023-25581.<sup>1</sup> Pac4j is a security framework for Java. The vulnerability affects systems that store externally controlled values in attributes of the `UserProfile` class from pac4j-core. It can be exploited by providing an attribute that contains a serialized Java object with a special prefix `{#sb64}` and Base64 encoding. This can lead to Remote Code Execution (RCE). Proof of Concept demonstrates the exploitation of the CVE-2023-25581 to conduct RCE.<sup>2</sup> Although a `RestrictedObjectInputStream` is in place, that puts some restriction on what classes can be deserialized, it still allows a broad range of java packages and potentially exploitable with different gadget chains.<sup>3</sup>

The Cal-CSIC recommends immediately updating to the latest Pac4J version.

For further information on applying updates please refer to [Pac4J documentation](#).

### Organization, Source, Reference, and Dissemination Information

#### Organization Description

California Government Code § 8586.5 established the California Cybersecurity Integration Center (Cal-CSIC) as the central organizing hub of state government's cybersecurity activities, including information sharing, intelligence analysis, incident response, and overarching cybersecurity strategy. The Cal-CSIC is responsible for reducing the likelihood and severity of cyber incidents that could damage California's economy, critical infrastructure, and public or private sector networks in our state.

#### Customer Feedback

If you need further information about this issue, contact the Cal-CSIC at our email address [CalCSIC@caloes.ca.gov](mailto:CalCSIC@caloes.ca.gov) or by telephone at (833) REPORT1. To help us identify ways to better assist you, please submit feedback [here](#).

CAL-CSIC-202410-008

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<sup>1</sup> National Vulnerability Database; “CVE-2023-25581 Detail” <https://nvd.nist.gov/vuln/detail/CVE-2023-25581>; accessed 23 October 2024

<sup>2</sup> GitHub; “CVE-2023-25581” <https://github.com/p33d/CVE-2023-25581>; accessed 23 October 2024

<sup>3</sup> Github Security Lab; “Java deserialization leading to RCE in pac4j-core - CVE-2023-25581” [https://securitylab.github.com/advisories/GHSL-2022-085\\_pac4j/](https://securitylab.github.com/advisories/GHSL-2022-085_pac4j/); accessed 23 October 2024

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