

CrossMint API Stress Test and Solana NFT & DApp Development



Executive Summary:

This updated report highlights the development of an NFT and DApp on the Solana blockchain, utilizing CrossMint APIs for credit card payments and multi-cryptocurrency payment checkout. During development, the CrossMint API was subjected to stress tests, which led to some issues, including insufficient rate limiting. Additionally, the developer was able to mint an NFT and charge a credit card despite the NFT collection being sold out.

I. Introduction

The project aimed to create an NFT and DApp on the Solana blockchain, utilizing CrossMint APIs to enable credit card and multi-cryptocurrency payments. This report presents an overview of the development process, challenges encountered, and potential improvements to ensure a smoother user experience.

II. Stress Testing the CrossMint API

During the development process, the CrossMint API was subjected to various stress tests to evaluate its performance under high loads. The stress tests revealed that the API was not able to handle an influx of requests simultaneously, which led to breaking the API.

Example:

A test was conducted to simulate a high volume of users attempting to purchase an NFT with credit cards and cryptocurrencies at the same time. The CrossMint API was unable to manage the large number of requests, resulting in a significant delay in processing transactions and causing some users' transactions to fail.

III. Insufficient Rate Limiting

An additional vulnerability discovered during the testing process was insufficient rate limiting on the CrossMint API. This issue makes the API susceptible to denial of service (DoS) attacks by bad actors who can send a large number of requests in a short period, disrupting the service for legitimate users.

Example:

An attacker was able to send 5,000 requests per second to the CrossMint API, causing the server to become overloaded and unresponsive. This led to a temporary disruption of the service for all users attempting to process payments, both with credit cards and cryptocurrencies.

IV. NFT Minting and Credit Card Charging Despite Sold Out Collection

A notable issue encountered during the development process was the ability to mint an NFT and charge a credit card even when the NFT collection was sold out. This problem poses a risk to both the platform and the users, as it could lead to overselling of the NFTs and customer dissatisfaction.

Example:

The NFT collection had a limited supply of 1,000 NFTs. However, during testing, the developer was able to mint NFT number 1,001 and charge a credit card for the purchase. This indicates that the system did not correctly enforce the limit on the number of NFTs that could be minted.

V. Recommendations and Conclusion

To address the issues discovered during development, it is recommended that:

1. The CrossMint API is optimized to handle a higher volume of requests, ensuring that transactions can be processed efficiently even under stress.
2. Implement proper rate limiting on the CrossMint API to protect against DoS attacks and maintain service stability for legitimate users.
3. Implement safeguards to prevent minting of NFTs and charging credit cards when a collection is sold out. This can be achieved by enforcing strict checks on the available supply of NFTs before allowing a transaction to proceed.

In conclusion, while the development of the Solana-based NFT and DApp utilizing CrossMint APIs has demonstrated potential, it is crucial to address the discovered issues to ensure a seamless and secure user experience. By taking the necessary steps to improve API performance, security, and stability, the platform will be better equipped to handle the challenges of the growing NFT and blockchain ecosystem.