

JS-Capacitor Smart Account Kit

Architecture Document

We built the Capacitor Passkey Plugin which is an open-source Capacitor plugin that provides cross-platform native passkey functionality for iOS, Android, and Web, enabling JavaScript developers to build passkey-secured applications with support for biometric authentication and YubiKey hardware security keys. The plugin already integrates seamlessly into the legacy Passkey Kit, furthermore we've implemented an open-source Demo App that showcases the complete wallet creation flow powered by the plugin's passkey functionality.

With the introduction of the new Smart Account Kit supporting OpenZeppelin's smart contract standard, the plugin needs to be adapted to serve as the production-ready native mobile bridge for this new architecture. The Smart Account Kit expects WebAuthn responses differently, requires a storage interface for credential and session persistence, and uses DOMException-compatible error handling.

The goal of this technical document is to describe the architectural changes and improvements needed to make the plugin fully usable by the Smart Account Kit, including the new adapter module, storage module, standardized error handling, and a demo cross platform mobile application demonstrating the complete Stellar smart wallet lifecycle.

Changes and Improvements

Native Response improvements (Adapter module)

The native layers on all three platforms (iOS Swift, Android Kotlin, Web TypeScript) must be updated to return the full set of response fields expected by the Smart Account Kit. The adapter module guarantees full compatibility by translating between the plugin's format and the Smart Account Kit's expected format, filling in any gaps where native platforms cannot provide certain fields directly.

Storage Module

A new storage module providing mobile credential and session persistence for the Smart Account Kit. It implements the Smart Account Kit's storage interface using Capacitor's native preferences API as backend. The module handles all credential operations saving, retrieving, querying by contract, updating, and deleting as well as session management. It takes care of binary data serialization and maintains an internal index for efficient credential lookups.

Error Mapping

Standardized error mapping that translates plugin-specific error codes into DOMException-compatible errors, matching the format expected by the Smart Account Kit and the broader WebAuthn ecosystem. Each error preserves the original plugin error code for debugging while presenting a standard error name that any WebAuthn-based application can handle consistently across all platforms.

Test Infrastructure

Add vitest as TypeScript test runner. Add unit tests for adapter, storage, error mapping, and web implementation. Improve the unit tests on both mobile platforms.

Demo App

We will implement a new cross platform demo app from scratch using the Smart Account Kit, integrating the improved Capacitor Passkey plugin and showcasing the most important wallet operations.

Project Architecture

