"1Pass" White Paper

Introduction:

In today's digital world, the widespread use of global internet and information technology brings unparalleled convenience and velocity to everyday life and work. However, it also introduces new challenges and potential disruptions - one of the most pressing being the secure management and storage of passwords as well as sensitive account credentials.

These challenges are rampant across a plethora of internet systems, and become even further pronounced in the domain of cryptocurrency ecosystems where wallet addresses, private keys, and mnemonics are involved. These credentials represent confidential and critical personal data tied directly to a user's digital assets. Losing, forgetting, or having this data stolen can lead to severe consequences.

We believe the world needs a digital tool that is both **secure** and **incredibly easy to use** for managing confidential data. We proudly present our dedicated solution in this direction to you, **"1Pass"**.

Confidential Storage Application - 1Pass:

Delta doesn't just envisions to create the next-gen mainstream digital currency, but it is also committed to create a decentralized application ecosystem. At Delta, we firmly believe that these decentralized applications will drive meaningful utility for our flagship Delta coin. "1Pass" is an effort in this regard. We'll build "1Pass" as a confidential data storage and management dApp, based on Delta's robust decentralized security architecture.

1Pass emphasizes ease of use without compromising security. It eliminates the need for complex authentication credentials by leveraging Delta's unique account security mechanisms, specifically, the **3-No Authentication** model and **2-FA Security Circle** verification, as detailed in the Delta White Paper. Note: 3-No Verification chapter, Security Circle chapter.

Below, we'll outline the product's design philosophy and principles from the perspectives of security, reliability, and ease of use.

1. Reliability:

"1Pass" is operated by an independent canister at Internet Computer (ICP), and as a part of Delta's dApp ecosystem, its fuelling mechanism is overseen by the Delta's Main Canister, which is highly competent to manage its status and will allocate the required fuel cycles for its sustained operation. This mechanism ensures that 1Pass benefits from Delta's **sustainable fuel mechanism**, guaranteeing long-term operation without requiring additional fees or manual intervention.

By offering a free, reliable, and categorized data storage service for the Deltans, we believe that **1Pass** dApp will provide an intangible value to the Delta ecosystem. Furthermore, it also bolsters the Delta economy and supports the long-term value of Delta Coin. Note: For more information on the Delta Fuel Mechanism, please refer to the relevant section of the Delta White Paper.

2. Security and Ease of Use:

*As a confidential storage management application, **data loss** and **leakage** are unacceptable for "1Pass". Therefore, we run "1Pass" in a multi-layered security environment to ensure zero tolerance for data loss or leakage.*

2.1 **Runtime Environment Layer** – 1Pass utilizes a dedicated canister on the ICP, which offers a secure, isolated, and fully encrypted environment. This environment offers an encrypted space where the internal data can't be accessed or tampered with, even by the system operators. (Learn more about ICP: What is Internet Computer?)

2.2 **Data Transfer Layer** – All communication between clients and the Canister use the industry-standard **HTTPS (SSL/TLS)** transmission security protocol for encrypting the transmitted data, which in turn effectively prevents data interception or tampering during the data transmission process.

2.3 **Permission Layer** – Access to stored data within the 1Pass dApp is strictly controlled and requires **explicit user authorization**. 1Pass relies on Delta's **"3-No Authentication + 2-FA Security Circle Verification"** model, which provides robust protection without the need to remember or manage traditional credentials. This ensures that the user access isn't just secure but convenient at the same time.

2.4 **Usage Layer** – Before data is stored in the 1Pass smart contract, it is **pre-encrypted** and **compressed** on the client side utilizing a **user-defined passphrase**. When users need to access the data on 1Pass, the decompression and decryption can only be carried out on the client side using the passphrase. This passphrase is generated by the user and stored in the client.

In order to ensure that this phrase isn't lost, the 1Pass dApp will prompt the user to record and save this pass phrase externally. The dApp also generates a **phrase hint**

associated with the phrase, which contains the first 3 characters, the last 3 characters, and the length of the middle omission, which is designed to aid the users in remembering these phrases without revealing the full content.

Most importantly, even if someone discovers the pass phrase, they cannot read your confidential data unless authorized, thanks to the Delta's underlying security mechanisms. The Delta's access authorization in itself is robust enough to ensure there's zero possibility of data theft. Even the 1Pass application team cannot access user data, as the pass phrase is never stored or transmitted to the server.

3. User Experience:

Users are only required to set up and input the pass phrase **once**, either during the initial setup or after reinstalling the app. From that point onwards, the client device stores and uses the pass phrase automatically for decryption, making the decrypting process seamless.

The ease of access as well as usage is one of the primary reasons why the application has adopted the name "**1Pass**" – your perfect password management partner that adapts to your needs and empowers you with a digital vault to store all your passwords, credentials, credit card details, etc. in one place.

Notes:

① Some of the concepts in this article have been vividly described in the Delta whitepaper. For better comprehension of this article, we encourage you to read the "Delta White Paper". https://www.delta.kim/auto/whitepaper

② The design philosophy as well as the cybersecurity aspect of this application is inspired by "Delta 3-No Verification" and the password management product "1password". (Learn more about 1password here: https://www.1 password.com

③ To ensure the transparency and credibility of this application, we have kept the source code pertaining to this project 100%-open source. Code repository: https://github.com/delta-kim/1pass

Haida and Sushobhan in July 2025