Single Block On

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Abstract

In the digital age, individuals increasingly maintain active presences across multiple platforms—ranging from social media and messaging applications to professional and communication tools. However, the current model for managing user-level privacy and abuse is siloed, requiring users to block undesirable contacts independently on each platform. This paper introduces Single Block On (SBO)—a unified and interoperable system enabling users to block an individual once and have that block propagated across all integrated applications. SBO operates via identity-based matching rules, utilizing configurable levels of identifier similarity, and interfaces with systems through standardized protocols such as SSO, LDAP, or direct REST integration. A novel Contact Rule Markup Language (CRML) facilitates consistent policy sharing across systems. The proposed solution increases user safety, enhances digital well-being, and sets a precedent for interoperable privacy enforcement.

1 Introduction

The increasing fragmentation of digital ecosystems has given rise to a critical gap in user control and safety management—specifically, in the ability to block other users across platforms. Today, if a user wishes to block a harassing or unwanted individual, they must independently initiate blocks across every application they use: from social media (e.g., Facebook, Instagram) and messaging apps (e.g., WhatsApp) to email providers and collaboration tools. This manual process is inefficient, error-prone, and fails to provide users with holistic protection.

This paper proposes a solution that mirrors the philosophy of Single Sign-On (SSO), where a user logs in once to gain access across multiple systems. We call this Single Block On (SBO)—a mechanism by which blocking a contact in one centralized system automatically extends that block across all user-authorized applications.

To the best of our knowledge, no existing invention or standard provides a user-centric, identity-based, and interoperable block list mechanism. We present SBO as a novel system that fills this technological and social gap.

2 Brief Description of the Invention

This invention proposes that if anyone blocks one or more user's email/user id/username/phone number/profile image or any other identifier in their "Single Block On" facility, then those users having those blocked user ids or other identifiers would be blocked on all digital platforms in which the blocking user has integrated their "Single Block On" facility. This invention will make it easier to block users across applications once identified in any application. It will not only save time, but also ensure that any unwanted user cannot continue to appear unblocked on any application using any of the similar identifiers.

3 Reduction to Practice

The proposed Single Block On system has been conceptually designed and is capable of practical realization via current web and authentication technologies. The system architecture includes the following components:

3.1 SBO Providers

Entities that host and manage block lists. Examples include sbo.aws.com, sbo.ibm.com, or sbo.free.com. Users create SBO accounts with these providers and define "Block Lists" containing unwanted contacts.

3.2 User-Created Block Lists

Users can define lists based on identifiers such as:

1. Email addresses
2. Phone numbers
3. Usernames
4. Profile pictures
5. Biographical information
6. Other contact metadata

Users configure matching rules with specified strictness levels: Strict, Medium, or Lenient.

3.3 Contact Rule Markup Language (CRML)

A structured data format (XML/JSON) to describe block lists and associated matching rules. CRML enables communication between SBO providers and client applications.

3.4 Integration Methods

Applications can consume SBO data through various methods:

1. Via SSO providers (e.g., OAuth)
2. Via LDAP servers
3. Direct integration through REST APIs
4. Manual provision of SBO credentials during app login
5. Priority rules allow for multiple SBO integration strategies.

3.5 Rule-Based Matching Engine

Applications use the identifiers and rules specified in CRML to match and block corresponding user profiles. Matching can include fuzzy matching and logical operations (AND, OR, etc.).

3.6 Real-Time Enforcement

Block lists can be refreshed:

1. Periodically (auto-refresh)
2. On login
3. On each request
4. Manually via user or system triggers

3.7 Multi-Provider Support

Users can register with multiple SBO services, with all block lists considered during application enforcement.

This complete pipeline—from identifier registration to real-time enforcement—demonstrates that the proposed invention is not only theoretically sound but also readily implementable with existing technologies.

3.8 Following are the steps of Implementation

- Free or paid "Single Block On/SBO" providers will be available on the internet. For example sbo.google.com, sbo.ibm.com, sbo.aws.com, sbo.free.com, sbo.paid.com etc.
- A user will create an account with a "Single Block On" provider on web. For example, the created account named "alexandergrahambell" with SBO provider sbo.aws.com
- The user will create a block list named "Block List 1" on sbo.aws.com in that account.
- In the block list, the user will add the contacts which should be blocked.

- The user will provider identifiers whose similarity should be considered for each added contact.
- The identifiers can be textual, or image based.
- Examples of identifiers are:
    1. Full Name
    2. Email Id
    3. Phone Number
    4. Profile Image
    5. Username i.e., the username name used by the Contact in applications
    6. Gender
    7. Age
    8. Location
    9. Biodata
    10. A mix of these identifiers
- The system will come configured with the default list of selected contact identifiers. The user can override that list and provide its own list of identifiers.
- The user will also provide the level of strictness of similarity to enforce while matching Contacts i.e., Strict, Medium, or Lenient.
    1. For Strict matching, the values of the identifiers should be equal or near equal textually.
    2. For Medium matching, the values of the identifiers can differ by few characters.
    3. For Lenient matching, the values of the identifiers can differ by more characters than in medium matching.
- The user can configure the SBO account and the BLOCK LIST at following levels:

1. Configure/Integrate the SBO with the SSO provider: When the application will authenticate via SSO, then the application will fetch the SBO and block list details from the SSO provider for the authenticated account. The user will authorize the SSO provider to authenticate to the configured SBO and extract the details of the configured Block List.
2. Configure/Integrate the SBO with the LDAP provider: When the application will authenticate via LDAP, then the application will fetch the SBO and block list details from the LDAP server for the authenticated account. The user will authorize the LDAP server to authenticate to the configured SBO and extract the details of the configured Block List.
3. Configure/Integrate the SBO directly in the application: The user can configure/integrate the SBO details directly in the application. The user can authorize the application to authenticate to the SBO provider and fetch the details of the block list.
4. Provide the SBO details to the app at the time of logging in: The user can provide the SBO provider details and the Block List name at the time of logging into the application.
5. The user can configure the priority of each type of SBO integration. If the user configures the SBO using multiple methods, then the available/configured SBO integration method having highest priority will override all other SBO integrations provided by the user.

- The system will provide multiple methods to match Contacts. The application owners can also provider their own custom methods for Contact Matching. **Rule Based Matching**

  1. The user will select the profile that the user wants to block.
  2. The system will identify all contact identifier entities on the profile e.g., Name, Email, Data of Birth, Gender, Address, Education etc.
  3. This automatic detection of identifiers of a Contact for the creation of matching rules is visualized in the image below.

Figure 1: Contact-Identifiers-detected-by-the-LLM

4. The user will be able to select these identifiers to create MATCHING RULE at the block list level for the contact to match.
5. Once the user selects any matching identifier the user will get options like MATCHES, EQUALS, GREATER THAN, FUZZYMATCHES, AND, OR etc.
6. Using these options, the user will be able to use the UI to create matching rules which will internally look like following. E.g., (Full Name MATCHES AND Phone Number MATCHES) OR (Photograph MATCHES AND Gender MATCHES AND Location MATCHES) OR (Bio MATCHES AND Email Id Matches) OR (Username MATCHES AND Bio FUZZYMATCHES)
7. The system will also come with default matching rules.
8. The default MATCHING RULE will be provided by the SBO provider. The user can override that rule.

- The application will fetch the Contact Details and Matching Rule's details from the SBO provider for the Block List which was found to have the highest priority.
- The Contact Details and the Matching method's details will be shared by the SBO provider to the application via REST in a structured format.
- This structured format can be called CRML i.e.," Contact Rule Markup Language"(like SAML). It can be a structured XML or JSON.

- CRML will contain information about the contacts and the contact matching rule's details.
- When any user will log in, then the application will iterate over the Contact List received from the SBO provider, and match the contacts in the list with all the Profiles interacting with the user using the MATCHING method's details received from the SBO provider via CRML.
- The application will block access and visibility to all the users whose profiles will match the retrieved list.
- When any blocked user will login, then the application will fetch the users from all integrated SBO providers who have blocked this user in one or more SBO providers.
- The application will disable/block access of the blocked user to the users/user account who have blocked this user.
- If the user updates the Block List in the SBO, then the new block list can be refreshed in the application by:
    1. Refreshing Block List automatically after every T seconds/minutes etc.
    2. Triggering refresh of cached block list manually in the application.
    3. Logging out and logging in again as every login can be configured to extract the fresh block list.
    4. Every new request to the application checks for update in the block list.
- The user can also configure multiple SBO providers and multiple Block Lists in each SSO account. The application will apply to all the block lists received from all the configured SBO accounts.

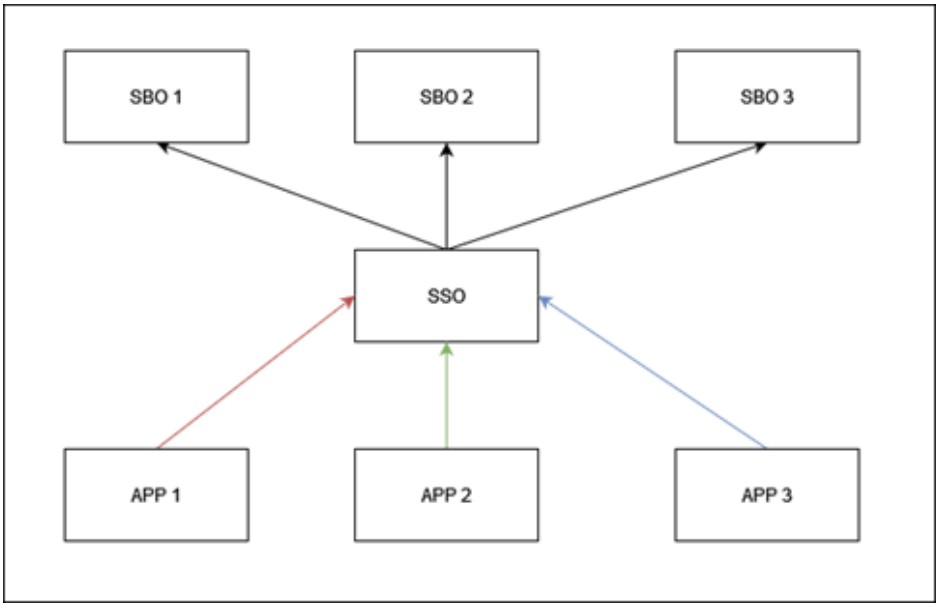

Figure 2: Application-Integrating-with-SBO-via-SSO

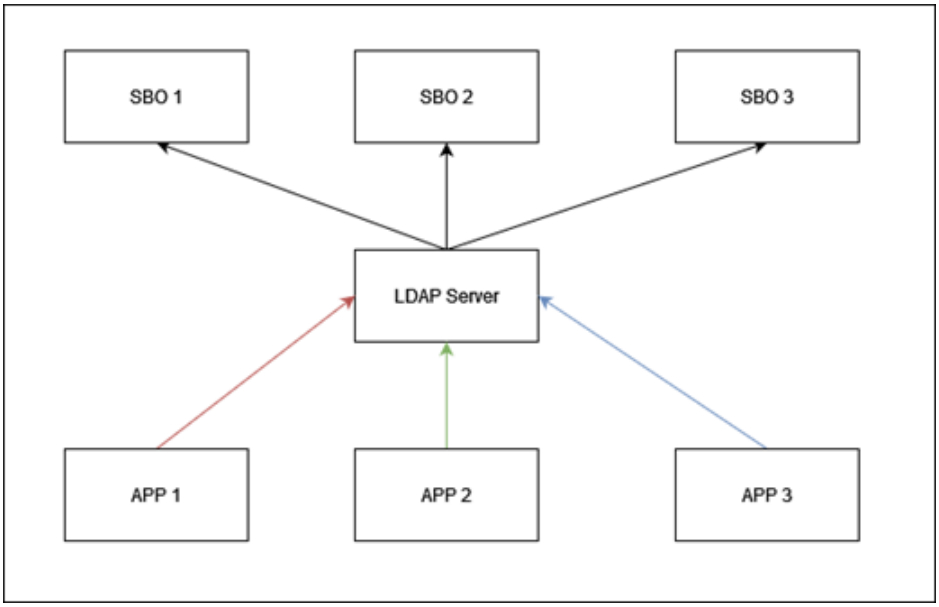

Figure 3: Application-Integrating-with-SBO-via-LDAP

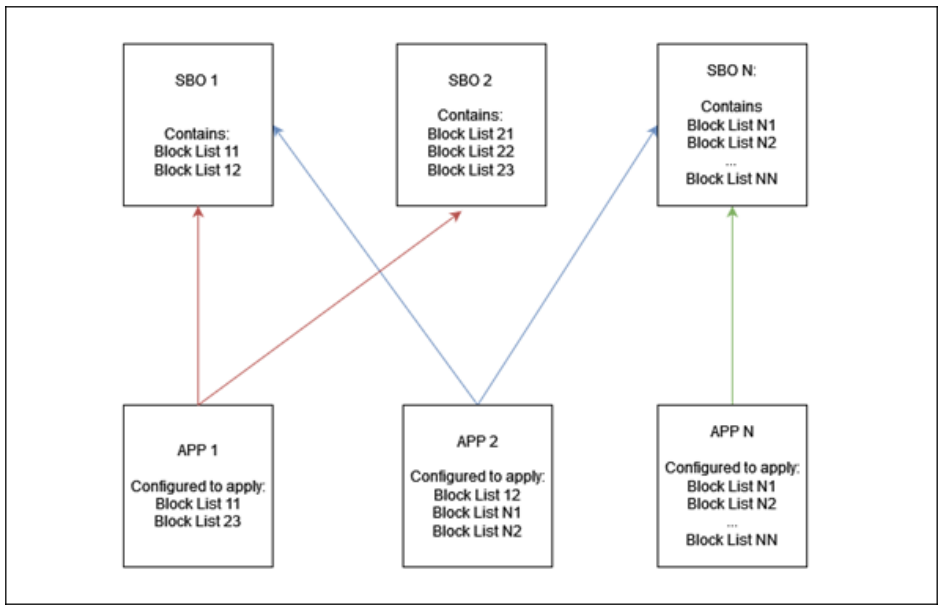

Figure 4: Direct-Integration-of-SBO-with-Application

4 Advantages of the Invention

The Single Block On invention provides several advantages:

1. Unified Privacy Management : Users can centrally manage all block actions from one interface rather than repeating the same action across multiple platforms.

2. Cross-Platform Consistency : Once blocked in SBO, a contact is effectively blocked everywhere—on email, messaging, social, professional, and collaborative platforms that the user connects.

3. Time and Cognitive Load Reduction : Instead of remembering to block an individual across 10 different systems, the user performs the action once.

4. Interoperable and Vendor-Agnostic : SBO is designed to integrate with multiple identity systems and is platform-agnostic, allowing independent developers and organizations to adopt it easily.

5. Standardization Through CRML : CRML serves as a de facto schema standard to facilitate interoperability between SBO services and applications.

6. Configurable Identity Matching : Supports multiple identity types (email, phone, profile picture, etc.) and allows for fuzzy matching and customizable rule logic.

7. Improved User Safety : Harassment, spam, or abuse mitigation becomes more robust, especially for vulnerable populations or high-profile individuals.

5 Conclusion

This paper presents Single Block On (SBO), a new paradigm in digital user safety and privacy management. By extending the metaphor of Single Sign-On to blocking functionality, SBO allows users to block malicious or unwanted contacts across multiple platforms via a single action. Through the use of rule-based matching, multi-identifier configuration, real-time enforcement mechanisms, and the introduction of the Contact Rule Markup Language (CRML), SBO is both a practical and innovative system capable of revolutionizing digital privacy practices.

The proposed system is ripe for implementation using existing identity and application infrastructure. Future work includes defining the CRML standard through open consortia, developing open-source reference implementations, and promoting industry-wide adoption. SBO represents a meaningful advancement in how users manage their online presence and interactions in a decentralized digital world.

6 Acknowledgment

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