SolCall: Decentralized Communication for the Solana Ecosystem

Abstract

SolCall is a decentralized communication protocol that assigns unique, user-friendly SolCall Numbers to Solana wallet addresses, enabling secure, pseudonymous, and trustless voice and messaging services. By leveraging Solana's high throughput and low fees, SolCall aims to become the communication layer for Web3, empowering users, DAOs, and projects to connect and collaborate without centralized intermediaries.

1. Introduction

The rapid growth of the Solana ecosystem has brought millions of users, thousands of dApps, and vibrant communities. However, communication remains fragmented, relying on off-chain platforms (Discord, Telegram, Twitter) that are centralized, prone to privacy risks, and disconnected from on-chain identity.

SolCall bridges this gap by providing a decentralized, on-chain communication protocol. With SolCall Numbers mapped to Solana addresses, users can call, message, and discover each other directly through the blockchain—without exposing personal information or relying on third parties.

2. Vision

SolCall envisions a world where blockchain users communicate as seamlessly and securely as they transact. Our mission is to:

- Make decentralized, on-chain communication as intuitive as sending a token.
- Empower users with privacy, security, and control over

their communication identity.
- Enable DAOs, NFT projects, and DeFi protocols to build stronger, more connected communities.

3. Service Overview

3.1 SolCall Numbers

SolCall Numbers are unique, easy-to-remember numeric identifiers (e.g., 123456) that are cryptographically mapped to Solana wallet addresses. They serve as your on-chain communication identity, replacing complex wallet strings with a simple number.

3.2 Solana Phonebook

The Solana Phonebook is an open, on-chain directory of SolCall Numbers and their associated public metadata (e.g., project name, DAO, support line). Users can browse, search, and verify entries, ensuring trustless discovery and connection.

3.3 Decentralized Calling & Messaging

SolCall enables peer-to-peer voice calls and messaging, authenticated by wallet signature. No phone numbers, SIM cards, or centralized servers are required. All communication is routed using open standards and can be end-to-end encrypted.

4. Utility

4.1 Identity

SolCall Numbers provide a persistent, pseudonymous identity for communication across the Solana ecosystem. Users can share their number instead of a wallet address or personal info.

4.2 Privacy & Security

All calls and messages are authenticated via wallet signature, ensuring only the true wallet owner can initiate or receive

communication. No personal data is required or stored.

4.3 Community Building

DAOs, NFT projects, and DeFi protocols can set up hotlines, support lines, and group calls, all verifiable on-chain. This fosters trust, transparency, and engagement.

4.4 Interoperability

SolCall Numbers can be integrated into dApps, wallets, and Solana-based platforms, enabling seamless user experiences and new use cases (e.g., in-app support, DAO governance calls).

5. Technical Architecture

5.1 On-Chain Registration

- **Smart Contracts:** SolCall Numbers are minted and mapped to Solana addresses via smart contracts. Registration is permissionless and transparent.
- **Metadata Storage:** Public metadata (e.g., display name, project info) is stored on-chain or via decentralized storage (e.g., Arweave, IPFS).

5.2 Authentication

- **Wallet Signature:** All communication requests require a Solana wallet signature, preventing spoofing and unauthorized access.
- **Session Management:** Temporary session keys can be generated for encrypted calls and messages.

5.3 Communication Protocol

- **Open Standards:** SolCall uses SIP (Session Initiation Protocol) for voice calls, ensuring compatibility with existing VoIP infrastructure.
- **P2P Routing:** Calls and messages are routed peer-to-peer, minimizing latency and central points of failure.
- **Encryption:** End-to-end encryption is implemented for all

communications, ensuring privacy and security.

5.4 Phonebook Management

- **On-Chain Directory:** The Solana Phonebook is maintained on-chain, with updates mirrored to GitHub for transparency and easy integration.
- **Search & Discovery:** Users can search by number, project, or tag, with all entries verifiable on-chain.

5.5 Scalability

- **Solana Native:** Built on Solana, SolCall benefits from high throughput, low fees, and fast confirmation times, supporting mass adoption and real-time communication.

6. Roadmap

Phase 1: Core Protocol Launch

- SolCall Number registration and mapping
- On-chain Solana Phonebook
- Basic peer-to-peer calling and messaging

Phase 2: Ecosystem Integration

- dApp and wallet integrations
- DAO project onboarding
- Community support lines and hotlines

Phase 3: Advanced Features

- End-to-end encrypted group calls and messaging
- Cross-chain communication (e.g., Ethereum, Cosmos)
- AI-powered voice services (e.g., automated support, voice bots)

Phase 4: Governance & Monetization

- Community-driven governance (DAO)
- Premium features (e.g., vanity numbers, number auctions)
- Revenue sharing and token incentives

7. Adaptability for Solana Users

7.1 Familiar UX

SolCall Numbers replace complex wallet addresses with simple, memorable numbers, making onboarding and communication intuitive for all users.

7.2 Easy Onboarding

Claiming a SolCall Number requires only a Solana wallet and a signature—no KYC, no phone number, no personal data.

7.3 Community-Driven

SolCall is open-source, transparent, and governed by the Solana community. Contributions, audits, and integrations are encouraged.

7.4 Composability

SolCall can be integrated into any Solana dApp, wallet, or platform, enhancing user engagement, retention, and utility.

8. Security Considerations

- **Authentication:** All actions require wallet signature, preventing unauthorized access.
- **Privacy:** No personal data is collected or stored; all communication is encrypted.
- **Resilience:** P2P architecture and open standards minimize central points of failure.
- **Audits:** Smart contracts and protocol code are open-source and subject to community audits.

9. Future Vision

SolCall aims to become the default communication layer for Web3, starting with Solana and expanding to other blockchains. By combining on-chain identity, privacy, and open standards,

SolCall will empower users, projects, and communities to connect, collaborate, and build the future of decentralized society.

10. Conclusion

SolCall is building the missing link for the Solana ecosystem: secure, decentralized, and user-friendly communication. By leveraging Solana's speed and composability, SolCall Numbers and the Solana Phonebook unlock new possibilities for identity, privacy, and community in Web3.

Website: solcall.club
GitHub: https://github.com/SolCall01/SolCall/blob/main/phonebook
Telegram: @solcallportal

This document is a living white paper and will be updated as the protocol evolves. Community feedback and contributions are welcome.