

GetOTP

A Smart Companion for Reliable OTP Delivery

Edited by **MOHAN DAS VISWAM**

In the digital age, One-Time Passwords (OTPs) serve as the backbone of secure transactions, identity verifications, and countless login procedures. From banking and e-governance to e-commerce and app security, OTPs are indispensable. But ironically, the very system trusted to deliver them - SMS - is showing signs of strain.

With poor mobile networks, Do Not Disturb (DND) filters, and the increased regulation brought on by TRAI's Distributed Ledger Technology (DLT) requirements, SMS delivery has become not just expensive but fragile and unreliable. Countless users experience failed logins or transaction breakdowns due to delayed or undelivered OTPs.

Enter GetOTP — a lightweight Android application that bypasses all the traditional hurdles of SMS-based OTP delivery. It offers a robust, secure, and cost-free method of delivering OTPs via the internet. No SMS, no delays, no registration, and best of all — no cost per message.

The design philosophy behind GetOTP is rooted in a simple observation: if SMS can fail, why not switch the channel altogether?

Unlike conventional SMS OTP systems that rely on mobile networks, GetOTP employs a pull-based internet model where the user retrieves their OTP from a secure backend using a silent, device-recognition approach. No mobile number needs to be typed, no OTP needs to be copied, and no account needs to be created.

Key Objectives of GetOTP

- **Plug-and-play utility:** Seamless integration with any host application without altering back-end logic
- **SMS-free delivery:** 100% internet-based



Ambati Bubli Sagar
Scientist - B
sagar.ambati@nic.in



GetOTP is a smart Android app that delivers OTPs via the internet, bypassing unreliable SMS channels. It ensures fast, secure, cost-free delivery using device recognition—no login, no SMS needed. Designed for developers and organizations, GetOTP offers plug-and-play integration, high delivery success, zero message cost, and strong privacy. It's the future-ready solution for seamless, scalable OTP authentication.



- **Zero login:** No user account or SMS verification needed
- **High security:** No access to host app credentials or private user data
- **High delivery success:** Operates efficiently in low-network or DND-filtered zones
- **Zero message cost:** Scalable without worrying about rising costs

GetOTP is built for organizations and developers who need large-scale, dependable OTP delivery — without incurring the costs or failures tied to SMS gateways.

Technology Stack

GetOTP's strength lies in its minimalist, efficient tech stack that's specifically tailored for reliability, privacy, and scalability.

- **Android SDK (Java):** Provides native support across all Android devices, ensuring wide compatibility
- **PHP:** Powers the API layer for handling OTP

generation, fetch requests, and device validations

- **MySQLi:** Manages server-side storage of OTPs, device identifiers, and expiry timestamps
- **SQLite:** Secures on-device data without requiring cloud-based or third-party syncing

By consciously avoiding Firebase or any push-notification dependency, GetOTP ensures consistent performance even on low-end devices or in poor internet conditions. It also eliminates any variable costs or third-party limitations.

Innovation

GetOTP redefines OTP delivery through its pull-based architecture, which removes dependency on mobile network infrastructure altogether. It offers both greater reliability and better control over OTP access.

Key Innovations

- **User-Initiated OTP Fetch:** Puts the power in the user's hands, minimizing failed deliveries
- **No Credential Sharing:** Keeps host systems isolated and secure — there's no need for app login or SMS interception
- **Silent Trust Model:** Recognizes devices securely using Android ID and mobile number, without asking the user to type either
- **Minimal Permissions:** The app does not request access to SMS, contacts, storage, or even location

Software Architecture

The core architecture follows a lightweight 3-tier structure:

- **Android App** — Simple UI with device recognition and OTP display
- **PHP API Layer** — Interprets fetch requests and communicates with the backend
- **MySQL Server** — Stores and validates OTPs with expiry timestamps and device ID mapping

This design ensures the app is portable across platforms like iOS, KaiOS, or even Linux-based kiosks — enabling wide-scale adoption in both public and enterprise environments.

Step-by-Step Flow

The GetOTP system operates with minimum

friction and maximum security. Here's how it works:

Mobile Number Detection

When the app is first installed, it automatically attempts to detect the user's mobile number (if permissioned). Alternatively, it can be securely provided via the host authenticator app and locked to the device to prevent spoofing.

OTP Generation (Host-Side)

The host system continues to generate OTPs based on its usual logic — time-based, random string, or user-triggered.

Device Recognition

The app identifies the user's device using the Android ID and the associated mobile number. This replaces the need for login or SMS verification.

User Requests OTP

When the user opens the app, it makes a secure call to the backend to fetch the current OTP.

Server Validation

The backend checks whether the OTP is still valid, verifies the device ID against the expected mapping, and ensures no tampering has occurred.

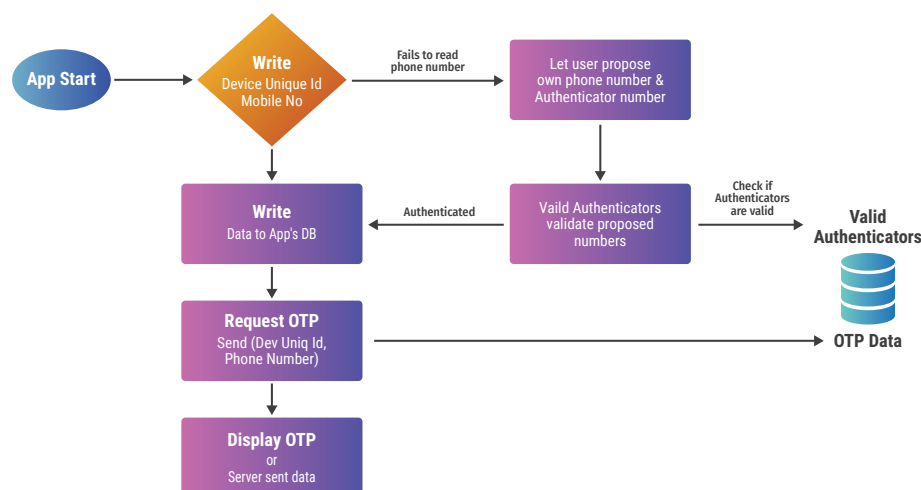
OTP Display

Once validated, the OTP is displayed on-screen, never shared with the clipboard or other apps. The OTP disappears after a set duration or when used.

This flow ensures that users always receive their OTP on time — no SMS delays, no spoofing, and no access hurdles.

Benefits

- **Bypasses SMS Weaknesses:** No more waiting for SMS to arrive. No more fights with the mobile network operator. GetOTP delivers consistently over any internet connection
- **No Onboarding Required:** Users don't need to sign up, log in, or share personal information. De-



▲ Fig 12.1

GetOTP Architecture

vice recognition is fully silent and secure

- **Easy Integration:** Organizations don't need to overhaul their backend systems. GetOTP is compatible with existing OTP generation logic
- **Flat Cost Model:** Unlike SMS gateways that charge per OTP, GetOTP runs on your server's bandwidth — lakhs of OTPs with zero messaging cost.
- **Stronger Privacy & Security:** The app doesn't read SMS, doesn't store OTPs on-device, and doesn't sync with cloud services. It's phishing-resistant and data-minimal.
- **Fewer Complaints, Higher Conversions:** Apps and services that use GetOTP see fewer user complaints, fewer failed authentications, and smoother user journeys.

The Future of GetOTP

The current version of GetOTP already solves one of the most persistent problems in digital ecosystems. But the team is committed to pushing its utility further with upcoming features that will make it even more flexible, secure, and auditable.

Roadmap

- **QR-Based Device Linking:** Allow OTP fetch via secure, time-limited QR sessions — great for desktop-web interactions
- **Tamper-Proof Audit Trails:** OTP access logs hashed and chained to prevent tampering
- **Biometric OTP Protection:** Allow OTPs to be visible only after fingerprint or face scan
- **Admin-Gated Visibility:** Enable OTPs to be shown only during specific time windows or admin-controlled sessions
- **Shared Device Mode:** Special profiles for Common Service Centres (CSCs), ATMs, or kiosk systems
- **Offline Cache (Optional):** OTPs can be temporarily cached (encrypted) to enable offline retrieval in remote areas

With these additions, GetOTP aims to become the digital backbone of secure, low-cost, and frictionless OTP delivery for both private and public digital infrastructure.

Conclusion

As digital trust becomes the currency of modern platforms, the humble OTP continues to play a starring role in user authentication. Yet, with SMS proving to be a fragile channel, we must ask — why rely on it?

GetOTP offers a bold, practical answer. It replaces outdated infrastructure with a simple, secure, and scalable model that just works — no matter where you are or how many OTPs you send.

In a world where users abandon carts, sessions expire, & networks drop signals - GetOTP delivers.

Contact for more details

Ambati Bubli Sagar
Scientist-B
NIC, R&B building, Vijayawada Rd, Punammathota
Labbipet, Vijayawada, Andhra Pradesh - 520010
Email: sagar.ambati@nic.in

▼ Table 12.1 : Comparison between SMS Gateway, Firebase Push and GetOTP

Feature	SMS Gateway	Firebase Push	GetOTP
Works without mobile network	✗	✗	✓
Avoids DND filters	✗	✓	✓
Zero message cost	✗	✓	✓
Works on shared devices	✗	✗	✓ (configurable)
Requires registration	✓	✓	✗
Privacy-safe	✗ (reads SMS)	✓	✓ (minimal access)