# x402-CoinData

**Product in One Sentence:**
x402-CoinData transforms subscription-based crypto APIs like CoinGecko into a pay-per-request API using X402, enabling developers, bots, and agents to access real-time market data without paying for a full monthly subscription.

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**What's the Problem Statement:**
Developers, bots, and on-chain agents often need only a few API calls per day to crypto market data providers such as CoinGecko. Current pricing models are subscription-based, requiring users to pay for a whole month even if they only need minimal usage. This creates friction for indie developers, hackathon projects, small bots, or agents that need micro-usage, making access expensive, inflexible, and wasteful. Existing APIs do not provide a seamless way for pay-as-you-go access, and developers must either overpay for subscriptions or build complex workarounds to share a subscription among multiple users.

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**How is this solved today?**
Currently, developers either:

- Pay for a full monthly subscription even for minimal API usage.
- Build their own backend proxy to share a subscription, which requires maintaining servers, handling billing, and ensuring fair usage among multiple users.
- Use rate-limited free APIs, which may not be reliable for production bots or apps.

There is **no simple, atomic pay-per-request system** for crypto data that works natively with wallets and web3 tools.

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**How does X402 improve this flow?**
x402-CoinData introduces **a pay-as-you-go layer for crypto data APIs using X402**:

1. **Atomic, wallet-native micro-payments:**
    - Each API request is paid individually using X402.

    - Developers, bots, or agents pay only when they make a request, avoiding monthly overpayments.

2. **Shared subscription model:**
    - Our backend maintains a subscription to CoinGecko (or other APIs).
    - We expose a pay-per-request API to multiple users without exposing upstream credentials or rate limits.

3. **Permissionless, frictionless access:**
    - Users do not need accounts or API keys.
    - Any wallet can pay and instantly access data.

4. **Flexible, composable usage:**
    - Works for bots, agents, dApps, and scripts.
    - Each request can be priced dynamically based on demand or computational cost.

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**How does the final product flow work?**

1. Our server subscribes to CoinGecko and caches data to optimize usage.
2. Users (developers, bots, or agents) make API requests to x402-CoinData.
3. The server responds with a **402 Payment Required** message, indicating the X402 payment amount for the request.
4. Users pay via their wallet (X402 transaction).
5. Once payment is verified, the server returns the requested data.
6. The server aggregates multiple user requests, ensuring efficient use of the upstream CoinGecko subscription.
7. Optionally, developers can integrate this API directly into their bots, scripts, or dApps without worrying about subscription limits or account management.

**Optional Features:**

- Tiered pricing for high-demand endpoints
- Historical snapshots or derived analytics
- Delayed / batched data delivery for cost optimization