# Polygon POL Net-Flow Indexer & API

**By**: Aditya Jaiswal

**Project Overview**

This project is a blockchain data indexer and API service.

It monitors the Polygon blockchain in real-time and tracks the net flow of MATIC tokens (POL) into and out of specific Binance exchange addresses.

The data is stored in a PostgreSQL database and made available via a REST API endpoint (/net-flow).

**Key Features**

1. Blockchain Indexer

* Connects to Polygon RPC.
* Reads new blocks continuously.
* Filters transactions involving Binance hot wallets.
* Tracks inflows (to Binance) and outflows (from Binance).

2. Database Integration

* Stores raw transfers (transaction-level details).
* Keeps cumulative totals of inflow and outflow.
* Maintains snapshots for historical queries.
* Maintains state so it can resume after restart.

3. REST API

* Exposes /net-flow endpoint.
* Returns the latest cumulative inflows, outflows, and net flow in JSON.

**Tech Stack**

* Language: Rust (fast, memory-safe, async capable).
* Blockchain SDK: ethers-rs a (for Polygon RPC).
* Framework: Axum a (HTTP server).
* Database: PostgreSQL.
* ORM: SQLX 7.
* Runtime: Tokio.
* Logging: Tracing.

**Note (**To run)

* Set **POLYGON\_RPC** and **DATABASE\_URL** in a **. env** (I have included **.env. example** ), run the **schema.sql** against your Postgres DB, then **cargo run --release**.

**Example of Transactions**

**Input**

* Block 501

TxHash Oxaaa :

* From: 0x111
* To: 0xF977... (Binance)
* Value: 1 MATIC = 1000000000000000000 wei
* Block 502

TxHash Oxbbb :

* From: 0x977...(Binance)
* To: 0x222
* Value: 2 MATIC = 2000000000000000000 wei

**Output**

* Database: raw\_transfers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| id | block\_number | tx\_hash | from | to | value\_wei |
| 1 | 501 | 0xaaa | 0x111 | 0xF977.. | 10000000000000000  00 |
| 2 | 502 | 0xbbb | 0xF977 | 0x222 | 20000000000000000  00 |

* Database: indexer\_state

|  |  |  |  |
| --- | --- | --- | --- |
| id | last\_block | cumulative\_in\_wei | cumulative\_out\_wei |
| 1 | 502 | 100000000000000000  0 | 200000000000000000  0 |

* Database: net\_flows\_snapshots

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| id | block\_number | cumulative\_in\_wei | cumulative\_out\_wei | net\_flow\_wei |
| 1 | 501 | 100000000000000000  0 | 0 | 100000000000000000  0 |
| 2 | 502 | 1000000000000000000 | 2000000000000000000 | -1000000000000000000 |

* API Response (/net-flow)

json

{

Copy code

"last\_block": 502,

"cumulative\_in\_wei": "1000000000000000000",

"cumulative\_out\_wei": "2000000000000000000",

"net\_flow \_wei": "-1000000000000000000"

}

**Reference** (since Rust and Blockchain is new for me)

* Google
* Youtube
* chatgpt