Mempool API

Connect to Blocknative transaction monitoring services directly with webhooks Overview

This documentation describes how to connect to and use Blocknative's transaction monitoring service using webhooks. The service delivers near real time notifications of Ethereum transaction state changes via POSTs to your URL (webhook). Each state change is a JSON payload with all the transaction details.

To use our API with web sockets, please see theSDK . API usage has rate limits. Please seeRate Limits for more details.

Getting Started

Setup API Key

1. Create a Blocknative account by clicking the Sign up button onMempool Explorer
2. and following the instructions. Account creation requires email confirmation to complete.
3. Blocknative will create a Default API key for your account that you can use. You can create additional API keys from your account page onexplorer.blocknative.com/account
4. by clicking the Add new API key button to the upper right.
5. Secret keys additionally are available to be generated for API keys which allow secure usage of configuration modification endpoints.
6.

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Setup Webhook

Create a new webhook for an API key by clicking the "Add a Webhook " button to the right of the API key. This will reveal a form to enter the webhook specifics: URL, blockchain (currently Ethereum and Bitcoin are supported), and network. See below forSupported Networks . You can optionally include a username and password if your webhook used basic authentication.

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We support Slack webhooks. If you want to create a Discord webhook, append/slack to the end of the Discord URL to use its Slack compatibility mode.

Slack webhooks must begin withhttps://hooks.slack.com/services . Discord webhooks must begin withhttps://discordapp.com/api/webhooks .

Slack and Discord limit the size of messages so notifications involving large contract inputs may be abbreviated. Normal, i.e. not Slack/Discord, webhooks are not abbreviated.

Add Address to Watch

Add an address to watch by clicking theWatch Address button and entering the address.

Ethereum addresses begin with a0x followed by 40 characters (hexadecimal). Any valid Ethereum address can be used, including external accounts and smart contracts. The following Bitcoin addresses are valid:

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To stop notifications for an address, use theView Address button next to Add webhook, and click the Delete icon next to the address you'd like to stop watching.

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It is safe to add the same address multiple times or to unwatch addresses not being watched.

Authentication

No authentication is currently required to facilitate testing, apart from configuration modification endpoints. Basic auth (username/password) is supported and recommended for production use, and we are adding additional authentication methods based on customer requirements. We recommend HTTPS requests but also offer support for HTTP.

Secret keys

Secret keys are available to be generated per API key, which can be used to access these endpoints:

- ****Get all configuration scopes
- ****Get configuration in specific scope
- ****Add a configuration
- ****Delete a configuration
-

These end points require a 'credentials' header which takes the API key and associated secret key in one variable in the form "apiKey:secretKey".

Example:9ed49579-a78b-4c82-b796-6db3aded6ed2:67ed12d1-f0ab-4f18-812c-58356684728b

Screencasts

See how to setup a Slack webhook in this screencast:

How to Setup a Webhook Screencast

API

Add transaction to watch

POST https://api.blocknative.com/transaction

Use the Blocknative https://api.blocknative.com/transaction endpoint to

POST

individual transaction hashes to watch for state changes (mempool and chain confirmation). For each transaction, specify your API key, the transaction

hash

or

txid

to watch, the transaction's blockchain (currently

ethereum

and

bitcoin

are supported), and the network to watch (see supported networks below).

Request Body

Name Type Description string JSON payload:

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{

\

"apiKey": "",

\

"hash": "",

\

"txid": ""

\

"blockchain": "ethereum",

\

"network": "main"

\

} 200 400 ```

Copy { "msg": "success" }

Copy Response body will describe nature of request failure.

Examples: XYZ is not a valid apiKey (string hash or txid) XYZ is an invalid transaction hash / txid (string blockchain) XYZ is not supported (string network) XYZ is an invalid network

``` apiKey is the API Key created fromSetup API Key step above.hash is the transaction hash to watch. (ethereum only)blockchain is the blockchain system to monitor.ethereum is supported at this time.network is the Blockchain network to monitor for the specified transaction hash. See below forSupported Networks .

Examplecurl call:

Ethereum

```

Copy curl-XPOST-H"Content-Type: application/json"-d'{"apiKey":"","hash":"","blockchain":"ethereum","network": "main"}'https://api.blocknative.com/transaction

```

Remove transaction to watch

DELETE https://api.blocknative.com/transaction

Use the Blocknative https://api.blocknative.com/transaction endpoint to DELETE individual transaction hashes that you are currently watching. For each transaction, specify your API key, the transaction hash or txid to watch, the transaction's blockchain (currently ethereum and bitcoin are supported), and the network to watch (see supported networks below).

Request Body

Name Type Description String JSON payload:

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{

\

"apiKey": "",

\

"hash": "",

\

"txid": ""

\

"blockchain": "ethereum",

\

"network": "main"

\

} 200: OK 400: Bad Request ```
```

Copy { // Response }

Copy { // Response }

```

Add address to watch

POST https://api.blocknative.com/address

Use the Blocknative https://api.blocknative.com/address endpoint to

POST

individual addresses to watch for transactions. For each address, specify your API key, the address to watch, the blockchain (currently Ethereum and Bitcoin are supported), and the networks to watch (see supported networks below).

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Request Body

Name Type Description string JSON payload:

\

{

\

"apiKey": "",

\

"address": "",

\

"blockchain": "ethereum",

\

"networks": "main"

\

} 200 400 ```

Copy { "msg": "success" }

Copy Response body will describe nature of request failure.

Examples: XYZ is not a valid apiKey (string address) XYZ is an invalid ethereum address (string blockchain) XYZ is not supported (array networks) ["XYZ"] contains an invalid network

``` apiKey is the API Key created fromSetup API Key step above.address is the external account address to watch.blockchain is the blockchain system to monitor.ethereum is supported at this time.networks is an array containing 1 or more networks to monitor for the specific address. See below forSupported Networks .

Examplecurl call:

Ethereum

```

Copy curl-XPOST-H"Content-Type: application/json"-d'{"apiKey":"","address":"","blockchain":"ethereum","networks":["main"]}'https://api.blocknative.com/address

```

This endpoint will returnsuccess if the specified address on the specified network(s) are already being watched for theapikey .

Remove address to watch

DELETE https://api.blocknative.com/address

Use the Blocknative https://api.blocknative.com/address endpoint to

DELETE

individual addresses from watching for transactions. For each address, specify your API key, the address to remove, the blockchain (currently

ethereum

and

bitcoin

are supported), and the networks to remove from watch (see supported networks below).

Request Body

Name Type Description string JSON payload:

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{

\

"apiKey": "",

\

"address": "",

\

"blockchain": "ethereum",

\

"networks": ["main", "rinkeby"]

\

} 200 400 ```

Copy { "msg": "success" }

Copy Response body will describe nature of request failure.

Examples: XYZ is not a valid apiKey (string address) XYZ is an invalid ethereum address (string blockchain) XYZ is not supported (array networks) ["XYZ"] contains an invalid network

``` apiKey is the API Key created fromSetup API Key step above.address is the external account address to remove from watching.blockchain is the blockchain for the address.ethereum is supported at this time.networks is an array containing 1 or more networks to remove monitoring for the specific address. See below forSupported Networks .

Examplecurl call:

Ethereum

```

Copy curl-XDELETE-H"Content-Type: application/json"-d'{"apiKey":"","address":"","blockchain":"ethereum","networks":["main"]}'https://api.blocknative.com/address

```

This endpoint will returnsuccess if the specified address on the specified network(s) was not being watched for theapikey .

List of watched addresses

GET https://api.blocknative.com/address////

Use this endpoint to access the watched addresses for your API key. Include your API key and the appropriate blockchain (currently

ethereum

and

bitcoin

are supported) and network. See below for Supported Networks.

Path Parameters

Name Type Description your-api-key string Your API key blockchain string Blockchain with watched addresses network string Network with watched addresses

Query Parameters

Name Type Description page number The page of watched addresses to receive size number The size of a page order string The creation time order of watched addresses 200 400 ```

Copy { "total": 0, // total number of watched addresses "page": 1, // current page number of watched addresses "pageSize": 1000, // maximum size of current page "items": [] // array of watched address strings }

Copy Response body will describe nature of request failure.

Examples: XYZ is not a valid apiKey

```

Required elements of the API request path

your-api-key is the API Key created fromSetup API Key step above.blockchain is the blockchain for the watched addresses you want to retrieve.ethereum is supported.network is the network for the watched addresses you want to retrieve. See below forSupported Networks .

Optional query string parameters for large lists

page is the page number, of multiple pages, you want to retrieve. Use thetotal value in the API response along with thesize parameter to iterate over all the pages of watched addresses.size is the length of a page of results. The default size is 100 items per page. The maximum size is 1000 items per page.order is the sort of the retrieved items according to when they were added to the list (via POST described earlier). The sortorder must be eitherasc (oldest - newest) ordesc (newest to oldest). Default isasc .

API requests are rate limited. Use larger page sizes for larger lists in order to get all items.

List of watched transactions

GET https://api.blocknative.com/transaction////

Use this endpoint to access the watched transactions for your API key. Include your API key and the appropriate blockchain (currently

ethereum

and

bitcoin

are supported) and network. See below for Supported Networks.

Path Parameters

Name Type Description your-api-key string Your API key blockchain string Blockchain with watched transactions network string Network with watched transactions

Query Parameters

Name Type Description page number The page of watched transactions to receive size number The size of a page order string The creation time order of watched transactions 200 400 ```

Copy { "total": 0, // total number of watched transactions "page": 1, // current page number of watched transactions "pageSize": 1000, // maximum size of current page "items": [] // array of watched transaction hash/id strings }

Copy Response body will describe nature of request failure.

Examples: XYZ is not a valid apiKey

```

Required elements of the API request path

your-api-key is the API Key created fromSetup API Key step above.blockchain is the blockchain for the watched transactions you want to retrieve.ethereum is supported.network is the network for the watched transactions you want to retrieve. See below forSupported Networks .

Optional query string parameters for large lists

page is the page number, of multiple pages, you want to retrieve. Use thetotal value in the API response along with thesize parameter to iterate over all the pages of watched transactions.size is the length of a page of results. The default size is 100 items per page. The maximum size is 1000 items per page.order is the sort of the retrieved items according to when they were added to the list (via POST described earlier). The sort order must be eitherasc (oldest - newest) ordesc (newest to oldest). Default isasc .

API requests are rate limited. Use larger page sizes for larger lists in order to get all items.

Get all configuration scopes

GET https://api.blocknative.com///configs

Use this endpoint to access all of the configuration scopes given on an API key. Include the appropriate blockchain and network, for which supported networks are listed below. Include your API key and it's associated secret key in a "credentials" header via the formatting "apiKey:secretKey". Your secret key can be set via your Accounts page where your keys are listed.

Path Parameters

Name Type Description network string Network with watched addresses blockchain string Blockchain with watched addresses

Headers

Name Type Description credentials string Here we define an API key and secret key together in the form "apiKey:secretKey" 200 400 ```

Copy [ "global", "0x7a250d5630b4cf539739df2c5dacb4c659f2488d" ]

Copy Response body will describe nature of request failure.

Examples: incorrect or no header apiKey:secretKey given XYZ is not a valid apiKey invalid secret key

```

Get configuration in specific scope

GET https://api.blocknative.com///configs/

Use this endpoint to access the full config deployed at a specific blockchain, network, API key and scope. Include the appropriate blockchain and network, for which supported networks are listed below. Include your API key and it's associated secret key in a "credentials" header via the formatting "apiKey:secretKey". Your secret key can be set via your Accounts page where your keys are listed.

Path Parameters

Name Type Description raw-scope string The desired scope, options for this path can be retrieved by the 'Get all configuration scope' endpoint detailed above network string Network with watched addresses blockchain string Blockchain with watched addresses

Headers

Name Type Description credentials string Here we define an API key and secret key together in the form "apiKey:secretKey" 200 400 ```

Copy { "configName": "example config name", "fields": ["example field"], "filters": [{ "status": "example" }], "abi": [] }

Copy Response body will describe nature of request failure.

Examples: incorrect or no header apiKey:secretKey given XYZ is not a valid apiKey invalid secret key

```

Add a configuration

PUT https://api.blocknative.com///configs/

Use this endpoint to add configurations to certain API keys at certain blockchains and networks. Include your API key and it's associated secret key in a "credentials" header via the formatting "apiKey:secretKey".

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Configurations can be exported from Mempool Explorer as specified here (https://docs.blocknative.com/mempool-explorer#configurations-sidebar).

Path Parameters

Name Type Description raw-scope string The desired scope, options for this path can be retrieved by the 'Get all configuration scope endpoint' detailed above network string Network with watched addresses blockchain string Blockchain with watched addresses

Headers
```

Name Type Description credentials string Here we define an API key and secret key together in the form "apiKey:secretKey"

Request Body

Name Type Description string Example JSON payload for an address:

\

{

\

"configName": "example",

\

"fields": ["example field"],

\

"filters": [{"status": "pending"}],

\

"abi" : []

\

} 200 400 ```

Copy { "msg": "ok" }

Copy Response body will describe nature of request failure.

Examples: incorrect or no header apiKey:secretKey given XYZ is not a valid apiKey invalid secret key Cannot set config itemin Reached max config limit for ::

``` There is a limit of 50 configurations per API key. If you need to watch more than 50 addresses and also filter them, it is recommended that you subscribe to all of the addresses and then use a'global' scoped filter that will apply to all of those addresses.

Websocket configuration example

```

Copy { "configName":"Limiting my public BN API key", "allowedOrigins": ["http://example.com","http://example2.com"], "ipNotificationRatelimit":250, "ipNotificationRatelimitWindow":1, "ipPendingSimulationRatelimit":50, "ipPendingSimulationRatelimitWindow":1 }

```

Global configuration example

```

Copy { "configName":"Global config example", "fields": ["example field"], "filters": [{"status":"pending"}] }

```

Address configuration example

```

Copy { "configName":"Example address config", "fields": ["example field"], "filters": [{"status":"pending"}], "abi": [] }

```

Delete a configuration

DELETE https://api.blocknative.com///configs/

Using this endpoint, you can clear a configuration set at a certain API key for a blockchain, network and scope. Include your API key and it's associated secret key in a "credentials" header in the form "apiKey:secretKey".

Path Parameters

Name Type Description raw-scope string The desired scope, options for this path can be retrieved by the 'Get all configuration scope endpoint' detailed above network string Network with watched addresses blockchain string Blockchain with watched addresses

Headers

Name Type Description credentials string Here we define an API key and secret key together in the form "apiKey:secretKey" 200 400 ```

Copy { "msg": "ok" }

Copy Response body will describe nature of request failure.

Examples: incorrect or no header apiKey:secretKey given XYZ is not a valid apiKey invalid secret key

```

Ethereum Notifications

Transaction state changes arePOST ed to your custom URL (webhook) with a JSON payload containing the transaction details. The contents of the payload depends on the type of transactions.

Base Payload

The following fields are included in every transaction notification and are captured directly from the mempool or block data. Fields arenot ordered.

```
```

Copy "from": String, "to": String, "nonce": Number, "gas": Number, "gasPrice": String, "gasPriceGwei": Number, "gasUsed": Number, present only when the tx is on-chain, "baseFeePerGas": String, "baseFeePerGasGwei": Number, "maxPriorityFeePerGas": String, "maxPriorityFeePerGasGwei": Number, "maxFeePerGas" String, "maxFeePerGasGwei" Number, "type": Number, "value": String, "hash": String, "input": String, "v": String, "r": String, "s": String, "blockHash": String, or null when status is 'pending', "blockNumber": String, or null when status is 'pending', "estimatedBlocksUntilConfirmed": Number, or null for estimates of 1-5

```

Field Description from The address initiating, signing, the transaction to Address receiving the transaction nonce Thefrom address nonce (transaction count from that address) gas Maximum amount of gas available to the transaction gasUsed Gas used during transaction execution. Only present when the tx is on-chain. value Amount of ETH transferred directly fromfrom address hash Transaction id hash unique for every transaction input Data sent to transaction. For direct value transfers from one external account to another, this field contains0x . For contract calls, this value contains the contract method signature and params as a hex string. v Transaction signature component (hex encoded) r Transaction signature component (hex encoded) s Transaction signature component (hex encoded) blockHash Block id hash for transactions that are on-chain. Field isnull unless notificationstatus isconfirmed orfailed blockNumber Block number for transactions that are on-chain. Field isnull unless notificationstatus isconfirmed orfailed estimatedBlocksUntilConfirmed Predicted number of blocks frompendingBlockNumber until confirmation based ongasPrice and Gas Platform data. Field is1 - 5 ornull for estimates outside of 1 - 5. type Denotes the gas pricing used for this transaction.

Gas Details

Notifications include gas price information depending on thetype of the transaction.

For an in-depth look at how EIP-1559 transactions are priced, see:

A Definitive Guide to Ethereum EIP-1559 Gas Fee Calculations

Type 2 (EIP-1559) Transactions

Field Description baseFeePerGas Base fee per gas of this block maxPriorityFeePerGas Max priority fee per gas in wei maxFeePerGas Max fee per gas in wei baseFeePerGasGwei baseFeePerGas in gwei, rounded to the 3rd most significant digit maxPriorityFeePerGasGwei maxPriorityFeePerGas in gwei, rounded to an integer maxFeePerGasGwei maxFeePerGas in gwei, rounded to an integer

Type 0 (Pre-EIP-1559) Transactions

Field Description gasPrice Amount, in wei, per unit ofgas gasPriceGwei Amount, in gwei, per unit of gas, rounded to an integer

Metadata Payload

In addition to the transaction details provided from the mempool or block, the JSON payload is augmented with the following field. Fields arenot ordered.

```

Copy "system": String, "network": String, "status": Status, "apiKey": String, "monitorVersion": String, "monitorId": String, "serverVersion": String, "timeStamp": String, // the UTC time of first detection of current status "pendingTimeStamp": String // ISO UTC time of initial pending status detection "pendingBlockNumber": Number // the chain head block number at time of pending detection "transactionIndex": Number, // optional, present if status confirmed, failed "blockTimeStamp": String, // optional, present if status confirmed, failed - UTC time of miner block creation "timePending": String, // optional, present if status confirmed, failed, speedup, cancel. "-1" if first detectiong is on-chain. "blocksPending": Number, // optional, present if status confirmed, failed, speedup, cancel "asset": String, // optional, present if direct transfer of ETH or ERC20 "direction": String, // optional, present in payloads with a watchedAddress param "counterparty": String, // optional, present in payloads with awatchedAddress param "watchedAddress": String, // optional, present when payload triggered by activity related to a watched address "replaceHash": String, // optional, present if status is speedup or cancel "failureReason": String, // optional, present if status is failed

```

Field Description system Blockchain of this transaction network Network name of this transaction (see table to supported networksbelow ) status New status of this transaction (see table of supported status valuesbelow ) apiKey Blocknative API key associated with the notification monitorVersion Version number of the Blocknative monitor that detected the transaction state change monitorId Identifier of the Blocknative monitor that first detected the transaction state change serverVersion Version number of the Blocknative server that delivered the notification timeStamp UTC ISO timestamp when Blocknative first detected this transaction update pendingTimeStamp UTC ISO timestamp when Blocknative first detected thepending state for this transaction pendingBlockNumber The chain head block number when thepending state was first detected transactionIndex Optional . For confirmed or failed transactions, the index (order) of the transaction in the block. blockTimeStamp Optional . **** UTC ISO block timestamp the miner reported when collating the block this transaction was eventually confirmed in. The block timestamp is usually a few seconds beforetimeStamp , the difference being the time between the validator collating the block, and the block being confirmed and propagated throughout the network timePending Optional . The number of milliseconds from initialpending detection toconfirmed orfailed detection. "-1" if first detection is on-chain. blocksPending Optional . The number of blocks since the initialpending detection toconfirmed orfailed detection. asset Optional . Symbol of the asset being transferred, e.g. ETH. This field is present only if transaction directly transfers Ether or is an ERC20 token transfer direction Optional . Indicates if funds are incoming or outgoing relative to thewatchedAddress . This field is present only if notification triggered bywatchedAddress counterparty Optional . Address of recipient of funds ifwatchedAddress is the sender in the transaction, address of sender of funds ifwatchedAddress is the recipient in the transaction. This field is present only if notification triggered bywatchedAddress watchedAddress Optional . Watched address which triggered the notification. This field is present only if notification triggered bywatchedAddress replaceHash Optional. The hash of the transaction that replaced this transaction in the txpool failureReason Optional. Forfailed transactions, the reason why the transaction failed. Some failures may not have a discernible reason.

Decoded Contract Payload

For some contract calls, Blocknative decodes theinput field of the transaction to interpret details of the contract method call. Fields arenot ordered.

```

Copy "contractCall": { "contractType": String, "contractAddress": String, "methodName": String, "params": { // key value pairs specific to the contract method }, "contractName": String, "contractDecimals": Number (optional), "decimalValue": String (optional), }

```

Blocknative currently supports decoding of the following contracts and regularly adds more:

- Uniswap v3 (Mainnet and Matic)
- Uniswap Universal Router (Mainnet and Matic)
- Uniswap v2 (Routing and Factory - Mainnet and Matic)
- Uniswap v1 (Mainnet and Matic)
- Sushiswap Router
- 0x Protocol v2.1
- 0x Protocol v3
- Curve.Fi (All pools shownhere
- )
- Synthetix ExchangeRates
- Synthetix Proxy
- MakerDAO
- Rebalancing Set Exchange Issuance v2
- Set Protocol
- Abridged
- Pillar Badge
- rToken
```

- 1inch Exchange V1
- 1inch Exchange V2
- 1inch Exchange V3
- Aave: Lending Pool V2
- Aave Flashloans
- OpenSea
- Balancer (BFactory, BPool, Distribution and Exchange Proxy 2)
- Honeyswap Router (Gnosis Chain)
- Sushiswap V2 Factory
- DIGG Orchestrator
- Quickswap Router & Factory (Matic)
- Aave Lending Pool (Matic)
- Aavegotchi: Opensea (Matic)
- ERC 4337 EntryPoints
-

Along with supported Ethereum token protocols:

- ERC-20
- ERC-721
- ERC-165
- ERC-777
- ERC-1820 * Field Description contractType Type of the called contract contractAddress Address of the called contract methodName Name of the called method params Optional . A series of keys and values specific to the contract method. This field is present only if the contract method call includes parameters. contractName Optional . **** Name of the called contract contractDecimals Optional . The result of calling thedecimal() method on the smart contract, if it exists decimalValue Optional . If there is avalue field in theparams object, andcontractDecimals is present,decimalValue will equalvalue / 10^contractDecimals

Internal Transactions Payload

Blocknative will sendconfirmed notifications when awatchedAddress is detected in the internal transactions of a contract call. In this case, theconfirmed notification will include details of the internal transactions and balance changes resulting from those internal transactions. Fields arenot ordered.

```

Copy "internalTransactions": [], "netBalanceChanges": Object

```

Field Description internalTransactions Array of objects containing details of each internal transaction (see below) netBalanceChanges Object containing details of balance changes for all addresses involved in internal transactions (see below) TheinternalTransactions array contains details on each internal transaction executed by the contract call of the parent (main) transaction. Fields arenot ordered.

```

Copy "internalTransactions": [ { "type": String, "from": String, "to": String, "input": String, "gas": Number, "gasUsed": Number, "value": String, "contractCall": Object (optional, contains an additional param 'contractAlias' which will be the symbol of the token if this is an erc20 transfer or transferFrom) }, ... ]

```

Field Description type Type of internal transaction (one ofCALL ,DELEGATECALL ,STATICCALL ,CALLCODE) from Address initiating the internal transaction call (typically the parent (main) transaction's contract address to Address the internal transaction is calling or sending value to input Data sent to internal transaction. For value transfers from external account initiating parent (main) transaction to another external account, this field contains0x . For contract calls, this value contains the contract method signature and params as a hex string. gas Maximum amount of gas available to the internal transaction gasUsed Amount of gas actually used executing the internal transaction value Amount of ETH transferred directly toto address from parent (main) transactionfrom address. contractCall Optional . A series of keys and values specific to the contract method . This object is present only if the contract method call includes parameters and Blocknative decodes the internal transaction contract call (e.g. an ERC20 transfer). For details see decoded contract payload above.NOTE: If the Internal transaction is an ERC20transfer ortransferFrom call, thecontractCall object will include an additional field,contractAlias with the symbol of the token transferred. ThenetBalanceChanges object contains details of all the balance changes resulting from the internal transactions details in theinternalTransactions array. The object is an array with an entry for each address involved in the internal transactions.

```

Copy "netBalanceChanges": [ { "address": String, "balanceChanges": [ { "delta": String, "asset": { "contractAddress": String "symbol": String, "type": String }, "breakdown": [ { "amount": String, "counterparty": String }, ... ] } ] }, ... ]

```

Field Description address Address involved in internal transaction. Each address contains an array of balances changes, one for eachcounterparty delta Amount of value transfer (balance change) in wei to theaddress . Outgoing value is represented as a negative balance change and incoming value is represented as a positive balance change asset Details of the asset being transferred. ContainscontractAddress ,type andsymbol contractAddress The address of the token contract if the value is notETH (ether), not present if the value osETH type The type of asset transferred (e.g. "ether" or "erc20") symbol The symbol of the asset transferred. "ETH" or appropriate ERC20 symbol breakdown Array of individual transfers toaddress for the currentasset counterparty Address of the other side of the transfer relative to theaddress amount The amount of asset transferred with thiscounterparty

Simulated Pending Payload

Blocknative will sendpending-simulation notifications when awatchedAddress is detected in thefrom orto field of the main transaction or internal transactions of a contract call. The notification will include details of the internal transactions and balance changes resulting from those internal transactions. The internal transaction details and balance changes areprobabilistic based on simulating the transaction against the latest confirmed block . Fields arenot ordered.

pending-simulation notifications are only available forEthereum Mainnet and Goerli Testnet . The payload structure forpending-simulation notifications is the same as forconfirmed notifications with the addition of the following object.

```

Copy "simDetails": { "blockNumber":Number, "performanceProfile":{ "breakdown":[ { "label":"detected", "timeStamp":String// UTC time of first detection of transaction }, { "label":"traceStart", "timeStamp":String// UTC time of when transaction simulation started }, { "label":"traceEnd", "timeStamp":String// UTC time of when transaction simulation completed }, { "label":"dispatch", "timeStamp":String// UTC time of when notification sent } ], "e2eMs":Number// end to end processing time in milliseconds } }

```

Examples

Direct send transaction

A direct send transaction is sending funds (ether) from one account to another. Thehash is setup as a watched transaction and/orto address or thefrom addresses or both are setup as watched addresses.

```
```

Copy { "system": "ethereum", "nonce": 1061, "id": "6f782dbf-248f-c46f-9a56-c53794f1", "network": "rinkeby", "from": "0x6f782dbf141c50e0b79b044b471fb8d76bcb7aed", "status": "pending", "blockHash": "0x0000000000000000000000000000000000000000000000000000000000000000", "blockNumber": null, "gas": 21000, "gasPrice": "10000000000", "gasPriceGwei": 10, "hash": "0x7fb386cc248fc46f9a56c53794f1580b6c48f6e16e4c2c5ed5e7a533af2ac2cf", "input": "0x", "to": "0x87c382487b6f20926acf7076de1210845d62e7cc", "transactionIndex": 0, "value": "100000000000000000", "asset": "ETH", "direction": "outgoing", "counterparty": "0x87c382487b6f20926acf7076de1210845d62e7cc", "watchedAddress": "0x6f782dbf141c50e0b79b044b471fb8d76bcb7aed", "apiKey": "3462c0f0-471f-4b7d-84c3-50e0244a9403" }

```

As a direct ETH transfer, this transaction has0x for itsinput .

Contract call transaction

When watched transaction is a contract call, or a watched address makes a contract call, a similar transaction notification is generated where theto address is the contract.

```

Copy { "system": "ethereum", "nonce": 1066, "id": "e08fc37a-db98-4954-be23-757719c7317c", "from": "0x6F782dBf141C50E0B79b044B471FB8D76Bcb7aeD", "network": "rinkeby", "status": "confirmed", "blockHash": "0xcef0fe0ce0036622877774251810 06e141ae517793e148e856076c6ae50c1023", "blockNumber": 4862011, "gas": 36402, "gasPrice": "1000000000", "gasPriceGwei": 1, "hash": "0x1ae540c5f8e4f50e951a3192d05cfd2da1028d4c7275455087de6dddd1139188", "input": "0x6c5c7a7000000000000000000000000006921144ad2a2923ae11c5652feb3b0d9053d9152", "to": "0x9E7aE8c4D07670Df36FdB88c1b3Ae06dc4625fa0", "transactionIndex": 6, "value": "0", "asset": "ETH", "direction": "outgoing", "counterparty": "0x9E7aE8c4D07670Df36FdB88c1b3Ae06dc4625fa0", "watchedAddress": "0x6f782dbf141c50e0b79b044b471fb8d76bcb7aed", "apiKey": "15273e72873dba2cd065" }

```

As a contract call, this transaction has a value for input. The value contains the contract method signature and and parameters to the method call.

If you would like to have your contract decoded (method and parameter names delivered in JSON message) please contact Blocknative at support@blocknative.com or on ourDiscord server with your contract address (for each supported network) and ABI.

Token transfer transaction

If the watched transaction is a ERC-20/ERC-721 transfer, or an ERC-20/ERC-721 tokentransfer ortransferFrom transaction involves a watched address, the details of the transfer and token involved are included in the transaction notification.

```

Copy { "system": "ethereum", "nonce": 67, "from": "0x87c382487b6f20926acf7076de1210845d62e7cc", "network": "rinkeby", "id": "87c38248-acd2-5d28-cc9a-b7e0eb72", "status": "pending", "blockHash": "0x0000000000000000000000000000000000000000000000000000000000000000", "blockNumber": null, "gas": 54643, "gasPrice": "10000000000", "gasPriceGwei": 10, "hash": "0xb85704efacd25d28cc9ab7e0eb726a30ed4dd4607a5008d57eb69bc262db503f", "input": "0xa9059cbb000000000000000000000000006f782dbf141c50e0b79b044b471fb8d76bcb7aed0000000000000000000000000000000000000000000000004563918244f40000", "to": "0xaff4481d10270f50f203e0763e2597776068cbc5", "transactionIndex": 0, "value": "5000000000000000000", "asset": "WEENUS", "contractCall": { "contractType": "erc20", "contractAddress": "0xaff4481d10270f50f203e0763e2597776068cbc5", "methodName": "transfer", "params": { "_to": "0x6f782dbf141c50e0b79b044b471fb8d76bcb7aed", "_value": "5000000000000000000" } }, "direction": "outgoing", "counterparty": "0x6f782dbf141c50e0b79b044b471fb8d76bcb7aed", "watchedAddress": "0x87c382487b6f20926acf7076de1210845d62e7cc", "apiKey": "15273e72873dba2cd065" }

```

Supported Networks

Ethereum and EVM Compatible

Name Id Description main 1 Ethereum Mainnet goerli 5 Ethereum Testnet xdai 100 Ethereum L2 matic-main 137 Polygon

Transaction Events (State Changes)

Key Description pending the transaction was detected in the "pending" area of the mempool and is eligible for inclusion in a block pending-simulation the transaction was detected in the "pending" area of the mempool and is eligible for inclusion in a block and has been simulated against the latest block stuck the transaction was detected in the "queued" area of the mempool and is not eligible for inclusion in a block speedup a replacement transaction (samenonce andfrom , highergas ) was detected in the mempool with the sameto ,value andinput parameters as the transaction being replaced cancel a replacement transaction (samenonce andfrom , highergas ) was detected in the mempool with differentto ,value orinput parameters compared to the transaction being replaced confirmed the transaction was mined or validated with no errors failed the transaction was mined or validated, but failed to execute due to EVM error dropped the transaction was dropped from the mempool before being mined or validated into a block

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If you have any questions, connect with the team on ourdiscord

Previous Mempool Explorer Next Rate Limits Last updated2 months ago



Was this helpful?
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