EIYARO Core API Reference

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Wallet Endpoints

These endpoints are available when we set:
config.toml

```
[wallet]
disable = false
```

This is the default value and we can possibly omit it.

Create Key Endpoint

Creates a private key. The private key is encrypted in the file and not visible to the user.

Parameters

`Object`:

- `String` - **alias**, name of the key.
- `String` - **password**, password of the key.
- `String` - **language**, mnemonic language of the key.

Optional:

- `String` - **mnemonic**, mnemonic of the key, create key by specified mnemonic.

Returns

`Object`:

- `String` - **alias**, name of the key.
- `String` - **xpub**, root pubkey of the key.
- `String` - **file**, path to the file of key.

Optional:

- `String` - **mnemonic**, mnemonic of the key, exist when the request mnemonic is null.

Example

Create key by random pattern:

Request

```
curl -X POST http://localhost:9888/create-key -d '{"alias": "alice", "password":
"123456", "language": "en"}'
```

Response

```
{
  "alias": "alice",
  "xpub":
"a85e6eccb22f4c5fdade905f9a969003a17b6f35c237183a4313354b819a92689d52da3bcfe55f15a5508
77e8d789bd2bb9620f46e5049ea36470ab1b588a986",
  "file": "/home/yang/.eiyaro/keystore/UTC--2024-3-10T07-09-17.509894697Z--341695b9-
9223-470c-a26d-bea210f8e1bb",
  "mnemonic": "verb smoke glory dentist annual peanut oval dragon fiction current
orbit lab load total language female mushroom coyote regular toy slide welcome employ
three"
}
```

Create key by specified mnemonic:

Request

```
curl -X POST http://localhost:9888/create-key -d '{"alias":"jack",
"password":"123456", "mnemonic":"please observe raw beauty blue sea believe then boat
float beyond position", "language":"en"}'
```

Response

```
{
  "alias": "jack",
  "xpub":
"c7bcb65febd31c6d900bc84c386d95c3d5b047090628d9bf5c51a848945b6986e99ff70388018a7681fa3
7a240dbd8df39a994c86f9314a61e75feb33563ca72",
  "file": "/home/yang/.eiyaro/keystore/UTC--2024-3-10T07-08-51.815030323Z--46ee932e-
88d3-4680-a5c1-dd9e63918fcc"
}
```

List Keys Endpoint

Returns the list of all available keys.

Parameters

None.

Returns

- `Array of Object`, keys owned by the client.
  - `Object`:
    - `String` - **alias**, name of the key.
    - `String` - **xpub**, pubkey of the key.

Example

Request a list of the current keys on the node.

Request

```
curl -X POST http://localhost:9888/list-keys
```

Response

```
[
  {
```

```
    "alias": "alice",
    "xpub":
"a7dae957c2d35b42efe7e6871cf5a75ebd2a0d0e51caffe767db42d3e6d69dbe211d1ca492ecf05908fe6
fa625ad61b3253375ea744c9442dd5551613ba50aea",
    "file": "/Path/To/Library/Eiyaro/keystore/UTC--2024-03-21T02-35-15.035935116Z--
4f2b8bd7-0576-4b82-8941-6cc6da05efe3"
  },
  {
    "alias": "bob",
    "xpub":
"d30a810e88532f73816b7b5007d413cbd21e526ae9159023e5262511893adc1526b8eacd691b27c080201
d7d79336a4f3d2cb4c167d997821cad445765916254",
    "file": "/Path/To/Library/Eiyaro/keystore/UTC--2018-03-22T06-30-27.609315219Z--
0e34293c-8856-4f5f-b934-37456a3820fa"
  }
]
```

Update Key Alias Endpoint

Update the alias for an existing key.

Parameters

`Object`:

- `String` - **xpub**, pubkey of the key.
- `String` - **new_alias**, new alias of the key.

Returns

Nothing in case the key alias is updated successfully.

Example

Update an existing key's alias.

Request

```
curl -X POST http://localhost:9888/update-key-alias -d '{"xpub":
"a7dae957c2d35b42efe7e6871cf5a75ebd2a0d0e51caffe767db42d3e6d69dbe211d1ca492ecf05908fe6
fa625ad61b3253375ea744c9442dd5551613ba50aea", "new_alias": "new_key"}'
```

Response

No response in case operation was successful.

Delete Key Endpoint

Deletes an existing key.

Please make sure that there is no balance in the related accounts.

Parameters

`Object`:

- `String` - **xpub**, pubkey of the key.
- `String` - **password**, password of the key.

Returns

Nothing in case the key is deleted successfully.

Example

Delete an existing key.

Request

```
curl -X POST {bas-url}delete-key -d '{"xpub":
"a7dae957c2d35b42efe7e6871cf5a75ebd2a0d0e51caffe767db42d3e6d69dbe211d1ca492ecf05908fe6
fa625ad61b3253375ea744c9442dd5551613ba50aea", "password": "123456"}'
```

Response

No response in case operation was successful.

Check Key Password Endpoint

Check an existing key's password.

Parameters

`Object`:

- `String` - **xpub**, pubkey of the key.
- `String` - **password**, password of the key.

Returns

`Object`:

- `Boolean` - **check_result**, if check is successful the value will be true, otherwise it will be false.

Example

Check the password for an existing key.

Request

```
curl -X POST http://localhost:9888/check-key-password -d '{"xpub":
"a7dae957c2d35b42efe7e6871cf5a75ebd2a0d0e51caffe767db42d3e6d69dbe211d1ca492ecf05908fe6
fa625ad61b3253375ea744c9442dd5551613ba50aea", "password": "123456"}'
```

Response

```
{
  "check_result": true
}
```

Reset Key Password Endpoint

Reset an existing key's password.

Parameters

`Object`:

- `String` - **xpub**, pubkey of the key.
- `String` - **old_password**, old password of the key.
- `String` - **new_password**, new password of the key.

Returns

`Object`:

- `Boolean` - **changed**, if reset is successful the value will be true, otherwise it will be false.

Example

Reset the password for an existing key.

Request

```
curl -X POST http://localhost:9888/reset-key-password -d '{"xpub":
"a7dae957c2d35b42efe7e6871cf5a75ebd2a0d0e51caffe767db42d3e6d69dbe211d1ca492ecf05908fe6
fa625ad61b3253375ea744c9442dd5551613ba50aea", "old_password": "123456",
"new_password": "654321"}'
```

Response

```
{
  "changed": true
}
```

Create Account Endpoint

Create an account to manage addresses.
Single sign account contains only one `root_xpubs` and quorum; however multi sign account can contain any number of `root_xpubs` and quorum.
Quorum is the number of verify signatures, the range is `[1, len(root_xpubs)]`.

Parameters

`Object`:

- `Array of String` - **root_xpubs**, pubkey array.
- `String` - **alias**, name of the account.
- `Integer` - **quorum**, the default value is `1`, threshold of keys that must sign a transaction to spend asset units controlled by the account.

Optional:

- `String` - **access_token**, if optional when creating account locally. However, if you want to create account remotely, it's indispensable.

Returns

`Object`:

- `String` - **id**, account id.
- `String` - **alias**, name of account.
- `Integer` - **key_index**, key index of account.
- `Integer` - **quorum**, threshold of keys that must sign a transaction to spend asset units controlled by the account.
- `Array of Object` - **xpubs**, pubkey array.

Example

Create an account with a given `root_xpubs` and `alias`.

Request

```
curl -X POST http://localhost:9888/create-account -d
```

```
'{"root_xpubs":["2d6c07cb1ff7800b0793e300cd62b6ec5c0943d308799427615be451ef09c0304bee5
dd492c6b13aaa854d303dc4f1dcb229f9578786e19c52d860803efa3b9a"],"quorum":1,"alias":"alic
e"}'
```

Response

```
{
  "alias": "alice",
  "id": "08FO663C00A02",
  "key_index": 1,
  "quorum": 1,
  "xpubs": [

"2d6c07cb1ff7800b0793e300cd62b6ec5c0943d308799427615be451ef09c0304bee5dd492c6b13aaa854
d303dc4f1dcb229f9578786e19c52d860803efa3b9a"
  ]
}
```

List Accounts Endpoint

Returns a list of the available accounts on the node.

Parameters

Optional:

- `String` - **id**, account id.
- `String` - **alias**, name of account.

Returns

- `Array of Object`, account array.
  - `Object`:
    - `String` - **id**, account id.
    - `String` - **alias**, name of account.
    - `Integer` - **key_index**, key index of account.
    - `Integer` - **quorum**, threshold of keys that must sign a transaction to spend asset units controlled by the account.
    - `Array of Object` - **xpubs**, pubkey array.

Example

Request a list of the accounts present on the node.

Request

```
curl -X POST http://localhost:9888/list-accounts -d '{"alias":"alice"}'
```

Response

```
[
  {
    "alias": "alice",
    "id": "086KQD75G0A02",
    "key_index": 1,
    "quorum": 1,
    "xpubs": [

"180aab8bf247932a7cf68da5cc9a873266279155097612f1e5fdda4add88d5e91e2e7ce5b736f3ac93382
4cdee9effcf1531b90dfcb388e5cc306d14e9a2c85e"
    ]
  }
]
```

Update Account Alias Endpoint

Updates an alias for the an existing account.

Parameters

`Object`: **account_alias** | **account_id**
* `String` - **new_alias**, new alias of account.

optional:

- `String` - **account_alias**, alias of account.
- `String` - **account_id**, id of account.

Returns

Nothing in case the account alias is updated successfully.

Example

Update the alias for a given account ID or an account alias.

Request

```
curl -X POST http://localhost:9888/update-account-alias -d '{"account_id":
"08FO663C00A02", "new_alias": "new_account"}'
# or
```

```
curl -X POST http://localhost:9888/update-account-alias -d '{"account_alias": "alice",
"new_alias": "new_account"}'
```

Response

No response in case operation was successful.

Delete Account Endpoint

Delete an existing account.

Please make sure that there is no balance in the related accounts.

Parameters

`Object`: **account_alias** | **account_id**

Optional:

- `String` - **account_alias**, alias of account.
- `String` - **account_id**, id of account.

Returns

Nothing if the account is deleted successfully.

Example

Delete an existing account by account ID or account alias.

Request

```
curl -X POST http://localhost:9888/delete-account -d '{"account_id": "08FO663C00A02"}'
# or
curl -X POST http://localhost:9888/delete-account -d '{"account_alias": "alice"}'
```

Response

No response in case operation was successful.

Create Account Receiver Endpoint

Creates an address and control program.
The address and control program are a one to one relationship.
In the `build-transaction` endpoint, the receiver is the address when the action is of type `control_address`, and the receiver is the control program when the action is of type `control_program`,

both can be used to the same effect.

Parameters

`Object`: **account_alias** | **account_id**

Optional:

- `String` - **account_alias**, alias of account.
- `String` - **account_id**, id of account.

Returns

`Object`:

- `String` - **address**, address of account.
- `String` - **control_program**, control program of account.

Example

Create an account alias on the existing account ID.

Request

```
curl -X POST http://localhost:9888/create-account-receiver -d '{"account_alias":
"alice", "account_id": "0BDQARM800A02"}'
```

Response

```
{
    "address": "ey1q5u8u4eldhjf3lvnkmyl78jj8a75neuryzlknk0",
    "control_program": "0014a70fcae7edbc931fb276d93fe3ca47efa93cf064"
}
```

List Addresses Endpoint

Returns the sub list of all available addresses by account with a limit count.

Parameters

- `String` - **account_alias**, alias of account.
- `String` - **account_id**, id of account.
- `Integer` - **from**, the start position of first address
- `Integer` - **count**, the number of returned

Returns

- `Array of Object`, account address array.
  - `Object`:
    - `String` - **account_alias**, alias of account.
    - `String` - **account_id**, id of account.
    - `String` - **address**, address of account.
    - `Boolean` - **change**, whether the account address is change.

Example

List three addresses from first position by `account_id` or `account_alias`

Request

```
curl -X POST http://localhost:9888/list-addresses -d '{"account_alias": "alice",
"account_id": "086KQD75G0A02", "from": 0, "count": 3}'
```

Response

```
[
  {
    "account_alias": "alice",
    "account_id": "086KQD75G0A02",
    "address": "ey1qcn9lf7nxhswratvmg6d78nq7r7yupm36qgsv55",
    "change": false
  },
  {
    "account_alias": "alice",
    "account_id": "086KQD75G0A02",
    "address": "ey1qew4h5uvt5ssrtg2alms0j77r94c30m78ucrcxy",
    "change": false
  },
  {
    "account_alias": "alice",
    "account_id": "086KQD75G0A02",
    "address": "ey1qgnp4lte7wge0rsekevjlrdh39vkzz0c2alheue",
    "change": false
  }
]
```

Validate Address Endpoint

Validate that the address is valid and report if it is local or not.

Parameters

`Object`:

- `string` - **address**, address of account.

Returns

`Object`:

- `Boolean` - **valid**, whether the account address is valid.
- `Boolean` - **is_local**, whether the account address is local.

Example

Request the validity of an address.

Request

```
curl -X POST http://localhost:9888/validate-address -d '{"address":
"ey1qcn9lf7nxhswratvmg6d78nq7r7yupm36qgsv55"}'
```

Response

```
{
   "valid": true,
   "is_local": true,
}
```

Get Mining Address Endpoint

Query the current mining address.

Parameters

None.

Returns

`Object`:

- `String` - **mining_address**, the current mining address being used.

Example

Request the current mining address.

Request

```
curl -X POST http://localhost:9888/get-mining-address
```

Response

```
{
    "mining_address":"ey1qnhr65jq3q9gf8uymza8vp0ew8tfyh642wddxh6"
}
```

Set Mining Address Endpoint

Set the current mining address, no matter wether the address is a local one or not.
It returns an error message if the address format is incorrect.

Parameters

`Object`:

- `String` - **mining_address**, mining address to set.

Returns

`Object`:

- `String` - **mining_address**, the new mining address.

Example

Update the node's mining address.

Request

```
curl -X POST http://localhost:9888/set-mining-address -d
'{"mining_address":"ey1qnhr65jq3q9gf8uymza8vp0ew8tfyh642wddxh6"}'
```

Response

```
{
    "mining_address":"ey1qnhr65jq3q9gf8uymza8vp0ew8tfyh642wddxh6"
}
```

Get Coinbase Arbitrary Endpoint

Get coinbase arbitrary.

Parameters

None.

Returns

`Object`:

- `String` - **arbitrary**, the arbitrary data append to coinbase, in hexadecimal format. (The full coinbase data for a block will be `0x00&block_height&arbitrary`.)

Example

Query for the coinbase arbitrary.

Request

```
curl -X POST http://localhost:9888/get-coinbase-arbitrary
```

Response

```
{
    "arbitrary":"ff"
}
```

Set Coinbase Arbitrary Endpoint

Set coinbase arbitrary.

Parameters

`Object`:

- `String` - **arbitrary**, the arbitrary data to be appended to coinbase, in hexadecimal format.

Returns

`Object`:

- `String` - **arbitrary**, the arbitrary data being appended to coinbase, in hexadecimal format. (The full coinbase data for a block will be `0x00&block_height&arbitrary`.)

Example

Set the coinbase arbitrary.

Request

```
curl -X POST http://localhost:9888/set-coinbase-arbitrary -d '{"arbitrary":"ff"}'
```

Response

```
{
    "arbitrary":"ff"
}
```

List pubkeys Endpoint

Returns the list of all available pubkeys by account.

Parameters

Object: **account_alias** | **account_id** | **public_key**

Optional:

- String - **account_alias**, alias of account.
- String - **account_id**, id of account.
- string - **public_key**, public key.

Returns

Object:

- String - **root_xpub**, root xpub.
- Array of Object -**pubkey_infos**, public key array.
    - String - **pubkey**, public key.
    - Object - **derivation_path**, derivation path for root xpub.

Example

Query for the list of pubkeys by account ID or account alias.

Request

```
curl -X POST http://localhost:9888/list-pubkeys -d '{"account_id": "0GO0LLUV00A02"}'
```

Response


```
{
  "pubkey_infos": [
    {
      "derivation_path": [
        "0101000000000000000",
        "0100000000000000"
      ],
      "pubkey": "b7730319feac582056379548360da5c08258e248e5c29de08a97a6614df1425d"
    },
    {
      "derivation_path": [
        "0101000000000000000",
        "0200000000000000"
      ],
      "pubkey": "5044a0d6113faaf4cb2550f63a820ab579a2af6134e503b76378490d5fe75af4"
    },
    {
      "derivation_path": [
        "0101000000000000000",
        "0300000000000000"
      ],
      "pubkey": "ff5c28ce257b25c2a6e172ded490a708a8e654253836d92eb0a68b81ce63bea3"
    }
  ],
  "root_xpub":
"94a909319eac179f7694b99b8367b9c02b4414b95961e2e3a5bd887e0616af05a7c5e4448df92cd6cdfd8
2e57cd7aefc1ee0a7fd0d6a2194b5e5faf82556bedc"
}
```


Create Asset Endpoint

Create an asset definition, it prepares for the issuance of an asset.

Parameters

`Object`:

- `String` - **alias**, name of the asset.
- `Object` - **definition**, definition of asset.

Optional:(please pick one from the following two ways)

- `Array of String` - **root_xpubs**, xpub array.
- `Integer` - **quorum**, the default value is `1`, threshold of keys that must sign a transaction to spend asset units controlled by the account.

or

- `String` - **issuance_program**, user-defined contract program.

Returns

`Object`:

- `String` - **id**, asset id.
- `String` - **alias**, name of the asset.
- `String` - **issuance_program**, control program of the issuance of asset.
- `Array of Object` - **keys**, information of asset pubkey.
- `String` - **definition**, definition of asset.
- `Integer` - **quorum**, threshold of keys that must sign a transaction to spend asset units controlled by the account.

Example

Create an asset by `xpubs`:

Request

```
curl -X POST http://localhost:9888/create-asset -d '{"alias": "GOLD", "root_xpubs":
["f6a16704f745a168642712060e6c5a69866147e21ec2447ae628f87d756bb68cc9b91405ad0a95f00409
0e864fde472f62ba97053ea109837bc89d63a64040d5"], "quorum":1}'
```

Response

```
{
  "id": "3c1cf4c9436e3f942cb2f1d70a584f1c61df3697698dacccdc89e46f46a003d0",
  "alias": "GOLD",
  "issuance_program":
"766baa209683b893483c0a5a317bf9868a8e2a09691f8aa8c1f3e2a7bb62b157e76712e05151ad696c00c
0",
  "keys": [
    {
      "root_xpub":
"f6a16704f745a168642712060e6c5a69866147e21ec2447ae628f87d756bb68cc9b91405ad0a95f004090
e864fde472f62ba97053ea109837bc89d63a64040d5",
      "asset_pubkey":
"9683b893483c0a5a317bf9868a8e2a09691f8aa8c1f3e2a7bb62b157e76712e012bd443fa7d56a0627df0
a29dffcdc52641672a0f5cba54d104ad76ebeb8dfc3",
      "asset_derivation_path": [
        "0002000000000000000"
      ]
    }
```

```
  ],
  "quorum": 1,
  "definition": {}
}
```

Create an asset by `issuance_program`:

Request

```
curl -X POST http://localhost:9888/create-asset -d '{"alias":
"TESTASSET","issuance_program":
"20e9108d3ca8049800727f6a3505b3a2710dc579405dde03c250f16d9a7e1e6e78160014c5a5b563c4623
018557fb299259542b8739f6bc20163201e074b22ed7ae8470c7ba5d8a7bc95e83431a753a17465e8673af
68a82500c22741a547a6413000000007b7b51547ac1631a000000547a547aae7cac00c0",
"definition":{"name":"TESTASSET","symbol":"TESTASSET","decimals":8,"description":{}}}'
```

Response

```
{
  "id": "59621aa82c047bd21f73711d4a7905b7a9fbb49bc1a3fdc309b13807cc8b9094",
  "alias": "TESTASSET",
  "issuance_program":
"20e9108d3ca8049800727f6a3505b3a2710dc579405dde03c250f16d9a7e1e6e78160014c5a5b563c4623
018557fb299259542b8739f6bc20163201e074b22ed7ae8470c7ba5d8a7bc95e83431a753a17465e8673af
68a82500c22741a547a6413000000007b7b51547ac1631a000000547a547aae7cac00c0",
  "keys": null,
  "quorum": 0,
  "definition": {
    "decimals": 8,
    "description": {},
    "name": "TESTASSET",
    "symbol": "TESTASSET"
  }
}
```

Get Asset Endpoint

Query asset details by asset ID.

Parameters

`Object`:

- `String` - **id**, id of asset.

Returns

`Object`:

- `String` - **id**, asset id.
- `String` - **alias**, name of the asset.
- `String` - **issuance_program**, control program of the issuance of asset.
- `Integer` - **key_index**, index of key for xpub.
- `Integer` - **quorum**, threshold of keys that must sign a transaction to spend asset units controlled by the account.
- `Array of Object` - **xpubs**, pubkey array.
- `String` - **type**, type of asset.
- `Integer` - **vm_version**, version of VM.
- `String` - **raw_definition_byte**, byte of asset definition.
- `Object` - **definition**, description of asset.

Example

Get asset details by asset ID.

Request

```
curl -X POST http://localhost:9888/get-asset -d '{"id":
"50ec80b6bc48073f6aa8fa045131a71213c33f3681203b15ddc2e4b81f1f4730"}'
```

Response

```
{
  "alias": "SILVER",
  "definition": null,
  "id": "50ec80b6bc48073f6aa8fa045131a71213c33f3681203b15ddc2e4b81f1f4730",
  "issue_program":
"ae2029cd61d9ef31d40af7541f9a50831d6317fdb0870249d0564fcfa9a8f843589c5151ad",
  "key_index": 1,
  "quorum": 1,
  "raw_definition_byte": "",
  "type": "asset",
  "vm_version": 1,
  "xpubs": [

"34b16ee500615cd325f8b84099f83c1ebecaca67977c5dc9b71ae32ceaf18207f996b0a9725b901d37926
89b2babcb60febe3b81a684d9b56b65f67f307d453d"
  ]
}
```

List Assets Endpoint

Returns the list of all available assets.

Parameters

None.

Returns

- `Array of Object`, asset array.
  - `Object`:
    - `String` - **id**, asset id.
    - `String` - **alias**, name of the asset.
    - `String` - **issuance_program**, control program of the issuance of asset.
    - `Integer` - **key_index**, index of key for xpub.
    - `Integer` - **quorum**, threshold of keys that must sign a transaction to spend asset units controlled by the account.
    - `Array of Object` - **xpubs**, pubkey array.
    - `String` - **type**, type of asset.
    - `Integer` - **vm_version**, version of VM.
    - `String` - **raw_definition_byte**, byte of asset definition.
    - `Object` - **definition**, description of asset.

Example

List all the available assets.

Request

```
curl -X POST http://localhost:9888/list-assets -d '{}'
```

Response

```
[
  {
    "alias": "EY",
    "definition": {
      "decimals": 8,
      "description": "Eiyaro Official Issue",
      "name": "EY",
      "symbol": "EY"
    },
```

```
    "id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
    "issue_program": "",
    "key_index": 0,
    "quorum": 0,
    "raw_definition_byte":
"7b0a202022646563696d616c73223a20382c0a2020226465736372697074696f6e223a20224279746f6d2
04f6666696369616c204973737565222c0a2020226e616d65223a202262746d222c0a20202273796d626f6
c223a202262746d220a7d",
    "type": "internal",
    "vm_version": 1,
    "xpubs": null
  },
  {
    "alias": "SILVER",
    "definition": null,
    "id": "50ec80b6bc48073f6aa8fa045131a71213c33f3681203b15ddc2e4b81f1f4730",
    "issue_program":
"ae2029cd61d9ef31d40af7541f9a50831d6317fdb0870249d0564fcfa9a8f843589c5151ad",
    "key_index": 1,
    "quorum": 1,
    "raw_definition_byte": "",
    "type": "asset",
    "vm_version": 1,
    "xpubs": [

"34b16ee500615cd325f8b84099f83c1ebecaca67977c5dc9b71ae32ceaf18207f996b0a9725b901d37926
89b2babcb60febe3b81a684d9b56b65f67f307d453d"
    ]
  }
]
```


Update Asset Alias Endpoint

Update asset alias by assetID.

Parameters

`Object`:

- `String` - **id**, id of asset.
- `String` - **alias**, new alias of asset.

Returns

Nothing the asset alias is updated successfully.

Example

Update asset alias.

Request

```
curl -X POST http://localhost:9888/update-asset-alias -d
'{"id":"50ec80b6bc48073f6aa8fa045131a71213c33f3681203b15ddc2e4b81f1f4730",
"alias":"GOLD"}'
```

Response

No response in case operation was successful.

List Balances Endpoint

Returns the list of all available accounts' balances.

Parameters

Optional:

- `String` - **account_id**, account id.
- `String` - **account_alias**, name of account.

Returns

- `Array of Object`, balances owned by the account.
  - `Object`:
    - `String` - **account_id**, account id.
    - `String` - **account_alias**, name of account.
    - `String` - **asset_id**, asset id.
    - `String` - **asset_alias**, name of asset.
    - `Integer` - **amount**, specified asset balance of account.

Example

List all the available accounts' balances.

Request

```
curl -X POST http://localhost:9888/list-balances -d '{}'
```

Response

```
[
  {
    "account_alias": "default",
```

```
    "account_id": "0BDQ9AP100A02",
    "amount": 35508000000000,
    "asset_alias": "EY",
    "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff"
  },
  {
    "account_alias": "alice",
    "account_id": "0BDQARM800A04",
    "amount": 60000000000,
    "asset_alias": "EY",
    "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff"
  }
]
```

List available accounts' balances by a given `account_id`:

Request

```
curl -X POST http://localhost:9888/list-balances -d '{"account_id":"0BDQ9AP100A02"}'
```

Response

```
[
  {
    "account_alias": "default",
    "account_id": "0BDQ9AP100A02",
    "amount": 35508000000000,
    "asset_alias": "EY",
    "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff"
  }
]
```

List Unspent Outputs Endpoint

Returns the sub list of all available unspent outputs for all accounts in your wallet.

Parameters

`Object`:

Optional:

- `String` - **id**, id of unspent output.
- `Boolean` - **unconfirmed**, is include unconfirmed `utxo`
- `Boolean` - **smart_contract**, is contract `utxo`
- `Integer` - **from**, the start position of first `utxo`

- `Integer` - **count**, the number of returned
- `String` - **account_id**, account id.
- `String` - **account_alias**, name of account.

Returns

- `Array of Object`, unspent output array.
  - `Object`:
    - `String` - **account_id**, account id.
    - `String` - **account_alias**, name of account.
    - `String` - **asset_id**, asset id.
    - `String` - **asset_alias**, name of asset.
    - `Integer` - **amount**, specified asset balance of account.
    - `String` - **address**, address of account.
    - `Boolean` - **change**, whether the account address is change.
    - `String` - **id**, unspent output id.
    - `String` - **program**, program of account.
    - `String` - **control_program_index**, index of program.
    - `String` - **source_id**, source unspent output id.
    - `String` - **source_pos**, position of source unspent output id in block.
    - `String` - **valid_height**, valid height.

Example

List all the available unspent outputs:

Request

```
curl -X POST http://localhost:9888/list-unspent-outputs -d '{}'
```

Response

```
[
  {
    "account_alias": "alice",
    "account_id": "0BKBR6VR00A06",
    "address": "ey1qv3htuvug7qdv46ywcvvzytrwrsyg0swltfa0dm",
    "amount": 2000,
    "asset_alias": "GOLD",
    "asset_id": "1883cce6aab82cf9af8cd085a3115dd4a92cdb8e6a9152acd73d7ae4adb9030a",
    "change": false,
```

```
    "control_program_index": 2,
    "id": "58f29f0f85f7bd2a91088bcbe536dee41cd0642dfb1480d3a88589bdbfd642d9",
    "program": "0014646ebe3388f01acae88ec318222c6e1c0887c1df",
    "source_id": "5988c1630c1f325e69bb92cb4b19af14286aa107311bc64b8f1a54629a33e0f4",
    "source_pos": 2,
    "valid_height": 0
  },
  {
    "account_alias": "default",
    "account_id": "0BKBR2D2G0A02",
    "address": "ey1qx7ylnhszg24995d5e0nftu9e87kt9vnxcn633r",
    "amount": 624000000000,
    "asset_alias": "EY",
    "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
    "change": false,
    "control_program_index": 12,
    "id": "5af9d3c9b69470983377c1fc0c9125c4ac3bfd32c8d505f2a6042aade8503bc9",
    "program": "00143789f9de0242aa52d1b4cbe695f0b93facb2b266",
    "source_id": "233d1dd49e591980f98e11f333c6c28a867e78448e272011f045131df5aa260b",
    "source_pos": 0,
    "valid_height": 12
  }
]
```


List the unspent output matching the given id:

Request

```
curl -X POST http://localhost:9888/list-unspent-outputs -d '{"id":
"58f29f0f85f7bd2a91088bcbe536dee41cd0642dfb1480d3a88589bdbfd642d9"}'
```

Response


```
{
  "account_alias": "alice",
  "account_id": "0BKBR6VR00A06",
  "address": "ey1qv3htuvug7qdv46ywcvvzytrwrsyg0swltfa0dm",
  "amount": 2000,
  "asset_alias": "GOLD",
  "asset_id": "1883cce6aab82cf9af8cd085a3115dd4a92cdb8e6a9152acd73d7ae4adb9030a",
  "change": false,
  "control_program_index": 2,
  "id": "58f29f0f85f7bd2a91088bcbe536dee41cd0642dfb1480d3a88589bdbfd642d9",
  "program": "0014646ebe3388f01acae88ec318222c6e1c0887c1df",
  "source_id": "5988c1630c1f325e69bb92cb4b19af14286aa107311bc64b8f1a54629a33e0f4",
  "source_pos": 2,
  "valid_height": 0
}
```

Backup Wallet Endpoint

Backs up a wallet to an image file, it contains the accounts' image, the assets' image and the keys' image.

Parameters

None.

Returns

`Object`:

- `Object` - **account_image**, account image.
- `Object` - **asset_image**, asset image.
- `Object` - **key_images**, key image.

Example

Request a backup of the node’s wallet information.

Request

```
curl -X http://localhost:9888/backup-wallet -d '{}'
```

Response

```
{
  "account_image": {
    "slices": [
      {
        "account": {
          "type": "account",
          "xpubs": [

"395d6e0ac25978c3f52f9c7bdfdf75ce6af02639fd7875b4b1f40778ab1120c6dcf461b7ab6fd310983af
b54a9a0fb3e09b6ec0d4364c4808c94383d50fb0681"
          ],
          "quorum": 1,
          "key_index": 1,
          "ID": "0CQTA3EOG0A02",
          "Alias": "def"
        },
        "contract_index": 2
      }
    ]
  },
```

```
  "asset_image": {
    "assets": []
  },
  "key_images": {
    "xkeys": [
      {
        "crypto": {
          "cipher": "aes-128-ctr",
          "ciphertext":
"bf44766fec149478af9500e25ce0a6bc50bb2fa04e40465781da6ff64e9b3a4c9af3d214cd92c5a41d849
8db5f4376526740f960ff429b16e52876aec6860e1d",
          "cipherparams": {
            "iv": "1b0fc61ae4dacb15f0f77d2b4ba67635"
          },
          "kdf": "scrypt",
          "kdfparams": {
            "dklen": 32,
            "n": 4096,
            "p": 6,
            "r": 8,
            "salt": "e133b1e7caae771ff1ab34b14824d6e27ef399f2b7ded4ad3500f080ede4a1dd"
          },
          "mac": "bc6bf411fb63e61a17bc15b94f29cf0d5a0f084c328955da1f7e2b26757cfc23"
        },
        "id": "1f40be59-7400-4fdc-b46b-15009f65363a",
        "type": "eiyaro_kd",
        "version": 1,
        "alias": "default",
        "xpub":
"c4ec9bfd5df19d175e17ff7fed89193c37a4a64e1c0928387da01387ca76c3bfd99390e3373ec4d438522
cc2d4644214cd2ec3b00965f7a1fa3546809583191c"
      },
      {
        "crypto": {
          "cipher": "aes-128-ctr",
          "ciphertext":
"f0887c8603cbbafc0a66d5b45f71488e089708c7dea4342625a67858a49d6d08c79cd3f1800627e3c8b46
68e8df34fcf0be9df5d9d4503acff05373976c312a9",
          "cipherparams": {
            "iv": "c111b46f9104f49f2c40aedb827e53b5"
          },
          "kdf": "scrypt",
          "kdfparams": {
            "dklen": 32,
            "n": 4096,
            "p": 6,
            "r": 8,
            "salt": "d9ef588b258b111dea1d99a4e4c5a4f968ab69072176bb95b111922e3bbea9e6"
          },
          "mac": "336f5fee643776e139f05ebe5e4f209d992ff97e16b906105fadac9e86133554"
        },
```

```
        "id": "611d407c-9e97-4297-a02a-13cd68e47983",
        "type": "eiyaro_kd",
        "version": 1,
        "alias": "def",
        "xpub":
"395d6e0ac25978c3f52f9c7bdfdf75ce6af02639fd7875b4b1f40778ab1120c6dcf461b7ab6fd310983af
b54a9a0fb3e09b6ec0d4364c4808c94383d50fb0681"
      }
    ]
  }
}
```


Restore Wallet Endpoint

Restores the wallet by image file.

Parameters

`Object`:

- `Object` - **account_image**, account image.
- `Object` - **asset_image**, asset image.
- `Object` - **key_images**, key image.

Returns

None if restore of the wallet was successful.

Example

Restore a node's wallet via the image file.

Request


```
curl -X POST http://localhost:9888/restore-wallet -d
'{"account_image":{"slices":[{"account":{"type":"account","xpubs":["395d6e0ac25978c3f5
2f9c7bdfdf75ce6af02639fd7875b4b1f40778ab1120c6dcf461b7ab6fd310983afb54a9a0fb3e09b6ec0d
4364c4808c94383d50fb0681"],"quorum":1,"key_index":1,"ID":"0CQTA3EOG0A02","Alias":"def"
},"contract_index":2}]},"asset_image":{"assets":[]},"key_images":{"xkeys":[{"crypto":{
"cipher":"aes-128-
ctr","ciphertext":"bf44766fec149478af9500e25ce0a6bc50bb2fa04e40465781da6ff64e9b3a4c9af
3d214cd92c5a41d8498db5f4376526740f960ff429b16e52876aec6860e1d","cipherparams":{"iv":"1
b0fc61ae4dacb15f0f77d2b4ba67635"},"kdf":"scrypt","kdfparams":{"dklen":32,"n":4096,"p":
6,"r":8,"salt":"e133b1e7caae771ff1ab34b14824d6e27ef399f2b7ded4ad3500f080ede4a1dd"},"ma
c":"bc6bf411fb63e61a17bc15b94f29cf0d5a0f084c328955da1f7e2b26757cfc23"},"id":"1f40be59-
7400-4fdc-b46b-
15009f65363a","type":"eiyaro_kd","version":1,"alias":"default","xpub":"c4ec9bfd5df19d1
75e17ff7fed89193c37a4a64e1c0928387da01387ca76c3bfd99390e3373ec4d438522cc2d4644214cd2ec
```

```
3b00965f7a1fa3546809583191c"},{"crypto":{"cipher":"aes-128-
ctr","ciphertext":"f0887c8603cbbafc0a66d5b45f71488e089708c7dea4342625a67858a49d6d08c79
cd3f1800627e3c8b4668e8df34fcf0be9df5d9d4503acff05373976c312a9","cipherparams":{"iv":"c
111b46f9104f49f2c40aedb827e53b5"},"kdf":"scrypt","kdfparams":{"dklen":32,"n":4096,"p":
6,"r":8,"salt":"d9ef588b258b111dea1d99a4e4c5a4f968ab69072176bb95b111922e3bbea9e6"},"ma
c":"336f5fee643776e139f05ebe5e4f209d992ff97e16b906105fadac9e86133554"},"id":"611d407c-
9e97-4297-a02a-
13cd68e47983","type":"eiyaro_kd","version":1,"alias":"def","xpub":"395d6e0ac25978c3f52
f9c7bdfdf75ce6af02639fd7875b4b1f40778ab1120c6dcf461b7ab6fd310983afb54a9a0fb3e09b6ec0d4
364c4808c94383d50fb0681"}]}}'
```


Response

No response in case operation was successful.

Rescan Wallet Endpoint

Trigger a rescan of the block information on the wallet.

Parameters

None.

Returns

Nothing if operation was a success.

Example

Request a rescan of the block information on the node.

Request

```
curl -X POST http://localhost:9888/rescan-wallet -d '{}'
```

Response

No response in case operation was successful.

Recovery Wallet Endpoint

Recovers a wallet and it's accounts from root `xpubs`.
All accounts and balances of `bip44` multi-account hierarchy for deterministic wallets can be restored via root `xpubs`.

Parameters

`Object`:

- `Object` - **xpubs**, root XPubs.

Returns

Status of recovery wallet operation.

Example

Request a wallet's recovery via `xpubs`.

Request

```
curl -X POST http://localhost:9888/recovery-wallet -d '{
"xpubs":["c536a2c11fafd8278e02e9393dcbf5aa420eb51a1761a7e5da7f2b9b37969b52a8f8e2b692e7
dcaf79dfa0d1e28c63eb9fda42942f20feaa8a71b383d9a4668c"]}'
```

Response

```
{
    "status": "success"
}
```

Wallet Info Endpoint

Returns the wallet's information.

Parameters

None.

Returns

`Object`:

- `Integer` - **best_block_height**, current block height.
- `Integer` - **wallet_height**, current block height for wallet.

Example

Request the node's wallet information.

Request

```
curl -X POST http://localhost:9888/wallet-info -d '{}'
```

Response

```
{
  "best_block_height": 150,
  "wallet_height": 150
}
```

Sign Message Endpoint

Sign a message with the key password(decode encrypted private key) of an address.

Parameters

`Object`:

- `String` - **address**, address for account.
- `String` - **message**, message for signature by address xpub.
- `String` - **password**, password of account.

Returns

`Object`:

- `String` - **derived_xpub**, derived xpub.
- `String` - **signature**, signature of message.

Example

Request the signature of a message by an address' private key.

Request

```
curl -X POST http://localhost:9888/sign-message -d
'{"address":"ey1qx2qgvvjz734ur8x5lpfdtlau74aaa5djs0a5jn", "message":"this is a test
message", "password":"123456"}'
```

Response

```
{
  "signature":
```

```
"74da3d6572233736e3a439166719244dab57dd0047f8751b1efa2da26eeab251d915c1211dcad77e8b013
267b86d96e91ae67ff0be520ef4ec326e911410b609",
  "derived_xpub":
"6ff8c3d1321ce39a3c3550f57ba70b67dcbcef821e9b85f6150edb7f2f3f91009e67f3075e6e76ed5f657
ee4b1a5f4749b7a8c74c8e7e6a1b0e5918ebd5df4d0"
}
```


Decode Program Endpoint

Decode a program.

Parameters

`Object`:

- `String` - **program**, program for account.

Returns

`Object`:

- `String` - **instructions**, instructions and data for program.

Example

Request to have a program decoded into it's instructions.

Request

```
curl -X POST http://localhost:9888/decode-program -d
'{"program":"0014a86c83ee12e6d790fb388345cc2e2b87056a0773"}'
```

Response


```
{
  "instructions": "DUP \nHASH160 \nDATA_20 a86c83ee12e6d790fb388345cc2e2b87056a0773
\nEQUALVERIFY \nTXSIGHASH \nSWAP \nCHECKSIG \n"
}
```


Get Transaction Endpoint

Query the account related transaction by transaction ID.

Parameters

`Object`:

- `String` - **tx_id**, transaction id, hash of transaction.

Returns

`Object`:

- `String` - **tx_id**, transaction id, hash of the transaction.
- `Integer` - **block_time**, the unix timestamp for when the requst was responsed.
- `String` - **block_hash**, hash of the block where this transaction was in.
- `Integer` - **block_height**, block height where this transaction was in.
- `Integer` - **block_index**, position of the transaction in the block.
- `Integer` - **block_transactions_count**, transactions count where this transaction was in the block.
- `Boolean` - **status_fail**, whether the state of the transaction request has failed.
- `Integer` - **size**, size of transaction.
- `Array of Object` - **inputs**, object of inputs for the transaction.
  - `String` - **type**, the type of input action, available option include: 'spend', 'issue', 'coinbase'.
  - `String` - **asset_id**, asset id.
  - `String` - **asset_alias**, name of asset.
  - `Object` - **asset_definition**, definition of asset(json object).
  - `Integer` - **amount**, amount of asset.
  - `Object` - **issuance_program**, issuance program, it only exist when type is 'issue'.
  - `Object` - **control_program**, control program of account, it only exist when type is 'spend'.
  - `String` - **address**, address of account, it only exist when type is 'spend'.
  - `String` - **spent_output_id**, the front of outputID to be spent in this input, it only exist when type is 'spend'.
  - `String` - **account_id**, account id.
  - `String` - **account_alias**, name of account.
  - `Object` - **arbitrary**, arbitrary infomation can be set by miner, it only exist when type is 'coinbase'.
  - `String` - **input_id**, hash of input action.
  - `Array of String` - **witness_arguments**, witness arguments.
- `Array of Object` - **outputs**, object of outputs for the transaction.
  - `String` - **type**, the type of output action, available option include: 'retire', 'control'.
  - `String` - **id**, outputid related to utxo.
  - `Integer` - **position**, position of outputs.
  - `String` - **asset_id**, asset id.
  - `String` - **asset_alias**, name of asset.

- `Object` - **asset_definition**, definition of asset(json object).
- `Integer` - **amount**, amount of asset.
- `String` - **account_id**, account id.
- `String` - **account_alias**, name of account.
- `Object` - **control_program**, control program of account.
- `String` - **address**, address of account.

Example

Retrieve a transaction by it ID.

Request

```
curl -X POST http://localhost:9888/get-transaction -d '{"tx_id":
"15b8d66e227feff47b3de0f278934ea16d6c828371ec6c13c8f84713dd11703b"}'
```

Response


```
{
  "block_hash": "1fa9bb389cf974a9b37b63ca38c0cf3453c30f394b9e8ae7f04f2d1b52c329b4",
  "block_height": 530,
  "block_index": 1,
  "block_time": 1528772056,
  "block_transactions_count": 2,
  "inputs": [
    {
      "account_alias": "default",
      "account_id": "0ER7MEFGG0A02",
      "address": "sy1q4pkg8msjumtep7ecsdzuct3tsuzk5pmnm3p8nr",
      "amount": 41250000000,
      "asset_alias": "EY",
      "asset_definition": {
        "decimals": 8,
        "description": "Eiyaro Official Issue",
        "name": "EY",
        "symbol": "EY"
      },
      "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
      "control_program": "0014a86c83ee12e6d790fb388345cc2e2b87056a0773",
      "input_id": "02702fe116e052aaf4473b034ed40720bfb3aba77df64625311ca3947d367336",
      "spent_output_id":
"002025b727148d04197cc7b9cf7eafd9986041f07641ca82dc0a1d9e227b52f6",
      "type": "spend",
      "witness_arguments": [

"944a35f256a49712f95319743671152b12360df859deedbfa9f37f9fe6a81b5ff2dce36d9ee6fc19e8be8
```

```
b1dd5915719d4341f66f5569aad26283859d3c1bc05",
        "bedfd27f48007c59555da672b6207ac997add62241894ff181bb9d8cba3b7e25"
      ]
    }
  ],
  "outputs": [
    {
      "account_alias": "default",
      "account_id": "0ER7MEFGG0A02",
      "address": "sy1qmt6jxrr8etssufr8qp98emyaly3lknxyndh5cj",
      "amount": 29450000000,
      "asset_alias": "EY",
      "asset_definition": {
        "decimals": 8,
        "description": "Eiyaro Official Issue",
        "name": "EY",
        "symbol": "EY"
      },
      "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
      "control_program": "0014daf5230c67cae10e2467004a7cec9df923fb4cc4",
      "id": "35a46dd36eb27b1ffdfdefbe5366175b6325e8f56e5bc3dd2aa1a47197e26e6c",
      "position": 0,
      "type": "control"
    },
    {
      "account_alias": "alice",
      "account_id": "0ER7OAK400A02",
      "address": "sy1qxe4jwhkekgnxkezu7xutu5gqnnpmyc8ppq98me",
      "amount": 11700000000,
      "asset_alias": "EY",
      "asset_definition": {
        "decimals": 8,
        "description": "Eiyaro Official Issue",
        "name": "EY",
        "symbol": "EY"
      },
      "asset_id": "ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
      "control_program": "0014366b275ed9b2266b645cf1b8be51009cc3b260e1",
      "id": "ae791bbde0cc5b370e28a505933b85082d67be8db81bdcc56b8202f200b883e7",
      "position": 1,
      "type": "control"
    }
  ],
  "size": 332,
  "status_fail": false,
  "tx_id": "15b8d66e227feff47b3de0f278934ea16d6c828371ec6c13c8f84713dd11703b"
}
```

List Transactions Endpoint

Returns the sub list of all the account related transactions.

Parameters

`Object`:

Optional:

- `String` - **id**, transaction id, hash of transaction.
- `String` - **account_id**, id of account.
- `Boolean` - **detail** , flag of detail transactions, default false (only return transaction summary)
- `Boolean` - **unconfirmed**, flag of unconfirmed transactions(query result include all confirmed and unconfirmed transactions), default false.
- `Integer` - **from**, the start position of first transaction
- `Integer` - **count**, the number of returned

Returns

`Array of Object`, transaction array.

Optional:

- `Object`:(summary transaction)
  - `String` - **tx_id**, transaction id, hash of the transaction.
  - `Integer` - **block_time**, the unix timestamp for when the requst was responsed.
  - `Array of Object` - **inputs**, object of summary inputs for the transaction.
    - `String` - **type**, the type of input action, available option include: 'spend', 'issue', 'coinbase'.
    - `String` - **asset_id**, asset id.
    - `String` - **asset_alias**, name of asset.
    - `Integer` - **amount**, amount of asset.
    - `String` - **account_id**, account id.
    - `String` - **account_alias**, name of account.
    - `Object` - **arbitrary**, arbitrary infomation can be set by miner, it only exist when type is 'coinbase'.
  - `Array of Object` - **outputs**, object of summary outputs for the transaction.
    - `String` - **type**, the type of output action, available option include: 'retire', 'control'.
    - `String` - **asset_id**, asset id.
    - `String` - **asset_alias**, name of asset.
    - `Integer` - **amount**, amount of asset.

        - `String` - **account_id**, account id.
        - `String` - **account_alias**, name of account.
        - `Object` - **arbitrary**, arbitrary infomation can be set by miner, it only exist when type is input 'coinbase'(this place is empty).
- `Object`:(detail transaction)
    - `String` - **tx_id**, transaction id, hash of the transaction.
    - `Integer` - **block_time**, the unix timestamp for when the requst was responsed.
    - `String` - **block_hash**, hash of the block where this transaction was in.
    - `Integer` - **block_height**, block height where this transaction was in.
    - `Integer` - **block_index**, position of the transaction in the block.
    - `Integer` - **block_transactions_count**, transactions count where this transaction was in the block.
    - `Boolean` - **status_fail**, whether the state of the transaction request has failed.
    - `Integer` - **size**, size of transaction.
    - `Array of Object` - **inputs**, object of inputs for the transaction.
        - `String` - **type**, the type of input action, available option include: 'spend', 'issue', 'coinbase'.
        - `String` - **asset_id**, asset id.
        - `String` - **asset_alias**, name of asset.
        - `Object` - **asset_definition**, definition of asset(json object).
        - `Integer` - **amount**, amount of asset.
        - `Object` - **issuance_program**, issuance program, it only exist when type is 'issue'.
        - `Object` - **control_program**, control program of account, it only exist when type is 'spend'.
        - `String` - **address**, address of account, it only exist when type is 'spend'.
        - `String` - **spent_output_id**, the front of outputID to be spent in this input, it only exist when type is 'spend'.
        - `String` - **account_id**, account id.
        - `String` - **account_alias**, name of account.
        - `Object` - **arbitrary**, arbitrary infomation can be set by miner, it only exist when type is 'coinbase'.
        - `String` - **input_id**, hash of input action.
        - `Array of String` - **witness_arguments**, witness arguments.
    - `Array of Object` - **outputs**, object of outputs for the transaction.
        - `String` - **type**, the type of output action, available option include: 'retire', 'control'.
        - `String` - **id**, outputid related to utxo.
        - `Integer` - **position**, position of outputs.
        - `String` - **asset_id**, asset id.

- `String` - **asset_alias**, name of asset.
- `Object` - **asset_definition**, definition of asset(json object).
- `Integer` - **amount**, amount of asset.
- `String` - **account_id**, account id.
- `String` - **account_alias**, name of account.
- `Object` - **control_program**, control program of account.
- `String` - **address**, address of account.

Example

List all the available transactions:

Request

```
curl -X POST http://localhost:9888/list-transactions -d '{}'
```

Response


```
[
  {
    "block_time": 1521771059,
    "inputs": [
      {
        "arbitrary": "06",
        "asset_id":
"0000000000000000000000000000000000000000000000000000000000000000",
        "type": "coinbase"
      }
    ],
    "outputs": [
      {
        "account_alias": "default",
        "account_id": "0BMHBOBVG0A02",
        "amount": 41250000000,
        "asset_alias": "EY",
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "type": "control"
      }
    ],
    "tx_id": "c631a8de401913a512c338bcf4a61cb2de6cede12a7385d9d11637eaa6578f33"
  },
  {
    "block_time": 1521770515,
    "inputs": [
      {
```

```
        "account_alias": "default",
        "account_id": "0BMHBOBVG0A02",
        "amount": 41250000000,
        "asset_alias": "EY",
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "type": "spend"
      }
    ],
    "outputs": [
      {
        "account_alias": "default",
        "account_id": "0BMHBOBVG0A02",
        "amount": 34649500000,
        "asset_alias": "EY",
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "type": "control"
      },
      {
        "account_alias": "alice",
        "account_id": "0BMHDI1P00A04",
        "amount": 6600000000,
        "asset_alias": "EY",
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "type": "control"
      }
    ],
    "tx_id": "1151ce5c7b32b8755b5e48109ec7ed956fb1783eaea9558bf5a2ad957825e4b7"
  }
]
```


List the transaction matching the given `tx_id` with detail:

Request

```
curl -X POST http://localhost:9888/list-transactions -d '{"id":
"7e9f9b999381da936e3cae48b5bac2b9bc28bb56c6c862be6c110448f7e2f6b3","detail": true}'
```

Response


```
[
  {
    "block_hash": "1b2d0efa025256603e9330273d37f5a900cd3dfb213e015ac53cf645e2315a6d",
    "block_height": 72,
    "block_index": 1,
    "block_time": 1528528584,
```

```
    "block_transactions_count": 2,
    "inputs": [
      {
        "account_alias": "default",
        "account_id": "0ER7MEFGG0A02",
        "address": "sy1q4pkg8msjumtep7ecsdzuct3tsuzk5pmnm3p8nr",
        "amount": 41250000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "0014a86c83ee12e6d790fb388345cc2e2b87056a0773",
        "input_id":
"adcef046c3f61fb6ba0d6a7107122f6e31cd4b49c7a3b05aa3391e5b0529d69a",
        "spent_output_id":
"0072a2c1cee30a7c7b7b006ca08a48c2b479bc81c0ec6463fe4865ef37626ab6",
        "type": "spend",
        "witness_arguments": [

"944a35f256a49712f95319743671152b12360df859deedbfa9f37f9fe6a81b5ff2dce36d9ee6fc19e8be8
b1dd5915719d4341f66f5569aad26283859d3c1bc05",
          "bedfd27f48007c59555da672b6207ac997add62241894ff181bb9d8cba3b7e25"
        ]
      }
    ],
    "outputs": [
      {
        "account_alias": "default",
        "account_id": "0ER7MEFGG0A02",
        "address": "sy1qskj096x5w7ejcmk746g3djmv84dpxts62dewvd",
        "amount": 34649500000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "001485a4f2e8d477b32c6edeae9116cb6c3d5a132e1a",
        "id": "b08c9bfc816064ca33da8b569998229774fc9552da7d4f16870b2c5a8f645b3b",
        "position": 0,
        "type": "control"
      },
      {
```

```
        "account_alias": "alice",
        "account_id": "0ER7OAK400A02",
        "address": "sy1qxe4jwhkekgnxkezu7xutu5gqnnpmyc8ppq98me",
        "amount": 6600000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "0014366b275ed9b2266b645cf1b8be51009cc3b260e1",
        "id": "0e8f8dc83a39b2b6d00a77759a797102d047f82f800fe21f5b1d80bb4d5e2e39",
        "position": 1,
        "type": "control"
      }
    ],
    "size": 333,
    "status_fail": false,
    "tx_id": "7e9f9b999381da936e3cae48b5bac2b9bc28bb56c6c862be6c110448f7e2f6b3"
  }
]
```


List the transaction matching the given `account_id` and unconfirmed flag(unconfirmed transaction's `block_hash`, `block_height` and `block_index` is default for zero):

Request

```
curl -X POST http://localhost:9888/list-transactions -d '{"account_id":
"0F1MQVI500A02", "unconfirmed": true, "detail": true}'
```

Response


```
[
  {
    "block_hash": "0000000000000000000000000000000000000000000000000000000000000000",
    "block_height": 0,
    "block_index": 0,
    "block_time": 1529032899,
    "inputs": [
      {
        "account_alias": "default",
        "account_id": "0F1L5Q3V00A02",
        "address": "sy1ql67n04pj8mfqzv3wjq8num3yrltdykemgrr45j",
        "amount": 41250000000,
        "asset_alias": "EY",
```

```
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "0014febd37d4323ed201322e900f3e6e241fd6d25b3b",
        "input_id":
"192ac93bad580cd53626b7f11c17e6eca64f66d1947add13a5620b78f666693e",
        "spent_output_id":
"00570443cbac4f68638ff565e8b04db2062800b9e23b7701913ddf6b190dbe65",
        "type": "spend",
        "witness_arguments": [

"512a2b60324433de96cd4274bd298b4b109a29c4d9d68582952065dfd0d7c00663cbc49e8e42fdef740a7
e1b78622ee31abf2e9b0d5609755f275afd6751590b",
          "bedfd27f48007c59555da672b6207ac997add62241894ff181bb9d8cba3b7e25"
        ]
      },
      {
        "account_alias": "default",
        "account_id": "0F1L5Q3V00A02",
        "address": "sy1ql67n04pj8mfqzv3wjq8num3yrltdykemgrr45j",
        "amount": 41250000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "0014febd37d4323ed201322e900f3e6e241fd6d25b3b",
        "input_id":
"83713c02b52eb18f782de67b322c43571d83793e082596b6410e2d3a8a41387d",
        "spent_output_id":
"01df9011ca0bed4bb9b95dc84da4c5103fed06ca28c03d92d34ee3d61b945288",
        "type": "spend",
        "witness_arguments": [

"512a2b60324433de96cd4274bd298b4b109a29c4d9d68582952065dfd0d7c00663cbc49e8e42fdef740a7
e1b78622ee31abf2e9b0d5609755f275afd6751590b",
          "bedfd27f48007c59555da672b6207ac997add62241894ff181bb9d8cba3b7e25"
        ]
      }
    ],
    "outputs": [
      {
```

```
        "account_alias": "default",
        "account_id": "0F1L5Q3V00A02",
        "address": "sy1qdcfprk7wjy6flavkzhcjh3dxyrwlm935trrs5m",
        "amount": 41249100000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "00146e1211dbce91349ff59615f12bc5a620ddfd9634",
        "id": "09fabb1a2bac44c45054175453e23e81a764557147523d8df70d8a190cf2eb17",
        "position": 0,
        "type": "control"
      },
      {
        "account_alias": "default",
        "account_id": "0F1L5Q3V00A02",
        "address": "sy1qt92xx2f4ys63dyhy58jle87nttcf37zftweklh",
        "amount": 39150000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "00145954632935243516 92e4a1e5fc9fd35af098f849",
        "id": "6efae48663e872193e8a672eb85b8bbf29d8aee98e42816340fa0b2340cc355d",
        "position": 1,
        "type": "control"
      },
      {
        "account_alias": "alice",
        "account_id": "0F1MQVI500A02",
        "address": "sy1qum6ly8aq9u9k7xrkuck9pq64xg67gw40khnnxu",
        "amount": 2100000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
```

```
        "control_program": "0014e6f5f21fa02f0b6f1876e62c5083553235e43aaf",
        "id": "aca1ecc59d8bcf548e4f5afb8a97e38f0eb56e1387b17400fd3c693c074a703d",
        "position": 2,
        "type": "control"
      }
    ],
    "size": 1194,
    "status_fail": false,
    "tx_id": "9c28a6a2a039ed5bdebe81eea44cdb22a951c472bc25cb1e8188ae423a98f251"
  },
  {
    "block_hash": "474b9c28b225fba02278ad3b097d561bf8f5c562ff2a548226fc10fc1d75b7ed",
    "block_height": 255,
    "block_index": 1,
    "block_time": 1528963126,
    "block_transactions_count": 2,
    "inputs": [
      {
        "account_alias": "alice",
        "account_id": "0F1MQVI500A02",
        "address": "sy1qum6ly8aq9u9k7xrkuck9pq64xg67gw40khnnxu",
        "amount": 10000000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "0014e6f5f21fa02f0b6f1876e62c5083553235e43aaf",
        "input_id":
"0705bb7f4aea4ef869f22ab5e4a26e051b066e41290c1b74734a82aee8c03dfc",
        "spent_output_id":
"767649aafdfe2c22d46d641a5b74d934e2590330f7280b0fc55b978812a99a58",
        "type": "spend",
        "witness_arguments": [

"a4d4f09a04371516d37e1d27f92c9cb41e4b1e7f62762cf23ed3904a9dfd2d794195862fffd00bf7ac373
e5891c8d2eb660dc5ff9c040ec4e01f973bbfd31c23",
          "2ecb3f55bfde18ec95a93c456dd3d44cb55da83148a68cbc059ea04e7b12d3bc"
        ]
      },
      {
        "account_alias": "alice",
        "account_id": "0F1MQVI500A02",
        "address": "sy1qum6ly8aq9u9k7xrkuck9pq64xg67gw40khnnxu",
        "amount": 1000000000000,
        "asset_alias": "GOLD",
        "asset_definition": {
```

```
          "decimals": 8,
          "description": {},
          "name": "",
          "symbol": ""
        },
        "asset_id":
"71deb74415f16a1f7bffb04c61d427bb1f93adfba257ffba2673f102d602e78f",
        "control_program": "0014e6f5f21fa02f0b6f1876e62c5083553235e43aaf",
        "input_id":
"35764d80217d0d2a3c1b000dc2dd47cf0c8bc152c842ce6e3a7783140087d3d6",
        "spent_output_id":
"5d7a88851f5696ded279cb9bc380e050024c555258ea7851dfdedc2797b0d820",
        "type": "spend",
        "witness_arguments": [

"a4d4f09a04371516d37e1d27f92c9cb41e4b1e7f62762cf23ed3904a9dfd2d794195862fffd00bf7ac373
e5891c8d2eb660dc5ff9c040ec4e01f973bbfd31c23",
          "2ecb3f55bfde18ec95a93c456dd3d44cb55da83148a68cbc059ea04e7b12d3bc"
        ]
      }
    ],
    "outputs": [
      {
        "account_alias": "alice",
        "account_id": "0F1MQVI500A02",
        "address": "sy1q39sztlh4jq5nknstn2udvvpm6v5ugussx2djc0",
        "amount": 9980000000,
        "asset_alias": "EY",
        "asset_definition": {
          "decimals": 8,
          "description": "Eiyaro Official Issue",
          "name": "EY",
          "symbol": "EY"
        },
        "asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff",
        "control_program": "0014896025fef590293b4e0b9ab8d6303bd329c47210",
        "id": "2b44969d28d79544006e792411d6cd1d245f9af20419f6138494b4b5aac2a72e",
        "position": 0,
        "type": "control"
      },
      {
        "account_alias": "alice",
        "account_id": "0F1MQVI500A02",
        "address": "sy1q258yd0gvatje4pn0qc8z9w8cdv45j9tvhfpjh8",
        "amount": 999999999901,
        "asset_alias": "GOLD",
        "asset_definition": {
          "decimals": 8,
          "description": {},
          "name": "",
```

```
          "symbol": ""
        },
        "asset_id":
"71deb74415f16a1f7bffb04c61d427bb1f93adfba257ffba2673f102d602e78f",
        "control_program": "0014550e46bd0ceae59a866f060e22b8f86b2b49156c",
        "id": "54be1bc876d1deccb9845acec79eabf62d7eacd5935e337850233657914d0f9d",
        "position": 1,
        "type": "control"
      },
      {
        "amount": 99,
        "asset_alias": "GOLD",
        "asset_definition": {
          "decimals": 8,
          "description": {},
          "name": "",
          "symbol": ""
        },
        "asset_id":
"71deb74415f16a1f7bffb04c61d427bb1f93adfba257ffba2673f102d602e78f",
        "control_program":
"20e864761d8181103b6476435a805cba97361df9a05c40fae644c27f69ce045d3c16001464d928e181900
d382fa33def66534c7323c778c4015820684d6683d014abb4e019878b50fbbb547bcbf9c4739498d8eeef5
65d37f9a82f741a547a6413000000007b7b51547ac1631a000000547a547aae7cac00c0",
        "id": "347553923bb550c236a703e46600d53f25161e3eb74ee3183884d398e5d894b0",
        "position": 2,
        "type": "control"
      }
    ],
    "size": 691,
    "status_fail": false,
    "tx_id": "383f8636842301b2fe292c5b8b2f540c6ed7867ba5751680b2e77827c300e41e"
  }
]
```


Build Transaction Endpoint

Build transaction.

Parameters

`Object`:

- `String` - **base_transaction**, base data for the transaction, default is null.
- `Integer` - **ttl**, integer of the time to live in milliseconds, it means utxo will be reserved(locked) for builded transaction in this time range, if the transaction will not to be submitted into block, it will be auto unlocked for build transaction again after this ttl time. it will be set to 5 minutes(300 seconds) defaultly when ttl is 0.

- `Integer` - **time_range**, the block height at which this transaction will be allowed to be included in a block. If the block height of the main chain exceeds this value, the transaction will expire and no longer be valid.
- `Arrary of Object` - **actions**:
  - `Object`:
    - `String` - **account_id** | **account_alias**, (type is spend_account) alias or ID of account.
    - `String` - **asset_id** | **asset_alias**, (type is spend_account, issue, retire, control_program and control_address) alias or ID of asset.
    - `Integer` - **amount**, (type is spend_account, issue, retire, control_program and control_address) the specified asset of the amount sent with this transaction.
    - `String`- **type**, type of transaction, valid types: 'spend_account', 'issue', 'spend_account_unspent_output', 'control_address', 'control_program', 'retire'.
    - `String` - **address**, (type is control_address) address of receiver, the style of address is P2PKH or P2SH.
    - `String` - **control_program**, (type is control_program) control program of receiver.
    - `String` - **use_unconfirmed**, (type is spend_account and spend_account_unspent_output) flag of use unconfirmed UTXO, default is false.
    - `String` - **arbitrary**, (type is retire) arbitrary additional data by hexadecimal.
    - `Arrary of Object` - **arguments**, (type is issue and spend_account_unspent_output) arguments of contract, null when it's not contract.
      - `String`- **type**, type of argument, valid types: 'raw_tx_signature', 'data'.
      - `Object`- **raw_data**, json object of argument content.
        - `String`- **xpub**, (type is raw_tx_signature) root xpub.
        - `String`- **derivation_path**, (type is raw_tx_signature) derived path.
        - `String`- **value**, (type is data) string of binary value.

Returns

- `Object of build-transaction` - **transaction**, built transaction.

Example

Build transaction of type `spend`.

Request

```
curl -X POST http://localhost:9888/build-transaction -d
'{"base_transaction":null,"actions":[{"account_id":"0BF63M2U00A04","amount":20000000,"
asset_id":"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","type":"s
pend_account"},{"account_id":"0BF63M2U00A04","amount":99,"asset_id":"3152a15da72be51b3
30e1c0f8e1c0db669269809da4f16443ff266e07cc43680","type":"spend_account"},{"amount":99,
"asset_id":"3152a15da72be51b330e1c0f8e1c0db669269809da4f16443ff266e07cc43680","address
```

```
":"bm1q50u3z8empm5ke0g3ngl2t3sqtr6sd7cepd3z68","type":"control_address"}],"ttl":0,"tim
e_range": 43432}'
```

Build transaction of type `issue`.

Request

```
curl -X POST http://localhost:9888/build-transaction -d
'{"base_transaction":null,"actions":[{"account_id":"0BF63M2U00A04","amount":20000000,"
asset_id":"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","type":"s
pend_account"},{"amount":10000,"asset_id":"3152a15da72be51b330e1c0f8e1c0db669269809da4
f16443ff266e07cc43680","type":"issue"},{"amount":10000,"asset_id":"3152a15da72be51b330
e1c0f8e1c0db669269809da4f16443ff266e07cc43680","address":"ey1q50u3z8empm5ke0g3ngl2t3sq
tr6sd7cepd3z68","type":"control_address"}],"ttl":0,"time_range": 43432}'
```

Build transaction of type `address`.

Request

```
curl -X POST http://localhost:9888/build-transaction -d
'{"base_transaction":null,"actions":[{"account_id":"0BF63M2U00A04","amount":20000000,"
asset_id":"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","type":"s
pend_account"},{"account_id":"0BF63M2U00A04","amount":99,"asset_id":"3152a15da72be51b3
30e1c0f8e1c0db669269809da4f16443ff266e07cc43680","type":"spend_account"},{"amount":99,
"asset_id":"3152a15da72be51b330e1c0f8e1c0db669269809da4f16443ff266e07cc43680","address
":"ey1q50u3z8empm5ke0g3ngl2t3sqtr6sd7cepd3z68","type":"control_address"}],"ttl":0,"tim
e_range": 43432}'
```

Build transaction of type `retire`.

Request

```
curl -X POST http://localhost:9888/build-transaction -d
'{"base_transaction":null,"actions":[{"account_id":"0BF63M2U00A04","amount":20000000,"
asset_id":"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","type":"s
pend_account"},{"account_id":"0BF63M2U00A04","amount":99,"asset_id":"3152a15da72be51b3
30e1c0f8e1c0db669269809da4f16443ff266e07cc43680","type":"spend_account"},{"amount":99,
"asset_id":"3152a15da72be51b330e1c0f8e1c0db669269809da4f16443ff266e07cc43680","arbitra
ry":"77656c636f6d65efbc8ce6aca2e8bf8ee69da5e588b0e58e9fe5ad90e4b896e7958c","type":"ret
ire"}],"ttl":0,"time_range":43432}'
```

Build transaction of type `spend_account_unspent_output`(user can get `UTXO` information by calling the `list-unspent-outputs` endpoint).

- action field `output_id` correspond to `UTXO` result `id` field
- UTXO asset and amount will be spent in this transaction

- transaction fee is (utxo `asset_amount` - output `asset_amount`)

Request

```
curl -X POST http://localhost:9888/build-transaction -d
'{"base_transaction":null,"actions":[{"type":"spend_account_unspent_output","output_id
":"01c6ccc6f522228cd4518bba87e9c43fbf55fdf7eb17f5aa300a037db7dca0cb"},{"amount":412430
00000,"asset_id":"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","a
ddress":"sy1qmw8c5s29zlexknfahrze3ghvlqrtn2huuntvpn","type":"control_address"}],"ttl":
0,"time_range":0}'
```

Response (this type is `spend`, the other types are similar)


```
{
  "allow_additional_actions": false,
  "local": true,
  "raw_transaction":
"07010000020161015fb6a63a3361170afca03c9d5ce1f09fe510187d69545e09f95548b939cd7fffa3fff
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff80fc93afdf01000116001426b
d1b851cf6eb8a701c20c184352ad8720eeee90100015d015bb6a63a3361170afca03c9d5ce1f09fe510187
d69545e09f95548b939cd7fffa33152a15da72be51b330e1c0f8e1c0db669269809da4f16443ff266e07cc
43680c03e0101160014489a678741ccc844f9e5c502f7fac0a665bedb25010003013effffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff80a2cfa5df0101160014948fb4f500e66d20fba
cb903fe108ee81f9b6d9500013a3152a15da72be51b330e1c0f8e1c0db669269809da4f16443ff266e07cc
43680dd3d01160014cd5a822b34e3084413506076040d508bb12232c70001393152a15da72be51b330e1c0
f8e1c0db669269809da4f16443ff266e07cc436806301160014a3f9111f3b0ee96cbd119a3ea5c60058f50
6fb1900",
  "signing_instructions": [
    {
      "position": 0,
      "witness_components": [
        {
          "keys": [
            {
              "derivation_path": [
                "0101000000000000000",
                "0500000000000000"
              ],
              "xpub":
"ee9dd8affdef7e0cacd0fbbf310217c7f588156c28e414db74c27afaedd8f876cf54547a672b431ff06ee
8a146207df9595638a041b55ada1a764a8b5b30bda0"
            }
          ],
          "quorum": 1,
          "signatures": null,
          "type": "raw_tx_signature"
        },
        {
          "type": "data",
```

```
          "value": "62a73b6b7ffe52b6ad782b0e0efdc8309bf2f057d88f9a17d125e41bb11dbb88"
        }
      ]
    },
    {
      "position": 1,
      "witness_components": [
        {
          "keys": [
            {
              "derivation_path": [
                "010100000000000000",
                "0600000000000000"
              ],
              "xpub":
"ee9dd8affdef7e0cacd0fbbf310217c7f588156c28e414db74c27afaedd8f876cf54547a672b431ff06ee
8a146207df9595638a041b55ada1a764a8b5b30bda0"
            }
          ],
          "quorum": 1,
          "signatures": null,
          "type": "raw_tx_signature"
        },
        {
          "type": "data",
          "value": "ba5a63e7416caeb945eefc2ce874f40bc4aaf6005a1fc792557e41046f7e502f"
        }
      ]
    }
  ]
}
```


Build Chain Transactions Endpoint

Build chain transactions. To solve the problem of excessive `utxo` causing the transaction to fail, the `utxo` merge will be performed automatically. Currently, only `EY` transactions are supported.

This feature requires the `core` software to be higher than `v1.0.1`.

Parameters

`Object`:

- `String` - **base_transaction**, base data for the transaction, default is null.
- `Integer` - **ttl**, integer of the time to live in milliseconds, it means utxo will be reserved(locked) for builded transaction in this time range, if the transaction will not to be submitted into block, it will be auto unlocked for build transaction again after this ttl time. it will be set to 5 minutes(300 seconds) defaultly when ttl is 0.

- `Integer` - **time_range**, time stamp(block height)is maximum survival time for the transaction, the transaction will be not submit into block after this time stamp.
- `Arrary of Object` - **actions**:
  - `Object`:
    - `String` - **account_id** | **account_alias**, (type is spend_account) alias or ID of account.
    - `String` - **asset_id** | **asset_alias**, (type is spend_account, issue, retire, control_program and control_address) alias or ID of asset.
    - `Integer` - **amount**, (type is spend_account, issue, retire, control_program and control_address) the specified asset of the amount sent with this transaction.
    - `String`- **type**, type of transaction, valid types: 'spend_account', 'issue', 'spend_account_unspent_output', 'control_address', 'control_program', 'retire'.
    - `String` - **address**, (type is control_address) address of receiver, the style of address is P2PKH or P2SH.
    - `String` - **control_program**, (type is control_program) control program of receiver.
    - `String` - **use_unconfirmed**, (type is spend_account and spend_account_unspent_output) flag of use unconfirmed UTXO, default is false.
    - `Arrary of Object` - **arguments**, (type is issue and spend_account_unspent_output) arguments of contract, null when it's not contract.
      - `String`- **type**, type of argument, valid types: 'raw_tx_signature', 'data'.
      - `Object`- **raw_data**, json object of argument content.
        - `String`- **xpub**, (type is raw_tx_signature) root xpub.
        - `String`- **derivation_path**, (type is raw_tx_signature) derived path.
        - `String`- **value**, (type is data) string of binary value.

Returns

- `Object of raw_transaction` - **raw_transaction**, builded transactions.
- `Object of signing_instructions` - **signing_instructions**, Information used to sign a transactions.

Example

Build chain transaction of type `spend`.

Request

```
curl -X POST http://localhost:9888//build-chain-transactions -d '{"base_transaction":
null,"actions":[{"account_id":"0JCH28A600A02","amount":30000500000000,"asset_id":"ffff
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","type":
"spend_account"}, {"amount": 30000490000000,"asset_id":
"ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff","address":
"sm1qx93sge8jkgzclc7pled7uqr596hjm2xe558lkr","type": "control_address"}],"ttl":
```

```
1000000,"time_range": 0}'
```

Response


```
{
    "status": "success",
    "data": [{
        "raw_transaction":
"0701000201620160a0d36052ca3d1335120ae48e1ffb2fb6b25588628eff90fa88bef3117dfb4301fffff
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff80ddb2c490e9060101160014316
30464f2b2058fe3c1fe5bee00742eaf2da8d901000161015f72de2064ab999acf22c05b5cf9c7d53164f80
038b46b1ce426708514a30a3485ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
fffff80d4f4f6990100011600143163046 4f2b2058fe3c1fe5bee00742eaf2da8d9010001013fffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffffffff8084c5b6aaea060116001431630464f
2b2058fe3c1fe5bee00742eaf2da8d900",
        "signing_instructions": [{
            "position": 0,
            "witness_components": [{
                "type": "raw_tx_signature",
                "quorum": 1,
                "keys": [{
                    "xpub":
"b4d084e77bcda7fd8a37e31135200b2a6af98d19018674125dc6290dd14176f92523f229d9f1f3514b461
f6931ac2073f586a35cd628c90270063725e6e1e983",
                    "derivation_path": ["0101000000000000000", "0100000000000000"]
                }],
                "signatures": null
            }, {
                "type": "data",
                "value":
"a86ab33efa9d71994270898ad99f198d60889ef617d5eaf25e776929a8973919"
            }]
        }, {
            "position": 1,
            "witness_components": [{
                "type": "raw_tx_signature",
                "quorum": 1,
                "keys": [{
                    "xpub":
"b4d084e77bcda7fd8a37e31135200b2a6af98d19018674125dc6290dd14176f92523f229d9f1f3514b461
f6931ac2073f586a35cd628c90270063725e6e1e983",
                    "derivation_path": ["0101000000000000000", "0100000000000000"]
                }],
                "signatures": null
            }, {
                "type": "data",
                "value":
"a86ab33efa9d71994270898ad99f198d60889ef617d5eaf25e776929a8973919"
            }]
        }],
```

```
        "allow_additional_actions": false
    }, {
        "raw_transaction":
"0701000101620160571cc5d99a2994ff6b192bc9387838a3651245cb66dad4a6bc5f660310cebfa9fffff
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff8084c5b6aaea060001160014316
30464f2b2058fe3c1fe5bee00742eaf2da8d9010002013effffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffff80faafed9901011600143163046 4f2b2058fe3c1fe5bee00742eaf2da8d90
0013ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff80ddb2c490e906011
60014316304 64f2b2058fe3c1fe5bee00742eaf2da8d900",
        "signing_instructions": [{
            "position": 0,
            "witness_components": [{
                "type": "raw_tx_signature",
                "quorum": 1,
                "keys": [{
                    "xpub":
"b4d084e77bcda7fd8a37e31135200b2a6af98d19018674125dc6290dd14176f92523f229d9f1f3514b461
f6931ac2073f586a35cd628c90270063725e6e1e983",
                    "derivation_path": ["0101000000000000000", "0100000000000000"]
                }],
                "signatures": null
            }, {
                "type": "data",
                "value":
"a86ab33efa9d71994270898ad99f198d60889ef617d5eaf25e776929a8973919"
            }]
        }],
        "allow_additional_actions": false
    }]
}
```


Network Endpoints

These endpoints are available regardless of the wallet being disabled or not.