

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Using Bitcoin Cash from mainnet.cash

A QuickStart

2qx - github.com/2qx

2023-10-21 10h EDT BlockHack Hackathon

Outline

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

1 Intro

- What is Bitcoin Cash?
- What is Mainnet Cash?
- What's in the box?

2 Ways to use mainnet-js

- Running mainnet-js Bundled Script
- Using mainnet.cash service
- Using the mainnet.cash Docker image
- Spin-up a Full Service Stack in Regtest

3 Warning

- Nothing is impossible, it's just not the way

4 Manuals

5 State of mainnet.cash

These Slides

BlockHack
Toronto '23

These slides <https://tinyurl.com/epbxrkns>



Intro

- Bitcoin Cash (BCH)
- Mainnet Cash
- Batteries included

Ways to use mainnet-js

- Javascript
- Unstable REST
- Docker image
- RegTest Stack

Warning

- Not the way

Manuals

- State of mainnet.cash

bitcoin (cash): a p2p payment network

with a hidden scripting language

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Listen to radio silence.

- Rule 1 of Disinformation: Hear no evil, see no evil, speak no evil. Regardless of what you know, don't discuss it – especially if you are a public figure, news anchor, etc. If it's not reported, it didn't happen, and you never have to deal with the issues.
- Bitcoin: A Peer-to-Peer Electronic Cash System

Mainnet Cash is a Specification

First and foremost.

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Mainnet Cash is a tool for developers to access common Bitcoin Cash functions, utilities and the network itself.

- A written contract for how a service will be provided.
- Implemented in typescript.
- Specified in OpenAPI3 (Swagger): [api.yml](#)
- A generated API is then implemented with the typescript library.

Visual Explanation

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash



mainnet.cash



mainnet-js



(λ)



Libauth



mainnet.cash is wasm wrapped in typescript, then
candied, cured with REST & shipped with docker

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

- [@bitauth/libauth](#) functional bitcoin library.
- mainnet-js: defacto reference wallet implementation.
- mainnet.cash an API specification implemented with mainnet-js.
- End Goal:
 - Developers can use common BCH functions from REST.
 - Developers get a similar interface in the browser.

Other tools included

-

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

- Automatic network providers for different networks (bitcoincash, chipnet, regtest)
- [CashTokens](#) & [BitcoinCash Metadata Registries \(BCMR\)](#) built in.
- BIP39/BIP44 Mnemonic seed wallets and xpub derivation.
- Caching interface to the CoinGecko USD spot API.
- Available plugin for [CashScript](#).
- Available storage plugins for browsers (IndexedDB) or nodejs (postgres)

RE: mainnet.cash is a contract

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript

Unstable REST

Docker image

RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

```
1 from future import print_function
2 import mainnet
3 import math
4 from mainnet.rest import ApiException
5 from pprint import pprint
6
7 # Defining the host is optional and defaults to https://rest-unstable.mainnet.cash
8 # See configuration.py for a list of all supported configuration parameters.
9 configuration = mainnet.Configuration(
10     | host="https://rest-unstable.mainnet.cash"
11     | #host="http://localhost:3000"
12 )
13
14 configuration.access_token = None
15
16 decay = 100
17 executorFee = 5460
18
19 # Enter a context with an instance of the API client
20 with mainnet.ApiClient(configuration) as api_client:
21     # Create an instance of the API class
22     api_instance = mainnet.ContractApi(api_client)
23
24     contract_init = {
25         | "network": "mainnet",
26         | "script": "pragma cashscript >= 0.7.1;contract Perpetuity(int period,bytes recipientLockingBytecode,int ex
27         | "parameters": [
28         |     4000,
29         |     "76a914ebdeb6430f3d16a9c6758d6c0d7a400c8e6bbe488ac",
30         |     executorFee,
31         |     decay
32     ]
```

Run the packages from a Browser

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use mainnet-js

JavaScript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

When developing from a [jsfiddle](#) or codepen...

```
<!-- mainnet-js -->  
<head>  
  <script src="https://cdn.mainnet.cash/mainnet-2.2.5.js"  
    integrity="sha384-RrFMKtXQroWNZV6mP8XFAV2FOIFsEPSAfzd5e7V1H1qSnLg8ww02bkLb5URN0v+k"  
    crossorigin="anonymous"></script>  
</head>
```

Get the answer

BlockHack
Toronto '23

Using a plain text file and firefox

```
<!DOCTYPE html>
<html>
<head>
  <script src="https://cdn.mainnet.cash/mainnet-2.2.5.js"
    integrity="sha384-RrFMktXQroWNZV6mP8XFAV2FOIFsEP5Afzd5e7V1H1qSnLg8ww02bkLb5URN0v+k"
    crossorigin="anonymous"></script>
  <script src="https://cdn.mainnet.cash/contract/contract-2.2.5.js"
    integrity="sha384-0+mqQ/sJ3NSWb6rJWjknNirr8TvHU3dEJyHvHmml1ZfNVytR32mGDZnh+2E1DQUcvc"
    crossorigin="anonymous"></script>
  <script>
script=`
pragma cashscript ^0.8.0;

contract LifeTheUniverseAndEverything() {
  function get_answer(int answer) {
    require(answer==42);
  }
}

document.addEventListener("DOMContentLoaded", async (event) => {
  globalThis.exports = globalThis.exports || {};
  Object.assign(globalThis, await __mainnetPromise);
  Object.assign(globalThis, await __contractPromise);

  let a = new Contract(script, []);
  console.log(await a.getDepositAddress());
  console.log(await a.getUtxos());
  console.log(await a.getBalance());
  //let getAnswer = a.getContractFunction("get_answer")
  //console.log(await getAnswer(42n).to("bitcoincash:qqad5sy4jml3f6vcvp246dulsem04wp48wq23d35rqe", 1000n).send
));
</script>
</head>
<body>
</body>
</html>
```

Do you want to develop an app?

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

JavaScript
Unstable REST
Docker image
RegTest Stack

Warning
Not the way

Manuals

State of
mainnet.cash

we have the webapps...

- [Demo Folder](#).
 - libauth, and now mainnet-js are ESM modules.
 - Expect there to be a slight issue with top-level awaits.
 - Tree shaking is possible, but no on our end.
 - If you get a working configuration in the hip new web framework, consider a PR to the demo list.
-

Try a demo version of mainnet.cash REST

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use mainnet-js

Javascript

Unstable REST

Docker image

RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

from REST

Verify a signed message via REST

```
curl -X 'POST' \
  'https://rest-unstable.mainnet.cash/wallet/signed/verify' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
    "walletId": "watch:mainnet:qqad5sy4jml3f6vcp246dulsex04xp48wq23d35rqe",
    "message": "2qx#72497 lucky_guava_52595 discord",
    "signature":
      "H+090z+9FFdaA9UCzTidbVh0CvWcrGduTRFCQnDifEKVRz3Fk1KFyZa88XSLmfGAVB/g1P80FRJqSatZtzo8h9I="
  }'
```

Starting your own mainnet.cash

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

To start your own mainnet.cash REST service

```
# get the image from docker
docker pull mainnet/mainnet-rest

# start the image, with one process,
# exposing locally at 3000 to the container's port 80
# & pass it details of the regression configuration
docker run -d --name Mainnet --env WORKERS=1 \
  -p 127.0.0.1:3000:80 \
  --env-file .env.regtest \
  mainnet/mainnet-rest
```

Stopping your own mainnet.cash

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Just in case something goes wrong...

```
# checking logs, to find the issue  
docker logs -f Mainnet
```

```
# restarting, stopping, forcefully stopping.  
docker restart Mainnet  
docker stop Mainnet  
docker kill Mainnet
```

```
# if your machine is paging memory or sounds like a jet plane  
sudo killall node  
# kills all docker processes  
docker stop $(docker ps -a -q)
```

assuming your container was given the name "Mainnet".

More Usage Samples and Configuration Information

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST

Docker image

RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

- There's more at: mainnet.cash/tutorial/running-rest.html
 - Including a full list of [configuration variables](#).
 - This is an [unstable public instance](#) of the REST service for testing and educational purposes
-

Running a RegTest Stack

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript

Unstable REST

Docker image

RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

The mainnet-js source code contains a full RegTest Stack, deployed with docker compose.

```
# To start a regtest stack,  
# from the mainnet-js source directory...  
yarn regtest:up
```

```
# reset everything  
yarn regtest:down; yarn regtest:up
```

There's more in the [docs](#).

Having your own private networks allow for better tests, testing in time, testing with a RegTest Bitcoin Cash chain.

Note: the docker images for the stack took about 6 min to download over wifi.

The RegTest Secrets

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

JavaScript
Unstable REST
Docker image

RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

One of the advantages of RegTest is reusing and sharing secrets

```
ADDRESS="bchreg:qpttdv3qg2usm4nm7talhxl105mlhms3ys43u76rn0"  
ADDRESS_TOKEN="bchreg:zpttdv3qg2usm4nm7talhxl105mlhms3ysjm0q59vu"  
ADDRESS_LEGACY="18uVyRcvE7RdR9WFLyD1kMPjehKxyE91in"  
PRIVATE_WIF="cNfsPtqN2bMRS7vH5qd8tR8GMvgXyL5BjnGAKgZ8DYEiCrCCQcP6"  
ALICE_ID="wif:regtest:cNfsPtqN2bMRS7vH5qd8tR8GMvgXyL5BjnGAKgZ8DYEiCrCCQcP6"  
BOB_ID="seed:regtest:divide battle bulb improve hockey favorite charge save merit fatal frog cag"
```

mainnet-js currently needs wasm

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Webassembly is currently a core requirement, given the state of libauth. This means the only environments where mainnet-js can't be used are places that can't satisfy that requirement.

- webassembly is **NOT** supported in React Native,
 - ... because Google, Apple and Meta.
 - Mainnet-js also won't work with [IE](#), [Opera Mini](#) or [KaiOS 2.5](#)
-

browser wallets

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Not every user has your browser.

- Be very careful expecting a user's browser to have persistent storage.
 - Consider the cross-browser experience, wallet recovery, potential loss of seed and funds if browser storage doesn't persist.
-

Where to get more information

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)
Mainnet Cash
Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Where to get more information

- Javascript walk-thrus at for mainnet-js
- Correlate walk-thrus for the REST service
- Demo webapp configurations
- mainnet.cash Swagger REST interface
- Every feature should also have test coverage, if/when documentation is incomplete.
- If you graduate to libauth, remember the reference implementation.

Committed to Adoption

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Mainnet Cash is built to last, but...

- The project is in a **stable alpha**.
- libauth v2 is also (technically) in alpha.
- Currently in a **feature freeze**.
- Seeking **broader adoption**, and usage.
- An independent **security audit** needed before warnings are removed.

Committed to Adoption

BlockHack
Toronto '23

That said...

- mainnet.cash (REST API) handled roughly \$2.2T of transactions in 2021 as the BCH backend software for noise.cash.
- Used for early prototyping of [early hop.cash](#) and [selene.cash](#).
- Used by the [Cashionize](#) CashToken web wallet.
- Used extensively for regression testing of [unspent/*](#).
- Second library to market for CashTokens and first BCMR library to market (?).
- Mainnet.cash is almost three years old in javascript land.

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning
Not the way

Manuals

State of
mainnet.cash

The Future

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

Mainnet Cash was built to be maintained.

- Really conservative and maintenance oriented design choices from the start.
- Extensive investment in testing and a testing harness
- These values are also apparent in supporting libraries.
- Outlook
 - **@bitauth/libauth** has a nice upgrade in the works.

Contact

BlockHack
Toronto '23

Intro

Bitcoin Cash
(BCH)

Mainnet Cash

Batteries
included

Ways to use
mainnet-js

Javascript
Unstable REST
Docker image
RegTest Stack

Warning

Not the way

Manuals

State of
mainnet.cash

- More documentation at mainnet.cash
- Please report [Bugs on Github](#).
- Join our [mainnet.cash Telegram Channel](#) for support.

Any Questions?

BlockHack Toronto '23

Intro

- Bitcoin Cash (BCH)
- Mainnet Cash
- Batteries included

Ways to use mainnet-js

- Javascript
- Unstable REST
- Docker image
- RegTest Stack

Warning

- Not the way

Manuals

State of mainnet.cash

