

Using SmartBCH via Mainnet Cash

A Quick Start

2qx - github.com/2qx

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Outline

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

1 Intro

- Pre-installed Software
- What is Mainnet Cash?

2 Dev Harness

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

3 sBCH Wallets

- Receiving From Faucet
- Send & Watch for Reciept

4 Web3 Wallets w/Metamask

5 SEP-20 Tokens

- SEP20 with Minting

6 State of mainnet.cash

Suggested Tooling

To Follow Along On Your Own Battle Station

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of
mainnet.cash

- **These slides:** <https://bit.ly/3MZEXJq>
- A computer with a POSIX command prompt and some GNU tooling, i.e. (Linux/WSL/Darwin)
- **Docker & docker-compose**
- The mainnet-js **source code**
`git clone`
`https://github.com/mainnet-cash/mainnet-js.git`
`cd mainnet-js`
- Run `yarn regtest:sbch:up` from the mainnet-js root directory to pre-download & deploy a RegTest network stack.
- Some kind of nodejs, or python http serverlet
`python3` or `npm i reload -g`
- Browser, with Metamask installed

Mainnet Cash is a Specification

First and foremost.

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

Mainnet Cash is a tool for developers to access Bitcoin Cash

- A contract for how a service will be provided.
- Generated and enforced to the specification programmatically, to the extent practical
- The specification: [api.yml](#)
- Specifically, an OpenAPI 3 spec, implement in typescript, used in a generated express server.

Developer convenience and expediency are valued over perfection, code cleanness or symmetry.

Starting your own mainnet.cash

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

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

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

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

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

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 version](#) of the REST service for testing and educational purposes
-

Running a RegTest Stack

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

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:sbch:up
```

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

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

SmartBCH has [alternative documentation](#)

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

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

One of the advantages of RegTest is reusing and sharing secrets

```
ALICE_ID="privkey:regtest:0x758c7be51a76a9b6bc6b3e1a90e5ff4cc27aa054b77b7acb6f4f08a219c1ce45";
ALICE_ADDRESS="0xE25ddbAF8DD61b627727e03e190E32feddBD1319";
BOB_ID="seed:regtest:"+
"total unlock silver actual hunt excuse tone hen fix turtle addict bracket:"+
"m/44'/60'/0'/0/0";
BOB_ADDRESS="0xaf9aD25ea3603B0aF520e1B5331d87315B6eB72B";
```

Run the packages from a Browser

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

JavaScript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

When developing from a jsfiddle or codepen...

```
<!-- mainnet-js -->
<script src="https://cdn.mainnet.cash/mainnet-0.5.4.js"
  integrity="sha384-W9XdLRFn3qb7qn1+gqFho+FTw9buULZBaQh+uceAAMmK3wKyJ/GC/3kcWUOpSitj"
  crossorigin="anonymous">
</script>
<!-- CashScript -->
<script src="https://cdn.mainnet.cash/contract/contract-0.5.4.js"
  integrity="sha384-4htLbqsKW0CH8CvR0ESHkSDw1lRiDXodGnw7e2xc3mcArviVp4neGsHKQKvEs7Wd"
  crossorigin="anonymous">
</script>
<!-- SmartBCH -->
<script src="https://cdn.mainnet.cash/smartbch/smartbch-0.5.4.js"
  integrity="sha384-sk/jV4NeaEsrfMShEi03C8zMwEOHzwfrVu6s6EiVoqOmnU87RT7WRsSNxztaxi7v"
  crossorigin="anonymous">
</script>
```

Run the packages from a Browser

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with Minting

State of

mainnet.cash

We want to load all the most recent bundles in a browser to access the library from the dev console...

```
# open a terminal and cd to the mainnet-js directory  
cd projects/mainnet-js
```

```
# serve an empty app with the smartBCH bundle preloaded  
python3 -m http.server -d jest/playwright/smartbch/
```

```
# python3 may be called python,
```

`npx reload` or similar is fine too. The script `yarn live` is a shortcut

You should now have a browser console with the latest bundles on [port 8000](#).

Simply pull `mainnet-js` to update versions.

Get a wallet

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

If you **didn't** get RegTest harness working...
Create a TestNet Wallet and get the deposit address:

```
const alice = await TestNetSmartBchWallet.newRandom();  
//  
await alice.getBalance()  
// Object { bch: 0, sat: 0, usd: 0 }  
alice.getDepositAddress()  
// "0xE25ddbAF8DD61b627727e03e190E32feddBD1319"  
alice.toString()  
// "seed:t....."
```

Save the wallet string, use it again with `TestNetSmartBchWallet.fromId()`

Getting Testnet sBCH

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with Minting

State of

mainnet.cash

If you are **not** using RegTest, you can obtain about 0.1 sBCH here:

- There is a TestNet [faucet here](#)
- 54.169.31.93:8080/faucet

On site users should skip this step if they have RegTest configured.

Get a wallet

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with

Minting

State of

mainnet.cash

Create a RegTest Wallet and get the deposit address:

```
ALICE_ID="privkey:regtest:0x758c7be51a76a9b6bc6b3e1a90e5ff4cc27aa054b77b7acb6f4f08a219c1ce45"
const alice = await RegTestSmartBchWallet.fromId(ALICE_ID);
//
await alice.getBalance()
// Object { bch: 10000, sat: 1000000000000, usd: 1141000 }
alice.getDepositAddress()
// "0xE25dddbAF8DD61b627727e03e190E32feddBD1319"
alice.toString()
// ALICE_ID
```

Sending/Watching

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with Minting

State of

mainnet.cash

Watch Bob's address as Alice sends coins:

```
ALICE_ID="privkey:regtest:0x758c7be51a76a9b6bc6b3e1a90e5ff4cc27aa054b77b7acb6f4f08a219c1ce45"
alice = await RegTestSmartBchWallet.fromId(ALICE_ID);
const bob = await RegTestSmartBchWallet.newRandom();

const bobBalanceWatchCancel = bob.watchBalance((balance) => {
  bobBalanceWatchCancel();
  console.log("bob got paid!");
});

alice.send(
  { address: bob.getDepositAddress(), value: 0.001, unit: "bch" },
  {},
  { gasPrice: 10 ** 10 }
);
```

Call Metamask

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

This command will cause your browser to connect to Metamask, on TestNet

```
let alice = await Web3TestNetSmartBchWallet.init();
```

- [Official Documentation from SmartBCH](#)
- Network URL: <https://moeing.tech:9545>
- The chain ID is: 0x2711 (i.e. 1001)

Call Regtest Metamask

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

Trying to repeat the steps above for RegTest will throw an alert with instructions to add the network manually with parameters

```
await Web3RegTestSmartBchWallet.init();
```

- Network Name: SmartBch RegTest
- New RPC URL: http://127.0.0.1:8545
- Chain ID: 0x2712
- Currency Symbol (optional): BCH

SEP20 Token genesis with baton

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

After creating a testnet wallet and funding it with some tsBCH... the following request creates an SEP20 token with a Baton:

```
curl -X POST https://rest-unstable.mainnet.cash/smartbch/sep20/genesis \
  -H "Content-Type: application/json" \
  -d '{
    "walletId":
    <your testnet wallet id>,
      "name": "Mainnet Coin",
      "ticker": "MNC",
      "decimals": 8,
      "initialAmount": 10,
    "endBaton": false,
    "tokenReceiverAddress": <your testnet address>,
    "batonReceiverAddress": "<your testnet address>",
  }'
```

SEP20 Token genesis with baton

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

**SEP20 with
Minting**

State of

mainnet.cash

the genesis response should return something like this:

```
{
  "tokenId": "0xc216B347d4684fa917dFa52660479935b670564F",
  "balance": {
    "name": "Mainnet Coin",
    "ticker": "MNC",
    "decimals": 0,
    "value": "10000",
    "tokenId": "0xc216B347d4684fa917dFa52660479935b670564F"
  }
}
```

SEP20 Token Mint Request

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

**SEP20 with
Minting**

State of

mainnet.cash

The following snippet can be used to mint new tokens.

```
curl -X 'POST' \
  'https://rest-unstable.mainnet.cash/smartbch/sep20/mint' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
    "walletId": <your testnet wallet id>,
    "value": 100000,
    "tokenId": <your token id>,
    "tokenReceiverAddress": <your receiver address>
  }'
```

SEP20 Token Mint Response

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

**SEP20 with
Minting**

State of

mainnet.cash

the mint response should return something like this:

```
{
  "txId": "0x6a7c03c0ab1c2e170705a7abcbab43cd908cd13f8d416995b0bd6facf48bee42",
  "balance": {
    "name": "Mainnet Coin",
    "ticker": "MNC",
    "decimals": 0,
    "value": "110000",
    "tokenId": "0xc216B347d4684fa917dFa52660479935b670564F"
  }
}
```

Committed to Adoption

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with

Minting

State of

mainnet.cash

Mainnet Cash will be here.

- The project **has some remaining funds to handle maintenance.**
- Currently in a **feature freeze.**
- Seeking **broader adoption**, and usage.
- The project is suitable for small or limited value transactions. \$0.02-\$50
- An independent **security audit** would be in order before the warnings are removed.

Warnings aside, mainnet-js was used for the old hop.cash and is in production on old.hop.cash.

The Future

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

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.
 - There are exiting things are happening with both SmartBCH and BCH

Contact

smartBCH

Intro

What You Need

Mainnet Cash

Dev Harness

Docker image

RegTest Stack

Javascript

sBCH

Wallets

Getting Money

Sending sBCH

Web3

Wallets

SEP-20

Tokens

SEP20 with
Minting

State of

mainnet.cash

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