RSK Truffle Starter Box¶

This box comes with everything you need to start using Truffle onRSK Blockchain . It includes network configurations for Mainnet, Testnet and the SimpleStorage contract as an example to deploy.

RSK is an open source platform for Ethereum compatible smart contracts based on the Bitcoin network.

Requirements¶

1. NPM (Node Package Manager)
2. Node.js and NPM are needed, though both are usually installed at once.

Go toNode.js if you need to install it.

1. Truffle

Install Truffle globally

npm install -g truffle

Installation¶

1. Create a new folder. For example, create the folderrsk-starter
2. . Navigate to the folder in the terminal.

mkdir rsk-startercd

rsk-starter 1. Run the unbox command. It can take some time, as this will install all necessary dependencies.

truffle unbox rsksmart/rsk-starter-box This is the result using Windows OS:

Development console¶

Truffle has an interactive console that also spawns a development blockchain. This is very useful for compiling, deploying and testing locally.

1. Run the development console. This command is successful if you see a list of 10 accounts, a mnemonic and the command prompt is nowtruffle(develop)>

truffle develop You will now be in the truffle develop REPL with seeded accounts and their associated private keys listed.

```
Truffle Develop started at http://127.0.0.1:9545/

Accounts: (0) 0x4579996629f631d5221c9ea0c3552f6dcff61e9e (1) 0x52f43fccc4ffcbb9f0a57320401139ef4088093f (2)
0xea7e59d8403587bdb1c12758eb33f82dc9e0a451 (3) 0x9eed1b59ac18360b67b7ef2a069f8c35ad62b009 (4)
0x064874a46fc29fd15736cc0c890276fe1dfb9ecc (5) 0x2c612c461690ab601977595028ba1ed62e98d605 (6)
0x50a317d18a78e4ad8491c0696582da35ba30b12a (7) 0xdf68b82ac51d21c731b8aa3c9c1d65c62ffb1b75 (8)
0x018c7c87900304eeff2f852def58776b920b9da2 (9) 0xdc2fe4385c54349c0303e448333a5de1131bc88e

Private Keys: (0) 0895ef2194a15575ac9e75c5c837853637af444442f7b64dcea60029e68df5f6 (1)
1ca9f748b4d92ca6b9ffcc4f0027a17189871f250666fa20c08bc901a6757174 (2)
97e256de57f8206741223fe20953d047429b85f8a0ed5ec00a459cbf6e5859c4 (3)
7dc0ba635a4fe0af8be559446f34be036bc2aa055a34d81337601ba929b1892c (4)
c2dc9ba56f683ba2090de3932ab991f60c6e08535d2a8ffcc4c3ddea4b9be2f8 (5)
e4943ce248e556559f5b5e0cc097215a440ca2dafcaddef9fbad79bef58e028d (6)
fbe436944b525e468209299b0e35f93a287bc0c25411418f10a9c2292ccbca8f (7)
0381515a5f83c9c97683a370383f45a4d2c8de61299d8a0e03c2313a5ace2457 (8)
ed39e1a942bf3c48c744bd5282410c811c56dbbec2bd133d09c43cd005a31e7b (9)
2dd9fbe98b5a4bad9f619e260f99db699d5b80b3081c0bc283647b576e44b89a

Mnemonic: butter mention wealth vicious fancy plastic treat title filter excess witness bus
```

⚠ Important ⚠ : This mnemonic was created for you by Truffle. It is not secure. Ensure you do not use it on production blockchains, or else you risk losing funds. 1. Take a look at the smart contractSimpleStorage.sol 2. . You can check it out in foldercontracts 3. .

This smart contract has:

- A variablestoredData
- to store a number
- A functionget()
- to return the number stored at variablestoredData
- A functionset()
- to change the number stored at variablestoredData
- Compile and migrate the smart contract. Note inside the development console we don't preface commands with truffle.

To make sure you're in the development console, the command prompt must betruffle(develop)>

compile Thecompile output should be similar to:

migrate And themigrate output should be similar to:

1. Running contract tests.

Our box also comes with the fileTestSimpleStorage.js for testing the smart contract. You can check it out in thetest folder.

Run this command in the development console:

test Thistest output should be similar to:

NOTE : This box is the starting point for the RSK tutorialUsing rsk-starter-box .

Using RSK networks¶

Truffle makes developing on RSK easier because we can configure custom networks for RSK. The networks are already configured in thetruffle-config.js file.

Setup an account & get R-BTC¶

- Get an address usingthese instructions
- .
- For the RSK Testnet, get tR-BTC fromour faucet
- .
- For the RSK Mainnet, get R-BTC froman exchange
- .

Take a looktruffle-config.js file to realize that we are usingHDWalletProvider with RSK Networks derivations path: - RSK Testnet dpath:m/44’/37310’/0’/0 - RSK Mainnet dpath:m/44’/137’/0’/0

For more information checkRSKIP57 .

Update your mnemonic¶

Paste the wallet mnemonic in the file.secret , located in the folder project, and save it.

Setup the gas price¶

Gas is the internal pricing for running a transaction or contract. When you send tokens, interact with a contract, send R-BTC, or do anything else on the blockchain, you must pay for that computation. That payment is calculated as gas. In RSK, this is paid inR-BTC . TheminimumGasPrice is written in the block header by miners and establishes the minimum gas price that a transaction should have in order to be included in that block.

To update theminimumGasPrice in our project run this query using cURL:

Testnet

```
curl https://public-node.testnet.rsk.co/ -X POST -H "Content-Type: application/json"

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--data '{"jsonrpc":"2.0","method":"eth_getBlockByNumber","params":["latest",false],"id":1}'

\

    .minimum-gas-price-testnet.json Mainnet

curl https://public-node.rsk.co/ -X POST -H "Content-Type: application/json"

\
```

--data '{"jsonrpc":"2.0","method":"eth_getBlockByNumber","params":["latest",false],"id":1}'

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> .minimum-gas-price-mainnet.json This query saved the details of latest block to file .minimum-gas-price-testnet.json or .minimum-gas-price-mainnet.json, respectively.

In thetruffle-config.js , we are reading the parameterminimumGasPrice in each json file.

For more information about theGas andminimumGasPrice please gohere .

Connect to RSK network¶

Run the truffle console for any RSK network.

Console for Mainnet

truffle console --network mainnet# Console forn Testnet truffle console --network testnet

Compile and migrate the smart contracts¶

We will do it running the below commands directly in the terminal, without using the truffle console, this is to show you an alternative.

On any of the networks, run this commands in a terminal (not in Truffle console):

truffle compile

truffle migrate

Next steps¶

- Go to tutorial

Go to the tutorialUsing rsk-starter-box to learn how to interact withSimpleStorage.sol . Also, we covered all the steps with more details, explanations, and images.

- Find more documentation

Check out theRSK developers portal .

- Do you have questions?

Ask inRSK chat .