Proof of Existence on Fabric

Configuration Guide

Table of Contents

App Services

The application has been divided into 2 different modules :

1. First one, utilizes rest API provided by hyperledger fabric v0.6

2. Second utilizes server to chain interaction using hfc module

1. Bootstrap using fabric Rest Service:

To bootstrap application with blockchain rest services as provider use file server-rest.js

Command:

node server-rest.js

and you would see on your screen:

Server is listening on port 3001

You can now access the application from your browser using localhost:3001

2. HFC Service:

To bootstrap application with block chain's hfc module as provider use file server.js

Command:

node server-hfc.js

and you would see on your screen:

Server is listening on port 3000
Connected!

You can now access the application from your browser using localhost:3000

PRE-REQUISTES

1. NodeJS v6.10.2 and included npm

2. Configuration Files

You need to fill two important files with the credentials and ids

For Rest Server : Files are config-rest.json and credentials-rest.json

For HFC server: Files are config-hfc.json and credentials-hfc.json

config.json Fields :

1. "**secret**": "REPLACE THIS WITH YOUR OWN SECRET, IT CAN BE ANY STRING"

   used for session maintaince

2. "**chaincodeId**": "00023030d182c09de987e5e12b6c5124a67d2e1d766333f2564280f59ef33d99",

   Resprest the smart contract to hit

3. "**chainUser**": "WebAppAdmin",

   Represents user of chain (since security is on), should be already enrolled

   Keep it WebAppAdmin

   in Case of HFC it is automatically enrolled, but not in rest

credentials.json

This file contains peer, ca , users information

In case of bluemix : copy credentials into the file

In case of local Deployment: Modify bluemix credentials to local ip address (example in credentials-hfc.json)

3. Node Modules

Node modules are not included in deliver folder

Come to filder where package.json file is present and type on cmd :

npm install

WebServer APi's to interact with chain:

1. POST : localhost:<port>/app/upload

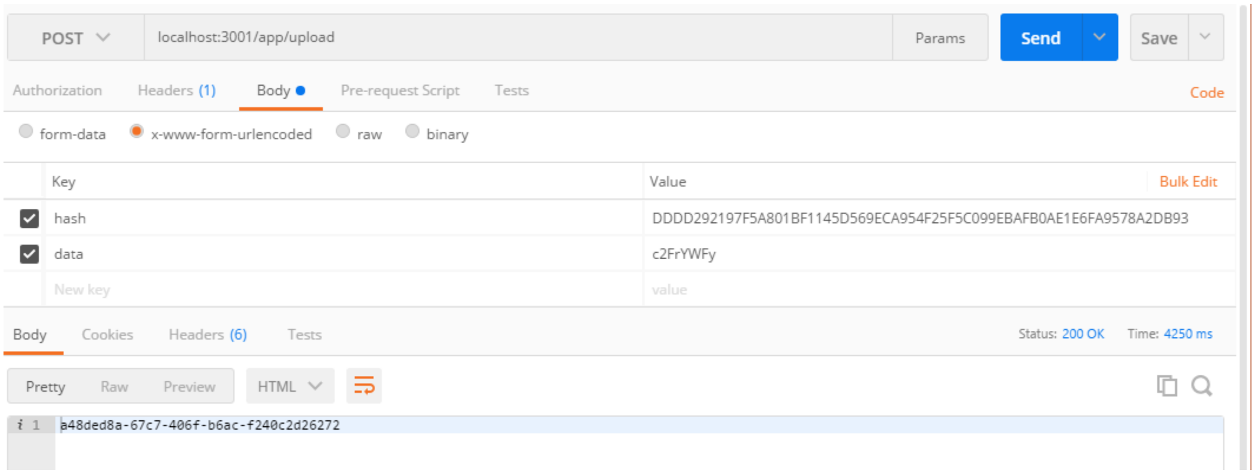
This api is responsible to upload hash and encoded string to blockchain

Parameters :

1. hash

2. data

Response: Blockchain transaction id



POST localhost:3001/app/upload

○ form-data ● x-www-form-urlencoded ○ raw ○ binary

	Key	Value
☑	hash	DDDD292197F5A801BF1145D569ECA954F25F5C099EBAFB0AE1E6FA9578A2DB93
☑	data	c2FrYWFy
	New key	value

Status: 200 OK Time: 4250 ms

HTML

```
a48ded8a-67c7-406f-b6ac-f240c2d26272
```

2. GET : localhost:<port>/app/retreive?hash=<hash_value>

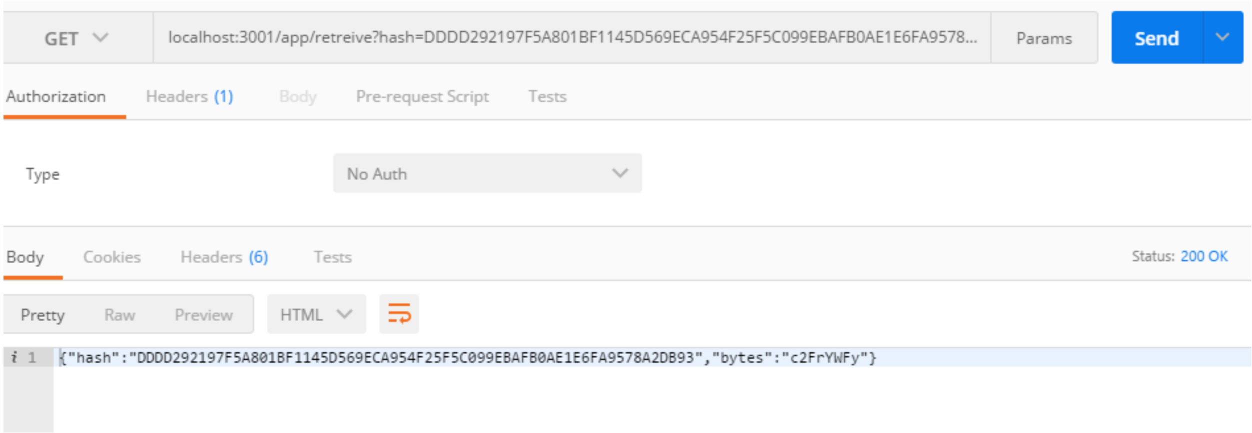
This api is responsible to check if hash is present on chain or not and retruns hash and encoded stored data

parameters:

1. hash

Response:

Json string with hash and data keys



GET localhost:3001/app/retreive?hash=DDDD292197F5A801BF1145D569ECA954F25F5C099EBAFB0AE1E6FA9578...

Type: No Auth

Status: 200 OK

```
{"hash":"DDDD292197F5A801BF1145D569ECA954F25F5C099EBAFB0AE1E6FA9578A2DB93","bytes":"c2FrYWFy"}
```

3. GET : localhost:<port>/api/getChaincodeId

This api is retruns the chaincode id from configuration file (which we used to initialise app)

parameters:NONE

Response:Chaincode id

4. GET : localhost:<port>/api/getPeers

This api is retruns the list of peers from configuration file (which we used to initialise app)

parameters:NONE

Response:peers

5. DEPLOY API

Refer to section making changes in the chaincode

Making changes in the chaincode

If you want to make changes in the chaincode to deploy on fabric, update the file **chaincode.go**.

To deploy this chaincode, there are 2 methods **depending on kind of app services** used :

1. If using fabric rest service :

Upload your chaincode on github or any cloud based repository

And using POSTMAN, use following application rest api :

localhost:<port>/app/deploy

parameters:

1. **address**
   // github address where chaincode is placed like https://github.com/sakaarbhatia/test-chaincode

Response:
Chaincode ID

After you get the chaincode address, replace it in config-rest.json and restart the server

2. If using, hfc service,

Use POSTMAN, use following application rest api :

localhost:<port>/app/deploy

parameters:
NONE (because hfc uses file to be present on local, in this case file is in chaincode/src/chaincode folder)

Response:
Chaincode ID

After you get the chaincode address, replace it in config-hfc.json and restart the server

Please note that deploying a chaincode needs time, so please ensure to have waited few minutes before doing transactions

Please note current correct chaincode on bluemix is
62e93b8fa75cb45f8342909e971c019b1119a17905168e56b833ff9ed3f8bd63ad7fe391e78d5893cc909ef
dcd2ee5307a9e6650f6ad0e4b6110024627693c78

Troubleshooting

NPM Install errors

HFC module needs node-gyp module to build some elements

For windows DO:

1. npm install --global --production windows-build-tools
2. npm install -g node-gyp

Refer : https://www.npmjs.com/package/node-gyp

HFC Connect Errors

There are some existing know issues with the grpc protocol and v0.6 Fabric on bluemix

You might see something like :

```
{ Error: {"created":"@1495272436.976000000","description":"End of TCP stream","f
ile":"..\src\core\lib\iomgr\tcp_windows.c","file_line":180,"grpc_status":14}

 at D:\Test\node_modules\grpc\src\node\src\client.js:417:17 code: 14, metadat
a: Metadata { _internal_repr: {} } }
```

OR

```
Security handshake failed: {“created”:”@1487585594.096749000”,”description”:”Handshake read
failed”,”file”:”../src/core/lib/security/transport/handshake.c”,”file_line”:237,”referenced_errors”:[{“cre
ated”:”@1487585594.096736000”,”description”:”FD
shutdown”,”file”:”../src/core/lib/iomgr/ev_poll_posix.c”,”file_line”:427}]}
```

SOMETIME IT WORKS SOMETIME IT DOESN’T BUT WORK 100% for LOCAL FABRIC and NOT BLUEMIX

Because This means that service is unavailable or bluemix is rejecting your connection

Solution would be to have

1. ideal grpc package correctly built
2. Ensuring availability
3. Correct Network

If nothing works for server-hfc on bluemix

1. webserver utilising fabric rest api implementation should be used .
   Command: node server-rest.js OR,

2. Webapp to be installed on bluemix OR,
3. Install hyperledger fabric on local and use server-hfc.js

Sometimes you will see :

```
{ Error: Identity or token does not match.
  at D:\Test\node_modules\grpc\src\node\src\client.js:417:17 code: 2, metadata
: Metadata { _internal_repr: {} } }
```

This means you enrolled a user using hfc and removed key file from keyvalueStore
Solution is to reinstall fabric service because private keys can not be recovered

Recommendations :

In case of bluemix :

Use: server-rest.js

In case of local fabric

Use: server-hfc.js

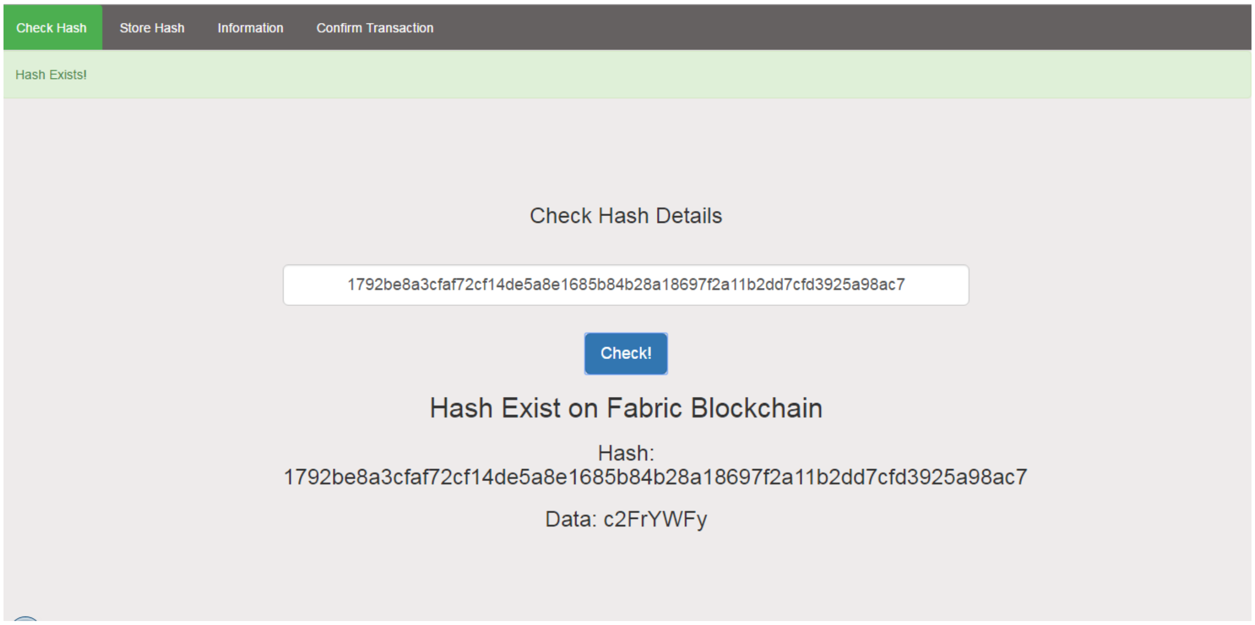
Miscellaneous :

1. **If you see error :**
   ```
   Error :User not logged in. Use the '/registrar' endpoint to obtain a security token.
   ```

This means the user in config.json is not enrolled, Enroll it using command :

```
curl -X POST --header "Content-Type: application/json" --header "Accept: application/json" -d "{
 \"enrollId\": \"WebAppAdmin\",
 \"enrollSecret\": \"f5db1f2830\"
}" "https://5c96fa9b377949a6a0fc6764c0c7207c-vp0.us.blockchain.ibm.com:5002/registrar"
```

GUI



Hash Exists!

Check Hash Details

1792be8a3cfaf72cf14de5a8e1685b84b28a18697f2a11b2dd7cfd3925a98ac7

Hash Exist on Fabric Blockchain

Hash:
1792be8a3cfaf72cf14de5a8e1685b84b28a18697f2a11b2dd7cfd3925a98ac7

Data: c2FrYWFy