

# Hyperledger Explorer

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## Installation of Hyperledger Explorer

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# Hyperledger Explorer

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# Installing Hyperledger Explorer(0/7)

## ▪ Using “test-network” for Test :

- **Step 00. Setup “test-network” for installing blockchain explorer.** Run the following **(RED)** commands.
  - For more information, please refer to [https://hyperledger-fabric.readthedocs.io/en/latest/test\\_network.html](https://hyperledger-fabric.readthedocs.io/en/latest/test_network.html).

```
cd fabric-samples/test-work
./network.sh up
./network.sh createChannel

./network.sh deployCC -ccn basic -ccp ../asset-transfer-basic/chaincode-go -ccl go

export PATH=${PWD}/../bin:$PATH
export FABRIC_CFG_PATH=$PWD/../config/
export CORE_PEER_TLS_ENABLED=true
export CORE_PEER_LOCALMSPID="Org1MSP"
export CORE_PEER_TLS_ROOTCERT_FILE=${PWD}/organizations/peerOrganizations/org1.example.com/peers/peer0.org1.example.com/tls/ca.crt
export CORE_PEER_MSPCONFIGPATH=${PWD}/organizations/peerOrganizations/org1.example.com/users/Admin@org1.example.com/msp
export CORE_PEER_ADDRESS=localhost:7051

peer chaincode invoke -o localhost:7050 --ordererTLSHostnameOverride orderer.example.com --tls --cafile
${PWD}/organizations/ordererOrganizations/example.com/orderers/orderer.example.com/msp/tlscacerts/tlsca.example.com-cert.pem -C mychannel -n basic
--peerAddresses localhost:7051 --tlsRootCertFiles ${PWD}/organizations/peerOrganizations/org1.example.com/peers/peer0.org1.example.com/tls/ca.crt --
peerAddresses localhost:9051 --tlsRootCertFiles ${PWD}/organizations/peerOrganizations/org2.example.com/peers/peer0.org2.example.com/tls/ca.crt -c
'{"function":"InitLedger","Args":[]}'

peer chaincode query -C mychannel -n basic -c '{"Args":["GetAllAssets"]}'

peer chaincode invoke -o localhost:7050 --ordererTLSHostnameOverride orderer.example.com --tls --cafile
${PWD}/organizations/ordererOrganizations/example.com/orderers/orderer.example.com/msp/tlscacerts/tlsca.example.com-cert.pem -C mychannel -n basic
--peerAddresses localhost:7051 --tlsRootCertFiles ${PWD}/organizations/peerOrganizations/org1.example.com/peers/peer0.org1.example.com/tls/ca.crt --
peerAddresses localhost:9051 --tlsRootCertFiles ${PWD}/organizations/peerOrganizations/org2.example.com/peers/peer0.org2.example.com/tls/ca.crt -c
'{"function":"TransferAsset","Args":["asset6","Christopher"]}'
```

**NOTICE!!! Before you run the Hyperledger Explorer, you need to create a channel for connection.**

# Installing Hyperledger Explorer(1/7)

- **Blockchain Explorer :**
  - **Step 01. Get the repository into your local machine.** Run the following commands.

```
cd fabric-samples
mkdir explorer
cd explorer
git clone https://github.com/hyperledger/blockchain-explorer.git
cd blockchain-explorer
```



```
1 shkwon@ubuntu: ~/Pr... + [icon]
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/my-network$ mkdir explorer
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/my-network$ cd explorer/
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/my-network/explorer$ git clone https://github.com/hyperledger/blockchain-explorer.git
Cloning into 'blockchain-explorer'...
remote: Enumerating objects: 9403, done.
remote: Counting objects: 100% (240/240), done.
remote: Compressing objects: 100% (137/137), done.
remote: Total 9403 (delta 124), reused 180 (delta 99), pack-reused 9163
Receiving objects: 100% (9403/9403), 165.03 MiB | 20.89 MiB/s, done.
Resolving deltas: 100% (5168/5168), done.
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/my-network/explorer$ ls
blockchain-explorer
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/my-network/explorer$ cd blockchain-explorer/
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/my-network/explorer/blockchain-explorer$ ls -al
total 1020
drwxr-xr-x 12 shkwon docker 4096 Oct 31 15:47 .
drwxr-xr-x  3 shkwon docker 4096 Oct 31 15:47 ..
drwxr-xr-x 11 shkwon docker 4096 Oct 31 15:47 app
-rwxr-xr-x  1 shkwon docker 2058 Oct 31 15:47 build_docker_image.sh
-rw-r--r--  1 shkwon docker 37494 Oct 31 15:47 CHANGELOG.md
drwxr-xr-x  2 shkwon docker 4096 Oct 31 15:47 ci
```

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## ▪ Blockchain Explorer :

- Step 02. Find files for setting the blockchain explorer. You need the following files.

- blockchain-explorer/**docker-compose.yaml**
- blockchain-explorer/examples/net1/connection-profile/**test-network.json**
- blockchain-explorer/examples/net1/**config.json**

- Step 03. Get the all certificates from the "test-network" example. The certificate files are in the "fabric-samples/test-network/organizations" directory. Before you copy the directory, you need to run "network.sh up" command in the "test-network" directory to generate all certificate files. Run the following commands.

```
blockchain-explorer/cp -r ../../test-network/organizations .
```



```
1 shkwon@ubuntu: ~/Pr... + [icon]
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$ cp -r ../../test-network/organizations .
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$ ls -al organizations/
total 36
drwxr-xr-x  6 shkwon docker 4096 Oct 31 16:07 .
drwxr-xr-x 13 shkwon docker 4096 Oct 31 16:07 ..
-rwxr-xr-x  1 shkwon docker 1655 Oct 31 16:07 ccp-generate.sh
-rwxr-xr-x  1 shkwon docker 1276 Oct 31 16:07 ccp-template.json
-rwxr-xr-x  1 shkwon docker  765 Oct 31 16:07 ccp-template.yaml
drwxr-xr-x  2 shkwon docker 4096 Oct 31 16:07 cryptogen
drwxr-xr-x  5 shkwon docker 4096 Oct 31 16:07 fabric-ca
drwxr-xr-x  3 shkwon docker 4096 Oct 31 16:07 ordererOrganizations
drwxr-xr-x  4 shkwon docker 4096 Oct 31 16:07 peerOrganizations
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$
```

# Installing Hyperledger Explorer(3/7)

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- **Blockchain Explorer :**

- **Step 04.** Edit “docker-compose.yaml” file. You need to **change the network name(“fabric\_test”) and volume path.**

```
...
networks:
  mynetwork.com:
    external:
      name: fabric_test
...
volumes:
  - ./examples/net1/config.json:/opt/explorer/app/platform/fabric/config.json
  - ./examples/net1/connection-profile:/opt/explorer/app/platform/fabric/connection-profile
  - ./organizations/tmp/crypto
  - walletstore:/opt/explorer/wallet
...
```

- **NOTICE!!!** “fabric\_test” should be in the “docker network ls” command result.
  - **Step 05.** Check the “config.json” file. It has to refer the “test-network.json” profile.

```
{
  "network-configs": {
    "test-network": {
      "name": "Test Network",
      "profile": "./connection-profile/test-network.json"
    }
  },
  "license": "Apache-2.0"
}
```

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- **Blockchain Explorer :**
  - **Step 06.** Edit “test-network.json” file to specify the private key and other certificates directory path.

```
""
"organizations": {
  "Org1MSP": {
    "mspid": "Org1MSP",
    "adminPrivateKey": {
      "path": "/tmp/crypto/peerOrganizations/org1.example.com/users/Admin@org1.example.com/msp/keystore/priv_sk"
    },
    "peers": [
      "peer0.org1.example.com"
    ],
    "signedCert": {
      "path": "/tmp/crypto/peerOrganizations/org1.example.com/users/Admin@org1.example.com/msp/signcerts/Admin@org1.example.com-cert.pem"
    }
  }
},
"peers": {
  "peer0.org1.example.com": {
    "tlsCACerts": {
      "path": "/tmp/crypto/peerOrganizations/org1.example.com/peers/peer0.org1.example.com/tls/ca.crt"
    },
    "url": "grpcs://peer0.org1.example.com:7051"
  }
}
```

# Installing Hyperledger Explorer(5/7)

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- Blockchain Explorer :
  - Step 06. Run the docker image. Run the following command.

blockchain-explorer/docker-compose up -d



```
1 shkwon@ubuntu: ~/Pr... + [icon]
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$ docker-compose up -d
Creating explorerdb.mynetwork.com ... done
Creating explorer.mynetwork.com ... done
shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$
```

- **NOTICE!!!** When you run the “test-network” again. You must copy all the certificates from “organization” directory into the “blockchain-explorer/organization” directory again.



# Note : Block Explorer Docker Container

## ▪ Checking Status

- To check the status of the Block Explorer container status, you can use the following command.

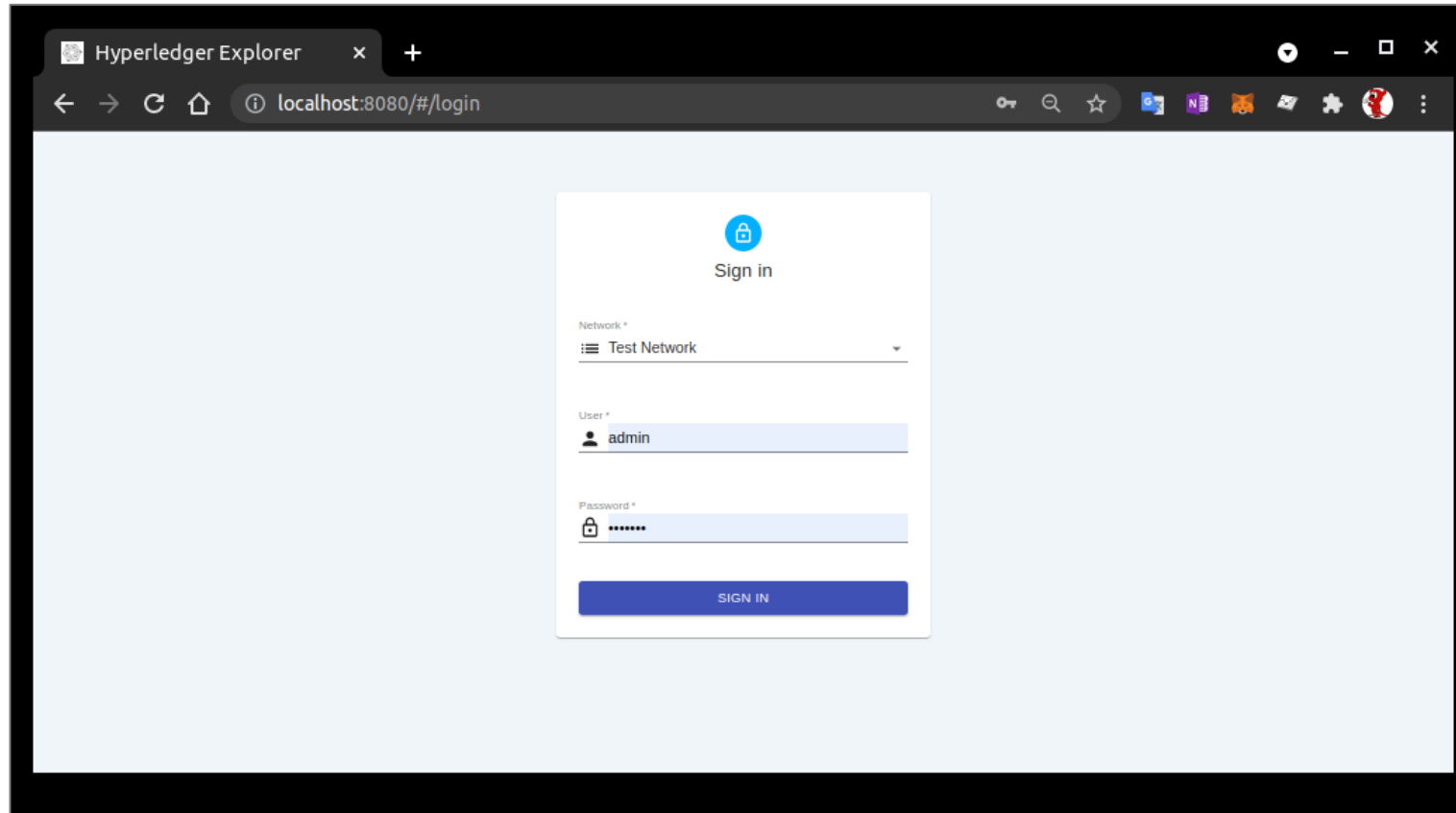
```
docker logs -f explorer.mynetwork.com
```



```
1 shkwon@ubuntu: ~/Pr... 2 shkwon@ubuntu: ~/Pr... 3 shkwon@ubuntu: ~/Pr... + 
[2021-11-01T04:56:10.012] [INFO] FabricClient - Discovered Org1MSP [
{
  mspid: 'Org1MSP',
  endpoint: 'peer0.org1.example.com:7051',
  name: 'peer0.org1.example.com:7051',
  ledgerHeight: { low: 3, high: 0, unsigned: true },
  chaincodes: [ [Object] ]
}
]
[2021-11-01T04:56:10.087] [INFO] FabricGateway - queryInstantiatedChaincodes mychannel
[2021-11-01T04:56:10.145] [INFO] Platform - getClient (id:test-network)
[2021-11-01T04:56:10.147] [INFO] FabricGateway - Sending discovery request...
[2021-11-01T04:56:10.193] [INFO] FabricGateway - Succeeded to send discovery request
[2021-11-01T04:56:10.195] [INFO] FabricClient - Discovered Org1MSP [
{
  mspid: 'Org1MSP',
  endpoint: 'peer0.org1.example.com:7051',
  name: 'peer0.org1.example.com:7051',
  ledgerHeight: Long { low: 3, high: 0, unsigned: true },
  chaincodes: [ [Object] ]
}
]
[2021-11-01T04:56:10.206] [INFO] FabricClient - Discovered Org2MSP [
{
  mspid: 'Org2MSP',
  endpoint: 'peer0.org2.example.com:9051',
  name: 'peer0.org2.example.com:9051',
  ledgerHeight: Long { low: 3, high: 0, unsigned: true },
  chaincodes: [ [Object] ]
}
]
^C
shkwon@ubuntu: ~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$
```

# Installing Hyperledger Explorer(6/7)

- **Blockchain Explorer :**
  - **Step 07.** Open your web browser and connect to the <http://localhost:8080>. It will show you the following screen.

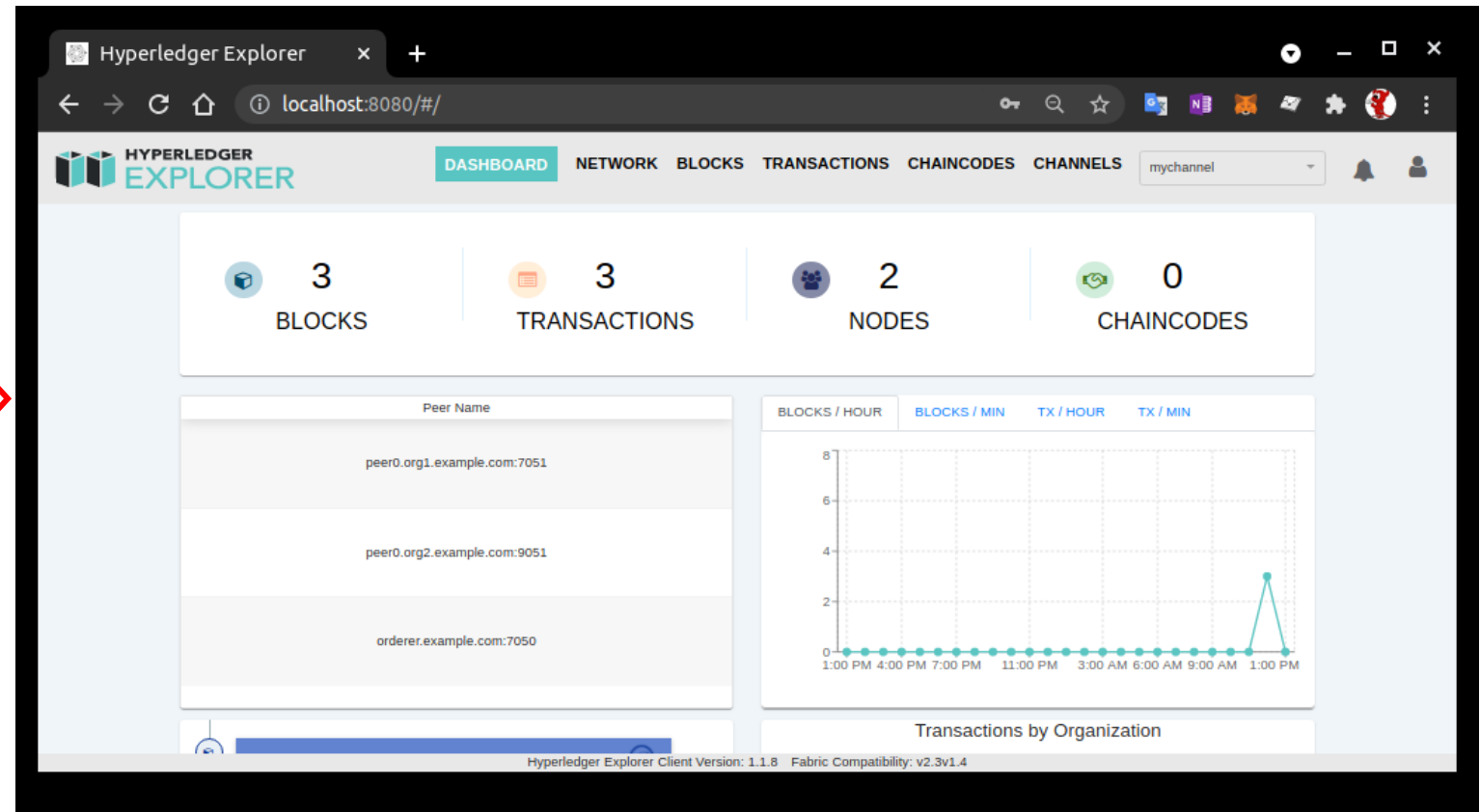


# Installing Hyperledger Explorer(7/7)

## ▪ Blockchain Explorer :

- **Step 08. Enter the User Name and Password.** You can get the user name and password from the "**test-network.json**" file.

```
{
  "name": "test-network",
  "version": "1.0.0",
  "client": {
    "tlsEnable": true,
    "adminCredential": {
      "id": "exploreradmin",
      "password": "exploreradminpw"
    },
    "enableAuthentication": true,
    "organization": "Org1MSP",
    "connection": {
      "timeout": {
        "peer": {
          "endorser": "300"
        },
        "orderer": "300"
      }
    },
    "channels": {
      "mychannel": {
        "peers": {
          "peer0.org1.example.com": {}
        }
      }
    }
  },
  ...
}
```



# Note : Checking Network Connectivity

## ▪ Troubleshooting :

- When you are not connected to the Hyperledger Fabric Peers, you can connect to the **explorerdb node** using "**docker exec -it explorerdb.mynetwork.com /bin/bash**" command. Then use "**ping peer0.org1.example.com**" command to know whether the network is reachable or not.

```
1 shkwon@ubuntu: ~/Pr... + [icon]

shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$ docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS
c99b4db729da   hyperledger/explorer:latest         "docker-entrypoint.s..." 23 minutes ago Up 22 minutes 0.0.0.0:8080->8080/tcp, :::8080->8080/tcp
a8fa419aa55f   hyperledger/explorer-db:latest      "docker-entrypoint.s..." 23 minutes ago Up 23 minutes (healthy) 5432/tcp
b7c89b382179   hyperledger/fabric-tools:latest     "/bin/bash"              2 hours ago   Up 2 hours   explorerdb.mynetwork.com
7b58be81b98e   hyperledger/fabric-orderer:latest   "orderer"                2 hours ago   Up 2 hours   0.0.0.0:7050->7050/tcp, :::7050->7050/tcp, 0.0.0.0:7053->7053/tcp, :::7053->7053/tcp
6ea3daf8e92b   hyperledger/fabric-peer:latest      "peer node start"        2 hours ago   Up 2 hours   0.0.0.0:7051->7051/tcp, :::7051->7051/tcp, 0.0.0.0:17051->17051/tcp, :::17051->17051/tcp
cd350d3f782a   hyperledger/fabric-peer:latest      "peer node start"        2 hours ago   Up 2 hours   peer0.org1.example.com
cp, 0.0.0.0:19051->19051/tcp, :::19051->19051/tcp peer0.org2.example.com

shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$

1 shkwon@ubuntu: ~/Pr... + [icon]

shkwon@ubuntu:~/Projects/Hyperledger/fabric-samples/explorer/blockchain-explorer$ docker exec -it explorerdb.mynetwork.com /bin/bash
bash-4.4# ping peer0.org1.example.com
PING peer0.org1.example.com (172.22.0.4): 56 data bytes
64 bytes from 172.22.0.4: seq=0 ttl=64 time=0.166 ms
64 bytes from 172.22.0.4: seq=1 ttl=64 time=0.135 ms
64 bytes from 172.22.0.4: seq=2 ttl=64 time=0.129 ms
64 bytes from 172.22.0.4: seq=3 ttl=64 time=0.155 ms
64 bytes from 172.22.0.4: seq=4 ttl=64 time=0.124 ms
^C
--- peer0.org1.example.com ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.124/0.141/0.166 ms
bash-4.4#
```

- **NOTICE!!!** If the network is not reachable, you cannot run "explorer.mynetwork.com" node.

# Reference

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- [1] Hands-On Smart Contract Development with Hyperledger Fabric V2, Oreilly, 2021.
- [2] <https://hyperledger-fabric.readthedocs.io>
- [3] <https://myhsts.org/hyperledger-fabric-book>
- [4] [Installing Hyperledger Explorer](#)
- [5] [https://blockchain-explorer.readthedocs.io/\\_/downloads/en/main/pdf/](https://blockchain-explorer.readthedocs.io/_/downloads/en/main/pdf/)



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thank  
you!