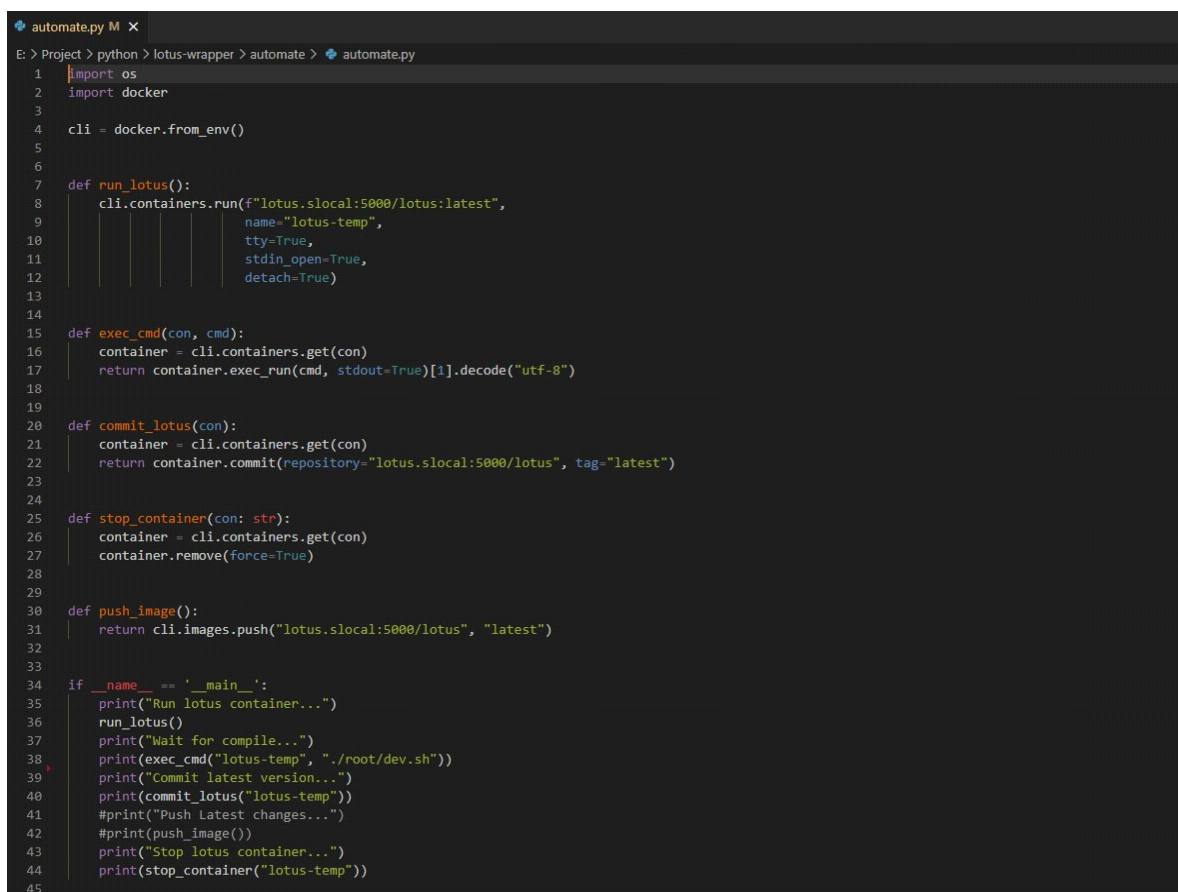


Devnet Environment

Docker Image file

In the Docker image file, we have created an automated script that retrieves the code from the specified repository. The script fetches the source from the repository, compiles and exports it, allowing a developer to test the latest changes.

A screenshot of a terminal window with a dark background. The title bar of the terminal shows 'automate.py M X'. The terminal content shows the execution of a Python script named 'automate.py'. The script defines several functions: 'run_lotus()' which runs a container named 'lotus-temp' from the 'lotus.slocal:5000/lotus:latest' image; 'exec_cmd()' which executes a command inside a container; 'commit_lotus()' which commits the changes in the 'lotus-temp' container to the 'lotus.slocal:5000/lotus:latest' image; 'stop_container()' which stops and removes the 'lotus-temp' container; and 'push_image()' which pushes the 'lotus.slocal:5000/lotus:latest' image. The main block of the script prints status messages and calls these functions in sequence: 'Run lotus container...', 'Wait for compile...', 'Commit latest version...', 'Push Latest changes...', and 'Stop lotus container...'.

```
1 import os
2 import docker
3
4 cli = docker.from_env()
5
6
7 def run_lotus():
8     cli.containers.run(f"lotus.slocal:5000/lotus:latest",
9                       name="lotus-temp",
10                      tty=True,
11                      stdin_open=True,
12                      detach=True)
13
14
15 def exec_cmd(con, cmd):
16     container = cli.containers.get(con)
17     return container.exec_run(cmd, stdout=True)[1].decode("utf-8")
18
19
20 def commit_lotus(con):
21     container = cli.containers.get(con)
22     return container.commit(repository="lotus.slocal:5000/lotus", tag="latest")
23
24
25 def stop_container(con: str):
26     container = cli.containers.get(con)
27     container.remove(force=True)
28
29
30 def push_image():
31     return cli.images.push("lotus.slocal:5000/lotus", "latest")
32
33
34 if __name__ == '__main__':
35     print("Run lotus container...")
36     run_lotus()
37     print("Wait for compile...")
38     print(exec_cmd("lotus-temp", "./root/dev.sh"))
39     print("Commit latest version...")
40     print(commit_lotus("lotus-temp"))
41     #print("Push Latest changes...")
42     #print(push_image())
43     print("Stop lotus container...")
44     print(stop_container("lotus-temp"))
45
```

An automated script for building lotus devnet new image in Docker

Lotus Devnet Sector Config

As soon as the Docker image can be used, we start lotus daemon and miner with 2k sectors that allow us to use smaller sectors for testing.

[illegible]

Left side : Lotus Wrapper Run the lotus daemon and miner, Right Top side : Daemon Logs, Right Bottom side : Miner Logs

Simulating a large set-up requires running multiple workers in docker containers on separate physical and virtually based servers. they are all part of the same miner.

```

$ ssh -t shsh -r /Projects/lotus-wrapper/lotus-wrapper
$ ssh -t shsh -r /Projects/lotus-wrapper/lotus-wrapper/devmet

$ ./jar/tmp/fllcfeon-proof-parameters/V28-stacked-proof-of-replication-merkletree-posetidon_hasher-0-8-2-sha256_hasher-9ef15404c5c
5le5d759bbf274bcbcf5e4dc7f0df1ec0c637123f1ba485ddfb2.vk is ok
2021-06-01T06:02:45.222-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-stacked-proof-of-replication-merkletree-posetidon_hasher-0-8-0-sha256_hasher-03d313bd225
06ec0082e72b2dcba18df184779904c35bfafee2b3793b06832f.vk is ok
2021-06-01T06:02:45.250-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-proof-of-spacetime-fallback-merkletree-posetidon_hasher-8-0-0-3ea0542bc9d16097f2359dc3e
fd3aaadb9f7d2c9357c13150bac3be9e.vk is ok
2021-06-01T06:02:45.251-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-stacked-proof-of-replication-merkletree-posetidon_hasher-8-0-0-sha256_hasher-ec0d36f48512
ab176cfa2f176eb031467daada4db24cb65bab.vk is ok
2021-06-01T06:02:45.251-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-stacked-proof-of-replication-merkletree-posetidon_hasher-8-0-0-sha256_hasher-82a357d2f2ca
81dc01b5454af6289bedde1bba5f3dc4cf7d4601bfef7828.vk is ok
2021-06-01T06:02:45.262-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-proof-of-spacetime-fallback-merkletree-posetidon_hasher-8-0-2-2627e4800b679fce9f990c0a47d
542ec67abb9a0d58f1901547bf2d228b09edf.vk is ok
2021-06-01T06:02:45.274-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-proof-of-spacetime-fallback-merkletree-posetidon_hasher-8-0-0-837f6d05cc52f41618760bf6f
e4eae151d507a0709bebea2c75557313ed.vk is ok
2021-06-01T06:02:45.279-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter f
lie/jar/tmp/fllcfeon-proof-parameters/V28-proof-of-spacetime-fallback-merkletree-posetidon_hasher-8-0-0-0170dbd1394b35d9552228e03
59194b13199d25908cd529f0009990b0.parms is ok
2021-06-01T06:02:45.344-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:138 Parameter o
nd key-fetching complete
2021-06-01T06:02:47.214-0400 INFO build go-paramfetchV0.0-2-0-20200701152213-3e0ffadfc261/paramfetch.go:102 parameter o
nd key-fetching complete
2021-06-01T06:02:47.453-0400 INFO badger v2@v2.0.0-rc.122 Initializing repo at '/root/.lotusworker'
2021-06-01T06:02:47.453-0400 INFO badger v2@v2.0.0-rc.122 All 0 tables opened in 0s
2021-06-01T06:02:47.738-0400 INFO badger v2@v2.0.0-rc.122 All 0 tables opened in 0s
2021-06-01T06:02:47.950-0400 INFO badger v2@v2.0.0-rc.122 All 0 tables opened in 0s
2021-06-01T06:02:47.992-0400 INFO badger v2@v2.0.0-rc.122 Replying file id: 0 at offset: 0
2021-06-01T06:02:47.992-0400 INFO badger v2@v2.0.0-rc.122 Replay took: 6.951µs
2021-06-01T06:02:48.012-0400 INFO badger v2@v2.0.0-rc.122 All 0 tables opened in 0s
2021-06-01T06:02:48.037-0400 INFO badger v2@v2.0.0-rc.122 Replying file id: 0 at offset: 0
2021-06-01T06:02:48.037-0400 INFO badger v2@v2.0.0-rc.122 Replay took: 5.221µs
2021-06-01T06:02:48.037-0400 INFO main lotus-seal-worker/main.go:335 Opening local storage; connecting to master
2021-06-01T06:02:48.039-0400 INFO main lotus-seal-worker/main.go:392 Setting up control endpoint at 127.0.0.1:13357
2021-06-01T06:02:48.040-0400 INFO main lotus-seal-worker/main.go:495 Making sure no local tasks are running
2021-06-01T06:02:48.242-0400 INFO main lotus-seal-worker/main.go:518 Worker registered successfully, waiting for tasks

```

Left side : Lotus Wrapper (List of workers), Right side : Worker logs

Create deals and task

Scheduler can be used to assign tasks to workers after the environment is ready. Our tool creates multiple deals and makes the miner accept them in order to provide tasks to workers.

```
>>> adeal test1

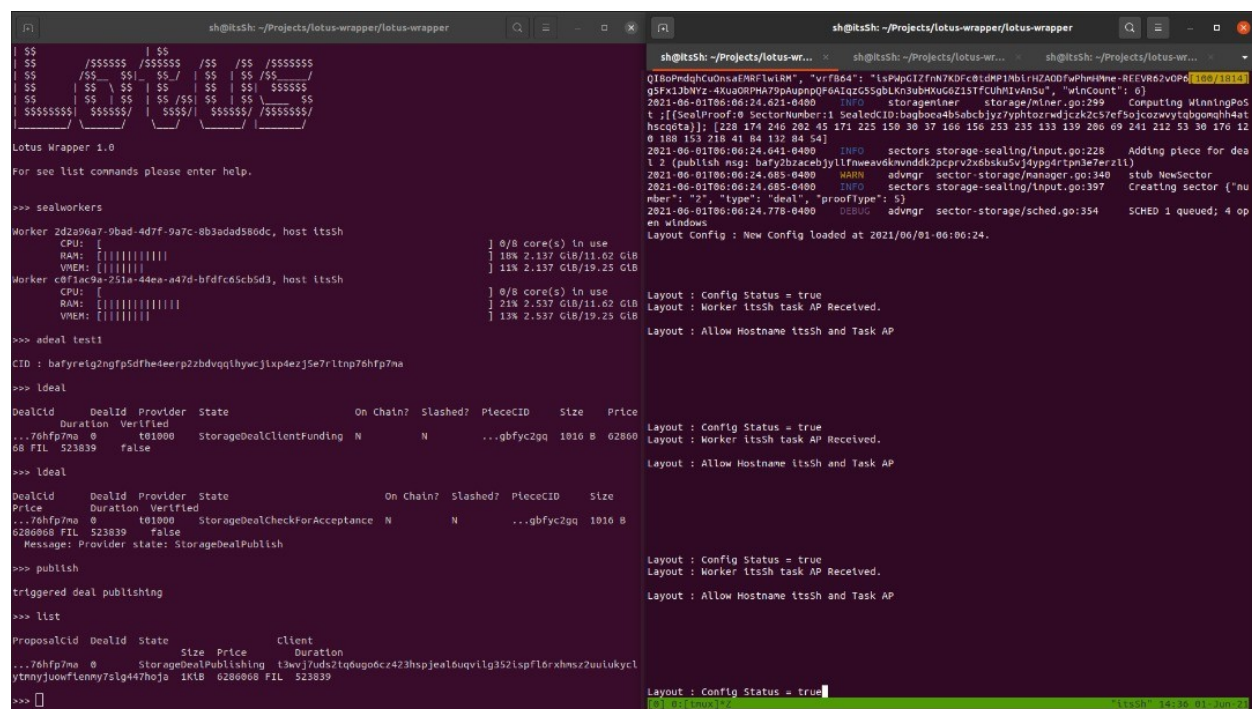
CID : bafyreig2ngfp5dfhe4erp2zbdvqqihywcjxp4ezj5e7rltnp76hfp7ma

>>> ldeal

DealCid    DealId    Provider    State          On Chain?    Slashed?    PieceCID    Size    Price    Duration    Verified
...76hfp7ma 0         t01000      StorageDealClientFunding N             N            ...gbfyc2gq 1016 B  6286068 FIL  523839     false

>>> █
```

Creating a deal using wrapper



```
sh@itsSh: ~/Projects/lotus-wrapper/lotus-wrapper

Lotus Wrapper 1.0
For see list commands please enter help.

>>> sealworkers

Worker 2d2a96a7-9bad-4d7f-9a7c-8b3adad580dc, host itsSh
CPU: [ ] 0/8 core(s) in use
RAM: [ ] 18% 2.137 GiB/11.02 GiB
VMEM: [ ] 11% 2.137 GiB/19.25 GiB

Worker c0f1ac9a-251a-44ea-a47d-bdfdc65cb5d3, host itsSh
CPU: [ ] 0/8 core(s) in use
RAM: [ ] 24% 2.537 GiB/11.02 GiB
VMEM: [ ] 13% 2.537 GiB/19.25 GiB

>>> adeal test1

CID : bafyreig2ngfp5dfhe4erp2zbdvqqihywcjxp4ezj5e7rltnp76hfp7ma

>>> ldeal

DealCid    DealId    Provider    State          On Chain?    Slashed?    PieceCID    Size    Price
...76hfp7ma 0         t01000      StorageDealClientFunding N             N            ...gbfyc2gq 1016 B  6286068 FIL  523839     false

>>> ldeal

DealCid    DealId    Provider    State          On Chain?    Slashed?    PieceCID    Size
...76hfp7ma 0         t01000      StorageDealCheckForAcceptance N             N            ...gbfyc2gq 1016 B
6286068 FIL  523839     false
Message: Provider state: StorageDealPublish

>>> publish

triggered deal publishing

>>> list

ProposalCid DealId State      Size Price      Client
...76hfp7ma 0         StorageDealPublishing t3wvjfuds2tqdu6oc243hspjealouqvl1g352lsp16rkhmsz2uulukycl
ytmyjjuowflemmy7slg447hoja 1KiB 6286068 FIL 523839

>>> █
```

```
sh@itsSh: ~/Projects/lotus-wrapper/lotus-wrapper

Q18aPndqhcUonsaEhRFlwRM", "vrF864": "tSPaGIZfna7KDFc0idhPmBirkH2ADDfWpHeHme-REEV862v0P6[106/1014]
g5fK12bVv2-4Xuo0RPMAT99AupnpQ6A1Qz559gbkknubmKucG219TfCUhEIVAnsU", "winCount": 0)
2021-06-01T06:06:24.621-0400 INFO storageMiner storage/miner.go:299 Computing WinningPoS
t: [[SealProof:0 SectorNumber:1 SealedCID:bagboea4SabcBjyz7yphTozrdwJczk2C57ef5ojcozwvvtqbgomqh4at
hscQota]]: [228 174 246 202 45 171 225 150 30 37 166 156 253 235 133 139 206 69 241 212 53 30 176 12
0 188 153 218 41 04 132 04 54]
2021-06-01T06:06:24.641-0400 INFO sectors storage-sealing/input.go:228 Adding piece for dea
l 2 (publish msg: bafy2bzacebjyllfneavskvnddk2pcprv2xbsksu5vj4ypp4rtpn3e7erz1l)
2021-06-01T06:06:24.685-0400 WARN advmgr sector-storage/manager.go:340 stub NewSector
2021-06-01T06:06:24.685-0400 INFO sectors storage-sealing/input.go:397 Creating sector ("nu
mber": "2", "type": "deal", "proofType": 5)
2021-06-01T06:06:24.778-0400 DEBUG advmgr sector-storage/sched.go:354 SCHED 1 queued; 4 op
en windows
Layout Config : New Config loaded at 2021/06/01-06:06:24.

Layout : Config Status = true
Layout : Worker itsSh task AP Received.
Layout : Allow Hostname itsSh and Task AP

Layout : Config Status = true
Layout : Worker itsSh task AP Received.
Layout : Allow Hostname itsSh and Task AP

Layout : Config Status = true
Layout : Worker itsSh task AP Received.
Layout : Allow Hostname itsSh and Task AP

Layout : Config Status = true
```

The left side shows the deal published and sent to the miner, the right side shows the new layout logic used by the scheduler