

目前官方的窗口调度 Scheduler 常常工作失灵, 有的 worker 工作繁忙, 有的 worker 则非常轻闲。个人认为 filecoin 运维人员最为熟悉自己的设备, 所以重新编写了一套调度程序, 废弃官方窗口调度和纯基于设备资源排序的规则, 重新自定义排序规则, **总体调度目标是让相关的任务平均分配到各个可以执行的 worker 上面。**

(一) myScheduler 调度参数说明

1. lotus-worker run 参数设置【主要】

--precommit1max value set maximum precommit1 quantity (default: 7)

①用于控制**调度 Worker 允许工作的最大 P1 数量**, 默认值 7。

--precommit1holdmax value set maximum precommit1 hold quantity (default: 25)

②用于控制 Worker 本地允许容纳的最大 P1 数量 (包括正在工作的 P1 和已经完成尚未 GET 走的, 但当前并未判断 fetching 临时子目录所占据的空间), 默认值 25, **防止 P1 过快导致磁盘爆满。如果该值设置为 0, 则自动忽略此参数的作用。**

--precommit2max value set maximum precommit2 quantity (default: 1)

③用于控制 Worker 允许工作的最大 P2 数量, 默认值 1, **调度支持并行多个 P2。**

--commit2max value set maximum commit2 quantity (default: 1)

④用于控制 Worker 允许工作的最大 C2 数量, 默认值 1, **调度支持并行多个 C2**, 当只有单个 GPU 时, 多个 C2 会交叉使用 GPU 资源。

--forcep2fromlocalp1 enable force precommit2 for local precommit1 (default: false)

⑤用于控制 Worker 工作 **P2 仅仅接收本地的 P1 (即绑定 P1/P2)**, 用于避免 P1 近 500GB 的跨存储复制, 默认值 false。请注意如果所有的 worker 都将此参数设置为 true, 则都仅仅工作自己本地的 P1。如果某个 worker 的参数 --forcep2fromlocalp1 值为 false, 则他可以获取来自各方的 P1, 包括那些此参数设置为 true 机器上的 P1 来进行下一阶段的 P2 工作。

2. lotus-miner 参数 config.toml 设置【次要】

[Storage]

AllowMyScheduler= true

- ① 默认启用放弃官方标准窗口调度, 启用自定义 myScheduler 调度程序。如果设置为 false, 则**支持无缝切换回到官方标准窗口调度**。

PreCommit1Max= 7

- ② Worker 允许工作的最大 P1 数量, 默认值 7。myScheduler 可以兼容调度 lotus-worker 仍然跑的是官方标准程序时,, 并且默认是该 worker 的最大 P1 数量。

PreCommit1HoldMax= 25

- ③ Worker 本地允许容纳的最大 P1 数量 (包括正在工作的 P1 和已经完成但尚未 GET 走的, 但当前并未判断 fetching 临时子目录所占据的空间), 默认值 25, 防止 P1 过快导致磁盘爆满。

3. 确认当前调度参数值

```
xl@psd-2080ti:~$ ./lotus-worker run -h
NAME:
  lotus-worker run - Start lotus worker

USAGE:
  lotus-worker run [command options] [arguments...]

OPTIONS:
  --listen value                host address and port the worker api will listen on (default: "0.0.0.0:3456")
  --no-local-storage            don't use storageminer repo for sector storage (default: false)
  --addpiece                   enable addpiece (default: true)
  --precommit1                 enable precommit1 (32G sectors: 1 core, 128GiB Memory) (default: true)
  --unseal                     enable unsealing (32G sectors: 1 core, 128GiB Memory) (default: true)
  --precommit2                 enable precommit2 (32G sectors: all cores, 96GiB Memory) (default: true)
  --commit                     enable commit (32G sectors: all cores or GPUs, 128GiB Memory + 64GiB swap) (default: true)
  --parallel-fetch-limit value maximum fetch operations to run in parallel (default: 5)
  --timeout value              used when 'listen' is unspecified, must be a valid duration recognized by golang's time.ParseDuration
  --precommit1max value        set maximum precommit1 quantity (default: 13)
  --precommit1holdmax value    set maximum precommit1 hold quantity (default: 25)
  --precommit2max value        set maximum precommit2 quantity (default: 1)
  --commit2max value           set maximum commit2 quantity (default: 1)
  --forcep2fromlocalp1         enable force precommit2 for local precommit1 (default: true)
  --help, -h                   show help (default: false)
```

```
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [ ] 0 core(s) in use
RAM: [ ] 2% 5.741 GiB/251.8 GiB
VMEM: [ ] 0% 5.741 GiB/717.5 GiB
Types: [ precommit/1,precommit/2,commit/2,unseal,commit/1,finalize,fetch,unsealread,addpiece, ]
PreCommit1Max: 7 PreCommit1HoldMax: 25 PreCommit2Max: 0 Commit2Max: 0 ForceP2FromLocalP1: false
```

4. 调度明细日志排查

由于调度的频繁度, 导致在运行过程中, 容易产生非常大的日志量, 可以通过下面的方式轻松查询相关成功分配和未分配的调度情况列表:

- ① more miner.log |grep trySchedMine > trySchedMine.txt

这个里面记录了, 所有成功调度的 has sucessfully scheduled 相关信息。

- ② `more miner.log |grep "not scheduling" > not_scheduling.txt` 则是拒绝接收任务分配的 worker 的日志。

(二) 32GB 实测环境之一

1. 使用官方标准调度的工作情况

从 `lotus-miner sealing jobs` 可以看到, 共有 11 号工作 assigned 等待分配中, 例如第 15 号 worker 节点, 当前有一个 P2 任务正在执行中, 尚有两个 P2 任务在它后面 assigned 等待中……, 是不是我们的 worker 设备不充足呢?

```

work@miner05:~$ lotus-miner sealing jobs
ID      Sector  Worker  Hostname  Task  State      Time
35      2117     2       worker04  PC1   running    1h52m49.6s
40      2090     2       worker04  PC1   running    1h52m49.6s
41      2093     2       worker04  PC1   running    1h52m49.6s
42      2091     2       worker04  PC1   running    1h52m49.6s
42      2043     4       worker03  PC1   running    1h28m6.5s
45      1447     4       worker03  PC1   running    1h28m6.5s
46      1898     4       worker03  PC1   running    1h28m6.5s
48      1890     4       worker03  PC1   running    1h28m6.5s
174     2111     3       worker07  PC1   running    1h24m45.9s
176     2128     3       worker07  PC1   running    1h24m33.4s
178     2127     3       worker07  PC1   running    1h24m18.5s
180     2116     3       worker07  PC1   running    1h23m19.8s
182     2118     3       worker07  PC1   running    1h22m53.1s
67      2119     2       worker04  PC1   running    1h14m46.5s
79      2033     2       worker04  PC1   running    1h12m6.6s
34      2144     1       worker06  PC1   running    1h11m16.5s
39      2137     1       worker06  PC1   running    1h11m16.5s
40      2143     1       worker06  PC1   running    1h11m16.5s
42      2120     1       worker06  PC1   running    1h11m16.5s
45      2142     1       worker06  PC1   running    1h11m16.5s
9       2089     14      worker15  PC2   running    59m47.3s
97      2131     2       worker04  PC1   running    57m45.5s
97      2148     4       worker03  PC1   running    52m58.6s
17      2121     15      worker16  PC2   running    8m10s
18      1423     15      worker16  GET   running    8m10s
13      2132     13      worker14  PC2   running    7m14.5s
14      1414     13      worker14  GET   running    7m14.5s
0       2122     14      worker15  PC2   assigned(0) 1h30m0.8s
0       1427     15      worker16  PC2   assigned(0) 1h29m9.5s
0       2112     13      worker14  PC2   assigned(0) 1h15m10.7s
0       1428     2       worker04  PC1   assigned(0) 57m3.7s
0       2083     2       worker04  PC1   assigned(0) 56m49.5s
0       2057     2       worker04  PC1   assigned(0) 56m49.5s
0       2133     2       worker04  PC1   assigned(0) 51m50.6s
0       2151     2       worker04  PC1   assigned(0) 51m21.2s
0       1426     14      worker15  PC2   assigned(1) 1h29m9.5s
0       1420     13      worker14  PC2   assigned(1) 41m1.7s
0       1412     15      worker16  PC2   assigned(1) 41m1.7s
work@miner05:~$ lotus-miner sealing jobs |grep worker15
9       2089     14      worker15  PC2   running    1h1m26.3s
0       2122     14      worker15  PC2   assigned(0) 1h31m39.7s
0       1426     14      worker15  PC2   assigned(1) 1h30m48.5s

```

等待任务分配

可是通过 lotus-miner sealing workers, 我们发现 08, 50, 100, 12, 13, 09, 11, 10 这 8 台 worker 设备是完全空置的!

```

Worker 4, host worker03
CPU: [|||||] ] 5 core(s) in use
RAM: [|||||] ] 56% 285.6 GiB/503.6 GiB
VMEM: [|||||] ] 64% 325.6 GiB/505.6 GiB
Worker 5, host worker08
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.235 GiB/1008 GiB
VMEM: [ ] ] 0% 8.235 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used
Worker 6, host worker50
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.597 GiB/1.23 TiB
VMEM: [ ] ] 0% 8.597 GiB/1.48 TiB
GPU: GeForce RTX 2080 Ti, not used
Worker 7, host worker100
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 1% 4.213 GiB/251.7 GiB
VMEM: [ ] ] 0% 4.213 GiB/763.7 GiB
GPU: GeForce RTX 2080 Ti, not used
Worker 8, host worker12
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.31 GiB/1008 GiB
VMEM: [ ] ] 0% 8.31 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, not used
Worker 9, host worker13
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.366 GiB/1008 GiB
VMEM: [ ] ] 0% 8.366 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, not used
Worker 10, host worker09
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.591 GiB/1008 GiB
VMEM: [ ] ] 0% 8.591 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used
Worker 11, host worker11
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.574 GiB/1008 GiB
VMEM: [ ] ] 0% 8.574 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used
Worker 12, host worker10
CPU: [ ] ] 0 core(s) in use
RAM: [ ] ] 0% 8.634 GiB/1008 GiB
VMEM: [ ] ] 0% 8.634 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used

```

真在工作 P2 的只 14, 15, 16 三台, 工作 P1 的只有 03, 04, 06, 07 四台,

15 台 worker 有 8 台完全闲置没有工作。

```

Worker 13, host worker14
CPU: [|||||] ] 64 core(s) in use
RAM: [|||||] ] 4% 40.37 GiB/1008 GiB
VMEM: [|||||] ] 3% 40.37 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used
Worker 14, host worker15
CPU: [|||||] ] 32 core(s) in use
RAM: [|||||] ] 3% 39.75 GiB/1008 GiB
VMEM: [|||||] ] 3% 39.75 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, used
Worker 15, host worker16
CPU: [|||||] ] 64 core(s) in use
RAM: [|||||] ] 4% 40.39 GiB/1008 GiB
VMEM: [|||||] ] 3% 40.39 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used
work@miner05:~$ lotus-miner sealing jobs |grep -E "worker14|worker15|worker16"
9 2089 14 worker15 PC2 running 1h7m58.8s
17 2121 15 worker16 PC2 running 16m21.5s
13 2132 13 worker14 PC2 running 15m26s
0 2122 14 worker15 PC2 assigned(0) 1h38m12.3s
0 1427 15 worker16 PC2 assigned(0) 1h37m21s
0 2112 13 worker14 PC2 assigned(0) 1h23m22.2s
0 1426 14 worker15 PC2 assigned(1) 1h37m21s
0 1420 13 worker14 PC2 assigned(1) 49m13.2s
0 1412 15 worker16 PC2 assigned(1) 49m13.2s
work@miner05:~$ lotus-miner sealing jobs |grep -E "worker03|worker04|worker06|worker07"
35 2117 2 worker04 PC1 running 2h2m6.6s
40 2090 2 worker04 PC1 running 2h2m6.6s
41 2093 2 worker04 PC1 running 2h2m6.5s
42 2091 2 worker04 PC1 running 2h2m6.5s
42 2043 4 worker03 PC1 running 1h37m23.5s
45 1447 4 worker03 PC1 running 1h37m23.5s
46 1898 4 worker03 PC1 running 1h37m23.5s
48 1890 4 worker03 PC1 running 1h37m23.5s
174 2111 3 worker07 PC1 running 1h34m2.9s
176 2128 3 worker07 PC1 running 1h33m50.3s
178 2127 3 worker07 PC1 running 1h33m35.5s
180 2116 3 worker07 PC1 running 1h32m36.8s
182 2118 3 worker07 PC1 running 1h32m10s
67 2119 2 worker04 PC1 running 1h24m3.4s
79 2033 2 worker04 PC1 running 1h21m23.5s
34 2144 1 worker06 PC1 running 1h20m33.5s
39 2137 1 worker06 PC1 running 1h20m33.5s
40 2143 1 worker06 PC1 running 1h20m33.5s

```

2. 使用 myScheduler 调度的工作情况

```
worker 0, host [redacted] /home/work/lotus_xy/lotus-miner sealing workers --color
worker 0, host [redacted]
CPU: [ ] 0 core(s) in use
RAM: [ ] 1% 16.32 GiB/1008 GiB
VMEM: [ ] 1% 16.32 GiB/1.484 TiB
GPU: GeForce RTX 2080 Ti, not used

worker 7, host [redacted]
CPU: [ ] 65 core(s) in use
RAM: [ ] 35% 90.27 GiB/251.7 GiB
VMEM: [ ] 28% 218.3 GiB/763.7 GiB
GPU: GeForce RTX 2080 Ti, used

worker 16, host [redacted]
CPU: [ ] 4 core(s) in use
RAM: [ ] 45% 229.8 GiB/503.6 GiB
VMEM: [ ] 51% 261.8 GiB/505.6 GiB

worker 17, host [redacted]
CPU: [ ] 5 core(s) in use
RAM: [ ] 46% 233.7 GiB/503.6 GiB
VMEM: [ ] 52% 265.7 GiB/505.6 GiB

worker 18, host [redacted]
CPU: [ ] 5 core(s) in use
RAM: [ ] 46% 233.7 GiB/503.6 GiB
VMEM: [ ] 52% 265.7 GiB/505.6 GiB

worker 19, host [redacted]
CPU: [ ] 4 core(s) in use
RAM: [ ] 45% 229.5 GiB/503.6 GiB
VMEM: [ ] 51% 261.5 GiB/505.6 GiB

worker 29, host [redacted]
CPU: [ ] 16 core(s) in use
RAM: [ ] 3% 38.65 GiB/1.23 TiB
VMEM: [ ] 10% 158.6 GiB/1.48 TiB
GPU: GeForce RTX 2080 Ti, used

worker 30, host [redacted]
CPU: [ ] 16 core(s) in use
RAM: [ ] 10% 129.2 GiB/1.23 TiB
VMEM: [ ] 16% 249.2 GiB/1.48 TiB
GPU: GeForce RTX 2080 Ti, used

worker 31, host [redacted]
CPU: [ ] 16 core(s) in use
RAM: [ ] 3% 37.8 GiB/1008 GiB
VMEM: [ ] 12% 157.8 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used

worker 32, host [redacted]
CPU: [ ] 16 core(s) in use
RAM: [ ] 3% 37.81 GiB/1008 GiB
VMEM: [ ] 12% 157.8 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used

worker 33, host [redacted]
CPU: [ ] 20 core(s) in use
RAM: [ ] 26% 264.4 GiB/1008 GiB
VMEM: [ ] 23% 296.4 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used

worker 34, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 20% 208.3 GiB/1008 GiB
VMEM: [ ] 18% 232.3 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used

worker 35, host [redacted]
CPU: [ ] 18 core(s) in use
RAM: [ ] 20% 207.8 GiB/1008 GiB
VMEM: [ ] 22% 231.8 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, not used

worker 36, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 20% 208.8 GiB/1008 GiB
VMEM: [ ] 23% 232.8 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, used

worker 37, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 20% 206.4 GiB/1008 GiB
VMEM: [ ] 27% 350.4 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used

worker 38, host [redacted]
CPU: [ ] 20 core(s) in use
RAM: [ ] 26% 265.4 GiB/1008 GiB
VMEM: [ ] 23% 297.4 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used

worker 39, host [redacted]
CPU: [ ] 20 core(s) in use
RAM: [ ] 26% 262.4 GiB/1008 GiB
VMEM: [ ] 41% 414.4 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, not used

worker 40, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 21% 215 GiB/1008 GiB
VMEM: [ ] 35% 359 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, used

worker 41, host [redacted]
CPU: [ ] 3 core(s) in use
RAM: [ ] 17% 176.3 GiB/1008 GiB
VMEM: [ ] 19% 200.3 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, not used

worker 42, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 21% 214.9 GiB/1008 GiB
VMEM: [ ] 35% 358.9 GiB/1010 GiB
GPU: GeForce RTX 2080 Ti, not used

worker 43, host [redacted]
CPU: [ ] 3 core(s) in use
RAM: [ ] 17% 176.6 GiB/1008 GiB
VMEM: [ ] 15% 200.6 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, not used

worker 44, host [redacted]
CPU: [ ] 20 core(s) in use
RAM: [ ] 26% 262.9 GiB/1008 GiB
VMEM: [ ] 32% 414.9 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used

worker 45, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 20% 206.6 GiB/1008 GiB
VMEM: [ ] 27% 350.6 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used

worker 46, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 20% 206.6 GiB/1008 GiB
VMEM: [ ] 27% 350.6 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used

worker 48, host [redacted]
CPU: [ ] 19 core(s) in use
RAM: [ ] 21% 215.2 GiB/1008 GiB
VMEM: [ ] 28% 359.2 GiB/1.234 TiB
GPU: GeForce RTX 2080 Ti, used
```


(三) 32GB 实测环境之二

1. 60 个工作任务下的 P1 压力逐渐派发情况

```

root@mc512103:~# lotus-miner sealing workers
Worker 0, host mc512103
  CPU: [ ] 0 core(s) in use
  RAM: [ ] 1% 3.74 GiB/251.8 GiB
  VMEM: [ ] 0% 3.74 GiB/581.8 GiB
  GPU: GeForce GTX 1080 Ti, not used
Worker 1, host mc512101
  CPU: [|||||] 9 core(s) in use
  RAM: [|||||] 51% 512.8 GiB/1004 GiB
  VMEM: [|||||] 52% 584.8 GiB/1.078 TiB
Worker 2, host mc512102
  CPU: [|||||] 9 core(s) in use
  RAM: [|||||] 50% 511.6 GiB/1004 GiB
  VMEM: [|||||] 52% 583.6 GiB/1.078 TiB
Worker 3, host mc512102
  CPU: [|||||] 9 core(s) in use
  RAM: [|||||] 50% 511.5 GiB/1004 GiB
  VMEM: [|||||] 52% 583.5 GiB/1.078 TiB
Worker 4, host mc512101
  CPU: [|||||] 9 core(s) in use
  RAM: [|||||] 51% 512.8 GiB/1004 GiB
  VMEM: [|||||] 52% 584.8 GiB/1.078 TiB

```

```

root@mc512103:~# lotus-miner sealing workers
Worker 0, host mc512103
  CPU: [ ] 0 core(s) in use
  RAM: [ ] 1% 3.74 GiB/251.8 GiB
  VMEM: [ ] 0% 3.74 GiB/581.8 GiB
  GPU: GeForce GTX 1080 Ti, not used
Worker 1, host mc512101
  CPU: [|||||] 13 core(s) in use
  RAM: [|||||] 73% 736.8 GiB/1004 GiB
  VMEM: [|||||] 76% 840.8 GiB/1.078 TiB
Worker 2, host mc512102
  CPU: [|||||] 12 core(s) in use
  RAM: [|||||] 67% 679.6 GiB/1004 GiB
  VMEM: [|||||] 70% 775.6 GiB/1.078 TiB
Worker 3, host mc512102
  CPU: [|||||] 12 core(s) in use
  RAM: [|||||] 67% 679.5 GiB/1004 GiB
  VMEM: [|||||] 70% 775.5 GiB/1.078 TiB
Worker 4, host mc512101
  CPU: [|||||] 12 core(s) in use
  RAM: [|||||] 67% 680.8 GiB/1004 GiB
  VMEM: [|||||] 70% 776.8 GiB/1.078 TiB

```

直到最终所有的 worker 达到 15 个参数设置的满配额度以后，任务无法再次下压：

```

root@mc512103:~# lotus-miner sealing workers
Worker 0, host mc512103
  CPU: [ ] 0 core(s) in use
  RAM: [ ] 1% 3.74 GiB/251.8 GiB
  VMEM: [ ] 0% 3.74 GiB/581.8 GiB
  GPU: GeForce GTX 1080 Ti, not used
Worker 1, host mc512101
  CPU: [|||||] 15 core(s) in use
  RAM: [|||||] 84% 848.8 GiB/1004 GiB
  VMEM: [|||||] 87% 968.8 GiB/1.078 TiB
Worker 2, host mc512102
  CPU: [|||||] 15 core(s) in use
  RAM: [|||||] 84% 847.6 GiB/1004 GiB
  VMEM: [|||||] 87% 967.6 GiB/1.078 TiB
Worker 3, host mc512102
  CPU: [|||||] 15 core(s) in use
  RAM: [|||||] 84% 847.5 GiB/1004 GiB
  VMEM: [|||||] 87% 967.5 GiB/1.078 TiB
Worker 4, host mc512101
  CPU: [|||||] 15 core(s) in use
  RAM: [|||||] 84% 848.8 GiB/1004 GiB
  VMEM: [|||||] 87% 968.8 GiB/1.078 TiB

DEBUG advmgr sector-storage/sched.go:338 trySchedMine SCHED 1 queued; 5 workers
DEBUG advmgr sector-storage/sched_resources.go:151 sector s-t-797 sched: not scheduling on worker
for seal/v0/precommit/1; not enough PreCommit1 quota, 1 need, 15 in use, PreCommit1Max is 15

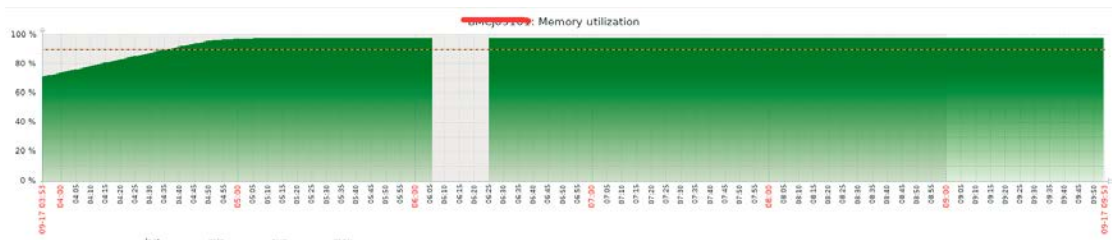
```

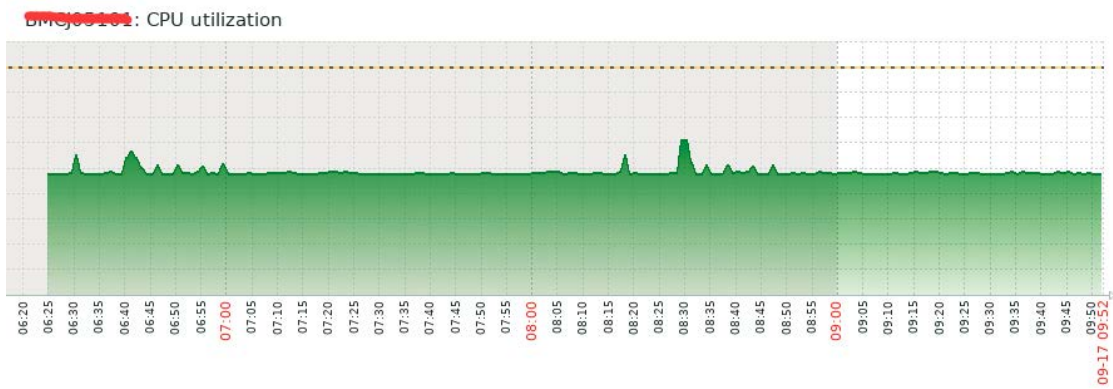
查看 lotus-miner sealing jobs，可以看到所有的 P1 工作任务完全匀称分摊到四个可以工作 P1 的 worker 上面：

```
root@192.168.1.2:~# lotus-miner sealing jobs
```

ID	Sector	Worker	Hostname	Task	State	Time
10	689	1	BM1680000001	PC1	running	7h25m22.3s
8	683	2	BM1680000010	PC1	running	7h25m22.3s
8	686	4	BM1680000011	PC1	running	7h25m22.3s
8	687	3	BM1680000012	PC1	running	7h25m22.3s
11	690	1	BM1680000013	PC1	running	7h25m22.3s
9	691	2	BM1680000014	PC1	running	7h25m22.3s
9	692	3	BM1680000015	PC1	running	7h25m22.3s
9	693	4	BM1680000016	PC1	running	7h25m22.3s
10	694	2	BM1680000017	PC1	running	7h25m22.3s
10	695	3	BM1680000018	PC1	running	7h25m22.3s
10	697	4	BM1680000019	PC1	running	7h25m22.3s
12	698	1	BM1680000020	PC1	running	7h25m22.3s
13	699	1	BM1680000021	PC1	running	7h25m22.3s
11	700	2	BM1680000022	PC1	running	7h25m22.3s
11	701	3	BM1680000023	PC1	running	7h25m22.3s
11	702	4	BM1680000024	PC1	running	7h25m22.3s
14	704	1	BM1680000025	PC1	running	7h25m22.3s
12	705	2	BM1680000026	PC1	running	7h25m22.3s
12	706	3	BM1680000027	PC1	running	7h25m22.3s
12	707	4	BM1680000028	PC1	running	7h25m22.2s
13	708	3	BM1680000029	PC1	running	7h25m22.2s
15	753	1	BM1680000030	PC1	running	7h25m22.2s
13	757	2	BM1680000031	PC1	running	7h25m22.2s
13	760	4	BM1680000032	PC1	running	7h25m22.2s
16	761	1	BM1680000033	PC1	running	7h25m22.2s
14	762	2	BM1680000034	PC1	running	7h25m22.2s
14	763	3	BM1680000035	PC1	running	7h25m22.2s
14	764	4	BM1680000036	PC1	running	7h25m22.2s
17	765	1	BM1680000037	PC1	running	7h25m22.2s
15	766	3	BM1680000038	PC1	running	7h25m22.2s
15	767	4	BM1680000039	PC1	running	7h25m22.2s
15	768	2	BM1680000040	PC1	running	7h25m22.2s
18	769	1	BM1680000041	PC1	running	7h25m22.2s
18	771	2	BM1680000042	PC1	running	7h21m32.2s
17	770	3	BM1680000043	PC1	running	7h21m32.2s
20	772	4	BM1680000044	PC1	running	7h21m32.2s

设备的内存使用已完全满了，调度程序优化好了，机器设备的“恶梦”就来了：





2. P2 /C2 工作派发情况

```
root@mc512103:~# lotus-miner sealing jobs
```

ID	Sector	Worker	Hostname	Task	State	Time
10	694	2	MC512103	PC1	running	20h33m4s
36	797	4	MC512103	PC1	running	40m25.8s
1	701	5	MC512103	PC2	running	37m56.7s
1	705	7	MC512103	PC2	running	37m53.6s
1	707	8	MC512103	PC2	running	37m51.6s
1	772	11	MC512103	PC2	running	29m41s
1	775	28	MC512103	PC2	running	29m39s
1	767	12	MC512103	PC2	running	29m21.8s
1	683	17	MC512103	PC2	running	28m52.4s
1	760	14	MC512103	PC2	running	28m49.2s
1	768	29	MC512103	PC2	running	28m47.9s
1	691	19	MC512103	PC2	running	28m46.7s
1	686	26	MC512103	PC2	running	28m46.7s
1	771	16	MC512103	PC2	running	28m43.2s
1	764	22	MC512103	PC2	running	28m18.7s
1	700	31	MC512103	PC2	running	28m14.3s
1	780	10	MC512103	PC2	running	28m14.3s
1	697	9	MC512103	PC2	running	28m11.2s
1	778	25	MC512103	PC2	running	27m48s
1	693	18	MC512103	PC2	running	27m19s
1	774	15	MC512103	PC2	running	26m35.3s
1	782	13	MC512103	PC2	running	26m24.8s
1	757	23	MC512103	PC2	running	26m23.3s
1	784	38	MC512103	PC2	running	25m53.8s
1	769	34	MC512103	PC2	running	25m1.9s
1	690	39	MC512103	PC2	running	25m1.9s
1	699	30	MC512103	PC2	running	25m1.9s
1	704	36	MC512103	PC2	running	25m1.9s
1	698	27	MC512103	PC2	running	25m1.9s
1	773	44	MC512103	PC2	running	25m0.1s
1	777	33	MC512103	PC2	running	25m0.1s
1	786	43	MC512103	PC2	running	24m43s
1	687	40	MC512103	PC2	running	24m28.9s
1	763	20	MC512103	PC2	running	24m25.3s
1	766	35	MC512103	PC2	running	24m25.3s
1	776	42	MC512103	PC2	running	24m21.5s
1	695	37	MC512103	PC2	running	24m21.5s
1	706	24	MC512103	PC2	running	24m19.7s
1	753	41	MC512103	PC2	running	24m19.7s
1	790	45	MC512103	PC2	running	19m55.7s
0	798	6	MC512103	AP	running	7m20.7s

```
lotus-miner sealing jobs | grep C2
1      800      28      PC2      running      7h55m3s
3      798      29      PC2      running      7h52m14.7s
4      708      42      C2       running      2h21m40s
9      840      8       PC2      running      2h6m50.7s
12     841      3       PC2      running      2h6m48.8s
11     843      4       PC2      running      2h2m27.7s
10     845      7       PC2      running      2h0m5.3s
189    855      20      PC2      running      1h53m6.5s
8      856      24      PC2      running      1h53m4.5s
9      858      10      PC2      running      1h53m2.4s
6      815      31      C2       running      1h52m37.3s
5      811      35      C2       running      1h49m33.5s
8      871      18      PC2      running      1h44m8.7s
10     836      36      C2       running      1h41m31.8s
6      817      37      C2       running      1h25m6.3s
11     823      41      C2       running      1h18m44.1s
8      787      34      C2       running      1h13m23.9s
6      807      30      C2       running      1h12m43.7s
5      783      33      C2       running      1h10m7.6s
5      821      32      C2       running      1h1m53.9s
5      826      38      C2       running      53m5.6s
9      874      26      PC2      running      47m51.5s
16     692      39      C2       running      47m30.4s
10     896      17      PC2      running      41m12.7s
19     892      15      PC2      running      31m7.5s
13     888      27      PC2      running      30m14.8s
28     876      16      PC2      running      24m24s
11     872      5       PC2      running      21m59.2s
15     873      25      PC2      running      14m49s
11     893      6       PC2      running      13m3.4s
106    897      21      PC2      running      12m19.5s
7      881      19      PC2      running      10m25.4s
9      889      12      PC2      running      5m18.8s
12     884      22      PC2      running      3m49.3s
9      882      9       PC2      running      3m7.1s
7      883      11      PC2      running      2m17.5s
13     880      23      PC2      running      1m17s
5      790      40      C2       running      46.6s
```

lotus-miner sealing workers 可以查到设备利用率近 100%

```
root@BMCJ04103:~# lotus-miner sealing workers
Worker 0, host BMCJ04103
CPU: [ ] 0 core(s) in use
RAM: [ ] 1% 3.73 GiB/251.8 GiB
VMEM: [ ] 0% 3.73 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, not used
Worker 1, host BMCJ04103
CPU: [|||||] 15 core(s) in use
RAM: [|||||] 84% 848.5 GiB/1004 GiB
VMEM: [|||||] 87% 968.5 GiB/1.078 TiB
Worker 2, host BMCJ04103
CPU: [|||||] 15 core(s) in use
RAM: [|||||] 84% 848.5 GiB/1004 GiB
VMEM: [|||||] 87% 968.5 GiB/1.078 TiB
Worker 3, host BMCJ04103
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.24 GiB/251.8 GiB
VMEM: [|||||] 6% 36.24 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 4, host BMCJ04103
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 36.24 GiB/251.8 GiB
VMEM: [|||||] 6% 36.24 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 5, host BMCJ04108
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 36.34 GiB/251.8 GiB
VMEM: [|||||] 6% 36.34 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 6, host BMCJ04108
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.34 GiB/251.8 GiB
VMEM: [|||||] 6% 36.34 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 7, host BMCJ04110
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 36.35 GiB/251.8 GiB
VMEM: [|||||] 6% 36.35 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 8, host BMCJ04110
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.35 GiB/251.8 GiB
VMEM: [|||||] 6% 36.35 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 9, host BMCJ04109
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 36.37 GiB/251.8 GiB
VMEM: [|||||] 6% 36.37 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 10, host BMCJ05109
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.37 GiB/251.8 GiB
VMEM: [|||||] 6% 36.37 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 11, host BMCJ04109
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 36.33 GiB/251.8 GiB
VMEM: [|||||] 6% 36.33 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 12, host BMCJ04109
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.33 GiB/251.8 GiB
VMEM: [|||||] 6% 36.33 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 13, host BMCJ04102
CPU: [|||||] 14 core(s) in use
RAM: [|||||] 78% 791.5 GiB/1004 GiB
VMEM: [|||||] 81% 903.5 GiB/1.078 TiB
Worker 14, host BMCJ05102
CPU: [|||||] 13 core(s) in use
RAM: [|||||] 73% 735.7 GiB/1004 GiB
VMEM: [|||||] 76% 839.7 GiB/1.078 TiB
Worker 15, host BMCJ04106
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 35.73 GiB/251.8 GiB
VMEM: [|||||] 6% 35.73 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 16, host BMCJ04106
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 35.73 GiB/251.8 GiB
VMEM: [|||||] 6% 35.73 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 17, host BMCJ05106
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.22 GiB/251.8 GiB
VMEM: [|||||] 6% 36.22 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 18, host BMCJ04103
CPU: [|||||] 27 core(s) in use
```

```
Worker 27, host BMCJ05108
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.44 GiB/251.8 GiB
VMEM: [|||||] 6% 36.44 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 28, host BMCJ05104
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 14% 36.15 GiB/251.8 GiB
VMEM: [|||||] 6% 36.15 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 29, host BMCJ05104
CPU: [|||||] 27 core(s) in use
RAM: [|||||] 14% 36.15 GiB/251.8 GiB
VMEM: [|||||] 6% 36.15 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 30, host BMCJ05107
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 17% 42.85 GiB/251.8 GiB
VMEM: [|||||] 27% 162.9 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 31, host BMCJ04103
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.29 GiB/251.8 GiB
VMEM: [|||||] 26% 154.3 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 32, host BMCJ04108
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 20% 51.58 GiB/251.8 GiB
VMEM: [|||||] 29% 171.6 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 33, host BMCJ05105
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 16% 42.25 GiB/251.8 GiB
VMEM: [|||||] 27% 162.2 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 34, host BMCJ05110
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.09 GiB/251.8 GiB
VMEM: [|||||] 26% 154.1 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 35, host BMCJ05100
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.44 GiB/251.8 GiB
VMEM: [|||||] 26% 154.4 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
```

```
Worker 35, host BMCJ05108
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.09 GiB/251.8 GiB
VMEM: [|||||] 26% 154.1 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 36, host BMCJ04104
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.27 GiB/251.8 GiB
VMEM: [|||||] 26% 154.3 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 37, host BMCJ04100
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.33 GiB/251.8 GiB
VMEM: [|||||] 26% 154.3 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 38, host BMCJ05109
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 17% 42.95 GiB/251.8 GiB
VMEM: [|||||] 28% 163 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 39, host BMCJ04106
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 33.79 GiB/251.8 GiB
VMEM: [|||||] 26% 153.8 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 40, host BMCJ04110
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 20% 51.35 GiB/251.8 GiB
VMEM: [|||||] 29% 171.4 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 41, host BMCJ05106
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 13% 34.23 GiB/251.8 GiB
VMEM: [|||||] 26% 154.2 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
Worker 42, host BMCJ04105
CPU: [|||||] 16 core(s) in use
RAM: [|||||] 20% 51.47 GiB/251.8 GiB
VMEM: [|||||] 29% 171.5 GiB/581.8 GiB
GPU: GeForce GTX 1080 Ti, used
```

3. 单 Worker 多 P2 工作派发情况


```
Worker 27, host [redacted]
CPU: [|||||] 64 core(s) in use
RAM: [|||||] 15% 75.76 GiB/503.6 GiB
VMEM: [|||||] 49% 315.8 GiB/631.6 GiB
GPU: GeForce RTX 2080 Ti, used
GPU: GeForce RTX 2080 Ti, used
Types: [ finalize,unseal,addpiece,commit/1,commit/2,fetch, ]
PreCommitMax: 13 PreCommitHoldMax: 25 PreCommit2Max: 1 Commit2Max: 2 ForceP2FromLocalP1: true

Worker 28, host [redacted]
CPU: [|||||] 160 core(s) in use
RAM: [|||||] 18% 166.3 GiB/881.5 GiB
VMEM: [|||||] 16% 166.3 GiB/1009 GiB
GPU: GeForce RTX 3090, not used
Types: [ unseal,addpiece,commit/1,fetch,finalize,precommit/2, ]
PreCommitMax: 5 PreCommitHoldMax: 8 PreCommit2Max: 5 Commit2Max: 1 ForceP2FromLocalP1: false

psd2@1080:~$ lotus-miner sealing jobs |grep epyc7f52-167
555 1601 28 [redacted] PC2 running 1h18m45.1s
559 1564 28 [redacted] PC2 running 1h16m23.4s
560 1544 28 [redacted] PC2 running 1h16m23.4s
567 1567 28 [redacted] PC2 running 1h12m42.4s
570 1572 28 [redacted] PC2 running 1h3m54.4s

2020-09-28T22:38:44.048 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:48.836 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:49.717 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:49.830 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:50.015 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:41:57.919+0800 ^[[35mDEBUG][0m stores stores/util_unix.go:28 move sector data {"from": "/notnvm/lotusworker1/1508", "to": "/notnvm/lotusworker1/cache/s-[redacted]-1508"}
2020-09-28T22:41:57.929+0800 ^[[34mINFO][0m stores stores/remote.go:322 Delete http://[redacted]:3246/remote/cache/[redacted]-1508
2020-09-28T22:42:15.822+0800 ^[[35mDEBUG][0m advmgr sector-storage/localworker.go:102 acquired sector {3364 1508} (e:6; a:0): rker1/sealed/s-t03364-1508 /notnvm/lotusworker1/cache/[redacted]-1508}
2020-09-28T22:48:03.449 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:21.524 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:23.579 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:24.064 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:24.213 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:50:27.150+0800 ^[[35mDEBUG][0m stores stores/util_unix.go:28 move sector data {"from": "/notnvm/lotusworker1/1505", "to": "/notnvm/lotusworker1/cache/s-[redacted]-1505"}
2020-09-28T22:50:27.156+0800 ^[[34mINFO][0m stores stores/remote.go:322 Delete http://[redacted]:3246/remote/cache/[redacted]-1505
2020-09-28T22:50:49.880+0800 ^[[35mDEBUG][0m advmgr sector-storage/localworker.go:102 acquired sector {3364 1505} (e:6; a:0): rker1/sealed/s-t03364-1505 /notnvm/lotusworker1/cache/[redacted]-1505}
2020-09-28T22:56:31.957 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:14.915 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:16.182 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:16.680 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:16.974 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T23:04:32.639 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 4/8 of length 153391689

2020-09-28T22:26:32.192 INFO storage_proofs_porep::stacked:vanilla:proof > replicate_phase2
2020-09-28T22:26:32.192 INFO storage_proofs_porep::stacked:vanilla:proof > generating tree c using the GPU
2020-09-28T22:26:32.192 INFO storage_proofs_porep::stacked:vanilla:proof > Building column hashes
2020-09-28T22:26:32.194 INFO storage_proofs_porep::stacked:vanilla:proof > replicate_phase2
2020-09-28T22:26:32.195 INFO storage_proofs_porep::stacked:vanilla:proof > generating tree c using the GPU
2020-09-28T22:26:32.195 INFO storage_proofs_porep::stacked:vanilla:proof > Building column hashes
2020-09-28T22:38:44.048 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:48.836 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:49.717 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:49.830 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:38:50.015 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 1/8 of length 153391689
2020-09-28T22:48:03.449 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:21.524 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:23.579 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:24.064 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:48:24.213 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 2/8 of length 153391689
2020-09-28T22:56:31.957 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:14.915 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:16.182 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:16.680 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T22:57:16.974 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 3/8 of length 153391689
2020-09-28T23:04:32.639 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 4/8 of length 153391689
2020-09-28T23:05:35.649 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 4/8 of length 153391689
2020-09-28T23:05:37.166 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 4/8 of length 153391689
2020-09-28T23:05:38.151 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 4/8 of length 153391689
2020-09-28T23:05:38.368 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 4/8 of length 153391689
2020-09-28T23:12:20.223 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 5/8 of length 153391689
2020-09-28T23:13:49.808 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 5/8 of length 153391689
2020-09-28T23:13:52.249 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 5/8 of length 153391689
2020-09-28T23:13:52.474 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 5/8 of length 153391689
2020-09-28T23:13:52.671 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 5/8 of length 153391689
2020-09-28T23:20:07.444 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 6/8 of length 153391689
2020-09-28T23:22:06.264 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 6/8 of length 153391689
2020-09-28T23:22:08.948 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 6/8 of length 153391689
2020-09-28T23:22:09.272 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 6/8 of length 153391689
2020-09-28T23:22:09.416 INFO storage_proofs_porep::stacked:vanilla:proof > persisting base tree_c 6/8 of length 153391689
^[[32m] epyc7f52-167:~$
```

+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
NVIDIA-SMI		455.23.04		Driver Version: 455.23.04			CUDA Version: 11.1		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
GPU	Name	Persistence-M		Bus-Id	Disp.A	Volatile	Uncorr.	ECC	
Fan	Temp	Perf	Pwr:Usage/Cap	Memory-Usage		GPU-Util	Compute	M.	
							MIG	M.	
=====									
0	GeForce RTX 3090	Off	00000000:C1:00.0	Off		92%		N/A	
82%	87C	P2	318W / 350W	4436MiB / 24265MiB			Default		
							N/A		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
Processes:									
GPU	GI	CI	PID	Type	Process name	GPU Memory			
	ID	ID				Usage			
=====									
0	N/A	N/A	1347	G	/usr/lib/xorg/Xorg	14MiB			
0	N/A	N/A	1498	G	/usr/bin/gnome-shell	8MiB			
0	N/A	N/A	8470	C	lotus-worker	4409MiB			
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
#####									
#####									
2020年 09月 28日 星期一 23:13:32 CST									
Mon Sep 28 23:13:32 2020									
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
NVIDIA-SMI		455.23.04		Driver Version: 455.23.04			CUDA Version: 11.1		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
GPU	Name	Persistence-M		Bus-Id	Disp.A	Volatile	Uncorr.	ECC	
Fan	Temp	Perf	Pwr:Usage/Cap	Memory-Usage		GPU-Util	Compute	M.	
							MIG	M.	
=====									
0	GeForce RTX 3090	Off	00000000:C1:00.0	Off		99%		N/A	
82%	88C	P2	319W / 350W	4486MiB / 24265MiB			Default		
							N/A		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									

测试过程中发现实际使用到了 4GB 显存,最后前面 3 个 P2 是 1 小时 20 分钟左右完成了,后面 2 个 P2 则花了 1 小时 40 分钟以上。

4. 单 Worker 多 C2 工作派发情况

```
red@1000:~$ lotus-miner sealing jobs
```

ID	Sector	Worker	Hostname	Task	State	Time
30	1291	7	epyc7132-103	PC1	running	1h0m41.6s
11	1433	9	epyc7132-103	PC1	running	59m21.3s
17	1349	14	epyc7132-103	PC1	running	44m0.3s
0	1361	15	epyc7132-103	C2	running	43m41.5s
1	1446	4	epyc7132-103	C2	running	28m59.1s
0	1406	25	epyc7132-103	C2	running	17m21.3s
1	1415	25	epyc7132-103	C2	running	17m20.6s
310	1405	12	epyc7132-104	PC1	running	2m37.2s

```
red@py1000:~$ nvidia-smi
```

Sun Sep 27 00:22:33 2020

+-----+-----+-----+									
NVIDIA-SMI 440.95.01 Driver Version: 440.95.01 CUDA Version: 10.2									
+-----+-----+-----+									
GPU	Name	Persistence-M	Bus-Id	Disp.A	Volatile Uncorr. ECC				
Fan	Temp	Perf	Pwr:Usage/Cap	Memory-Usage	GPU-Util	Compute M.			
+-----+-----+-----+									
0	GeForce RTX 208...	Off	00000000:81:00.0	Off		N/A			
47%	49C	P2	54W / 250W	2374MiB / 11019MiB	0%	Default			
+-----+-----+-----+									
1	GeForce RTX 208...	Off	00000000:C1:00.0	Off		N/A			
42%	46C	P8	13W / 250W	2374MiB / 11019MiB	0%	Default			
+-----+-----+-----+									
Processes:							GPU Memory		
GPU	PID	Type	Process name				Usage		
+-----+-----+-----+									
0	1055669	C	lotus-worker				2363MiB		
1	1055669	C	lotus-worker				2363MiB		
+-----+-----+-----+									

(四) 本地开发环境

下面是一个只有 2 个 worker 的本地测试情况，派发了四个 pledge 任务（15、16、17、18 号扇区）：

1. 四个任务下的 P1 工作情况

```

psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
psdz@lotus-2080ti:~$ lotus-miner sectors pledge
psdz@lotus-2080ti:~$ lotus-miner sectors pledge
psdz@lotus-2080ti:~$ lotus-miner sectors pledge
psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
1 15 0 lotus-2080ti PC1 running 6.8s
3 16 2 lotus-2080ti PC1 running 6.1s
3 17 0 lotus-2080ti PC1 running 5.5s
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [||] ] 2 core(s) in use
RAM: [||] ] 2% 7.307 GiB/251.8 GiB
VMEM: [ ] ] 1% 7.307 GiB/717.5 GiB
Worker 2, host lotus-2080ti
CPU: [||] ] 1 core(s) in use
RAM: [||] ] 3% 8.136 GiB/251.8 GiB
VMEM: [ ] ] 1% 8.136 GiB/717.5 GiB
psdz@lotus-2080ti:~$ lotus-miner sectors pledge
psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
1 15 0 lotus-2080ti PC1 running 34.5s
3 16 2 lotus-2080ti PC1 running 33.7s
3 17 0 lotus-2080ti PC1 running 33.1s
7 18 2 lotus-2080ti PC1 running 5.2s
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [||] ] 2 core(s) in use
RAM: [||] ] 2% 7.307 GiB/251.8 GiB
VMEM: [ ] ] 1% 7.307 GiB/717.5 GiB
Worker 2, host lotus-2080ti
CPU: [||] ] 2 core(s) in use
RAM: [||] ] 3% 8.136 GiB/251.8 GiB
VMEM: [ ] ] 1% 8.136 GiB/717.5 GiB

```

派发四个任务，P1 平均调配
到了两个 Worker 上面

2. 四个任务下的 P2 工作情况

```

psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
5 15 0 lotus-2080ti PC2 running 1m33.8s
9 16 2 lotus-2080ti PC2 running 1m33.1s
psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
7 18 0 lotus-2080ti PC2 running 9.7s
11 17 2 lotus-2080ti PC2 running 8.9s
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [|||||] ] 44 core(s) in use
RAM: [ ] ] 2% 7.307 GiB/251.8 GiB
VMEM: [ ] ] 1% 7.307 GiB/717.5 GiB
Worker 2, host lotus-2080ti
CPU: [|||||] ] 44 core(s) in use
RAM: [ ] ] 3% 8.136 GiB/251.8 GiB
VMEM: [ ] ] 1% 8.136 GiB/717.5 GiB
psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
psdz@lotus-2080ti:~$ lotus-miner sectors list
0: Proving sSet: YES active: YES tkth: 0 seedH: 0 deals: [0] toUpgrade:false
1: Proving sSet: YES active: YES tkth: 0 seedH: 0 deals: [1] toUpgrade:false
3: SealPreCommit1Failed sSet: NO active: NO tkth: 15309 seedH: 16448 deals: [0] toUpgrade:false
4: SealPreCommit1Failed sSet: NO active: NO tkth: 15522 seedH: 16587 deals: [0] toUpgrade:false
5: SealPreCommit1Failed sSet: NO active: NO tkth: 15522 seedH: 16605 deals: [0] toUpgrade:false
7: Proving sSet: YES active: YES tkth: 25623 seedH: 26772 deals: [0] toUpgrade:false
8: Proving sSet: YES active: YES tkth: 25711 seedH: 26861 deals: [0] toUpgrade:false
9: Proving sSet: YES active: YES tkth: 26096 seedH: 27246 deals: [0] toUpgrade:false
10: Proving sSet: YES active: YES tkth: 26097 seedH: 27295 deals: [0] toUpgrade:false
11: Proving sSet: YES active: YES tkth: 26147 seedH: 27296 deals: [0] toUpgrade:false
12: Proving sSet: YES active: YES tkth: 26508 seedH: 27687 deals: [0] toUpgrade:false
13: Proving sSet: YES active: YES tkth: 26508 seedH: 27648 deals: [0] toUpgrade:false
15: WaitSeed sSet: NO active: NO tkth: 27119 seedH: 0 deals: [0] toUpgrade:false
16: WaitSeed sSet: NO active: NO tkth: 27119 seedH: 0 deals: [0] toUpgrade:false
17: WaitSeed sSet: NO active: NO tkth: 27120 seedH: 0 deals: [0] toUpgrade:false
18: WaitSeed sSet: NO active: NO tkth: 27131 seedH: 0 deals: [0] toUpgrade:false

```

四个 P2 先后串行分配到了两个 Worker 上面

3. 四个任务下的 C2 工作情况

```

15: Committing      sSet: NO active: NO tktH: 27119 seedH: 28269 deals: [0] toUpgrade:false
16: Proving         sSet: YES active: YES tktH: 27119 seedH: 28269 deals: [0] toUpgrade:false
17: Committing      sSet: NO active: NO tktH: 27120 seedH: 28319 deals: [0] toUpgrade:false
18: Committing      sSet: NO active: NO tktH: 27131 seedH: 28319 deals: [0] toUpgrade:false
psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
12 18 0 lotus-2080ti C2 running 1m27s
17 15 2 lotus-2080ti C2 running 41.4s
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [ ] 1 core(s) in use
RAM: [ ] 2% 7.307 GiB/251.8 GiB
VMEM: [ ] 1% 7.307 GiB/717.5 GiB
Worker 2, host lotus-2080ti
CPU: [ ] 1 core(s) in use
RAM: [ ] 3% 8.136 GiB/251.8 GiB
VMEM: [ ] 1% 8.136 GiB/717.5 GiB
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [ ] 0 core(s) in use
RAM: [ ] 2% 7.307 GiB/251.8 GiB
VMEM: [ ] 1% 7.307 GiB/717.5 GiB
Worker 2, host lotus-2080ti
CPU: [ ] 1 core(s) in use
RAM: [ ] 3% 8.136 GiB/251.8 GiB
VMEM: [ ] 1% 8.136 GiB/717.5 GiB
psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
20 17 2 lotus-2080ti C2 running 2m20.3s

```

C2 任务均分到两个 Worker

4. 四个任务工作完成

```

psdz@lotus-2080ti:~$ lotus-miner sealing jobs
ID Sector Worker Hostname Task State Time
psdz@lotus-2080ti:~$ lotus-miner sealing workers
Worker 0, host lotus-2080ti
CPU: [ ] 0 core(s) in use
RAM: [ ] 2% 7.307 GiB/251.8 GiB
VMEM: [ ] 1% 7.307 GiB/717.5 GiB
Worker 2, host lotus-2080ti
CPU: [ ] 0 core(s) in use
RAM: [ ] 3% 8.136 GiB/251.8 GiB
VMEM: [ ] 1% 8.136 GiB/717.5 GiB
psdz@lotus-2080ti:~$ lotus-miner sectors list
0: Proving      sSet: YES active: YES tktH: 0 seedH: 0 deals: [0] toUpgrade:false
1: Proving      sSet: YES active: YES tktH: 0 seedH: 0 deals: [1] toUpgrade:false
3: SealPreCommit1Failed sSet: NO active: NO tktH: 15309 seedH: 16448 deals: [0] toUpgrade:false
4: SealPreCommit1Failed sSet: NO active: NO tktH: 15522 seedH: 16587 deals: [0] toUpgrade:false
5: SealPreCommit1Failed sSet: NO active: NO tktH: 15522 seedH: 16605 deals: [0] toUpgrade:false
7: Proving      sSet: YES active: YES tktH: 25623 seedH: 26772 deals: [0] toUpgrade:false
8: Proving      sSet: YES active: YES tktH: 25711 seedH: 26861 deals: [0] toUpgrade:false
9: Proving      sSet: YES active: YES tktH: 26096 seedH: 27246 deals: [0] toUpgrade:false
10: Proving     sSet: YES active: YES tktH: 26097 seedH: 27295 deals: [0] toUpgrade:false
11: Proving     sSet: YES active: YES tktH: 26147 seedH: 27296 deals: [0] toUpgrade:false
12: Proving     sSet: YES active: YES tktH: 26508 seedH: 27687 deals: [0] toUpgrade:false
13: Proving     sSet: YES active: YES tktH: 26508 seedH: 27648 deals: [0] toUpgrade:false
15: Proving     sSet: YES active: YES tktH: 27119 seedH: 28269 deals: [0] toUpgrade:false
16: Proving     sSet: YES active: YES tktH: 27119 seedH: 28269 deals: [0] toUpgrade:false
17: Proving     sSet: YES active: YES tktH: 27120 seedH: 28319 deals: [0] toUpgrade:false
18: Proving     sSet: YES active: YES tktH: 27131 seedH: 28319 deals: [0] toUpgrade:false

```