Lotus部署步骤

一、 基础环境

1、龙头

1. 准备好/mnt/lotus目录及二进制文件，tools脚本，证明文件等
2. 配置好/mnt/lotus/hosts-all文件，对集群内设备进行资源分配。

2、worker

1. 准备好/mnt/lotus/目录
2. sudo免密操作
3. 在龙头节点运行init.sh脚本会同步证明文件到worker节点，同时安装运行lotus所需的软件环境

二、 启动步骤

以下命令大部分均为alias

1、启动lotus daemon

```
slotus2 #启动
tlotus  #查看链运行日志
rm /mnt/lotus/.lotus/* -rf  #删除老链信息
lotus sync status #查看链同步状态
lotus sync wait #查看链同步时间
```

2、导入钱包或者new一个钱包

```
lotus wallet import #导入钱包
lotus wallet new bls #新建钱包
```

3、用miner info查看启动状态

4、初始化矿工

```
#模版
miner init --actor=t*** --owner=t3************
#示例
Miner init --actor=t03045 --
owner=t3s626nosb3xwo4thzgk3x57k2mfhioxjm22p4x5i5kujpemkgoufwcgkuopyaqsoozzw6652zqy
dv2li4vlqq
```

5、使用命令sminer2启动miner

6、在miner机器上面检查work机器系统环境

```
#执行检查命令
/mnt/local/tools/check.sh
```

主要关注点：确认磁盘数量、存储状态和容量、显卡数量、内存容量等是不是正常的

7、部署p1/P2机器， deploy2.sh 脚本会读取/mnt/lotus/hosts-all文件中的worker列表，自动完成逐台部署

```
#模版
./deploy.sh <本机IP>
#示例
./deploy2.sh 10.0.4.41
#命令查看各个worker工作状态
mwl
#集群加机器，注意点：每种角色都要单独加
deploy2.sh 10.0.4.41 xxxx
```

部署C2 worker机器， deployc2.sh 脚本会读取/mnt/lotus/hosts-allc2文件中的worker列表，自动完成逐台部署

```
#模版
./deployc2.sh <本机IP>
#示例
./deployc2.sh 10.0.4.41
#命令查看各个worker工作状态
mwl
#集群加机器，注意点：每种角色都要单独加
deployc2.sh 10.0.4.41 xxxx
```

8、启动整个集群

```
#启动集群
./pledge2.sh
```

三 、环境变量说明

1、 出块龙头（主miner）

特点：

- 主miner需要GPU，一般配置两张2080TI
- 主要负责时空证明
- 配置两台，一台负责windowpost，一台负责winningpost

重要参数：MINER_CONFIG

示例： export MINER_CONFIG="0:10.10.1.1;2:10.10.1.2;3:10.10.1.3"

参数说明：上述例子表示有3个小集群在工作，其中：

- 0-99999的sector是10.10.1.1这台算力龙头负责的worker
- 100000-199999的sector是10.10.1.2这台算力龙头负责的worker
- 200000-299999的sector是10.10.1.3这台算力龙头负责的worker
- 冒号前面的数字表示sectorID整除10w以后的结果，后面的IP表示出块龙头的IP，支持公网远程seal，需开放2345端口

大龙头需要创建/mnt/lotus/.miners文件夹，并在.miners下创建以小龙头IP命名的子文件夹，并将小龙头的/mnt/lotus/.lotusstorage/token拷贝到该子文件夹下

2、算力龙头（子miner）

特点：

- 算力龙头不需要GPU，只负责worker任务调度

参数一览：

```
#同时回传sector数据的worker数量
export SEAL_GETDATA_NUMS=6
#读取sector的路径
export READ_STORAGE_PATHS="/mnt/local/sector"
#写入sector的路径
export WRITE_STORAGE_PATHS="/mnt/local/sector"
#本龙头旗下的worker的sectorID起始值
export SEAL_ID_INDEX=200000
#一体机内部P2超出限制后自由调度，miner环境变量
export SEAL_P2QUEUE_LIMIT=4
```

环境变量支持在线修改，方法如下：

```
示例：
miner sectors pledge --worker="<具体内容>"
miner sectors pledge --worker="FAULT_IDS=345;359"
miner sectors pledge --worker="SEAL_GETDATA_NUMS=10"
#启动sealing， 启动miner和worker后，继续以前未完成的task
miner sectors pledge --worker="sealing=1"
```

3、所用脚本

deploy2.sh

```
#!/bin/bash
# Lotus auto-deployment script.
# Written by wanlei <wanlei@storswift.com>
# License:
# 1. Please keep the author name and email address when you use or
#    redistribute in code when you use it.
# 2. This file is under MIT license.

#
#hosts-all
#exp 192.168.2.153:4565/p1/5
# ssh_ip:worker_listen_port / seal_type /seal_worker_num
#exp 192.18.2.156:1234/c2-192.168.2.156/16/0 :p2
#exp 192.18.2.156:1234/c2-192.168.2.156/16/0,1,2,4 :c2
# ssh_ip:worker_listen_port / seal_type - physical_ip /seal_worker_num / gpu_id

function show_error() {
  echo "****************************************"
  echo $1
  echo "****************************************"
  exit 1
}

function deploy() {
  sb=$1
  echo ${sb} | grep - >/dev/null

  if [ $? -eq 0 ]; then
    ip_port=$(echo ${sb} | cut -d '/' -f 1)
    listen_port=$(echo ${ip_port} | cut -d ':' -f 2)
    ssh_ip=$(echo ${ip_port} | cut -d ':' -f 1)
    physical_ip=$(echo ${sb} | cut -d '/' -f 2 | cut -d '-' -f 2)
    seal_type=$(echo ${sb} | cut -d '/' -f 2 | cut -d '-' -f 1)
    seal_worker_num=$(echo ${sb} | cut -d '/' -f 3)
  else
    ip_port=$(echo ${sb} | cut -d '/' -f 1)
    listen_port=$(echo ${ip_port} | cut -d ':' -f 2)
    ssh_ip=$(echo ${ip_port} | cut -d ':' -f 1)
    physical_ip=none
    seal_type=$(echo ${sb} | cut -d '/' -f 2)
    seal_worker_num=$(echo ${sb} | cut -d '/' -f 3)
```

```
  fi

  gpu_ids=$(echo ${sb} | cut -d '/' -f 4)
  echo "seal type: ${seal_type} ssh ip: ${ssh_ip} worker listen ip port:
${ip_port} physical ip: ${physical_ip} \
  seal worker num: ${seal_worker_num} gpu ids: ${gpu_ids}"

  [ -z ${ssh_ip} ] && return

  #  return
  echo "############################ ${sb} ############################"
  echo "Now kill all worker and reset seal worker "

  ssh ${ssh_ip} -C "ps axu | grep lotus-worker |grep ${ip_port} | grep -v grep |
awk '{print \$2}' | xargs -i sudo kill -9 {} >/dev/null"

  ssh ${ssh_ip} -C "rm -rf /tmp/.lotus; mkdir -pv /mnt/lotus/{lotus,log,tmp}; sudo
chmod -R 777 /mnt/lotus/;chmod 600 /mnt/lotus/.lotus/keystore/* >/dev/null; \
      sed -i '/\/tcp\/2345\/http/d' ~/.profile; echo 'export
MINER_API_INFO=$STORAGE_API:/ip4/$LocalIP/tcp/2345/http' >> ~/.profile ;\
      sed -i '/FIL_PROOFS_MAXIMIZE_CACHING/d' ~/.profile; echo 'export
FIL_PROOFS_MAXIMIZE_CACHING=1' >> ~/.profile; \
      sed -i '/cbench/d' ~/.profile; echo 'alias cbench='\''grep -a bench
/mnt/lotus/log/seal.log | grep sector'\''' >> ~/.profile; \
      sed -i '/tworker/d' ~/.profile; echo 'alias tworker='\''tail -f -n 100
/mnt/lotus/log/seal.log'\''' >> ~/.profile; \
      sed -i '/RUST_LOG/d' ~/.profile; echo 'export RUST_LOG=info' >> ~/.profile;
    "

  echo "Now copy lotus-worker to ${sb}"

  sleep 3.2
  case $seal_type in
  "p1")
    if [ "${physical_ip}" != "none" ]; then
      ssh ${ssh_ip} -C "sed -i '/PHYSICAL_IP/d' ~/.profile; echo 'export
PHYSICAL_IP=${physical_ip}' >> ~/.profile"
    else
      ssh "${ssh_ip}" -C "sed -i '/PHYSICAL_IP/d' ~/.profile"
    fi
    sleep 0.8
    echo -e "$(date): Run seal worker with Precommit1... ${seal_worker_num}
${ssh_ip}:${ip_port}"
    ssh ${ssh_ip} -C "source ~/.profile;export TMPDIR=/mnt/lotus/tmp; \
                      export FIL_PROOFS_MAXIMIZE_CACHING=1; \
                      export FIL_PROOFS_USE_HPERF=1; \
                      export FIL_PROOFS_USE_MPERF=1; \
                      export SEAL_WORKER_NUM=${seal_worker_num}; \
                      nohup /mnt/lotus/lotus/lotus-worker --worker-
repo=/mnt/lotus/.lotusworker --miner-repo=/mnt/lotus/.lotusstorage \
                      run --address=${ip_port} --precommit1=true --
precommit2=false \
                      --commit=false >>/mnt/lotus/log/seal.log 2>&1 & \
                      "
    ;;
  "p2")
    if [ "$physical_ip" != "none" ]; then
      ssh ${ssh_ip} -C "sed -i '/PHYSICAL_IP/d' ~/.profile; echo 'export
PHYSICAL_IP=${physical_ip}' >> ~/.profile"
    else
      ssh "${ssh_ip}" -C "sed -i '/PHYSICAL_IP/d' ~/.profile"
    fi

    if [ ! -z ${gpu_ids} ]; then
```

```
      for ((gpu = 0; gpu <= ${gpu_ids}; gpu++)); do
        pp=$((${listen_port} + ${gpu}))
        echo -e "$(date): Run seal worker with Precommit2/Commit1... ${gpu}
${seal_worker_num} ${ssh_ip}:${pp}"
        sleep 0.5
        ssh ${ssh_ip} -C "source ~/.profile; \
                  export TMPDIR=/mnt/lotus/tmp; \
                  export FIL_PROOFS_COLUMN_TREE_PLATFORM='NVIDIA CUDA'; \
                  export FIL_PROOFS_COLUMN_TREE_DEVICE='#${gpu} GeForce RTX 2080
Ti'; \
                  export MUSK_WORKSET='57;58;59;60;60;61;62;63'; \
                  export FIL_PROOFS_USE_GPU_COLUMN_BUILDER=1; \
                  export FIL_PROOFS_USE_GPU_TREE_BUILDER=1; \
                  unset FIL_PROOFS_MAXIMIZE_CACHING; \
                  unset FIL_PROOFS_USE_HPERF; \
                  unset FIL_PROOFS_USE_MPERF; \
                  export SEAL_WORKER_NUM=${seal_worker_num}; \
                  nohup /mnt/lotus/lotus/lotus-worker --worker-
repo=/mnt/lotus/.lotusworker --miner-repo=/mnt/lotus/.lotusstorage \
                  run --address=${ssh_ip}:${pp} --precommit1=false --
precommit2=true --commit=false >>/mnt/lotus/log/seal.log 2>&1 & \
                  "
      done

    else
      echo -e "$(date): Run seal worker with Precommit2/Commit1...
${seal_worker_num}"
      ssh ${ssh_ip} -C "source ~/.profile;export TMPDIR=/mnt/lotus/tmp; \
                export SEAL_WORKER_NUM=${seal_worker_num}; \
                unset FIL_PROOFS_COLUMN_TREE_PLATFORM; \
                unset FIL_PROOFS_USE_GPU_COLUMN_BUILDER; \
                unset FIL_PROOFS_USE_GPU_TREE_BUILDER; \
                unset FIL_PROOFS_COLUMN_TREE_DEVICE; \
                unset FIL_PROOFS_MAXIMIZE_CACHING; \
                unset FIL_PROOFS_USE_HPERF; \
                unset FIL_PROOFS_USE_MPERF; \
                export FIL_PROOFS_USE_CSTEP=1048576; \
                nohup /mnt/lotus/lotus/lotus-worker --worker-
repo=/mnt/lotus/.lotusworker --miner-repo=/mnt/lotus/.lotusstorage \
                run --address=${ip_port} --precommit1=false --precommit2=true --
commit=false >>/mnt/lotus/log/seal.log 2>&1 & \
                "

    fi

    ;;

  "c2")
    if [ ! -z ${gpu_ids} ]; then
      for ((gpu = 0; gpu <= ${gpu_ids}; gpu++)); do
        pp=$((${listen_port} + ${gpu}))
        echo -e "$(date): Run seal worker with Commit2... ${gpu}
 ${seal_worker_num}  ${ssh_ip}:${pp}  "
        ssh ${ssh_ip} -C "source ~/.profile; \
              export TMPDIR=/mnt/lotus/tmp; \
              export BELLMAN_WORKING_GPUS=${gpu}; \
              export SEAL_WORKER_NUM=${seal_worker_num}; \
              unset BELLMAN_NO_GPU; \
              unset BELLMAN_FFT_NO_GPU; \
              unset FIL_PROOFS_MAXIMIZE_CACHING; \
              unset FIL_PROOFS_USE_HPERF; \
              unset FIL_PROOFS_USE_MPERF; \
              nohup /mnt/lotus/lotus/lotus-worker \
              --worker-repo=/mnt/lotus/.lotusworker --miner-
repo=/mnt/lotus/.lotusstorage \
```

```
              run --address=${ssh_ip}:${pp} --precommit1=false --precommit2=false
--commit=true >>/mnt/lotus/log/seal.log 2>&1 & \
              "
      done
    else
      echo -e "$(date): Run seal worker with Commit2... ${seal_worker_num}
 ${ssh_ip}:${pp}  "
      ssh ${ssh_ip} -C "source ~/.profile; \
            export BELLMAN_NO_GPU=1; \
            export BELLMAN_FFT_NO_GPU=1;\
            export BELLMAN_MAIN_THREAD=1; \
            unset FIL_PROOFS_MAXIMIZE_CACHING; \
            unset FIL_PROOFS_USE_HPERF; \
            unset FIL_PROOFS_USE_MPERF; \
            export TMPDIR=/mnt/lotus/tmp; \
            export SEAL_WORKER_NUM=${seal_worker_num}; \
            nohup /mnt/lotus/lotus/lotus-worker --worker-
repo=/mnt/lotus/.lotusworker --miner-repo=/mnt/lotus/.lotusstorage \
            run --address=${ip_port} --precommit1=false --precommit2=false --
commit=true >>/mnt/lotus/log/seal.log 2>&1 & \
            "
    fi

    ;;
  esac
  echo
  echo
}

STORAGE_API=$(cat /mnt/lotus/.lotusstorage/token)

if [ $# -lt 1 ]; then
  echo
  echo "$0 <LocalIP> [host] [new]"
  echo "  1.<LocalIP> You must specify the LocalIP."
  echo "  2.[host] You can specify the host/IP, otherwise use the
/mnt/lotus/hosts-all file."
  echo "  3.[new] Default is 0, set 1 to start a new seal-worker on the specific
host."
  echo
  exit 1
elif [ $# -lt 2 ]; then
  LocalIP=$1
elif [ $# -lt 3 ]; then
  LocalIP=$1
  host=$2
elif [ $# -lt 4 ]; then
  LocalIP=$1
  host=$2
  new=$3
else
  show_error "Maybe you use more than 3 parameters!"
fi

echo ${LocalIP} | grep '^[0-9]\{1,3\}\.[0-9]\{1,3\}\.[0-9]\{1,3\}\.[0-9]\{1,3\}$'
>>/dev/null
[ ! $? -eq 0 ] && echo "args 1 must be ip" && exit 1

if [ -z "$host" ]; then
  host=$(cat /mnt/lotus/hosts-all | grep -Ev "#|^$")
fi
#echo "##########################Set keystone to
600####################################"
#echo
#chmod 600 /mnt/lotus/.lotus/keystore/*
```

```
#chmod 600 /mnt/lotus/.lotusstorage/keystore/*
#echo
#echo
## start the seal-worker ##

##coyp worker
woker_ips=$(awk -F'/' '!/^#/{if ($0 != "") print $1 }' /mnt/lotus/hosts-all | awk
-F':' '{print $1}' | uniq)

if [ ! -z "$2" ]; then
  woker_ips=$(echo $host | cut -d '/' -f 1 | cut -d ':' -f1)
fi
for ssh_ip in ${woker_ips[@]}; do
  ssh ${ssh_ip} -C "mkdir -pv /mnt/lotus/{lotus,log,tmp}" >>/dev/null
  ssh ${ssh_ip} -C "lscpu | grep -i amd" >/dev/null
  if [ $? -eq 0 ]; then
    scp /mnt/lotus/lotus/lotus-worker-a ${ssh_ip}:/mnt/lotus/lotus/lotus-worker ||
show_error "Can not scp lotus-worker to ${ssh_ip}"
  else
    scp /mnt/lotus/lotus/lotus-worker ${ssh_ip}:/mnt/lotus/lotus/lotus-worker ||
show_error "Can not scp lotus-worker to ${ssh_ip}"
  fi
done

TIMESTAMP=$(date +%Y%m%d-%H%M)
mkdir -p /mnt/lotus/log/deploy-${TIMESTAMP} || show_error "Can not mkdir deploy's
log"
for i in ${host[@]}; do
  log=$(echo ${i} | sed -e "s#/#-#g")
  deploy $i >/mnt/lotus/log/deploy-${TIMESTAMP}/${log}.log 2>&1 &
done
```

check.sh

```
#!/bin/bash
#check.sh scripts

host=$(cat /mnt/lotus/hosts-all | grep -Ev "#|^$")
for i in ${host[@]}; do
  ip_port=$(echo ${i} | cut -d '/' -f 1)
  ssh_ip=$(echo ${ip_port} | cut -d ':' -f 1)
  [ ${ssh_ip} == "" ] && continue

#  ssh ${ssh_ip} -C "rm /mnt/lotus/.lotusworker/* -rf;rm /mnt/lotus/log/* -rf"

  echo "############################ $i ############################"

  ssh ${ssh_ip} -C "echo -e 'Huge:';grep 'HugePages'  /proc/meminfo; \
   echo -e 'Memory:';free -g; \
   echo; \
   echo -e 'Storage:';df -h | grep /mnt; ls -l /mnt/; \
   echo; \
   echo -e 'CPU:';lscpu | grep name; \
   echo; \
   echo -e 'Proof:';du /var/tmp/filecoin-proof-parameters/ -sh; \
   echo; \
   echo -e 'Date:';date; \
   echo; \
   echo -e 'ENV:';cat ~/.profile | grep -E 'export|alias';nvidia-smi \
   "
  echo
  echo
done
```

pledge2.sh

```
#!/bin/bash

function addlog() {
  echo $1
  echo $1 >>/mnt/lotus/log/pledge.log
}

if [ -z "$1" ]; then
  host=$(cat /mnt/lotus/hosts-all | grep -Ev "#|^$")
else
  host=$1
fi

for i in ${host[@]}; do
  echo ${i} | grep - >/dev/null
  if [ $? -eq 0 ]; then
    ip_port=$(echo ${i} | cut -d '/' -f 1)
    ssh_ip=$(echo ${ip_port} | cut -d ':' -f 1)
    seal_type=$(echo ${i} | cut -d '/' -f 2 | cut -d '-' -f 1)
  else
    ip_port=$(echo ${i} | cut -d '/' -f 1)
    ssh_ip=$(echo ${ip_port} | cut -d ':' -f 1)
    seal_type=$(echo ${i} | cut -d '/' -f 2)
  fi
  if [ "$seal_type" = "p1" ]; then
    echo "ip port: ${ip_port} ssh ip: ${ssh_ip} seal type: ${seal_type}"
    echo "############################ $i ############################"
    echo
    status=$(/mnt/lotus/lotus/lotus-miner --repo=/mnt/lotus/.lotus --miner-
repo=/mnt/lotus/.lotusstorage workers list | grep ${ip_port})
    working_num=$(echo $status | awk '{print $13}' | cut -d '/' -f 1 | egrep -o
'm[0-9]+' | egrep -o '[0-9]+')
    total_num=$(echo $status | awk '{print $13}' |cut -d '/' -f 3 |egrep -o '[0-
9]+')
    if [ $working_num -lt $total_num ]; then
      result=$((total_num - working_num))
      for ((j = 1; j <= $result; j++)); do
        echo -e "pledge ${ssh_ip}: $j"
        /mnt/lotus/lotus/lotus-miner --repo=/mnt/lotus/.lotus --miner-
repo=/mnt/lotus/.lotusstorage sectors pledge --worker="${ip_port}"
        sleep 1
      done
    fi
  fi
done
```