

一) 测试方法： 无交易不出块； 压测脚本发送（非rawTx的）调用智能合约方法CreateUser， name参数为32个长度字符串

二) 测试时间： 07-12 早上 8:17 ~ 9:27， 持续发送交易70分钟

三) 测试结果：

*) 出块数： 0xda1 – 0xd3f = 98 （ 08:17 ~ 10:35 时间段）

*) 交易数： 测试脚本自身统计是： 4个节点70分钟总共内发送了850347个交易； 事后用 eth.getBlock查询 08:17 ~ 10:35 时间段上链的块， 统计出来的打包的交易数也是 850347， 二者一致！

*) 在其它三个节点的txpool中的交易都打包上链后， 有一个节点的txpool在很长一段时间（半个小时以上）一直没得到处理， 也没出块。这个现象在之前（07-11? ）的测试中也出现过。

从txpool曲线图上看， 节点2的 pending值是曲线递增的， 而其它三个节点的是曲线波动的。感觉像是节点2的出块速度比其它三个节点都慢。

四) 测试观察到的数据：

1) 提交的交易数： 70分钟内， 节点1/2/3/4 的测试脚本提交的交易数分别是： 335192, 59717 , 149227 , 306211。 合计提交了850347 个交易。

2) 检查链上的块信息：（ 下面的块信息中有异常的部分用红色背景标出了）

```
> for(var i=0xd3f; i<=0xda1; i+=1){ var b=eth.getBlock(i,true);console.log("@", new Date().toLocaleTimeString(), " , blockNum: ", i, " , blockSize: ", b.size, " , gasUsed:", b.gasUsed, " , gasLimit: ", b.gasLimit, new Date(b.timestamp*1000), " , TxNum:", b.transactions.length );}
@ 14:23:45 , blockNum: 3391 , blockSize: 908 , gasUsed: 0 , gasLimit:
```

671491740307436500 Wed, 11 Jul 2018 19:47:22 CST , TxNum: 0
@ 14:23:45 , blockNum: 3392 , blockSize: 1154 , gasUsed: 74121 , gasLimit:
670835986654792600 Thu, 12 Jul 2018 08:17:36 CST , TxNum: 1
@ 14:23:45 , blockNum: 3393 , blockSize: 1154 , gasUsed: 74121 , gasLimit:
670180873386575100 Thu, 12 Jul 2018 08:17:37 CST , TxNum: 1
@ 14:23:46 , blockNum: 3394 , blockSize: 40599 , gasUsed: 12155844 , gasLimit:
669526399877408600 Thu, 12 Jul 2018 08:17:38 CST , TxNum: 164
@ 14:23:48 , blockNum: 3395 , blockSize: 113928 , gasUsed: 34614507 ,
gasLimit: 668872565502546200 Thu, 12 Jul 2018 08:17:39 CST , TxNum: 467
@ 14:23:51 , blockNum: 3396 , blockSize: 220880 , gasUsed: 67375989 ,
gasLimit: 668219369637848300 Thu, 12 Jul 2018 08:17:40 CST , TxNum: 909
@ 14:24:05 , blockNum: 3397 , blockSize: 772362 , gasUsed: 236297748 ,
gasLimit: 667566811659785100 Thu, 12 Jul 2018 08:17:44 CST , TxNum: 3188
@ 14:24:30 , blockNum: 3398 , blockSize: 1252953 , gasUsed: 383502054 ,
gasLimit: 666914890945619700 Thu, 12 Jul 2018 08:17:58 CST , TxNum: 5174
@ 14:25:06 , blockNum: 3399 , blockSize: 1752422 , gasUsed: 536487798 ,
gasLimit: 666263606872992400 Thu, 12 Jul 2018 08:18:19 CST , TxNum: 7238
@ 14:25:52 , blockNum: 3400 , blockSize: 2205908 , gasUsed: 675390552 ,
gasLimit: 665612958820191400 Thu, 12 Jul 2018 08:18:49 CST , TxNum: 9112
@ 14:26:37 , blockNum: 3401 , blockSize: 2233004 , gasUsed: 683692104 ,
gasLimit: 664962946166082800 Thu, 12 Jul 2018 08:19:17 CST , TxNum: 9224
@ 14:27:23 , blockNum: 3402 , blockSize: 2323755 , gasUsed: 711487479 ,
gasLimit: 664313568289969000 Thu, 12 Jul 2018 08:19:47 CST , TxNum: 9599
@ 14:28:10 , blockNum: 3403 , blockSize: 2292559 , gasUsed: 701925870 ,
gasLimit: 663664824571978100 Thu, 12 Jul 2018 08:20:16 CST , TxNum: 9470
@ 14:28:58 , blockNum: 3404 , blockSize: 2356424 , gasUsed: 721493814 ,
gasLimit: 663016714392760200 Thu, 12 Jul 2018 08:20:48 CST , TxNum: 9734
@ 14:29:46 , blockNum: 3405 , blockSize: 2356656 , gasUsed: 721567935 ,
gasLimit: 662369237133668000 Thu, 12 Jul 2018 08:21:16 CST , TxNum: 9735
@ 14:30:35 , blockNum: 3406 , blockSize: 2354970 , gasUsed: 721049088 ,
gasLimit: 661722392176586500 Thu, 12 Jul 2018 08:21:47 CST , TxNum: 9728
@ 14:31:21 , blockNum: 3407 , blockSize: 2243422 , gasUsed: 686879307 ,
gasLimit: 661076178904032900 Thu, 12 Jul 2018 08:22:13 CST , TxNum: 9267
@ 14:32:09 , blockNum: 3408 , blockSize: 2327410 , gasUsed: 712599294 ,
gasLimit: 660430596699078000 Thu, 12 Jul 2018 08:22:44 CST , TxNum: 9614
@ 14:32:56 , blockNum: 3409 , blockSize: 2291326 , gasUsed: 701555265 ,
gasLimit: 659785644945532900 Thu, 12 Jul 2018 08:23:12 CST , TxNum: 9465
@ 14:33:45 , blockNum: 3410 , blockSize: 2331499 , gasUsed: 713859351 ,
gasLimit: 659141323027668500 Thu, 12 Jul 2018 08:23:42 CST , TxNum: 9631
@ 14:34:33 , blockNum: 3411 , blockSize: 2314565 , gasUsed: 708670881 ,
gasLimit: 658497630330444900 Thu, 12 Jul 2018 08:24:12 CST , TxNum: 9561
@ 14:35:21 , blockNum: 3412 , blockSize: 2339254 , gasUsed: 716231223 ,
gasLimit: 657854566239363500 Thu, 12 Jul 2018 08:24:42 CST , TxNum: 9663
@ 14:36:09 , blockNum: 3413 , blockSize: 2353535 , gasUsed: 720604362 ,
gasLimit: 657212130140569500 Thu, 12 Jul 2018 08:25:14 CST , TxNum: 9722
@ 14:36:57 , blockNum: 3414 , blockSize: 2326667 , gasUsed: 712376931 ,
gasLimit: 656570321420784800 Thu, 12 Jul 2018 08:25:43 CST , TxNum: 9611
@ 14:37:44 , blockNum: 3415 , blockSize: 2313831 , gasUsed: 708448518 ,
gasLimit: 655929139467315700 Thu, 12 Jul 2018 08:26:13 CST , TxNum: 9558
@ 14:38:33 , blockNum: 3416 , blockSize: 2368061 , gasUsed: 725051622 ,

gasLimit: 655288583668092400 Thu, 12 Jul 2018 08:26:46 CST , TxNum: 9782
@ 14:39:20 , blockNum: 3417 , blockSize: 2303683 , gasUsed: 705335436 ,
gasLimit: 654648653411666200 Thu, 12 Jul 2018 08:27:16 CST , TxNum: 9516
@ 14:40:09 , blockNum: 3418 , blockSize: 2378217 , gasUsed: 728164704 ,
gasLimit: 654009348087102100 Thu, 12 Jul 2018 08:27:49 CST , TxNum: 9824
@ 14:40:57 , blockNum: 3419 , blockSize: 2314552 , gasUsed: 708670881 ,
gasLimit: 653370667084177400 Thu, 12 Jul 2018 08:28:19 CST , TxNum: 9561
@ 14:41:46 , blockNum: 3420 , blockSize: 2391523 , gasUsed: 732241359 ,
gasLimit: 652732609793141100 Thu, 12 Jul 2018 08:28:53 CST , TxNum: 9879
@ 14:42:35 , blockNum: 3421 , blockSize: 2388117 , gasUsed: 731203665 ,
gasLimit: 652095175604962600 Thu, 12 Jul 2018 08:29:24 CST , TxNum: 9865
@ 14:43:23 , blockNum: 3422 , blockSize: 2382073 , gasUsed: 729350640 ,
gasLimit: 651458363911107000 Thu, 12 Jul 2018 08:29:56 CST , TxNum: 9840
@ 14:44:10 , blockNum: 3423 , blockSize: 2326654 , gasUsed: 712376931 ,
gasLimit: 650822174103668500 Thu, 12 Jul 2018 08:30:28 CST , TxNum: 9611
@ 14:45:00 , blockNum: 3424 , blockSize: 2423935 , gasUsed: 742173573 ,
gasLimit: 650186605575313800 Thu, 12 Jul 2018 08:31:01 CST , TxNum: 10013
@ 14:45:50 , blockNum: 3425 , blockSize: 2387153 , gasUsed: 730907181 ,
gasLimit: 649551657719393900 Thu, 12 Jul 2018 08:31:35 CST , TxNum: 9861
@ 14:46:40 , blockNum: 3426 , blockSize: 2428767 , gasUsed: 743655993 ,
gasLimit: 648917329929722900 Thu, 12 Jul 2018 08:32:10 CST , TxNum: 10033
@ 14:48:59 , blockNum: 3427 , blockSize: 6274174 , gasUsed: 1921512804 ,
gasLimit: 648283621600802800 Thu, 12 Jul 2018 08:32:52 CST , TxNum: 25924
@ 14:50:15 , blockNum: 3428 , blockSize: 3442958 , gasUsed: 1054297104 ,
gasLimit: 647650532129398000 Thu, 12 Jul 2018 08:34:05 CST , TxNum: 14224
@ 14:51:11 , blockNum: 3429 , blockSize: 2720620 , gasUsed: 833045919 ,
gasLimit: 647018060908159700 Thu, 12 Jul 2018 08:35:01 CST , TxNum: 11239
@ 14:52:47 , blockNum: 3430 , blockSize: 4433187 , gasUsed: 1357600236 ,
gasLimit: 646386207334274400 Thu, 12 Jul 2018 08:36:16 CST , TxNum: 18316
@ 14:54:18 , blockNum: 3431 , blockSize: 4201615 , gasUsed: 1286666439 ,
gasLimit: 645754970805663200 Thu, 12 Jul 2018 08:37:38 CST , TxNum: 17359
@ 14:55:49 , blockNum: 3432 , blockSize: 4164568 , gasUsed: 1275325926 ,
gasLimit: 645124350718870500 Thu, 12 Jul 2018 08:39:54 CST , TxNum: 17206
@ 14:56:52 , blockNum: 3433 , blockSize: 2978328 , gasUsed: 911984784 ,
gasLimit: 644494346471989800 Thu, 12 Jul 2018 08:40:46 CST , TxNum: 12304
@ 14:58:37 , blockNum: 3434 , blockSize: 4826189 , gasUsed: 1477972740 ,
gasLimit: 643864957463099100 Thu, 12 Jul 2018 08:42:37 CST , TxNum: 19940
@ 15:00:22 , blockNum: 3435 , blockSize: 4810172 , gasUsed: 1473080754 ,
gasLimit: 643236183092741600 Thu, 12 Jul 2018 08:44:14 CST , TxNum: 19874
@ 15:02:01 , blockNum: 3436 , blockSize: 4459057 , gasUsed: 1365531183 ,
gasLimit: 642608022759848000 Thu, 12 Jul 2018 08:45:46 CST , TxNum: 18423
@ 15:03:33 , blockNum: 3437 , blockSize: 4226020 , gasUsed: 1294152660 ,
gasLimit: 641980475864621800 Thu, 12 Jul 2018 08:48:03 CST , TxNum: 17460
@ 15:04:57 , blockNum: 3438 , blockSize: 3933483 , gasUsed: 1204540371 ,
gasLimit: 641353541808055900 Thu, 12 Jul 2018 08:50:01 CST , TxNum: 16251
@ 15:06:22 , blockNum: 3439 , blockSize: 3933236 , gasUsed: 1204466250 ,
gasLimit: 640727219991648500 Thu, 12 Jul 2018 08:51:55 CST , TxNum: 16250
@ 15:07:45 , blockNum: 3440 , blockSize: 3876599 , gasUsed: 1187121936 ,
gasLimit: 640101509817639800 Thu, 12 Jul 2018 08:53:53 CST , TxNum: 16016
@ 15:09:09 , blockNum: 3441 , blockSize: 3859403 , gasUsed: 1181859345 ,

gasLimit: 639476410688697500 Thu, 12 Jul 2018 08:55:48 CST , TxNum: 15945
@ 15:10:45 , blockNum: 3442 , blockSize: 4392987 , gasUsed: 1345296150 ,
gasLimit: 638851922008115500 Thu, 12 Jul 2018 08:58:17 CST , TxNum: 18150
@ 15:12:12 , blockNum: 3443 , blockSize: 3981859 , gasUsed: 1219364571 ,
gasLimit: 638228043180000100 Thu, 12 Jul 2018 09:00:22 CST , TxNum: 16451
@ 15:15:16 , blockNum: 3444 , blockSize: 7949728 , gasUsed: 2434726608 ,
gasLimit: 637604773608368400 Thu, 12 Jul 2018 09:02:42 CST , TxNum: 32848
@ 15:15:24 , blockNum: 3445 , blockSize: 343327 , gasUsed: 104881215 ,
gasLimit: 636982112700207900 Thu, 12 Jul 2018 09:04:39 CST , TxNum: 1415
@ 15:16:52 , blockNum: 3446 , blockSize: 4231850 , gasUsed: 1295931564 ,
gasLimit: 636360059855927700 Thu, 12 Jul 2018 09:08:54 CST , TxNum: 17484
@ 15:19:22 , blockNum: 3447 , blockSize: 6709314 , gasUsed: 2054782362 ,
gasLimit: 635738614486873000 Thu, 12 Jul 2018 09:10:23 CST , TxNum: 27722
@ 15:19:36 , blockNum: 3448 , blockSize: 648961 , gasUsed: 198496038 ,
gasLimit: 635117775999173100 Thu, 12 Jul 2018 09:12:55 CST , TxNum: 2678
@ 15:21:12 , blockNum: 3449 , blockSize: 4474565 , gasUsed: 1370274927 ,
gasLimit: 634497543796339700 Thu, 12 Jul 2018 09:17:24 CST , TxNum: 18487
@ 15:21:19 , blockNum: 3450 , blockSize: 339942 , gasUsed: 103843521 ,
gasLimit: 633877917290733300 Thu, 12 Jul 2018 09:18:11 CST , TxNum: 1401
@ 15:23:13 , blockNum: 3451 , blockSize: 5169745 , gasUsed: 1583224560 ,
gasLimit: 633258895887281200 Thu, 12 Jul 2018 09:23:17 CST , TxNum: 21360
@ 15:26:06 , blockNum: 3452 , blockSize: 7557444 , gasUsed: 2314576467 ,
gasLimit: 632640478999085400 Thu, 12 Jul 2018 09:25:37 CST , TxNum: 31227
@ 15:26:12 , blockNum: 3453 , blockSize: 253556 , gasUsed: 77382324 ,
gasLimit: 632022666034703400 Thu, 12 Jul 2018 09:27:02 CST , TxNum: 1044
@ 15:26:46 , blockNum: 3454 , blockSize: 1708139 , gasUsed: 522923655 ,
gasLimit: 631405456400017300 Thu, 12 Jul 2018 09:31:36 CST , TxNum: 7055
@ 15:28:26 , blockNum: 3455 , blockSize: 4638130 , gasUsed: 1420380723 ,
gasLimit: 630788849509767600 Thu, 12 Jul 2018 09:32:42 CST , TxNum: 19163
@ 15:32:36 , blockNum: 3456 , blockSize: 10354402 , gasUsed: 3171266985 ,
gasLimit: 630172844775998800 Thu, 12 Jul 2018 09:35:44 CST , TxNum: 42785
@ 15:32:36 , blockNum: 3457 , blockSize: 908 , gasUsed: 0 , gasLimit:
629557441611917700 Thu, 12 Jul 2018 09:38:59 CST , TxNum: 0

@ 15:32:37 , blockNum: **3458** , blockSize: 103518 , gasUsed: 31427304 ,
gasLimit: 628942639422843500 Thu, 12 Jul 2018 10:03:16 CST , TxNum: 424 //

3458、3459 这两个块的出块时间特别长

@ 15:32:54 , blockNum: **3459** , blockSize: 889498 , gasUsed: 272172312 ,
gasLimit: 628328437626578300 Thu, 12 Jul 2018 10:20:30 CST , TxNum: 3672

@ 15:32:54 , blockNum: 3460 , blockSize: 908 , gasUsed: 0 , gasLimit:
627714835637107200 Thu, 12 Jul 2018 10:20:45 CST , TxNum: 0

@ 15:32:56 , blockNum: 3461 , blockSize: 103520 , gasUsed: 31427304 ,
gasLimit: 627101832867930400 Thu, 12 Jul 2018 10:22:57 CST , TxNum: 424

@ 15:33:12 , blockNum: 3462 , blockSize: 889495 , gasUsed: 272172312 ,
gasLimit: 626489428734316300 Thu, 12 Jul 2018 10:24:11 CST , TxNum: 3672

@ 15:33:12 , blockNum: 3463 , blockSize: 908 , gasUsed: 0 , gasLimit:

625877622651966600 Thu, 12 Jul 2018 10:24:23 CST , TxNum: 0 // 这里的出空

块也比较奇怪，因为这时的txpool中还有很多交易

@ 15:33:14 , blockNum: 3464 , blockSize: 103519 , gasUsed: 31427304 ,
gasLimit: 625266414036095600 Thu, 12 Jul 2018 10:25:33 CST , TxNum: 424

@ 15:33:31 , blockNum: 3465 , blockSize: 889495 , gasUsed: 272172312 ,

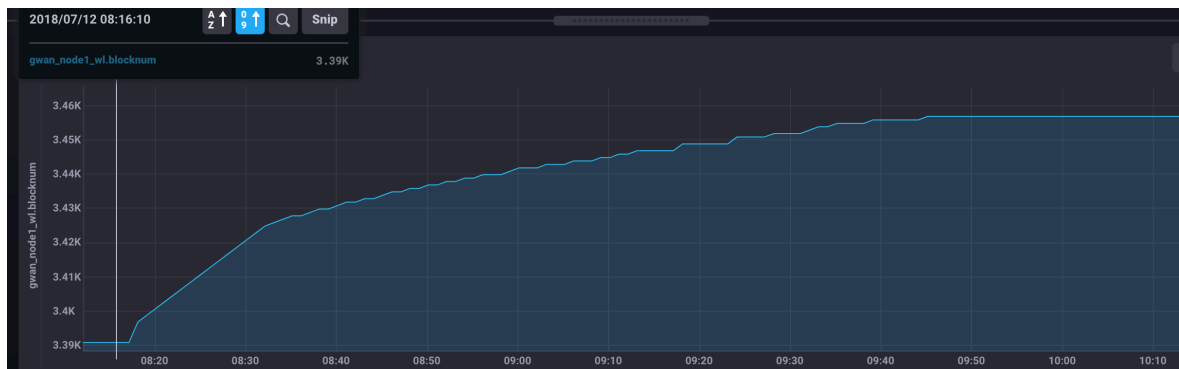
gasLimit: 624655802303684500 Thu, 12 Jul 2018 10:25:44 CST , TxNum: 3672
@ 15:33:31 , blockNum: 3466 , blockSize: 908 , gasUsed: 0 , gasLimit:
624045786872146000 Thu, 12 Jul 2018 10:25:56 CST , TxNum: 0
@ 15:33:31 , blockNum: 3467 , blockSize: 35759 , gasUsed: 10673424 , gasLimit:
623436367158403700 Thu, 12 Jul 2018 10:25:57 CST , TxNum: 144
@ 15:33:31 , blockNum: 3468 , blockSize: 908 , gasUsed: 0 , gasLimit:
622827542581116200 Thu, 12 Jul 2018 10:26:07 CST , TxNum: 0
@ 15:33:33 , blockNum: 3469 , blockSize: 103515 , gasUsed: 31427304 ,
gasLimit: 622219312559064300 Thu, 12 Jul 2018 10:28:07 CST , TxNum: 424
@ 15:33:50 , blockNum: 3470 , blockSize: 889502 , gasUsed: 272172312 ,
gasLimit: 621611676511689300 Thu, 12 Jul 2018 10:28:16 CST , TxNum: 3672
@ 15:33:50 , blockNum: 3471 , blockSize: 908 , gasUsed: 0 , gasLimit:
621004633859244700 Thu, 12 Jul 2018 10:28:25 CST , TxNum: 0
@ 15:33:50 , blockNum: 3472 , blockSize: 1154 , gasUsed: 74121 , gasLimit:
620398184021491500 Thu, 12 Jul 2018 10:28:35 CST , TxNum: 1
@ 15:33:50 , blockNum: 3473 , blockSize: 35517 , gasUsed: 10599303 , gasLimit:
619792326419908100 Thu, 12 Jul 2018 10:28:38 CST , TxNum: 143
@ 15:34:09 , blockNum: 3474 , blockSize: 957500 , gasUsed: 293000313 ,
gasLimit: 619187060476154100 Thu, 12 Jul 2018 10:28:42 CST , TxNum: 3953
@ 15:34:09 , blockNum: 3475 , blockSize: 908 , gasUsed: 0 , gasLimit:
618582385612837100 Thu, 12 Jul 2018 10:28:57 CST , TxNum: 0
@ 15:34:10 , blockNum: 3476 , blockSize: 70368 , gasUsed: 21272727 , gasLimit:
617978301251887100 Thu, 12 Jul 2018 10:29:42 CST , TxNum: 287
@ 15:34:27 , blockNum: 3477 , blockSize: 922639 , gasUsed: 282326889 ,
gasLimit: 617374806817102000 Thu, 12 Jul 2018 10:29:45 CST , TxNum: 3809
@ 15:34:27 , blockNum: 3478 , blockSize: 908 , gasUsed: 0 , gasLimit:
616771901732733200 Thu, 12 Jul 2018 10:29:55 CST , TxNum: 0
@ 15:34:27 , blockNum: 3479 , blockSize: 16642 , gasUsed: 4817865 , gasLimit:
616169585422447400 Thu, 12 Jul 2018 10:30:14 CST , TxNum: 65
@ 15:34:46 , blockNum: 3480 , blockSize: 976370 , gasUsed: 298781751 ,
gasLimit: 615567857311690200 Thu, 12 Jul 2018 10:30:17 CST , TxNum: 4031
@ 15:34:46 , blockNum: 3481 , blockSize: 908 , gasUsed: 0 , gasLimit:
614966716826472000 Thu, 12 Jul 2018 10:30:32 CST , TxNum: 0
@ 15:34:46 , blockNum: 3482 , blockSize: 37452 , gasUsed: 11192271 , gasLimit:
614366163392071200 Thu, 12 Jul 2018 10:31:15 CST , TxNum: 151
@ 15:35:04 , blockNum: 3483 , blockSize: 955560 , gasUsed: 292407345 ,
gasLimit: 613766196435649900 Thu, 12 Jul 2018 10:31:19 CST , TxNum: 3945
@ 15:35:04 , blockNum: 3484 , blockSize: 908 , gasUsed: 0 , gasLimit:
613166815384871700 Thu, 12 Jul 2018 10:31:30 CST , TxNum: 0
@ 15:35:05 , blockNum: 3485 , blockSize: 72305 , gasUsed: 21865695 , gasLimit:
612568019666722300 Thu, 12 Jul 2018 10:31:49 CST , TxNum: 295
@ 15:35:23 , blockNum: 3486 , blockSize: 920716 , gasUsed: 281733921 ,
gasLimit: 611969808710048600 Thu, 12 Jul 2018 10:31:55 CST , TxNum: 3801
@ 15:35:23 , blockNum: 3487 , blockSize: 908 , gasUsed: 0 , gasLimit:
611372181944142800 Thu, 12 Jul 2018 10:32:10 CST , TxNum: 0
@ 15:37:08 , blockNum: 3488 , blockSize: 4771962 , gasUsed: 1461369636 ,
gasLimit: 610775138797713000 Thu, 12 Jul 2018 10:33:13 CST , TxNum: 19716
@ 15:37:08 , blockNum: 3489 , blockSize: 908 , gasUsed: 0 , gasLimit:
610178678703371500 Thu, 12 Jul 2018 10:33:35 CST , TxNum: 0

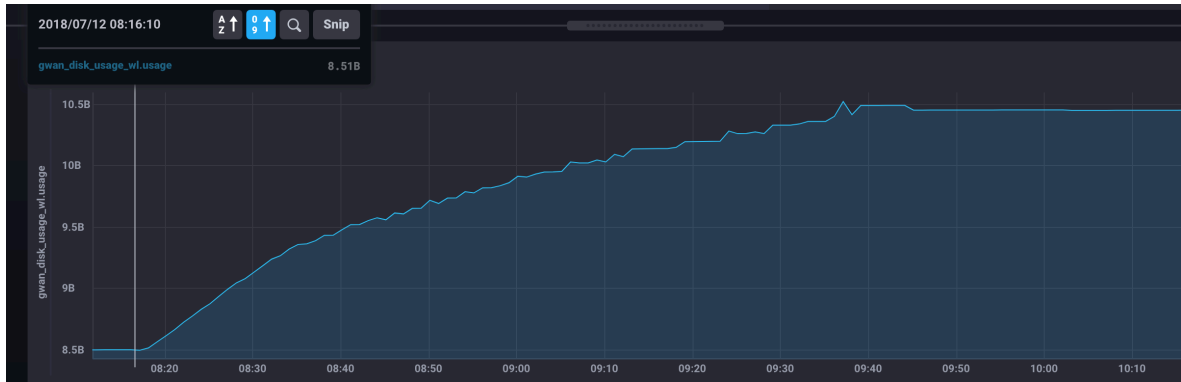
五) 测试观察到的数据曲线图:

为了说明问题, 我把图分为两个时间段的。第一个时段是正常出块的, 第二个时段是出块有异常的。

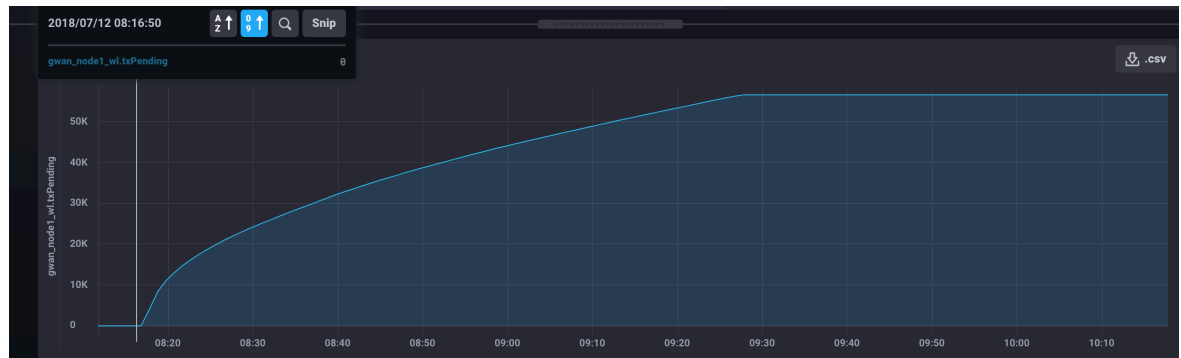
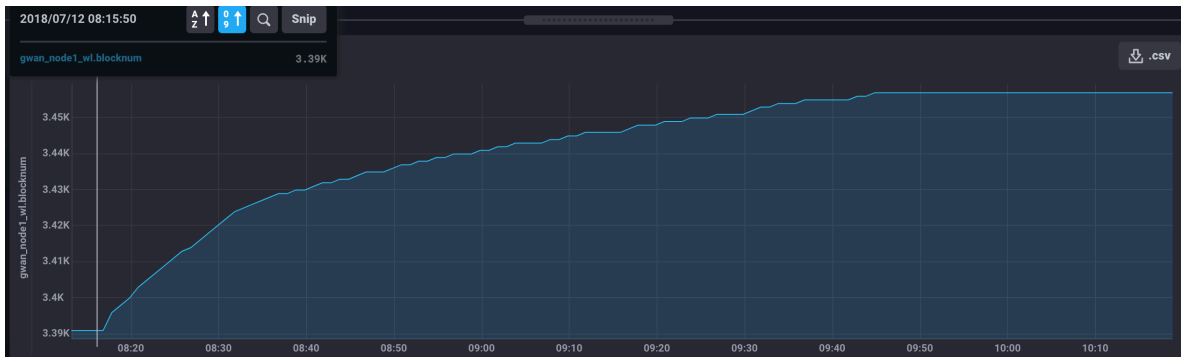
1) 第一个时段 8:17 ~ 09:50

节点1:

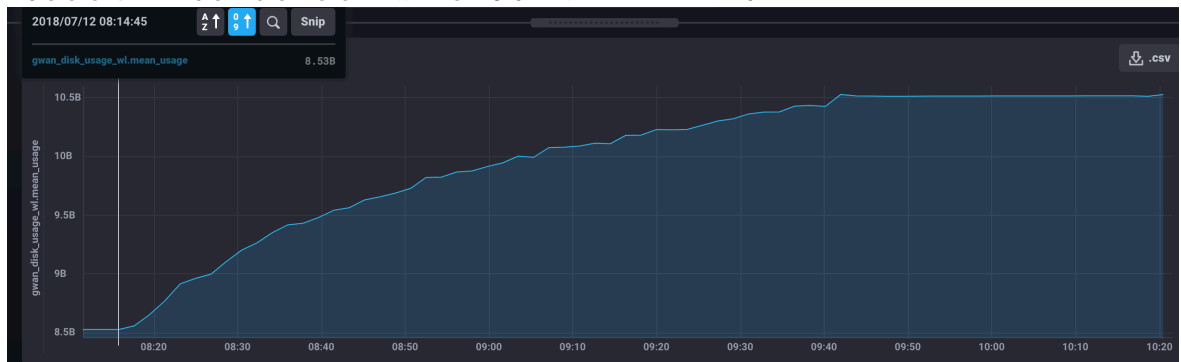




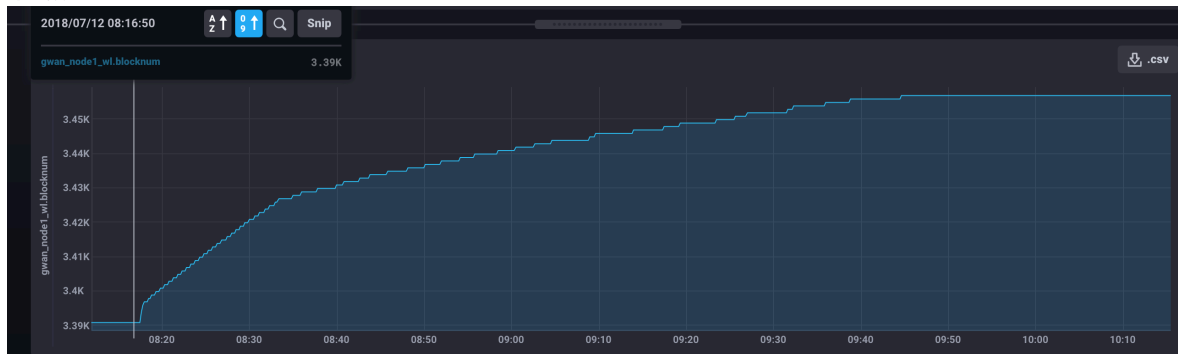
节点2:



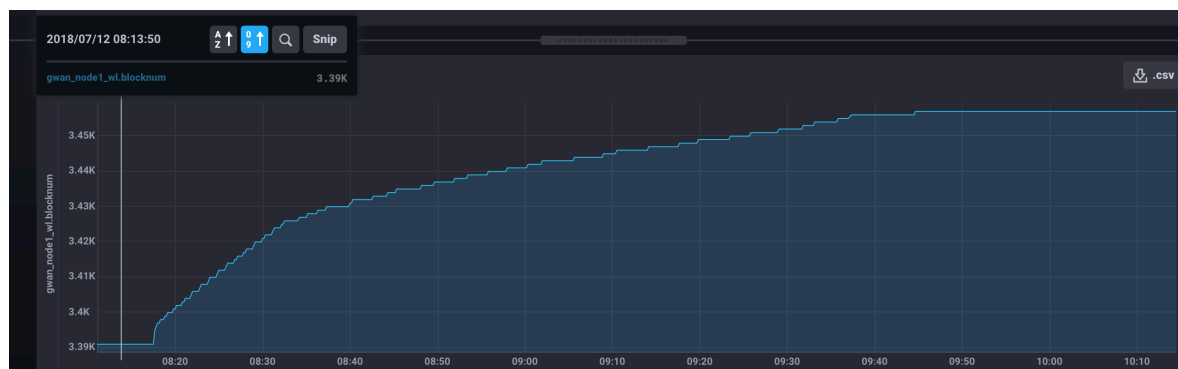
(下图为磁盘占用曲线图--纵坐标单位B是 GB的意思)：

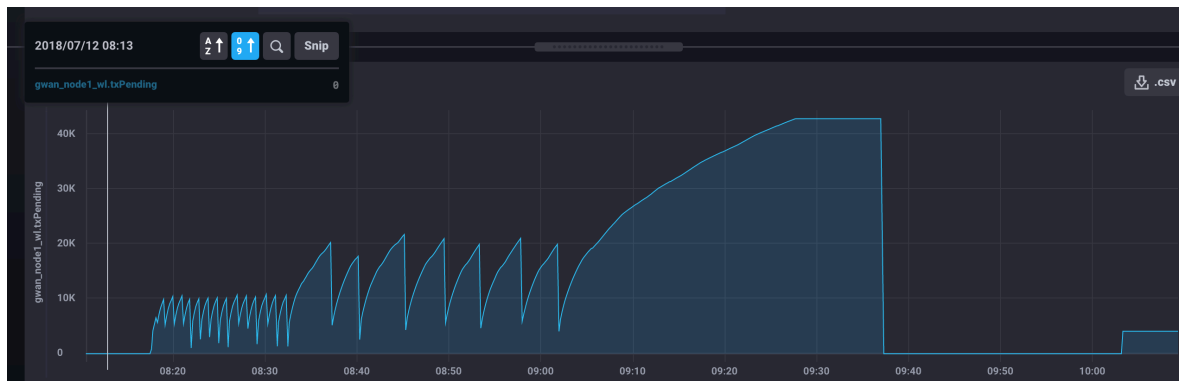


节点3:



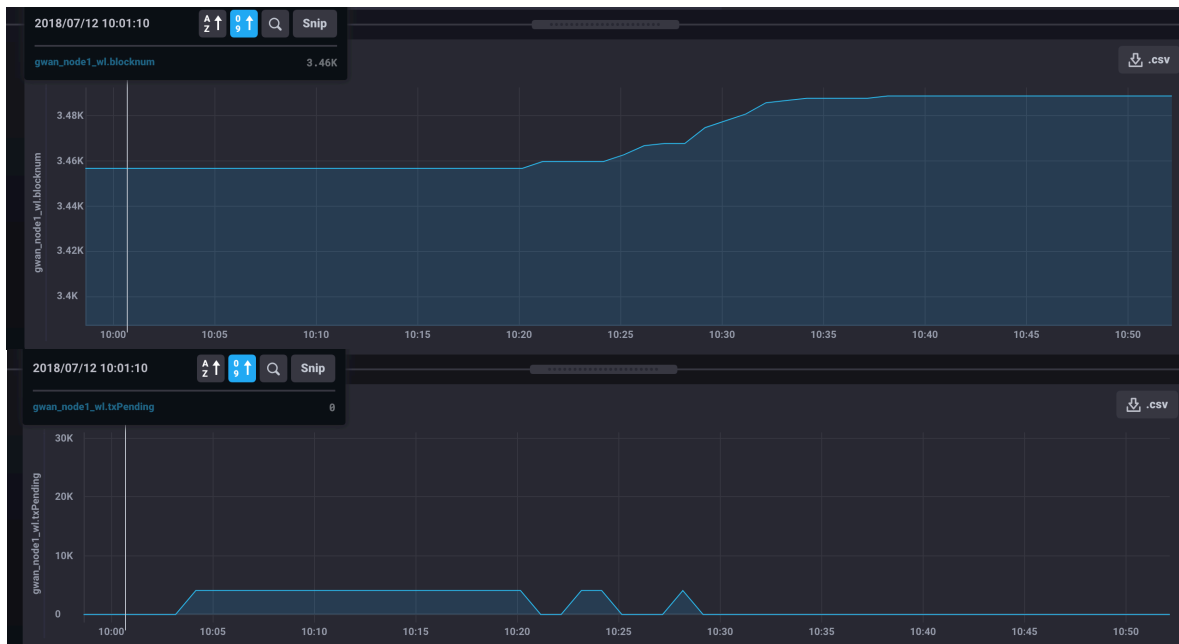
节点4:



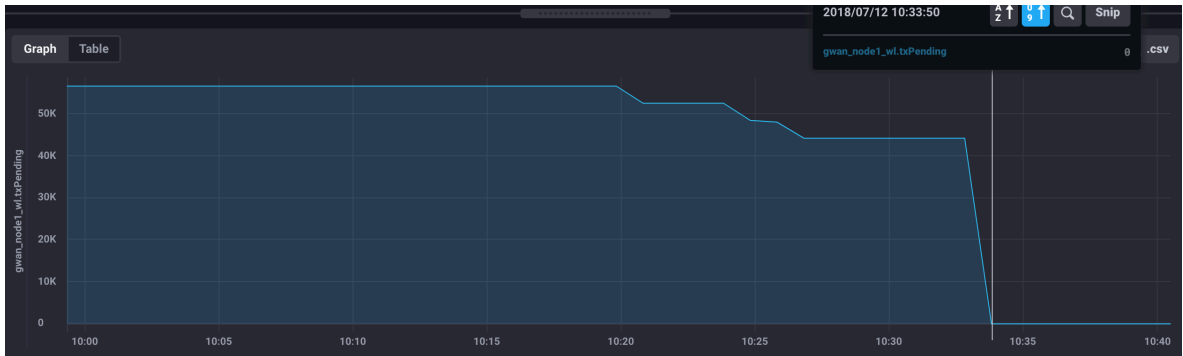
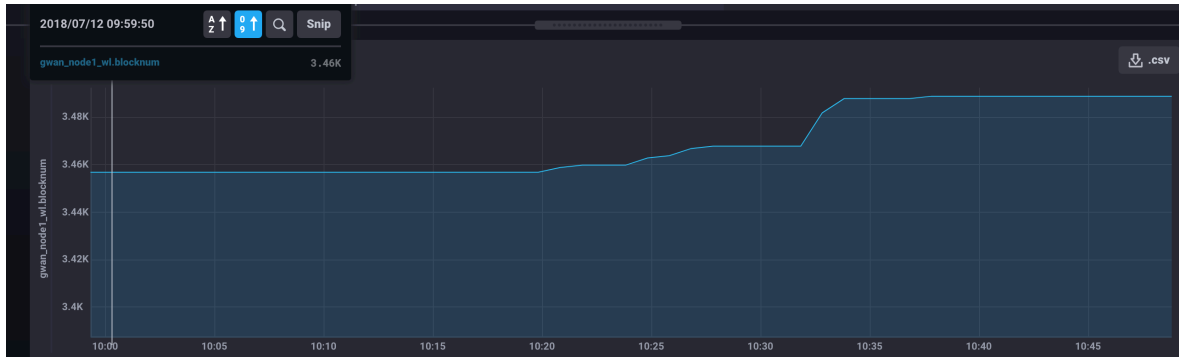


2) 第二个时段 09: 50 ~ 10:40 （图中）

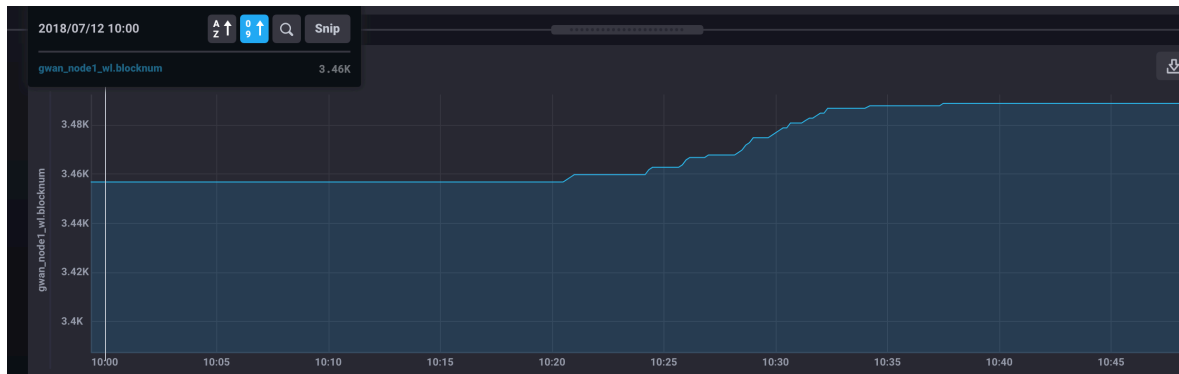
节点1:



节点2:



节点3:



节点4:

