整理了下各个模块的时间，分析得到的结果是只要硬件采集图像的帧率不低，其他的模块耗时都很小（静态目标的场景下）。

如果一定要找到优化的地方：

-1-          传感器和组件的不稳定性,受主机配置严重影响,建议全部更换为i7+8核台式主机

-2-          ICP 执行refine calibration进行多视角融合的算法仍有优化空间

下面不多说，直接贴数据：

Client 1: 6-15fps，配置： Rock Canyon i7 5th Gen Intel NUC

Client 2:30fps，配置： Rock Canyon i7 5th Gen Intel NUC

Server:5-15fps

让我们来看下log的时间统计：

1. 服务器端绘制界面                28ms

2019-12-20 10:41:48,689 [ThreadId:1] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[.ctor](72) [INFO ][ExecTime:113ms] loginfo - Start to draw the MainWindowForm!

2019-12-20 10:41:48,717 [ThreadId:1] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\Program.cs}[Main](32) [INFO ][ExecTime:141ms] loginfo - MainWindowForm is drawing end!

1. 接收来自2台客户端同一世界不同视角下的frames
   1. ZSTD压缩耗时：2ms
   2. 总耗时：104ms(其中两台客户端此时一部稳定在30 fps,另一部不稳定表现在6-15 fps, 服务器端6-15 fps)

2019-12-20 11:16:00,312 [ThreadId:14] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\KinectServer.cs}[ReceivingWorker](439) [INFO ][ExecTime:2051736ms] loginfo - Start to receive last frame!

2019-12-20 11:16:00,413 [ThreadId:14] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\ZSTDDecompressor.cs}[Decompress](25) [INFO ][ExecTime:2051837ms] loginfo - Start ZSTD decompress!

2019-12-20 11:16:00,415 [ThreadId:14] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\ZSTDDecompressor.cs}[Decompress](38) [INFO ][ExecTime:2051839ms] loginfo - ZSTD decompress End!

2019-12-20 11:16:00,416 [ThreadId:14] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\KinectServer.cs}[ReceivingWorker](442) [INFO ][ExecTime:2051840ms] loginfo - Receive last frame end!

1. 执行ICP时处理来自1.得到的last frame（Tips:     此时为独立新开线程，线程生命周期与2.一致）,耗时：1925ms
   1. 获得ICP的对象（客户端们接收到refine calib指令时的当前帧）耗时：292ms
   2. 初始化容器姿态耗时：<<1ms, 可忽略不计
   3. 使用ICP优化传感器姿态耗时：1629ms

上述步骤总耗时：9917512-9915591=1921ms

1. 将优化后的姿态数据传回各客户端：4ms

2019-12-20 13:27:04,167 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[refineWorker\_DoWork](309) [INFO ][ExecTime:9915591ms] loginfo - Start ICP calibrate for two or more point clouds!

2019-12-20 13:27:04,459 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[refineWorker\_DoWork](316) [INFO ][ExecTime:9915883ms] loginfo - End download the latest frame from each client!

2019-12-20 13:27:04,459 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[refineWorker\_DoWork](337) [INFO ][ExecTime:9915883ms] loginfo - End initialize the containers for the poses!

2019-12-20 13:27:06,088 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[refineWorker\_DoWork](368) [INFO ][ExecTime:9917512ms] loginfo - End refine the sensor poses by using ICP!

2019-12-20 13:27:06,105 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[refineWorker\_DoWork](404) [INFO ][ExecTime:9917529ms] loginfo - End update calibration data, then will send to the client machines!

2019-12-20 13:27:06,109 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[refineWorker\_DoWork](407) [INFO ][ExecTime:9917533ms] loginfo - Send data to client is down, End ICP calibrate for two or more point clouds

1. 保存到ply点云文件，耗时：1496ms

2019-12-20 13:31:23,551 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[savingWorker\_DoWork](194) [INFO ][ExecTime:10174974ms] loginfo - Start saving ply!

2019-12-20 13:31:25,046 [ThreadId:10] {C:\projectsIntel\IntelProjects\ChenyW\Source\Repos\LiveScan3D\LiveScanServer\MainWindowForm.cs}[savingWorker\_DoWork](244) [INFO ][ExecTime:10176470ms] loginfo - Ply is saved end!

1. 新发现的问题：多传感器图像融合之后，recording会卡死，只能采集到当前帧，接下来会debug找到这个问题的原因。