

[SCA] 网络诊断库介绍

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1. 背景

由于移动端应用的功能越来越依赖网络状况，为了能随时反馈移动端网络状况，并且在用户环境出现网络问题时及时给出解决方案，需要加入移动端的网络诊断功能。

2. 功能

功能点	功能描述
网络诊断操作页	操作页可以选择诊断的具体项目，填写需要诊断的Host
9项网络诊断	操作页，或者后台通过Interceptor可以开启诊断，诊断内容参考设计文档
诊断数据记录和上传	诊断完成自动上传数据到前端接口，操作页可以查看本地上传失败的记录

设计文档：<https://confluence.shopee.io/pages/viewpage.action?pageId=368971423>

3. 使用说明

3.1 依赖引入

```
implementation "com.shopee.sc:net-diagnosis:lastestVersion"
```

目前的最新版本为1.0.6

3.2 初始化

入口类为NetDiagnosis，是个单例。

```
NetDiagnosis.getInstance()  
    .init(context, info, multipleProcess)  
    .setHost(baseUrl);
```

init方法需要传入context，配置信息DiagnosisConfigInfo（不能为空），以及是否支持多进程。配置信息包含如下信息：

```

private String mProject = ""; // WMS SPX...

private String mEnv = "test"; // test uat live

private String mUid = ""; // id

private String mCountry = ""; //

private String mWareHouse = ""; //

private boolean mBackEnable = true; //

//
private long mBackDiagnosisTimeInterval = DIALOG_TIME_INTERVAL;

// 58
private long mBackTimeoutInterval = HTTP_TIMEOUT;

// 15
private int mBackUploadTimeInterval = UPLOAD_TIME_INTERVAL;

// TimeUnit
private TimeUnit mBackUploadTimeUnit = TimeUnit.MINUTES;

```

实际使用，使用Build新建实例：

```

DiagnosisConfigInfo info = new DiagnosisConfigInfo.Builder()
    .setProject(PROJECT)
    .setEnv(getEnvString(env))
    .setUid(UUID.randomUUID().toString())
    .setCountry(Locale.getDefault().getCountry())
    ...
    .build();

```

通过NetDiagnosis的getConfigInfo()可以随时获取已设置的DiagnosisConfigInfo实例，来更新配置。

3.3 网络诊断操作页

通过调用NetDiagnosis的goToSelect()可以进入操作页面。

NetDiagnosis的start方法可以开启全选项诊断，start方法区分手动触发和后台自动触发，后台自动触发需要记录触发超时的url请求，会触发前端的预警功能。

3.4 后台触发控制

通常情况下，若项目使用OkHttp，则可以通过NetDiagnosis的getTimeOutInterceptor()方法获取拦截器，加入到OkHttp中。

也可以调用NetDiagnosis的dealWithNetTimeOut方法，传入请求耗时和请求网址，框架自行判断是否需要触发后台诊断。

3.5 支持多进程

支持将网络诊断运行在子进程中。

在3.2的初始化之前，需要先初始化WorkManager，使其支持多进程。调用的是NetDiagnosis的initWorkManager方法，传入context，进程名，和是否为Debug。然后将3.2的初始化移到子进程中运行。

在Manifest中指定相关组件的进程名：

```

<provider
    android:name="androidx.work.impl.WorkManagerInitializer"
    android:authorities="${applicationId}.workmanager-init"
    tools:node="remove" />

<service
    android:name="androidx.work.multiprocess.RemoteWorkManagerService"
    android:process=":${NET_MONITOR_PROCESS}"
    tools:replace="android:process" />

<service
    android:name="androidx.work.impl.background.systemjob.SystemJobService"
    android:process=":${NET_MONITOR_PROCESS}"
    tools:replace="android:process" />

<activity
    android:name="com.shopee.sc.netdiagnosis.ui.DiagnosisSelectActivity"
    android:process=":${NET_MONITOR_PROCESS}"
    tools:replace="android:process" />

<activity
    android:name="com.shopee.sc.netdiagnosis.ui.DiagnosisDialogActivity"
    android:process=":${NET_MONITOR_PROCESS}"
    tools:replace="android:process" />

<activity
    android:name="com.shopee.sc.netdiagnosis.ui.DiagnosisResultActivity"
    android:process=":${NET_MONITOR_PROCESS}"
    tools:replace="android:process" />

<activity
    android:name="com.shopee.sc.netdiagnosis.ui.DiagnosisHistoryActivity"
    android:process=":${NET_MONITOR_PROCESS}"
    tools:replace="android:process" />

```

后台控制需要注意，子进程无法通过传递拦截器来实现，必须将请求耗时和请求url传到子进程，在子进程调用dealWithNetTimeOut方法自行实现。

4. 上传数据说明

使用前端接口上报，数据查询可以在Kibana：

[http://10.143.138.93:5601/app/kibana#/discover?_g=\(filters:!\(\),refreshInterval:\(pause:!t,value:0\),time:\(from:now-30d,to:now\)\)&_a=\(columns:!\(d.delay\),filters:!\(\('\\$state':\(store:appState\),meta:\(alias:!n,disabled:!f,index:'980f4d70-ea13-11eb-b049-3b6436676388',key:bt,negate:!f,params:\(query:WMS\),type:phrase\),query:\(match_phrase:\(bt:WMS\)\)\),\('\\$state':\(store:appState\),meta:\(alias:!n,disabled:!f,index:'980f4d70-ea13-11eb-b049-3b6436676388',key:pf,negate:!f,params:\(query:android\),type:phrase\),query:\(match_phrase:\(pf:android\)\)\)\),index:'980f4d70-ea13-11eb-b049-3b6436676388',interval:auto,query:\(language:kuery,query:'\)\),sort:!\(\(\)\)](http://10.143.138.93:5601/app/kibana#/discover?_g=(filters:!(),refreshInterval:(pause:!t,value:0),time:(from:now-30d,to:now))&_a=(columns:!(d.delay),filters:!(('$state':(store:appState),meta:(alias:!n,disabled:!f,index:'980f4d70-ea13-11eb-b049-3b6436676388',key:bt,negate:!f,params:(query:WMS),type:phrase),query:(match_phrase:(bt:WMS))),('$state':(store:appState),meta:(alias:!n,disabled:!f,index:'980f4d70-ea13-11eb-b049-3b6436676388',key:pf,negate:!f,params:(query:android),type:phrase),query:(match_phrase:(pf:android)))),index:'980f4d70-ea13-11eb-b049-3b6436676388',interval:auto,query:(language:kuery,query:')),sort:!(()))

数据选择data-code_log-*, 过滤条件为pf=android 且 bt=WMS。

诊断结果数据示例：

```

{
  // MTU
  "MtuScan": {
    "totalTime": 2200,
    "mtu": 604
  },
  //
  "Device": {
    "mCpuName": "ARMv7 Processor rev 4 (v7l)",
    "mAvailableMem": "1.94 GB",
    "mTotalRootStorage": "2.60 GB",
    "mFreeExternalStorage": "24.14 GB",
    "mBatteryLevel": 90,
    "mTotalMem": "3.04 GB",
    "mFreeRootStorage": "761 MB",
    "mTotalExternalStorage": "26.42 GB"
  },
  // Ping
  "Ping": {
    "mRttAvg": 34.543,
    "mRttMin": 11.772,
    "mRttMax": 147.951,
    "mIp": "143.92.81.64",
    "mAddress": "http://wms.ssc.shopee.com.my",
    "mReceived": 10,
    "mLossRate": 9,

```

```
"mError":0,
"mRttMDev":41.186,
"mTransmitted":11,
"mAllTime":10020,
"mTtl":55
},
// Host
"Host":{
  "mParam":[
    "127.0.0.1 localhost",
    "::1 ip6-localhost"
  ],
  "mTotalTime":13
},
// Http
"Http":{
  "mHeaderServer":"SGW",
  "mIsJump":true,
  "mAddress":"http://wms.ssc.shopee.com.my",
  "mSize":7.287109375,
  "mTotalTime":498,
  "mHeader":[
    {
      "X-Android-Selected-Protocol":"http/1.1",
      "null":"HTTP/1.1 307 Temporary Redirect",
      "Server":"SGW",
      "Connection":"keep-alive",
      "X-Android-Response-Source":"NETWORK 307",
      "X-Android-Sent-Millis":"1637742956071",
      "Content-Length":"164",
      "X-Android-Received-Millis":"1637742956086",
      "Date":"Wed, 24 Nov 2021 08:35:56 GMT",
      "Content-Type":"text/html",
      "Location":"https://wms.ssc.shopee.com.my/"
    },
    {
      "Transfer-Encoding":"chunked",
      "Server":"SGW",
      "vary":"Accept-Encoding",
      "Connection":"keep-alive",
      "X-Android-Received-Millis":"1637742956210",
      "Date":"Wed, 24 Nov 2021 08:35:56 GMT",
      "last-modified":"Wed, 17 Nov 2021 09:46:13 GMT",
      "X-Android-Selected-Protocol":"http/1.1",
      "null":"HTTP/1.1 200 OK",
      "X-Android-Response-Source":"NETWORK 200",
      "etag":"W/\"6194cf65-1d26\"",
      "X-Android-Sent-Millis":"1637742956176",
      "Content-Type":"text/html"
    }
  ],
  "mSpeed":39,
  "mResponseCode":200,
  "mTime":497
},
// Trace Route
"TraceRoute":{
  "mTotalTime":11976,
  "mList":[
    {
      "mIp":"172.16.110.254",
      "mTime":"*",
      "mHop":1
    },
    {
      "mIp":"172.16.210.3",
      "mTime":"*",
      "mHop":2
    },
    {
      "mIp":"1.9.55.254",
      "mTime":"*",
      "mHop":3
    },
    {
      "mIp":"10.55.49.253",
      "mTime":"*",
      "mHop":4
    },
    {
      "mIp":"*",
      "mTime":"*",
      "mHop":5
    }
  ],
}
```

```
{
  "mIp": "10.55.209.34",
  "mTime": "*",
  "mHop": 6
},
{
  "mIp": "27.111.229.145",
  "mTime": "*",
  "mHop": 7
},
{
  "mIp": "143.92.108.196",
  "mTime": "*",
  "mHop": 8
},
{
  "mIp": "143.92.108.154",
  "mTime": "*",
  "mHop": 9
},
{
  "mIp": "143.92.108.155",
  "mTime": "*",
  "mHop": 10
},
{
  "mIp": "10.100.168.63",
  "mTime": "*",
  "mHop": 11
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 12
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 13
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 14
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 15
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 16
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 17
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 18
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 19
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 20
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 21
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 22
}
```

```
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 23
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 24
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 25
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 26
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 27
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 28
},
{
  "mIp": "*",
  "mTime": "*",
  "mHop": 29
}
},
//
"PortScan": {
  "mPortNetBeans": [
    {
      "mIsConnected": true,
      "mDelay": 193,
      "mPort": 80
    },
    {
      "mIsConnected": true,
      "mDelay": 25,
      "mPort": 443
    }
  ],
  "mAddress": "http://wms.ssc.shopee.com.my",
  "mTotalTime": 30367
},
//
"Net": {
  "mOutputIpCountry": "*",
  "mMobileDbm": 0,
  "mWifiRssi": -87,
  "mDnsServer": "10.36.6.91 / 10.36.6.92",
  "mOutputDnsCountry": "*",
  "mMobileAsu": 0,
  "mMobileLevel": 0,
  "mOutputIp": "115.134.221.169",
  "mIsWifi": true,
  "mNetworkType": "Other",
  "mNetworkTypeValue": 0,
  "mClientIP": "10.36.26.54",
  "mOutputDns": "172.69.19.71",
  "mWifiName": "<unknown ssid>"
},
// DNS
"NSLookup": {
  "mDnsServerIPs": [
    "10.36.6.91",
    "10.36.6.92"
  ],
  "mTotalTime": 168,
  "mDnsMethodBeans": [
    {
      "mDnsIps": [
        "143.92.81.64"
      ]
    }
  ]
},
```

```
"mDnsMethod": "Default Strategy",
"mAddress": "wms.ssc.shopee.com.my",
"mTime": 0
},
{
  "mDnsIps": [
    "143.92.81.64"
  ],
  "mDnsMethod": "DNS 10.36.6.91",
  "mAddress": "wms.ssc.shopee.com.my",
  "mTime": 160
},
{
  "mDnsIps": [
    "143.92.81.64"
  ],
  "mDnsMethod": "DNS 10.36.6.92",
  "mAddress": "wms.ssc.shopee.com.my",
  "mTime": 1
}
],
},
//
"Base": {
  "timeoutUrl": "https://wms.ssc.shopee.com.my/api/v2/pda/config/pdanotification/get_notification_sound_list",
  "modifyTimeString": "2021-11-24 16:36:26",
  "modifyTime": 1637742986092,
  "isManual": 0,
  "host": "http://wms.ssc.shopee.com.my",
  "wareHouse": "MYL"
}
}
```