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iSolarCloud API Solution Technical Description

1.Preface

This document describes the API solution of iSolarCloud, with the purpose of helping to provide guidance on open API implementation, making sure of the proper configuration between the 3rd party platform and iSolarCloud platform through open API (Application Programming Interfaces).

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2. API Introduction

API allows information integration between two platforms in real time. An open API is a publicly available application programming interface that provides developers with programmatic access to a proprietary software application or web service.

API are sets of requirements that govern how one application can communicate and interact with another and the main purpose is to provide data interaction channels between different software and platforms.

The main functions of API include: RPC(Remote Procedure Call) and file transfer, etc.
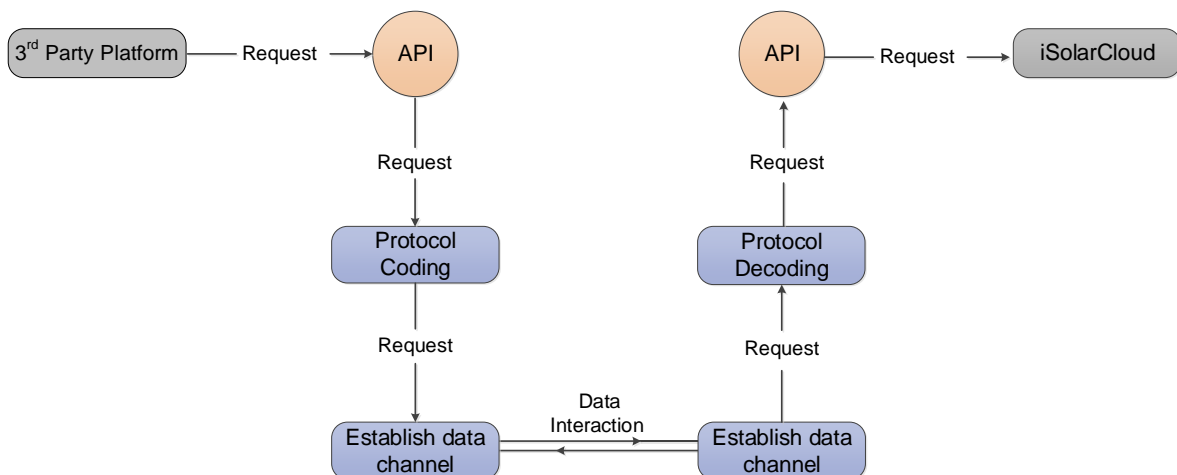
The main steps of data interaction :

Step 1: 3rd party platform sends a data request instructions ;

Step 2: Request instructions are coded and placed in HTTP package protocol through API interface ;

Step 3: After the HTTP package protocol arrives to the destination address, it will establishes a data transmission channel and executes the protocol decoding. The decoded request instruction is transmitted to iSolarCloud. iSolarCloud returns the response instruction and completes all the the process of data call, after executing the request instruction.

API interface can be used to request and interact data between different software and platforms. In order to ensure that the third-party platform is authorized, iSolarCloud is required to provide authorized accounts and passwords when interacting with the third-party platform.

3.iSolarCloud API Solution

3.1. System Architecture

For residential scenarios, the wireless communication module of Sungrow Power Supply Company Limited collects the data of inverters and uploads the data to iSolarCloud. The Third-party platform can realize the data interaction between the third-party cloud platform and iSolarCloud by calling the iSolarCloud API.
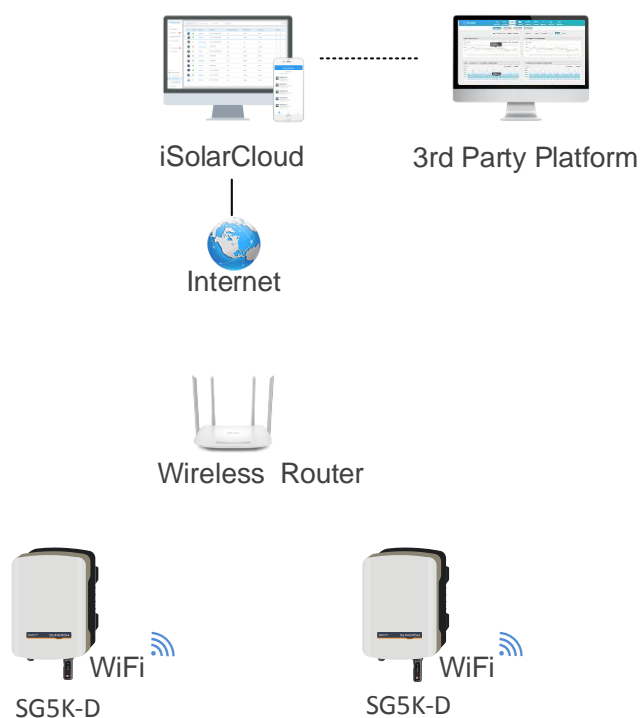
3.2. API Call Process

1） Communication protocol and call rules

Service address：http://t.isolarcloud.com/sungws/AppService (Test address)

Communication protocol：all interfaces of API of iSolarCloud Intelligent Energy Management Platform communicate through http.

Request method：DoPost request for HTTP&JSON

Character encoding：All use UTF-8 encoding

2） Authorization information (example)

Project	Value(example)
Authorized accounts	Xsolar
Initial password	12345678
Appkey	B6E87*******************F67C2
Call address	http://t.isolarcloud.com/sungws/AppService (Test address)

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3） Common parameters

Common parameters are parameters used to identify users and interface authentication. Each request needs to carry these parameters in order to initiate the request normally.

Name	Type	Description	Y/N
appkey	String	Authorization code, appkey assigned to client system by interface	Yes
service	String	Service name for each interface service entry	Yes
lang	String	Language(Chinese：_zh_CN，English：_en_US)	No
token	String	Login token	Yes

4） Interface services(For an example of historical power generation, refer to the iSolarCloud API Specification Document for detailed request and response parameters.)

Request character：

Name	Type	Description	Y/N
service	String	Service name: getHistoryInfo	Yes
user_id	String	User id	Yes
ps_id	String	Power plant id	No
year	String	Year	Yes
month	String	Month	Yes
day	String	Day	Yes
date_type	String	0:Total generation capacity，1:年，:2月，3:日	Yes

Response character：

Name	Type	Description	Y/N
time_flag	String	Time mark 0: Total generation capacity，1 :Year，2：Month，3：Day	Yes
plan_energy	List	Planned generation capacity	Yes
plan_energy_unit	String	Planned generation capacity unit	Yes
actual_energy	List	Actual generation capacity	Yes
actual_energy_unit	String	Actual generation capacity unit	Yes

5） Call examples

```
1 )    {
2 )        CloseableHttpClienthttpclient = HttpClients.createDefault();
3 )        String url = "https://t.isolarcloud.com/sungws/AppService";
4 )        HttpPosthttppost = new HttpPost(url);
5 )        try
6 )        {
7 )            //  AddHeader
8 )            httppost.addHeader("User-Agent", "sungrow-agent");
9 )            HashMap<String, Object>req = new HashMap<String, Object>();
10 )           // Common parameters
11 )           req.put("appkey", "xxxx");
12 )           req.put("req_time", "20141113115100");
13 )           // Traffic parameters
14 )           req.put("service", "xxxxx");
15 )           req.put("user_account", "sssss");
16 )           String jsonStr = com.alibaba.fastjson.JSON.toJSONString(req);
17 )           System.out.println("send json-<" + jsonStr.toString());
18 )           StringEntitystrEntity = new StringEntity(jsonStr);
19 )           strEntity.setContentType("application/json");
20 )           httppost.setEntity(strEntity);
21 )           CloseableHttpResponse response = httpclient.execute(httppost);
22 )           try
23 )           {
24 )               HttpEntity entity = response.getEntity();
25 )               InputStreaminputStream = entity.getContent();
26 )               InputStreamReaderinputStreamReader = new InputStreamReader(
27 )                   inputStream, "UTF-8");
28 )               BufferedReader reader = new BufferedReader(inputStreamReader);
29 )               StringBuilder result = new StringBuilder();
30 )               String s;
31 )               while (((s = reader.readLine()) != null)
32 )               {
33 )                   result.append(s);
34 )               }
35 )               reader.close();
36 )               System.out.println("receive json-<" + result.toString());
37 )           }
```

4.Summary

The Third-party cloud platform can interact data with iSolarCloud through API specification, it can monitor and manage the group power station uniformly.