

# CloudSense

Version 2.0

Technical Document

## cloudSense Native API

**AJAX/HTTPRequest API Reference**

**Version 1.0**

**\*This API is for cloudSense (Server Site) ONLY\***

<https://cs.listenfield.com>

ListenField Co., Ltd.

Email: [support@listenfield.com](mailto:support@listenfield.com)

Website: <http://www.listenfield.com>

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# 1 Introduction

This document outlines the AJAX Application Programming Interface (API) for cloudSense. The API is typically called by AJAX clients and the results are returned to the clients as XML.

This API provides a very powerful means of accessing information from the cloudSense and making it available to other applications.

**\*\* This API is work only on cloudSense (Server site).  
For SOS API for SOS Station \*\***

## 2 How to use

Using the AJAX API, you can simply call methods by their name and pass parameters. The results are returned in XML that can be parsed via client scripting and applied to the body of the web page.

Basically, there are two main steps for calling API functions.

1. Generate a token key for a specific host and user. The key can be created from cloudSense website and it cannot be used in different host name or IP Address rather than the one specified in generating process. (do only one time)
2. Call function using AJAXRequest. API functions and their parameters are listed in next section. URL: <http://webiste/WebAPIRequest.jsp?Key=xxxx>

PS1: SensorName = Observable Property

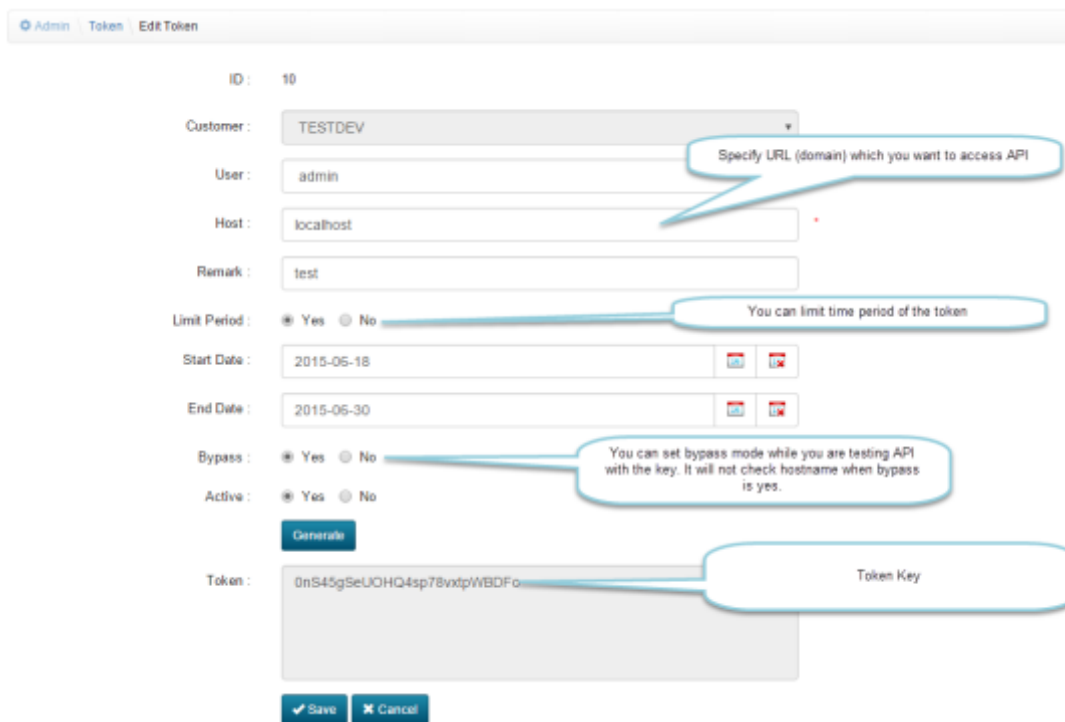
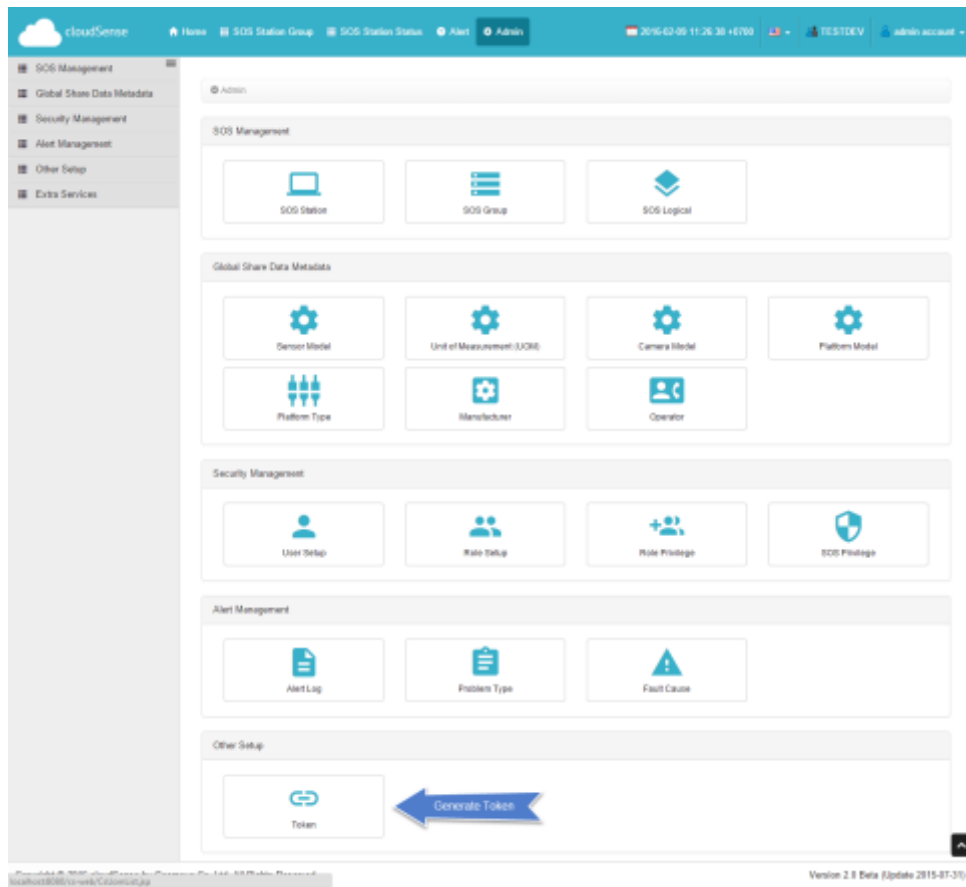
PS2: if you call this API from software, please make sure to add request header “referer” with hostname or IP address of the machine and that hostname must match with one registered in

PS3: To test POST method, you can use add-on on firefox:

<https://addons.mozilla.org/en-us/firefox/addon/http-resource-test/>

## 2.1 Generate Token Key

It is under menu Admin -> Token.



## 2.2 How to test APIs

To make it sure that all functions are working and easy testing for users who want to use the APIs, we provided a page for testing API function. You can simply input your key. Then, you can inquiry any function of API. Request and parameters are provided for test command and its parameters. Once you click “EXECUTE” button, the result of requested command will be shown in Response Message section as shown in the following figure. Sample request message will as well be shown. The link is <http://website/CSWebSOSAPITest.jsp>

- Input Token key
- Select Command from the list
- Input parameters of function in parameter box (if necessary)
- Click “EXECUTE”

The screenshot displays the 'Web SOS API Test' interface. The 'Request Command' section includes a 'Token Key' field with the value 'RdVFMg6hevd3X0e8pLIgM4pys', a 'Command List' dropdown set to 'GET-SOS-LIST', and a 'Parameters' field with 'OutputType=json'. An 'EXECUTE' button is present. A red error message states: '\* Token Key is needed to be generate via Admin/Token menu'. A remark at the bottom right says: 'Remark: OutputType= xml, json, csv'. The 'Response Result' section shows a 'Sample Request' URL: 'http://<URL>/WebAPIRequest.jsp?Key=RdVFMg6hevd3X0e8pLIgM4pys&Cmd=GET-SOS-LIST&OutputType=json'. The 'Response Message' is a JSON object: 

```
{
  "Active": "Y",
  "Description": "TESTLSOS1",
  "CustomerCode": "TESTDEV",
  "Latitude": 19.973349,
  "ID": 0,
  "Longitude": 100.546875,
  "NAME": "TESTLSOS",
  "Location": "",
  "Altitude": null
}
```

The interface also includes a 'Show Parameter Template' checkbox and a 'Remark: OutputType= xml, json, csv' note.

Figure 1: Web API Test

## 2.3 An example for Web Client (jQuery)

The example below shows the code that will call API function from web client in Ajax mode. It returns SOS name as an output.

```
<!doctype html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Test API</title>
</head>
<body>

  Output Message: <input type="text" id="txtOutput" name="txtOutput" value="">
  <br>
  <button type="submit" id="requestButton" name="requestButton"> EXECUTE</button>

  <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.3/jquery.min.js"></script>

  <script>
    $("#requestButton").click(function () {
      $.ajax({
        url: "http://localhost:8080/sos-station/WebAPIRequest.jsp?Key=xxxx&Cmd=GET-SOS-DESCRIBE",
        type: "GET",
        dataType: "html",
        success: function (data) {
          var xmlDoc = $.parseXML(data);
          var SOSName = $(xmlDoc).find("ELEMENT").attr('NAME');
          $('#txtOutput').val(SOSName);
        },
        error: function (xhr, status) {
          alert("Sorry, there was a problem!");
        }
      });
      return false;
    });
  </script>

</body>
</html>
```



## 2.4 An example for Java

The example below shows the code that will call API function from Java. It return SOS name as an output.

```
import javax.xml.parsers.DocumentBuilderFactory;
import javax.xml.xpath.XPath;
import javax.xml.xpath.XPathConstants;
import javax.xml.xpath.XPathExpression;
import javax.xml.xpath.XPathFactory;
import org.apache.http.HttpEntity;
import org.apache.http.HttpHost;
import org.apache.http.HttpRequest;
import org.apache.http.HttpResponse;
import org.apache.http.HttpVersion;
import org.apache.http.impl.client.DefaultHttpClient;
import org.apache.http.message.BasicHttpRequest;
import org.w3c.dom.Document;
import org.w3c.dom.NodeList;
import org.xml.sax.InputSource;

public class test {

public static void main(String[] args) {
    final HttpHost target = new HttpHost("localhost/sos-station ",8080,"http");

    try {
        DefaultHttpClient dhc = new DefaultHttpClient();
        HttpRequest req;
        HttpResponse rsp;

        String cmd = "/WebAPIRequest.jsp?Key=XXXXXX&Cmd=GET-SOS-LIST";
        req = new BasicHttpRequest("POST", cmd, HttpVersion.HTTP_1_1);
        rsp = dhc.execute(target, req);
        HttpEntity entity = null;
        System.out.println("status: " + rsp.getStatusLine().toString());

        entity = rsp.getEntity();
        InputSource xmlInputSource =new InputSource(entity.getContent());
        DocumentBuilderFactory dbf = DocumentBuilderFactory.newInstance();
        Document doc = dbf.newDocumentBuilder().parse(xmlInputSource);

        XPathFactory factory = XPathFactory.newInstance();
        XPath xpath = (XPath) factory.newXPath();
        XPathExpression expr = xpath.compile("//ELEMENT/@NAME");
        NodeList nodes = (NodeList) expr.evaluate(doc, XPathConstants.NODESET);

        for (int i = 0; i < nodes.getLength(); i++) {
            System.out.println("=====");
            System.out.println("NodeName:" + nodes.item(i).getNodeName());
            System.out.println("NodeValue:" + nodes.item(i).getFirstChild().getNodeValue());
        }
    } catch (Exception e) {
        e.printStackTrace();
    }
}
}
```

## 2.5 An example for VB.NET / ASP.NET

The example below shows the code that will call API function from VB.NET. It returns SOS name as an output.

```
Imports System
Imports System.IO
Imports System.Net
Imports System.Text
Imports System.Xml

Module Module1

Sub Main()

    Dim cookies As String = ""
    Console.Out.WriteLine("Output:")

    Dim host As String = "http://localhost:8080/sos-station"

    Dim s_url As String
    Dim request As WebRequest
    Dim response As HttpWebResponse

    s_url = host & "/WebAPIRequest.jsp?Key=XXXX&Cmd=GET-SOS-LIST"
    request = WebRequest.Create(s_url)
    response = CType(request.GetResponse(), HttpWebResponse)

    Dim myreader = New StreamReader(response.GetResponseStream())
    Dim myanswer As String = myreader.ReadToEnd()
    Console.Out.WriteLine(myanswer)
    myreader.Close()
    response.Close()

    Dim xmlDoc As New XmlDocument
    xmlDoc.LoadXml(myanswer)
    Dim sosNodes As XmlNodeList
    Dim sosNode As XmlNode

    sosNodes = xmlDoc.DocumentElement.SelectNodes("//ELEMENT/@NAME")
    Console.WriteLine("Found {0} Nodes", sosNodes.Count)
    For Each sosNode In sosNodes
        Console.WriteLine("Name:" & sosNode.ChildNodes.Item(0).InnerText)
    Next

    Console.ReadLine()

End Sub

End Module
```

### 3 AJAX Methods

#### 3.1 SOS Station Functions

##### 3.1.1 GET-SOS-LIST

This method returns list of SOS stations under customer account.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
Active (Optional)	String	Indicate that result will be only active SOS or all SOS 0 = All, 1 = Only active SOS

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <pre> &lt;BASEELEMENT SCHEMA="SOS" METHOD="GET-SOS-LIST"&gt;   &lt;ELEMENT ID="26" NAME="SOS07.AFITA.JAPAN"&gt;     &lt;Description&gt;SOS07.AFITA.JAPAN&lt;/Description&gt;     &lt;SerialNo&gt;SOS-I-0000007&lt;/SerialNo&gt;     &lt;Location&gt;AFITA,JAPAN&lt;/Location&gt;     &lt;Latitude&gt;34.7009&lt;/Latitude&gt;     &lt;Longitude&gt;136.4886&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;CustomerCode&gt;HondaLab&lt;/CustomerCode&gt;     &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;     &lt;Active&gt;Y&lt;/Active&gt;     &lt;Status&gt;Activated&lt;/Status&gt;   &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt;                     </pre>

**Example:**

AJAXRequest(GET-SOS-LIST','&Active=1', false);

### 3.1.2 GET-SOS-DESCRIBE

This method returns description of specific SOS stations including all attached devices and sensors.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <pre> &lt;BASEELEMENT SCHEMA="SOS" METHOD=" GET-SOS-DESCRIBE"&gt;   &lt;ELEMENT ID="26" NAME="SOS07.AFITA.JAPAN"&gt;     &lt;Description&gt;SOS07.AFITA.JAPAN&lt;/Description&gt;     &lt;SerialNo&gt;SOS-I-0000007&lt;/SerialNo&gt;     &lt;Location&gt;AFITA,JAPAN&lt;/Location&gt;     &lt;Latitude&gt;34.7009&lt;/Latitude&gt;     &lt;Longitude&gt;136.4886&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;CustomerCode&gt;HondaLab&lt;/CustomerCode&gt;     &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;     &lt;Active&gt;Y&lt;/Active&gt;     &lt;Status&gt;Activated&lt;/Status&gt;     &lt;FieldServers Total="1"&gt;       &lt;FieldServer Id="127"&gt;FS1&lt;/FieldServer&gt;     &lt;/FieldServers&gt;   &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt;                     </pre>

### 3.1.3 GET-SOS-STATUS

This method returns latest status of specific SOS stations as well as status of all attached devices.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <BASEELEMENT SCHEMA="SOS-STATUS" METHOD="GET-SOS-STATUS"> <RETURNVALUE>1</RETURNVALUE> <ELEMENT ID="696" NAME="SOS55.HondaLab.AIT"> <IsMonitored>Y</IsMonitored> <SOSStatus Time="2012-07-31 13:35:04">N</SOSStatus> <FieldServers Total="1"> <FSStatus Name="AerialFS" Time="2012-07-31 13:35:04"> Success </FSStatus> </FieldServers> </ELEMENT> </BASEELEMENT>

**3.1.4 GET-SOS-CAPABILITIES**

This method returns current capabilities of a specific SOS stations. All field servers and sensors are included in response result.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
------	------	-------------

SOSName	String	A SOS name. SOS name must be unique under same customer.
---------	--------	--

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="SOS-CAPABILITIES" METHOD="GET-SOS-CAPABILITIES"&gt; &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt; &lt;ELEMENT ID="15" NAME="SOS08.HondaLab.AIT.AAAA"&gt;   &lt;Description&gt;SOS08.HondaLab.AIT&lt;/Description&gt;   &lt;SerialNo&gt;SOS-I-0000008&lt;/SerialNo&gt;   &lt;Location&gt;AIT&lt;/Location&gt;   &lt;Latitude&gt;14.74&lt;/Latitude&gt;   &lt;Longitude&gt;101.12&lt;/Longitude&gt;   &lt;Altitude&gt;100&lt;/Altitude&gt;   &lt;CustomerCode&gt;HondaLab&lt;/CustomerCode&gt;   &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;   &lt;Active&gt;Y&lt;/Active&gt;   &lt;Status&gt;Activated&lt;/Status&gt;   &lt;FieldServers Total="1"&gt;     &lt;FieldServer Id="39" Name="FSIII-01.SOS08"&gt;       &lt;Description&gt;FieldServer1&lt;/Description&gt;       &lt;Type&gt;HTTP FieldServer&lt;/Type&gt;       &lt;Model&gt;Field Server Version III&lt;/Model&gt;       &lt;Group&gt;Default Group&lt;/Group&gt;       &lt;SerialNo&gt;XXXXXXXX&lt;/SerialNo&gt;       &lt;Location&gt;HondaLab&lt;/Location&gt;       &lt;Latitude&gt;13.45&lt;/Latitude&gt;       &lt;Longitude&gt;100.23&lt;/Longitude&gt;       &lt;Altitude&gt;100&lt;/Altitude&gt;       &lt;FeedInterval&gt;300&lt;/FeedInterval&gt;       &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;       &lt;Sensors Total="1"&gt;         &lt;Sensor Id="94" Name="Soil Temperature"&gt;           &lt;SerialNo&gt;1082&lt;/SerialNo&gt;           &lt;Model&gt;Thermal Sensor&lt;/Model&gt;           &lt;Unit&gt;&amp;deg;C&lt;/Unit&gt;         &lt;/Sensor&gt;       &lt;/Sensors&gt;     &lt;/FieldServer&gt;   &lt;/FieldServers&gt; </pre>

		<pre> &lt;Location&gt;AIT&lt;/Location&gt; &lt;Latitude&gt;14.12&lt;/Latitude&gt; &lt;Longitude&gt;100.36&lt;/Longitude&gt; &lt;Altitude&gt;&gt;null&lt;/Altitude&gt; &lt;InstallationDate&gt;20080806&lt;/InstallationDate&gt; &lt;LastCalibrationDate&gt;20080806&lt;/LastCalibrationDate&gt; &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt; &lt;/Sensor&gt; &lt;/Sensors&gt; &lt;/FieldServer&gt; &lt;/FieldServers&gt; &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt; </pre>
--	--	---

## 3.2 Field Server Functions

### 3.2.1 GET-FS-LIST

This method returns list of field server under specific SOS Station.

#### Compatibility:

cloudSense API Version 1.0

#### Parameters:

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.

#### Results:

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <pre> &lt;BASEELEMENT SCHEMA="FS" METHOD="GET-FS-LIST"&gt;   &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt;   &lt;ELEMENT ID="39" NAME="FSIII-01.SOS08"&gt;     &lt;Description&gt;FieldServer1&lt;/Description&gt;     &lt;Type&gt;HTTP FieldServer&lt;/Type&gt; </pre>

		<pre> &lt;Model&gt;Field Server Version III&lt;/Model&gt; &lt;Group&gt;Default Group&lt;/Group&gt; &lt;SerialNo&gt;XXXXXXXX&lt;/SerialNo&gt; &lt;Location&gt;HondaLab&lt;/Location&gt; &lt;Latitude&gt;13.45&lt;/Latitude&gt; &lt;Longitude&gt;100.23&lt;/Longitude&gt; &lt;Altitude&gt;100&lt;/Altitude&gt; &lt;FeedInterval&gt;300&lt;/FeedInterval&gt; &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt; &lt;SOSStation&gt;SOS08.HondaLab.AIT.AAAA&lt;/SOSStation&gt; &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt; </pre>
--	--	--

### 3.2.2 GET-FS-DESCRIBE

This method returns description of specific field server including all attached sensors.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <pre> &lt;BASEELEMENT SCHEMA="FS" METHOD="GET-FS-DESCRIBE"&gt;   &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt;   &lt;ELEMENT ID="39" NAME="FSIII-01.SOS08"&gt;     &lt;Description&gt;FieldServer1&lt;/Description&gt;     &lt;Type&gt;HTTP FieldServer&lt;/Type&gt; </pre>



		<pre> &lt;Model&gt;Field Server Version III&lt;/Model&gt; &lt;Group&gt;Default Group&lt;/Group&gt; &lt;SerialNo&gt;XXXXXXXX&lt;/SerialNo&gt; &lt;Location&gt;HondaLab&lt;/Location&gt; &lt;Latitude&gt;13.45&lt;/Latitude&gt; &lt;Longitude&gt;100.23&lt;/Longitude&gt; &lt;Altitude&gt;100&lt;/Altitude&gt; &lt;FeedInterval&gt;300&lt;/FeedInterval&gt; &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt; &lt;SOSStation&gt;SOS08.HondaLab.AIT.AAAA&lt;/SOSStation&gt; &lt;Sensors Total="1"&gt;   &lt;Sensor Id="94" Type="Temperature Sensor"&gt;     Soil Temperature   &lt;/Sensor&gt; &lt;/Sensors&gt;  &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt; </pre>
--	--	--

### 3.2.3 GET-FS-STATUS

This method returns latest status of specific field server.

#### Compatibility:

cloudSense API Version 1.0

#### Parameters:

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.

#### Results:

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success

Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="FS-STATUS" METHOD="GET-FS-STATUS"&gt;   &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt;   &lt;ELEMENT ID="696" NAME=" FSIII-01.SOS08"&gt;     &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;     &lt;FSStatus Time="2012-07-31 07:35:45"&gt; Success&lt;/FSStatus&gt;     &lt;Sensors Total="1"&gt;       &lt;SensorStatus Name="AerialFS"&gt;         &lt;Status Time="2012-07-31 07:35:45"&gt;Y&lt;/Status&gt;         &lt;Value Raw="10" Unit="C"&gt;32&lt;/Value&gt;       &lt;/SensorStatus&gt;     &lt;/Sensors&gt;   &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt; </pre>
------	--------	--

### 3.2.4 GET-FS-CAPABILITIES

This method returns current capabilities of a specific field server. All sensors are included in response result.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success

Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="SOS-CAPABILITIES" METHOD="GET-SOS-CAPABILITIES"&gt; &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt; &lt;ELEMENT ID="15" NAME="FSIII-01.SOS08"&gt;   &lt;Description&gt;FieldServer1&lt;/Description&gt;   &lt;Type&gt;HTTP FieldServer&lt;/Type&gt;   &lt;Model&gt;Field Server Version III&lt;/Model&gt;   &lt;Group&gt;Default Group&lt;/Group&gt;   &lt;SerialNo&gt;XXXXXXXX&lt;/SerialNo&gt;   &lt;Location&gt;HondaLab&lt;/Location&gt;   &lt;Latitude&gt;13.45&lt;/Latitude&gt;   &lt;Longitude&gt;100.23&lt;/Longitude&gt;   &lt;Altitude&gt;100&lt;/Altitude&gt;   &lt;FeedInterval&gt;300&lt;/FeedInterval&gt;   &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;   &lt;Sensors Total="1"&gt;     &lt;Sensor Id="94" Name="Soil Temperature"&gt;       &lt;SerialNo&gt;1082&lt;/SerialNo&gt;       &lt;Model&gt;Thermal Sensor&lt;/Model&gt;       &lt;Unit&gt;&amp;deg;C&lt;/Unit&gt;       &lt;Location&gt;AIT&lt;/Location&gt;       &lt;Latitude&gt;14.12&lt;/Latitude&gt;       &lt;Longitude&gt;100.36&lt;/Longitude&gt;       &lt;Altitude&gt;100&lt;/Altitude&gt;       &lt;InstallationDate&gt;2008-08-06&lt;/InstallationDate&gt;       &lt;LastCalibrationDate&gt;2008-08-06&lt;/LastCalibrationDate&gt;       &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt;     &lt;/Sensor&gt;   &lt;/Sensors&gt; &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt; </pre>
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### 3.3 Sensor and Camera Functions

#### 3.3.1 GET-SENSOR-LIST

This method returns list of sensors under specific field server.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <pre> &lt;BASEELEMENT SCHEMA="SENSOR" METHOD="GET-SENSOR-LIST"&gt;   &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt;   &lt;ELEMENT ID="94" NAME="Soil Temperature"&gt;     &lt;SerialNo&gt;1082&lt;/SerialNo&gt;     &lt;Model&gt;Thermal Sensor&lt;/Model&gt;     &lt;Unit&gt;&amp;deg;C&lt;/Unit&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;     &lt;Longitude&gt;100.36&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;InstallationDate&gt;2008-08-06&lt;/InstallationDate&gt;     &lt;LastCalibrationDate&gt;2008-08-06&lt;/LastCalibrationDate&gt;     &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt;     &lt;SOSStation&gt;SOS08.HondaLab.AIT.AAAA&lt;/SOSStation&gt;     &lt;FieldServer&gt;FSIII-01.SOS08&lt;/FieldServer&gt;   &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt;                     </pre>

**3.3.2 GET-SENSOR-DESCRIBE**

This method returns a detail of a specific sensor.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
SensorName	String	A sensor name. Name must be unique under same field server. A part of name is allowed and multiple sensors are returned in case.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="SENSOR" METHOD="GET-SENSOR-LIST"&gt;   &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt;   &lt;ELEMENT ID="94" NAME="Soil Temperature"&gt;     &lt;SerialNo&gt;1082&lt;/SerialNo&gt;     &lt;Model&gt;Thermal Sensor&lt;/Model&gt;     &lt;Unit&gt;&amp;deg;C&lt;/Unit&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;     &lt;Longitude&gt;100.36&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;InstallationDate&gt;2008-08-06&lt;/InstallationDate&gt;     &lt;LastCalibrationDate&gt;2008-08-06&lt;/LastCalibrationDate&gt;     &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt;     &lt;SOSStation&gt;SOS08.HondaLab.AIT.AAAA&lt;/SOSStation&gt;     &lt;FieldServer&gt;FSIII-01.SOS08&lt;/FieldServer&gt;   &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt; </pre>

**3.3.3 GET-CAMERA-LIST**

This method returns list of cameras under specific field server.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <BASEELEMENT SCHEMA="SENSOR" METHOD="GET-SENSOR-LIST"> <RETURNVALUE>1</RETURNVALUE> <ELEMENT ID="94" NAME="Panasonic IP Camera"> <SerialNo>ER1112</SerialNo> <Model> Panasonic IP Camera </Model> <Location>AIT</Location> <Latitude>14.12</Latitude> <Longitude>100.36</Longitude> <Altitude>100</Altitude> <InstallationDate>2008-08-06</InstallationDate> <LastCalibrationDate>2008-08-06</LastCalibrationDate> <FeedInterval>300</FeedInterval> <IsMonitored>Y</IsMonitored> <SOSStation>SOS08.HondaLab.AIT.AAAA</SOSStation> <FieldServer>FSIII-01.SOS08</FieldServer> </ELEMENT> </BASEELEMENT>

**3.3.4 GET-CAMERA-DESCRIBE**

This method returns a detail of a specific camera.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
CameraName	String	A camera name. Name must be unique under same field server. A part of name is allowed and multiple cameras are returned in case.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="SENSOR" METHOD="GET-CAMERA-DESCRIBE"&gt;   &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt;   &lt;ELEMENT ID="94" NAME="Panasonic IP Camera"&gt;     &lt;SerialNo&gt;ER1112&lt;/SerialNo&gt;     &lt;Model&gt; Panasonic IP Camera &lt;/Model&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;     &lt;Longitude&gt;100.36&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;InstallationDate&gt;2008-08-06&lt;/InstallationDate&gt;     &lt;LastCalibrationDate&gt;2008-08-06&lt;/LastCalibrationDate&gt;     &lt;FeedInterval&gt;300&lt;/FeedInterval&gt;     &lt;IsMonitored&gt;Y&lt;/IsMonitored&gt;     &lt;SOSStation&gt;SOS08.HondaLab.AIT.AAAA&lt;/SOSStation&gt;     &lt;FieldServer&gt;FSIII-01.SOS08&lt;/FieldServer&gt;   &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt;                     </pre>

### 3.4 Observation Functions

#### 3.4.1 GET-SENSOR-OBSERVATION-LASTN

This method returns last N records of monitored data of sensors under specific field server.

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensors	String	List of sensors that want to query. Multiple sensors are allowed with comma separated. Ex: Temperature, Humidity
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 1 that means return latest data.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="SENSOR-OBSERVATION" METHOD="GET-SENSOR-OBSERVATION"&gt; &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt; &lt;Observations Sensors="Temperature,AirPressure" Type="LASTN"&gt;   &lt;Measurement ID="94" Type="Sensor" Data="Actual" NAME="Soil Temperature"&gt;     &lt;Time format="yyyy-MM-dd HH:mm:ss" offset="+700"&gt;       2010-01-25 10:25:49     &lt;/Time&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;     &lt;Longitude&gt;100.36&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;SensorModel&gt;Temperature&lt;/SensorModel&gt;     &lt;Result rawValue="37" uom="&amp;deg;C"&gt;37&lt;/Result&gt;           </pre>



		<pre> &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt; &lt;/Measurement&gt; &lt;Measurement Data="Actual" ID="97" NAME="AirPressure" Type="Sensor"&gt;   &lt;Time format="yyyy-MM-dd HH:mm:ss" offset="+700"&gt;2012-07-31 07:35:00&lt;/Time&gt;   &lt;Location&gt; AIT &lt;/Location&gt;   &lt;Latitude&gt;14.12&lt;/Latitude&gt;   &lt;Longitude&gt;100.36&lt;/Longitude&gt;   &lt;Altitude&gt;100&lt;/Altitude&gt;   &lt;SensorModel&gt;Atmospheric Pressure Sensor&lt;/SensorModel&gt;   &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt;   &lt;Result rawValue="110.3" uom="mb"&gt;110.3&lt;/Result&gt; &lt;/Measurement&gt; &lt;/Observations&gt; &lt;/BASEELEMENT&gt; </pre>
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### 3.4.2 GET-SENSOR-OBSERVATION-PERIOD

This method returns records of monitored data during specific period of sensors under specific field server.

**Compatibility:**

CLOUDSENSE API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensors	String	List of sensors that want to query. Multiple sensors are allowed with comma separated. Ex: Temperature, Humidity
FromDate (Optional)	String	A start time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
ToDate (Optional)	String	An end time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500

Sort (Optional)	String	A sort type of query data. It must be “asc or desc”. Default is “desc”.
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 100 that mean return latest data.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <BASEELEMENT SCHEMA="SENSOR-OBSERVATION" METHOD="GET-SENSOR-OBSERVATION-PERIOD"> <RETURNVALUE>1</RETURNVALUE> <Observations Type="PERIOD" Sensors="Temperature, Humidity"> <Measurement ID="94" Type="Sensor" Data="Actual" NAME="Soil Temperature"> <Time format="yyyy-MM-dd HH:mm:ss" offset="+700"> 2010-01-25 10:25:49 </Time> <Location>AIT</Location> <Latitude>14.12</Latitude> <Longitude>100.36</Longitude> <Altitude>100</Altitude> <SensorModel>Temperature</SensorModel> <Result rawValue="37" uom="&deg;C">37</Result> <ConversionEquation>X</ConversionEquation> </Measurement> </Observations> </BASEELEMENT>

**3.4.3 GET-SENSOR-OBSERVATION-AGGREGATED**

This method returns aggregated values of monitored data during specific period of sensors under specific field server. The aggregated values consist of low, high, dates of first and last value, average, sum, a number of records.

**Compatibility:**

CLOUDSENSE API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensors	String	List of sensors that want to query. Multiple sensors are allowed with comma separated. Ex: Temperature, Humidity
FromDate (Optional)	String	A start time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
ToDate (Optional)	String	An end time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 100 that mean return latest data.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="SENSOR-OBSERVATION-AGGREGATED" METHOD="GET-SENSOR-OBSERVATION-AGGREGATED"&gt; &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt; &lt;Observations Type="PERIOD" Sensors="Temperature, Humidity"&gt;   &lt;AggregatedValue Type="Sensor" Data="Aggregated" NAME="Soil Temperature"&gt;     &lt;FirstDateTime format="yyyy-MM-dd HH:mm:ss" offset="+700"&gt;       2010-01-25 10:25:49     &lt;/FirstDateTime&gt;     &lt;LastDateTime format="yyyy-MM-dd HH:mm:ss" offset="+700"&gt;       2010-01-25 10:25:49     &lt;/LastDateTime&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;           </pre>

		<pre> &lt;Longitude&gt;100.36&lt;/Longitude&gt; &lt;Altitude&gt;100&lt;/Altitude&gt; &lt;SensorModel&gt;Temperature&lt;/SensorModel&gt; &lt;LowestValue&gt;10&lt;/LowestValue&gt; &lt;HighestValue&gt;30&lt;/HighestValue&gt; &lt;AverageValue&gt;20&lt;/AverageValue&gt; &lt;SumValue&gt;100&lt;/SumValue&gt; &lt;TotalRecords&gt;25&lt;/TotalRecords&gt; &lt;/AggregatedValue&gt; &lt;/Observations&gt; &lt;/BASEELEMENT&gt; </pre>
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### 3.4.4 GET-CAMERA-OBSERVATION-LASTN

This method returns last N records of captured images of camera under specific field server.

**Compatibility:**

CLOUDSENSE API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Cameras	String	List of camera sensors that want to query.
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 1 that means return latest data. In case of rotatable camera, default will be 10 since it allow 10 preset position.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success

Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="CAMERA-OBSERVATION" METHOD="GET-CAMERA-OBSERVATION-LASTN"&gt; &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt; &lt;Observations Type="LASTN" Cameras="Panasonic"&gt;   &lt;Measurement ID="94" Type="Camera" Data="Actual" NAME="Panasonic"&gt;     &lt;Time format="yyyy-MM-dd HH:mm:ss" offset="+700"&gt;       2010-01-25 10:25:49     &lt;/Time&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;     &lt;Longitude&gt;100.36&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;CameraModel&gt;Panasonic Camera&lt;/CameraModel&gt;     &lt;Result uom="jpg" channel="1"&gt; <a href="http://cs.listenfield.com/GetImage.jsp?imageId=1112">http://cs.listenfield.com/GetImage.jsp?imageId=1112</a>&lt;/Result&gt;   &lt;/Measurement&gt; &lt;/Observations&gt; &lt;/BASEELEMENT&gt; </pre>
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### 3.4.5 GET-CAMERA-OBSERVATION-PERIOD

This method returns records of captured data during specific period of cameras under specific field server.

**Compatibility:**

CLOUDSENSE API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Cameras	String	List of sensors that want to query. Multiple sensors are allowed with comma separated. Ex: Temperature, Humidity
FromDate (Optional)	String	A start time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500

ToDate (Optional)	String	An end time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 100 that mean return latest data.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	<p>XML Text Stream containing output parameters:</p> <pre> &lt;BASEELEMENT SCHEMA="CAMERA-OBSERVATION" METHOD="GET-CAMERA-OBSERVATION-LASTN"&gt; &lt;RETURNVALUE&gt;1&lt;/RETURNVALUE&gt; &lt;Observations Type="PERIOD" Cameras="Panasonic"&gt;   &lt;Measurement ID="94" Type="Camera" Data="Actual" NAME="Panasonic"&gt;     &lt;Time format="yyyy-MM-dd HH:mm:ss" offset="+700"&gt;       2010-01-25 10:25:49     &lt;/Time&gt;     &lt;Location&gt;AIT&lt;/Location&gt;     &lt;Latitude&gt;14.12&lt;/Latitude&gt;     &lt;Longitude&gt;100.36&lt;/Longitude&gt;     &lt;Altitude&gt;100&lt;/Altitude&gt;     &lt;CameraModel&gt;Panasonic Camera&lt;/CameraModel&gt;     &lt;Result uom="jpg" channel="1"&gt; <a href="https://cs.listenfield.com/GetImage.jsp?imageId=1112">https://cs.listenfield.com/GetImage.jsp?imageId=1112</a>&lt;/Result&gt;   &lt;/Measurement&gt; &lt;/Observations&gt; &lt;/BASEELEMENT&gt; </pre>

### 3.5 Widget Graphic Functions

#### 3.5.1 GET-WIDGET

This method returns latest value of specific sensor in graph image. It can be used for showing recent value of sensors on website.

**Compatibility:**

SOS API Version 1.0

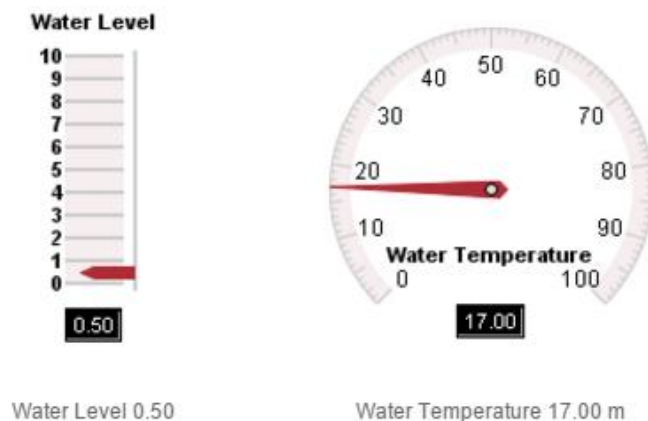
**Parameters:**

Name	Type	Description
Key	String	A Token Key for authentication.
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensor	String	A sensor that want to query. Multiple sensors are not allowed.

**Results:**

Name	Type	Description
Data	Image	<p>The command will return image stream that you can put in html image tag ( &lt;img&gt; )</p> <p><i>Example:</i></p> <pre>&lt;img src=" https://cs.listenfield.com/WebAPIRequest.jsp? Key=XXXX&amp;Cmd=GET- WIDGET&amp;SOSName=SOS55&amp;FSName=AerialFS&amp;Sensor=Speed" alt="latest" /&gt;</pre>

**Example Output:**



### 3.5.2 GET-WIDGET-SENSOR

This method returns latest value of specific sensor in text value.

**Compatibility:**

SOS API Version 1.0

**Parameters:**

Name	Type	Description
Key	String	A Token Key for authentication.
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensor	String	A sensor that want to query. Multiple sensors are not allowed.

**Results:**

Name	Type	Description
Data	Text	The command will return text value <i>Example:</i> <code>http://&lt;URL&gt;/WebAPIRequest.jsp? Key=XXXX&amp;Cmd=GET-WIDGET-SENSOR&amp;SOSName=SOS55&amp;FSName=AerialFS&amp;Sensor=Speed</code>

**Example Output:**

Enter link in browser such as IE and result will show as text as shown below.

**96.0 % (2012-07-31 07:35:00)**



### 3.5.3 GET-WIDGET-CAMERA

This method returns latest image of specific camera.

**Compatibility:**

SOS API Version 1.0

**Parameters:**

Name	Type	Description
Key	String	A Token Key for authentication.
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Camera	String	Camera that want to query an image.
Channel (Optional)	String	A channel of camera : 1-10

**Results:**

Name	Type	Description
Data	Image	The command will return image stream that you can put in html image tag ( <img>) <i>Example:</i> 

**Example Output:** (image, jpg)



### 3.5.4 GET-WIDGET-SUMMARY

This method returns line chart with data from specific period of sensor in graph image.

**Compatibility:**

SOS API Version 1.0

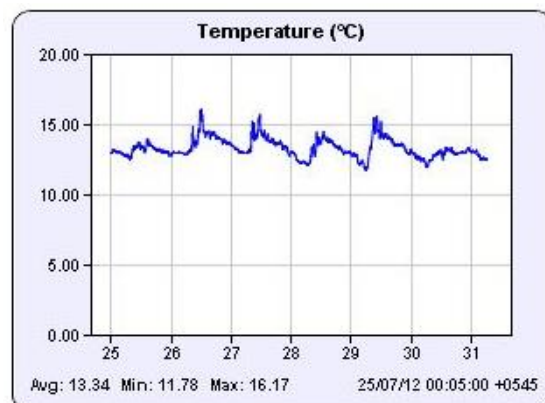
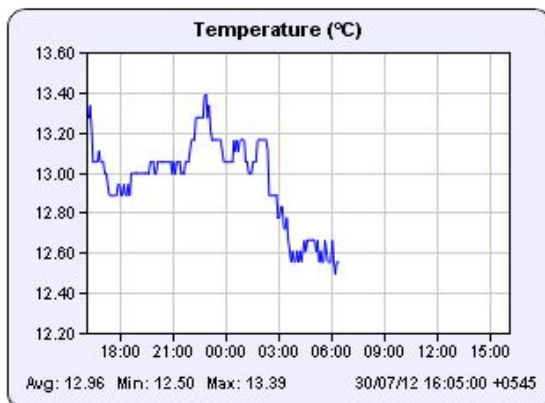
**Parameters:**

Name	Type	Description
Key	String	A Token Key for authentication.
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same sos.
Sensor	String	A sensor that want to query. Multiple sensors are not allowed.
GType	String	A Graph type: day, week, month, year

**Results:**

Name	Type	Description
Data	Image	<p>The command will return image stream that you can put in html image tag ( &lt;img&gt;)</p> <p><i>Example:</i></p> <pre>&lt;img src=" http://&lt;URL&gt;/WebAPIRequest.jsp?Key=XXXX&amp;Cmd=GET- WIDGET-SUMMARY&amp;GType=day&amp;SOSName=SOS55 &amp;FSName=AerialFS&amp;Sensor=Speed" alt="latest" /&gt;</pre>

**Example Output: (day, week)**



## 4.1 Data Export Functions

### 4.1.1 GET-SENSOR-EXPORT-PERIOD

This method returns last N records of monitored data of sensors under specific field server. The result will be in comma-separated format (CSV).

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensors	String	List of sensors that want to query. Multiple sensors are allowed with comma separated. Ex: Temperature, Humidity
FromDate (Optional)	String	A start time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
ToDate (Optional)	String	An end time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 100 that mean return latest data.
RowOrCol	String	Show sensor result in row-based or column-based 0 = row-based 1 = column-based

**Results:**

<p><u>Row-based:</u></p> <p>Sensor,Date,Value,UOM  Temperature, 2010-01-25 10:00:00+0700,-10,c  Temperature, 2010-01-25 11:00:00+0700,-10,c  Temperature, 2010-01-25 12:00:00+0700,-10,c  Humidity, 2010-01-25 10:00:00+0700, 84.60, %RH  Humidity, 2010-01-25 11:00:00+0700, 84.60, %RH  Humidity, 2010-01-25 12:00:00+0700, 84.60, %RH</p> <p>* No Data are indicated by “-99999”</p>
---

Column-based:

Date, Temperature [c], Humidity [%RH], Air Pressure [hPa]  
 2010-01-25 10:00:00+0700,-10, 84.60, 1008.7  
 2010-01-25 11:00:00+0700,-10, 84.60, 1008.7  
 2010-01-25 12:00:00+0700,-10, 84.60, 1008.7  
 2010-01-25 13:00:00+0700,-10, 84.60, 1008.7

#### 4.1.2 GET-SENSOR-EXPORT-SUMMARY

This method returns summary by day, month and year of monitored data of sensors under specific field server. The result will be in comma-separated format (CSV).

**Compatibility:**

cloudSense API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
FSName	String	A field server name. Name must be unique under same SOS.
Sensors	String	List of sensors that want to query. Multiple sensors are allowed with comma separated. Ex: Temperature, Humidity
FromDate	String	A start time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
ToDate (Optional)	String	An end time period for query observation data. Datetime format: yyyyMMddHHmmss Ex: 20100125102500
Interval	String	hour,day,month,year
Aggregate	String	min,max,avg,sum
Interpolate	String	0 = no interpolation (default) 1 = use interpolation
RowOrCol	String	Show sensor result in row-based or column-based 0 = row-based 1 = column-based

**Results:**

Row-based:

Sensor,Date,avg,UOM

Temperature, 2010-01-25 10:00:00+0700,-10,c

Temperature, 2010-01-25 11:00:00+0700,-10,c

Temperature, 2010-01-25 12:00:00+0700,-10,,c

Humidity, 2010-01-25 10:00:00+0700,84.60, %RH

Humidity, 2010-01-25 11:00:00+0700,84.60, %RH

Humidity, 2010-01-25 12:00:00+0700,84.60, %RH

Sensor,Date,min,max,avg,UOM

Temperature, 2010-01-25 10:00:00+0700,-10,-10,-10,c

Temperature, 2010-01-25 11:00:00+0700,-10,-10,-10,c

Temperature, 2010-01-25 12:00:00+0700,-10,-10,-10,c

Humidity, 2010-01-25 10:00:00+0700,84.60,84.60,84.60, %RH

Humidity, 2010-01-25 11:00:00+0700,84.60,84.60,84.60, %RH

Humidity, 2010-01-25 12:00:00+0700,84.60,84.60,84.60, %RH

\* No Data are indicated by “-99999”

Column-based:

Date, Temperature\_avg [c], Humidity\_avg [%RH], Air Pressure\_avg [hPa]

2010-01-25 10:00:00+0700,-10, 84.60, 1008.7

2010-01-25 11:00:00+0700,-10, 84.60, 1008.7

2010-01-25 12:00:00+0700,-10, 84.60, 1008.7

2010-01-25 13:00:00+0700,-10, 84.60, 1008.7

Date, Temperature\_min [c], Temperature\_avg [c], Humidity\_min [%RH], Humidity\_avg [%RH]

2010-01-25 10:00:00+0700,-10,84.60,84.60,1008.7,1008.7

2010-01-25 11:00:00+0700,-10,84.60,84.60,1008.7,1008.7

2010-01-25 12:00:00+0700,-10,84.60,84.60,1008.7,1008.7

2010-01-25 13:00:00+0700,-10,84.60,84.60,1008.7,1008.7

\*sensor name\_ Aggregate= Temperature\_min

\* No Data are indicated by “-99999”

## 4.2 Sensor by Location

### 4.2.1 GET-SENSOR-LIST-BY-LOCATION

This method returns list of sensors filtered by location. Location is specified by longitude, latitude and radius in meter from the point.

**Compatibility:**

SOS API Version 1.0

**Parameters:**

Name	Type	Description
SOSName	String	A SOS name. SOS name must be unique under same customer.
Longitude	Number	Longitude of point location to search
Latitude	Number	Latitude of point location to search
Radius	Number	Distance in meter to search from point location
NRecords (Optional)	String	A number of data return from query. The results are sort from latest data and Default is 1 that means return latest data.

**Results:**

Name	Type	Description
ReturnValue	Number	0 is failure, 1 is success
Data	String	XML Text Stream containing output parameters: <BASEELEMENT SCHEMA="SENSOR" METHOD="GET-SENSOR-LIST-BY-LOCATION"> <RETURNVALUE>1</RETURNVALUE> <ELEMENT ID="94" NAME="Soil Temperature" observedProperty="water_temperature" > <SerialNo>1082</SerialNo> <Model>Thermal Sensor</Model> <Unit>&deg;C</Unit> <Location>AIT</Location> <Latitude>14.12</Latitude> <Longitude>100.36</Longitude> <Altitude>100</Altitude> <InstallationDate>2008-08-06</InstallationDate> <LastCalibrationDate>2008-08-06</LastCalibrationDate>

		<pre>&lt;MinObservationDate&gt;2015-05-15 00:27:00&lt;/MinObservationDate&gt; &lt;MaxObservationDate&gt;2016-12-29 00:19:46&lt;/MaxObservationDate&gt;   &lt;ConversionEquation&gt;X&lt;/ConversionEquation&gt;   &lt;SOSStation&gt;SOS08.HondaLab.AIT.AAAA&lt;/SOSStation&gt;   &lt;FieldServer&gt;FSIII-01.SOS08&lt;/FieldServer&gt; &lt;/ELEMENT&gt; &lt;/BASEELEMENT&gt;</pre>
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