



TAMIL NADU POLLUTION CONTROL BOARD

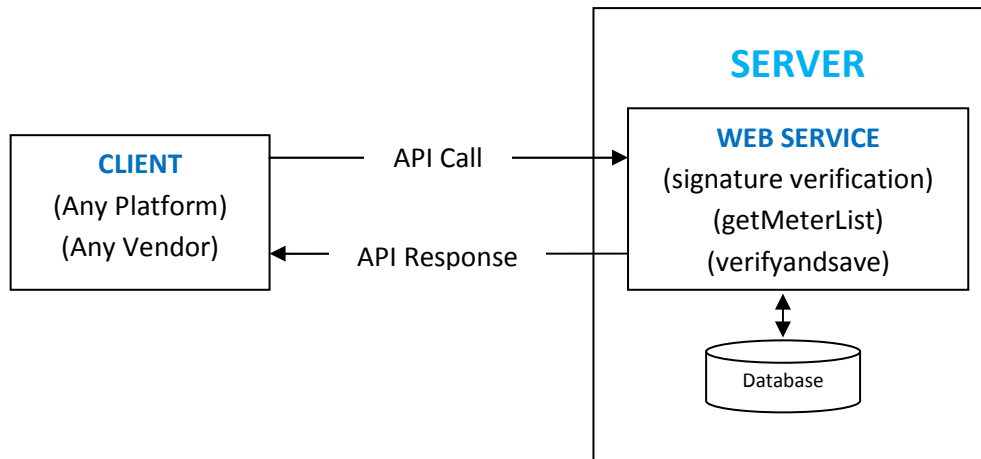
The Open API (Application Programmable Interface) with client side requirements for other software developers to develop client side requirement and establish connectivity with the Central Server Software of Ideatec Softwares India Pvt Ltd at Water Quality Watch Centre. The interested developers after development shall contact Water Quality Watch Centre, TNPCB for demo for approval of Technical Committee.

Version: 1.0

Release Date : 23-July-2015

Introduction:

As per the TNPCB norms, in order to facilitate multi-client environment, Ideatec is providing Open API architecture to communicate with Central Server.



Technology

Technology used is “WCF” - Windows Communication Foundation – Service using SOAP Protocol

Web Service

WCF Service is hosted in the below mentioned URL

<https://wqwtncpb.readmeter.in/DataUpload.svc>

Client Industry Identification

It is important to identify the caller & also protect the API from unauthorized access. It is being achieved by Digitally Signing the calls. For this, it requires callers of the Web service to procure a Digital Signature & registered with the Central Server Software.

Calling the Web service

When you have installed the client digital signature certificate in either the machine store or user store, you can access it from application code to call the Web service. The steps required are the same, independent of Client Platform.

This API provides the following services to the client:

1. Get a list of Meters and their settings from Server to the Client
2. Decrypt and save the Meter readings from Client to the respective Client DB

Methods

S.No.	Method	Description
1	getMetersList	Returns a list of client meters
2	VerifyAndSave	Save meter readings from client module to the Web DB

1.getMetersList

Syntax

Function getMetersList() As DataSet

Parameters

none

Return Value

Type : Dataset

A dataset contains a list of meters for the given query

Fields	Data type	Description
MeterID	Bigint	Meter ID
MeterType	int	Type of Meter
MeterName	varchar(50)	Meter Name
Col_Order	Int	Column Display order
MeterItem	varchar(15)	Item Name (Water,PH,RO,TDS,etc)
SlaveID	int	Slave ID (Master Station ID or else MeterID) Applicable for RS485 / HART output Meters
NodeNo	Int	Meter Number Applicable for Multichannel meters like HART
FlowRate	Decimal(18,9)	Max Flow per Hour
MaxReading	Decimal(18, 9)	Max Reading of the Meter

Exceptions

The following are the exceptions that might be thrown by the **getMetersList** Method

S.No	Faultcode	Faultstring
1	InvalidCertificate	Unknown Client certificate
2	DatabaseConnectionError	Unable to Open the database
3	DatabaseError	Unexpected database error

2. VerifyAndSave

Syntax

Function VerifyAndSave(ByVal strReadings As String, ByVal dtedate As Date) As String

Parameters

strReadings

Type : String

One minute readings of all the meters in encrypted format, signed by the client's digital signature. Encryption to be done by Asymmetric Encryption using Public Key in the certificate of web server.

One Minute Serialized Records

```
<ArrayOfCMeterReadings xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <cMeterReadings>
    <MeterID>1</MeterID>
    <Value1>10</Value1>
    <Value2>100</Value2>
  </cMeterReadings>
  <cMeterReadings>
    <MeterID>2</MeterID>
    <Value1>12.56</Value1>
    <Value2>13676.343</Value2>
  </cMeterReadings>
  .
  <cMeterReadings>
    <MeterID>N</MeterID>
    <Value1>XXX</Value1>
    <Value2>XXX</Value2>
  </cMeterReadings>
```

Where Value1 is Instant Value & Value2 is Totalizer value

Note: Value2 is applicable for Cumulative Meters only

dtedate

Type : Date Time

Date and time of Reading

Return Value

Type : String

Returns 'Success' when the process is completed

Exceptions

The following are the exceptions that might be thrown by the **VerifyAndSave** Method

S.No.	Faultcode	Faultstring
1	InvalidCertificate	Unknown Client certificate
2	InvalidSignature	Unable to verify the signature
3	InvalidServerCertificate	Unable to load Server certificate for Decryption
4	DatabaseConnectionError	Unable to Open the database

Technical Support

We at Ideatec will be glad to support the client software vendors for the Open API handling.

Kindly contact Mr.Vinod @ 98947-80018 or mail to readmeter@ideatec.co.in to get the Technical support .

Client Side Software Requirements

1. To build a Real Time Monitoring System for Water Pollution Monitoring in terms of quantitative measurements and qualitative measurements.
2. To monitor operations of Effluent Treatment plants, performance evaluation of waste water recovery system, and reject management system.
3. To ensure Zero Liquid Discharge System (ZLDS) of IETPs and CETPs.
4. To monitor member unit as part of CETPs.
5. Monitoring of water quality of river and water bodies.
6. To Collect and transmit instantaneous measurements and cumulative readings from all effluent treatment monitoring equipments which includes quantitative equipments (like water flow meters, steam flow meters, energy meters, tank level indicators, etc.) and qualitative analytical equipments (like pH, TOC, COD, BOD, TSS, TDS, temperature, ammoniacal nitrogen, differential pressure, dissolved oxygen, turbidity, pressure, residual chlorine, etc.)
7. During collection and transmission, utilize digital communication protocols to ensure data authentication, data origination and source validation.
8. All client module vendors should transmit data to Central Server as per the data transmission protocol.
9. This Module is Client side software which shall be installed at the client i.e. the industry, which should be capable of reading meters of any make & model using digital communication protocols which includes RS232, RS485, HART etc.
10. Should read data directly from the respective meters.
11. Should read and display all meter data in real time. Should log all meter data at defined frequency (minimum 1 minute frequency), which need to be date time stamped immediately up on reading, encrypted using public key and transmitted to server with client digital signature.
12. Should be able to handle stand-by wireless internet service in case of failure of the wired internet broadband service.
13. Should possess facility to store encrypted data packets locally in case of Internet communication failure due to any reason, which shall be streamed up to the server on resuming of internet communication link.
14. Should be facilitated to add and remove parameters with updates without affecting previous data in local and server database.
15. Any data available in industry side should be in encrypted and in non-editable format.

16. Should be capable of remote configure from the central server system.
17. Should possess configurable alert generations as SMS and email to generate alerts for non-communication of meters, meter reading errors, data transmission errors, server link failure, etc.