CaoSQLWebAPI

Version 1.1.2

User's Guide

January 29, 2020

Remark

[Revision history]

Version	Dating	Content
1.0.0	2019-2-11	First edition
1.1.0	2019-5-30	Added binary upload / download commands
1.1.2	2020-1-29	Fixed to return byte array as Number array when getting value Added option to return byte array as Base64 string when getting value

[Compatible device]

Model	Version	Note

Table of contents

1. Introduction

CaoSQLWebAPI is a web-service that allows CaoSQL operations to be performed using HTTP protocols.

CaoSQL's projects created by IoT Data Share or IoT Data Server are supported.

*** Projects created by CaoSQLConfig (*. csq) are not subject to action.**

2. Overview

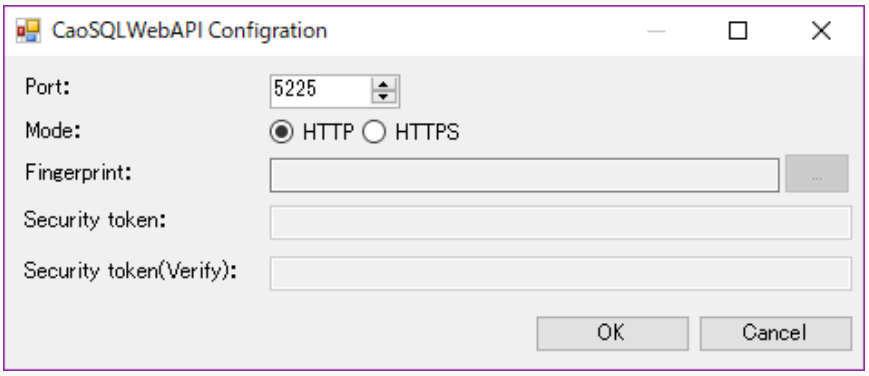
2.1. Operating system installation

To install CaoSQLWebAPI, run CaoSQL/REST/Bin/install.bat below the folders where you installed ORiN2 SDK.

To uninstall the CaoSQLWebAPI, run CaoSQL/REST/Bin/uninstall.bat below the folders where you installed the ORiN2 SDK.

2.2. Setting

CaoSQLWebAPI setting can change by using CaoSQL/WebAPI/Bin/CaoSQLWebConfig.exe under the folder where ORiN2 SDK is installed.



Pressing OK button after editing the setting, the setting will be saved in the CaoSQLWebAPI.config file, but please do not edit it directly.

Restarting the service is necessary to apply the saved settings.

The folder path of the configuration file can be specified with the environment variable CAOSQLWEBAPI_CONFIG.

If the environment variable is not set, it is treated as the same current folder path as CaoSQLWebConfig.exe.

2.2.1. **Port designation**

You can specify ports that accept HTTP/HTTPS requests by changing the value of <add key="port"value="5225"/> elements.

2.2.2. **Setting secure communication (HTTPS)**

When CaoSQLWebAPI is default, it communicates using HTTP protocols.

By changing Mode to HTTPS, it is possible to communicate using the HTTPS protocol.

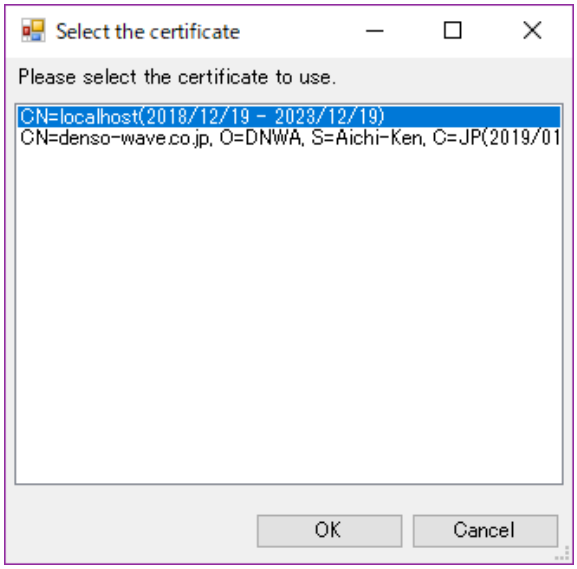
In order to perform secure communication, the following settings are necessary..

- You must install the server certificate in pfx format on the local computer /individual in the certificate store.

➢ You can easily install using CertUtil.exe included with Windows.

- You must specify the value of the element with the thumbprint of the installed certificate.

  ➢ Press the button on the right side of Fingerprint to display a list of installed certificates, so select the certificate to use and press OK



- Certificates that have been self-authenticated can cause security problems, so if you use HTTPS protocols, it is recommended that you buy certified certificates with an official certification authority.

2.2.3. **Designation of security token**

In HTTPS mode, you can specify a security token for restricting access.

When using a security token, please specify the same string in Security token and Security token (Verify).

To access the CaoSQLWebAPI that specifies the security token, please specify the following items in the header of the request

Authorization: Bearer <UTF-8 security token encoded with Base64>

2.3. Starting

To start the CaoSQL, start the CaoSQLWebAPI from the services of the administration tools, or run the following commands from command prompts that are started with administrator privileges.

```
Sc start CaoSQLWebAPI
```

3. CaoSQLWebAPI commands

3.1. How to specify the command

For CaoSQLWebAPI base addresses in HTTP protocols

Http://<server address>/api/v1/

For HTTPS protocols

Https://<server address>/api/v1/

You are.

It also supports GET and POST as web methods.

However, some functions support GET only and some functions support POST only.

Specify the GET argument in the form ?aaa=bbb & ccc=ddd, followed by the URL.

Specify "application / json" in Content-Type of header at POST, and specify arguments in json format in the body except for the upload command.

For the upload command, specify "application / octet-stream" as Content-Type, and store a binary image of the data to be uploaded in the body.

3.2. Return value of the command

The return values of the commands are json.

Refer to the items in each command for the meaning of the values.

3.3. Return value at error

If the connection to the CaoSQL is incorrect, a common return value of the following form is returned.

Result	:	The result of the command"OK": Success, "NG": Failed
Errormessage	:	Error message (only when NG)
Errorcode	:	Error code (COM HRESULT.NG only)

Examples

{"result":"NG" or "errormessage":" The connection was rejected by the target computer, so the connection was not possible. 127.0.0.1:5191"、"errorcode":-2147467259}

3.4. Command list

3.4.1. **Obtaining the controller list**

URL : Getcontrollernames

Method : GET : ○ POST : ×

GET argument : Without

Examples

http://localhost:5225/api/v1/getcontrollernames

POST arguments : -

Returned value : Result : The result of the command"OK": Success, "NG": Failed

Names : Array of controller names

Examples

{"names":["COLLECT","FL","SET","STR_TEST"],"result":"OK"}

3.4.2. **Obtain Item List**

URL : Getitemnames

Method : GET : ○ POST : ○

GET argument : Controller =<Controller name>

Examples

http://localhost:5225/api/v1/getitemnames?controller=COLLECT

POST arguments : Specify "application / json" as Content-Type of header, and specify the text by json of the following form.

{"controller":<Controller name>}

Examples

{"controller":"COLLECT"}

Returned value : Result : The result of the command"OK": Success, "NG": Failed

Names : Array of item names

Examples

{"names":["BOOL","DOUBLE","FLOAT","LONG","LONGLONG","SHORT","STRING","STRING2","ULONG","ULONGLONG","USHORT","WSTRING"],"result":"OK"}

3.4.3. **Obtain Item Values**

URL : Getvalue

Method : GET : ○ POST : ○

GET argument : Controller =<Controller Name> &item =<Item Name>&base64=<true or false>

Base64 is optional and defaults to false.
If true is specified for base64, the byte array will be returned as a Base64 string.

Examples
http://localhost:5225/api/v1/getvalue?controller=COLLECT & item=LONG

POST arguments : Specify "application / json" as Content-Type of header, and specify the text by json of the following form.
{"controller":<Controller Name>,"item":<Item Name>,"base64":<true or false>}

Base64 is optional and defaults to false.
If true is specified for base64, the byte array will be returned as a Base64 string.

Examples
{"controller":"COLLECT","item":"LONG"}

Returned value :

Result	:	The result of the command"OK": Success, "NG": Failed
Success	:	Result of getting values (get_Value on the CaoSQL)
Errorcode	:	Error code of get_Value (only when success is false)
Value	:	Item values (only when the success is true)

Examples
{"value":3,"result":"OK","success":true}

3.4.4. **Collective acquisition of item values**

URL : Getvalues

Method : GET : × POST : ○

GET argument : -

POST arguments : Specify "application / json" as Content-Type of header, and specify the text by json of the following form.

Array of {"controller":<Controller Name>,"item":<Item Name>,"base64":<true or false>}

Base64 is optional and defaults to false.

If true is specified for base64, the byte array will be returned as a Base64 string.

Examples

[{"controller":"COLLECT","item":"LONG","base64":true},{"controller":"COLLECT","item":"SHORT"}]

Returned value :

- Result : The result of the command"OK": Success, "NG": Failed
- Items : An array of the following elements (corresponding to those specified in the argument)
  - Controller : Name of the controller from which it was obtained
  - Item : Source item name
  - Success : Result of getting values (get_Value on the CaoSQL)
  - Errorcode : Error code of get_Value (only when success is false)
  - Value : Item values (only when the success is true)

Examples

{"items":[{"value":3,"controller":"COLLECT","item":"LONG","success":true},{"value":null,"controller":"COLLECT","item":"SHORT2","success":false,"errorcode":-2147024809}],"result":"OK"}

3.4.5. **Item value setting**

URL : Putvalue

Method : GET : × POST : ○

GET argument : -

POST arguments : Specify "application / json" as Content-Type of header, and specify the text by json of the following form.

{"controller":<Controller Name>,"item":<Item Name>,"value":<Value>}

Examples

{"controller":"SET","item":"LONG","value":10}

Returned value :

Result	:	The result of the command"OK": Success, "NG": Failed
Success	:	Result of setting values (put_Value on CaoSQL)
Errorcode	:	Error code of get_Value (only when success is false)

Examples

{"result":"OK","success":true}

3.4.6. **Collective setting of item values**

URL : Putvalues

Method : GET : × POST : ○

GET argument : -

POST arguments : Specify "application / json" as Content-Type of header, and specify the text by json of the following form.

Array of {"controller":<Controller Name>, "item":<Item Name>, "value":<Item Value>}

Examples

[{"controller":"SET","item":"LONG","value":10},{"controller":"COLLECT","item":"SHORT","value":20}]

3.4.7. **Upload binary data**

URL : upload?controller=<controller name>&item=<item name>

Method : GET : × POST : ○

GET argument : -

POST arguments : Specify the controller name / item name of the upload destination in the parameter of URL.
Specify "application / octet-stream" as Content-Type of header.
Store the binary data to be uploaded in the body.
Binary images can be uploaded up to 10MB including the header.

Returned value : Result : The result of the command"OK": Success, "NG": Failed

Examples
{"result":"OK" }

3.4.8. **Download binary data**

URL : download

Method : GET : ○ POST : ×

GET argument : controller=<controller name >&item=<item name>[&filename=<download file name>]
The download file name is optional.
Examples
http://localhost:5225/api/v1/download?controller=COLLECT&item=BIN

POST arguments : -

Returned value : Binary data stored in then item.

Remarks : The download command downloads binary data, so the results can not be returned by json. Therefore, the result of the download command is returned as the HTTP status code. The meaning of the status code is as follows.

Acquisition success: 200 (Success)
If the item does not exist or the item's value is not a binary image: 400 (Bad Request)
If an error occurs in internal processing: 500 (Internal Server Error)

4. License indication

4.1. Json.NET