IBM Watson IoT Platform providers

Version 1.1.1

User's Guide

Dec 10, 2021

Remark

Revision history

Version	Dating	Content
1.0.0	2019-06-06	First edition
1.1.0	2021-03-23	Supports TLS 1.2. Change to EXE format.
1.1.1	2021-12-10	Supports version upgrade of reference DLL.

Compatible device

Model	Version	Note

Contents

1. Introduction

This guide is a user's guide for sending and receiving text data to and from the IBM Cloud Watson IoT Platform. It does not support sending of binary data.

The CAO provider (CaoProvWatsonIoTPlatform.exe) used in this manual is called the WatsonIoTPlatform provider.

Chapter 2 outlines the WatsonIoTPlatform providers and describes the variables in detail.2

Ibm-watson-iot/iot-csharp and so on are used to communicate with the Watson IBM Platform.

For more information, see:

[ibm-watson-iot/iot-csharp Site Links]
URL: https://github.com/ibm-watson-iot/iot-csharp

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[M2Mqtt Site Links]
URL: https://github.com/eclipse/paho.mqtt.m2mqtt

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2. Provider overview

2.1. Overview

The WatsonIoTPlatform provider is a CAO provider that provides two-way communication with the IBM Cloud Internet of Things Platform. The file format is EXE, which is dynamically loaded from the CAO engine when the CAO engine is used. To use WatsonIoTPlatform providers, you must create them as shown in Table 2-1. RegistAsm.bat and UnregistAsm.bat are located in the DotNet ¥BAT folder below the folder where you installed the ORiN2SDK.

Tabular 2-1 WatsonIoTPlatform providers

File name	CaoProvIBMWatsonIoTPlatform.exe
ProgID	CaoProv.IBM.WatsonIoTPlatform
Registry registration	RegistAsm.bat CaoProvIBMWatsonIoTPlatform.exe
Unregistering the registry	UnregistAsm.bat CaoProvIBM WatsonIoTPlatform.exe

2.2. Method Properties

2.2.1. CaoWorkspace::AddController method

WatsonIoTPlatform providers refer to the connection parameters for communication during AddController and connect to the WatsonInternet of Things Platform.

Format AddController(<bstrCtrlName:BSTR>,<bstrProvName:BSTR>,
<bstrPCName:BSTR>,<bstrOption:BSTR>))

BstrCtrlName :[in] Controller Name
BstrProvName :[in] Provider name. Fixed value="CaoProv. IBM. WatsonIoTPlatform"
BstrPcName :[in] Provider's Execution Machine Name
BstrOption :[in] option string

Here is the list that you specify for the option string:

Optional strings in the tabular 2-2 CaoWorkspace::AddController

Option[1]	Description
OrgId = <OrganizationID>	Organizational identifier as defined on the mandatory. IBM Cloud.
DeviceId=[<DeviceID >]	Device ID. Default: "all" defined on the IBM Cloud
DeviceType=[<DeviceType >]	Device types defined on the IBM Cloud. Default: "all"
Authentication =<AuthenticationToken>	Authentication tokens obtained from the IBM Cloud.
Protocol =[<Protocol number>]	The protocol used for communication. (1: MQTT, 2: HTTPS, 3: HTTP, defaults: 1)
Format =[<Receive format>]	Analysis formats when Watson IoT Platform is received. Default: "all"
Event =[<EventName>]	Event name Default: all
QoS=[<QoS level>]	QoS level. (0: Level 0, 1: Level 1, 2: Level 2, Default: 0)
Port = [<receive-port number>]	The Watson IoT Platform port number. (Defaults: 8883 when Protocol = 1, 8883 when Protocol = 2, 1883 when Protocol = 3)
@EventDisable=[<Receive messages from	When reception is enabled: "False", when reception

[1] Square brackets ("[]") indicate optional.

cloud>]	is disabled: "True". Defaults: False
WaitTimeSecs = [<Cloud Event Check Intervals (seconds)>]	Valid only when the cloud checks for events (seconds). Protocol = 2 or 3. Default: 0 seconds
EventPolling =[<Inter-provider Event Confirmation>]	Available only when Protocol = 2, 3. Default: 10 seconds
ReceiveCommand =[<Command-ID when receiving events>]	Command ID. Default: "+" when event is received
ReceiveFormat =[<Format of command-received strings>]	Command string format when an event is received. Defaults to "json"

2.2.2. CaoController::AddVariable method

The AddVariable method of the CaoController class is a method by which the providers create their variable objects. Variable names can only be used with variables 2.3.1.

Format AddVariable(<bstrVariableName:VT_BSTR>[,<bstrOption:VT_BSTR>])

<bstrVariableName> : [in] variable name
<bstrOption> : In option string

The option string can be used to specify the synchronization settings for data transmission:

Optional strings in the tabular 2-3 CaoController::AddVariable

Option	Meaning
DeviceId=[<DeviceID >]	Same as AddController options. If not specified, the values specified in AddController are used.
DeviceType=[<DeviceType >]	Same as AddController options. If not specified, the values specified in AddController are used.
Format =[<Receive format>]	Same as AddController options. If not specified, the values specified in AddController are used.
Event =[<EventName>]	Same as AddController options. If not specified, the values specified in AddController are used.

2.2.3. CaoVariable:get_VariableNames Properties

Get the variable of 2.3.1.

2.2.4. CaoVariable:get_Value Properties

Gets the information for the variable. Refer to 2.3.1 for the implementation status of each variable and the data obtained.

2.2.5. CaoVariable:put_Value Properties

Set the information for the variable. Refer to 2.3.1 for the implementation status and setting data of each variable.

2.2.6. CaoController::OnMessage events

CaoController classes of OnMessage events occur at the following occasions:

TABLE 2-4 Message Types

Message type		Trigger for occurrence
1	Watson IoT Platform data reception	Occurs when data is received from the Watson IoT Platform.

2.2.6.1. Receive IoT Hub Events

The data format obtained by the disconnection detection message is shown below.

Number : Content type of events. json:0, text:1, xml:2, csv:3, others:4

Value : Contents of received messages

DateTime : Timestamped

Description : Command name

2.3. Variable List

2.3.1. CaoController classes

Table 2-5 CaoController Classes User Variables List

Variable name	Data type	Description	Attribute		Option
			Get	Put	DataType
*	VT_BSTR	Send messages to the IBM Watson IoT Platform.	-	○	○