Google Cloud Pub/Sub providers

Version 1.0.1

User's Guide

October 22, 2024

[Remark]

[Revision History]

Version	Date	Content
1.0.0	2023-04-25	First edition

1.0.1	2024-10-22	Fixed an issue where the GetValue could not retrieve errors when using an invalid credential file.

[Supported Devices]

Model	Version	Notes

Contents

1. Introduction

This document is a user's guide for CAO providers that send Cloud Pub/Sub and data. Google Cloud(GC is a cloud-based service provided by Google.

CAO providers (CaoProv.Google.CloudPubSub.exe) covered in this document are called Cloud Pub/Sub providers.

Chapter2 provides an introduction to Cloud Pub/Sub providers and a detailed description of the variables.2

This provider uses the following libraries.

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2. Provider Overview

2.1. Overview

A CAO provider that sends Cloud Pub/Sub and dataamong the services Google Cloud (GC that Google provides in the cloud. Its file format is EXE and is dynamically loaded at use from CAO engine. To use.Cloud Pub/Sub providers, you must register as described in Table 2-1..RegistAsm.bat and UnregistAsm.bat are located in DotNet ¥BAT folder under the folder where you installed ORiN2SDK.Tabular 2-1 Cloud Pub/Sub Providers21

Tabular 2-1 Cloud Pub/Sub Providers21

File name	CaoProv.Google.CloudPubSub.exe
ProgID	CaoProv.Google.CloudPubSub
Registry registration	RegistAsm.bat CaoProv.Google.CloudPubSub.exe
Deleting registry entries	UnregistAsm.bat CaoProv.Google.CloudPubSub.exe

2.2. Method Properties

2.2.1. CaoWorkspace::AddController method

Cloud Pub/Sub providers connect to Cloud Pub/Sub by referring to the connection parameters for communication during AddController.

Format   AddController(<bstrCtrlName:BSTR>,<bstrProvName:BSTR>,

<bstrPCName:BSTR>,<bstrOption:BSTR>))

BstrCtrlName : [in] Controller name

BstrProvName : [in] Provider name. Fixed value = "CaoProv.Google.CloudPubSub"

BstrPcName   : [in] Provider's running machine name

BstrOption   : [in] Option string

The following lists the option strings.

Optional String for Tabular 2-2 CaoWorkspace::AddController22

Option[1]	Description
@EventDisable = [<message-reception-from-cloud>]	When reception is enabled: "False", when reception is disabled: "True". Defaults: False.
ProjectId=<Project ID>	Specifies Project ID of Google Cloud to use.
CredentialFile = <credentials file path>	Specifies the path to the information file (JSON format) required for authentication.
CredentialType = <credential file type>	Specifies the type of file required for authentication. (0:Service account, 1:OAuth 2.0 client ID)
RefreshToken=[<RefreshToken>]	Specifies the refresh token to retrieve the access token for accessing Google Cloud Pub/Sub. ※ Required when specifying "1:OAuth 2.0 client ID" in CredentialType.
ProxyUri=[<Proxy URI>]	Specify Proxy URI to use. Example: http://proxy.server.com:8080http://proxy.server.com:8080/ ※When "True" is specified as UseProxy, the "True" is specified as the valid.UseProxy, and when ProxyUri is not specified, Proxy URI set in the PC is used.
UseProxy=[<Use Proxy>]	When Proxy is enabled: "True", when disabled: "False". Defaults: True.

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

2.2.2. CaoController::AddVariable method

AddVariable method of CaoController is the method by which each provider creates a variable object. Only the variables in Section 2.3.1 can be used in variable names.2.3.1

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

        <bstrVariableName>   :   [in] Variable Name

        <bstrOption>   :   [in] Option string

The following optional strings are used:

Optional String for Tabular 2-3 CaoController::AddVariable23

---

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

Option	Meaning
OperationMode=<OperationMode>	Specify the action type. (0:Publisher, 1:Subscriber)
TopicId=<TopicID>	Specifies Topic ID to send. Required when specifying Publisher in PubSubType.
SubscriptionId=<SubscriptionID>	Specify Subscription ID to subscribe to. Required when specifying Subscriber in PubSubType.
PollingSpan=[<PollingSpan>]	Specify the interval (in seconds) to subscribe to. (default value: 60, minimum value: 1, maximum value: 2147483)
MaxMessages=[<MaxMessages>]	Specifies the maximum number of messages to retrieve when subscribing. (default value: 100, minimum value: 1, maximum value: 1000)
ReceiveType=[<ReceiveType>]	Specifies how subscribed messages are received. (0: Receive in all ways, Receive in 1: OnMessage, 2: Receive in item, Defaults: 1)

2.2.3. CaoVariable: get_VariableNames Properties

2.3.1

2.2.4. CaoVariable: get_Value Property

Retrieves information corresponding to a variable. See Section 2.3.1 for implementation status and acquisition data of each variable. Some of the available parameters that connect to Cloud Pub/Sub take longer to complete because communication is performed.2.3.1

2.2.5. CaoVariable:put_Value Property

Set the information corresponding to the variable. For the implementation status and setting data of each variable, see chapter 2.3.1. Some of the available parameters that connect to Cloud Pub/Sub take longer to complete because communication is performed.2.3.1

2.2.6. CaoController::OnMessage Events

A CaoController class-related OnMessage event is generated at the following timing.

Table 2-4: Message types24

Message type		Trigger
0	Error	This error occurs when sending/receiving data to/from Cloud Pub/Sub.
1	Cloud Pub/Sub Message ID	Occurs when the sending of a message to Cloud Pub/Sub is completed.
2	Cloud Pub/Sub Subscribe Message	This error occurs when a message is received from Cloud Pub/Sub.
3	Exceed Message Queue	This error occurs when the queuing upper limit of received messages is exceeded.

2.2.6.1. Error reception

When an error occurs during data transmission/reception with Cloud Pub/Sub, the error details are received.

The data format obtained by the message is shown below.

Number	:	Received message type number (0)
Value	:	Contents of received messages
DateTime	:	Time stamp
Destination	:	Topic ID,Subscription ID in which the error occurred
Description	:	Explanation (Error)

Fixed values are shown in parentheses (" ()").

2.2.6.2. Message ID reception

When data transmission is completed, Message ID corresponding to the data is received from Cloud Pub/Sub.

The data format obtained by the message is shown below.

Number	:	Received message type number (1)
Value	:	Message ID
DateTime	:	Time stamp
Destination	:	Destination Topic ID
Description	:	Explanation (Message ID)

Fixed values are shown in parentheses (" ()").

2.2.6.3. Message reception

Messages registered in Subscription are received.

The data format obtained by the message is shown below.

Number	:	Received message type number (2)
Value	:	Contents of received messages
DateTime	:	Time stamp
Destination	:	Subscription ID of the recipient
Description	:	Explanation (Subscribe Message)

Fixed values are shown in parentheses (" ()").

2.2.6.4. Queued exceeded

When a message is discarded because the maximum number of messages that can be queued has been exceeded, a message with Message ID of the discarded message is received.

The data format obtained by the message is shown below.

Number	:	Received message type number (3)
Value	:	Message ID of discarded messages
DateTime	:	Time stamp
Destination	:	Subscription ID of the recipient
Description	:	Explanation (Exceed Queue Limit)

Fixed values are shown in parentheses (" ()").

2.3. Variable List

2.3.1. CaoController class-

Table 2-5 CaoController Class User Variable List25

| Variable Name | Data type | Description | Attribute | | Option |
			Get	Put	OperationMode
*	VT_BSTR	Sends text to Cloud Pub/Sub.	-	○	0: Publisher
*	ARRAY| VT_BSTR	Cloud Pub/Sub text is received.	○※	-	1: Subscriber

※Google Cloud Pub/Sub provider queues messages registered in Subscription ID at PollingSpan interval specified in AddVariable option. When get is executed, it retrieves the queued messages. Further information can be found in 3.1.3Variable process.3.1.3Process by Variable

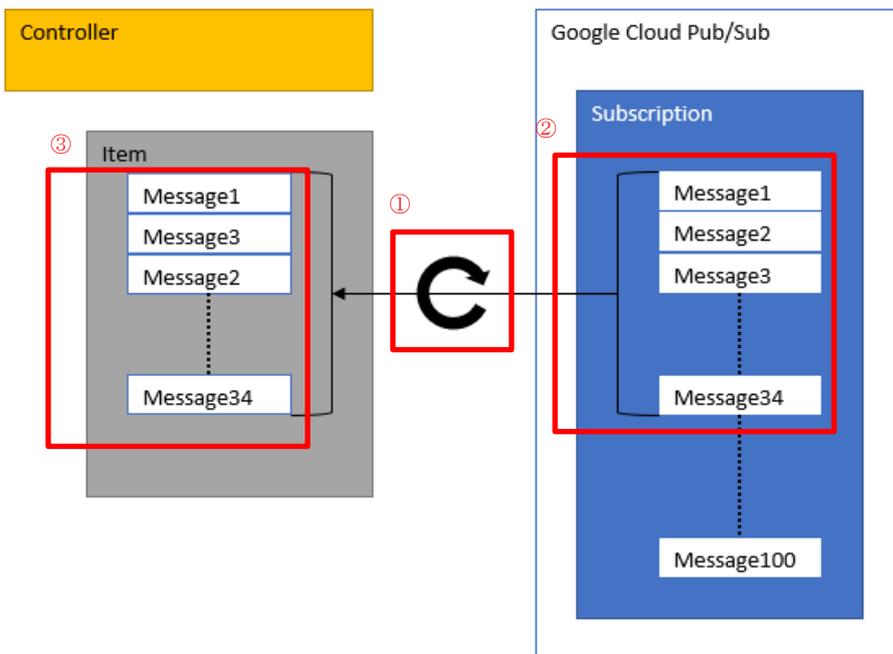**Table 2-6 CaoController Class System Variable List26**

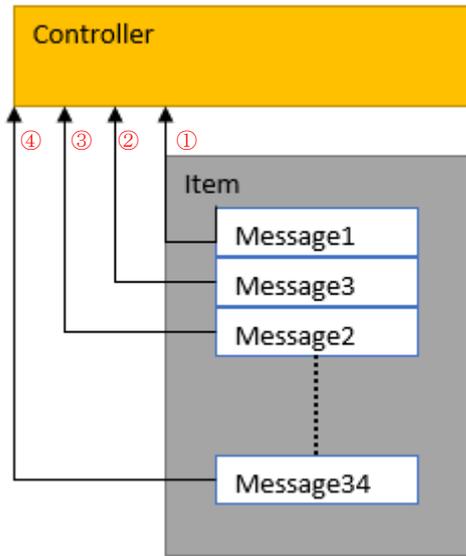| Variable Name | Data type | Description | Attribute | |
			Get	Put
@MAKER_NAME	VT_BSTR	Obtain the manufacturer name. (Google)	○	-
@VERSION	VT_BSTR	Get the version of the provider.	○	-

3. Appendix

3.1. Subscriber Behavior Overview
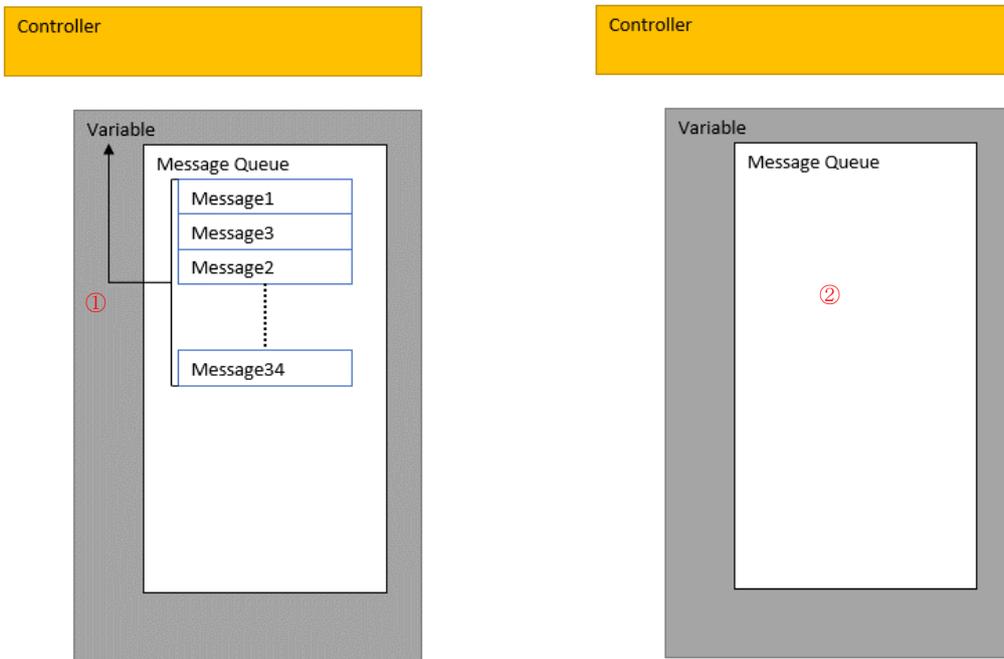
3.1.1. Receive Messaging from Google Cloud Pub/Sub

Cloud Pub/Sub providers periodically visit Subscription of Google Cloud Pub/Sub and receive messaging. The communication interval ① is specified by the optional character "PollingSpan" of CaoController::AddVariable method. Although you can specify the communication interval in seconds, it is recommended that you specify the interval in minutes during operation. The number of messages to be acquired in one communication ② is specified by the optional character "MaxMessages" of CaoController::AddVariable method. The number of messages specified in MaxMessages is not retrieved at one time, but it is not guaranteed that the number of messages specified in MaxMessages will always be received. Also, the order of messages registered in Google Cloud Pub/Sub is not guaranteed when they are received ③.

3.1.2. Messaging by OnMessage

Controller

④ ③ ② ①

Item

Message1

Message3

Message2

Message34

3.1.3. Process by Variable

Controller

Variable

Message Queue

Message1

Message3

Message2

Message34

①

Controller

Variable

Message Queue

②

Until then, messages are stored in Message Queue with a.Message Queue limit of 10000. When a message exceeding the upper limit is received ③ and added to Message Queue, the oldest message is discarded. Message ID of the discarded message is notified to Controller in OnMessage ④ This notification is notified even if OnMessage selected by "0" or "1" in the option character "ReceiveType" of CaoController::AddVariable method is not selected, but it is not notified when the option character "@EventDisable" of 2.2.1CaoWorkspace::AddController method is selected

"True".2.2.1CaoWorkspace::AddController method