

# CAP provider CAP communication

Version 1.0.1

## User's guide

April 29, 2020

【 remarks 】

**【 revision history 】**

Version	Date	Content
1.0.0.0	2006-02-23	First edition.
1.0.1.0	2007-06-23	Addition of Interval option.
1.0.1.1	2010-02-10	Addition of error code.
1.0.1	2012-07-17	Document versioning rules was changed.
	2020-04-29	Fixed sample program.

**【 hardware 】**

Model	Version	Notes

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## 1. Introduction

This book is an user's guide of the CAP(Controller Access Protocol) provider that connects it from CAO(Controller Access Object) with the CAO provider remotely through the Internet.

In the CAO engine, the method of the connection to the CAO provider remotely includes the following two methods.

- (1) A remote, connected function of the CAO engine is used.
- (2) The DllHost process is used.

However, because these correspondence procedures use DCOM(Distributed Component Object Model) as a communication specification, it is not possible to connect it remotely substantially through the Internet. (Because such a setting has the problem of security, it is not possible to set it generally though the port can be opened by setting the firewall. )

In the CAP provider, it solves by using SOAP(Simple Object Access Protocol) that has achieved RPC(Remote Procedure Call) by using HTTP for this problem, and the interface of CAO is mounted. Therefore, it is possible to connect it with the provider remotely through the Internet in case of being in the environment that HTTP passes.

This book explains the function of this CAP provider and the mounting method.

## 2. Outline of provider

### 2.1. Outline

The CAP provider is CAO provider to connect it with the CAO provider remotely by way of the Internet through CAO (Figure 2-1). This provider can use the application for CAO even by the Internet connection environment without developing special software just like a local connection environment (LAN is included).

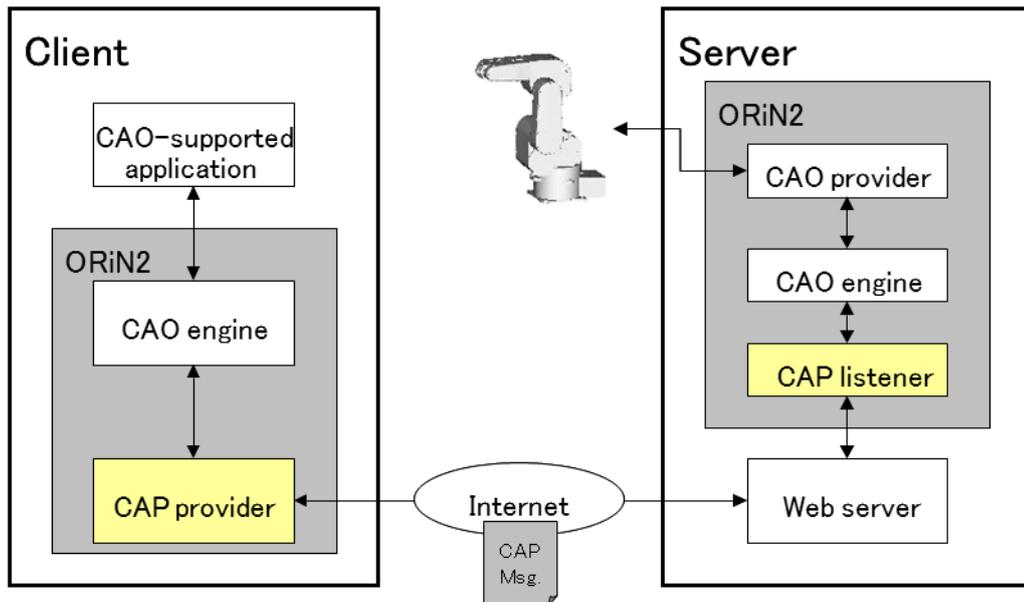


Figure 2-1 Connection of the Internet passing

The CAP listener is COM component here that receives the CAP message and calls the method of the CAO engine of the server machine.

#### 2.1.1. Setup of CAP provider

The CAP provider uses SOAP and communicates. Therefore, it is necessary to adjust the setting to use SOAP to the client side and the server side to use the CAP provider.

Set-up steps on the client side and the server side are shown as follows.

**2.1.1.1. Setup of client side**

- (1) The Cap provider is registered in the registry.

**Table 2-1 CAP provider**

File name	CaoProvCAP.DLL
ProgID	CaoProv.CAP
Registry registration	regsvr32 CaoProvCAP.DLL
Blotting out of registry registration	regsvr32 /u CaoProvCAP.DLL

- (2) Microsoft SOAP Toolkit 3.0 is installed.

**Table 2-2 Soap Toolkit 3.0 download site**

File name	URL
soapsdk.exe	<a href="http://msdn.microsoft.com/webservices/building/soaptk/">http://msdn.microsoft.com/webservices/building/soaptk/</a>

### 2.1.1.2. Setup of server side

(1) The CAO engine is set to the user who has the Administrator authority in the service registration or the start user.

- When you do the service registration to the CAO engine
  1. "CAO.exe /service" is executed by the command prompt.
  2. Setting → control panel is clicked, and management tool → service of the control panel of the start menu is selected.
  3. "CAO" is selected from among the management tool of service, and the check is put in "The conversation with desktop is permitted to service" of "Logon" tab.

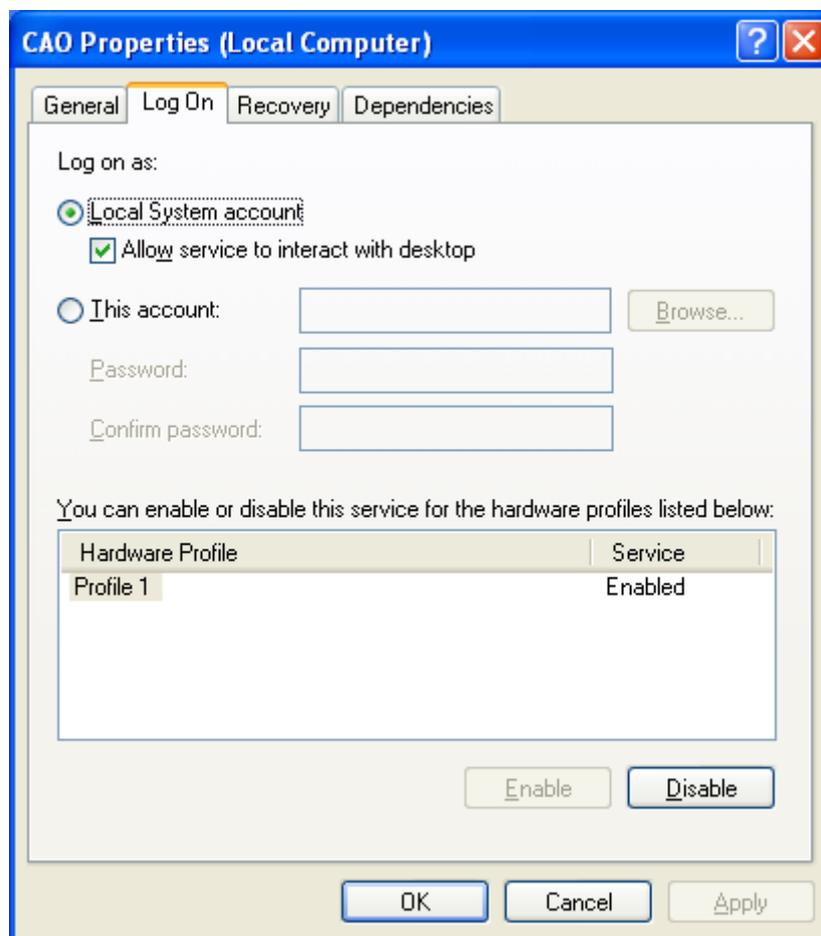


Figure 2-2 Management tool screen of service

- When you set the CAO engine start user
  1. "Dcomcnfg" is executed by the command prompt.
  2. "CAO" is selected from among the application of the composition property screen of decentralization COM, and the property is clicked.
  3. The identification tab on the property screen of CAO is selected, and the following user is selected. The user's password is input to the user-name and the password with the Administrator authority in the user-name and the "OK" button is clicked.

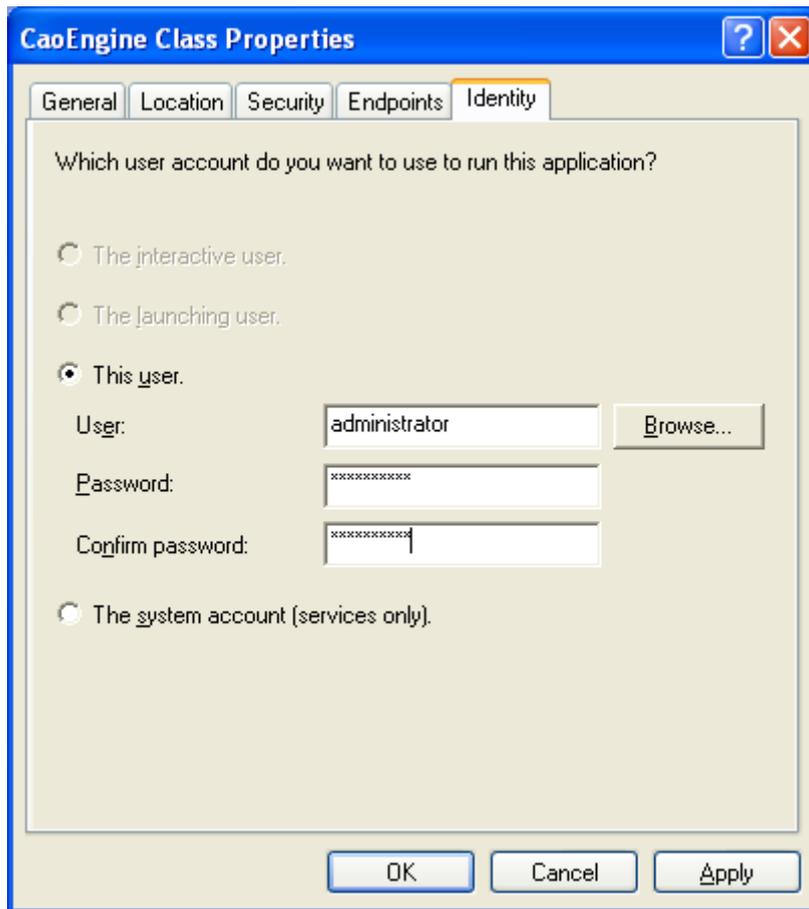


Figure 2-3 Dcomcnfg setting screen

(2) The Cap listener is registered in the registry.

Table 2-3 CAP listener

File name	CapListener.DLL
Registry registration	regsvr32 CapListener.DLL
Blotting out of registry registration	regsvr32 /u CapListener.DLL

- (3) Microsoft SOAP Toolkit 3.0 is installed. (Table 2-2)
- (4) The virtual directory is made by using SOAPVDIR.CMD of Microsoft SOAP Toolkit 3.0. The following commands are input to making by the command prompt.  
Bin directory of SOAPVDIR.CMD CREATE Cap <CapListener >
- (5) The check is applied to the following reading accesses of two files that exist in virtual directory "CAP" in the setting of IIS. (Please note the extension. )
  - CapLister.WSML
  - CapListerClient.WSML
- (6) The Internet guest account is added to the start authority of CAO.exe on the server side.
- (7) **Only the server name** of the 3492nd line of the CapListner.WSDL file in the CapListener directory is changed to the name of an actual Web server.  
(example) soap:address location='http://**cap-server**/Cap/CapListener.WSDL' />
- (8) It right-clicks in "Regulated Web site" by setting IIS and the property is selected. The check on "The HTTP keep alive is made effective" that exists in the item of the connection in "Web site" tab of the dialog is removed. (There is a possibility that the processing speed slows remarkably though CAP operates even if this setting is not done. )

### 2.1.2. Message

The acquisition of the message generated by a remote engine can be switched by the "Message" option of the AddController method.

When the message is turned off, the message generated by a remote engine cannot be acquired.

When the message is turned on, the bit flag of the engine control message can acquire only the message of turning off in the message option.

## 2.2. Method property

### 2.2.1. CaoWorkspace::AddController method

When this method is executed, CAO and the CAO provider are started, and connected with the server.

The parameter necessary for the provider that starts remotely is specified for the option character string of this method. The list specified for the option character string is shown as follows.

**Table 2-4 Option character string of CaoWorkspace::AddController**

Option	Meaning
Provider name of =< Provider >	Provider name that starts remotely. (default value: Null character string)
=< Web server name Server >	The WEB server name is specified. (default value: "localhost")

=< machine name Machine >	When a remote provider is started with a machine different from the WEB server, it specifies it. (default value: Null character string)
Option character string of =< Option >	The option character string necessary for a remote provider is specified. (default value: Null character string)
Message[=<True/False>]	Presence of message acquisition. True: There is message acquisition (default). False: There is no message acquisition.
Polling interval of Interval=< >	Message acquisition interval (ms) is specified. (default value: 1000 ms)

The example when the AddController method is executed is shown as follows.

```

AddController
(
  "RC1",                               // controller name = RC1
  "CaoProv. CAP",                       // Fixation
  "",                                     // The CAP provider is executed in the process of the CAO
  engine,
  "Server=TestServer, Provider=CaoProv. DataStore" // It is WEB server "TestServer" and
  DataStore.
  // The provider is started.
);

```

### 2.2.2. Method properties other than AddController

As for the CAP provider, the controller, the robot, the file, the task, the variable, and all the methods and the properties of the extension board class are mounted. The method and the properties other than above-mentioned AddController (2.2.1) execute the method and the property of the same name with CAO of the server.

#### **Execute method directions**

The parameter of the second argument (Variant type) can be omitted in the Execute method mounted in Controller, Extension, File, Robot, and the Task class of CAO. When the Variant type argument is omitted when Visual Basic is used for the client here, the data of the VT\_ERROR type is transmitted to CAO and the CAO provider. However, it fails in each omission of the second argument of the Execute method because of no correspondence of the SOAP message that the CAP provider makes to the VT\_ERROR type. Therefore, please specify it by not using the omission, and using 0(NULL) etc. when the second argument of the Execute method is unnecessary when you use the CAP provider.

### **2.3. Variable list**

There is no variable peculiar to the CAP provider.

### **2.4. Error code**

CAP Provider does not define specific error code. For common error code for ORiN2, please refer to error code section of [“ORiN2 Programming guide”](#).

### 3. Sample program

The DataStore provider is started with server "SampleServer", and the sample that sets, and acquires the value to the variable is shown as follows.

**List 3-1****Sample.frm**

```
Private eng As CaoEngine
Private ctrl As CaoController
Private var As CaoVariable

Private Sub Form_Load()

    Dim ws As CaoWorkspace

    Set eng = New CaoEngine
    Set ws = eng.Workspaces(0)

    ' Server and connection
    Set ctrl = ws.AddController("RC1", _
        "CaoProv. CAP", _
        "" _
        "Provider=CaoProv. DataStore, Server=SampleServer")

    ' acquisition of variable
    Set var = ctrl.AddVariable("Var1")

End Sub

' setting of variable
Private Sub Command1_Click()
    var.value = Text1.Text
End Sub

' acquisition of variable
Private Sub Command2_Click()
    Text1.Text = var.value
End Sub
```