

工業物聯網

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一、 過程(PY. CODE)

server

```
8  from opcua import Server
9
10 from random import randint
11
12 import time
13
14 import datetime
15
16 server = Server()
17
18 url = "opc.tcp://140.116.226.85:4840"
19
20 server.set_endpoint(url)
21
22 name = "OPCUA_SIMUALTION_SERVER"
23
24 addspace = server.register_namespace(name)
25
26
27 node = server.get_objects_node()
28
29 Param = node.add_object(addspace, "Parameters")
30
31 Temp = Param.add_variable(addspace, "Temperature", 0)
32
33 Temp.set_writable()
34
35 Param2 = node.add_object(addspace, "Parameters")
36
37 Hum = Param2.add_variable(addspace, "Humidity", 0)
38
39 Hum.set_writable()
40
41 server.start()
42
43 print("server at {}".format(url))
44
45 while True:
46     Temperature = randint(0,200)
47     Humidity = randint(0,100)
48     print(datetime.datetime.now())
49     print(Temperature)
50     print(Humidity)
51     Hum.set_value(Humidity)
52     Temp.set_value(Temperature)
53     time.sleep(2)
```

client

```
8  from opcua import Client
9
10 import time
11
12 import datetime
13
14 url = "opc.tcp://140.116.226.85:4840"
15
16 client = Client(url)
17
18 client.connect()
19
20 print("Client Connected")
21
22 while True:
23     Temp = client.get_node("ns=2;i=2")
24     Hum = client.get_node("ns=2;i=2")
25     Temperature = Temp.get_value()
26     Humidity = Hum.get_value()
27     print(datetime.datetime.now())
28     print(Temperature)
29     print(Humidity)
30     time.sleep(1)
```

二. 使用 UaExpert 和伺服器連線

Unified Automation UaExpert - The OPC Unified Architecture Client - NewProject*

File View Server Document Settings Help

Project Data Access View Attributes

Project Servers Documents Data Access

Address Space

No Highlight

Root Objects Parameters Humidity Parameters Temperature Server Types Views

#	Server	Node Id	Display Name	Value	Datatype	Source Timestamp	Server Time
1	IIOTSERVER	NS2[Numeric]2	Temperature	45	Int64	PM 11:12:44.370	AM 08:00
2	IIOTSERVER	NS2[Numeric]4	Humidity	33	Int64	PM 11:12:44.370	AM 08:00

Attribute

NamespaceIndex IdentifierType Identifier NodeClass BrowseName DisplayName Description WriteMask

References

Reference Target Display

HasTypeDefinition BaseDataVariable

Log

Timestamp	Source	Server	Message
2021/12/9 PM ...	DA Plugin	IIOTSERVER	CreateMonitoredItems succeeded [ret = Good]
2021/12/9 PM ...	DA Plugin	IIOTSERVER	Item [NS2[Numeric]2] succeeded : RevisedSamplingInterval=500, RevisedQueueSize=1, MonitoredItemId=112 [ret = Good]
2021/12/9 PM ...	Attribute Plugin	IIOTSERVER	Read attributes of node 'NS2[Numeric]4' succeeded [ret = Good].
2021/12/9 PM ...	Reference Plu...	IIOTSERVER	Browse succeeded.
2021/12/9 PM ...	AddressSpace...	IIOTSERVER	QasAddressSpaceModel::mimeData
2021/12/9 PM ...	DA Plugin	IIOTSERVER	QasDaModel::dropMimeData
2021/12/9 PM ...	DA Plugin	IIOTSERVER	Found existing subscription for ServerId 9
2021/12/9 PM ...	DA Plugin	IIOTSERVER	Item [NS2[Numeric]4]: SamplingInterval=250, QueueSize=1, DiscardOldest=1, ClientHandle=5
2021/12/9 PM ...	DA Plugin	IIOTSERVER	CreateMonitoredItems succeeded [ret = Good]
2021/12/9 PM ...	DA Plugin	IIOTSERVER	Item [NS2[Numeric]4] succeeded : RevisedSamplingInterval=500, RevisedQueueSize=1, MonitoredItemId=113 [ret = Good]

三. 結果

成功顯示溫度及濕度兩個參數之結果

#	Server	Node Id	Display Name	Value	Datatype	Source Timestamp	Server Time
1	IIOTSERVER	NS2[Numeric]2	Temperature	45	Int64	PM 11:12:44.370	AM 08:00
2	IIOTSERVER	NS2[Numeric]4	Humidity	33	Int64	PM 11:12:44.370	AM 08:00

四. 心得

此次實驗於 windows 系統上運行 UaExpert 和伺服器連線，以 python code 為基礎撰寫 server 及 client，並與伺服器連線。如今，從工廠設備、汽車到行動裝置，以及智慧手錶等，大多能夠傳輸和接收其他設備資料，現今的 IoT 更結合了感測器、軟體和其他技術的互連設備。因此，在此次實作中，即是運用 UaExpert 和伺服器連線，以進行資料的傳輸，可再搭配感測器，做進一步的應用。