



# Connectivity Guide

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## Connect ThingWorx® Kepware® Server to Ali IoT

# 1. Overview

This document explores how to configure an MQTT Client Agent within the IoT Gateway Plug-In for ThingWorx Kepware Server to send data to Ali IoT. The connection can be made using MQTT over Transmission Control Protocol (TCP) and MQTT over Transport Layer Security (TLS).

- **Note:** Before connecting ThingWorx Kepware Server to Ali IoT via MQTT, ensure appropriate Ali IoT product and device configuration, getting ProductKey, DeviceName, DeviceSecret, and root CA certificate ready. Find this information on the console page of the website: <https://iot.console.aliyun.com>.

## 2. Configure the Agent for MQTT over TCP

1. Launch ThingWorx Kepware Server and use the left panel to locate the IoT Gateway Plug-In.
2. Located and select the MQTT Client Agent.
3. Right-click and select **Create....**
4. Set the following parameters:
  - a. MQTT Broker URL has the format of `tcp://${YourProductKey}.iot-as-mqtt.${region}.aliyuncs.com:1883`
  - b. MQTT Broker Topic has the format of `/${YourProductKey}/${YourDeviceName}/${CustomizedString}`

Property Editor - IoT Gateway.Aliyun

Property Groups	MQTT Broker	
General	URL	tcp://Xlabolkxqcq.iot-as-mqtt.cn-shanghai.aliyuncs.com:1883
<b>Client</b>	Topic	/Xlabolkxqcq/Shanghai/iotgateway
Message	Publish	
Security	QoS	1 (At least once)
Last Will	Rate (ms)	10000
Subscriptions	Format	Narrow Format
Licensing	Max Events per Publish	1000
	Transaction timeout in (s)	5

- c. Inside Credentials, specify Client ID in the format of `${clientId}|securemode=3,signmethod=hmacsha1|` for TCP Connection  
`${clientId}|securemode=2,signmethod=hmacsha1|` for TLS Connection  
● **Tip:** {clientId} is customizable in ThingWorx Kepware Server, but “Kepware” is used in this guide.
- d. For inside credentials, specify user name in the format of `${YourDeviceName}&${YourProductKey}`

Property Groups	Credentials	
General	Client ID	Kepware securemode=3,signmethod=hmacsha1
Client	Username	Shanghai&Xlabolkxqcq
Message	Password	*****
<b>Security</b>	TLS Configuration	
Last Will	TLS Version	v1.2
Subscriptions	Client Certificate	Disable
Licensing		

- e. For inside credentials, the password must be calculated by HMACSHA1 algorithm.
- **Note:** Ali IoT provides a tool to generate a password. The same password can be used for the TCP and TLS connections.

productKey:	<input type="text" value="Xlabolkgxcq"/>
deviceName:	<input type="text" value="Shanghai"/>
deviceSecret:	<input type="text" value="ZG09R5yWFK0A3"/>
timestamp:	<input type="text"/>
clientId:	<input type="text" value="Kepware"/>
method:	<input type="text" value="hmacsha1"/>
password:	<input type="button" value="Generate"/>
password:	<input type="text" value="707078E79EA4298E1A0"/>

5. Set and Enable this MQTT Client Agent.
6. Verify it displays as connecting to Ali IoT.

Date	Time	Source	Event
2020/6/16	7:34:57	KEPServerEX\Runtime	MQTT agent 'Ali_IoT_TCP' is connected to broker 'tcp://Xlabolkgxcq.iot-as-mqtt.cn-shanghai.aliyuncs.com:1883'

7. Verify data is received in Ali IoT.

MessageID	1272673999763293185 <a href="#">复制</a>
Topic	/Xlabolkgxcq/Shanghai/iotgateway
时间	2020/06/16 07:35:01.340
内容	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> <input type="text" value="Text (UTF-8)"/> </div> <div> <pre>{   "timestamp": 1592264101518,   "values": [     {       "id": "Simulator.Device.Temperature",       "v": 20,       "q": true,       "t": 1592264085613     },     {       "id": "Simulator.Device.Temperature",       "v": 31.125,       "q": true,       "t": 1592264086619     },     {       "id": "Simulator.Device.Temperature",       "v": 21.5,       "q": true,       "t": 1592264087618     },     {       "id": "Simulator.Device.Temperature",       "v": 21.125,       "q": true,       "t": 1592264088613     },     {       "id": "Simulator.Device.Temperature",       "v": 29.125,       "q": true,       "t": 1592264089615     },     {       "id": "Simulator.Device.Setpoint",       "v": 0,       "q": true,       "t": 1592264085613     },     {       "id": "Simulator.Device.Humidity",       "v": 40,       "q": true,       "t": 1592264085613     },     {       "id": "Simulator.Device.Humidity",       "v": 55.1666679,       "q": true,       "t": 1592264086619     },     {       "id": "Simulator.Device.Humidity",       "v": 45,       "q": true,       "t": 1592264087618     },     {       "id": "Simulator.Device.Humidity",       "v": 42.1666679,       "q": true,       "t": 1592264088613     }   ] }</pre> </div> <div style="margin-left: 10px; align-self: center;"> <a href="#">复制</a> </div> </div>

### 3. Configure MQTT Over TLS (Optional)

8. Install the root CA Certificate from Ali IoT on the host operating system.
9. Change the broker URL in the client property group of the MQTT Client Agent to reflect the use of SSL (replace "tcp://" with "ssl://").

Property Groups	MQTT Broker	
General	URL	ssl://Xlabolkqxcq.iot-as-mqtt.cn-shanghai.aliyuncs.com:1883
<b>Client</b>	Topic	/Xlabolkqxcq/Shanghai/iotgateway
Message	Publish	
Security	QoS	1 (At least once)
Last Will	Rate (ms)	10000
Subscriptions	Format	Narrow Format
Licensing	Max Events per Publish	1000
	Transaction timeout in (s)	5

10. Change the TLS version in the security property group to **v1.2**.

Property Groups	Credentials	
General	Client ID	Kepware securemode=2,signmethod=hmacsha1
Client	Username	Shanghai&Xlabolkqxcq
Message	Password	*****
<b>Security</b>	TLS Configuration	
Last Will	TLS Version	v1.2
Subscriptions	Client Certificate	Disable
Licensing		

Date	Time	Source	Event
2020/6/16	7:39:43	KEPServerEX\Runtime	MQTT agent 'Ali_IoT_SSL' is connected to broker 'ssl://Xlabolkqxcq.iot-as-mqtt.cn-shanghai.aliyuncs.com:1883'
2020/6/16	7:39:30	KEPServerEX\IoT Gateway	Running with Java 1.8.0_241 [Oracle Corporation Java HotSpot(TM) Client VM version 25.241-b26].
2020/6/16	7:39:30	KEPServerEX\IoT Gateway	IoT Gateway using JRE at [C:\Program Files (x86)\Java\jre1.8.0_241].