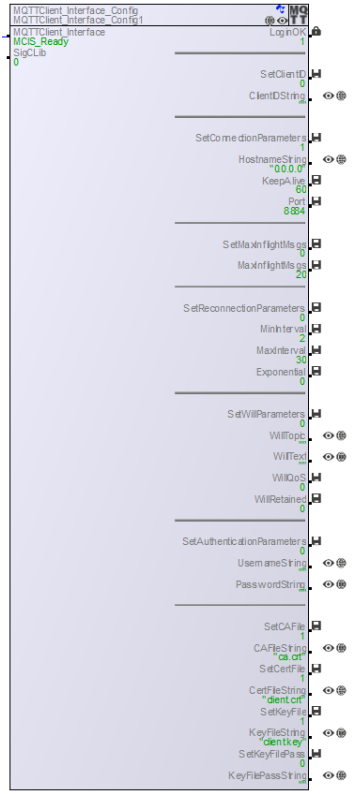
MQTTClient_Interface_Config



The MQTTClient_Interface_Config class allows the user to configure the MQTTClient_Interface class in conjunction with the XML file or in a standalone configuration.

The user only has to place and connect an instance to be able to configure his MQTTClient_Interface class.

The class is derived from the MQTTClient_Interface_ConfigBase class and expands the functionality for the general use-case, it is also possible for the user to create a derivation of the MQTTClient_Interface_ConfigBase class to implement any specific requirements.

Implementation of the Base Class

Only one instance of the MQTTClient_Interface_ConfigBase class (thus a derivation thereof) can be used for each instance of the MQTTClient_Interface, the basic functionality of the class entails logging in to the connected MQTTClient_Interface instance and calling user methods to determine the configuration to use for each section.

The user methods are called during the MCIS_Initialise sequence of the MQTTClient_Interface instance and are intended to be overwritten by the user.

The user methods to be overwritten are shown in Table 1:

Table 1 - Virtual Methods

Method	Description
ClientID()	During the call of this method the user can populate an output structure of type t_s_ClientID which contains a pointer to the ClientID that the users wishes to set to the MQTTClient_Interface class.
ConnectionParameters()	During the call of this method the user can populate an output structure of type t_s_ConnectionParameters which contains the hostname, port and keepalive parameters. These parameters will be used by the MQTTClient_Interface instance to build a connection to the MQTT Broker.
MaxInflightMessages()	During the call of this method the user can populate an output structure of type t_s_MaxInflightMessages which contains the number of maximum inflight messages to be used by the MQTTClient instance.
ReconnectionParameters()	During the call of this method the user can populate an output structure of type t_s_ReconnectionParameters which contains the minimum interval, maximum interval and exponential mode parameters. These parameters will be used by the MQTTClient_Interface instance to rebuild a connection to the MQTT Broker once the connection has been lost.
Will()	During the call of this method the user can populate an output structure of type t_s_Will which contains the Will message and parameters thereof. This message will be distributed by the broker to other clients if the client unexpectedly loses connection.
AuthenticationParameters()	During the call of this method the user can populate an output structure of type t_s_Authentication which contains the username and password parameters. These parameters will be used by the MQTTClient_Interface instance to build a connection to the MQTT Broker.
TLS()	During the call of this method the user can populate an output structure of type t_s_TLS which contains the TLS filename parameters. These parameters will be used by the MQTTClient_Interface instance to build an encrypted connection to the MQTT Broker.

Interfaces

Clients

MQTTClient_Interface	Object channel to the MQTTClient_Interface class. Data type: MQTTClient_Interface::t_e_MQTTClientStates
SigCLib	Object channel to the SigCLib class. Does not have to be connected. Data type: DINT

Servers

LoginOK

This server indicates whether the MQTTClient_Interface_ConfigBase class has successfully logged in to the MQTTClient_Interface. If more than one instance of this class is connected to the same MQTTClient_Interface only one will login successfully.

0 – Login not performed / failed.

1 – Login successful.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	-	Retentive	FALSE

Implementation

The MQTTClient_Interface_Config class is derived from the MQTTClient_Interface_ConfigBase class and provides a general implementation that should cover most use cases. The class is intended to be provide the user with an easily configurable interface for the MQTTClient_Interface class.

The implementation of this class should simply require the placement thereof in a network and connection to the relative MQTTClient_Interface instance.

Interfaces

Servers

SetClientID

On this server the user must specify whether the ClientID is to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

ClientIDString

Object channel to the StringRAM object on which the ClientID string is to be specified.

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

SetConnection-Parameters

On this server the user must specify whether the connection parameters are to be set or ignored during configuration, if ignored the default / XML configured values will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

HostnameString

Object channel to the StringRAM object on which the hostname string is to be specified.

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

KeepAlive

KeepAlive time in seconds is to be specified on this server.

Unit	Seconds	Data type	DINT
Value range	0 – 65535	Write Protected	TRUE
Default value	60	Retentive	TRUE

Port

Connection port number is to be specified on this server.

Normative values used by the MQTT protocol:
Non-encrypted: 1833
Encrypted (No Client Cert): 8883
Encrypted (With Client Cert): 8884

Unit	-	Data type	DINT
Value range	-	Write Protected	TRUE
Default value	1883	Retentive	TRUE

SetMaxInflight-Msgs

On this server the user must specify whether the max inflight messages value is to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

MaxInflightMsgs

Maximum number of inflight messages is to be specified on this server.
In a standard application this value should not be changed.

Unit	-	Data type	DINT
Value range	-	Write Protected	TRUE
Default value	20	Retentive	TRUE

SetReconnectionParameters

On this server the user must specify whether the reconnection parameters are to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

MinInterval

Minimum delay interval to be used for the reconnection procedure, should be specified in seconds.

Unit	-	Data type	DINT
Value range	0 -> MaxInterval - 1	Write Protected	TRUE
Default value	2	Retentive	TRUE

MaxInterval

Maximum delay interval to be used for the reconnection procedure, should be specified in seconds.

Unit	-	Data type	DINT
Value range	MinInterval + 1 ->	Write Protected	TRUE
Default value	30	Retentive	TRUE

Exponential

Whether the reconnection delay should increase exponentially should be specified on this server.
0 = Linear Increase. (MinInterval must be >= 1).
1 = Exponential Increase. (MinInterval must be >= 2).

With MinInterval = 2 and MaxInterval = 30, Reconnection Intervals will be:
0: 2,4,6,8,10,...,30,30,30,...
1: 2,4,8,16,30,30,30,...

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

SetWillParameters

On this server the user must specify whether the Will parameters are to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

WillTopic

Object channel to the StringRAM object on which the Will Topic string is to be specified.

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

WillText

Object channel to the StringRAM object on which the Will Text string is to be specified.

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

WillQoS

Quality of Service (QoS) to be used for the Will message delivery.

Unit	-	Data type	DINT
Value range	0, 1, 2	Write Protected	TRUE
Default value	0	Retentive	TRUE

WillRetained

Whether the Will Message is to be retained on the broker for new clients to receive when connecting after this will has been published.

0 = Not Retained.
1 = Retained.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

<table>
<tr><td>SetAuthentica-tionParameters</td><td>On this server the user must specify whether the Authentication Parameters are to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.
<table>
<tr><td>Unit</td><td>-</td><td>Data type</td><td>DINT</td></tr>
<tr><td>Value range</td><td>0/1</td><td>Write Protected</td><td>TRUE</td></tr>
<tr><td>Default value</td><td>0</td><td>Retentive</td><td>TRUE</td></tr>
</table></td></tr>
<tr><td>UsernameString</td><td>Object channel to the StringRAM object on which the Username string is to be specified.
<table>
<tr><td>Unit</td><td>-</td><td>Data type</td><td>StringRAM</td></tr>
<tr><td>Value range</td><td>-</td><td>Write Protected</td><td>FALSE</td></tr>
<tr><td>Default value</td><td>0</td><td>Retentive</td><td>Implemented by StringRAM.</td></tr>
</table></td></tr>
<tr><td>PasswordString</td><td>Object channel to the StringRAM object on which the Password string is to be specified.
<table>
<tr><td>Unit</td><td>-</td><td>Data type</td><td>StringRAM</td></tr>
<tr><td>Value range</td><td>-</td><td>Write Protected</td><td>FALSE</td></tr>
<tr><td>Default value</td><td>0</td><td>Retentive</td><td>Implemented by StringRAM.</td></tr>
</table></td></tr>
<tr><td>SetCAFile</td><td>On this server the user must specify whether the CA File is to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.
<table>
<tr><td>Unit</td><td>-</td><td>Data type</td><td>DINT</td></tr>
<tr><td>Value range</td><td>0/1</td><td>Write Protected</td><td>TRUE</td></tr>
<tr><td>Default value</td><td>0</td><td>Retentive</td><td>TRUE</td></tr>
</table></td></tr>
</table>

CAFileString

Object channel to the StringRAM object on which the CA Filename string is to be specified.

The File should be placed in "C:/LSLSYS/" and the filename should be specified in the string:

Example:
Full path to the file is: "C:/LSLSYS/myFile.cert"
String should contain: "myFile.cert"

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

SetCertFile

On this server the user must specify whether the Cert File is to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

CertFileString

Object channel to the StringRAM object on which the Cert Filename string is to be specified.

The File should be placed in "C:/LSLSYS/" and the filename should be specified in the string:

Example:
Full path to the file is: "C:/LSLSYS/myFile.cert"
String should contain: "myFile.cert"

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

SetKeyFile

On this server the user must specify whether the Key File is to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

KeyFileString

Object channel to the StringRAM object on which the Key Filename string is to be specified.

The File should be placed in "C:/LSLSYS/" and the filename should be specified in the string:

Example:
Full path to the file is: "C:/LSLSYS/myFile.cert"
String should contain: "myFile.cert"

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.

SetKeyFilePass

On this server the user must specify whether the Key File Password is to be set or ignored during configuration, if ignored the default / XML configured value will be used by the MQTTClient_Interface instance.

0 – Do not set.
1 – Set.

Unit	-	Data type	DINT
Value range	0/1	Write Protected	TRUE
Default value	0	Retentive	TRUE

KeyFilePassString

Object channel to the StringRAM object on which the KeyFile Password string is to be specified.

Unit	-	Data type	StringRAM
Value range	-	Write Protected	FALSE
Default value	0	Retentive	Implemented by StringRAM.