webdyn

Flexitron group

TITAN

Application Note 37

Using MQTT – RS232/RS485 Gateways

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1. Scenario Details

TITAN-based devices have all the typical functionalities of 4G/3G/2G routers, as well as a series of added features that make them one of the most feature-packed routers on the market.

One of the added features is its ability to create several simultaneous IP – RS232/RS485 gateways. In other words, TITAN-based devices can implement gateways of the following types:

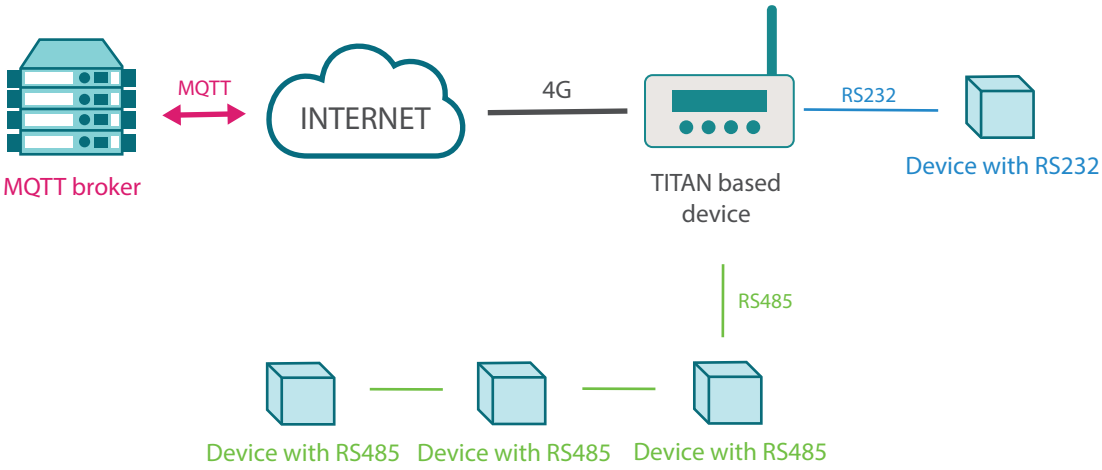
Ethernet <> RS232 / RS485

Wi-Fi <> RS232 / RS485

4G/3G/2G <> RS232 / RS485

This means that if you have one or more remote devices with RS232 and/or RS485 ports, you can access them remotely as if they were local. There are several ways to implement Serial IP Gateways in the family of TITAN-based devices: TCP Server mode, TCP Client mode or MQTT. This application note will detail how to implement 2 MQTT Serial gateways simultaneously in order to control, using an MQTT broker, an RS232 device and the devices connected to an RS485 bus (up to 64).

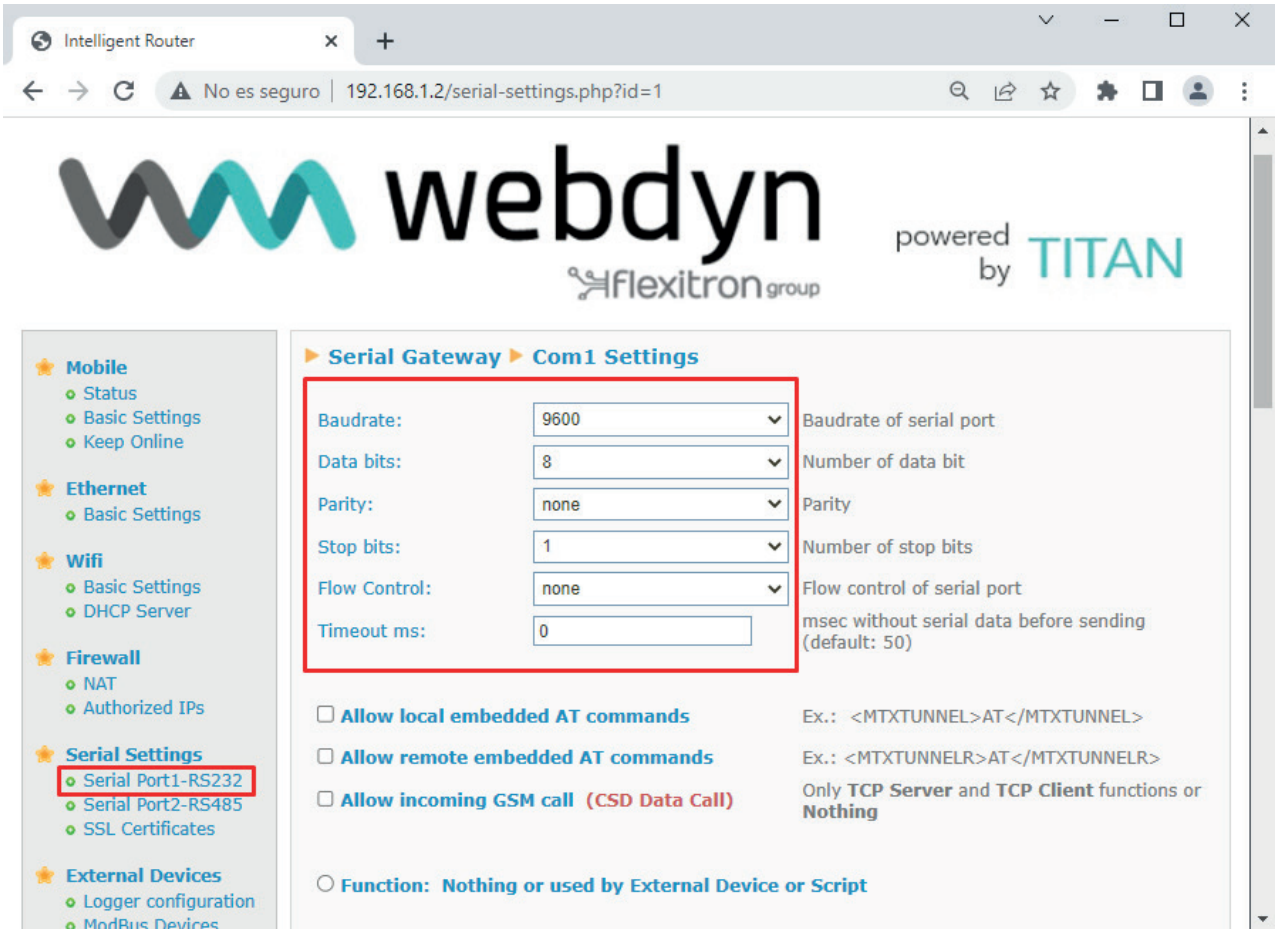
2. Description of the Example



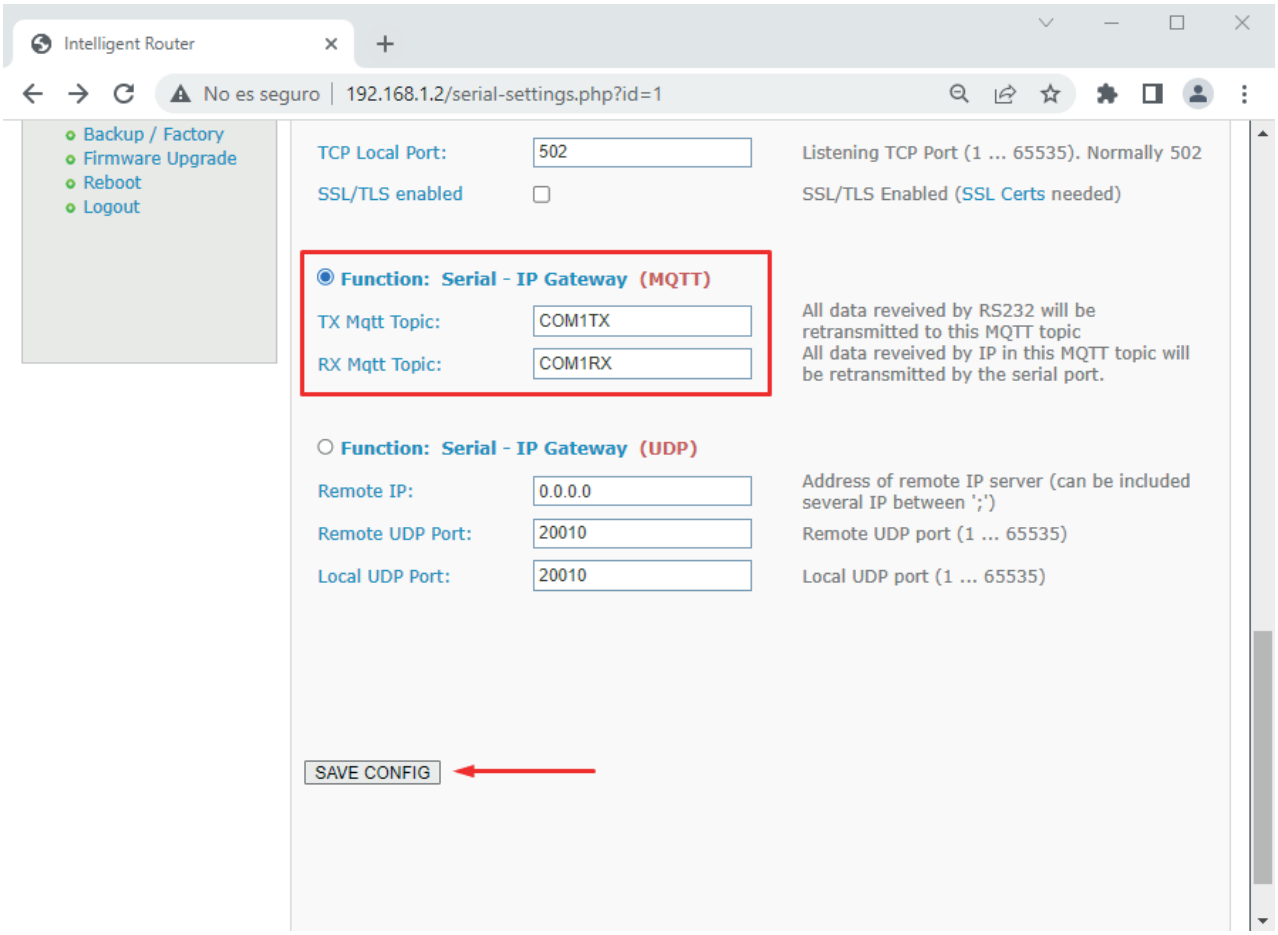
As mentioned above, the purpose of this application note is to describe how to connect multiple serial devices (RS232 and RS485) to an MQTT broker via 4G/3G/2G, with transparent data flow. As such, the data received by one of the TITAN-based device's serial ports (RS232, RS485) must be transparently sent to an MQTT broker and, vice versa, it must be possible to send information transparently from an MQTT broker to any of the serial ports of the TITAN-based device (RS232, RS485), and therefore to the devices connected to them.

3. Configuration of the Associated RS232 and RS485 Ports

The configuration required for each of the serial ports is very simple. To configure the COM1 port (RS232), go to the “Serial Settings” > “Serial Port1-232” menu and configure the properties of the serial port (baudrate, parity, etc.) according to the external device being connected to it.



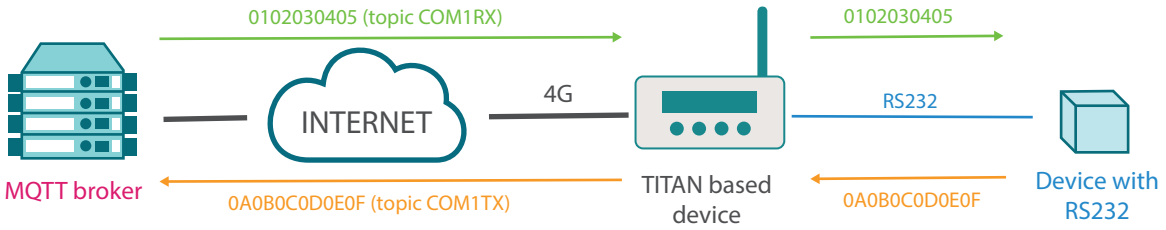
Next, at the bottom of the same configuration screen, enter the "TX Mqtt Topic" and "RX Mqtt Topic" configuration parameters, which are the key parameters for this working scenario. Then click on the “Save Config" button.



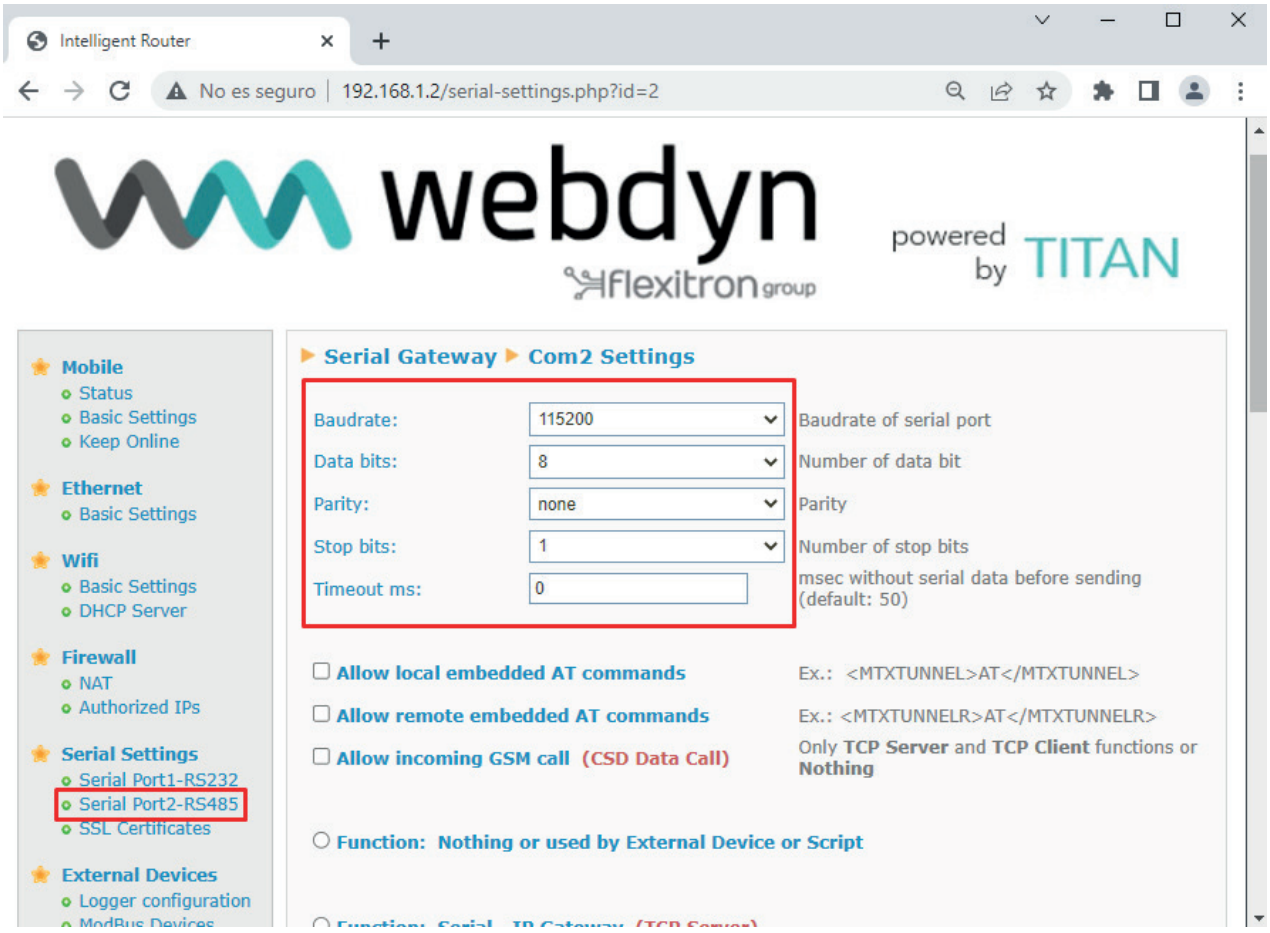
What are the implications of entering COM1TX and COM1RX values in the configuration in this example?

It implies that all data streams received by the TITAN-based device's RS232 COM1 serial port are forwarded (transparently) to the MQTT broker under the TOPIC "COM1TX". The MQTT broker will then receive the INPUT data stream from the TITAN-based device's RS232 COM1 port in that topic. Conversely, if we need to send an OUTPUT data stream through the TITAN-based device's COM1 RS232 port from the MQTT broker, this data stream must be sent to the "COM1RX" topic, as this is the topic the TITAN-based device will subscribe to for these types of actions.

Schematically, it could be represented as follows:



The same configuration process must be performed on the RS485 serial port using its configuration menu. The properties of the serial port must be correctly configured and the topics for receiving (RX) and transmission (TX) must be configured.



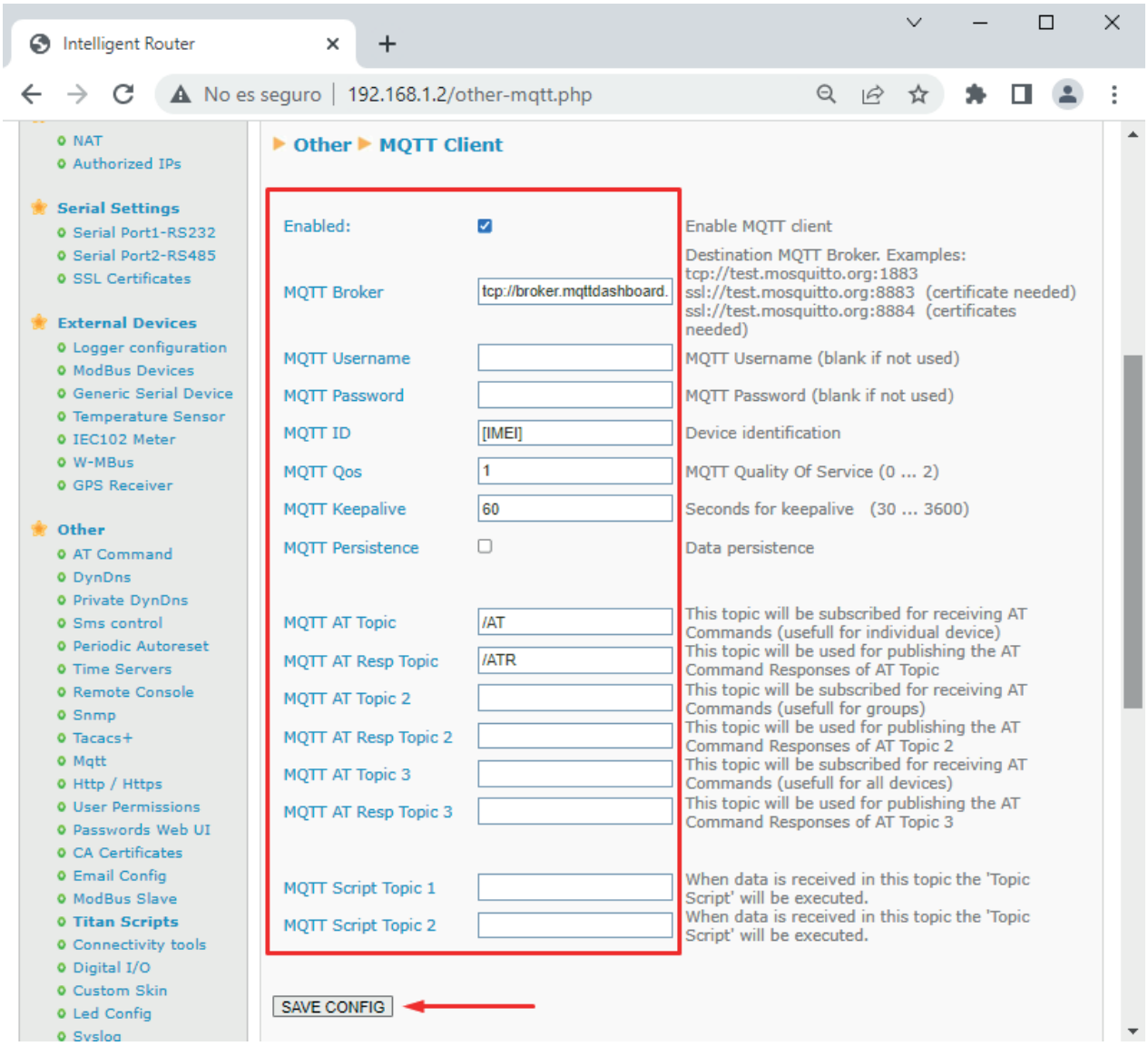
For example, the configuration for the topics of all the serial ports could be as follows:

COM1 (RS232): COM1TX | COM1RX

COM2 (RS485): COM2TX | COM2RX

4. Configuring the MQTT Client

The MQTT client section must also be configured, it is this configuration that will cause the TITAN-based device to connect to the desired MQTT broker. This must be done from the “Other > MQTT” configuration menu



Check with your MQTT broker for the appropriate parameters in this section. Once configured, click on the “SAVE CONFIG” button.

5. Configuring the WAN Section

In order for the TITAN-based device to connect to the Internet, and therefore be able to access the MQTT broker via 4G/3G/2G, the “WAN > Basic Settings” section must also be configured. In this section, enter the SIM card’s PIN (if there is one), enter the APN, and the Username and Password for the operator, etc. Once done, click on the “SAVE CONFIG” button. Lastly, reboot the TITAN-based device with the new settings.