ThingsSpot LabVIEW API

User Manual

Ovak Technologies
2016

Contents

1. Introduction

1.1. Definitions and Acronyms

API – Application programming interface

IIoT – Industrial Internet of Things

MQTT Protocol – Machine-to-machine (M2M)/ "Internet of Things" publish-subscribe-based "lightweight" messaging protocol

ThingsSpot IIoT platform – IIoT platform (gateway/server) by Ovak Technologies

1.2. The purpose

The purpose of this manual is to provide information to LabVIEW developers of how to use *"ThingsSpot LabVIEW API"*.

1.3. Overview

This API provides VIs to connect ThingsSpot IIoT platform and communicate with IoT devices over MQTT protocol. It can be used on NI hardware (such as sbRIO, compactRIO, etc.) with Windows OS or Linux RT, to make them IoT devices.

2. ThingsSpot LabVIEW API palette

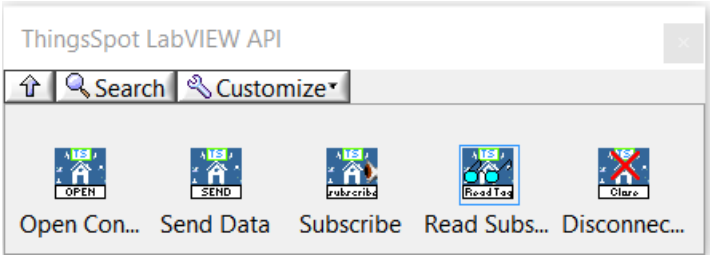

Figure 1 ThingsSpot LabVIEW API function palette

ThingsSpot LabVIEW API palette consists of the following VIs:

- **Open Connection** – opens connection and creates/updates IoT device with given name in ThingsSpot IIoT platform. Created device have unique MQTT clientID, which consists of device's name and controller's serial number.
- **Send Data** – creates/updates tag with given name and publishes message to ThingsSpot IIoT platform with MQTT topic name, which is the same tag's name. Other IoT devices of the ThingsSpot IIoT platform can subscribe to this topic.
- **Subscribe** – subscribes to ThingsSpot IIoT platform tags and enables to receive messages from other IoT devices.
- **Read Subscribed Tags** – reads subscribed tags from ThingsSpot IIoT platform.
- **Disconnect** – closes connection with ThingsSpot IIoT platform.

3. Examples

The below mentioned examples can be found from the NI Example Finder. These examples are designed with cRIO-9068 as the basic hardware. In order to run this example, you need to configure a project to run specific hardware connected to your computer. In order to ensure proper operation of this example or other projects based on *ThingsSpot LabVIEW API* you need to copy *TS Get Device File Reference.vi* from the following directory: ***C:\Program Files (x86)\National Instruments\LabVIEW 2013\vi.lib\Ovak Technologies\ThingsSpot LabVIEW API\Supporting files*** to target controller.

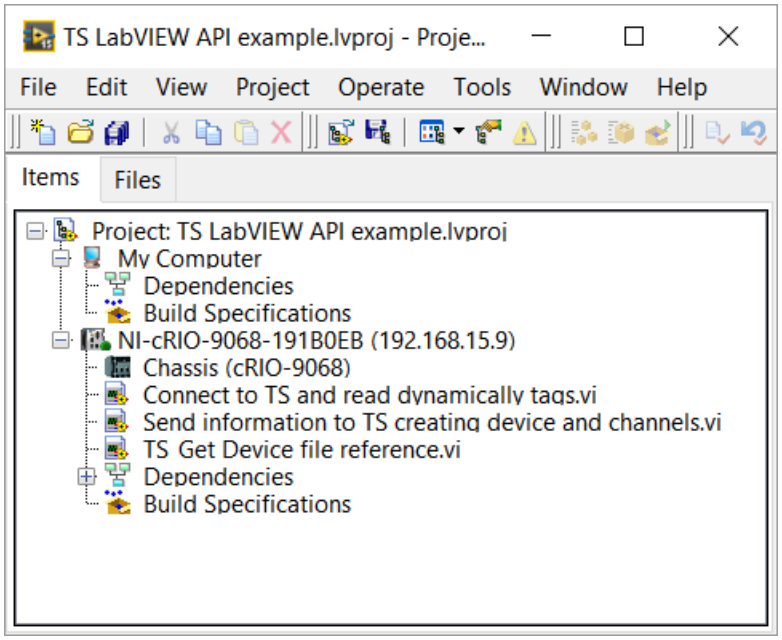

Figure 2 ThingsSpot LabVIEW API example project

3.1. Send information to TS creating device and channels

This example connects, creates device, and tags with *"Sine"* and *"Square with noise"* names and *"Amp"* and *"Volt"* units. It continuously sends simulated signals to ThingsSpot IIoT platform. Default username and password to connect to ThingsSpot: "testuser", "passwd".

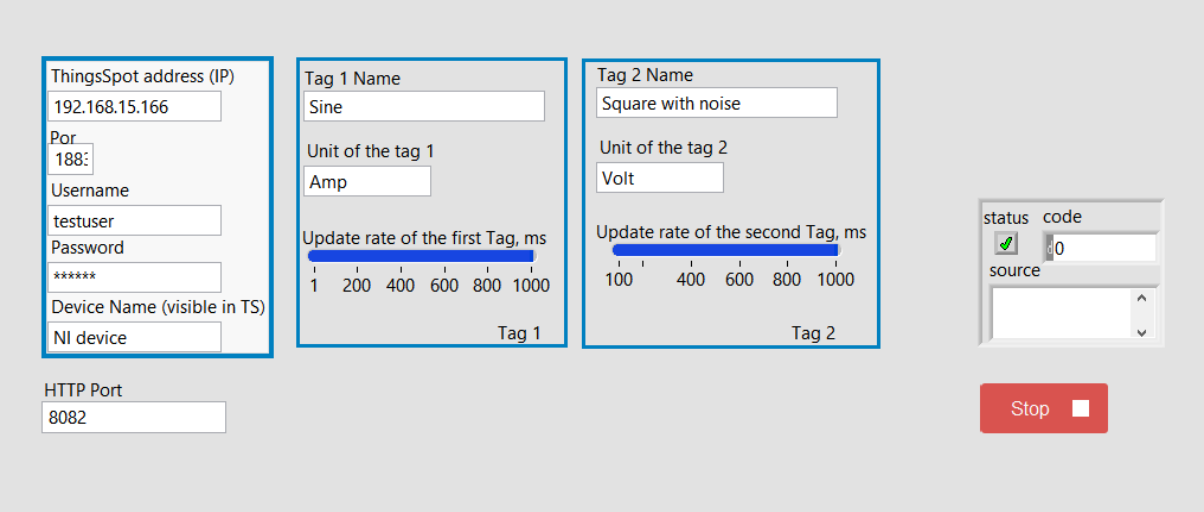

Figure 3 Example Front Panel

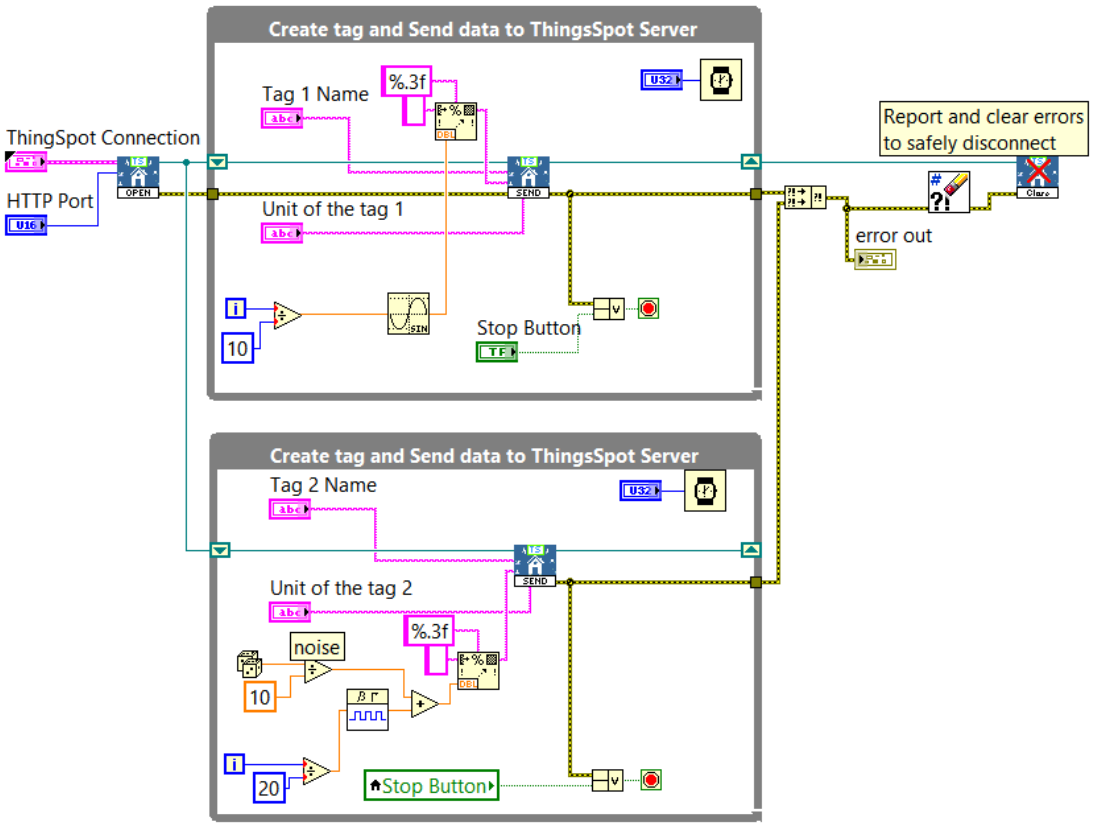

Figure 4 Example Block Diagram

3.2. Connect to TS and read dynamically tags

This example connects to ThingsSpot IIoT platform, subscribes to tags with the following names *"Sine"* and *"Square with noise"*, reads values of this tags and plots on the chart. Default username and password to connect to ThingsSpot: "testuser", "passwd".

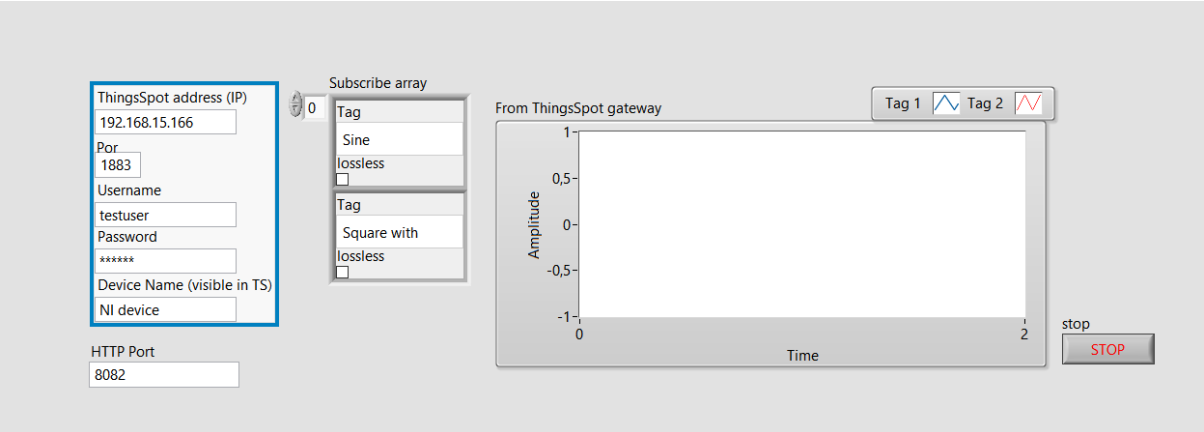

Figure 5 Example Front Panel

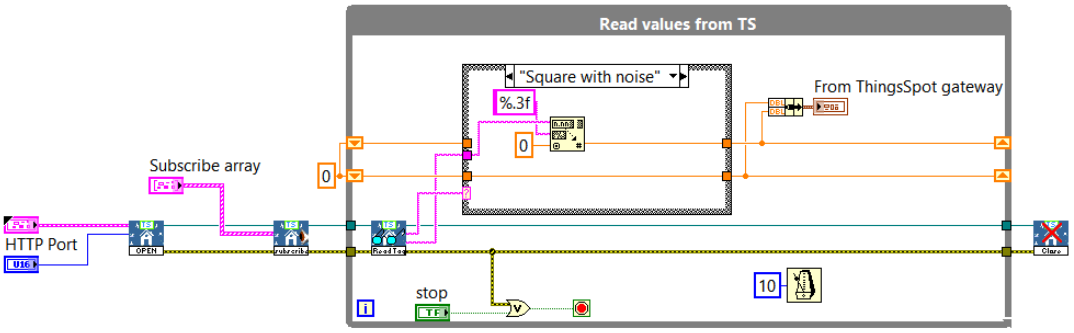

Figure 6 Example Block Diagram

4. System Requirements

- LabVIEW Base, Full, or Professional Development System 2013 or higher
- Windows XP, Vista, 7, 8, 10
- NI Controller with Windows or NI Linux RT OS

5. Support Information

For technical support, please, contact Ovak Technologies at:

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