TCP Extension User Guide

Version [1.0]

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Introduction and Installation

Extensibility is a core aspect of the architecture and design of ThingWorx. Partners, third parties, and users, as well as ThingWorx can easily add new functionality into the system in a seamless manner. Extensions can be Service (function/method) libraries, Connector Templates, Widgets, and more. This document provides installation and usage instructions for the TCP Extension.

About the TCP Extension

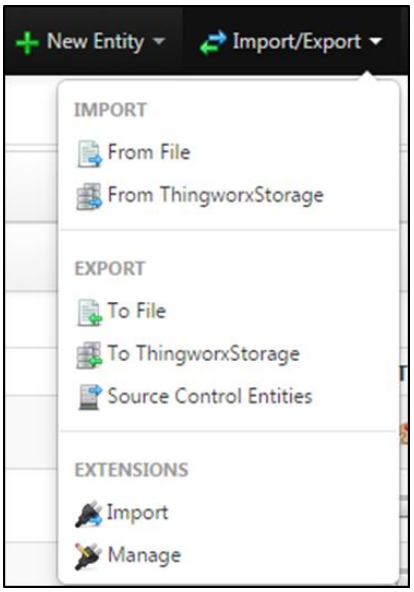
The TCP Extension allows the user to send a TCP message to a server, and optionally listen for a response from it.
It is useful when communicating with devices who only answer to specific TCP commands and which return the result of that command.

The TCP Extension allows you to create a TCP thing in ThingWorx. The received response is delivered asynchronously in the **ReceivedTextMessageContents** property of your TCP Thing.
The thing houses the configuration information to the TCP instance and provides the following service:

1. Send a Text TCP Message
2. Receive and store a response to from the server

Installing the TCP Extension

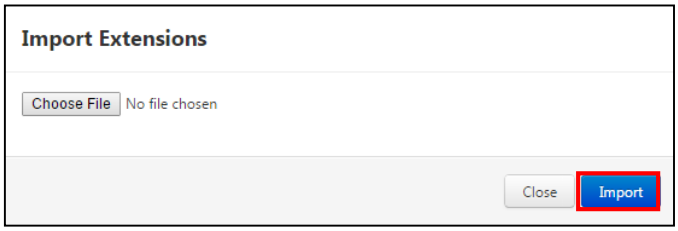
1. From a web browser, launch ThingWorx.
2. Log into ThingWorx as an administrator.
3. Go to **Import/Export > Extensions > Import**.



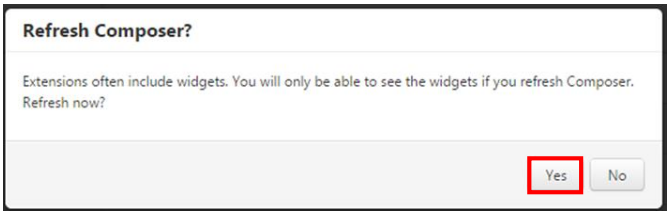
4. Click Choose File and select TCPExtension.zip
5. Click **Import**.

   Note: If an **Import Successful** message does not display, contact your ThingWorx System Administrator.

6. Click **Yes** to refresh Composer after importing the final extension.



Note:



Configuration and Usage

Usage of the TCP Extension requires creation of a TCP Thing in ThingWorx. Please refer to the TCP Thing entity download in the Marketplace for reference.

The TCP Thing Template provides the following property:
ReceivedTextMessageContents

This property holds the received response that a devices sends. This property will listen for and store a value **only** if the *ResponseNeeded* checkbox is checked in the service *SendTextTCPMessage*. This property will always hold the last received message.

Do Not check the *ResponseNeeded* checkbox if the remote device does not send a response, as checking this box and running the service will generate open sockets waiting for messages on the system. These open sockets which are utilized by the service could potentially interfere with other services on your system.

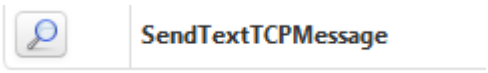
Configuration

Configuration consists of invoking the service from a Thing entity (which implements the TCPThing Thing Template). Here, you'll be required to enter the server IP address, port, message, and check the *ResponseNeeded* checkbox if required.

Usage

The TCP Extension can be used by invoking the following service:

- SendTextTCPMessage



This service has the following input parameters:

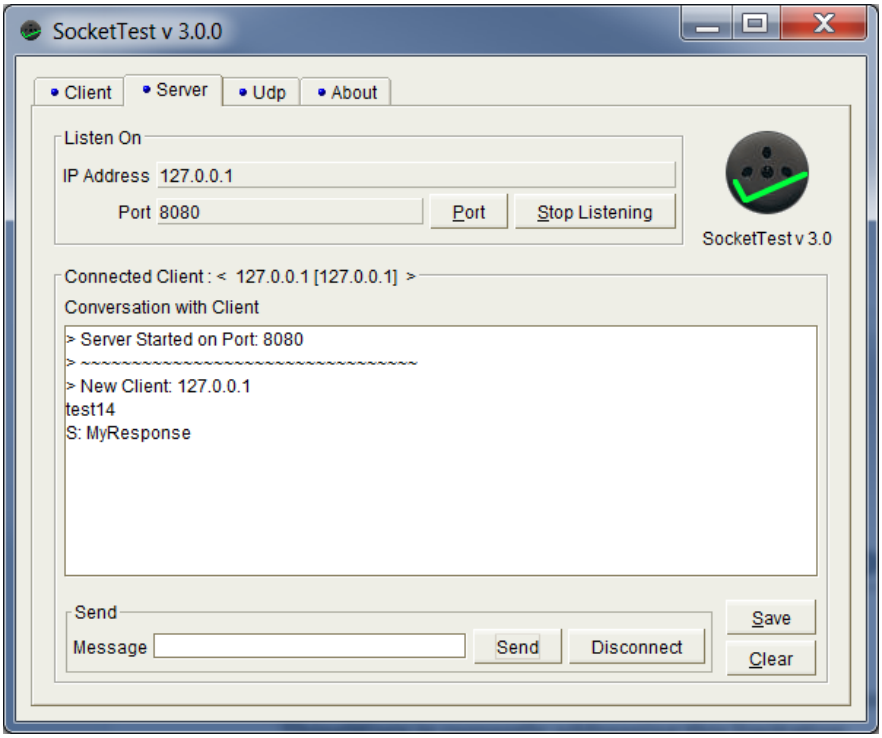
  - **Message**: The text message that must be sent to that TCP socket. A new line is appended automatically at the end of the message.
  - **DestinationIP**: The destination IP address of the system where the TCP packet will be sent. Must be in the format x.x.x.x (ex: 192.168.0.1)
  - **DestinationPort**: The destination port of the system where the TCP packet will be sent. Must be in the range 1-65535.
  - **ResponseNeeded**: If the socket must be kept open to listen for a response after the service completes, check this checkbox. This function waits for the newline character as a trigger for the end of the message. The actual response will be delivered async in the *ReceivedTextMessageContents* property of this thing. **Note:** Avoid checking this box if

your system does not expect or require a response message from the server, as it will take up a port and set it up to listen after the service completes.

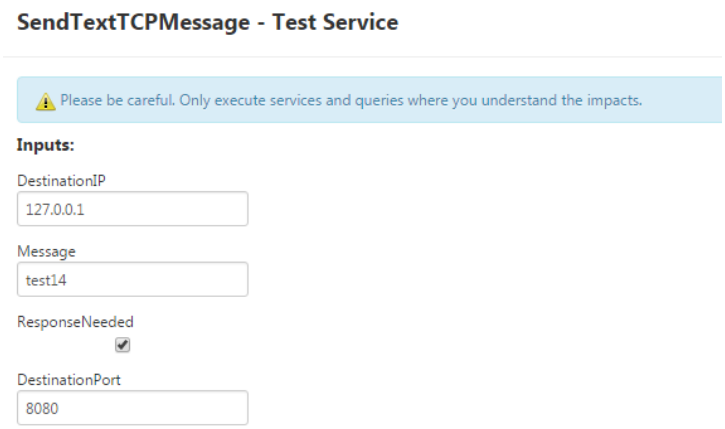
Testing

This service may be tested using an application such as “SocketTest” (v 3.0.0 was used for this guide).

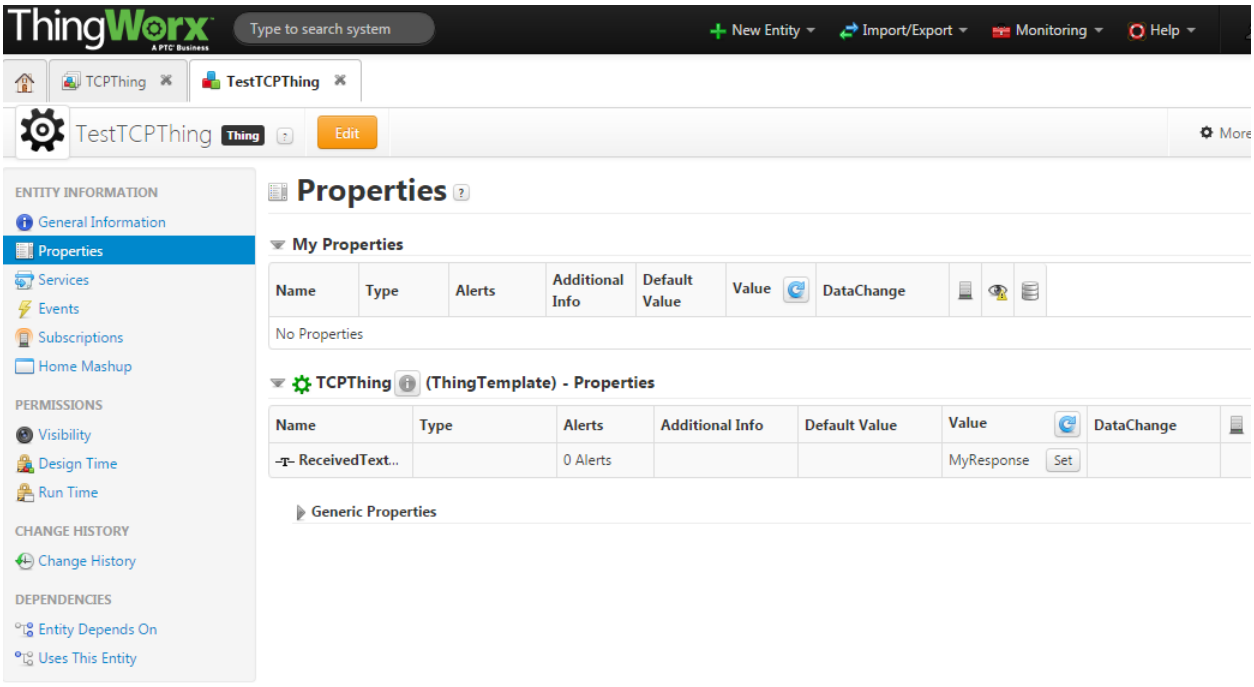
1. Open SocketTest, and click the “Server” tab. Set the IP address of your server and the port at the top and begin listening by clicking “Start Listening”. Note that the port should not be the same port used by your ThingWorx Server.



2. In ThingWorx, create a new Thing which implements the TCPThing Thing Template. Save it, and click the “Services” tab.
3. Click “Test” next to the SendTextTCPMessage Service. Enter the information in the Inputs fields exactly as it appears in your SocketTest listener. Check the “Response Needed” checkbox, and enter a test message, and click “Execute Service”.



4. You should receive the message in your SocketTest application. Here, you may enter a response in the "Message" bar at the bottom of the window. Enter your message, and click "Send".
5. Check the property of the *ReceivedTextMessageContents* string under the Properties tab of your ThingWorx thing. Click the Refresh icon. The value of "Value" should change to match that of the reply message you sent in SocketTest.



6. You can bind this service to an event in a mashup or another service for use. This completes the test demonstration guide.

Compatibility

This guide has been tested for compatibility with the DEVICE and the following ThingWorx platform and operating system:

ThingWorx Platform Version	ThingWorx 6.0.1
OS	Windows 7, Service Pack 1

Document Revision History

Revision Date	Version	Description of Change
August 20, 2015	[1.0]	Initial Release - SPF