

CoAP Tutorial for Eclipse

This tutorial shows how to run a CoAP server using Eclipse, and view the CoAP resources through Copper, the CoAP user-agent.

1. Download Eclipse for Java developers.

<http://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/mars1>

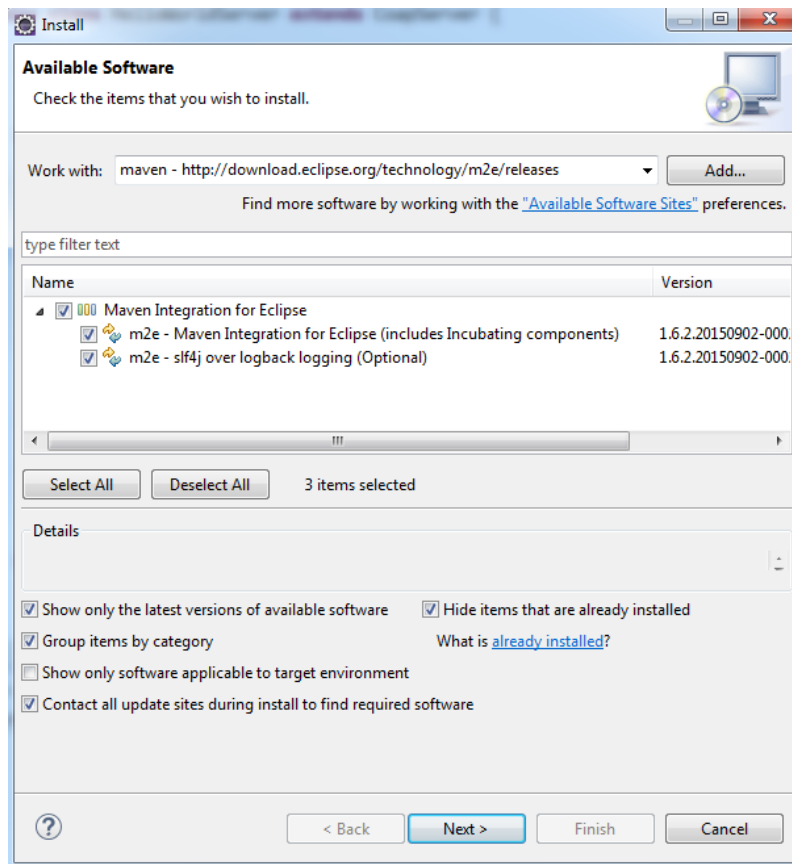
No need to install, unzip the package and you can run Eclipse now.

2. Install Maven plugin for Eclipse

Run Eclipse, click *Help-> Install New Software...*, in the *Work with:* field, enter the following website:

<http://download.eclipse.org/technology/m2e/releases>

In the output, select *Maven Integration for Eclipse*, click *Next*, and *Next*, until it is installed. You may need to restart Eclipse after the installation.



3. Download CoAP library

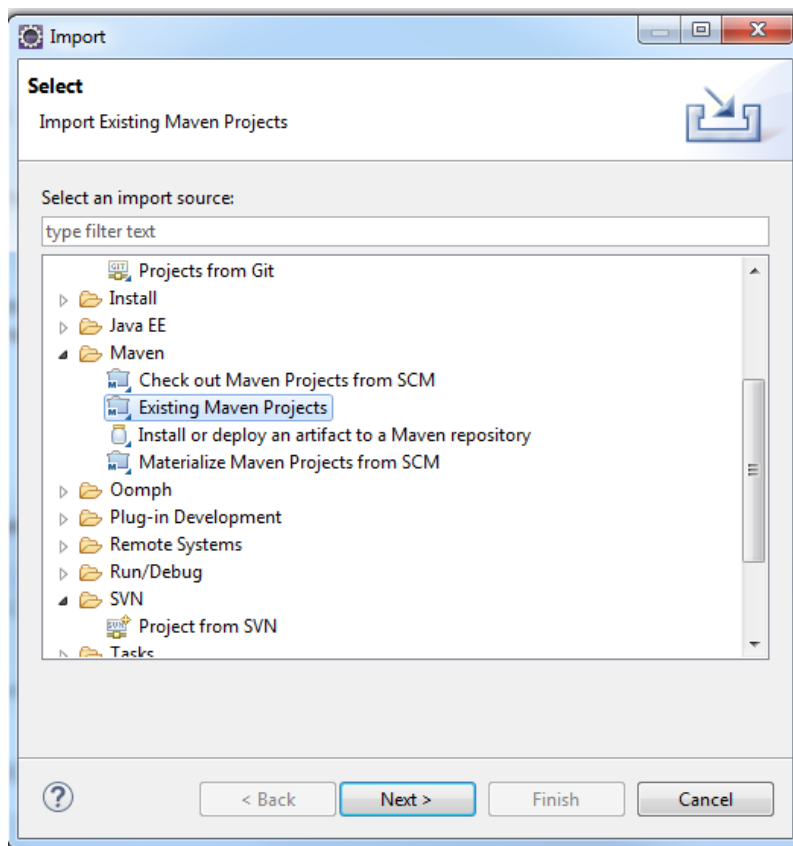
On windows, download the .zip file directly from the github page:

<https://github.com/eclipse/californium.core>

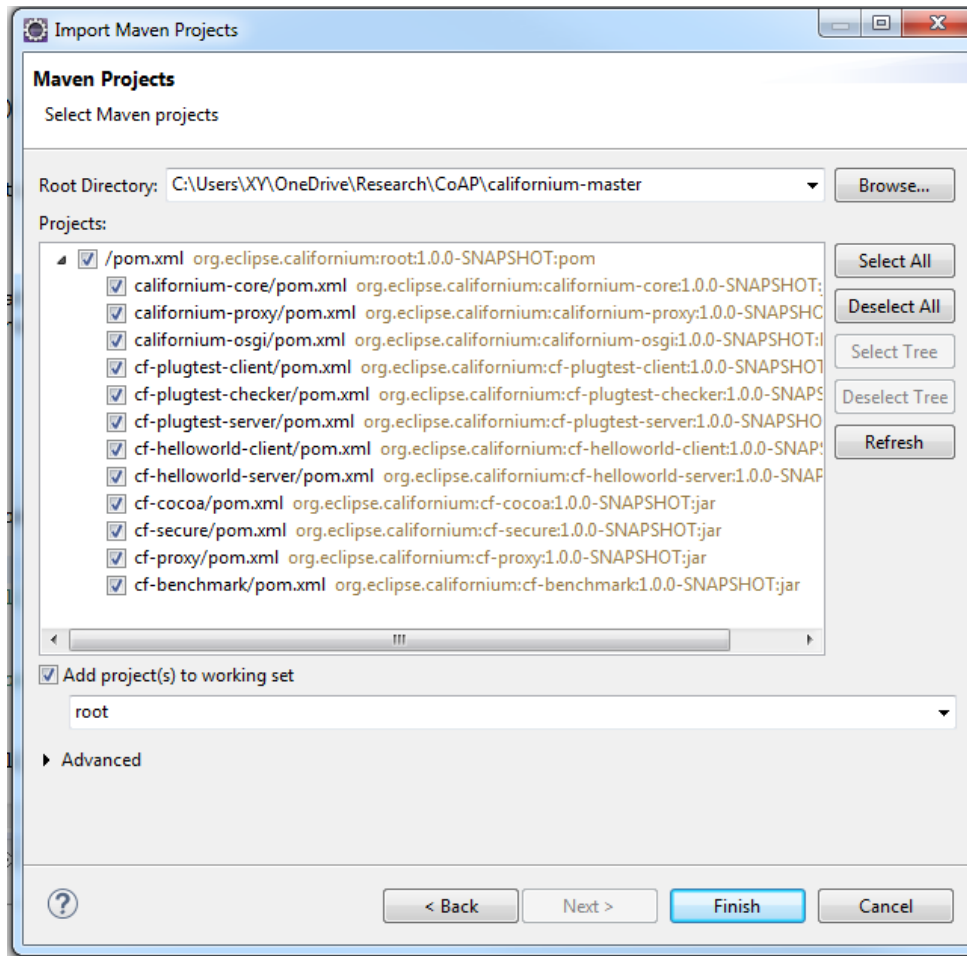
Then unzip it.

4. Import the Californium to Eclipse:













Click *File -> Import...*, you would see the following dialog.



Select *Maven->Existing Maven Project*, then click *Next*. You would see the following dialog. In the *Root Directory:*, browse to your *californium-master* folder. Check all the *pom.xml* files, then click *Finish*.



You would see all the Californium libraries and projects are listed on the left.

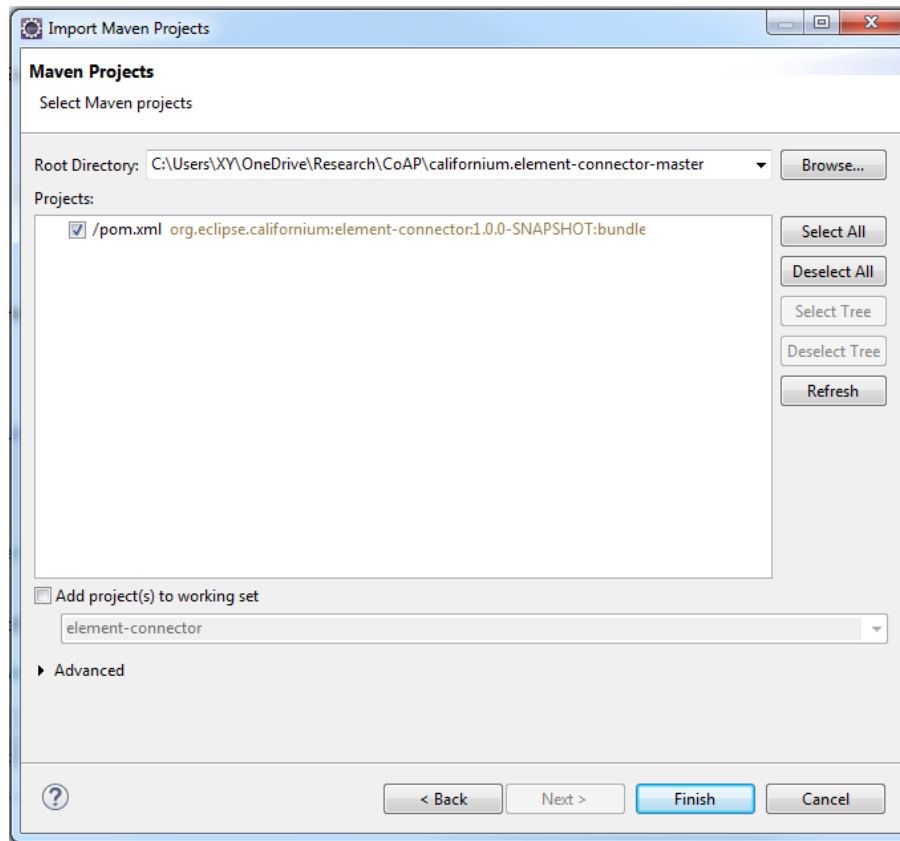
- ▶  californium-core
- ▶  californium-osgi
- ▶  californium-proxy
- ▶  cf-benchmark
- ▶  cf-cocoa
- ▶  cf-helloworld-client
- ▶  cf-helloworld-server
- ▶  cf-plugtest-checker
- ▶  cf-plugtest-client
- ▶  cf-plugtest-server
- ▶  cf-proxy
- ▶  cf-secure

5. Download and Import the Californium Element Connector

The connector is necessary for all the Californium projects. Download it from the following link:

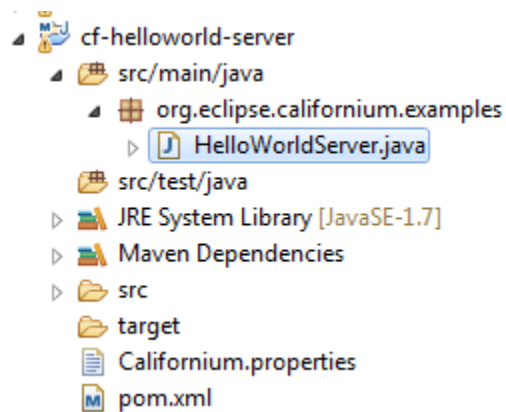
<https://github.com/eclipse/californium.element-connector>

Unzip it, and use import the whole library to Eclipse using Maven.



6. Run Hello World

Select the Hello World example, double click it, the code is already compiled automatically by Eclipse. Click Run -> Run, you will have a Coap server running on your computer.



You will see the output as the following:

```
HelloWorldServer [Java Application] C:\Program Files\Java\jre1.8.0_45\bin\javaw.exe (Nov 2, 2015, 4:47:01 PM)
Nov 02, 2015 4:47:01 PM org.eclipse.californium.core.network.config.NetworkConfig createStandardWithFile
INFO: Loading standard properties from file Californium.properties
Nov 02, 2015 4:47:01 PM org.eclipse.californium.core.CoapServer start
INFO: Starting server
Nov 02, 2015 4:47:01 PM org.eclipse.californium.core.CoapServer start
INFO: No endpoints have been defined for server, setting up server endpoint on default port 5683
Nov 02, 2015 4:47:01 PM org.eclipse.californium.core.network.CoAPEndpoint start
INFO: Starting endpoint at 0.0.0.0/0.0.0.0:5683
```

To stop the server, click the **RED** square near the Console.

Basically, you will modify this example for your Project 2.

You can also check the examples from the following Github repository:

<https://github.com/jvermillard/hands-on-coap>

7. Install Copper user-agent add-ons on Firefox.

You must have Firefox browser installed to run this CoAP client. Open your Firefox browser, and load the following link from Firefox:

<https://addons.mozilla.org/en-US/firefox/addon/copper-270430/>



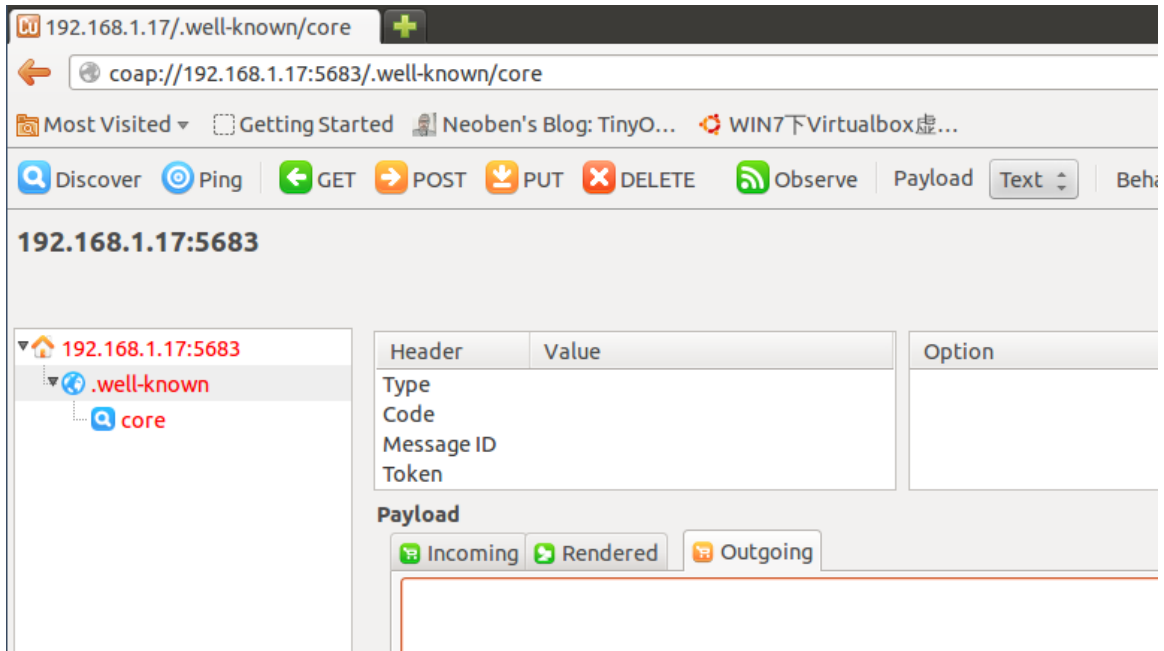
The screenshot shows the Firefox Add-ons page for the "Copper (Cu) 0.18.4.1-signed" add-on by Matthias Kovatsch. The add-on icon is a blue square with the letters "CU" in white. The description states: "The Copper (Cu) CoAP user-agent for Firefox installs a handler for the 'coap' URI scheme and allows users to browse and interact with Internet of Things devices." Below the description is a yellow button with a plus sign and the text "Add to Firefox". At the bottom, it says "This add-on has been preliminarily reviewed by Mozilla. [Learn more](#)".


Then simply click the "Add to Firefox" button to install Copper.

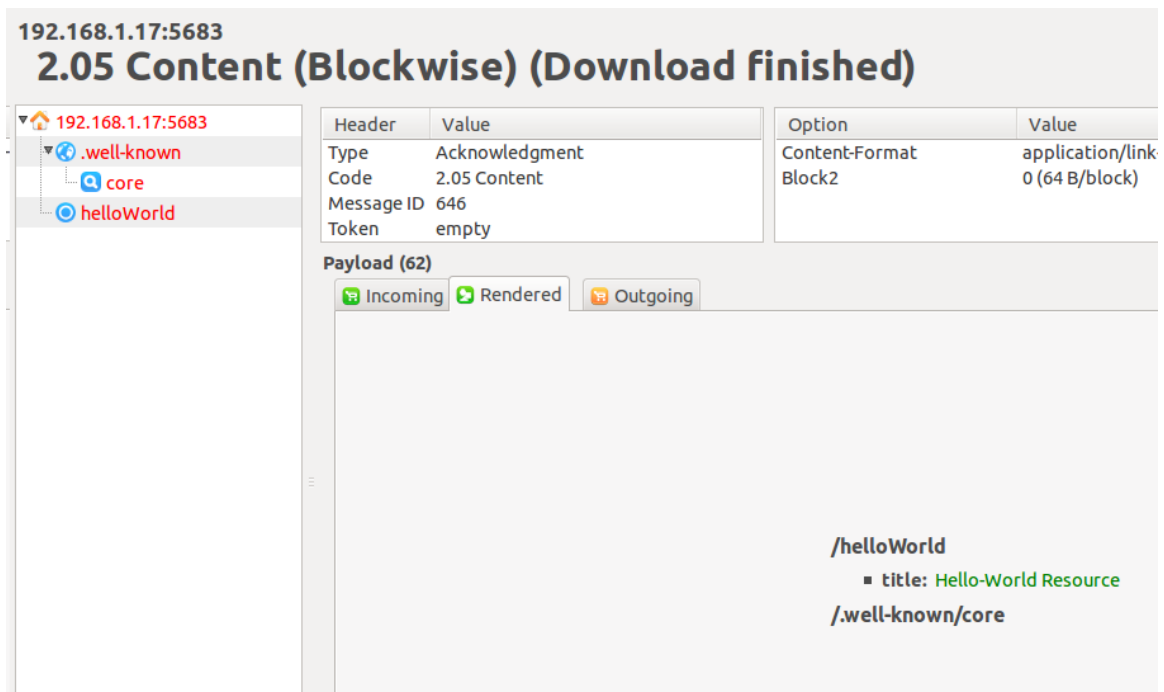
8. Access the "HelloWorld" server through Copper


Type the following CoAP address to access the "HelloWorld" server. Suppose the ip address of your computer is 192.168.1.17:

`coap://192.168.1.17:5683/`



Click “core”, then click , you will get all the *resources* on the server. In this example, the resource name is “*helloworld*”:



Then click “*helloworld*” and , you will get the response which is sent back by the “*helloworld*” resource, which is the string “Hello World!”:

192.168.1.17:5683

2.05 Content (Blockwise) (Download finished)

▼ 192.168.1.17:5683

- ▼ .well-known
 - core
 - helloWorld

Header	Value	Option
Type	Acknowledgment	Content-Format
Code	2.05 Content	Block2
Message ID	56503	
Token	empty	

Payload (12)

Incoming Rendered Outgoing

```
Hello World!
```