

LLRP Commander User Guide

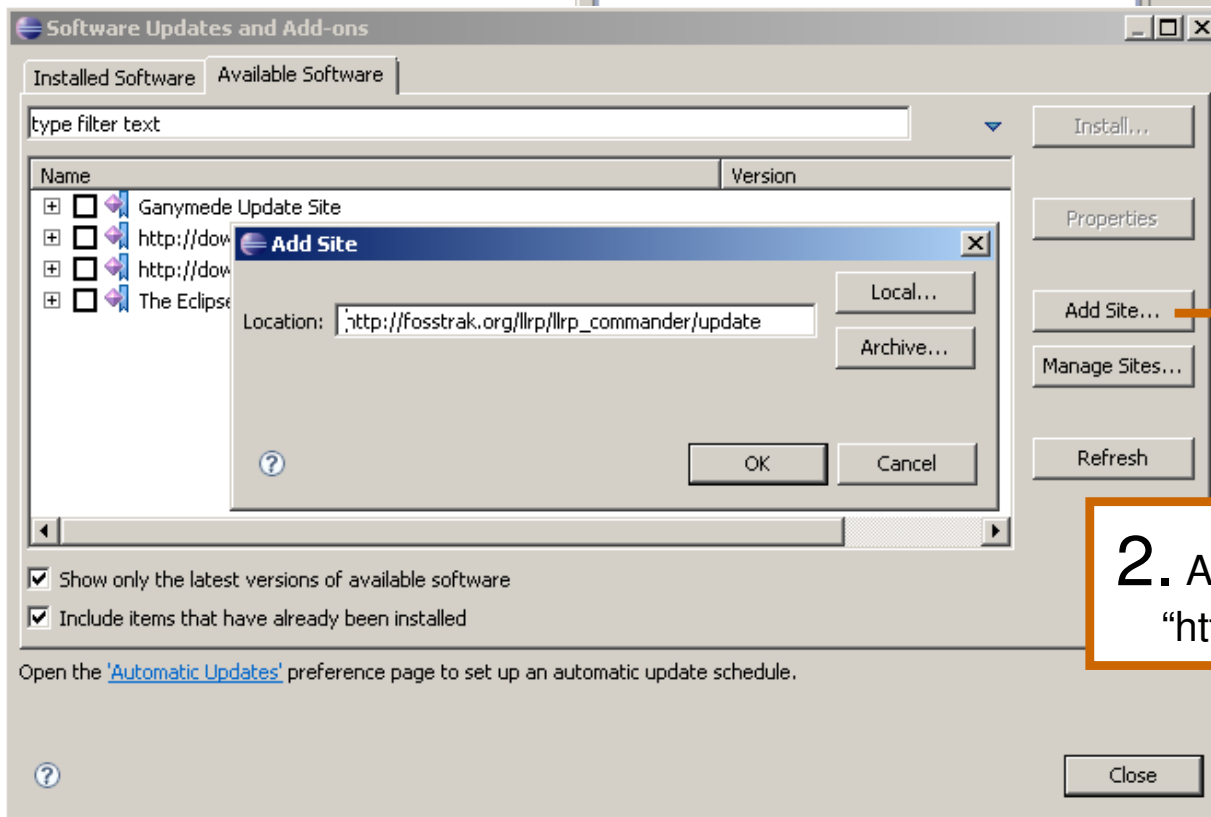
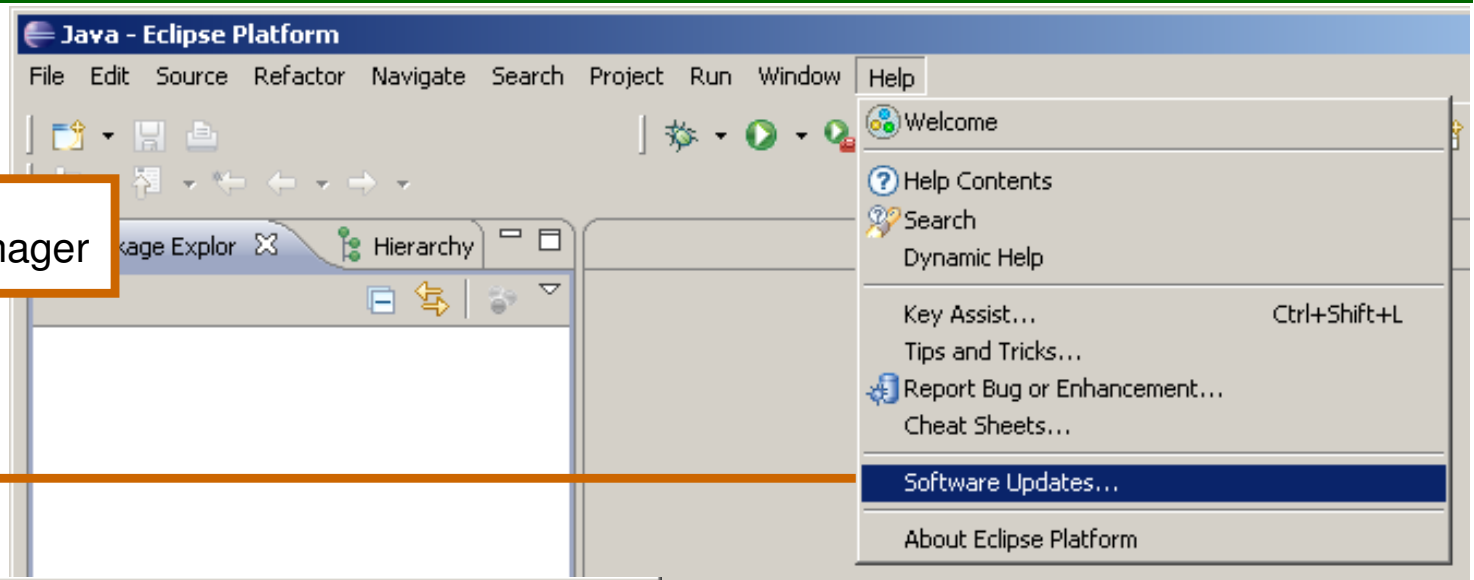
June, 2009

Content

1. Install the Eclipse Plug-In
2. Setup Emulator Environment
3. Manage Reader
4. View Message History
5. Create New Messages with the Message Wizard
6. Assemble Messages in Graphical Editor
7. Edit Messages in XML Editor
8. View Messages in Binary Format
9. Send Messages

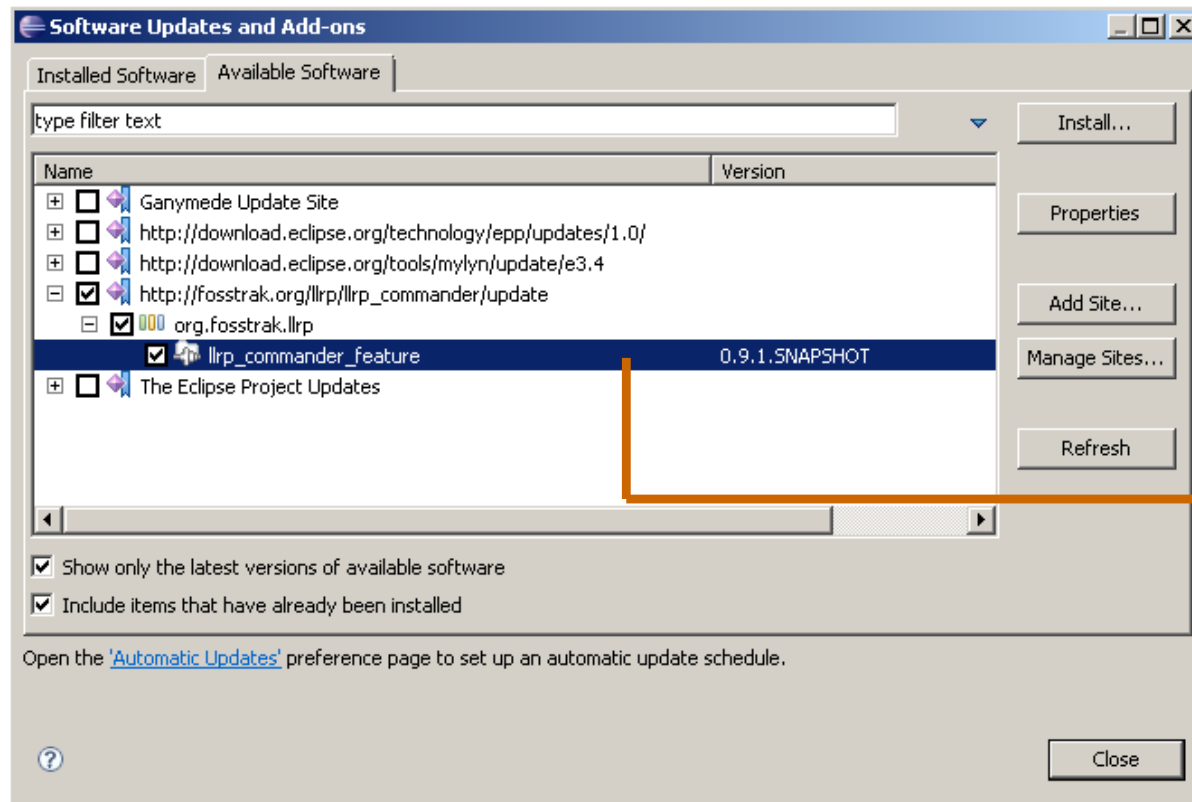
Installation via Eclipse update manager

1. Open Eclipse update manager



2. Add new update site:
"http://fosstrak.org/llrp/llrp_commander/update"

Installation via Eclipse update manager (cont'd)



3. Select the LLRP Commander and press „Install“

4. Follow the installation instructions.
Please restart Eclipse when the update manager proposes to do so.

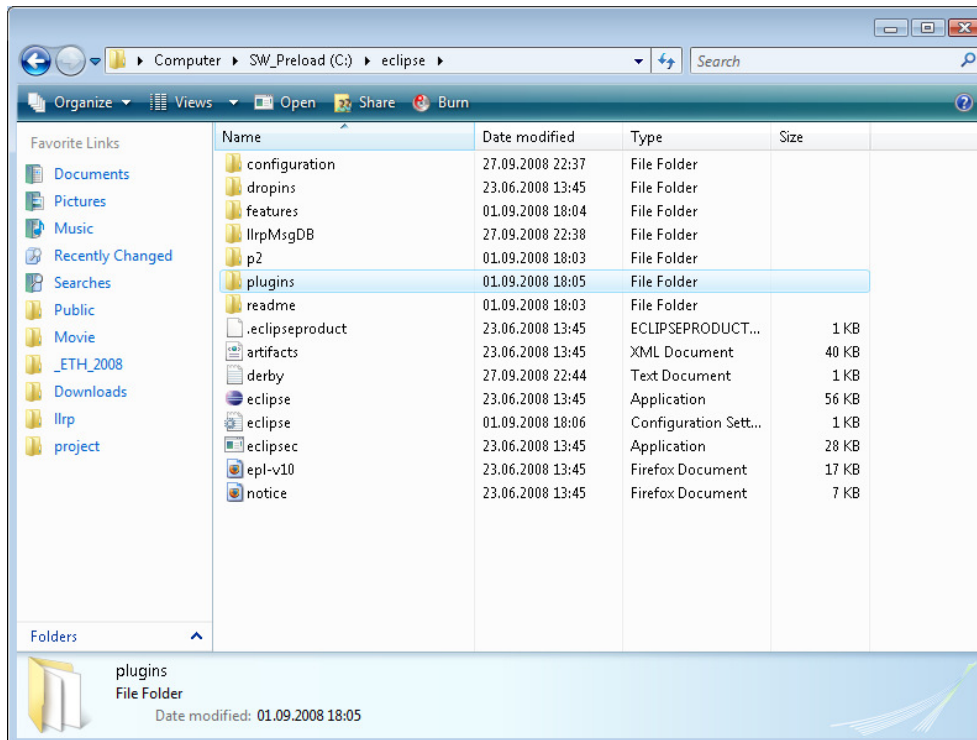
Manual Installation

Prerequisites:

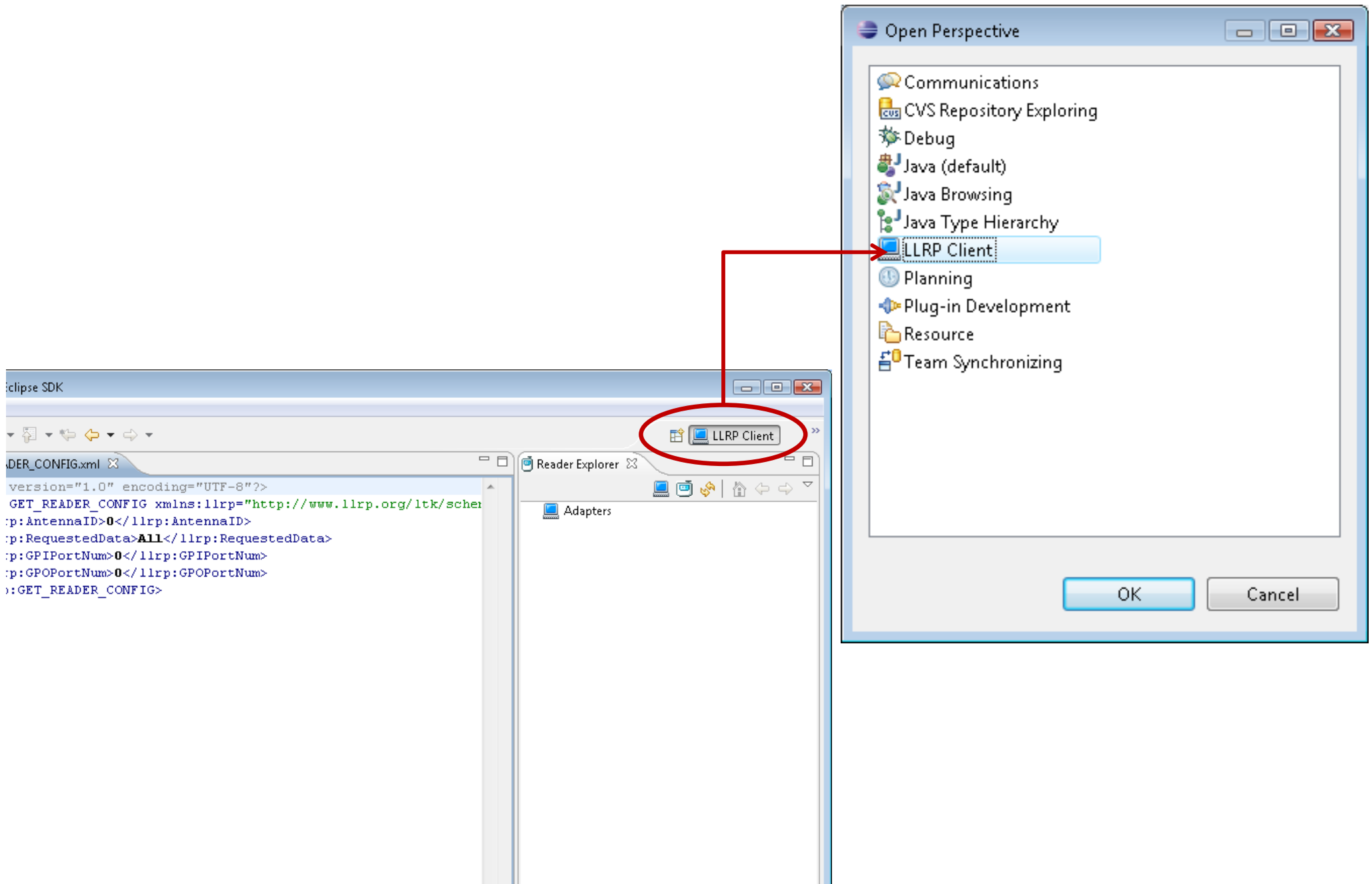
1. Java 1.5
2. Eclipse >= 3.3.0

Installation of the LLRP Commander:

1. Download `llrp_commander_<VERSION>.zip` from <http://maven-repository.fosstrak.org/releases/org/fosstrak/llrp>
2. Extract the zip file into the subfolder „plugins“ of Eclipse's home directory.



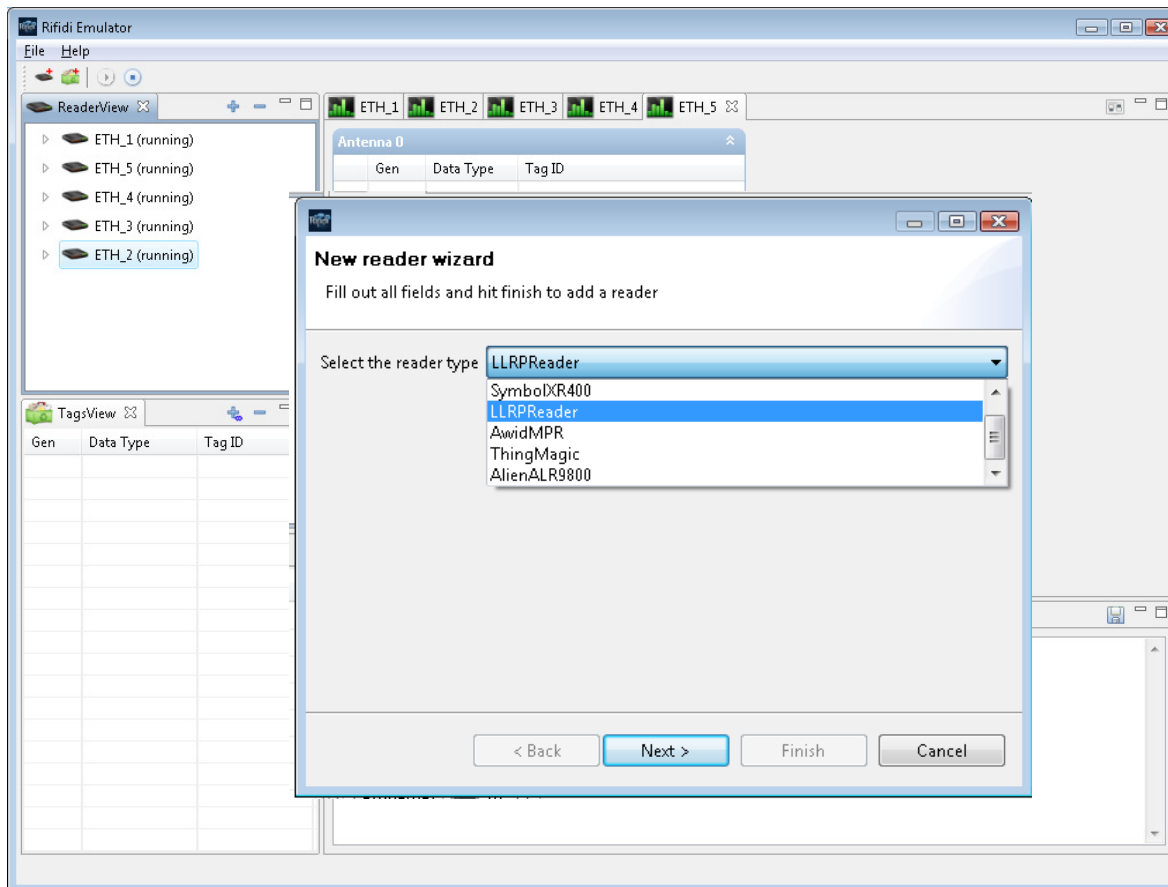
Start Eclipse and open “LLRP Commander” perspective



Setup Rifidi Emulator

If you don't have a Hardware RFID Reader available, you can test the LLRP Commander with the Rifidi Software Reader:

1. Setup the Rifidi Emulator via <http://www.rifidi.org/>
2. Create a reader of type „LLRPReader“ and set it to „running“.



LLRP Commander Perspective

The screenshot displays the LLRP Client Eclipse SDK interface. The main window is titled "LLRP Client - LLRP_CLIENT/Temporary/2008-Sep-26-17-20-03-761.xml - Eclipse SDK". The interface is divided into several panes:

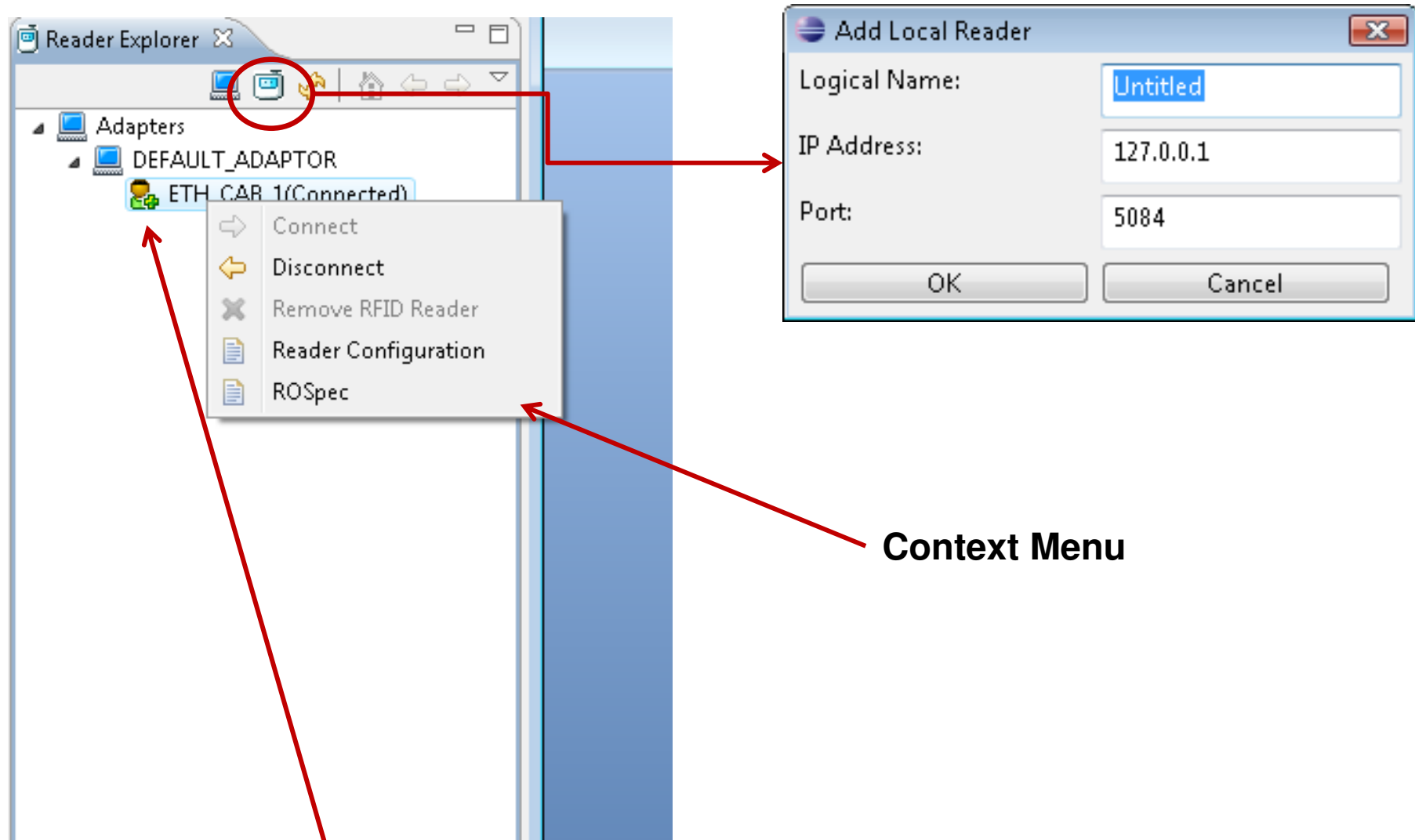
- 1. Project Navigator:** Located on the left, it shows a tree view of the project structure. The "LLRP_CLIENT" folder is expanded, showing a "Draft" folder with several XML files (ADD_ACCESSSPEC.xml, ADD_ROSPEC.xml, ENABLE_ROSPEC.xml, GET_READER_CAPABILITIES.xml, GET_READER_CONFIG.xml, READER_EVENT_NOTIFICATION.xml, RO_ACCESS_REPORT.xml, SET_READER_CONFIG.xml, START_ROSPEC.xml) and a "Temporary" folder with a ".project" file.
- 2. Multi-Page Editor:** The central pane displays the XML content of the selected file, "GET_READER_CONFIG.xml". The XML is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<llrp:GET_READER_CONFIG xmlns:llrp="http://www.llrp.org/ltk/schema/c
<llrp:AntennaID>0</llrp:AntennaID>
<llrp:RequestedData>All</llrp:RequestedData>
<llrp:GPIOPortNum>0</llrp:GPIOPortNum>
<llrp:GPOPortNum>0</llrp:GPOPortNum>
</llrp:GET_READER_CONFIG>
```
- 3. Message Box:** Located at the bottom, it displays a table of messages. The selected message is highlighted in blue.
- 4. Reader Explorer:** Located on the right, it shows a tree view of the adapters. The "ETH_CAB_1(Connected)" adapter is selected.

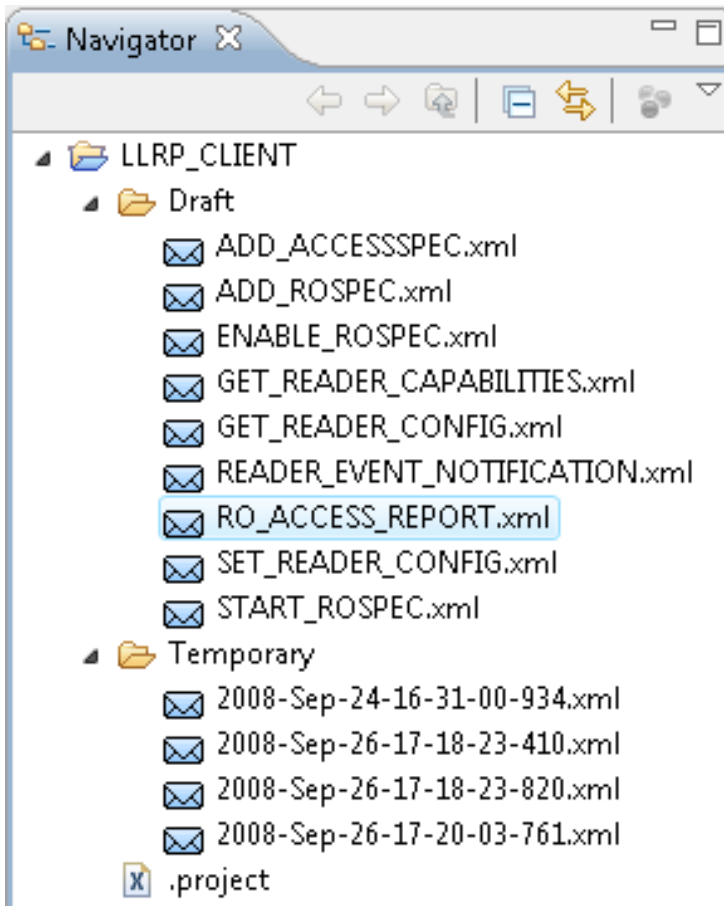
The "LLRP Client" window title is circled in red. The "3. Message Box" label is placed over the selected message row in the table.

ID	Reader	Message Type	Time	Comment
2008-Sep-26-17-20-03-881	ETH_CAB_1	GET_READER_CONFIG_RESPONSE	2008-Sep...	
2008-Sep-26-17-20-03-761	ETH_CAB_1	GET_READER_CONFIG_REQUEST	2008-Sep...	
2008-Sep-26-17-18-23-820	ETH_CAB_1	GET_READER_CONFIG_RESPONSE	2008-Sep...	
2008-Sep-26-17-18-23-410	ETH_CAB_1	READER_EVENT_NOTIFICATION	2008-Sep...	

Reader Management



Project Navigator



The LLRP commander needs a Eclipse project to store editable messages. You can either define a specific project in the Preference Page, or use the default “LLRP_CMDR” project folder.

The LLRP commander automatically generates two folders for the project folder:

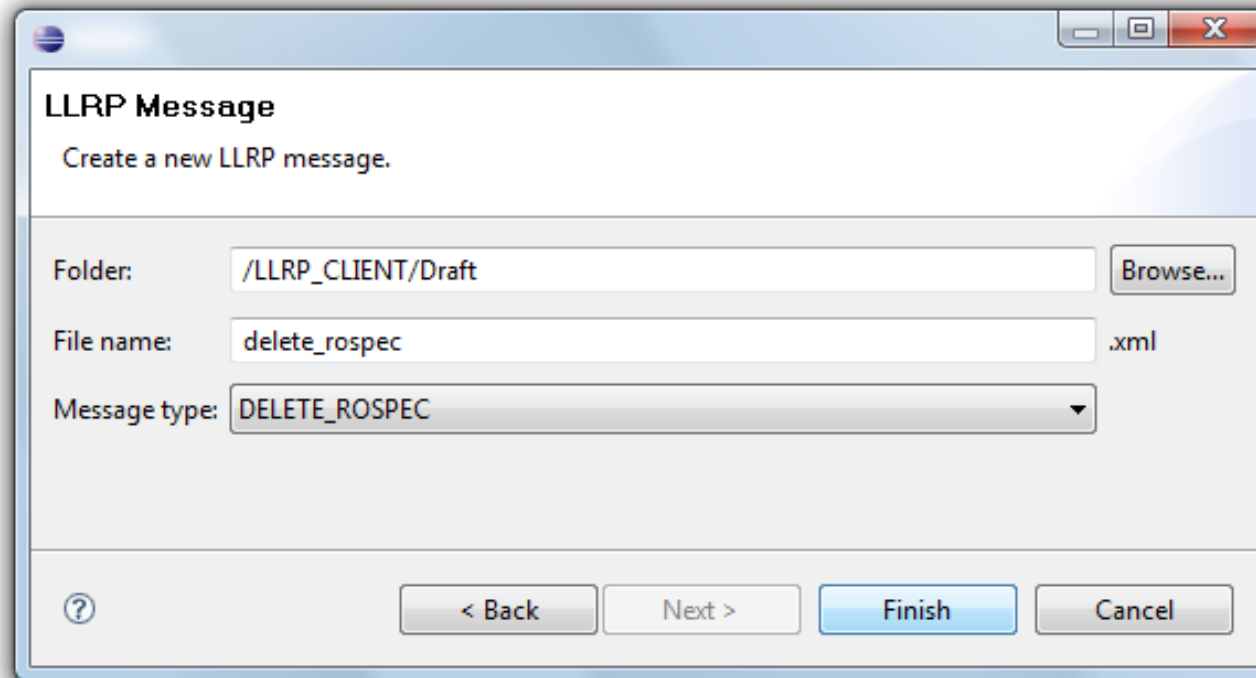
- 1.Draft:** to hold the pre-built sample LLRP message files;
- 2.Temporary:** to hold the incoming message files when users load them from the repository.

When you modify the files in the “**Temporary**” folder, the changes will not be written to the Repository. In addition, if you purge the JavaDB, the files under “**Temporary**” folder will not be removed.

Every time Eclipse starts up, the “Health Check” can detects whether the project exists or the folder structure is corrupted. If yes, you can easily recover it by the “Auto Fix” function.

“New LLRP Message” Wizard

The “New LLRP Message” wizard assists you in creating new LLRP messages from scratch. To start the wizard choose *File/New/Other.../LLRP/LLRP Message*.



The screenshot shows a Windows-style dialog box titled "LLRP Message". The main text inside the dialog reads "Create a new LLRP message." Below this, there are three input fields: "Folder:" with the text "/LLRP_CLIENT/Draft" and a "Browse..." button to its right; "File name:" with the text "delete_rospec" and ".xml" to its right; and "Message type:" with a dropdown menu showing "DELETE_ROSPEC". At the bottom of the dialog, there is a help icon (a question mark in a circle) on the left, and four buttons: "< Back", "Next >", "Finish" (which is highlighted in blue), and "Cancel".

After pressing “Finish” a new message of the selected type will be created in the specified folder with the given file name. The message will have all fields initialized by default values and all mandatory parameters set. It will be automatically opened in the editor where you can adapt it to your needs.

Graphical Editor

Click on hyperlink to jump to the invalid parameter.

Expand all tree elements.

Collapse all tree elements.

Set vertical or horizontal orientation.

Move mouse over error icon to get information on why the field value is invalid.

Right-click on a tree element to delete it or to add new sub-parameters.

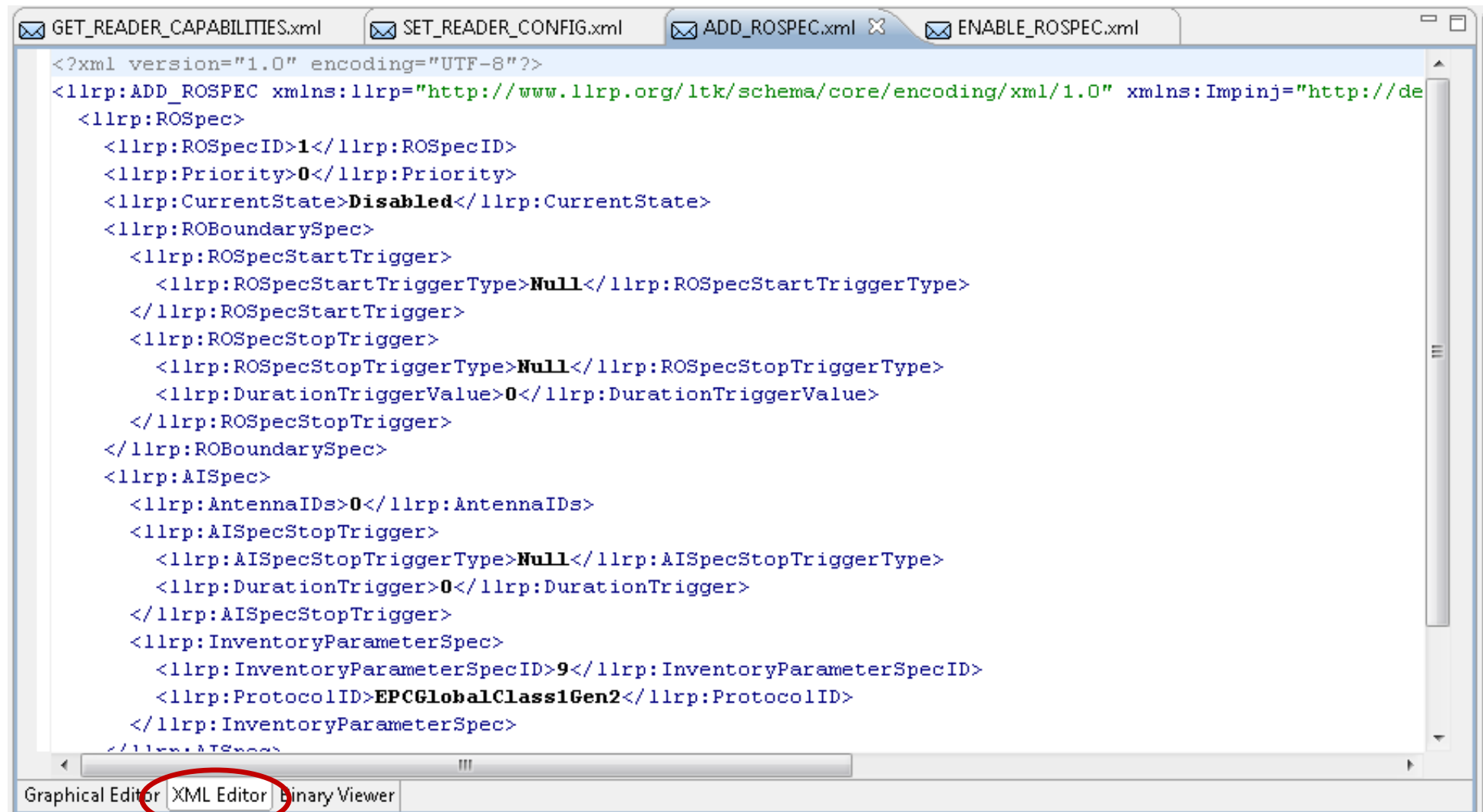
The screenshot displays the Graphical Editor interface for editing an XML file named ADD_ROSPEC.xml. The interface is divided into several sections:

- Message Tree:** A hierarchical tree view on the left showing the structure of the XML. The root is ADD_ROSPEC, which contains a ROSpec element. The ROSpec element is expanded, showing a context menu with 'Add' and 'Delete' options. The 'Add' option is further expanded to show 'ROBoundarySpec' and 'ROReportSpec'. Below the ROSpec element is a SpecParameter folder, which contains an AISpec folder. AISpec contains AISpecStopTrigger and an InventoryParameterSpec folder. InventoryParameterSpec contains AntennaConfiguration, Custom, and another Custom folder.
- Parameter Configuration Panel:** On the right, the configuration for the selected ROSpec element is shown. It includes fields for ROSpecID (0), Priority (0), CurrentState (Disabled), ROBoundarySpec (ROBoundarySpec), SpecParameter (AISpec), and ROReportSpec (ROReportSpec). An information icon (i) is visible next to the ROSpecID field.
- Bottom Bar:** A tabbed bar at the bottom shows 'Graphical Editor', 'XML Editor', and 'Binary Viewer'. The 'Graphical Editor' tab is selected and circled in red.

Show information about the parameter.

This parameter carries the information of the Reader inventory and survey operation.

XML Message Editor



The screenshot shows the XML Message Editor application with four tabs: GET_READER_CAPABILITIES.xml, SET_READER_CONFIG.xml, ADD_ROSPEC.xml, and ENABLE_ROSPEC.xml. The ADD_ROSPEC.xml tab is active and displays the following XML content:

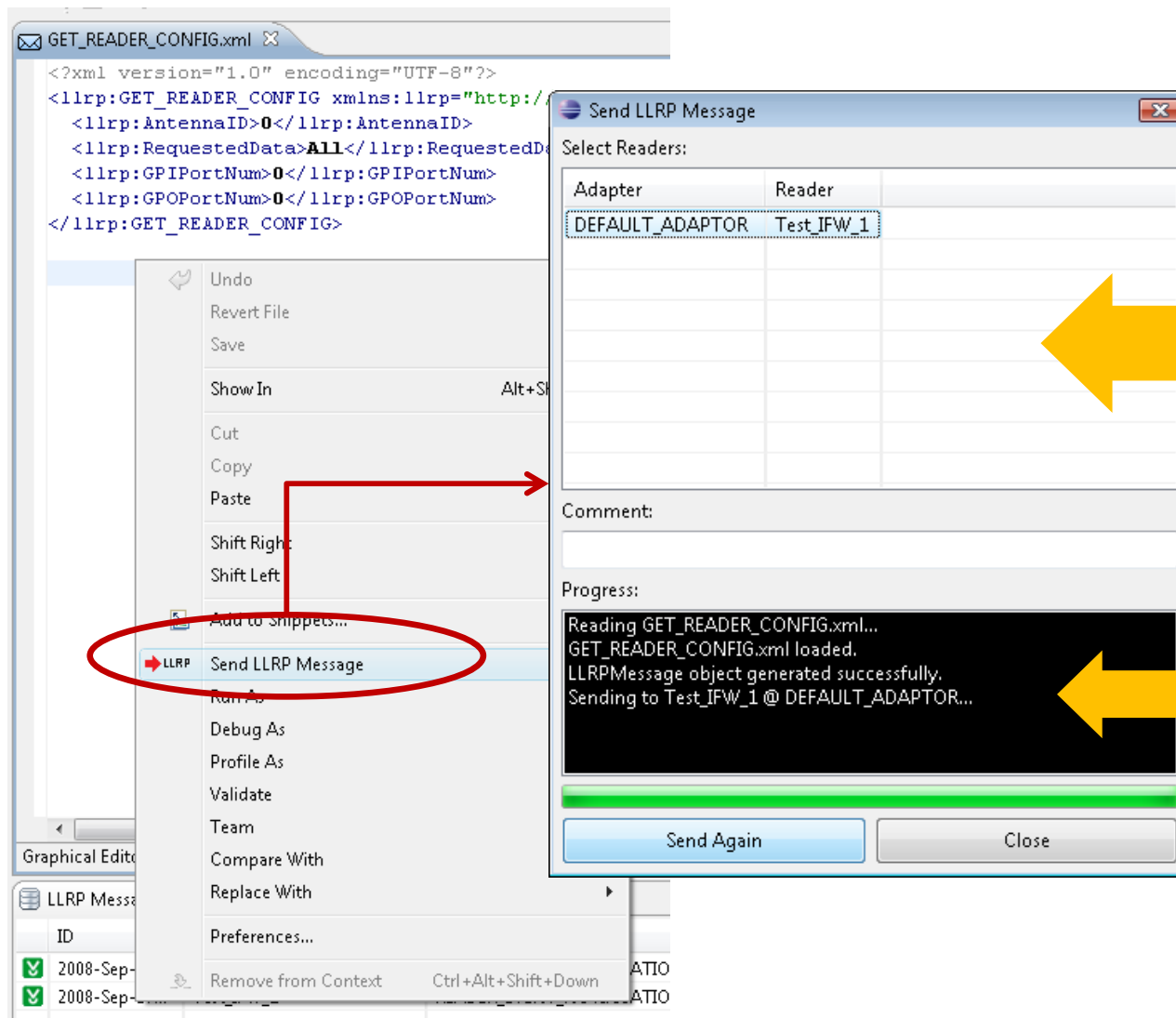
```
<?xml version="1.0" encoding="UTF-8"?>
<llrp:ADD_ROSPEC xmlns:llrp="http://www.llrp.org/ltk/schema/core/encoding/xml/1.0" xmlns:Impinj="http://de
<llrp:ROSpec>
  <llrp:ROSpecID>1</llrp:ROSpecID>
  <llrp:Priority>0</llrp:Priority>
  <llrp:CurrentState>Disabled</llrp:CurrentState>
  <llrp:ROBoundarySpec>
    <llrp:ROSpecStartTrigger>
      <llrp:ROSpecStartTriggerType>Null</llrp:ROSpecStartTriggerType>
    </llrp:ROSpecStartTrigger>
    <llrp:ROSpecStopTrigger>
      <llrp:ROSpecStopTriggerType>Null</llrp:ROSpecStopTriggerType>
      <llrp:DurationTriggerValue>0</llrp:DurationTriggerValue>
    </llrp:ROSpecStopTrigger>
  </llrp:ROBoundarySpec>
  <llrp:AISpec>
    <llrp:AntennaIDs>0</llrp:AntennaIDs>
    <llrp:AISpecStopTrigger>
      <llrp:AISpecStopTriggerType>Null</llrp:AISpecStopTriggerType>
      <llrp:DurationTrigger>0</llrp:DurationTrigger>
    </llrp:AISpecStopTrigger>
    <llrp:InventoryParameterSpec>
      <llrp:InventoryParameterSpecID>9</llrp:InventoryParameterSpecID>
      <llrp:ProtocolID>EPCGlobalClass1Gen2</llrp:ProtocolID>
    </llrp:InventoryParameterSpec>
  </llrp:AISpec>
</llrp:ADD_ROSPEC>
```

At the bottom of the application, there are three tabs: Graphical Editor, XML Editor, and Binary Viewer. The XML Editor tab is circled in red.

Send Messages

To send a message, proceed as follows:

1. Open the message in the editor.
2. Click on “Send LLRP Message” in the context menu of the xml editor/binary viewer or on the “Send LLRP Message” icon in the toolbar.



All connected readers are listed here. You can select multiple readers to send the message to multiple readers simultaneously.

You can see the sending progress here (Text and Percentage)