

Quick Start Guide of Tag Capturer

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Tag Capturer Version 1.0
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Introduction

This installation guide provides the necessary procedures to install Tag Capturer.

Tag Capturer is an application demonstrating the functionalities of the ALE middleware and integration with Accada's EPCIS project. Tag Capturer demonstrates the successful integration of CUHK Middleware with an open source EPCIS module.

The goal of EPCIS is to enable disparate applications to leverage Electronic Product Code (EPC) data via EPC-related data sharing, both within and across enterprises. Ultimately, this sharing is aimed at enabling participants in the EPCglobal Network to gain a shared view of the disposition of EPC-bearing objects within a relevant business context.

Tag Capturer is an application that demonstrates the interoperability of CUHK middleware with an open sourced EPCIS product, namely Accada EPCIS. Accada EPCIS Project is the first open source EPCIS project with its implementation available public, and claims to be compliant to the EPC Information Services (EPCIS) Version 1.0 Specification as specified in EPCglobal's Ratified Standard (Version 1.0 of April 12, 2007). Tag Capturer implements the EPCIS role in the EPC network and develops the appropriate tools that facilitate communication with an EPCIS Repository instance.

Since an EPCIS application is domain specific and requires detailed workflow in order to fulfill requirements and align with business, Tag Capturer demonstrates only the feasibility of expanding CUHK middleware with specification compliant EPCIS products. Tag Capturer shows the integration of CUHK middleware with Accada EPCIS Capture Interface and Accada EPCIS repository to capture an EPCIS Event.

Apart from the interoperability, Tag Capturer also demonstrates the usage feasibility of the following scenarios:

1. Embed EPCIS Repository into the demonstration application to add an EPCIS interface to it
2. Interactively explore any EPCIS Repository using Accada's graphical EPCIS Query Application
3. Build an EPCIS Capture Application

This document is intended to provide a "getting started" point for Tag Capturer. After following this technical article, users should be able to install and setup the Tag Capturer.

This technical article does not explain the system design and the technical details of Tag Capturer. Readers are expected to have a basic level of understanding of the EPCGlobal ALE and EPCIS standards, which may be referenced from the site <http://www.epcglobalinc.org/>.

Preparing the Installation

The installation of Tag Capturer requires the following software to be installed in the machine:

- Java Development Kit (JDK) 1.5
- MySQL 5.0
- CUHK RFID 1.0
- Apache Tomcat 6.0 or above
- Accada EPCIS Project

The CUHK RFID 1.0 includes:

- Management Console - provides a bird-view of the running system and provides administrative and management functions.
- Reader Emulator – provides hardware reader emulation to the middleware
- Tag Capturer – demonstrates the basic functionalities of the middleware

For details of installing CUHK middleware, please refer to the document “Quick Start Guide of Middleware Installation”.

Installing Java Development Kit (JDK) 1.5

Install Java Development Kit (JDK) 1.5

- run `jdk-1_5_0_10-windows-i586-p.exe`
- make sure to include the bin directory is in your system PATH
- make sure JAVA_HOME environment variable is set

Installing MySQL 5.0

Run `mysql-5.0.15-win32_setup.exe`

- choose Standard Configuration in MySQL server instance configuration
- note the password of the root user
- make sure to include the bin directory is in your system PATH

Installing CUHK RFID 1.0

Run `cuhkrfid_1.0.exe`

Installing Tomcat

Apache Tomcat 6.x as the Web container for running Accada's EPCIS Repository. After installation, it is important to check if CATALINA_HOME environment variable has been set to the Tomcat root installation directory and that the JAVA_HOME environment variable points to a valid JRE directory.

Please note that if the Tomcat is installed in the same machine as the CUHK RFID, make sure that opened ports do not collide with each other.

Installing Accada EPCIS Project

Tag Capturer is able to incorporate Accada's EPCIS Repository implementation into CUHK Middleware to provide a means of persistence for EPC-related data.

This section provides only a high level guideline, which provides outline items that should be executed for the installation of Accada EPCIS Project For step by step installation guide, please refer to the official link of Accada's EPCIS Project, that is at <http://www.accada.org/epcis/docs/user-guide.html> .

1. Download the modified version of epcis-repository-0.2.0.war
2. Deploy EPCIS repository to the Tomcat (as installed in previous section)
3. Create database schema for EPCIS repository
4. Start the Accada's Capture Application to test successful installation of EPCIS Repository via the Capture Interface
5. Start the Accada's Query Application to test the connection via SOAP with the Query Interface

Testing Installation

When you set up your lab computers, install and configure your systems in the following order:

Here we use a simple scenario to test the successful installation of the TagCapturer.

1. Start the Accada's EPCIS Repository by starting the Tomcat application server
2. Start the Accada's EPCIS Query Application and test the connection with the EPCIS Repository
3. Open Management Console:
 - Create a reader called "READER1"
 - Create a logical reader called "LREADER1"
 - Create a mapping such that logical reader "LREADER1" mapped to reader "Reader1"
4. Open Tag Capturer:
 - a) Add a View
 - In the Menu, choose "Add a View"
 - Title: ecspec1
 - Logical Readers: LREADER1
 - Scope of Tags: urn:epc:pat:gid-96:1000001.0.[5000-9999]
 - Set of EPCs: current
 - Submit the Request
 - b) Select a View
 - In the Menu, choose "Select a View"
 - Select "ecspec1"
5. Open Reader Emulator:
 - Server Address: localhost
 - Reader ID: READER1
 - Reader Cycle: 1000
 - Tags: urn:epc:tag:gid-96:1000001.0.[5000-9000:1]
 - Start the emulation
6. The Tag Capturer reports the tags received
7. Execute Accada's Query Application to retrieve the results

For details of installing CUHK middleware, please refer to the document "Quick Start Guide of Middleware Installation".

Tag Capturer Guide

Tag Capturer is an application demonstrating the functionalities of the ALE middleware and integration with Accada's EPCIS project. Tag Capturer demonstrates the successful integration of CUHK Middleware with an open source EPCIS module.

Tag Capturer provides the following functionalities:

1. Define and subscribe ECSpec in the middleware
2. Receive reports from the middleware
3. Transform reports into EPCIS Events
4. Send EPCIS Events to the EPCIS Capture Interface
5. Receive response from the Capture Interface
6. Display the EPCIS status

Configuration

There is a file named "**config.properties**" which contains the following parameters:

- ***server.host, server.port***
These parameters specify the hostname and the port number of the ALE middleware. The default value is `localhost, 8080`.
- ***client.host, client.port***
These parameters specify the hostname and the port number of Tag Capturer as seen by the middleware. For example, if Tag Capturer is running on private IP address, and the middleware is running in public Internet, then a proxy is required to be set up in order to route the traffic from middleware to the client. The ***client.host*** and ***client.port*** in this case is the proxy's public address and the port for traffic routing. The default value is `localhost, 6666`.
- ***epcis.captureurl***
This parameter specifies the URL of the EPCIS Capture Interface. Since the Capture Interface will be hosted in another application server and the communication is conducted via XML messages on HTTP, the link specifying the Capture Interface should be changed according to different configuration of the application server. The default value is `http://localhost:8081/epcis-repository-0.2.0/capture`.

View

The Tag Capturer is working on “View”, which is an abstraction of ECSpec and ECReport.

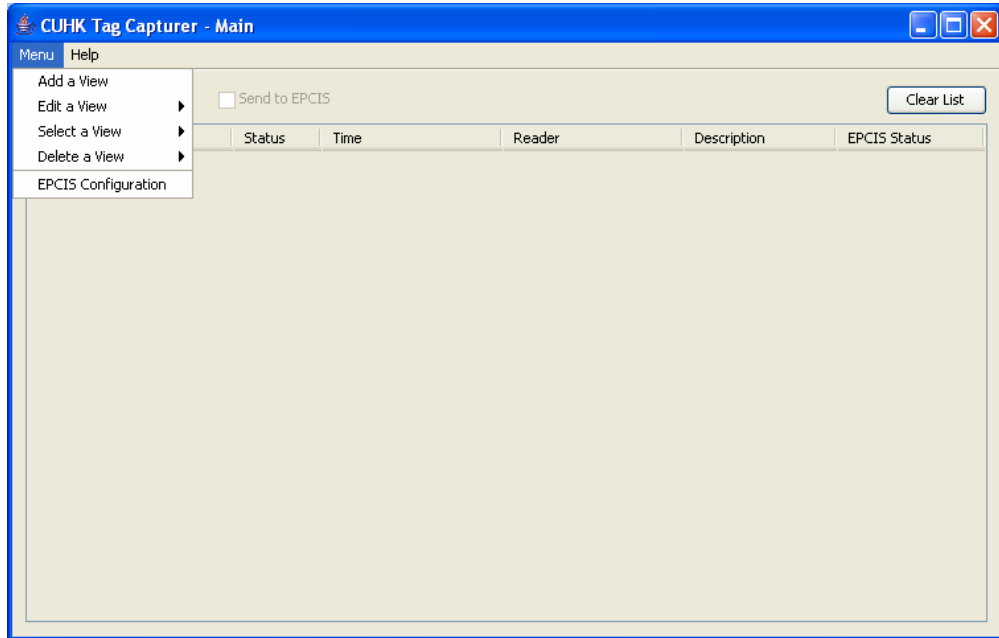
To add a view, the following parameters have to be specified:

- **Title**
This parameter corresponds to the name of the ECSpec, specName.
- **Logical Readers**
This parameter corresponds to the one in ECSpec. Semicolon “;” can be used to separate list of logical reader names.
- **Scope of Tag IDs**
This parameter corresponds to the includePatterns in the ECFilterSpec. Semicolon “;” can be used to separate a list of tag patterns.
- **Set of ECPs**
This parameter corresponds to the setting in ECReportSetSpec. The ECSpec added in the middleware has a duration of 3 seconds in ECTimeoutSpec.

Operations

To add a view, the following parameters have to be specified:

- **Title**
This parameter corresponds to the name of the ECSpec, specName.
- **Logical Readers**
This parameter corresponds to the one in ECSpec. Semicolon “;” can be used to separate list of logical reader names.
- **Scope of Tag IDs**
This parameter corresponds to the includePatterns in the ECFilterSpec. Semicolon “;” can be used to separate a list of tag patterns.
- **Set of ECPs**
This parameter corresponds to the setting in ECReportSetSpec. The ECSpec added in the middleware has a duration of 3 seconds in ECTimeoutSpec.



- **Add a View**

When a view is added, an ECSpec is defined and subscribed in the middleware. The report is displayed in the reporting window.

- **Edit a View**

This action unsubscribes and undefines the selected ECSpec, then defines it again with new parameters and subscribe to it.

- **Select a View**

This action displays the reports of selected view in the reporting window.

- **Delete a View**

The action unsubscribes and then undefines the selected ECSpec.

- **EPCIS Configurations**

This action allows modification of the URL of the Capture Interface for the EPCIS Events.

There is a Main View that displays all the reports in different views. In an individual view, users can check the box “**Alarm on New reports**” so that the reporting window will switch to that view when a report is received for that view. Besides, by checking on the checkbox “**Send to EPCIS**” will convert the reports into EPCIS Events and send to the EPCIS module via the specified URL of the Capture Interface.

Conclusion

By following the steps in this technical article, you should have a fully functioning middleware, EPCIS and Tag Capturer. You have learnt how to use the Reader Emulator to create tag events, send to middleware for processing and obtains reports from the Tag Capturer. By transforming the reports into corresponding Capture Events, the events will be sent to EPCIS repository via the Capture Interface provided by the EPCIS module.