

OW2 Aspire RFID

Sub Project: RFID Suite

Specification Datasheet

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TABLE OF REVISION

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1. INTRODUCTION

This datasheet summarizes the features of the RFID Suite (as of 30/09/2007).

2. ARCHITECTURAL ASPECTS

The RFID Suite is globally architected on the Edge-Premise-Server model.

- Edge (OSGi) : Apache Felix
- Premise (OSGi): Apache Felix
- Server/EPC IS (JavaEE): OW2 JOnAS, RedHat JBoss)
- Object Naming Server (JavaEE): OW2 JOnAS
- RFID Readers
 - TagSys Medio L100 <http://www.tagsysrfid.com/html/products-18.html>
 - Texas Instruments TIRIS 6350 <http://www.ti.com/rfid/shtml/rfid.shtml>
 - Fictive RFID Readers
- Sensors
 - OneWire iButton Thermocron DS 1920, DS1921(ID + Temperature logger)
 - NMEA 0183 Serial GPS Receiver
 - Fictive Measurement sensor
 - Fictive Position sensor
- Management
 - The platforms are managed through Java Management eXtension (JMX)
 - Middleware elements (OSGi bundles, JavaEE services) and Application elements (OSGi bundles, JavaEE applications) are managed through MBeans.
- Deployment
 - Maven : The OSGi bundles and the JavaEE applications are deployed from the RFID Suite' Maven 2 repository.
 - OSGi Bundle Repository (RFC 0112) : the OBR index is build on the Maven2 repository to deploy (transitively) OSGi bundles on edges and premises.
 - JMX : MBeans are used to pilot deployment operations

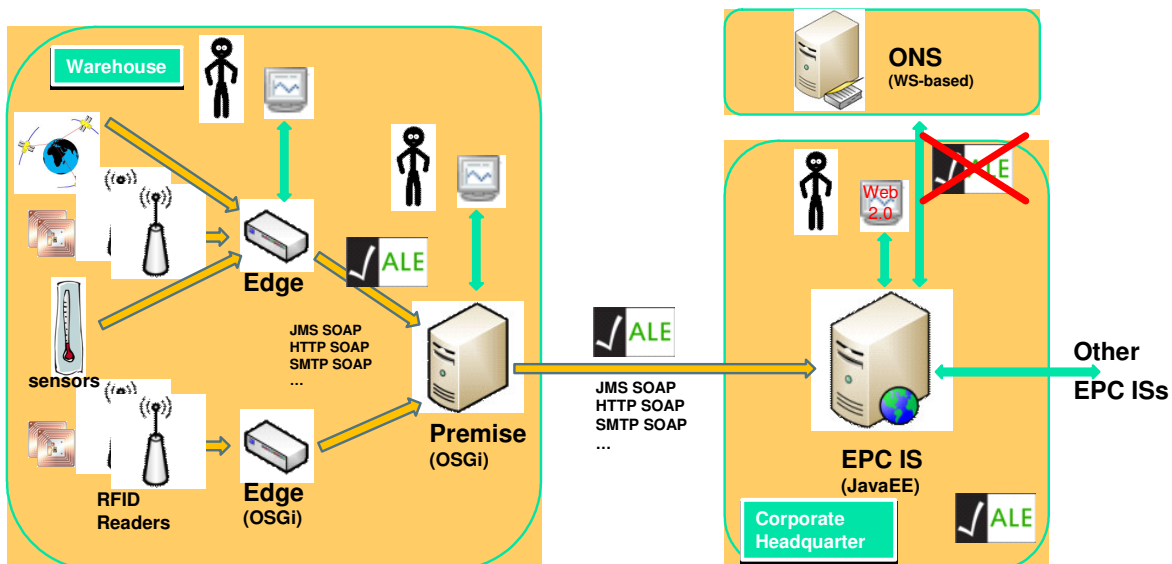


Figure 1: overall view of the RFID Suite

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3. EPC GLOBAL STANDARDS

The suite is not certified by EPC Global but it's designed under the standards definitions (<http://www.epcglobalinc.org/standards/>).

- EPC IS : based on spec V1.0 (http://www.epcglobalinc.org/standards/epcis/epcis_1_0-standard-20070412.pdf)
- ALE : based on V1.0 spec (http://www.epcglobalinc.org/standards/ale/ale_1_0-standard-20050915.pdf)
- ONS : freely inspired of EPC Global principles (http://www.epcglobalinc.org/standards/ons/ons_1_0-standard-20051004.pdf). The RFID Suite ONS can be queried using Web Services technologies instead of the DNS-based protocol.

Edges, premises and servers exchange ALE events.
EPC IS server does not support real-time push.

ALE Reports are extended by measurement sub-reports associated to physical sensors in the readers and objects environments. Current measurements are GPS positions (namespace org.osgi.util.position) and temperatures (namespace org.osgi.util.measurement).

The RFID Suite' reader management is based on JMX and it is not based on the EPC Global specification "Reader management" (http://www.epcglobalinc.org/standards/rm/rm_1_0_1-standard-20070531.pdf)

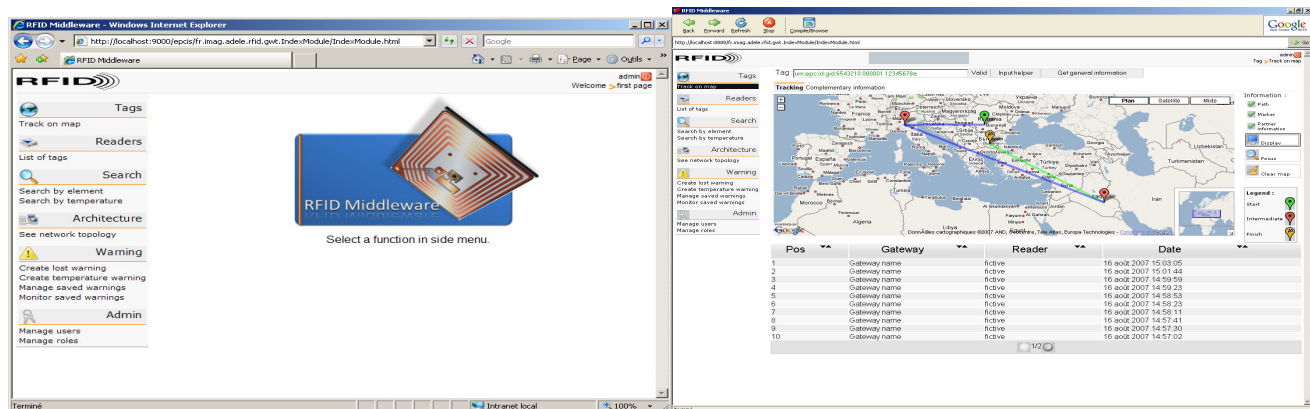
The following standards are not addressed by the RFID Suite

- Low-Level Reader Protocol
- Reader Protocol

4. CONSOLE

The RFID Suite console (RConsole) enables the end-user:

- to create (discard) ALE reports,
- to track objects (display GPS and temperature history)
- to notify alerts on object disappearance
- to visualize the EPC architecture
- ...



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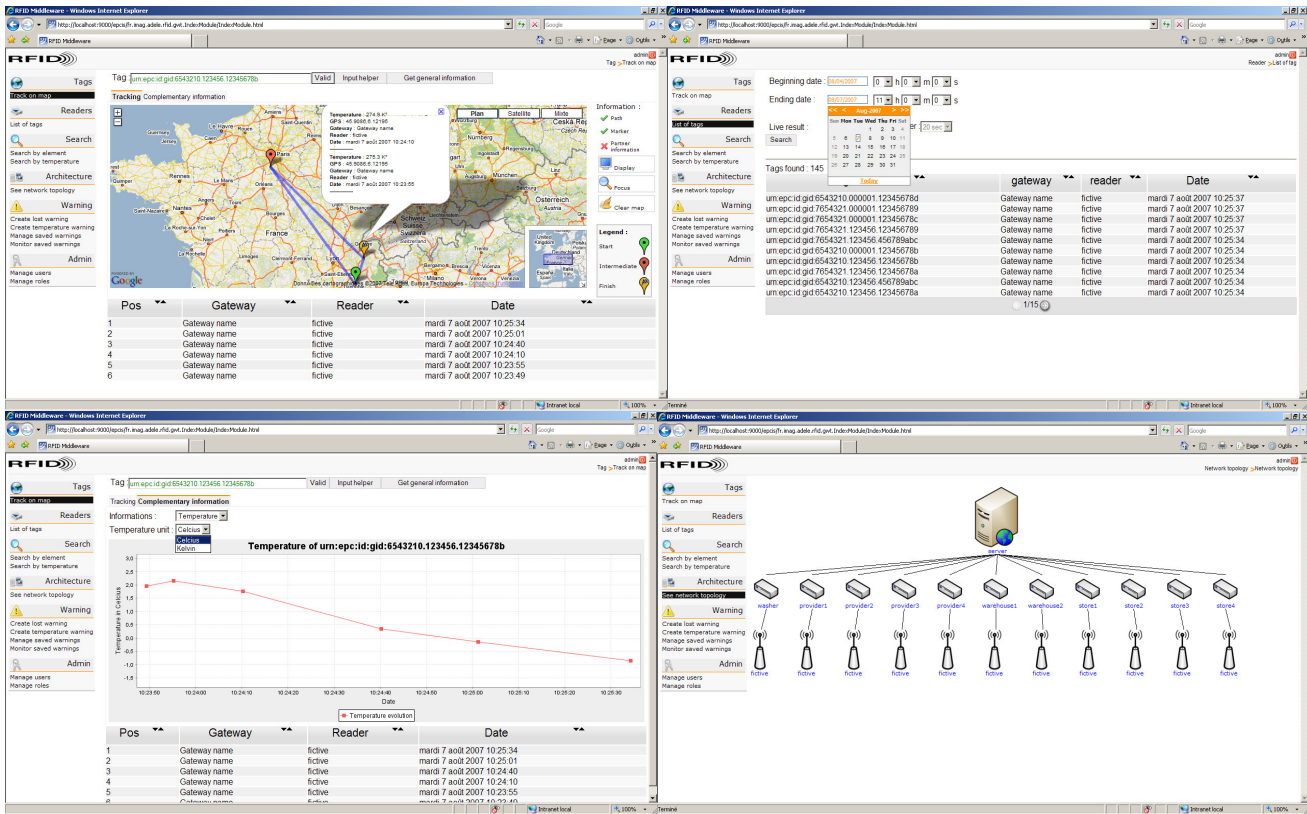


Figure 2 : Examples of the RConsole screens

5. APPLICATION DEMONSTRATORS

The RFID Suite provides several application demonstrators

- Missing objects alert
- Object information sharing between several EPCIS through the ONS
- Tracking of refillable containers between several partners
- ...

6. INTEROPERABILITY

To be defined

7. TECHNOLOGIES

The RFID Suite relies and requires the following technologies:

- OSGi R4 (Edge, Premise)
- iPOJO (OSGi service-oriented CBSE)
- MOSGi (JMX-based management of OSGi platforms (edge,premise))
- xFire (Web Services on edges and premises)
- JavaEE 5 (Server,ONS)
- EJB3 + JSR 181: Web Services Metadata for the JavaTM Platform (Server,ONS)
- Google Web Toolkit (RConsole)
- Google Maps (RConsole)
- xFire (WebServices)
- JConsole (edges, premises and servers)
- Jasmine OSGi Console (edges and premises)

Extra

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- Apache James (and mailet) for Mail-based event/report exchanges (when a SMTP server is not available).
- Apache Directory Server for LDAP directory of users , edges, premises and servers (descriptions and configurations).

8. COMMUNICATION

Communication layers between edges, premises and servers are based on Web-services technologies:

Current supported protocols are:

- HTTP/SOAP
- JMS/SOAP
- SMTP+POP/SOAP

9. TOOLS

The RFID Suite is developed, deployed and managed with the following tools :

- Source Versioning : SubVersion
- Build : Maven 2 (Bundle plugin, OBR plugin), Ant 1.7, Eclipse 3.2+
- Deployment : OSGi Bundle Repository (RFC 0112), Catalina JMX Tasks, JOnAS/JBoss JSR77 implementation
- Management : JConsole, Jasmine Console

10. LICENCE

To be defined

11. ROADMAP

To be defined

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