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About This Guide

What’s In This Guide

This guide describes how to install and set up Sun Java™ System RFID Software which consists of Event Manager and Information Server modules. It is intended for Professional Services staff in the corporate enterprise who are involved in promoting RFID applications to a broader audience through the EPCGlobal network.

This preface addresses the following topics:

- Who Should Use This Guide
- How This Guide is Organized
- Documentation Conventions
- Related Documentation
- Contacting Sun Technical Support
- Related Third-party Web Site References
- Sun Welcomes Your Comments

Who Should Use This Guide

The intended audience for this guide is the person who installs and configures Sun Java System RFID software and the Application Server subsystems and components.

This guide assumes you are familiar with the following topics:

- Java programming and concepts
How This Guide is Organized

This guide is divided into eight chapters plus four appendices.

Chapter 1: Installation Requirements
This chapter describes the items needed to support successful installation.

Chapter 2: Preparing for Installation
This chapter summarizes the installation steps to guide the process in advance. The following topics are included:
- Getting Started
- RFID Reader Installation
- PMLReader Emulator

Chapter 3: Installing RFID Event Manager
This chapter describes in detail the steps required to install the Sun Java System RFID Event Manager. The following topics are included:
- Before You Begin
- Install the Event Manager
- Start the Event Manager

Chapter 4: Installing the Application Server
This chapter briefly outlines the installation of the Sun ONE Application Server 7 Standard Edition. The following topics are included:
How This Guide is Organized

• Application Server Installation
• Start the Application Server

Chapter 5: Installing the Information Server

This chapter describes in detail the installation of the Sun Java System RFID Information Server. The following topics are included:
• Starting the Application Server
• Oracle Database Installation
• Before You Begin
• Information Server Installation
• Post Installation Steps

Chapter 6: Additional Steps

This chapter outlines several requirements that do not otherwise fit neatly into other topics. The following topics are included:
• Enable/Disable RFID Tag Readers
• Start/Stop Scripts
• Uninstalling the Product
• Log Files
• Troubleshooting

Chapter 7: Using the RFID Application

This chapter describes how to use most of the basic features and functions of the Sun Java System RFID Software. The following topics are included:
• Reading Tags
• EPC Vu-Meter Window
Appendix A: RFID Tag Reader Considerations

This appendix provides an example for illustrative purposes of the installation and configuration of an RFID Reader device on the EPC network. The following topics are included:

- Reader Port Connectors
- Configuring the Reader

Appendix B: Verifying the Information Server Installation

This appendix provides information for verifying the installation of the Information Server.

Appendix C: PMLReader

The PMLReader is a software program that generates emulated RFID events. By default, the Event Manager is configured at installation time to listen for RFID events from the PMLReader simulator. This appendix provides information on this program.

Appendix D: RFID Configuration Files

This appendix provides information regarding the several classes of configuration files which may require user access. The following files are discussed in this appendix:

- System Files
- Log Files
- XML File Description

Documentation Conventions

This section describes the types of conventions used throughout this guide:
General Conventions

The following general conventions are used in this guide:

- File and directory paths are given in UNIX® format (with forward slashes separating directory names). For Windows versions, the directory paths are the same, except that backslashes are used to separate directories.

- URLs are given in the format:
  
  http://server.domain/path/file.html

  In these URLs, server is the server name where applications are run; domain is your Internet domain name; path is the server’s directory structure; and file is an individual filename. Italic items in URLs are placeholders.

- Font conventions include:
  
  - The monospace font is used for sample code and code listings, API and language elements (such as function names and class names), file names, pathnames, directory names, and HTML tags.
  
  - Italic type is used for code variables.
  
  - Italic type is also used for book titles, emphasis, variables and placeholders, and words used in the literal sense.
  
  - Bold type is used as either a paragraph lead-in or to indicate words used in the literal sense.

- Installation root directories for most platforms are indicated by install_dir in this document. Exceptions are noted in Conventions Referring to Directories below.

  By default, the location of install_dir on most Solaris-based platforms is:

  /opt/SUNWrfid and /opt/SUNWrfidis

  By default, the location of install_dir on most Linux-based platforms is:

  /opt/sun/rfidem and /opt/sun/rfidis

- UNIX-specific descriptions throughout this manual apply to the Linux operating system as well, except where Linux is specifically mentioned.
Conventions Referring to Directories on Solaris Platforms

When using the Solaris package-based installation, the RFID Software files are spread across several root directories. This guide uses the following document conventions to correspond to the various default installation directories provided:

- `install_dir` refers to `/opt/SUNWrfid` and `/opt/SUNWrfidis`, which contains the static portion of the application server installation image. All utilities, executables, and libraries that make up the application server reside in this location.

- `install_config_dir` refers to `/etc/opt/SUNWrfid` for location of configuration files for the Event Manager and `/etc/opt/SUNWrfidis` for the Information Server.

- `install_log_dir` refers to `/var/opt/SUNWrfid` for log files and Rio items for the Event Manager and `/etc/opt/SUNWrfidis` for log files for the Information Server.

- `appsvr_install_dir` refers to `/opt/SUNWappserver7`, which contains the Sun Java System Application Server 7 installation image.

- `appsvr_log_dir` refers to `/var/opt/SUNWappserver7` for log files for the Sun Java System Application Server 7.

Conventions Referring to Directories on Linux Platforms

When using the Linux RPM-based installation, the RFID Software files are spread across several root directories. This guide uses the following document conventions to correspond to the various default installation directories provided:

- `install_dir` refers to `/opt/sun/rfidem` and `/opt/sun/rfidis`, which contains the static portion of the application server installation image. All utilities, executables, and libraries that make up the application server reside in this location.

- `install_config_dir` refers to `/etc/opt/sun/rfidem` for location of configuration files for the Event Manager and `/etc/opt/sun/rfidis` for the Information Server.
install_log_dir refers to /var/opt/sun/rfidem for log files and Rio items for the Event Manager and /etc/opt/sun/rfidis for log files for the Information Server.

appsvr_install_dir refers to /opt/sun/appserver7, which contains the Sun Java System Application Server 7 installation image

appsvr_log_dir refers to /var/opt/sun/appserver7 for log files for the Sun Java System Application Server 7.

Related Documentation

The following table lists the tasks and concepts that are described in the Sun Java™ System RFID Software manuals and Release Notes. If you are trying to accomplish a specific task or learn more about a specific concept, refer to the appropriate manual.

<table>
<thead>
<tr>
<th>For information about</th>
<th>See the following</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late-breaking information about the software and the documentation</td>
<td>Release Notes</td>
</tr>
<tr>
<td>Installing Sun Java™ System RFID Software and its various components.</td>
<td>Installation Guide</td>
</tr>
<tr>
<td>The following administration topics:</td>
<td>Administration Guide</td>
</tr>
<tr>
<td>• RFID System overview</td>
<td></td>
</tr>
<tr>
<td>• Event Manager configuration</td>
<td></td>
</tr>
<tr>
<td>• Distributed RFID Event Manager environment</td>
<td></td>
</tr>
<tr>
<td>• Sun Java System Application Server administration tasks</td>
<td></td>
</tr>
<tr>
<td>• Sun Java System RFID Information Server configuration tasks</td>
<td></td>
</tr>
<tr>
<td>• RFID System / JMS Service</td>
<td></td>
</tr>
<tr>
<td>Sun Java™ System RFID Software Information Server (IS), including architecture, database tables, API and the PML Utilities.</td>
<td>Developer’s Guide</td>
</tr>
</tbody>
</table>
Contacting Sun Technical Support

To report a bug, submit a comment, or ask a question, send us an email at:
rfid-software-feedback@sun.com

Related Third-party Web Site References

Sun is not responsible for the availability of third-party web sites mentioned in this document. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials that are available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content goods or services that are available on or through such sites or resources.

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Give Us Feedback

If you have general feedback on the documentation, please use the following URL:
http://www.sun.com/hwdocs/feedback
Chapter 1

Installation Requirements

This chapter describes the items needed to properly deploy the Sun Java System RFID Software suite. Both hardware and software requirements are included, as well as the appropriate RFID reader items. Note that Sun hardware must be acquired prior to installation, and software must be downloaded to a target host before beginning installation at the “Getting Started” section in the next chapter.

The following sections are included in this chapter:

• Computer Hardware Requirements
• Software Requirements
• Supported Operating and Desktop Systems
• RFID Reader Requirements

Computer Hardware Requirements

Choose the following hardware configurations to install the Sun Java System RFID Software suite.

Table 1-1  Hardware Platforms

<table>
<thead>
<tr>
<th>Sun Fire V60:</th>
<th>For the RFID Event Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single 3.06 GHz Intel Xeon</td>
<td></td>
</tr>
<tr>
<td>512 MB RAM min (1 GB best)</td>
<td></td>
</tr>
</tbody>
</table>
Software Requirements

The following table lists the Sun Java System RFID Software requirements:

<table>
<thead>
<tr>
<th>Name</th>
<th>URL for Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java 1.4.2 or later</td>
<td><a href="http://java.sun.com/">http://java.sun.com/</a></td>
</tr>
</tbody>
</table>

Supported Operating and Desktop Systems

The operating systems supporting Sun Java System RFID Software include Linux/Redhat AS 3 and Solaris 9 for both SPARC and X86 versions.

RFID Reader Requirements

The following table lists the Sun Java System RFID Reader requirements:

<table>
<thead>
<tr>
<th>Reader Name</th>
<th>Protocols</th>
<th># Antenna</th>
<th># Ant. Tested</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThingMagic Mercury3</td>
<td>EPC Class 1, ISO 15693</td>
<td>2</td>
<td>2</td>
<td>915 Mhz</td>
</tr>
<tr>
<td>Alien NanoScanner 915Mhz*</td>
<td>EPC Class 1, ISO 15693</td>
<td>2</td>
<td>2</td>
<td>915 Mhz</td>
</tr>
</tbody>
</table>
The Mercury3 Agile Reader is typical for application, and uses RFID to read data stored on RFID tags and labels. It operates as a SQL (Structured Query Language) server, providing tag data in response to requests from another application. A separate software application may be used to direct its operation and provide a user interface.

The reader supports UHF (ultra high frequency) and HF (high frequency) antennas which are available separately. The reader provides 2 UHF and 2 HF antenna ports and transfers data to a computer through an Ethernet port.

*Note: Alien readers are reverse threaded.

<table>
<thead>
<tr>
<th>Reader Name</th>
<th>Protocols</th>
<th># Antenna</th>
<th># Ant. Tested</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrics RDR-001</td>
<td>EPC Class 0</td>
<td>4</td>
<td>4</td>
<td>915 Mhz</td>
</tr>
</tbody>
</table>
RFID Reader Requirements
This chapter provides information to follow to prepare for installing Sun Java System RFID Software. The following sections are included in this chapter:

- Getting Started
- RFID Reader Installation
- PMLReader Emulator

Getting Started

Outlined here are the general steps involved in the installation of the Sun Java System RFID Software suite.

1. After logging into your computer, extract the downloaded software suite to your system from http://wwws.sun.com/software/solutions/rfid.
2. Connect and configure a reader to the network (see Appendix A, which uses the ThingMagic model as an example).
3. Install the Java RFID System Event Manager software (see “Install the Event Manager” on page 23) either from a Console terminal or using the wizard (described here).
4. Install the Sun Java System Application Server v.7 on a Sun Fire V210 machine (see “Application Server Installation” in Chapter 4, “Installing the Application Server” on page 35) and start it when installation is successful.
5. Install the Oracle database and the JDBC driver on the target host machine (see “Oracle Database Installation” in Chapter 5, “Installing the Information Server” on page 37).
6. Install the Information Server software (see “Information Server Installation” in Chapter 5, “Installing the Information Server” on page 37) and re-start the Application Server when installed.

RFID Reader Installation

Consult documentation provided by the vendor with your specific reader model for detailed connection requirements. Appendix A, “RFID Tag Reader Considerations” in this document provides “typical” information for a reader set-up. But it is illustrative only, and represents the ThingMagic model cited earlier in this document.

Configure the Reader

Refer to the example set-up provided in Appendix A for an illustration of a “typical” reader installation and configuration. But consult documentation provided by the vendor with your specific reader model for detailed configuration requirements.

PMLReader Emulator

Note that a software reader emulator is installed as part of the Control Station package. You can use this software reader emulator (referred to as PMLReader from now on) for testing until you have access to an RFID reader. Refer to Appendix B for details about how to configure and launch PMLReader.
Chapter 3

Installing RFID Event Manager

This chapter describes how to install the Sun Java System RFID Software Event Manager. The following sections are included in this chapter:

• Before You Begin
• Install the Event Manager
• Start the Event Manager

Before You Begin

Before you can install the Event Manager component of Sun Java System RFID Software, begin by finding it on the CD provided with your software package. Open a terminal window on a Sun V60 machine where you have ROOT access privilege, and log in as root.

You should find a directory listing on the CD typically like this:

# ls -al

-rw-r--r-- 1 root bin 5255 Jun 23 18:54 COPYRIGHT
-rw-r--r-- 1 root bin 18470 Jun 23 18:54 LICENSE
drwxr-xr-x 2 root bin 512 Jun 23 18:53 LICENSEREADME/
-rw-r--r-- 1 root bin 3456 Jun 24 18:46 README
drwxr-xr-x 3 root bin 512 Jun 21 15:00 docs/

You can cd to /sparc, /x86 or /linux and find the setup paths for the two components, /rfidem and /rfidis.
Install the Event Manager

You install the RFID Event Manager software using the installation wizard provided with the software package.

To Open the Wizard and Start the Installation

Perform the following steps to start the installation wizard:

1. Change directory or cd to the /cdrom/cdrom0/{sparc,x86,linux}/rfidem location.

2. Run the ./setup executable file from this location to open the installation wizard window as shown in Figure 3-1 on page 22.

![Event Manager Install Wizard](image)
3. Click on **Next** to present the software license dialog.

![Software License Dialog]

**Figure 3-2**  Software License Dialog

4. Click the **Yes (Accept License)** button to view the Select Type of Installation screen.
Install the Event Manager

Figure 3-3 Select Installation Type Dialog

5. Select “Typical” and click on Next to present the next dialog.
Install the Event Manager

Chapter 3 Installing RFID Event Manager 25

6. If the default directory is acceptable click on Next to present the next screen. If prompted to “Create a Directory”, click Yes.

7. On Linux, if a version of the Sun Java System Message Queue that is older than version 3.5 is detected to be installed on the system, you will be prompted with the following dialog which will allow you to choose whether or not you would like to upgrade to the latest version of the Sun Java System Message Queue (recommended). If you choose not to upgrade your system, you may encounter unsupported Message Queue interfaces.

Figure 3-4 Select Installation Directory (Linux)

Figure 3-5 Sun Java System Message Queue Update (Linux)
Install the Event Manager

An older version of Sun Java System Message Queue 3.5 was detected in your system. Do you want to upgrade to service pack 1 of the IMQ 3.5 application?

- yes, upgrade SunMQ 3.5
- no, keep current SunMQ
8. Note the IP address your host has reported, which is the address at which the control station is to be installed. You can accept this default only if you are installing control station and execution agent software on the same host. Otherwise you need to specify the specific remote host location where control station is to be installed, as is the case for a distributed installation.

Click on Next to present the Startup Script screen.
9. For this example you leave the default no active, and the event manager will start automatically whenever the system restarts. (The startup script is generally reserved for troubleshooting.) By clicking on Next the installation process completes all preliminary setup and presents the next dialog panel.
Figure 3-8    Ready to Install Screen (Linux)

NOTE

This dialog (Figure 3-8) appears when the Type of Installation you have selected is Typical, reference Figure 3-3 on page 24. If you selected Custom you will first be presented with a dialog/screen where you can select the components you want to install. The Ready to Install Screen for a custom installation is obviously a little different from the one shown above in this case. (See Figure 3-9 on page 30 for an illustration of a typical Select Components dialog, from an earlier release.)
Install the Event Manager

Figure 3-9  Component Selection Dialog

This panel lists all the components that the wizard is to install at this host location. The control station contains components necessary to run the provisioner, lookup service, and webster.

NOTE

In configuring a distributed installation, you need at least one control station on one machine, and multiple agents on other machines. The Execution Agent Components check-box would be unchecked in such an instance. The execution agents are installed on one or more different machines but must refer to the IP address of the control station from their respective locations.

The Common Files item is grayed out, as it is required by at least one of the event manager components. Finally, the documentation contains all the instructions needed to run and configure the event manager.
A progress meter appears after you click **Install Now** on the Ready to Install panel, Figure 3-8 on page 29.

![Installing Progress Meter Panel](image)

**Figure 3-10**  
*Installing...* Progress Meter Panel

Click on the **Stop** button if you need to abort the installation for any reason. When the installation process concludes the wizard reports a final status summary panel, see Figure 3-11 on page 32.
Install the Event Manager

The Installation Summary screen reports the successful status as “Installed”. You can optionally click on the Details... button for additional information that might be useful, see Figure 3-12 on page 33.

Figure 3-11   Final Event Manager Install Screen
Start the Event Manager

The installation process includes providing certain script files designed to run or stop various software components. For the "Typical" installation, script files named "station", "agent", "startall" and "stopall" are installed. (An additional script to report software status is also included.)

Once these files are located in the installation directory, cd to /install_dir/bin to run the script to start applications. To start both the Control Station and the Execution Agent on the same host, type the following when you start the Sun Java System RFID Software Suite application:

```
# startall
```

To terminate both the Control Station and the Execution Agent:

```
# stopall
```
Start the Event Manager
Installing the Application Server

This chapter provides information for installing the Sun Java System Application Server 7, Standard Edition. The following sections are included here:

- Preparing To Install
- Application Server Installation
- Start the Application Server

Preparing To Install

Before you can proceed with the installation of the RFID Information Server component, you must make certain that the Sun Java System Application Server 7, Standard Edition is installed. If not, navigate a browser to http://www.sun.com/software/download/app_servers.html and download Sun Java System Application Server 7, Standard Edition Update 3.

The Sun Java System Application Server installation components are described briefly in the following sections in Sun Java Application Server 7, Standard Edition Installation Guide (817-5601app7.pdf):

- Sun Java System Application Server
- Administration Client
- Sun Java System Message Queue
- PointBase
- Sample Applications
- Java 2 Software Development Kit (J2SE)
Application Server Installation

Please see the *Sun ONE Application Server 7 Installation Guide* available at http://docs.sun.com/db/doc/817-5601-10 for specific details on installing the Sun Java System Application Server.

Start the Application Server

To use the graphical Administration interface or to use many of the commands in the command-line interface, you must have a running Admin Server. Follow the instructions in the Sun ONE Application Administrator’s Guide available at http://docs.sun.com/db/doc/817-5445/ to start the Sun Java System Application Server.
The RFID/EPC Information Server can be installed once the Sun Java System Application Server 7 has been successfully installed and is running on the host machine. But first verify that an operational installation of Oracle 8 database software has been successfully completed.

The following sections are included in this chapter:

- Initial Requirements
- Starting the Application Server
- Oracle Database Installation
- Information Server Installation
- Post-Installation Steps

Initial Requirements

The general steps involved in the installation of Information Server software are prerequisite and are as follows:

- Sun Java System Application Server 7 is installed and RUNNING
- Oracle 8.1.7 is installed and properly licensed with a developer account
- The Oracle 8.1.7 Thin Driver (for JDBC support) is installed
Starting the Application Server

Installation of the Sun Java System Application Server 7 software is described in preceding Chapter 5, with more detailed instructions available at the Sun website for downloading the software.

To Start the Application Server

1. In a terminal window `cd` to `/appsrv_install_dir/bin`.
2. As root, run `/asadmin start-appserv`

To verify that the application server is running, navigate a browser to `http://<hostname>:<http_port>` and you should see a window similar to the one shown below:
Oracle Database Installation

The RFID Information Server utilizes a relational database to maintain all the product information reported back to the user. The database supported in this first release is the Oracle 8.1.7. Before you can proceed with installation of the Information Server component, you must make certain that you have an Oracle8i database installed.

Make a note of the following information from your database installation:
Oracle Database Installation

- Database username and password
- Oracle SID
- IP address of the database server

Oracle Pre-Installation Setup

This task would be used to set up Groups and Users for Oracle installation and management, if it has not already been done before.

To create Groups and Users:
1. Log in as root
2. `# groupadd dba`
3. `# groupadd oinstall`
4. `# useradd -g oinstall -G dba -d /usr/bin/sh oracle`
5. `# passwd oracle`
   
   New Password: `<password>`
   
   Re-enter new Password: `<password>`

Oracle Installer Wizard

If you are installing the database using the wizard, you need to switch user in the same terminal window as above and set environment variables and file mode creation mask using scripts if provided. After that the GUI-based installer can be run.

To do this setup:
1. `# su - oracle`
2. `% ./ora-vars`
3. `% umask 022`
4. `% xhost +`
5. `% cd /ora-instl/<install-dir>`
6. `% ./runInstaller`
For detailed instructions regarding the installation of Oracle Database software, please refer to their website, see Figure 5-2 on page 42.

**JDBC Driver Installation**

The RFID Information Server is deployed to the Sun Java System Application Server running on Solaris 9 Sparc, X86, or Linux. The application server communicates with the Oracle database through JDBC to handle additions, deletions and insertions of rows for the EPC tags identified.

To acquire the Oracle JDBC driver software, navigate a browser to http://otn.oracle.com/software/tech/java/sqlj_jdbc/index.html

which should present a window that appears typically as shown in Figure 5-2 on page 42.

You may need to create a developer account in order to acquire proper licensing etc for this installation. Instructions for downloading and installing the software should be available at this website as well, see the “Services” frame to the side of the window in Figure 5-2.

It is necessary to download the Oracle8i 8.1.7 driver to a designated directory in the Sun Java System Application Server 7 installation path. On your target host machine you need to install the file in pathname

```
/appsvr_log_dir/domains/domain1/server1/lib
```

(Alternatively, with access you can get the needed driver file from a Sun website at http://autoid.sfbay/download/software/jdbc/. The file name is *classes12.jar*.)
Before you can install the Information Server component of Sun Java System RFID Software, begin by finding it on the CD provided with your software package. Open a terminal window and log in as root.
You should find a directory listing on the CD typically like this:

# ls -al

-rw-r--r--   1 root     bin         5255 Jun 23 18:54 COPYRIGHT
-rw-r--r--   1 root     bin        18470 Jun 23 18:54 LICENSE
-dwxr-xr-x   2 root     bin          512 Jun 23 18:53 LICENSEREADME/
-rw-r--r--   1 root     bin         3456 Jun 24 18:46 README
-drwxr-xr-x   3 root     bin          512 Jun 21 15:00 docs/
-drwxr-xr-x   2 root     bin          512 Jun 24 09:35 sparc/
-drwxr-xr-x   2 root     bin          512 Jun 24 09:35 x86/
-drwxr-xr-x   2 root     bin          512 Jun 24 09:35 linux/

cd to /sparc, /x86, or /linux (depending on your platform) and find the setup paths for the two components, /rfidem and /rfinis. The setup for Information Server is found in /rfinis/.

To Install the RFID Information Server

To Install the RFID Information Server, perform the following steps on the target host machine:

1. Login as root if you have not already done so.
   
   Note: Make sure the application server is running.

2. On the computer, cd to the /rfinis directory. Start the RFID Information Server Install Wizard by running the ./setup executable from this location. You will be presented with a window that looks like this:
Figure 5-3  Install Wizard for Information Server

3. Click on Next to present the Software License screen.
Figure 5-4  Software License Screen

4. Click Yes (Accept License) to present the next dialog screen.
Figure 5-5  Select Type of Installation

5. Click on Next to present the next dialog screen.
6. Click on **Next** to present the next dialog screen.
7. Click on **Next** button to present the next dialog screen (which may report an error if Application Server was not started properly, see Figure 5-8).

If you plan to use a different application server, you should Browse for the pathname to provide for the selected server and enter it in the field provided in Figure 5-7. Or enter a pathname manually of no application server appears in the scroll list.
Figure 5-8  Application Error Report

Here you can enter the admin password from the application server install, reference Figure 5-5 on page 40.

8. Click on **Next** to present the next dialog screen.
The Database Configuration dialog is where you now enter a DATABASE User, Password and JDBC URL. Use the information gathered from the database install to fill in the values.

Note that the default JDBC URL is `jdbc:oracle:thin:@<ip_address>:1521:<oracle_sid>`. Replace the `<ip_address>` and `<oracle_sid>` placeholders with the ip address of the database server and the Oracle SID.

9. Click on Next to present the next dialog screen.
10. Click **Install Now** and the installation process should begin.
When the process is completed a final status screen is presented:

Figure 5-12  Information Server Install Progress
11. Click **Details** if you wish to examine the installation log record, see Figure 5-14 on page 54. Otherwise click **Close** and this phase of the Sun Java System RFID Information Server software installation is completed.
Figure 5-14  Installation Log Details (Solaris)

Post-Installation Steps

Several actions are required before actual usage of the Sun Java System RFID software commences, as outlined here.

Updating the server.policy File

1. In a terminal window, cd to /install_dir/policy/ and find and copy the file named server.policy.
   
   This file needs to replace the file of the same name that is located in the Application Server’s Configuration directory at (e.g.)

   /appsvr_log_dir/domains/domain1/server1/config/ where you can paste it.

   You will now need to restart the application server:

2. Navigate a browser to http://<hostname>:<http_port> and you should see the admin browser window similar to the one shown below:
Figure 5-15  Admin Server Window (Solaris)

3. Click on **Apply Changes** before restarting the application server.
4. To restart the server click on the **Stop** button.
5. Start the application server by clicking on the **Start** button when the screen refreshes.
Populating the Database

The Oracle SQL scripts to set up database tables and populate them are located in /install_dir/lib/sql. The files of interest are oracle_create_table.sql and oracle_populate.sql. (Or file oracle_rfidis_setup runs all scripts automatically.)

To run the scripts
1. In a terminal window cd to /install_dir/lib/sql
2. ftp the scripts to the /tmp directory of the database server
3. Login to the database server as the Oracle Unix user
4. cd to /tmp
5. Run sqlplus using the connect string
   <DB_USER>/<DB_PASSWD>@<ORACLE_SID>
6. At the prompt run the following SQL commands
   i.@oracle_create_table
   ii.@oracle_populate
   iii.commit;
   iv.exit
You should now be ready to use the application

Installation Verification

When the Information Server installation has been successfully completed you should be able to confirm it with presentation of the EPCIS Index page in your browser window. (See also Appendix B, “Verifying the Information Server Installation”.)

1. Navigate to the URL
   http://<host>:4848/
2. Login as the admin user at the login screen:
3. Click OK to be presented with the following Screen:

**Figure 5-16**  admin user login

**Figure 5-17**  Admin Server Screen (Solaris)
Post-Installation Steps

4. Click on Apply Changes and then Restart the configuration.

1. Navigate to the URL

   http://<host>:4848/epcis/index.html

   Where <host> specifies your application server’s location. You should now see a page similar to the one shown here.

![Information Server Index Page](image)

**Figure 5-18**  Information Server Index Page
Chapter 6

Additional Steps

This chapter outlines several additional script-supported procedures for the Sun Java System RFID Software installation and configuration, such as: configuring different readers for use in EPC network, Event Manager startup on multiple hosts, and uninstallation of RFID software.

These procedures are described in the following sections:

- Enable/Disable RFID Tag Readers
- Start/Stop Scripts
- Uninstalling Sun Java System RFID Software
- Log Files
- Troubleshooting Procedures

Enable/Disable RFID Tag Readers

The RfidConfig.xml file furnished with the software package contains entries for the various readers supported to date. You can modify this file to provide changes in network address or other properties as described here.

To modify the IP Address, Gateway, and netmask etc for a given reader, change directory to /install_config_dir and follow the instructions in the examples provided below to edit the xml file content.

This section describes the following readers:

- Alien Technology Reader
- Tyco ThingMagic Reader
Enable/Disable RFID Tag Readers

Alien Technology Reader

If using an Alien reader to run the demonstration, you enable it by opening the RfidConfig.xml file and deleting the line "<!- -". Then scroll down and delete the line "- ->". This is to uncomment the Alien reader configuration and expose the code to execution. Then place the respective "<!- -" and "- ->" before and after the other reader configurations in order to hide their configuration from the Sun Java System RFID Software application. Modify the IP address of the respective reader by changing its default value to the one assigned by the network administrator. A sample of such entries in xml code would look like this:

```xml
<ems:name>AlienReader</ems:name>
<ems:properties>
  <ems:property>hostname</ems:property>
  <ems:value>192.168.2.20</ems:value>
</ems:properties>
```

Tyco ThingMagic Reader

If using a ThingMagic reader to run the demonstration, you enable it by opening the RfidConfig.xml file and deleting the line "<!- -". Then scroll down and delete the line "- ->". This is to uncomment the ThingMagic reader configuration and expose the code to execution. Then place the respective "<!- -" and "- ->" before and after the other reader configurations in order to hide their configuration from the Sun Java System RFID Software application. Modify the IP address of the respective reader by changing its default value to the one assigned by the network administrator. A sample of such entries in xml code would look like this:

```xml
<ems:name>ThingMagicReader</ems:name>
<ems:properties>
  <ems:property>ipaddr</ems:property>
  <ems:value>192.168.2.20</ems:value>
</ems:properties>
```
Start/Stop Scripts

The installation process includes providing certain script files designed to run or stop various software components. For the "Typical" installation of Event Manager, script files named "station", "agent", "start_all" and "stop_all" are installed. (An additional script to report software status is also included.)

Single Host

Once these files are located in the /install_dir installation directory, cd to /install_dir/bin to run the scripts to start/stop applications. To start both the Control Station and the Execution Agent on the same host, type the following when you start the Sun Java System RFID Software Suite application:

```
# ./startall
```
To terminate both the Control Station and the Execution Agent:

```
# ./stopall
```

Multiple Hosts

If only the "Control Station Components" are to be installed on a separate machine as part of a "Custom" installation, the scripts "station", "start_all" and "stop_all" are installed. Such a configuration ensues when the Agent components are located on a different host. To start the Control Station in this instance, type the following:

```
# station start
```
To terminate the Control Station:

```
# station stop
```
To show the status of the Control Station:

```
# station status
```
To show the version of the Control Station:

```
# station version
```

Similarly, on hosts where the "Execution Agent Components" were installed without the Control Station, you will find the script "agent" installed. To start the Execution Agent, type the following:

```
# agent start
```
To terminate the execution agent:
Uninstalling Sun Java System RFID Software

This section describes the procedures required for uninstalling the Sun Java System RFID Software. The following topics are included here:

- Uninstalling the Event Manager
- Uninstalling the Information Server

Uninstalling the Event Manager

To uninstall the RFID Event Manager, go to the installation directory and run the `uninstall` script. This should bring up a series of dialogs that query the user regarding various options, see Appendix E. A full uninstall will remove all the components installed in the system (control station, execution agent, common files, and documentation). If you opt for a partial uninstall, you should retain the Common Files item, which is shared by Control Station and Execution Agent. The command to invoke the uninstall process is as shown:

```
# cd /install_dir/
# ./uninstall
```

Should the uninstall process fail to properly remove the components, the user can invoke “prodreg” and manually uninstall the Event Manager packages registered to the system.

Uninstalling the Information Server

To uninstall the RFID Information Server, make sure that the application server is first running. This is because the uninstall wizard will perform some administrative functions that clean up the application server from all the JMS, JDBC, and ear applications registered to the application.

Go to the installation repository of the RFID Information Server and run the uninstall script:

```
# cd /install_dir/
```
# /uninstall

The uninstall wizard should appear to query the user on removing all of the RFID Information Server components installed in the system, see Appendix E. Should the uninstall wizard be unavailable, the user has the following additional removal options:

- Run the scripts in /install_dir/lib directory to manually remove the jdbc resources, jms resources, and undeploy the ear application.
- On Solaris, run the `prodreg` Solaris application to manually remove the SUNWrfdidis packages from the system.
- On Linux, run the "`rpm -e`" command to manually remove the rfdidis rpms.

Log Files

The Control Station and Execution Agent log files are located in /install_log_dir/logs. By default, only Severe problems, Warnings, configuration options and Information messages are logged.

**Adjusting Log Levels**

You can change the logs to a more granular setting for debugging by changing the LogLevel property of the component of interest in /install_config_dir/RfidConfig.xml. Please be aware that setting the LogLevel to a more granular level should only be done for debugging, since it will significantly increase the amount of information logged and the size of the log files. The valid values for LogLevel are defined in the Java Logging Level definition at: http://java.sun.com/j2se/1.4.2/docs/api/

There are several other places in the /install_config_dir/system path at which you can set various logging levels:

- logging-station.properties file (see topic below) and logging-agent.properties file.
- Opstring (Rfid.xml)

The logging-[station, agent].properties file has the lowest precedence order. Values in this file will be over ridden by any values of "Finer" logging levels set in Rfid.xml and RfidConfig.xml.
If no log levels are set in either Rfid.xml or RfidConfig.xml, then the values in logging-[station, agent].properties file will be used.

**NOTE**

Only values of FINER logging level in RfidConfig.xml and/or Rfid.xml will override values in logging-[station, agent].properties.

Logging values in Rfid.xml apply to the Rio Service Logging level. These values are mutually exclusive of the RfidConfig.xml values.

Logging values in RfidConfig.xml apply to the individual Adapter code logging levels. You can specify different log level values for each Adapter.

**A Few Examples**

Consider in this example the logging-[station,agent].properties log level - which takes precedence because no higher level is defined elsewhere.

logging-station.properties

```properties
... .level= FINE ... 
```

RfidConfig.xml properties

```xml
<ems:name>PMLReader</ems:name>

<ems:classname>com.sun.autoid.adapter.pml.PMLAdapter</ems:classname>

<ems:properties>
  <ems:property>LogLevel</ems:property>
  <ems:value>INFO</ems:value>
</ems:properties>
```

... 

In this case, because the log level specified in RfidConfig.xml is not Finer than the log level in the logging-station.properties file, then a log level of FINE will be used.

But notice the difference in this example, where RfidConfig.xml values take precedence:
logging-station.properties

... 
.level= INFO 
...

RfidConfig.xml properties

<ems:name>PMLReader</ems:name>
<ems:classname>com.sun.autoid.adapter.pml.PMLAdapter</ems:classname>
<ems:properties>
  <ems:property>LogLevel</ems:property>
  <ems:value>FINE</ems:value>
</ems:properties>
...

In this case the PMLReader Adapter will have a logging level of Fine.

Sample Policy File

Control Station Log Policy File:

(install_config_dir/system/logging-station.properties)

Agent Log Policy File:

(install_config_dir/system/logging-agent.properties)

# Default global logging level.
.level= CONFIG

# default file output is in user’s home directory.
java.util.logging.FileHandler.pattern = /install_log_dir/logs/station_%g.log
java.util.logging.FileHandler.limit = 5120000
java.util.logging.FileHandler.count = 10
java.util.logging.FileHandler.formatter = java.util.logging.SimpleFormatter

# Limit the message that are printed on the console to OFF
java.util.logging.ConsoleHandler.level = OFF
java.util.logging.ConsoleHandler.formatter = java.util.logging.SimpleFormatter

The policy file shows the location where all the logs will be stored
(install_log_dir/logs), the size of the file, and the number of times the log file is generated. All the logs generated by default will be CONFIG level.
Troubleshooting Procedures

This section describes troubleshooting procedures.

Device Not Found: SocketException in the Jini.Rfid.log

**Solution:**

```
netstat -r
Should be an entry for multicast
224.0.0.0 <gateway> UG 0 0 eth0
If it's not then add
route add -net 224.0.0.0 netmask 240.0.0.0 dev eth0
```

Conflict with Group ID of Another Demokit Instance Within the Same Subnet.

Perform the following steps:

**1.** Modify the following files:

```
/install_config_dir/Rfid.xml and /install_config_dir/infrastructure.xml
```

**2.** Change the Group "AutoID" to a different AutoID group name.

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="no"?>
<!DOCTYPE opstring SYSTEM "java://com/sun/rio/dtd/rio_opstring.dtd" [ 
<!ENTITY Local.IP "10.6.165.65" > 
<!ENTITY Local.Port "9000" > 
<!ENTITY CodeServerURL "http://&Local.IP;&Local.Port;" > 
<!ENTITY Group "AutoID" > 

/install_config_dir/system/env.station and
/install_config_dir/system/env.agent
```

**3.** Change LUSGROUP=AutoID to a different group name.

```
If [ "$LUSGROUP" = "" ]
then
LUSGROUP=AutoID
export LUSGROUP
```
This chapter describes how to use most of the basic features and functions of the Sun Java System RFID Software. The ideal usage would entail reading physical RFID tags using an operational tag reader, but an emulator is also provided in the software package to allow virtual demonstration of RFID application capabilities. The installation and configuration of physical readers is described in an appendix to this document. A separate appendix also covers the PMLReader simulator packaged with the RFID Event Manager software.

The reader device only detects and captures a signal reflected from an RFID tag, provided the signal represents an Auto-ID standard EPC (Electronic Product Code). The Sun Java System RFID Event Manager is used to gather RFID events from the readers, filter out redundant events, and post relevant events to higher level software for further processing. The Sun Java System RFID Information Server is used as a repository for Track and Trace information, containment information, as well as provide basic EPC to product information mapping.

The following topics are described in this chapter:

- Reading Tags
- EPC Vu-Meter Window

**Reading Tags**

Once the RFID System has been properly installed, the user can obtain a Tag such as the I-Tag (shown below) and wave it above the antenna (about 1-3 feet high) for the reader to pick up the signal.

![Image of I-Tag](image-url)
Initially, the Sun Java System RFID software will detect and store any Auto-ID standard Electronic Product Code (EPC), but not associate it with a particular product. The Sun Java System RFID software includes a directory service which features a large catalog of standardized EPC codes cross-referenced to their corresponding product identities. The software provides means to associate a raw code entry with its specific product.

EPC Vu-Meter Window

The Sun Java System RFID Software Event Manager provides a GUI tool to help track the EPC tag events discovered by the system. The GUI tool is provided in the RFID software for determining relative signal strength of EPC tag reads. This tool gauges the signal strength of the reader’s detection of EPC tag codes, which can vary depending on how fast a count is being generated per EPC. Any given stationary reader can be detecting numerous tags concurrently, while (for example) a pallet of items is moving past the reader’s antennae. A color scheme is provided to indicate signal strength, which can vary with proximity.
**Figure 7-2**  EPC GUI Viewer “Vu-Meter”

Red indicates a weak read, yellow shows that the reader is picking it up, but is fairly unreliable, and green represents a strong read.
Appendix A

RFID Tag Reader Considerations

This appendix provides an example for illustrative purposes of the installation and configuration of an RFID Reader device on the EPC network. The Mercury3 model device by ThingMagic/Tyco Industries is the model used for this illustration. The procedures are considered somewhat typical in general, but please be sure to consult your vendor’s documentation for specific details on your particular unit.

The following sections are included here:

- Reader Port Connectors
- Configuring the Reader

Reader Port Connectors

Illustrated below is the connector panel on the ThingMagic RFID Reader.

![Reader Connector Panel](image)

*Figure A-1* Reader Connector Panel
It is equipped with the following pertinent connectors:
   A - Category-V network cable port.
   B - RS-232C Serial Port
   C - UHF (Ultra High Frequency) ports to connect to antennas
   D - Power Input

Connections are self-explanatory, with items A, C and D representing the “mandatory” interfaces. Plug in the ThingMagic Mercury3 reader power adapter into a power outlet, and also connect the two antennas that came with the package into the UHF ports. Plug a category 5 network cable into the reader, with the other end connecting to the same network on which the host computer is active.

**Configuring the Reader**

Plug a category 5 network cable into the reader and configure the IP address by going to:

http://10.0.0.101/ (for example)
Net mask: 255.0.0.0
Gateway: 10.0.0.1

NOTE: You must know the IP address and subnet mask settings for the network environment in which the installed reader is to run.

**To Configure the Reader**

1. Exit any reader applications that are running on the network.
2. Verify that the reader is operational. The green power/heartbeat LED should be blinking.
3. Start a Java-enabled web browser from any network-enabled PC.
4. Browse to http://10.0.0.101/ (example) (use the correct IP address).
5. Click the Network link in the navigation menu (on reader’s browser-based interface). The Network Settings page appears as shown below in Figure A-2 on page 73.
6. Enter the required network settings in the IP address, subnet mask, and gateway fields, for example:
   - IP Address: 192.168.2.20
   - Subnet Mask: 255.255.255.0
   - Gateway: 192.168.2.1

7. Click the Save button to store the configuration settings.

8. Click on the Restart link in the window on Figure A-2. The Startup Settings page with a Restart button appears as shown below in Figure A-3 on page 74.
Note: To modify the configured IP Address, Gateway, and subnet mask for this reader in the RFID software, follow the instructions outlined at “Enable/Disable RFID Tag Readers” on page 67 in Chapter 7, “Additional Steps”.

Figure A-3 Reader Startup Settings

9. Verify that the settings shown are correct. Then, click the Restart System button.

Once the system restarts, the reader is ready to receive commands from the network. Use the Query page of the browser-based interface to verify antenna operation.

10. Close the browser window and start the reader application on the network.

The following graphic illustrates the configured ThingMagic Reader.
Figure A-4  Fully Configured Reader
Configuring the Reader
When you have the Sun Java System Application Server and RFID Information Server software properly installed you can browse as Administrator for settings and configuration parameters. Your browsing should present screens that appear typically per those that follow. (The Application Server 7’s Admin Server should have an URL typically per http://<your_machine>:<port> where port is typically 4848.)

**Admin Server Screens**

When you navigate to the location where the Admin Server is stored you are prompted for a login:

![Admin Server Login Prompt](image)

*Figure B-1*  Admin Server Login Prompt
Use the login created previously at step 5 of RFID Information Server installation topic (Chapter 6, “Installing the Information Server”) to view the Administration screens that follow. When your login concludes and you open the “Admin Server” link you are presented with this Screen.

Figure B-2  Admin Server Screen (Solaris)

Details about the Admin Server configuration are displayed on the Control tab, which also includes a Stop button and Apply Changes button.

In the navigation bar if you open the Applications item and click on the Enterprise Apps link, you are presented with this screen.
Figure B-3  Enterprise Apps Screen (Solaris)

The Status (Enabled here) and Location of the Information Server instance is reported on this screen, which also features controls to Deploy/Undeploy and Enable/Disable the virtual server(s) shown.

In the navigation bar if you open the JDBC item and click on the JDBC Resources link, you are presented with this screen.
Figure B-4  JDBC Resources Screen

The Status and Pool-Name for any current JNDI items is reported on this screen, and controls to add new items or delete existing items are also provided.

In the navigation bar if you open the JDBC item and click on the Connection Pools link, you are presented with this screen.
Figure B-5  JDBC Connection Pools Screen

The Datasource Classname for any current Pool-Name items is reported on this screen, and controls to add new items or delete existing items are also provided.

In the navigation bar if you open the JMS item and click on the Connection Factories link, you are presented with this screen.
Figure B-6  JMS Connection Factories Screen

The Status and Type for any current Connection Factory items is reported on this screen, and controls to add new items or delete existing items are also provided.

In the navigation bar if you open the JMS item and click on the Destination Resources link, you are presented with this screen.
Figure B-7   JMS Destination Resources Screen

The Status and Type for any currently defined Topic or Queue destination items is reported on this screen, and controls to add new items or delete existing items are also provided.

And finally, in the navigation bar if you open the JMS item and click on the Service link, you are presented with this last screen.
Figure B-8  JMS Service Screen
Appendix C

PMLReader

The PMLReader is a software program that generates emulated RFID events. By default, the Event Manager is configured at installation time to listen for RFID events from the PMLReader simulator. The simulator is installed as part of the Control Station Components. Change directory to /install_dir/bin and type PMLReader. You will see the following output as a result:

```
$ cd /install_dir/bin
$ PMLReader

PMLReader: Using property file: /
/etc/opt/SUNWrfid/system/Simulators.properties
PMLReader: Creating new Reader (port=9011,
readerepc=urn:epc:tag:gid-96:1.255.1,
epc=urn:epc:tag:gid-96:1.1.100, tagSetSize=10,
generator=com.sun.autoid.simulator.StaticEPCGenerator,
minCycleTime=9000, maxCycleTime=11000)
PMLReader: Waiting for readers to complete
Reader: urn:epc:tag:gid-96:1.1.100 - Connected from:
/127.0.0.1:35408
Processing command: 'Reset'
Sending newline
Processing command: 'Set Auto Mode 250'
Sending newline
```

The Reader EPC Viewer will show the EPCs on its GUI incrementing in unison, as the PMLReader generates the RFID events. The PMLReader by default emulates the continuous detection of 10 RFID tags, starting with value urn:epc:id:gid:1.1.101 through urn:epc:id:gid:1.1.110. Please refer to the Sun Java System RFID Software Configuration Guide for details on how to configure the PMLReader.
To stop the generation of EPC events, simply interrupt the PMLReader program by issuing a <CTRL-C> keyboard sequence.

Please note that the PMLReader is intended for use as a debugging and demonstration tool only. If you do not plan to use the PMLReader, you will want to remove the PMLReaderAdapter from the Event Manager configuration file: /install_config_dir/RfidConfig.xml.

You need to be aware that no authentication is performed between the PMLReader and the PMLReaderAdapter in the Event Manager. Therefore leaving the PMLReaderAdapter enabled during live deployments constitutes a security risk.

To disable, either comment out (using XML comment delimiters <!-- and -->) or remove the PMLReader adapter lines from the configuration file:

<!--
<ems:adapter>
  <ems:name>PMLReader</ems:name>
  <ems:classname>com.sun.autoid.adapter.pml.PMLAdapter</ems:classname>
  <ems:properties>
    <ems:property>LogLevel</ems:property>
    <ems:value>ALL</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>hostname</ems:property>
    <ems:value>localhost</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>port</ems:property>
    <ems:value>9011</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>readerepc</ems:property>
  </ems:properties>
  <ems:properties>
    <ems:property>autoread</ems:property>
    <ems:value>true</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>timeout</ems:property>
    <ems:value>20000</ems:value>
  </ems:properties>
</ems:adapter>-->
<ems:outputs>
    <ems:output>DemokitSmoother</ems:output>
    <ems:output>EpcGuiLogger</ems:output>
</ems:outputs>
</ems:adapter>
There are several classes of configuration files which may require user access, as follows:

- System Files
- Log Files
- XML File Description

All the user configurable files are located in `/install_config_dir`.

### System Files

`/install_config_dir/system` contains the following types of files:

- license file
- Property files
- Application-Private Configuration files

### License File

This notifies the application what type of license the user has agreed to in terms of the software’s utilization. There are two types: Permanent and Evaluation. The evaluation license lasts 60 days.
Property Files

These files include the logger files and the PMLReader/simulator. The user can modify these files according to their requirements on logging (INFO, SEVERE, WARNING, etc). Also they can modify the PMLReader (see Appendix C, “PMLReader”) through the Simulator.properties file. This tells the reader what kind of tags are present and how often it publicizes the information.

Application-Private Configuration Files

These files configure the webster, lookup service, cybernodes, opstring, and the provisioner. Please refer to the configuration guide for more information on these files.

Log Files

All Event Manager log files (see Chapter 7, “Additional Steps”) are stored under /install_log_dir/logs. All agent events are logged in /install_log_dir/logs/agent_[0-9].log, while the control station logs are recorded under /install_log_dir/logs/station_[0-9].log. Each log file that is generated is cycled every 50 mb. There is also a maximum of 10 logs allotted. This is to prevent the application from over-flowing the file system. These settings can be changed by modifying /install_config_dir/system/logging-[system, agent].properties.

There are numerous places in which to set various logging levels:

- logging-station.properties and logging-agent.properties files.
- Opstring (Rfid.xml in /install_config_dir/system)
- RfidConfig.xml in /install_config_dir/system
XML File Description

The end user has the ability to configure the semantics of each Execution Agent by editing the XML configuration file for each Execution Agent. The user configures adapters, filters, and loggers properties through an XML configuration file. The adapters, filters, and loggers are tied to one another by use of a special <output> tag in the configuration file. By default, the system ships configured to execute with one Execution Agent. The default configuration file is: 

/install_config_dir/RfidConfig.xml.

A sample file is as shown below.

```xml
<?xml version="1.0" encoding="ISO-8859-1" standalone="no"?>
  <ems:adapter>
    <ems:name>PMLReader</ems:name>
    <ems:classname>com.sun.autoid.adapter.pml.PMLAdapter</ems:classname>
    <ems:properties>
      <ems:property>LogLevel</ems:property>
      <ems:value>ALL</ems:value>
    </ems:properties>
    <ems:properties>
      <ems:property>hostname</ems:property>
      <ems:value>localhost</ems:value>
    </ems:properties>
    <ems:properties>
      <ems:property>port</ems:property>
      <ems:value>9011</ems:value>
    </ems:properties>
    <ems:properties>
      <ems:property>readerepc</ems:property>
    </ems:properties>
    <ems:properties>
      <ems:property>autoread</ems:property>
      <ems:value>true</ems:value>
```
<ems:properties>
  <ems:property>timeout</ems:property>
  <ems:value>20000</ems:value>
</ems:properties>

<ems:outputs>
  <ems:output>Smoothen</ems:output>
  <ems:output>AntennaGuiLogger</ems:output>
</ems:outputs>

<ems:filter>
  <ems:name>Smoothen</ems:name>
  <ems:properties>
    <ems:property>LogLevel</ems:property>
    <ems:value>ALL</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>MaxCycles</ems:property>
    <ems:value>1</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>MaxPersistTime</ems:property>
    <ems:value>1000</ems:value>
  </ems:properties>
  <ems:outputs>
    <ems:output>Delta</ems:output>
  </ems:outputs>
</ems:filter>

<ems:filter>
  <ems:name>Delta</ems:name>
  <ems:properties>
    <ems:property>LogLevel</ems:property>
    <ems:value>ALL</ems:value>
  </ems:properties>
  <ems:outputs>
    <ems:output>ProductGuiLogger</ems:output>
  </ems:outputs>
<ems:filter>

<ems:logger>
  <ems:name>AntennaGuiLogger</ems:name>
  <ems:properties>
    <ems:property>LogLevel</ems:property>
    <ems:value>ALL</ems:value>
  </ems:properties>
  <ems:properties>
    <ems:property>Title</ems:property>
    <ems:value>Reader EPC Viewer</ems:value>
  </ems:properties>
</ems:logger>

<ems:logger>
  <ems:name>ProductGuiLogger</ems:name>
  <ems:properties>
    <ems:property>LogLevel</ems:property>
    <ems:value>ALL</ems:value>
  </ems:properties>
</ems:logger>

</ems:EventManagement>
XML File Description