

Oracle® Retail Integration Bus

Operations Guide

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Preface

Oracle Retail Operations Guides are designed so that you can view and understand the application's behind-the-scenes processing, including the following:

- Key system administration configuration settings
- Technical architecture
- Functional integration dataflow across the enterprise

Audience

This operations guide is designed for System Administrators, Developers, and Applications Support personnel. It provides a basic understanding of the Oracle Retail Integration Bus components, how messages flow between them, and the operational activities surrounding these components. It also provides templates for using the RIB as an alternative to FTP batch jobs for transferring files from one system to another.

Related Documents

For more information, see the following documents in the Oracle Retail Integration Bus Release 13.0.3 documentation set:

- *Oracle Retail Integration Bus Release Notes*
- *Oracle Retail Integration Bus Installation Guide*
- *Oracle Retail Integration Bus Integration Guide*
- *Oracle Retail Integration Bus Implementation Guide*

Customer Support

To contact Oracle Customer Support, access My Oracle Support at the following URL:

- <https://metalink.oracle.com>

When contacting Customer Support, please provide the following:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to recreate
- Exact error message received
- Screen shots of each step you take

Review Patch Documentation

If you are installing the application for the first time, you install either a base release (for example, 13.0) or a later patch release (for example, 13.0.2). If you are installing a software version other than the base release, be sure to read the documentation for each patch release (since the base release) before you begin installation. Patch documentation can contain critical information related to the base release and code changes that have been made since the base release.

Oracle Retail Documentation on the Oracle Technology Network

In addition to being packaged with each product release (on the base or patch level), all Oracle Retail documentation is available on the following Web site (with the exception of the Data Model which is only available with the release packaged code):

http://www.oracle.com/technology/documentation/oracle_retail.html

Documentation should be available on this Web site within a month after a product release. Note that documentation is always available with the packaged code on the release date.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Third-Party Open-Source Applications

Oracle Retail Security Manager includes the following third-party open-source applications:

Software Provider: lo4j

Software Name: log4j

Software Version: Unknown

Jar File Name: log4j.jar

Provider Web Site:

<http://logging.apache.org/log4j/docs/index.html>

License: Apache

Software Provider: Apache XML Project

Software Name: xerces

Software Version: Unknown

Jar File Name: xercesImpl.jar

Provider Web Site:

<http://xerces.apache.org/xerces-j>

License: Apache

Software Provider: Apache XML Project

Software Name: xerces

Software Version: Unknown

Jar File Name: xml-apis.jar and/or xmlParserAPIs.jar (one and the same, with xmlParserAPIs.jar being deprecated)

Provider Web Site:

<http://xerces.apache.org/xerces-j>

License: Apache

Software Provider: GNU

Software Name: gsort (renamed from gnu sort)

Software Version: Unknown

Provider Web Site:

<http://www.gnu.org/software/textutils/textutils.html>

License: GPL

Software Provider: Hibernate

Software Name: Hibernate

Software Version: 2.1.8

Jar File Name: hibernate2.jar

Provider Web Site:

<http://www.hibernate.org/>

Introduction

This chapter describes the components that make up the Oracle Retail Integration Bus (RIB). These components are distributed within the Oracle Fusion Middleware platform. The final deployed system may be distributed across multiple computing systems.

Oracle Application Server

The RIB is configured and deployed to the Oracle Application Server. Installation and configuration of the application server is not in the scope of the document, but a thorough understanding is strongly recommended.

Note: See Oracle® Application Server Administrator's Guide 10g Release 3 (10.1.3.4)

Oracle Retail RIB Supplied Components

This section contains a brief description of the components that Oracle Retail has built upon the Oracle Fusion Middleware platform to create the Oracle Retail Integration Bus.

- Publishing adapters create messages from the information captured by the applications. These publishing adapters are designed to publish events from a single "Message Family" and are specific to an Oracle Retail application, such as Oracle Retail Merchandising System (RMS).
- Subscribing adapters are used to consume messages. These are specific to Oracle Retail and are designed to consume all messages from a specific message family.
- Transformation Address Filters/Router (TAFR) adapters transform message data and route messages. Multiple, message family specific TAFRs have been implemented. Different TAFR adapter may be active on different message families or on the same message family depending on the needs of an application. Not all message families require TAFRs. The TAFR acronym is a generic term.
- RIB Database Objects are Oracle objects and tables to support the PL/SQL Message Family API stored procedures that are called by the Publishing and Subscribing Adapters. They are part of a specific PL/SQL Oracle Retail application, such as RMS and Oracle Retail Warehouse Management System (RWMS).

- RIB Hospital database tables are used as a basis for storing and re-trying problematic messages. Each application, both PL/SQL and JavaEE, have a dedicated Hospital.
- RIHA is the RIB Hospital administration tool.

Application Builder

The RIB Application Builder and its directories and content are not a temporary staging structure. The directory structure and the tools must be in a permanent location and treated as a core application home. The location of the rib-app-builder is a key implementation decision.

Note: See "Pre-Implementation Considerations" in the *Oracle Retail Integration Bus Implementation Guide*.

The RIB installation process builds and executes out of rib-home. The RIB installer gathers all of the information that these tools require, constructs the key xml file (rib-deployment-env-info.xml), and then performs the installation, assembly, configuration, and deployment by invoking, as appropriate, a given task. Therefore, for most RIB software life cycle activities, the RIB installer should be used instead of the command line tools.

RIB Application Builder Directory Structure

The rib-<app> application configuration and installation process follows the RIB lifecycle phases. Each of the lifecycle phases can be managed by a certain role. To support the separation of roles and responsibilities and to clearly define these phases the RIB has adopted a specific directory structure. The tools required for each of these roles are provided within this directory structure.

This directory structure supports access permissions to different tools that are managed according to the site-specific business requirements. For example; a sysadmin can be given access permissions to all the tools while a ribadmin or appadmin can be provided access to only certain operation tools.

The RIB App Builder directory structure is fixed and is created by the RIB kernel tar file; RibKernel<release>ForAll<release>Apps_eng_ga.tar.

The rib-home is a controlled structure and there are very specific rules for using the tools and the key files within it. A key rule is that the tools scan and check versions of all files within rib-home (except for tools-home). The processes do not allow files to have the same name with only an additional extension.

NOT ALLOWED: rib-rms.properties.bak

Directory Structure and Key Files

```
rib-home
  rib-installer.sh -- this is the RIB GUI Installer
  .retail-installer -- this directory contains the RIB GUI installer file
  application-assembly-home
    bin
      rib-app-compiler.sh
    conf
    log
    rib-aip
    rib-func-artifacts
      rib-func-artifact.war
      rib-private-tafr-business-impl.jar
      rib-public-payload-database-object-types.zip
      rib-public-payload-database-xml-library.zip
      rib-public-payload-java-beans.jar
      rib-public-payload-xml-samples.zip
    rib-rms
      rib-<app>-adapters-resources.properties
      rib-<app>-adapters.xml
  rib-<app>-plsql-api.xml
    rib-<app>.properties
  rib-rpm
  rib-rwms
  rib-sim
  rib-tafr
  deployment-home
    bin
      rib-app-deployer.sh
    conf
      rib-deployment-env-info.xml
    log
  download-home
    all-rib-apps
    all-rib-defect-fixes
    bin
  check-version-and-unpack.sh
    log
    rib-func-artifacts
  integration-lib
    internal-build
    third-party
  maintenance-home
    bin
      check-version-and-apply-defect-fix.sh
      inventory-management.sh
    history-repository
      rib-inventory-info.xml
    log
  operation-home
    bin
      rib-adapter-controller.sh
    log
  tools-home
    javaee-api-stubs
    plsql-api-stubs
    rdmt
    rib-func-artifact-gen
    riha
```

RIB App Builder Tools

All RIB Application Builder tools use the `rib-deployment-env-info.xml` as the source of all values.

Logging

Each tool that has a log directory where the execution log is maintained (for example, `rib-app-builder.compiler.log`). These logs are maintained by `log4j` and the `log4j.xml` that is in `rib-home`. Do not edit this `log4j.xml`. It is set for `DEBUG` when the tools are executed by command line. When the RIB installer is used, it displays the logging at the console level as `INFO`, but the tools themselves write the logs at `DEBUG`.

Backup and Archive of Key Files

The `rib-app-builder` tools will automatically generate a backup when a patch is installed. Additionally, it is recommended that each site develop a backup plan that includes a regular backup at the file system level of the `rib-app-builder` directory structure.

`rib-app-compiler`

The `rib-compiler` is the tool that drives the `rib-<app>.ear` creation process. It performs validation of the input xml files. There are four xml files are used to build the `rib-<app>.ear`. These input files are:

- `rib-<app>-adapters.xml`
- `rib-integration-flows.xml`
- `rib-application-assembly-info.xml`
- `rib-deployment-env-info.xml`.

The compiler tool generates the `rib-<app>` specific application level configuration files, and then collects all of the generated files and packages them to create a deployable `rib-<app>.ear` file.

This tool works against all applications in-scope in the `rib-deployment-env-info.xml` file.

`rib-app-deployer`

This tool performs operations related to deploying the RIB components. It takes a command line set of arguments and values for each function. All functions are driven by the contents of the `rib-deployment-env-info.xml`.

Command Line Option	Description
<code>-prepare-jms</code>	Prepares the JMS server with RIB JMS topics using the information in <code>rib-deployment-env-info.xml</code> . The JMS server must be running. See Chapter 6, "JMS Provider Management" later in this guide.
<code>-deploy-rib-func-artifact-war</code>	Deploys the <code>rib-func-artifact.war</code> to the Java EE application server defined in <code>rib-deployment-env-info.xml</code> . The Java EE server must be running.

Command Line Option	Description
-deploy-rib-app-ear rib-<app>	Deploys the rib-<app>.ear to the Java EE application server defined in rib-deployment-env-info.xml. The Java EE server must be running.
-update-remote-rib-app-config-files rib-<app>	Updates the rib-<app> application level configuration files in the remote server where rib-<app>.ear is or will be deployed. The remote server information is defined in rib-deployment-env-info.xml. The Java EE server must be running.
-undeploy-rib-func-artifact-war	Undeploys the rib-func-artifact.war from the Java EE application server defined in rib-deployment-env-info.xml. The Java EE server must be running.
-undeploy-rib-app-ear rib-<app>	Undeploys the rib-<app> from the Java EE application server defined in rib-deployment-env-info.xml. The Java EE server must be running.

Check-version-and-unpack

This tool will verify the version compatibility between the RIB paks and extract the files if they are compatible. The extracted files are moved to the appropriate directories under the rib-home.

The version compatibility between RibKernel, RibFuncArtifact and RIBPaks is determined based on the naming conventions used in the tar files and the information that is present in the MANIFEST.mf file inside the kernel tar file.

The RIB infrastructure kernel, RIB functional Pak and RIB functional artifacts version naming convention should be same. All should have same number of major and minor versions.

How Verifications work:

1. The tool gets the version of the Rib kernel from the MANIFEST.MF file of the RIB kernel tar file. This is the RibKernel<RIB_MAJOR_VERSION>ForAll<RETAIL_APP_VERSION>Apps_eng_ga.tar.
2. The tool reads the functional artifact file from rib-home/download-home/rib-func-artifacts.
3. The tool reads the list of all the RIB application packs from the -home/download-home/all-rib-apps directory is read.
4. The tool makes use of the naming convention to check if the kernel version is the same as the functional artifact version. If the version is compatible, the tar file is un-tar'd into the rib-home/application-assembly/rib-func-artifacts directory.
5. The tool makes use of the naming convention to check if the kernel version is the same as the application packs. If the version is compatible, the tar file is un-tar'd into the rib-home/application-assembly/rib-<app> directory.

check-version-and-apply-defect-fix

The RIB has been designed to centrally manage and track the application of defects. The check-version-and-apply-defect-fix tool is responsible for that activity.

All RIB defects come in the form of a zip file (for example, RIB13_HPQC1789.zip). The zip file always contains a README.txt file in the format below.

```

-----
Product       : Oracle Retail Integration Bus
Version #    : 13.0.x
Defect #     : 1789
Date        : 02/27/2008
-----

```

Defects Fixed by this patch:

Resolution:

Files included:

Defect Fix Install Instructions:

The README.txt file contains the specific instructions on the application of the defect. It is always applied to the rib-home and deployed from there. Depending on the type of defect it may be necessary to migrate a jar to one of the Oracle Retail applications into the appropriate directories.

All defects are applied to rib-home in the same manner.

1. Drop the Defect.zip into /rib-home/download-home/all-rib-defect-fixes directory.
2. Run the check-version-and-apply-defect-fix.sh from the /rib-home/maintenance-home/bin directory.
3. Run the rib-home/application-assembly-home/bin/rib-app-compiler.sh script from the rib-home/application-assembly-home/bin directory.
4. Run the rib-home/deployment-home/bin/rib-app-deployer.sh script from rib-home/deployment-home/bin directory to the appropriate rib-<app>s.

The tool check-version-and-apply-defect-fix.sh will perform version compatibility checks and will update the RIB inventory xml file.

inventory-management

The RIB jars and xml files in rib-home are tracked through an xml file called rib-inventory-info.xml located in the rib-home/maintenance-home/history-repository/ directory. This file is initially created when the RIB installer, or user, executes the check-version-and-unpack tool the first time to extract the RIB application packs and the functional artifacts. Thereafter this file is updated and tracks the file change history of the jars and xml files in the rib-home system.

Command Line Option	Description
-update-current-inventory	Scans the rib-home file system and updates the inventory database.
-generate-file-change-history-report	Generates a report of how the files in the rib-home file system have changed over time.
-generate-defect-fix-applied-report	Generates a report of what defect fixes have been applied to rib-home on this system.
-generate-defect-fix-detail <defect-fix-id>	Displays the long defect resolution description for a given defect fix id.

rib-adapter-controller

The rib-adapter-controller a set of tools that perform RIB adapter control functions such as start/stop and subscriber check, The command line options and usage are summarized here. See "[RIB Components Start and Stop](#)" in this manual.

Start Flow

Starts all adapters in a message flow for a given family or family list (comma separated list without any space)

```
start integation-message-flows <family-name-list>[no-subscriber-check]
```

Description:

1. For a given family, it identifies all message flow ids that this family directly or indirectly participates in.
2. Using the message flow ids defined in the rib-integration-flows.xml, it connects to all application servers where the respective rib-apps are deployed.
3. It starts the adapters in the order as defined in the message flows.
4. It checks if durable subscribers exist before starting an adapter.
5. It ignores all rib apps that are not in scope.

Examples:

```
rib-adapter-controller.sh start integation-message-flows Alloc  
rib-adapter-controller.sh start integation-message-flows Alloc,Order
```

Stop Flow

Stops all adapters in a message flow for a given family or family list (comma separated list without any space).

```
stop integation-message-flows <family-name-list>
```

Description:

1. For a given family it identifies all message flow ids that this family directly or indirectly participates in.
2. Using the message flow ids in the rib-integration-flows.xml, it connects to all application servers where the respective rib-apps are deployed.
3. It stops the adapters in the order as defined in the message flows.
4. It ignores all rib apps that are not in scope.

Examples:

```
rib-adapter-controller.sh stop integation-message-flows Alloc  
rib-adapter-controller.sh stop integation-message-flows Alloc,Order
```

List Flow

Stops all adapters in a message flow for a given family or family list (comma separated list without any space).

```
list integation-message-flows <family-name-list>
```


Description:

1. It will display all message node ids for all message flows that are part of the given family.
2. It lists the adapters in the order as defined in the message flows.
3. It ignores all rib apps that are not in scope.

Examples:

```
rib-adapter-controller.sh list integration-message-flows Alloc
rib-adapter-controller.sh list integration-message-flows Alloc,Order
```

Start Adapters By Type

Starts all adapters by type given a rib-app or rib-app-list (comma separated list without any space).

```
start rib-app-adapters-by-type <sub,tafr,pub,hosp_retry,all><rib-app-list>
[no-subscriber-check]
```

Description:

1. For every adapter type specified in the input it collects the adapter instances from the given rib-app-list.
2. It reorders the input adapter types to start in the correct order.
3. It connects to the respective applications servers where rib-apps are deployed.
4. It starts the sub adapters first in all rib-apps, and then it moves on to start all the tafr adapters in all rib-apps and so on.
5. It checks if durable subscribers exist before starting an adapter.
6. It ignores all rib apps that are not in scope.

Examples:

```
rib-adapter-controller.sh start rib-app-adapters-by-type sub,tafr rib-rms
rib-adapter-controller.sh start rib-app-adapters-by-type pub,sub rib-rms,rib-sim
rib-adapter-controller.sh start rib-app-adapters-by-type all rib-rms,rib-sim
```

Stop Adapters by Type

Stops all adapters by type given a rib-app or rib-app-list (comma separated list without any space).

```
stop rib-app-adapters-by-type <sub,tafr,pub,hosp_retry,all><rib-app-list>
```

Description:

1. For every adapter type specified in the input it collects the adapter instances from the given rib-app-list.
2. It connects to the respective applications servers where rib-apps are deployed.
3. It stops the first adapter type first in all rib-apps, and then it moves on to stop the second adapter types in all rib-apps and so on.
4. It ignores all rib apps that are not in scope.

Examples:

```
rib-adapter-controller.sh stop rib-app-adapters-by-type sub,tafr rib-rms,rib-sim
rib-adapter-controller.sh stop rib-app-adapters-by-type pub,sub
rib-adapter-controller.sh stop rib-app-adapters-by-type all rib-rms,rib-sim
```

Start Adapter

Starts individual adapter instances. Adapter instance must be fully qualified as "rib-<app>.<Family>.<type>.<n>". A comma separated list of adapter instances names can also be provided.

```
start rib-app-adapter-instance <rib-app.Family_type_1-list>[no-subscriber-check]
```

Description:

1. Checks if durable subscribers exist before starting an adapter.
2. Starts the adapter instance.

Examples:

```
rib-adapter-controller.sh start rib-app-adapter-instance rib-rms.Alloc_pub_1
rib-adapter-controller.sh start rib-app-adapter-instance rib-rms.Alloc_pub_
1,rib-sim.ASNIn_sub_1
```

Stop Adapter

Stops individual adapter instances. Adapter instances must be fully qualified as "rib-<app>.<Family>.<type>.<n>". A comma separated list of adapter instances names can also be provided.

```
stop rib-app-adapter-instance <rib-app.Family_type_1-list>
```

Description:

- Stops the adapter instance.

Examples:

```
rib-adapter-controller.sh stop rib-app-adapter-instance rib-rms.Alloc_pub_1
rib-adapter-controller.sh stop rib-app-adapter-instance rib-rms.Alloc_pub_
1,rib-sim.ASNIn_sub_1
```

Test Durable Subscriber for Adapter

Tests if durable subscriber exist for topics associated with a given adapter class def. Adapter class def must be fully qualified as "rib-<app>.<Family>.<type>". A comma separated list of adapter class def names can also be provided.

```
test durable-subscriber-exist-for-adapter-class-def <rib-app.Family_type-list>
```

Description:

1. Finds out the topic names the input rib app adapter class def publishes to.
2. For each topic it publishes to, it checks to see if there is a durable subscriber registered.

Examples:

```
rib-adapter-controller.sh test durable-subscriber-exist-for-adapter-class-def
rib-rms.Alloc_pub
rib-adapter-controller.sh test durable-subscriber-exist-for-adapter-class-def
rib-rms.Alloc_pub,rib-tafr.ASNOutToASNOutAT_tufr
```

Test Durable Subscriber for RIB App

Tests if durable subscriber exist for all publishing topics associated with a given rib-app or rib-app-list (comma separated list without any spaces).

```
test durable-subscriber-exist-for-rib-app <rib-app-list>
```

Description:

1. Finds out all adapter instances that publish to a topic name for the given rib-app-list.
2. For each topic it publishes to, it checks to see if there is a durable subscriber registered.

Examples:

```
rib-adapter-controller.sh test durable-subscriber-exist-for-rib-app rib-rms
rib-adapter-controller.sh test durable-subscriber-exist-for-rib-app
rib-rms,rib-sim
```

List RIB App Adapters

Lists all adapter instance for a given rib-app or rib-app-list (comma separated list without any spaces).

```
list rib-app-adapters <rib-app-list>
```

Description:

- Lists all adapters that are part of the rib-app.

Examples:

```
rib-adapter-controller.sh list rib-app-adapters rib-rms
rib-adapter-controller.sh list rib-app-adapters rib-rms,rib-sim
```

RIB Artifacts Generator Tools

The RIB Artifacts Generator is a collection of tools designed to create the various RIB artifacts from an XML Schema (XSD).

RIB Functional Artifacts

Messages (business objects) that flow between the retail applications are XML messages. RIB XML message definitions are defined statically through XML schemas. The integration infrastructure works with multiple technologies (Java EE, PL/SQL), so it has different ways of representing the same functional XML message structure in different technologies. To make it easier to maintain the various RIB functional artifacts, the RIB uses a code generator.

Each RIB message family and type combination maps to one and only one RIB functional message definition. One RIB functional message definition can map to one or more than one family/type combination within the same family.

The RIB functional artifacts are different representations of the same message structure/definition in different technologies (Java EE, PL/SQL). Depending on the retail application's technology, RIB uses the appropriate artifacts, converting one from the other as needed. Following are the RIB functional object definitions.

RIB XML Schemas

The functional XML message structure is a contract between the integrating retail applications and is defined by the RIB XML schemas. All the other RIB artifacts are generated from the XML schemas. RIB XML schemas are the inputs required by the artifact generators.

RIB Castor Java Payloads

The Java EE Oracle Retail applications interface with the RIB through Castor Java Payloads. The RIB Castor Payloads are the java bean representation of the RIB XML message definition and are used by the JavaEE applications to create the business object and publish them to the other integrating retail applications through the RIB. The RIB Castor Payloads are generated from the RIB XML schema files.

RIB JAXB Java Beans

JAXB is a standard java SML binding technology. It provides the mechanism to convert SML instances to java objects--and java objects to SML instances--in a standard way. The javaEE WEB Service infrastructure internally uses JAXB to marshall and unmarshall the SOAP messages. For every payload XSD, the artifact generator generates the corresponding JAXB beans.

RIB Objects (Oracle Objects)

PL/SQL retail applications communicate with RIB by using RIB Oracle Objects. These objects are user-defined database objects that define the RIB XML message structure inside the database.

Sample RIB XML Files

The tool generates example XML files that represent instances of RIB XML message schemas. Each element is present and has appropriate data to the full declared length.

Installation

The RIB Artifact Generator can be installed and run in the following ways:

- As a stand-alone application.
- As an application inside rib-home.

Prerequisites

This section describes the conditions under which installation can take place, including environment variables.

For Stand-Alone Application

1. Be sure the JAVA_HOME environment variable is set for the user who will perform the setup task: Run the command `echo $JAVA_HOME` and check that the JAVA_HOME is set to `/usr/bin/java/jdk1.5.0_09`. If it is not set correctly, run the following command to set the right path: `export JAVA_HOME=/usr/bin/java/jdk1.5.0_09`.
2. Determine the host and file system on which to create the Artifact Generator home directory (for example, `mkdir ArtifactGeneratorStandalone`).

For Application Inside rib-home

Be sure the JAVA_HOME environment variable is set for the user who will perform the setup task: Run the command `echo $JAVA_HOME` and check that the JAVA_HOME is set to `/usr/bin/java/jdk1.5.0_09`. If it is not set correctly, run the following command to set the right path: `export JAVA_HOME=/usr/bin/java/jdk1.5.0_09`.

Installation and Setup

This section describes the steps required to install and set up the Artifact Generator tool.

For Stand-Alone Application

1. Download and extract the Artifact Generator to the Artifact Generator home directory:
 - `cd Artifact Generator Standalone`
 - `tar -xvf ArtifactGeneratorStandalone13.0.3ForAll13.x.x_eng_ga.tar`
2. Make Groovy executable.
 - `cd rib-func-artifact-gen`
 - `chmod 711 ./integration-lib/third-party/groovy/1.5.6/bin/groovy`
3. Set Groovy path:
`export GROOVY_HOME= pwd/integration-lib/third-party/groovy/1.5.6`
4. Download RibFuncArtifactX.X.XForAllX.X.XApps_eng-ga and place it in `./base-func-artifacts`. DO NOT untar it.
5. Execute the setup script.
`$(GROOVY_HOME)/bin/groovy SetupWorkArea.groovy`
6. Run the Artifact Generator to verify installation. All subdirectories and artifacts should be created without errors.
`$(GROOVY_HOME)/bin/groovy GenArtifacts.groovy`

Note: Upon completion of Step 6 above, installation is complete. All appropriate output subdirectors are available, and the `input-xsds` subdirectory contain the required schemas.

For Application Inside rib-home

1. Download and extract the Artifact Generator to the tools-home directory of rib-home:
 - `cd ../rib-home/tools-home`
 - `tar -xvf ArtifactGeneratorStandalone13.0.3ForAll13.x.x_eng_ga.tar`
2. Make Groovy executable.
 - `cd rib-func-artifact-gen`
 - `chmod 711 ./integration-lib/third-party/groovy/1.5.6/bin/groovy`
3. Set Groovy path:
`export GROOVY_HOME= pwd/integration-lib/third-party/groovy/1.5.6`
4. Execute the setup script.
`$(GROOVY_HOME)/bin/groovy SetupWorkArea.groovy`
5. Make Groovy executable.
 - `cd ../rib-home`
 - `chmod 711 ./integration-lib/third-party/groovy/1.5.6/bin/groovy`

6. Set Groovy path:


```
export GROOVY_HOME= pwd/integration-lib/third-party/groovy/1.5.6
```
7. Run the Artifact Generator to verify installation. All subdirectories and artifacts should be created without errors.


```
cd tools-home/ rib-func-artifact-gen
$GROOVY_HOME/bin/groovy GenArtifacts.groovy
```

Note: Upon completion of Step 7 above, installation is complete. All appropriate output subdirectories are available, and the input-xsds subdirectory contain the required schemas.

Usage

Directories and Outputs

The source for all Artifact Generator tools is defined by the XML schemas. All other artifacts are generated from XML schemas. As a result of installation, a directory structure is created to contain the libraries (integration.lib) and input artifacts (base-func-artifacts/rib-func-artifacts) required to generate all support output types. For example:

```
./base-func-artifacts
|----- rib-func-artifacts
retail-public-bo-java-beans.jar
rib-custom-tafr-business-impl.jar
rib-func-artifact.war
rib-private-tafr-business-impl.jar
rib-public-payload-database-object-types.zip
rib-public-payload-database-xml-library.zip
rib-public-payload-java-beans.jar
rib-public-payload-xml-samples.zip
```

An output directory exists for each type of artifact produced. For example:

- ./output-database-object-types


```
|----- src
|----- |---- ASNInDesc.sql
|----- dist
|----- |---- rib-public-payload-database-object-types.zip
```
- ./output-jaxb-java-beans


```
|----- src
|----- |---- com/oracle/retail/integration/payload/asnindesc
|----- |----- ASNInDesc.java...
|----- |----- ObjectFactory.java
|----- |----- package-info.java
|----- dist
|----- |---- retail-public-bo-java-beans.jar
```
- ./output-castor-java-beans


```
|----- src//com/retex/rib/binding/payload
|----- |---- ASNInDescDescriptor.java
|----- |----- ASNInDesc.java
|----- dist
|----- |---- rib-public-payload-java-beans.jar
```

- ./output-xml-samples
 - |----- src
 - |----- |---- ASNInDesc.xml
 - |----- dist
 - |----- |---- rib-public-payload-xml-samples.zip

Commands

All artifacts are generated by the same command:

```
$GROOVY_HOME/bin/groovy GenArtifacts.groovy
```

Note: All schemas should conform to the Meta schema, IntegrationMetaSchema.xsd. The artifact generator tools check the validity of the schema before generating any artifacts. If the schema is not compliant with the IntegrationXmlMetaSchema, the artifact generator fails. The error file can be found in the conf directory of the rib-func-artifact-gen directory.

General Usage Example: Modify Existing XSD

1. Edit the payload XSDs in ./input-xsd.

- cd input-xsd
- vi ASNInDesc.xsd (make changes)

2. Run the Artifact Generator.

```
$GROOVY_HOME/bin/groovy GenArtifacts.groovy
```

Note: Upon completion of Step 2 above, each generated artifact is in the appropriate ./output*/dist folder.

Hot Fix Installation Reports

The following HTML reports can be used to verify the successful installation of RIB hot fixes:

- defect-fix-applied-report.html
- file-change-history-report.html
- defect-fix-detail-<defect-fix-id>.html

These reports are available at
rib-home/maintenance-home/history-repository/HTML-Report.

Sample: file-change-history-report

File Change History Report

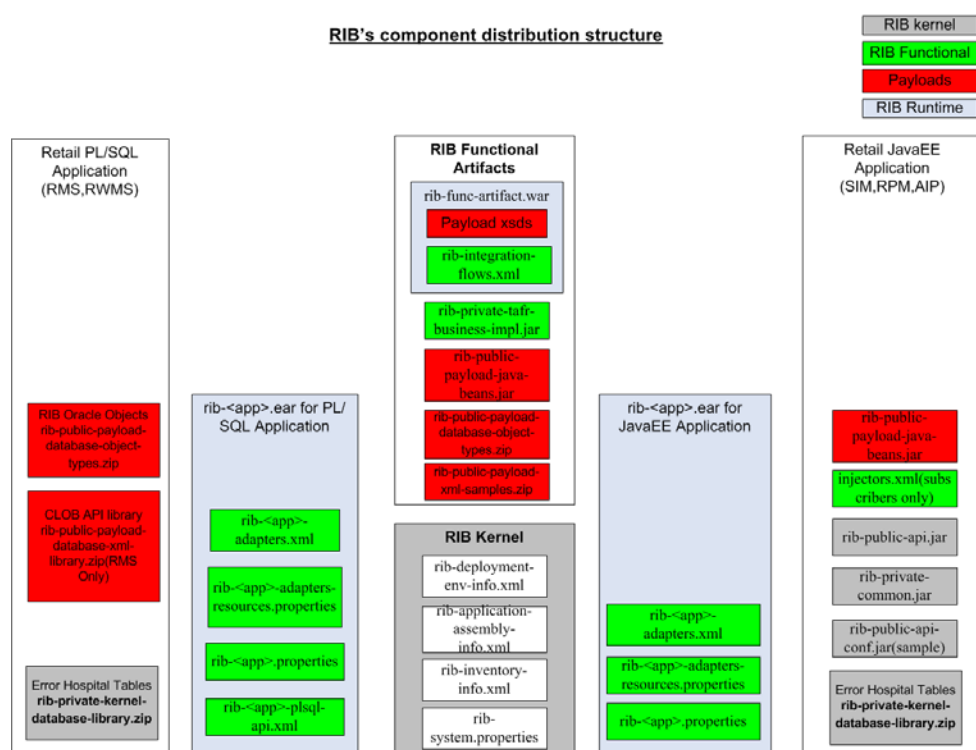
File ..\..\trib-home\integration\lib\internal-build\trib-admin-gui.war						
content-creation-date	creation-date-on-local-file-system	md5	size	defect-fix-ref	defect-tracking-identifier	
Tue Jul 08 11:56:22 IST 2008	Wed Jul 16 12:29:47 IST 2008	a7735470cfeeedbc0866c5234b9b19e	76601	NO_ASSOCIATED_DEFECT_FIX_REF	-NA-	
Back to top						
File ..\..\trib-home\integration\lib\internal-build\trib-app-builder.jar						
content-creation-date	creation-date-on-local-file-system	md5	size	defect-fix-ref	defect-tracking-identifier	
Wed Jul 16 12:29:42 IST 2008	Wed Jul 16 12:29:47 IST 2008	cc0699755a5adbdec94c58d1b3ed5a6	727768	NO_ASSOCIATED_DEFECT_FIX_REF	-NA-	
Back to top						
File ..\..\trib-home\integration\lib\internal-build\trib-config-agent.war						
content-creation-date	creation-date-on-local-file-system	md5	size	defect-fix-ref	defect-tracking-identifier	
Wed Jul 16 12:29:42 IST 2008	Wed Jul 16 12:29:48 IST 2008	e9852a361146140242029265dd3513	2310	NO_ASSOCIATED_DEFECT_FIX_REF	-NA-	
Back to top						
File ..\..\trib-home\integration\lib\internal-build\trib-private-app-plugin.jar						
content-creation-date	creation-date-on-local-file-system	md5	size	defect-fix-ref	defect-tracking-identifier	
Fri Jun 05 14:07:36 IST 2008	Wed Jul 16 12:29:47 IST 2008	5b437e72874a22ab302853a71a5ab7f	5197	NO_ASSOCIATED_DEFECT_FIX_REF	-NA-	
Back to top						

Sample: defect-fix-detail-<defect-fix-id>

Defect Fix Applied Report

defect-fix	defect-tracking-identifier	short-defect-description
19	HPQCDdefect_469	ASINOutToASINInLoc TAFR shuts itself down after the Transfer is dispatched
20	BugDB#7209670	ERROR HOSPITAL RETRY PROBLEM FOR ENTRIES WITH JMS REASON CODE
21	BugDB#7209670	ERROR HOSPITAL RETRY PROBLEM FOR ENTRIES WITH JMS REASON CODE
22	BugDB#7209670	ERROR HOSPITAL RETRY PROBLEM FOR ENTRIES WITH JMS REASON CODE
23	BugDB#7209670	ERROR HOSPITAL RETRY PROBLEM FOR ENTRIES WITH JMS REASON CODE

Backend System Administration and Logging



This figure depicts the actual files that comprise the RIB and where they are located in the deployment picture.

rib-<app>-adapters.xml

This file specifies all the adapter instances needed by RIB to interact with an application. Each rib-<app_name> has its own rib-<app-name>_adapter.xml.

The file is located in the rib-home/application-assembly/rib-<app> directory. After deployment it is found in the path \$application_instance_home/\$application_name where \$application_instance_home is the oc4j instance path where the application is deployed.

These are the standard RIB defined adapter types.

<subscribers> element

<subscribers> elements consist of multiple occurrences of <message-driven> elements, that define all the subscribers available for a particular application. Each <message-driven> element consists of id (specifies id for the adaptor) and initialState (specifies the initial state of the adaptor) attributes. The initialState attribute for <message-driven> adaptors accepts two values; running and stopped.

```
<subscribers>
  <message-driven id="ASNIn_sub_1" initialState="running" />
  <message-driven id="ASNOut_sub_1" initialState="running" />
```

Note: Running and stopped are the ONLY valid states and are case sensitive.

<publisher> element

<publisher> elements consist of multiple occurrences of <timer-driven> or <request-driven> elements, used to define all the publishers available for a particular application.

<timer-driven>

<timer-driven> is used to define publishers for PL/SQL (RMS and RWMS) applications. Each <timer-driven> element consists of an id (specifies id for adaptor), initialState (specifies the initial state of the adaptor) and timeDelay (delay after which the GETNXT needs to call each time) attributes. The initialState attribute for <timer-driven> adaptors accepts two values; running and stopped. This consists of an element called <timer-task> which specifies the implementation details of the adaptor. The <timer-task> element specifies the GETNXT implementation through the <class> element.

```
<publishers>
  <timer-driven id="Alloc_pub_1" initialState="running" timeDelay="10">
    <timer-task>
      <class name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl" />
      <property name="maxChannelNumber" value="1" />
    </timer-task>
  </timer-driven>
```

<request-driven> <request-driven> is used to define publishers for javaee (Oracle Retail Price Management (RPM), Oracle Retail Store Inventory Management (SIM), Oracle Retail Advanced Inventory Planning (AIP)) applications. Each <request-driven> element consists of id (specifies id for adaptor) and initialState (specifies the initial state of the adaptor) attributes. The initialState attribute has a value of notConfigurable.

```
<publishers>
  <request-driven id="ASNOut_pub_1" initialState="notConfigurable" />
  <request-driven id="DSDReceipt_pub_1" initialState="notConfigurable" />
```

<hospital> element

<hospital> element specifies hospital related adaptor information. The structure is very similar to the <publisher> element except that the name and value attribute in the property element defines the different hospital adaptor types.

```

<hospitals>
  <timer-driven id="sub_hosp_0" initialState="running" timeDelay="10">
    <timer-task>
      <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask"/>
      <property name="reasonCode" value="SUB"/>
    </timer-task>
  </timer-driven>

```

rib-<app>-adapters-resource.properties

These are internationalizable strings for internal rib adapter key names.

Example:

```

sub_all.name=Subscribers
sub_all.desc=Manages all subscribers at the same time.

```

```

ASNIn_sub_1.name=ASNIn Subscriber, channel 1
ASNIn_sub_1.desc=Subscriber for the ASNIn family through channel 1.

```

```

ASNOut_sub_1.name=ASNOut Subscriber, channel 1
ASNOut_sub_1.desc=Subscriber for the ASNOut family through channel 1.

```

rib-<app>-plsql-api.xml

This configuration file is specific to RMS and RWMS. The RIB interfaces with RMS and RMWS through two database procedures; GETNXT and CONSUME. This file contains the calling signatures for these procedures, the parameters to be configured before calling these procedures, and the implementation class for handling the objects returned from these procedures.

rib-<app>.properties

These are internationalizable strings for internal rib adapter key names.

Property Name and Default Value	Description
facility_id defaultValue = "facility_id";	This property is used to refer to the warehouse routing configuration. The value of this property is used to construct the facility type
dc_dest_id defaultValue = "*";	This property is used to refer to the warehouse distribution center. Destination ID
facility_type_default defaultValue = "PROD";	Specifies the default facility type to be used by RWMS publishing adapters for calls to RWMS.

rib-system.properties

All properties for RIB have been classified into kernel properties and application properties. This file contains kernel properties that are used specifically for the functioning of the RIB kernel. They are mostly related to hospital retry configuration, payload locations, or alerting.

Property Name and Default Value	Description
hospital_attempt_max defaultValue = "5"	This property refers to the maximum number of attempts to try to push this record through the RIB automatically. Once this retry count is exceeded, the message remains in the RIB Hospital DB but is no longer retried automatically
hospital_attempt_delay defaultValue = "10"	This property refers to the value (in seconds) used to calculate the next attempt time.
hospital_attempt_delayIncrement defaultValue = "10"	This property refers to the value (in seconds) used to calculate the next attempt time. The next attempt time is calculated as: hospitalAttemptDelay + (hospitalAttemptDelyIncrement * attempt count). This is done so that the delay between each attempt is longer than the previous delay.
numOfRecordsToRetry defaultValue = "20"	This property refers to the maximum number of RIB Hospital records to be retried in one RIB Hospital retry attempt.
xml_schema_base_url defaultValue = "http://localhost:8888/rib-func-artifact"	This property refers to the location of web application (rib-func-artifact) which has RIB related XML Schema (XSD) files.
mail_smtp_host defaultValue = "mail.smtp.host"	This property is used to identify the smtp host from which to send out emails.
mail_smtp_port defaultValue = "25"	This property is used to identify the smtp port from which to send out emails.
mail_smtp_from defaultValue = "admin@company.com"	This property refers to the email id that the RIB platform needs to use to send the emails for administrative purposes.
war_http_port defaultValue = "9080"	This property refers to the port number used by the web based Hospital Retry Admin Tool.

rib-integration-flows.xml

This file is the single source of all values used by the RIB Application Builder tools to define and configure the JMS topics as well as perform start and stop activities, including subscriber checks. For RIB deployments this file should not be edited.

This file is packaged and deployed as part of the rib-func-artifacts war file.

Example:

```
<message-flow id="1">
  <node id="rib-rms.Alloc_pub" app-name="rib-rms"
    adapter-class-def="Alloc_pub" type="DbToJms">
    <in-db>default</in-db>
    <out-topic>etAllocFromRMS</out-topic>
  </node>
  <node id="rib-tafr.Alloc_tafr" app-name="rib-tafr"
    adapter-class-def="Alloc_tafr" type="JmsToJms">
    <in-topic>etAllocFromRMS</in-topic>
    <out-topic name="topic-name-key-iso">etStockOrdersISO</out-topic>
    <out-topic
name="topic-name-key-wh">etStkOrdersFromRIBToWH{*}</out-topic>
  </node>
```

```

<node id="rib-sim.StockOrder_sub" app-name="rib-sim"
      adapter-class-def="StockOrder_sub" type="JmsToDb">
  <in-topic>etStockOrdersISO</in-topic>
  <out-db>default</out-db>
</node>
<node id="rib-rwms.StockOrder_sub" app-name="rib-rwms"
      adapter-class-def="StockOrder_sub" type="JmsToDb">
  <in-topic>etStkOrdersFromRIBToWH1</in-topic>
  <out-db>default</out-db>
</node>
</message-flow>

```

rib-deployment-env-info.xml

This file is the single source of all values used in the RIB App Builder tools and is the only (or should be the only) file that requires editing for using them. The RIB Installer gathers the appropriate values from the user, constructs the file, and invokes the appropriate tools.

For example, when the RIB Application Builder is used to extract error hospital tables from an application schema, this file supports those tables.

The RIB Application Builder tools can be executed independent of the RIB installer tool. In some cases it is necessary to edit this file manually.

app-in-scope-for-integration

This section defines what applications are in scope for this environment.

Example:

```

<app-in-scope-for-integration>
  <app id="rms" type="plsql-app" />
  <app id="tafr" type="tafr-app" />
  <app id="sim" type="javaee-app" />
  <app id="rwms" type="plsql-app" />
  <app id="rpm" type="javaee-app" />
  <app id="aip" type="javaee-app" />
</app-in-scope-for-integration>

```

rib-jms-server

This section defines the JMS server information.

Example:

```

<jms-server-home>linux1@linux1:/home/oracle/oracle/product/10.2.0/db_
1</jms-server-home>
<jms-url>jdbc:oracle:thin:@linux1:1521:ora10g</jms-url>
<jms-port>1521</jms-port>
<jms-user>ribaq</jms-user>
<jms-password>ribaq</jms-password>

```

rib-application-server

This section defines the Oracle Application Server information.

Example:

```

<oas-instance-name> AS4.linux1.localdomain </oas-instance-name>
<oas-instance-home>soa1@linux1:/home/soa1/product/10.1.3.1/OracleAS_

```

```

6</oas-instance-home>
<oas-opmn-request-port>6003</oas-opmn-request-port>
<oas-ohs-port protocol="http" >7777</oas-ohs-port>
<java-home>/usr/java/jdk1.5.0_01</java-home>

```

rib-javaee-containers

This section defines the oc4j instances for each of your rib-<app> applications that are in-scope.

Example:

```

<oc4j id="rib-rms-app-server-instance">
  <oc4j-instance-name>rib-rms-oc4j-instance</oc4j-instance-name>
  <oc4j-instance-home>soa1@linux1:/home/soa1/product/10.1.3.1/OracleAS_
4/j2ee/rib-rms-oc4j-instance</oc4j-instance-home>
  <oc4j-user>riboc4jadmin</oc4j-user>
  <oc4j-password>riboc4jadmin</oc4j-password>
</oc4j>

```

rib-applications

This section defines the rib-<app> specific information for each applicable rib-<app>.

Example 1: RIB-RMS (for app-type=PL/SQL)

```

<rib-app id="rib-rms" type="plsql-app">
  <url>jdbc:oracle:thin:@linux11521:soa1</url>
  <user>rms13en</user>
  <password>rms13</password>

  <notifications>
    <email>
      <email-server-host>mail.oracle.com</email-server-host>
      <email-server-port>25</email-server-port>
      <from-address>rib@oracle.com</from-address>
      <to-address-list>rib@oracle.com</to-address-list>
    </email>
    <jmx/>
  </notifications>

```

Example 2: Error Hospital Database (for app-type=PL/SQL)

```

<error-hospital-database>
  <hosp-url>DB host URL for error-hospital tables</hosp-url>
  <hosp-user>errorhospitaluser </hosp-user>
  <hosp-password>password </hosp-password>
</error-hospital-database>
<app-database>
  <app-url> DB host URL for pl/sql application</app-url>
  <app-user>appuser </app-user>
  <app-password>password </app-password>
</app-database>

```

Example 3: JavaEE application with JNDI information defined

```

  <jndi>

  <url>opmn:ormi://linux1:6003:sim-oc4j-instance/javaee-api-stubs</url>
  <factory>oracle.j2ee.rmi.RMIInitialContextFactory</factory>

```

```
<user>oc4jadmin</user>
<password>welcome1</password>
</jndi>
```

Example 4: Error Hospital Database (for app-type=JavaEE/TAFR)

```
<error-hospital-database>
  <hosp-url>DB host URL for error-hospital tables</hosp-url>
  <hosp-user>errorhospitaluser </hosp-user>
  <hosp-password>password </hosp-password>
</error-hospital-database>
```

commons-logging.properties

There are several - insert locations and use. The RIB uses the Apache Commons Logging subsystem as the logging interface. For RIB deployments this file should not be edited.

log4j.xml

The log4j Open Source software is used to control all RIB logging. This software requires the log4j.xml file to configure the file name, logging level, and type of file used.

rib-app-builder-paths.properties

For RIB deployments this file should not be edited.

rib-application-assembly-info.xml

This is a non editable file that describes the structure of the rib-<app>.ear and the resources it uses.

RIB Logging

All logging in the RIB is through log4j, the Apache Software Foundation's Open Source software. For details about log4j visit the Apache Software Foundation's log4j home page.

For additional information on how the RIB uses log4j, see "[log4j.xml](#)".

Log Level Recommendations

The logging level will need to be adjusted for the phase of the deployment. What is appropriate in development and test (DEBUG) is not appropriate in production (INFO).

There are some logs such as audit and timing that may be used differently at certain phases as well. Audit is either on (DEBUG) or off (INFO), the same is true with timings.

Note: See "[RIB Timings Utility](#)" in this manual.

As a rule the appropriate level will always be INFO.

Changing Logging Levels

The RIB's use of log4j allows the control of logging levels to suit the deployment and situation. There are two methods of setting the logging levels; directly manipulating the log4.xml file using a text editor, and the RIB Administration GUI.

RIB Administration GUI

The RIB Administration GUI allows control of the logging levels for each adapter individually. It permits the change to affect only the runtime logging and is dynamic. It also provides the ability to persist the change so that the adapter(s) retains that level when restarted. This is the recommended approach.

log4j.xml Configuration File

The RIBLOGS log4j.xml file can be directly edited. This requires that the adapter(s) be bounced for the change to take effect. See the sections below on what to edit related to the type of log (RIBLOG, Timing Log, and so on).

Adapter Logging (RIBLOGS)

The RIB adapter code contains logging logic that writes all of its runtime logs to the RIBLOG log files. The logs are written to the path `<rib-application_instance_home>/<rib-app>/logs/<rib-app>`.

Example:

```
/home/rib/product/10.1.3.3/OracleAS_6/j2ee/rib-rms-oc4j-instance/log/rib-rms
```

The RIBLOG filenames are in the format `<adapter-instance-name>.rib.log`.

Example:

```
Alloc_pub_1.rib.log  
ASNIn_sub_1.rib.log  
ASNOut_sub_1.rib.log
```

To enable this function, parameters must be set per adapter.

Be careful because there are multiple entries for each adapter instance in the log4j.xml file. Search for the section of the log4j.xml file:

```
<!--RIB Appender for adapterInstance: Alloc_pub_1-->
```

RIB Timing Logs

The RIB messaging components code is instrumental to log timing entries on the internal activities whenever they create, transform, route, filter, or subscribe to messages on the RIB. These timings logs are written using the log4j logging mechanism.

The timings log files follow the name convention `<adaptor-instance-name>.timings.log` and are found in the same locations as the RIBLOGS.

Typically, one timings log file is created per component (EJB or other) which holds the entries for that component. These files are cumulative, meaning that they do not get overwritten with every initialization of the component, but they append new entries to the current information already recorded. The files do roll over after they reach a certain configurable size and backup files are created to preserve previous entries.

Each entry in the timings log represents a timestamp of a particular event in the RIB component, listing the date and time information, name of the component, thread id and a distinct message for each event. The list of time stamped events includes such items as the start time and/or end time of the following actions:

- Overall publication, subscription, routing, or transformation process
- Calls to store procedures (getnxt and consume)
- Actual publication and subscription of messages to and from the JMS server
- Calls to the RIB Hospital to check for dependencies and insert messages
- Calls to other applications to process messages after subscription (injectors)

The log4j.xml file must have the "level value" property set to DEBUG. This tag is not normally present in the standard log4j.xml file, it must be added. The example below shows how and where.

Be careful because there are multiple entries for each adapter instance in the log4j.xml file. Search for the section of the log4j.xml file:

```
<!--Timings Logger for adapterInstance: -->".
```

Before:

```
<logger additivity="false" name="rib.pub.timings.Order_pub_1">
  <!-- Possible levels are TRACE, DEBUG, INFO, WARN, ERROR and FATAL -->
  <level value="INFO"/>
  <appender-ref ref="appender.rib.pub.timings.Order_pub_1"/>
</logger>
```

After:

```
<logger additivity="false" name="rib.pub.timings.Order_pub_1">
  <!-- Possible levels are TRACE, DEBUG, INFO, WARN, ERROR and FATAL -->
  <level value="DEBUG"/>
  <appender-ref ref="appender.rib.pub.timings.Order_pub_1"/>
</logger>
```

RIB Audit Logs

The RIB has an auditing feature that logs a message as it passes through the RIB infrastructure. Each messaging component can be set to write the message, and only the message, to a separate log file. This allows the tracing of message content from publication to subscription, and all steps, such as a TAFR, in between.

There are two benefits to this mechanism; the ability to audit each step, and the ability to create a recovery plan. The messages can be played back, without effort being spent to extract them from inside other more systemic log files.

The log4j.xml can be edited to remove the <audit-entry> tag from the output and to have only the message in the file.

```
<!--Audit Appender for adapterInstance: ASNIn_sub_1-->
  <appender class="org.apache.log4j.FileAppender"
    name="appender.rib.sub.audit.ASNIn_sub_1">
    <param name="File" value="/u00/webadmin/product/10.1.3/OracleAS_
1/j2ee/rib-rms-oc4j-instance/log/rib-rms/ASNIn_sub_1.audit.log"/>
    <!--param name="MaxFileSize" value="2048KB"/-->
    <!--param name="MaxBackupIndex" value="1"/-->
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="&lt;audit-entry
audit-time=&quot;%d{yyyy.MM.dd
```


Other RIB Management Logs

deploy.rib.log

This log will track the source rib-app-builder home that pushed the changes to this OC4J instance.

Example:

```
Uploading configuration file from machine(mspdev81)
dir(/stage/Rib1300-ms7.1/Rib1300ForAll113xxApps/rib-home/deployment-home/bin/../../
../rib-home) at (Mon Jan 28 11:15:57 PST 2008).
```

management.rib.log

The RIB maintains a management log which is used to keep track of the oc4j instance on the whole.

This is usually written during the startup of an oc4j instance. The recommendation is that each rib-app be deployed in a separate oc4j instance, so management logs are specific to a rib-app.

The management log writes RIB information common to all the components like loading property files and creating logging files.

Example:

```
2008-02-01 14:33:23,928 [AJPRequestHandler-RMICallHandler-6] DEBUG
com.retek.rib.management.adapters.client.action.StopAdapterAction - Invoking
operation to stop the adapters
2008-02-01 14:33:23,928 [AJPRequestHandler-RMICallHandler-6] DEBUG
com.retek.rib.monitor.engine.MBeanAbstractFactory - Invoking MBean operation
domain(rib-rms) objectNameProperty(level=adapters,type=sub,name=Receiving_sub_1)
methodName(stop) parameter([Ljava.lang.Object;@1452a1)
signature([Ljava.lang.String;@3d06a4).
```

global.rib.log

Example:

```
2008-02-06 10:14:26,688 [AJPRequestHandler-RMICallHandler-7] DEBUG
retек.com.retek.rib.ui.view.tags.IteratePropertyTag.com.retek.rib.management.adap
ters.model.AdapterTypes - Invoking Operation returnStatusForAll of MBean.
2008-02-06 10:14:26,777 [AJPRequestHandler-RMICallHandler-7] DEBUG
retек.com.retek.rib.ui.view.tags.IteratePropertyTag.com.retek.rib.monitor.engine.M
BeanAbstractFactory - Invoking MBean operation domain(rib-rms)
objectNameProperty(level=types,type=pub,name=pub_all)
methodName(returnStatusForAll) parameter(null) signature(null).
2008-02-06 10:14:26,780 [AJPRequestHandler-RMICallHandler-7] DEBUG
retек.com.retek.rib.ui.view.tags.IteratePropertyTag.com.retek.rib.management.adapt
ers.model.AdapterTypes - Operation returnStatusForAll for type pub invoked
successfully :<type name="pub"><adapter id="Alloc_pub_1" name="Alloc Publisher,
channel 1" state="running" /><adapter id="SeedData_pub_1" name="SeedData
Publisher, channel 1" state="running" /><adapter id="SeedObj_pub_1" name="SeedObj
Publisher, channel 1" state="running" /><adapter id="W00ut_pub_1" name="W00ut
Publisher, channel 1" state="running" /><adapter id="Banner_pub_1" name="Banner
Publisher, channel 1" state="running" /><adapter id="Transfers_pub_1"
name="Transfers Publisher, channel 1" state="running" /><adapter
id="RcvUnitAdj_pub_1" name="RcvUnitAdj Publisher, channel 1" state="running"
/><adapter
id="Vendor_pub_1" name="Vendor Publisher, channel 1" state="running" /><adapter
id="WH_pub_1" name="WH Publisher, channel 1" state="running" /><adapter
id="RTVReq_pub_1" name="RTVReq Publisher, channel 1" state="running" /><adapter
```

```
id="MerchHier_pub_1" name="MerchHier Publisher, channel 1" state="running"
/><adapter id="UDAs_pub_1" name="UDAs Publisher, channel 1" state="running"
/><adapter id="Order_pub_1" name="Order Publisher, channel 1" state="running"
/><adapter id="Items_pub_1" name="Items Publisher, channel 1" state="running"
/><adapter id="DiffGrp_pub_1" name="DiffGrp Publisher, channel 1" state="running"
/><adapter id="Item
Loc_pub_1" name="ItemLoc Publisher, channel 1" state="running" /><adapter
id="Partner_pub_1" name="Partner Publisher, channel 1" state="running" /><adapter
id="Diffs_pub_1" name="Diffs Publisher, channel 1" state="running" /><adapter
id="WOIn_pub_1" name="WOIn Publisher, channel 1" state="running" /><adapter
id="Stores_pub_1" name="Stores Publisher, channel 1" state="running" /></type>
```

Overview

This section describes the RIB JMX infrastructure. JMX is a specification that provides capability for runtime management of java components. Each of the RIB's software components (PublisherEjb, SubscriberEjb, TafrEjb, HospitalRetryEjb, and so on) provides its own management facility by implementing management beans.

The RIB's MBean components use uniform registration, deployment, and communication mechanisms provided by the RIB JMX infrastructure.

RIB uses log4j to log business and system events in the RIB runtime system. The definitions of the loggers are statically defined and come from a configuration file (log4j.xml). As logging is an expensive process we need to provide capability to manage log levels dynamically. The RIB Administration UI Log Manager MBean registers itself through the standard RIB JMX registration process at application startup. It provides an API to access current RIB loggers and change the log levels.

The AlertPublisherFactory is a factory that allows the user to select what alerting mechanism they want. A new JMX alerting mechanism will be added to the system. The JmxAlertPublisher class extends NotificationBroadcasterSupport and provides JMX notification capability. The Jmx alerting capability is only available when running inside a container. A message type attribute will be added to the Alert class to provide the message filtering capability.

Any third party JMX console compatible with the Java EE container can be used to manage RIB components. RDMT uses the JMX command line interface provided by this design.

Note: See "Java Management Extensions (JMX)" in the *Oracle Retail Integration Bus Implementation Guide*.

RIB JMX Client

The RIB provides a command line interface to the RIB JMX system. The client is shipped as java classes in the jmx-cmd-line-ui.jar. The entry point is JmxClientMain and allows the user to either execute a single JMX command or run JMX commands in an interactive shell. There is a menu selection that invokes the interactive shell feature. See Chapter 8, "[Diagnostic and Monitoring Tools](#)," for examples of how to interface to this utility.

User Interface

```
JMXClient> help
Executing command : JmxCommand(help).
exit
Example: exit

info objectName
Example: info oc4j:j2eeType=JVM,name=single,J2EEServer=standalone

setattrs ObjectName attributeName1 attributeValue1 [attributeName2
attributeValue2]...
        setattrs will only work with attribute types that have
        a constructor with java.lang.String argument.

Example: setattrs oc4j:j2eeType=JTAResource,name="oc4j-tm",J2EEServer=standalone
transactionTimeout 31

getattrs ObjectName [attribute1] [attribute2]..
Example: getattrs oc4j:j2eeType=JVM,name=single,J2EEServer=standalone
javaVersion freeMemory

help [command]

invoke ObjectName methodName paramType1 paramValue1 [paramType2 paramValue2]...
Example: invoke
        oc4j:j2eeType=JNDINamespace,name=JNDINamespace,J2EEServer=standalone
        getAllBindingsAsXMLString
Example: invoke oc4j:j2eeType=JVM,name=single,J2EEServer=standalone getProperty
        java.lang.String java.library.path

list objectName
Example: list *.*

close
Example: close

connect jmxServiceUrl jmxUser jmxPassword jmxConnectionProtocolProviderPackage
Example: connect service:jmx:rmi://localhost:23791/oc4j oc4jadmin oc4jadmin
        oracle.oc4j.admin.jmx.remote

Previous command successful: JmxCommand(help).
JMXClient>
```

For clients like RDMT that might issue "single" JMX commands from shell scripts, the `JmxClientMain` class provides a user interface that is similar to the JMX commands above, with additional connection options for each command.

Third Party JMX Client Example

This example is for Sun JConsole tool.

See:

<http://java.sun.com/developer/technicalArticles/J2SE/jconsole.html>

<http://java.sun.com/j2se/1.5.0/docs/guide/management/jconsole.htm>

1. Install the oc4j_admin_client_101330 on a client system.

See: <http://www.oracle.com/technology/index.html>

2. Create a startup file that sets the properties and classpath:

```
set JAVA_HOME=D:\Java\jdk1.6.0_02
```

```
set CLASSPATH=D:\oc4j\jmxadmin\oc4j_admin_client_101330\j2ee\home\admin_client.jar
```

```
rem Add the JConsole libraries to the CLASSPATH environment variable:
```

```
set CLASSPATH=%CLASSPATH%;%JAVA_HOME%\lib\jconsole.jar
```

```
set CLASSPATH=%CLASSPATH%;%JAVA_HOME%\lib\tools.jar
```

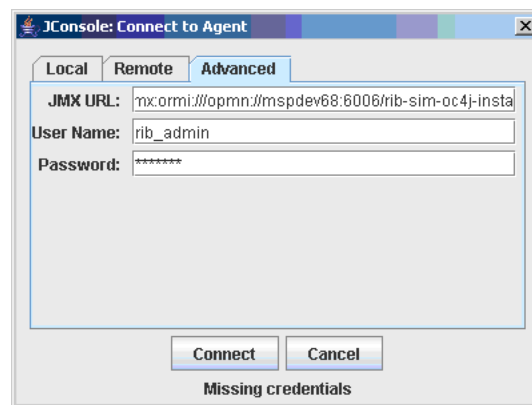
```
rem Configure the JMX connector to use the OC4J ORMI protocol:
```

```
set PROPS=jmx.remote.protocol.provider.pkgs=oracle.oc4j.admin.jmx.remote
```

```
rem Run jconsole:
```

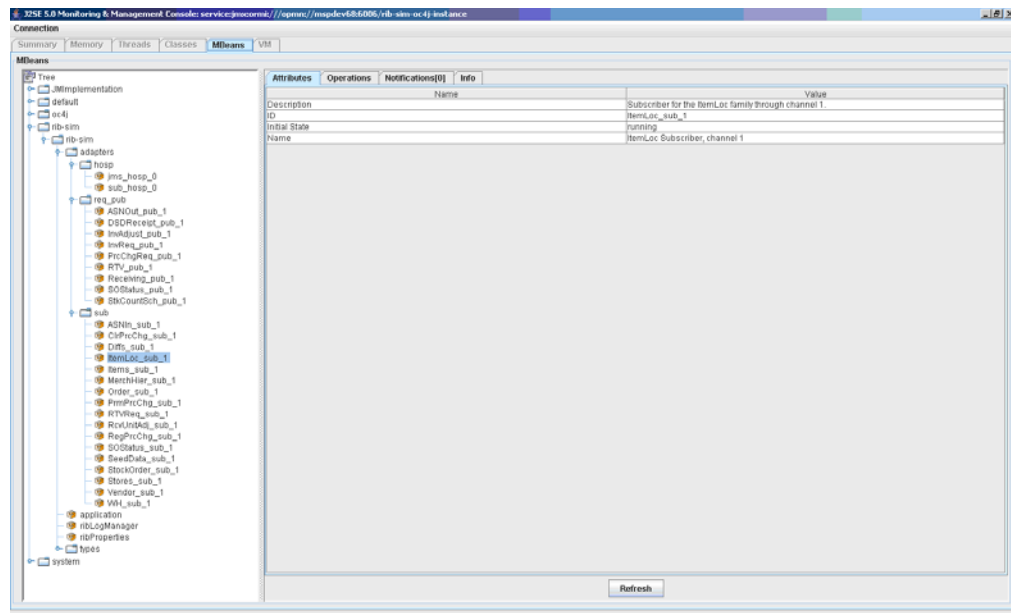
```
%JAVA_HOME%\bin\jconsole -J-Djava.class.path=%CLASSPATH% -J-D%PROPS%
```

3. Start the JConsole and login into MBean server using a connect URL (e.g. service:jmx:ormi:///opmn://linux1:6003/rib-rms-oc4j-instance).

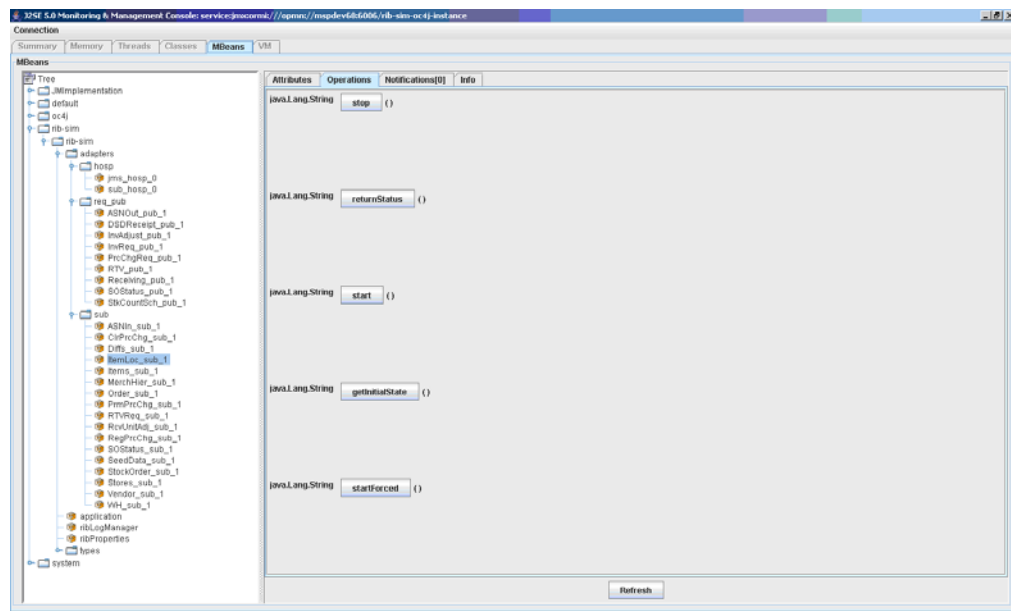


4. Select and open any one of the MBean. It opens a window with four tabs: Attributes, Operations, Notifications, and Info.

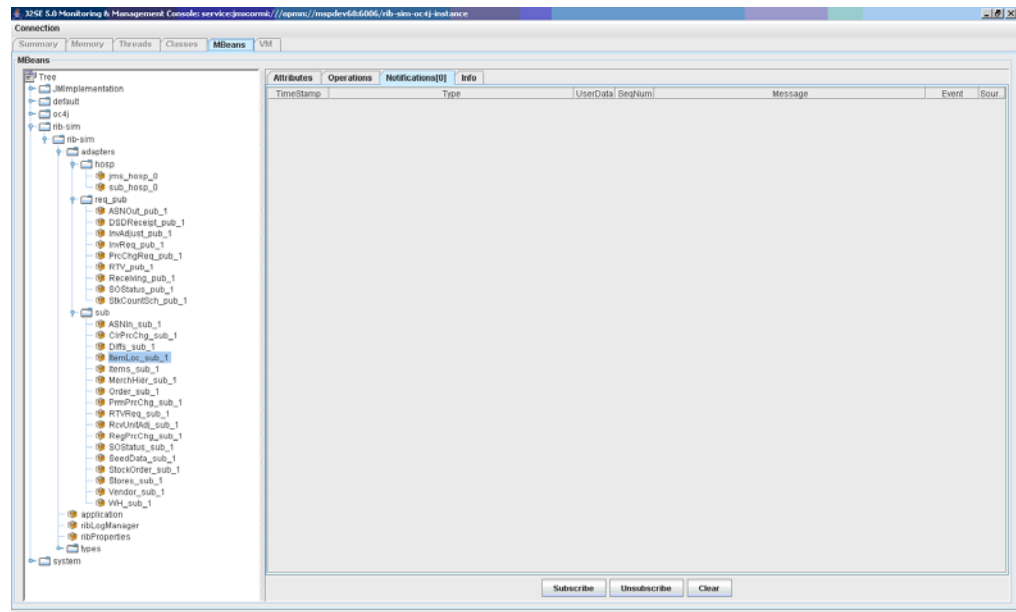
- a. The Attributes tab gives the information about the attributes of the MBean.



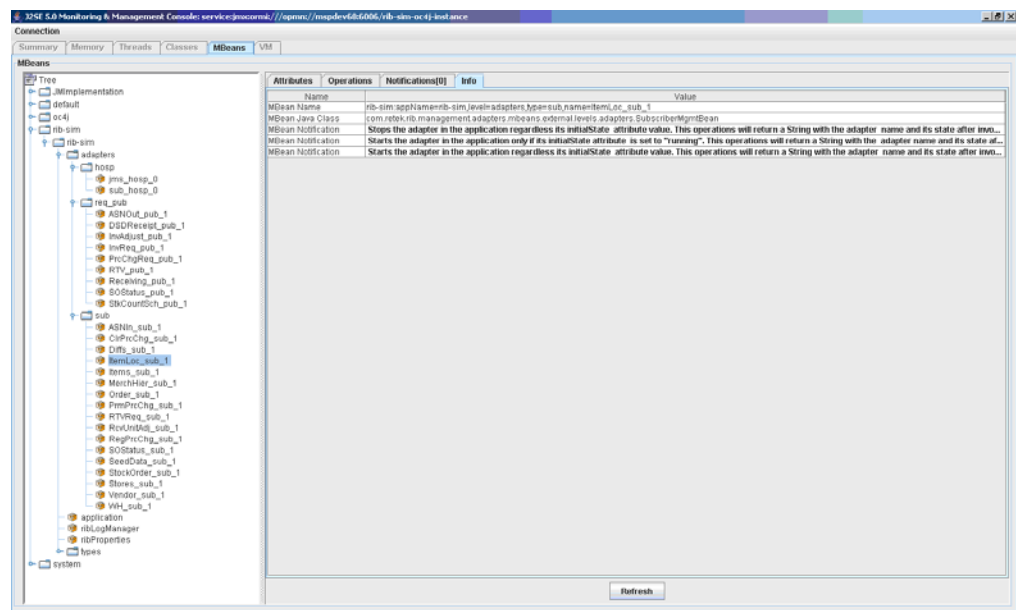
- b. The Operations tab gives the list of operations supported by that MBean.



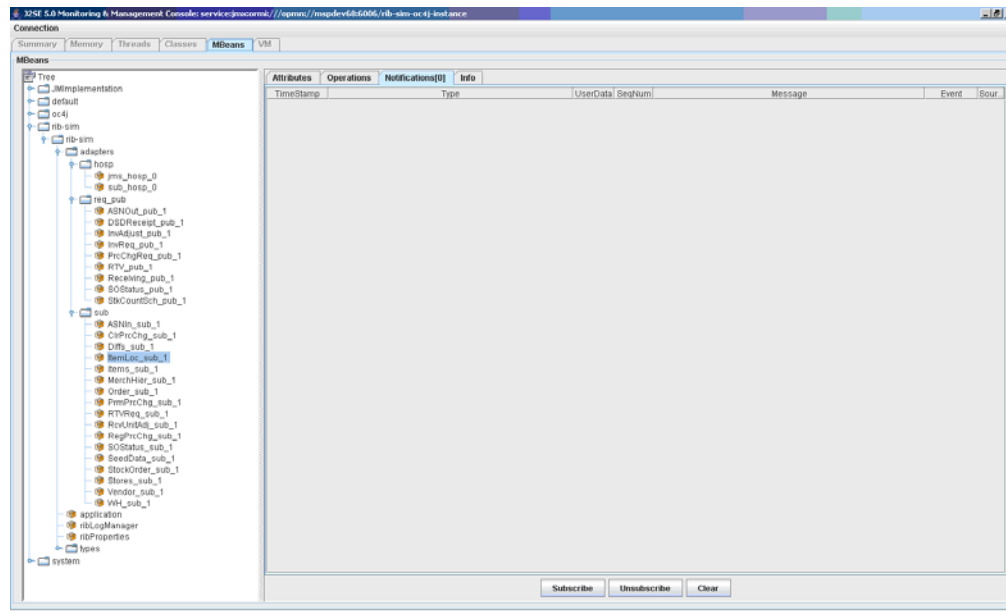
- c. The Notifications tab gives the list of notifications captured on that MBean. (You have to subscribe for capturing the notifications.) Subscribing, Unsubscribing, and clearing of notifications can be done from this tab.



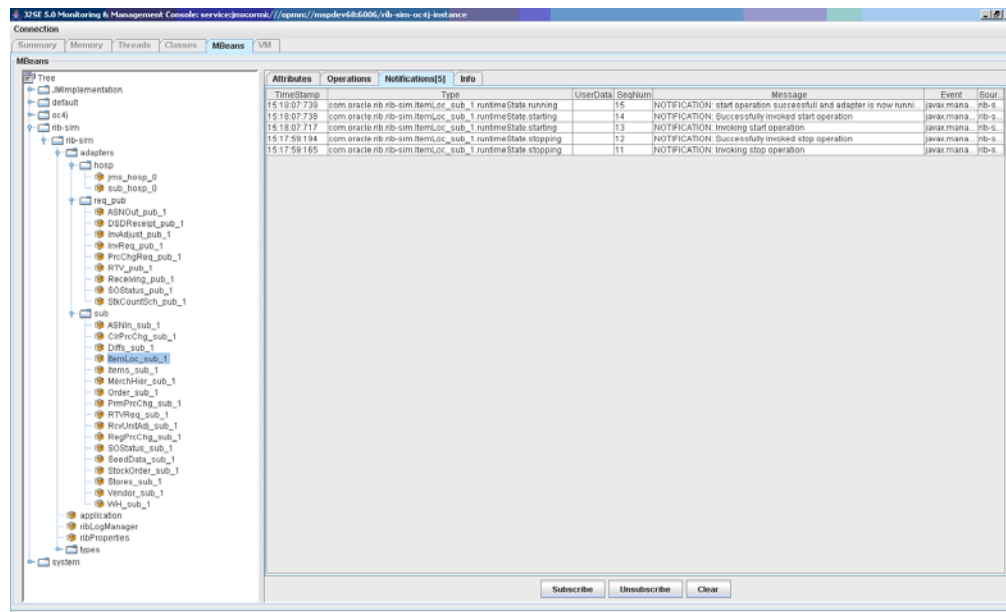
- d. The Info tab gives the details of the MBean.



- e. Once an MBean is subscribed for notifications, you can see the list of notifications that occurred for that MBean. By default, it will show zero.



- f. When some operations of the subscribed MBean are executed/invoked, notifications are captured under the Notifications tab.



The RIB provides four types of adapters that Oracle Retail applications can exploit to integrate with one another. These adapter types are publisher, subscriber, TAFR, and hospital retry adapters. They have been built using different technologies based on their particular needs.

Subscriber and TAFR adapters use Message Driven Bean (MDB) technology to register with JMS topics and receive messages for further processing.

Publisher and hospital retry adapters make use of the Java SE (Standard Edition) timer facility to schedule repetitive events. These events trigger calls to Enterprise Java Beans (EJB) to query application tables for messages to publish to the JMS server.

A fifth type of adapter exists for publishing messages in a pushing fashion, which the Retail javaEE applications, such as SIM and RPM, invoke at will for publishing messages. These are not controlled via this framework, they are always on.

Due to the variety of technologies used by the adapters, the goal of RIB Admin UI is to isolate users from these differences and provide a common management interface that can be used to control the state of the adapters and logging.

RIB Admin URLs

The RIB Admin tools are reached via URL's within each of the deployed rib-<apps>'s.

RIB Admin GUI

`http://<server>.us.oracle.com:<http-port>/rib-<app>-admin-gui/`

Replace <server> with the name or IP address of the server in the environment that has the rib-<app> deployed.

Replace <http-port> with the port number that the Oracle Application Server is listening on. (for example, 7777)

Replace <app> with either:

- rms
- tafr
- rwms
- sim

RIB Functional Artifacts

`http://<server>.us.oracle.com:7777/rib-func-artifact/`

Replace <server> with the name or IP address of the server in the environment that has the rib-<app>'s deployed.

RIB Message Flows

`http://<server>.us.oracle.com:7777/rib-func-artifact/rib-integration-flows.xml`

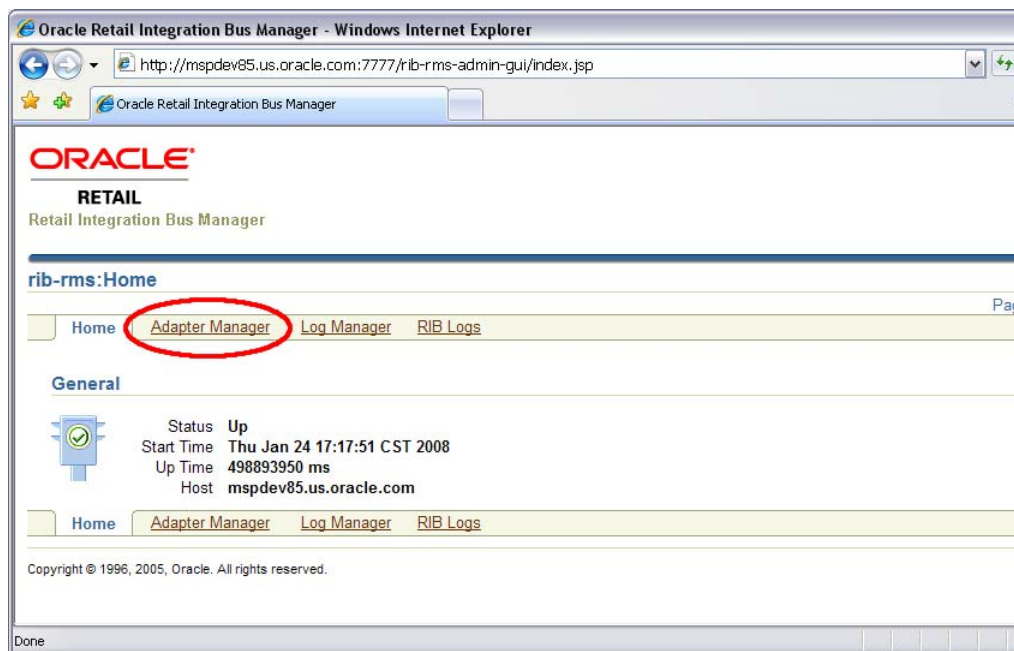
RIB Payloads (xsds)

`http://<server>.us.oracle.com:7777/rib-func-artifact/payloads/xsd`

RIB Admin GUI Home

Home Screen

Click the **Adaptor Manager** link to view all adaptors for the given application.



Adaptor Manager

All message functions in the RIB are performed by adapters. There are four categories of adapters: publishers, subscribers, TAFRs (transform, address, filtering and routing), and RIB hospital retry. The adaptor manager console is used to start and stop adapters, configure settings, and view adaptor log files.

Adapter Manager Screen

This screen shows the current status of all adapters for the specified application. A



signifies that an adapter is up and running, whereas



indicates that the adapter is offline or has shut itself down. From this screen you can start and stop any listed adapters by selecting the check-box related to the adapter and then using the



buttons. Clicking the



button in the "View Log" column opens the log file viewer for the specified adapter.

Oracle Retail Integration Bus Manager - Windows Internet Explorer

http://mspdev85.us.oracle.com:7777/rib-rms-admin-gui/rib_adapter_manager.jsp

ORACLE
RETAIL
Retail Integration Bus Manager

rib-rms:RIB Adapter Manager

Page Refreshed Wed Jan 30 11:46:07 2008

Home Adapter Manager Log Manager RIB Logs

This page shows the RIB Adapters (publishers, subscribers,tarfs and/or hospitals) deployed on this RIB instance.

View All

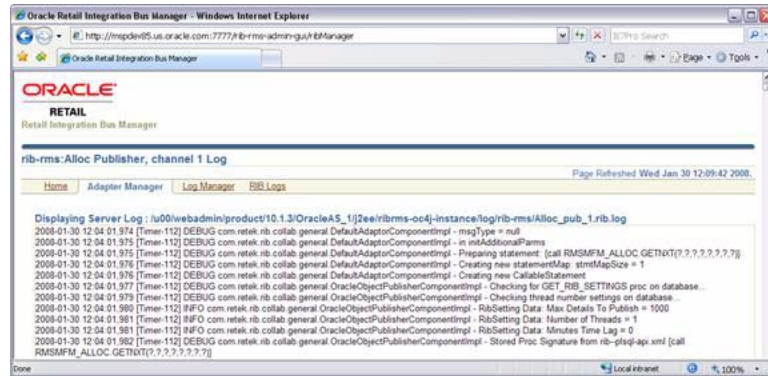
Start Stop Refresh Date

Select	Name	Status	Start Time	Edit Properties	View Log
<input type="checkbox"/>	▼ Polling_Publishers				
<input type="checkbox"/>	Alloc Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		
<input type="checkbox"/>	Banner Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		
<input type="checkbox"/>	DiffGrp Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		
<input type="checkbox"/>	Diffs Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		
<input type="checkbox"/>	ItemLoc Publisher, channel 1	↓			
<input type="checkbox"/>	Items Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		
<input type="checkbox"/>	MerchHier Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		
<input type="checkbox"/>	Order Publisher, channel 1	↓			
<input type="checkbox"/>	Partner Publisher, channel 1	↑	Mon Jan 28 15:59:21 CST 2008		

Done Local intranet 100%

Log Viewer

Depending on what level the logging is set to, the log for the adapter can contain very little to extreme amounts of data, errors, and message failures. However, it will always be shown.



Log Manager

Log Manager Screen

This screen enables the user to change the logging level of the adapters. It also allows the user to enable audit and timings logging.

The UI displays each logger and the current log level. If the log level is inherited, it displays a * along with the log level. The user is able to select a logger and modify the log level by clicking **Set Option**. The changed settings are an in memory representation of the logger. If the user wants to persist the log level between an application server bounce, they have the option to click **Save**. The save operation updates the log4j.xml file in the file system in the location where it was loaded from.

When Audit logging is turned on, each message that is processed by the adapter, the XML payload is persisted to an audit log. Audit logging only works when the audit log level is set to DEBUG for the specified adapter.

The Timings logging captures adapter processing performance data to another separate log. As with the audit log, this only works with the logging level set to DEBUG. The RDMT command line tool can be used to process and view the results of the timings logging output.

Current Loggers on the RIB Instance.

Name	Log Level Inherited	Log Level
retek.subscriber.XPriceChg_sub_1	false	DEBUG
retek.subscriber.XStore_sub_1	false	DEBUG
retek.subscriber.XTsf_sub_1	false	DEBUG
rib.hospitalretry.timings.jms_hosp_0	false	INFO
rib.hospitalretry.timings.pub_hosp_0	false	INFO
rib.hospitalretry.timings.sub_hosp_0	false	INFO
rib.pub.audit.Alloc_pub_1	false	INFO
rib.pub.audit.Order_pub_1	false	INFO
rib.pub.audit.Partner_pub_1	false	INFO
rib.pub.audit.RTVReq_pub_1	false	INFO

RIB Logs

RIB Logs Screen

This screen can be used to view the regular adapter log file (also accessible by clicking the



button in the "View Log" column on the Adaptor Manager screen) along with the Timings and Audit logs for each adapter, if they have been activated. (See the instructions on the Log Manager Screen.)

The screenshot shows a web browser window titled "Oracle Retail Integration Bus Manager - Windows Internet Explorer". The address bar contains the URL "http://mspdev05.us.oracle.com:7777/rib-rms-admin-gui/logs.jsp". The page header includes the Oracle logo and "RETAIL Retail Integration Bus Manager". Below the header, there is a navigation menu with "Home", "Adapter Manager", "Log Manager", and "RIB Logs" (which is selected). A status bar indicates "Page Refreshed Wed Jan 30 16:11:18 2008".

The main content area displays a table of log files from the directory "/u00/webadmin/product/10.1.3/OracleAS_11j2ee/ribms-oc4j-instance/log/rib-rms". The table has three columns: "File Name", "Size", and "Last Modified".

File Name	Size	Last Modified
deploy_rib.log	189	Mon Jan 28 16:00:38 CST 2008
ASIn_sub_1 timings.log	0	Wed Jan 23 15:34:11 CST 2008
ASIn_sub_1 audit.log	0	Wed Jan 23 15:34:11 CST 2008
ASIn_sub_1 rib.log	0	Wed Jan 23 15:34:12 CST 2008
ASOut_sub_1 timings.log	0	Wed Jan 23 15:34:12 CST 2008
ASOut_sub_1 audit.log	0	Wed Jan 23 15:34:12 CST 2008
ASOut_sub_1 rib.log	0	Wed Jan 23 15:34:12 CST 2008
COCogs_sub_1 timings.log	0	Wed Jan 23 15:34:12 CST 2008
COCogs_sub_1 audit.log	0	Wed Jan 23 15:34:12 CST 2008
COCogs_sub_1 rib.log	0	Wed Jan 23 15:34:12 CST 2008

The browser status bar at the bottom shows "Done", "Local intranet", and "100%" zoom level.

JMS Provider Management

The Oracle Enterprise Messaging Service (OEMS) provides a robust architecture for integrating business-critical applications. Built on Java 2 Enterprise Edition (J2EE) standards such as the Java Message Service (JMS) and the J2EE ConnectorArchitecture (JCA), OEMS reduces the time, cost, and effort required to build integrated and distributed applications. Through a common interface, JMS, OEMS offers developers a quality of service (QoS) choice for persisting messages.

The RIB is designed to be JMS provider agnostic and will be certified with several, starting with the OEMS JMS Database persistence option; which is the JMS interface to the Oracle Database Streams Advanced Queuing (AQ) feature. Subsequent releases will add certification of the OC4J JMS (for the file and memory-persistence version) that is bundled with the Oracle Application Server, as well as other JMS standard providers.

For more details on OEMS, see the Oracle® Containers for J2EE Services Guide 10g - Using Oracle Enterprise Messaging Service.

The RIB on AQ JMS

The AQ JMS is a database and needs to be installed, configured, and tuned to support the anticipated transaction loads for a retailer's production message volumes.

There are some areas to be considered by the RIB team and the Database Administrators.

- It is strongly recommended that the Oracle Database Instance that is configured to be the AQ JMS provider is not shared with any other applications and is not on the same host (physical or logical) with any other applications.
- AQ, on the server side, is I/O intensive. Pay close attention to the disk layout.
- AQ JMS as used by the RIB will have high transaction rates. Consider this in configuration of the redo logs.

AQ JMS should be run in archive log mode. If the database crashes, it must be recoverable to a point-in-time or messages (business events) will be lost.

- The RIB is a client of the AQ database and uses JDBC connections via the aqapi client. The average message size for a given interface affects the network and overall performance behavior.
- AQ JMS sizing to avoid out-of-space situations is critical.

Queue Monitor Process Setup

The QMON processes are optional background processes for Oracle Streams Advanced Queuing (AQ) which monitor and maintain all the system and user owned AQ objects. They provide the mechanism for message expiration, retry, and delay, maintain queue statistics, remove processed messages from the queue table and maintain the dequeue IOT.

The number of queue monitor processes is controlled by the dynamic initialization parameter AQ_TM_PROCESSES. There can be a maximum of 10 QMON processes. The parameter AQ_TM_PROCESSES can be set in the PFILE or SPFILE:

- `aq_tm_processes=4`
- `alter system set aq_tm_processes=4`

Starting with Oracle RDBMS release 10.1, Oracle automatically manages the QMON monitor processes depending on the system load. It is no longer required to explicitly set AQ_TM_PROCESSES. However, it is recommended to monitor the workload and make any adjustments. If the QMON processes lag behind, there is a chance of expired messages remaining in the queue and the tablespace eventually running out of space.

If explicitly setting AQ_TM_PROCESSES, our recommended value is between 2 to 8. Do not set the value to the maximum allowed value of 10 in Oracle 10g. This is due to the fact that all explicitly started QMON processes work only with persistent messages. Oracle can automatically start processes to maintain buffered messages. Setting AQ_TM_PROCESSES to a maximum value of 8 still leaves 2 processes for Oracle that can be started to maintain buffered messages.

Optimizing Enqueue/Dequeue Performance

The AQ database performance needs to be tuned as per Oracle database tuning practices.

Tuning the SGA. Use tools such as Statspack, Oracle Enterprise Manager and SQL trace to find out bottlenecks. An inefficiently configured SGA will slow-down enqueue and dequeue transactions.

Tune the Server Resources: Check server CPU, memory, I/O and network utilization. Tools such as nmon, sar, iostat, vmstat, glance can be used to collect system statistics. Use shared memory and semaphore parameters that are recommended for the Oracle database on that type of server.

Tune Physical Schema setup: This will include creating right tablespaces, placements of datafiles, tables, and indexes.

Note: See also Oracle Database Administrator's Guide 10g Release 2 (10.2), Oracle Streams Advance Queuing User's Guide, and Reference 10g Release 2 (10.2).

Sizing Considerations

There are some important considerations required by the RIB team and Database Administrators for sizing for the deployment of the RIB on AQ JMS.

- The enqueueing/dequeueing rate for the messages per message family affects the requirement for the number of available database segments.

By default, all RIB topics are created in a single tablespace. AQ creates multiple tables for each topic within that tablespace. A topic (message family) that has a high transaction rate can quickly consume available segments. If the tablespace is not sized appropriately, then a single interface can negatively impact all interfaces.

The QMON background process that is responsible for space management will not keep up the transaction rates of some RIB interfaces. In this case, the transaction rate is defined as the rate of enqueueing vs. dequeueing. Messages that are subscribed (consumed) are not removed from the AQ tables immediately. It is the normal case that the enqueue rate will be faster than the dequeue rate. This time lag should be a sizing consideration.

- The total tablespace(s) sizing needs to be calculated based on the business requirement for the number of messages that have to be retained per message family if a subscribing application is off-line.

It is very common for a subscribing application to go off-line. This means that messages have to be retained (persisted) on the JMS until the subscriber comes back on-line. The general sizing guideline for any RIB JMS sub-system is for the disk (mount points or database) to be able to handle 24 hours of maximum messages per topic as defined by the site's projected volume requirements. For example -- OrdersFromRMS may be specified to retain 355,000 details (e.g. 1000 1M messages = 1GB). This calculation needs to be performed for each of the 90+ topics in the GA RIB system and based on the customer's estimated volume per interface.

Note: See ["How to Calculate Average Message Size"](#) in this manual.

The RIB on AQ JMS - Server Side Processes

A process is a "thread of control" or a mechanism in an operating system that can run a series of steps. (Some operating systems use the terms, "job" or "task.") A process normally has its own private memory area in which it runs.

When the RIB is configured to use the Oracle AQ JMS, there are considerations that affect RDBMS tuning and the configuration of database processes. This section is intended to outline these considerations.

Types of Oracle Database Side Processes

The processes in an Oracle database system are categorized into two major groups:

- User processes run the application or Oracle tool code.
- Oracle database processes run the Oracle database server code. They include server processes and background processes.

The RIB and OAS and JDBC Connections

The number of RIB related server side processes can grow based on activity. It is related to the way the OAS container manages jdbc connections. The following rules apply:

- Each subscriber uses one JDBC connection to AQ JMS.
- Each Publisher or Hospital Retry may use one or more connections, depending on volume and activity.
- When a RIB adapter (java code) asks for "a" connection to the OAS, the application server may decide to get more than one connection and add it to its pool.

RIB Connections - Summary

RIB Adapter Type	Total Adapters in RIB
rib-app Subscriber	67
TAFR Subscriber	23
rib-app Polling Publisher	33
rib-app Request-driven Publisher	14
TAFT Publishers	23
Hospital Retry - Polling Publisher	11
Total	171

At any time, depending on deployment options in a non-multiple channel deployment, the RIB can have at least 171 "AQ connections." The OAS application server may ask for more than 171 from the database.

These numbers will increase if there are multiple retry adapters configured and if message flows are configured for multiple channels. So the calculation includes the base numbers plus one for each additional retry--and one for each multiple channel publisher or subscriber. Always assume that the result is the lowest number of connections, because the OAS container can ask for more.

rib-rms Connections

RIB Adapter Type	Total Adapters in RIB
Subscriber	35
Polling Publisher	22
Hospital Retry - Polling Publisher	3
Total	60

At any time, depending on deployment option, the rib-rms app can have at least 60 "Q connections. The OAS application server may ask for more than 60 from the database.

rib-rwms Connections

RIB Adapter Type	Total Adapters in RIB
Subscriber	14
Polling Publisher	11
Hospital Retry - Polling Publisher	2
Total	27

At any time, depending on deployment option, the rib-rwms app can have at least 27 AQ connections. The OAS application server may ask for more than 27 from the database.

rib-sim Connections

RIB Adapter Type	Total Adapters in RIB
Subscriber	18
Request Driven Publishers	9
Hospital Retry - Polling Publisher	2
Total	29

At any time, depending on deployment option, the rib-sim app can have at least 29 AQ connections. The OAS application server may ask for more than 29 from the database.

rib-tafr Connections

RIB Adapter Type	Total Adapters in RIB
Subscriber	23
Publishers	23
Hospital Retry - Polling Publisher	2
Total	48

At any time, depending on deployment option, the rib-tafr app can have at least 48 AQ connections. The OAS application server may ask for more than 48 from the database.

rib-rpm Connections

RIB Adapter Type	Total Adapters in RIB
Subscriber	0

RIB Adapter Type	Total Adapters in RIB
Request Driven Publisher	3
Hospital Retry - Polling Publisher	1
Total	4

At any time, depending on deployment option, the rib-rpm app can have at least four AQ connections. The OAS application server may ask for more than four from the database.

Configuration Recommendations

It is strongly recommended that, for the production RIB deployment, the Oracle database instance configured as the AQ JMS be separate from all other uses. There are performance considerations as well as architectural reasons for maintaining this separation.

Note: See the *Oracle Retail Integration Bus Implementation Guide*.

For the testing and QA phases of the deployment life cycle, co-location is not recommended. Regardless of the life cycle phase, the AQ JMS should not be configured with any other applications, including the rib-app, Error Hospital.

If the option to co-locate is chosen, work with the database administrators to determine and set the appropriate maximum database sessions and processes, depending on the RIB environment setup (single channel or multiple channel, for example.) Note that the result may be more than 500 processes. The issues that may arise from having this many processes can be obscure, and it is difficult to isolate their root cause.

Support for Multiple JMS Servers Within a Single Deployment

Employing multiple JMS servers allows for the isolation of flows (for example, high volume versus low, custom versus base, and message families) for performance and operational QoS.

Design

To meet the JMS agnostic requirement for the RIB, a unique JMS server ID (jms-server-id) is assigned to each RIB adapter. Accordingly, each RIB adapter can identify the JMS server to which it is associated. As the default, "out-of-the-box" adapters are configured to be on jms-server, jms1.

For each new jms-server-ID, a new resource adapter must be configured to point the application server to the JMS provider's resource. The adapter communicates with the JMS server and is deployed as part of the application. Where customization is required, the adapter can be configured to point to a different JMS server.

rib-app-builder Validation Checks

The rib-app-builder performs several validation checks, as listed below. To prevent the rib-app-builder compilation process from failing, the following criteria must be met:

- Each `jms-server-id` is unique where more than one JMS server is configured.
- Within a message flow, the `jms-server-id` is the same for all applications.
- A `jms-server-id` is present in the `rib-deployment-env-info.xml` and present in at least one of the `rib-<app>-adapters.xml` files.
- A `jms-server-id` is present in `rib-<app>-adapters.xml` and present in the `rib-deployment-env-info.xml` file.
- Multiple channels are configured for a give family are on the same JMS server.
- Proper hospitals are configured for all JMS servers. (Where additional JMS servers are configured, the `rib-app-builder` checks to see if hospital adapters are configured for all JMS servers.)

How to Set Up Multiple JMS Servers

Process Overview

1. Determine the family to be configured.
2. Examine the `rib-integration-flows.xml` to identify all the RIB applications in the full integration flow.
3. Add a new JMS server by updating `rib-deployment-env-info.xml`.
4. In the `rib-home`, modify the appropriate files for each of the `rib-<apps>` participating in the integration flow. Point the adapters to the correct JMS server:
 - a. `rib-<app>-adapters.xml`
 - b. `rib-<app>-adapter-resources.properties`
5. Compile all applicable `rib-<apps>`.
6. Run `prepare-jms` for the newly created JMS server.
7. Deploy.

General Recommendations

- The default ID for out-of-the-box JMS servers is `jms1`. It is recommended that the same nameing convention is followed when additional JMS servers are configured (for example, `jms2`).
- If multiple JMS servers require configuration, it is recommended that the application (for example, `rib-rms`) be completely removed (or undeployed) before the new deployment begins.

AQ Recommendation

If multiple AQ JMS servers are configured, each must be on a different database server instance.

Sample Configuration

Following are portions of the Items message flow from `rib-integration-flows.xml`. The message originates from RMS flows through a a TAFR. The TAFT sends the message to two topics, and the message is subscribed by RWMS and SIM. The samples below assume that a new `jms-server-id` (`jms2`) is required for the message flow.

rib-integration-flows.xml

```

<message-flow id="6">
  <node id="rib-rms.Items_pub" app-name="rib-rms"
    adapter-class-def="Items_pub" type="DbToJms">
    <in-db>default</in-db>
    <out-topic>etItemsFromRMS</out-topic>
  </node>
  <node id="rib-tafr.ItemsToItemsTL_tufr" app-name="rib-tafr"
    adapter-class-def="ItemsToItemsTL_tufr" type="JmsToJms">
    <in-topic>etItemsFromRMS</in-topic>
    <out-topic>etItemsTLFromRIB</out-topic>
  </node>
  <node id="rib-tafr.ItemsToItemsISO_tufr" app-name="rib-tafr"
    adapter-class-def="ItemsToItemsISO_tufr" type="JmsToJms">
    <in-topic>etItemsFromRMS</in-topic>
    <out-topic>etItemsISO</out-topic>
  </node>
  <node id="rib-rwms.Items_sub" app-name="rib-rwms"
    adapter-class-def="Items_sub" type="JmsToDb">
    <in-topic>etItemsTLFromRIB</in-topic>
    <out-db>default</out-db>
  </node>
  <node id="rib-sim.Items_sub" app-name="rib-sim"
    adapter-class-def="Items_sub" type="JmsToDb">
    <in-topic>etItemsISO</in-topic>
    <out-db>default</out-db>
  </node>
</message-flow>

```

Note: The following are the configuration changes required for the message flow. The example assumes that all applications apply (RMS, TAFT, SIM, and RWMS).

rib-deployment-env-info.xml

A new JMS server with `jms-server-id=jms2` is added in `rib-deployment-env-info.xml` file as follows:

```

<aq-jms-servers>
  <aq-jms-server jms-server-id="jms1">
    <jms-server-home>user@host:/u00/db</jms-server-home>
    <jms-url>jdbc:oracle:thin:@host:port:SID</jms-url>
    <jms-port>1521</jms-port>
    <jms-user>riabaq</jms-user>
    <jms-password>riabaq</jms-password>
  </aq-jms-server>
  <aq-jms-server jms-server-id="jms2">
    <jms-server-home>user@host:/u00/db</jms-server-home>
    <jms-url>jdbc:oracle:thin:@host:port:SID</jms-url>
    <jms-port>1521</jms-port>
    <jms-user>aq2</jms-user>
    <jms-password>aq2</jms-password>
  </aq-jms-server>
</aq-jms-servers>

```


RIB-RMS Application Configuration

To configure the RIB-RMS application, complete the following steps:

rib-rms-adapters.xml changes

1. Edit \$RIB_HOME/application-assembly-home/rib-rms/rib-rms-adapters.xml, where \$RIB_HOME is the rib-home directory. For example, /u00/riboas/RIB13.0.3/Rib1302ForAll13xxApps/rib-home/
2. Point the Items_pub_1 adapter to jms-server-id "jms2" as follows:

```
<timer-driven id="Items_pub_1" initialState="stopped" timeDelay="10"
jms-server-id="jms2">
    <timer-task>
        <class
name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl"/>
        <property name="maxChannelNumber" value="1" />
    </timer-task>
</timer-driven>
```

3. Add hospital adapters for jms-server-id "jms2", as follows:

```
<!--Hospital adapter configuration starts here -->
<timer-driven id="sub_hosp_2" initialState="stopped" timeDelay="10"
jms-server-id="jms2">
    <timer-task>
        <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask"/>
        <property name="reasonCode" value="SUB"/>
    </timer-task>
</timer-driven>
<timer-driven id="pub_hosp_2" initialState="stopped" timeDelay="10"
jms-server-id="jms2">
    <timer-task>
        <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask"/>
        <property name="reasonCode" value="PUB"/>
    </timer-task>
</timer-driven>
<timer-driven id="jms_hosp_2" initialState="stopped" timeDelay="10"
jms-server-id="jms2">
    <timer-task>
        <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask"/>
        <property name="reasonCode" value="JMS"/>
    </timer-task>
</timer-driven>
```

rib-rms-adapters-resources.properties

Add the following properties to the resource file:

sub_hosp-2.name=SUB Hospital Retry jms2

sub_hosp-2.desc=Inject messages into from the Error Hospital.

pub_hosp-2.name=PUB Hospital Retry jms2

pub_hosp-2.desc=Re-publish messages from to JMS.

jms_hosp-2.name=JMS Hospital Retry jms2

jms_hosp-2.desc=Re-publish messages from to JMS after JMS is brought up again.

RIB-TAFR Application Configuration

To configure the RIB-TAFR application, complete the following steps:

rib-tafr-adapters.xml

1. Edit \$RIB_HOME/application-assembly-home/rib-rms/rib-rms-adapters.xml, where \$RIB_HOME is the rib-home directory. For example, /u00/riboas/RIB13.0.3/Rib1303ForAll13xxApps/rib-home/
2. Point the ItemsToItemsTL_tufr_1 adapter to jms-server-id jms2, as shown below.
3. Point the ItemsToItemsISO_tufr_1 adapter to jms-server-id jms2, as shown below:

```
<tafrs>
  <message-driven id="ItemsToItemsTL_tufr_1" initialState="stopped"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.ItemsToItemsTLFromRibBOImpl"
jms-server-id="jms2" />

  <message-driven id="ItemsToItemsISO_tufr_1" initialState="stopped"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.ItemsToItemsISOFromRibBOImpl"
jms-server-id="jms2" />
</tafrs>
```

4. Add hospital adapters for jms-server-id jms2.

```
<!--Hospital adapter configuration starts here -->
<timer-driven id="sub_hosp_0" initialState="stopped" timeDelay="20"
jms-server-id="jms2">
  <timer-task>
    <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask"/>
    <property name="reasonCode" value="SUB"/>
  </timer-task>
</timer-driven>

<timer-driven id="jms_hosp_0" initialState="stopped" timeDelay="30"
jms-server-id="jms2">
  <timer-task>
    <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask"/>
    <property name="reasonCode" value="JMS"/>
  </timer-task>
</timer-driven>
```

rib-tafr-adapters-resources.properties

Add the following properties to the resource file:

sub_hosp-2.name=SUB Hospital Retry jms2

sub_hosp-2.desc=Inject messages into from the Error Hospital.

jms_hosp-2.name=JMS Hospital Retry jms2

jms_hosp-2.desc=Re-publish messages from to JMS after JMS is brought up again.

RIB-SIM Application Configuration

To configure the RIB-SIM application, complete the following steps:

rib-sim-adapters.xml

1. Edit \$RIB_HOME/application-assembly-home/rib-rms/rib-rms-adapters.xml, where \$RIB_HOME is the rib-home directory. For example, /u00/riboas/RIB13.0.3/Rib1303ForAll13xxApps/rib-home/

```
<subscribers>
  <message-driven id="Items_sub_1" initialState="running"
jms-server-id="jms2" />
</subscribers>
```

2. Add hospital adapters for jms-server-id jms2.

```
<!--Hospital adapter configuration starts here -->

<timer-driven id="sub_hosp_0" initialState="stopped" timeDelay="20"
jms-server-id="jms2">
  <timer-task>
    <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask" />
    <property name="reasonCode" value="SUB" />
  </timer-task>
</timer-driven>

<timer-driven id="jms_hosp_0" initialState="stopped" timeDelay="30"
jms-server-id="jms2">
  <timer-task>
    <class
name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask" />
    <property name="reasonCode" value="JMS" />
  </timer-task>
</timer-driven>
```

rib-sim-adapters-resources.properties

1. Add the following properties to the resources file:

```
sub_hosp-2.name=SUB Hospital Retry jms2
```

```
sub_hosp-2.desc=Inject messages into from the Error Hospital.
```

```
jms_hosp-2.name=JMS Hospital Retry jms2
```

```
jms_hosp-2.desc=Re-publish messages from to JMS after JMS is brought up again.
```

RIB-RWMS Application Configuration

To configure the RIB-SIM application, complete the following steps

rib-rwms-adapters.xml

1. Edit \$RIB_HOME/application-assembly-home/rib-tafr/rib-tafr-adapters.xml
2. Point the Items_sub_1 adapter to jms-server-id jms2.

```
<subscribers>
  <message-driven id="Items_sub_1" initialState="running"
jms-server-id="jms2" />
</subscribers>
```

3. Add hospital adapters for jms-server-id "jms2".

```
<!--Hospital adapter configuration starts here -->

<timer-driven id="sub_hosp_0" initialState="stopped" timeDelay="20"
jms-server-id="jms2">
  <timer-task>
    <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask" />
    <property name="reasonCode" value="SUB" />
  </timer-task>
</timer-driven>
<timer-driven id="jms_hosp_0" initialState="stopped" timeDelay="30"
jms-server-id="jms2">
  <timer-task>
    <class name="com.retek.rib.j2ee.ErrorHospitalRetryTimerTask" />
    <property name="reasonCode" value="JMS" />
  </timer-task>
</timer-driven>
```

rib-rwms-adapters-resources.properties

sub_hosp-2.name=SUB Hospital Retry jms2

sub_hosp-2.desc=Inject messages into from the Error Hospital.

jms_hosp-2.name=JMS Hospital Retry jms2

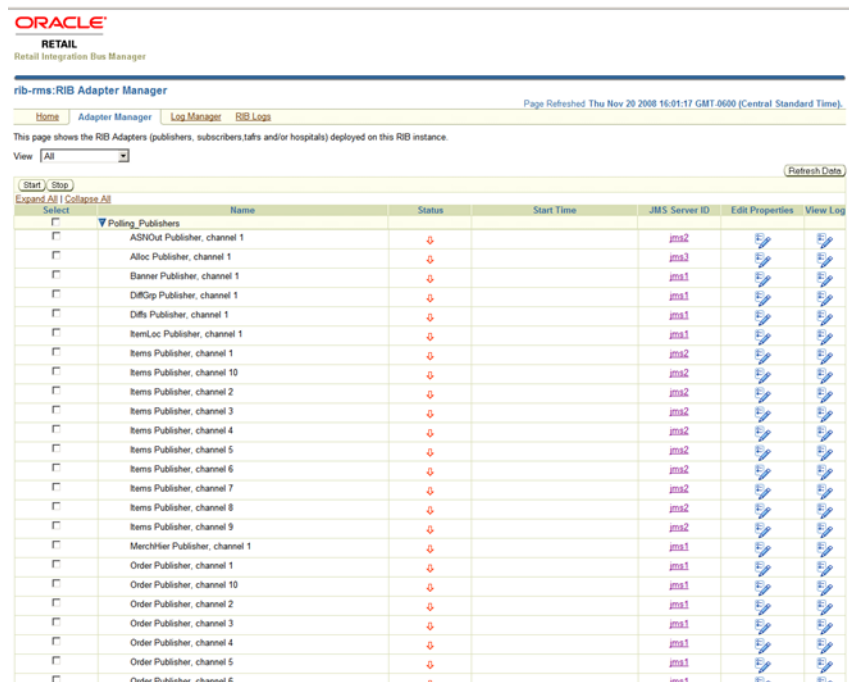
jms_hosp-2.desc=Re-publish messages from to JMS after JMS is brought up again.

Compile and Deploy

Using the RIB Installer or the RIB App Builder command line tools compile, and deploy the new rib-<app>.ears.

RIB-ADMIN-GUI

After deployment check if the adapters configured point to the correct JMS server.



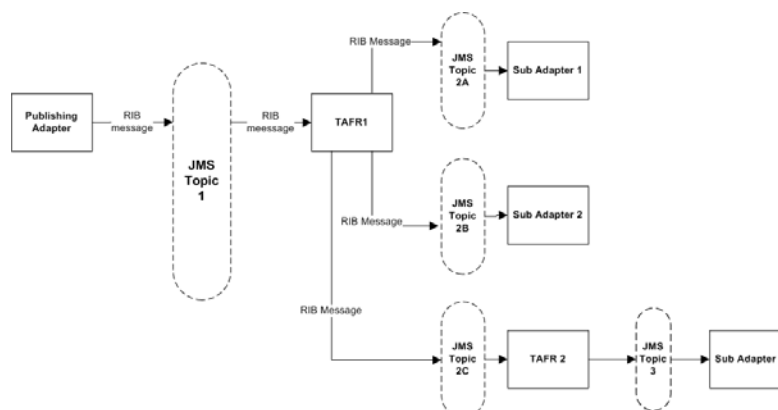
Message Transform, Filtering and Routing (TAFR)

After initial publication, it may be required that a message undergo a series of transformation, filtering, or routing operations. The RIB component that implements these operations is known as a Transformation and Address Filter/Router (TAFR) component.

- A transformation operation changes the message data or contents.
- A filter operation examines the message contents and makes a determination as to whether the message is appropriate to the specific subscriber.
- A router operation examines the message contents and forwards the message to a subset of its subscribers. A filter operation can be considered a special case of a routing operation. Although logically separate operations, for performance reasons, TAFR components usually combine as many as is appropriate.

A TAFR's operation is specific to a message family and the set of subscribers to it. Multiple TAFRs may process a single message for a specific subscriber and different specific TAFRs may be present for different subscribers. Different sets of TAFRs are necessary for different message families.

Multiple TAFRs may be needed depending on the types of subscribers. The following diagram shows the message flow with TAFR.



TAFR Adapter Process

A Transformation Address Filter/Router (TAFR) adapter is used to perform operations on all messages from a single message family. The specific activities performed are dependent on the needs of its subscribers.

- TAFRs in a message flow are an exception rather than a norm. (For example, a tafr that does message transformation just for a single application is NOT encouraged or recommended going forward.) The subscribing application is responsible for filtering and transformation of the payload data.
- Payload content based routing is not recommended as it degrades performance.
- TAFR adapters take advantage of the RIB hospital.
- Error messages are automatically retried by the hospital retry adapter.
- The TAFR configuration makes most of the routing decision dynamic without requiring any configuration.
- TAFRs are standard Java EE Message Driven Beans(MDB).
- Custom TAFR business implementation can be easily plugged in by editing rib-tafr-adapters.xml.

Configuration

Deployment configuration of the TAFR in the javaEE container is handled by the rib-app-builder application. Refer the documentation for the rib-app-builder on how to deploy a TAFR application. The following is an example configuration in rib-tafr-adapters.xml.

```
<tafrs>
  <message-driven id="Alloc_tafr_1" initialState="running"
  tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.AllocToStockOrderFromRibBOImp
  l" />
</tafrs>
```

- message-driven - Indicates that the TAFR is deployed as an MDB.
- id - Indicates the id for this particular adaptor.
- InitialState - Indicates the state of the adaptor.
- Tafr-business-impl - Indicates the implementation class for this TAFR. This class contains the implementation for transformation, filtering and routing of RIBMessage.

Transformation

Message transformation is the process of converting one message family payload to another message family payload.

Filtering Configuration

This involves updating the rib-tafr.properties file with the appropriate information.

The property follows the usual properties naming convention (name=value).

The property that is used for filtering is "for.<tafr name>_tafr.drop-messages-of-types"

Example:

```
for.ItemsToItemsISO_tufr.drop-messages-of-types=
ISCDimCre,ISCDimMod,ISCDimDel,ItemImageCre,ItemImageMod,ItemImageDel,
ItemUdaDateCre,ItemUdaDateMod,ItemUdaDateDel,ItemUdaFfCre,ItemUdaFfMod,ItemUdaFfDe
l,
ItemUdaLovCre,ItemUdaLovMod,ItemUdaLovDel
```

This property should be read as "for ItemsToItemsISO tufr" drop these message types. A comma delimits the message types.

If customization is required then the rib-tufr.properties file needs to be updated for filtering to take place.

Routing

Routing is enabled by default for TAFR's, the RIB infrastructure handles this routing. If a TAFR requires routing based on message content, then implementation classes override the following method.

```
public void routeRibMessage(RibMessage newMsg,MessageRouterIface router) throws
    TafrException {
    router.addMessageForTopic(eventType, newMsg);
}
```

Configuration Example - Facility ID

One of the common configurations requirements is to set up the flow of transfers and orders to RWMS. This is based on Facility ID.

These examples and step-by-step instructions illustrate how to configure a TAFR for one and two RWMS deployments.

Single RWMS Configuration

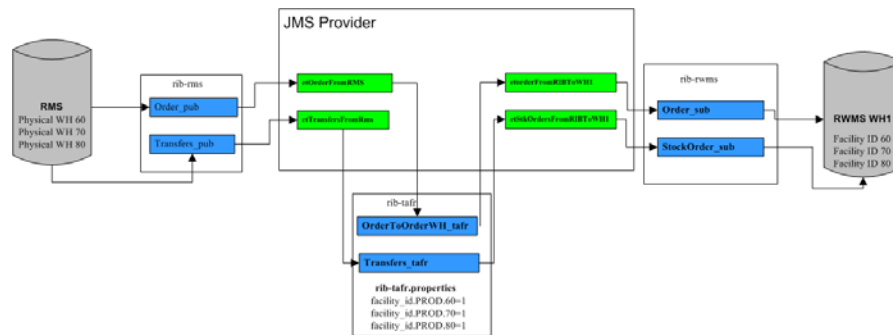
RIB allows stock based transactions to be routed between different RWMS instances. An RWMS instance is assigned to a physical distribution center which may have one or more facilities assigned to it. A company may have one or more distribution centers.

By default the standard RIB configuration is set for a single RWMS instance. This means that all physical warehouses in RMS route directly to a single RWMS instance (in this case denoted as WH1) with each RMS physical warehouse directly correlating to a facility ID in RWMS.

Configuration Process

1. Modify the TAFR routing settings:
 - For each physical warehouse set up in RMS there should be a matching entry in the rib-tufr.properties file. This file resides in the \$RIB_HOME/application-assembly-home/rib-tufr directory and is used by the TAFR adapters, amongst other things, to route messages by facility ID to the correct RWMS instances.

- The file by default contains the following mappings:
 - facility_id.PROD.1=1
 - facility_id.PROD.2=1
 - facility_id.PROD.3=1
- The routing properties are structured in the following way: facility_id.<FACILITY_TYPE>.<RMS_PHYSICAL_WH_ID>=<RWMS_INSTANCE_NAME>
 - <FACILITY_TYPE> - This should match the facility_type.default value in the rib-tafr.properties file, in most cases this would be left as the default value which is "PROD".
 - <RMS_PHYSICAL_WH_ID> - The physical warehouse ID from RMS.
 - <RWMS_INSTANCE_NAME> - The RWMS installation topic name identifier that the warehouses messages will be routed to.
- These mappings need to be edited so that each physical warehouse in RMS has its own entry. The physical warehouses can be found by running the following query in the RMS schema:
 - SELECT wh FROM wh
WHERE wh.wh = wh.physical_wh;
- For the example in the diagram above, physical warehouse IDs 60, 70 and 80 would be returned by the query.
- There is only one RWMS instance (WH1) in this example and the RWMS installation topic name identifier is simply "1". This corresponds to the name of the topics that the RIB routes the messages to. This is also the default name suffix of the RWMS topics in the rib-integration-flows.xml file.

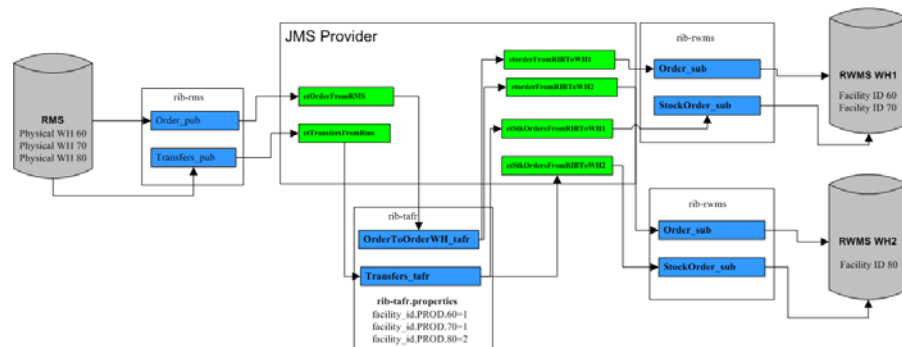


- Therefore, our mapping in the rib-tafr.properties file should read:
 - facility_id.PROD.60=1
 - facility_id.PROD.70=1
 - facility_id.PROD.80=1
2. Deploy the settings to the rib-tafr instance:
- The new TAFR routing settings need to be migrated to the rib-tafr instance. To do this run the following script found in the \$RIB_HOME/deployment-home/bin directory.
 - rib-app-deployer.sh -deploy-rib-app-ear rib-tafr

3. Configuration should now be complete.

Note: For every new physical warehouse added to RMS, the `rib-tafr.properties` file requires a new entry and the new settings need to be deployed to the instance.

Two RWMS Configuration



Description

RIB can be configured to route stock based transactions between multiple distribution centers, each with their own RWMS instance. The purpose of this is to only send stock transactions that will be shipped to or from a certain warehouse to the distribution center that contains that warehouse (facility).

From RMS the user only has visibility to the warehouse that they are performing a stock shipment to or from, the RIB TAFR's then route the messages to the separate RWMS instances based on the configuration stated in the "rib-tafr.properties" file. In the above example, RMS physical warehouses 60 and 70 are assigned to the RWMS instance called WH1 while RMS physical warehouse 80 is assigned to another RWMS instance called WH2.

Configuration Process

- Modify the TAFR routing settings:
 - For each physical warehouse set up in RMS there should be a matching entry in the `rib-tafr.properties` file. This file resides in the `$RIB_HOME/application-assembly-home/rib-tafr` directory and is used by the TAFR adapters, amongst other things, to route messages by facility ID to the correct RWMS instances.
 - The file by default contains the following mappings:
 - `facility_id.PROD.1=1`
 - `facility_id.PROD.2=1`
 - `facility_id.PROD.3=1`

- The routing properties are structured in the following way: facility_id.<FACILITY_TYPE>.<RMS_PHYSICAL_WH_ID>=<RWMS_INSTANCE_NAME>
 - <FACILITY_TYPE> - This should match the facility_type.default value in the rib-tafr.properties file, in most cases this would be "PROD".
 - <RMS_PHYSICAL_WH_ID> - The physical warehouse ID from RMS.
 - <RWMS_INSTANCE_NAME> - The RWMS installation topic name identifier that the warehouses messages are routed to.
 - These mappings need to be edited so that each physical warehouse in RMS has its own entry. The physical warehouses can be found by running the following query in the RMS schema:
 - SELECT wh FROM wh
WHERE wh.wh = wh.physical_wh;
 - Before editing the file for multiple RWMS instance routing, the user should know which RMS physical warehouses are to be routed to the particular RWMS instances and the RWMS installation topic name identifiers.
 - For the example in the diagram above physical warehouse IDs 60 and 70 are routed to RWMS instance WH1 where the RWMS installation topic name identifier is "1" and RMS physical warehouse ID 80 are routed to RWMS instance WH2 where the RWMS installation topic name identifier is "2". To support this the mapping in the rib-tafr.properties file should read:
 - facility_id.PROD.60=1
 - facility_id.PROD.70=1
 - facility_id.PROD.80=2
2. Modify the rib-integration-flows.xml file:
- The RIB requires information on how to route the messages between the two RWMS instances. This is done by adding new entries to the rib-integration-flows.xml file.
 - By default the file contains entries for the RWMS instance "rib-rwms" and all appropriate warehouse based adaptor mappings point to the et<TOPIC_NAME>WH1 topics. When adding multiple RWMS instances all the entries for RWMS need to be duplicated for the second instance "rib-rwms2" and all adaptor mappings for the new instance need to point to et<TOPIC_NAME>WH1 topics.
 - The entire "RWMS PUBLISHERS" section in the integration-flows.xml file needs to be duplicated and all new entries need to be changed to the second RWMS instance name of "rib-rwms2" for example:
 - <node id="rib-rwms2.ASNIn_pub" app-name="rib-rwms2"
adapter-class-def="ASNIn_pub"
type="DbToJms"><in-db>default</in-db><out-topic>etASNIn</out-topic></node>

- Each RWMS adapter mapping in the file that follows the et<TOPIC_NAME>WH1 format needs to be duplicated as well but needs to point to et<TOPIC_NAME>WH2. With the original adapter mapping and the new adapter mapping to route to the second RWMS instance, for the Stock Order adapter, the entry should be similar to the following example:
 - `<node id="rib-rwms.StockOrder_sub" app-name="rib-rwms" adapter-class-def="StockOrder_sub" type="JmsToDb"><in-topic>etStkOrdersFromRIBToWH1</in-topic><out-db>default</out-db></node>`
 - `<node id="rib-rwms2.StockOrder_sub" app-name="rib-rwms2" adapter-class-def="StockOrder_sub" type="JmsToDb"><in-topic>etStkOrdersFromRIBToWH2</in-topic><out-db>default</out-db></node>`
- The rib-integration-flows.xml file can be edited and then deployed in the following way:
 - `cd $RIB_HOME/application-assembly-home/rib-func-artifacts`
 - `jar -xvf rib-func-artifact.war`
 - `cd integration`
 - `vi rib-integration-flows.xml`
 - Make the changes specified above.
 - `jar -uvf rib-func-artifact.war integration/rib-integration-flows.xml`
- 3. Deploy the settings to the rib-tafr instance:
 - The new TAFR routing settings need to be migrated to the rib-tafr instance, to do this run the following script found in the \$RIB_HOME/deployment-home/bin directory.
 - `rib-app-deployer.sh -deploy-rib-app-ear rib-tafr`
- 4. Deploy the settings to the functional artifact:
 - The new integration flow settings need to be migrated to the rib-func-artifact instance, to do this run the following script found in the \$RIB_HOME/deployment-home/bin directory.
 - `rib-app-deployer.sh -deploy-rib-func-artifact-war`
- 5. Configuration should now be complete.

Note: For every new physical warehouse added to RMS the rib-tafr.properties will require a new entry and the new settings will need to be deployed to the instance.

Note: Multiple RWMS instances can be added as per the instructions above.

Changes to this configuration affect the following TAFRS.

- AllocToStockOrder
- ASNOutToASNInLoc
- CustOrderToStockOrder
- ItemLocToItemLocLoc
- OrderToOrderWH
- PendReturnToPendReturnWH
- RTVReqToRTVReqLoc
- TransfersToStockOrder
- WOInToWOInWH
- WOOOutToWOOOutWH

Diagnostic and Monitoring Tools

Overview

The RIB Diagnostic and Monitoring Tool Kit (RDMT) is a collection of command line tools, written in UNIX shell script along with supporting Java classes packaged in jar files. There are various tools to address these areas:

- Installation Verification (reports)
- Operations (scanning and monitoring)
- Production (scanning and quick triage)
- Test and Support (scanning and fine grain control)
- AQ JMS support and tools

The RIB is a complex collection of distributed components, and there are a variety of GUI tools. These tools augment those tools and provide command line control and access to all levels of the RIB functions. The tools are written to be stand-alone and to provide examples and capabilities for integration into enterprise level OSS and management frameworks, such as Oracle Enterprise Manager, Tivoli or HP OpenView.

Functionality

- Support for Oracle AS - OC4J RIB Version.
- Support for both local/remote installation.
- Support for Oracle Streams AQ JMS as the JMS Provider.
- Support for RIB Hospital databases.
- Support for RAC Configured Databases.
- Support for JMX control of all RIB Components
- Support for message Pub/Sub.

All of the scripts are written to be examples of specific functionality, but have been integrated into a simple tool kit that is configuration driven and has a very simple character-based menu system provided to allow a single point of integration.

RDMT and User Roles and Responsibilities

The tools are written to provide capabilities and examples of functions for users with various roles and responsibilities.

The primary target role is the RIB administrator as someone who is responsible for the installation, configuration, and deployment of the RIB components. The ribadmin is also usually then tasked with ongoing RIB Software Life Cycle management as well as production operation support. This person has full permissions on all of the application server directories and has full read and execute permissions on the Oracle Application Server tools such as opmnctl and the OC4J instance subdirectories.

Local or Remote Installations and Capabilities

RDMT can be installed by a user on the system that may or may not have the RIB/OAS environment. RDMT tools support both local and remote OC4J functions via JMX.

In remote installs, some scripts in the toolkit expect the installing user to have read permissions of the OAS home RIB OC4J sub-directories or require execute permission of opmnctl. Therefore, these will return file or permissions errors.

Once the roles and responsibilities of the user have been understood and established, follow the installation instructions. See the *Oracle Retail Integration Bus Installation Guide*.

RDMT Support jars

.jar File	Description
rib-jms-api.jar	Support classes for jms.
rib-jms-admin-aq-impl.jar	Specific impl for AQ
rib-jms-admin.jar	Support classes for AQ admin
jmx-cmd-line-ui.jar	JMX client
rdmt.jar	Support tools

Sample XML Messages

The RDMT release packages a zip file of example xml messages for each message family and message type payload. The zip file is located in the RDMT subdirectory testmsgs.

Tools Overview

RDMT has been designed as a set of command line tools that can serve generally needed functions with examples for retailer specific uses, and to provide a ready to use, low impact application. In many situations, it is a requirement to have tools that consume low bandwidth to manage and triage the RIB. These tools provide alternatives to the GUI based tools. The other common requirement is for control and monitoring command line scripts that can be incorporated into enterprise operations scheduling frameworks, such as Autosys or Appworkx.

RDMT has been organized around a very simple character-based menu system that can be modified to suit the deployment roles and responsibilities and to provide some structure by functional area.

RDMT as an Application

SCRIPTDIR

All of the tools have been organized into a simple application and accessible via the character-based menu system. All of the tools have been designed to execute relative to a based directory (readmit). Within that base directory all tools expect to find all of the support libraries and other scripts. To execute any tool, all that is needed is to set the base directory as an environmental variable; SCRIPTDIR.

Setup

RDMT can be installed either inside/outside rib-home or in a remote server. To install inside/outside rib-home, the installation script (configbuilder.sh) automatically fetches all necessary configuration parameters from rib-deployment-env.-info.xml from inside the specified rib-home/deployment-home/conf directory.

However, if RDMT is installed in a remote server, the installation script prompts for the RIB deployment environment specific values. All of the scripts have been designed to be configuration driven by property files. The setup proces updates these files.

Current Configuration

Because there are multiple configurations possible with the fully distributed RIB, all of the tools are designed to work against a set of property files that provide the values need to execute. Collectively these are call "current". In the menu system there are functions that allow configuration of n-number of configurations. For example there can be n-number of rib-<app>'s configured. Other functions set runtime configuration files to these "current" configurations. All tools then read these "current" values and perform tasks against them.

RDMTLOGS

All of the tools are designed to produce logs and to use temporary files. The location of these logs is a configuration parameter and defaults to RDMTLOGS within the rdmt base directory.

RDMT RAC Support

RDMT supports RAC configured databases. The user needs to provide the entire database connection URL when prompted during the setup process.

The user needs to provide the same JDBC connection URL for AQ JMS or Hospital Databases as supplied in rib-deployment-env-info.xml during the RIB installation. The user can provide either thin JDBC connection URL or long JDBC connection URL format (in case of RAC configured database) depending upon the user's environment.

The user needs to provide only the database username, password, and connection URL in order to configure for any AQ JMS/ Hospital database. The below example shows the configuration for an hospital database during the RDMT setup process.

Example:

```
Enter RMS database Connection URL [needs_value]: jdbc:oracle:thin:@(DESCRIPTION
=(ADDRESS_LIST =(ADDRESS = (PROTOCOL = TCP)(HOST = mspvip72)(PORT =
1521))(ADDRESS = (PROTOCOL = TCP)(HOST = mspvip73)(PORT = 1521))(LOAD_
BALANCE = yes))(CONNECT_DATA =(SERVICE_NAME = orcl)))
```

```
You entered: jdbc:oracle:thin:@(DESCRIPTION =(ADDRESS_LIST =(ADDRESS =
(PROTOCOL = TCP)(HOST = mspvip72)(PORT = 1521))(ADDRESS = (PROTOCOL =
TCP)(HOST = mspvip73)(PORT = 1521))(LOAD_BALANCE = yes))(CONNECT_
DATA =(SERVICE_NAME = orcl)))
```

Enter to Continue? y/n/q [y]:

RDMT Main Menu

This is the main entry point into the RDMT tool kit application. Most selections invoke other submenus, but for convenience several tools, include in other submenus, are directly accessed from this menu.

```
soa1@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RDMT Diagnostic & Monitoring Tools
Main Menu

This Host: burchda-pc
RDMTLOGS : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RDMTLOGS
RMS DB : rms12en3@soa1
TAFR DB : tafrhosp@soa1
JMS Type : ojms
JMS HOST : burchda-pc
JMS Port : 1521
JMX CFG : jmx1.conf
OC4J : burchda-pc#6003
Instance : rib-rms-oc4j-instance
RIB APP : rib-rms

1 - OC4J/JMX Utilities Menu      7 - RIB Health Menu            13 - RIB Admin menu
2 - JMS Utilities Menu          8 - Hospital Scan Menu        14 - Archive RDMTLOGS
3 - FUS/SUB Msg Menu           9 - JMS Topic Scan           15 - View history Log
4 - Switch OC4J/JMX Config     10 - JMS Switch              16 - RIB Health scan
5 - Scan RIB Logs              11 - JMS Config
6 - Scan RIB Logs - delta      12 - View Scan Log Exceptions

99 - Logout
Selection: █
```


OC4J/JMX Utilities

Script Used:

rdmt_jmx_submenu

Description:

This menu option exposes the various tools that use JMX to interact with the OC4J instance and to control or status the current rib-<app> and its components.

```

jms1@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RIB Diagnostic & Monitoring Tools
OC4J/JMX SubMenu

This Host: burchda-pc
RIMTLOGS : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RDMTLOGS
RMS DB   : rms1pc6003
TAFR DB  : tafrohsp@scal
JMS Type : ojms
JMS HOST : burchda-pc
JMS Port : 1521
JMX CFG  : jmx1.conf
OC4J    : burchda-pc6003
Instance: rib-rms-oc4j-instance
RIB APP  : rib-rms
Type     : sub
Adapter  : default

Selections:

1 - JMX cmdline Utility           5 - Get OC4J Instance State       9 - Start ALL Adapters
2 - OC4J/JMX Config Utility       6 - Get RIB App State            10 - Stop ALL Adapters
3 - Switch OC4J/JMX Config       7 -                               11 - Status ALL Adapters
4 - Status ALL config'd OC4J     8 -                               12 - Bounce ALL Adapters

13 - Get Logger Name(s)          17 - Status ALL SUB              21 - Get Adapters SUB
14 - Get Logging Levels          18 - Status ALL PUB              22 - Get Adapters PUB
15 - Set Logging Level(s)        19 - Status ALL Hosp            23 - Get Adapters Hosp
16 - Get ALL Levels (xml)        20 - Status ALL TAFR            24 - Get Adapters TAFR

25 - Status Named Adapter        29 - Start ALL SUB              33 - Stop ALL SUB
26 - Bounce Named Adapter       30 - Start ALL PUB              34 - Stop ALL PUB
27 - Start Named Adapter(force)  31 - Start ALL Hosp            35 - Stop ALL Hosp
28 - Stop Named Adapter         32 - Start ALL TAFR            36 - Stop ALL TAFR

99 - Main Menu
Selection: █

```

Script	Description
jmx_app_state.sh	status of the currently active rib application
jmxcmdline_interactive.sh	A wrapper to the jmx client support classes. This script directly invoke the interactive functions.
jmxcmdline.sh	General wrapper for other tools to invoke specific jmx functions.
jmxconfig.sh	There are multiple configurations possible with the fully distributed J2EE RIB. This utility is used to manage the configuration files that allow the rdmt tools to access them. This option can also be used to switch/re-configure the previously configured OC4J/JMX configuration.
jmx_get_logger_names.sh	RIB app logging tool
jmx_get_logging_levels_all.sh	RIB app logging tool
jmx_get_logging_levels.sh	RIB app logging tool
jmx_set_logging_levels.sh	RIB app logging tool
jmx_managed_adapters.sh	Common script used by all jmx tools to interact with the jmx client jar. Many of the menu selections merely set the calling parameters to this tool.
jmx_OC4Jribstatus.sh	Get the run state of the rib-app OC4J instance and application for all configured.
jmx_OC4Jrib_scan.sh	For all configured rib-app scans the state of the instance, app and adapters.
jmx_oc4j_state.sh	Status of the currently active OC4J instance.

Script	Description
jmx_switch_config.sh	This utility is used to switch the active configuration file that the rdmt tools use.
jmx_tester.sh	Test script for testing arbitrary jmx commands within the RDMT framework. This is not a menu selection since it requires user editing.

JMS Tools

Script Used:

rdmt_jmsutil_AQ_submenu

Description:

This menu option exposes the various JMS functionalities available in the tool kit. For convenience some tools in other submenus are presented here as well.

```

soa1@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RIB Diagnostic & Monitoring Tools
JMS Utilities SubMenu

This Host: burchda-pc
RDMLLOGS : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RDMLLOGS
RMS DB   : rms12en3@soa1
TAFR DB  : taf1rhosp@soa1
JMS Type : ojms
JMS HOST : burchda-pc
JMS Port : 1521
JMX CFG  : jmx1.conf
OC4J     : burchda-pc:6003
Instance : rib-rms-oc4j-instance
RIB APP  : rib-rms

Selections:
1 - AQ JMS Utility           5 - JMS Topic Scan (all)    9 - JMS Delete Message(s)
2 - JMS Topics (list)       6 - JMS Topic Scan (w/mqgs) 10 - JMS Delete Subscriber
3 - JMS Topics Subscriber List 7 - JMS Topic Msg Dump     11 - JMS Msg Properties
4 - JMS Switch              8 - JMS Config             12 -
99 - Main Menu

Selection: █
    
```

Script	Description
ajjmscmdline.sh	Common script used by all JMS tools to interact with the AQ JMS client jar. Many of the menu selections merely set the calling parameters to this tool.
deletemsgAQ.sh	Delete message(s) on a specified JMS topic for a specified subscriber.
dmpmsgAQ.sh	Dump a message(s) on an AQ JMS topic for a specified subscriber.
dmp_msg_statsAQ.sh	Dump properties of message(s) on an AQ JMS topic for a specified subscriber.
jmsconfig.sh	RDMT supports configuration of n-number of JMS Providers. This utility configures the values to support. rdmt_jms_submenu is used to make one the current configuration.
jmstoticsAQ.sh	Query the AQ JMS for all of the topics and the message count on each topic.
jmstoticsAQ_scan.sh	Query the AQ JMS for just the topics with message counts.
jmsutil.sh	This utility provides direct access to the AQ JMS java API utilities.

PUB/SUB Msg Tools

Script Used:

rdmt_msgutil_submenu

Description:

All of the tools in this menu are wrappers that expose functions in the java utilities rib-jms-api.jar included in the tool kit library. These are general purpose pub/sub functions that are written to support the various JMS Providers for the RIB, e.g. AQ JMS.

In addition to these, we have a utility to test any TAFR's business implementation. By providing the necessary parameters which are prompted, the user can see the output of a particular TAFR either on the console or in the specified file.

```

soa1@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RIB Diagnostic & Monitoring Tools
PUB/SUB Utilities Submenu

This Host: burchda-pc
RDMTLOGS : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RDMTLOGS
RMS DB   : rms12en3@soa1
TAFR DB  : tafrhoap@soa1
JMS Type : ojms
JMS HOST : burchda-pc
JMS Port : 1521
JMX CFG  : jmx1.conf
OC4J     : burchda-pc:6003
Instance : rib-rms-oc4j-instance
RIB APP  : rib-rms

1 - Publish Msg Utility      4 - SUB Receipt test msg      7 - PUB Multiple - file
2 - Subscribe Msg Utility    5 - PUB Receipt test msg      8 - PUB Multiple - dir
3 - JMS Topic Scan          6 -                            9 - PUB Publish Utility
99 - Main Menu

Selection: █

```

Script	Description
pubmsgutil.sh	Provides direct access the java api by prompting for all of the expected command line values it expects.
submsgutil.sh	Provides direct access the java api by prompting for all of the expected command line values it expects.
submsg.sh	Higher level wrapper that uses the configuration values to shortcut the values needed to call the java api's.
pubmsg.sh	Higher level wrapper that uses the configuration values to shortcut the values needed to call the java api's.
pubmsgutil_multiple.sh	Script that supports multi-message publication.
pubmsgutil_directory.sh	Script that supports multi-message publication.
ejbpub_util.sh	Utility to wrapper the EJB Message Publish java api.
ejbpubutil_multiple.sh	Script that supports multi-message publication through EJB Message Publish java api.
ejbpubutil_directory.sh	Script that supports multi-message publication through EJB Message Publish java api.
tafrmsgutil.sh	Script that can be used to test any TAFR Business implementation.

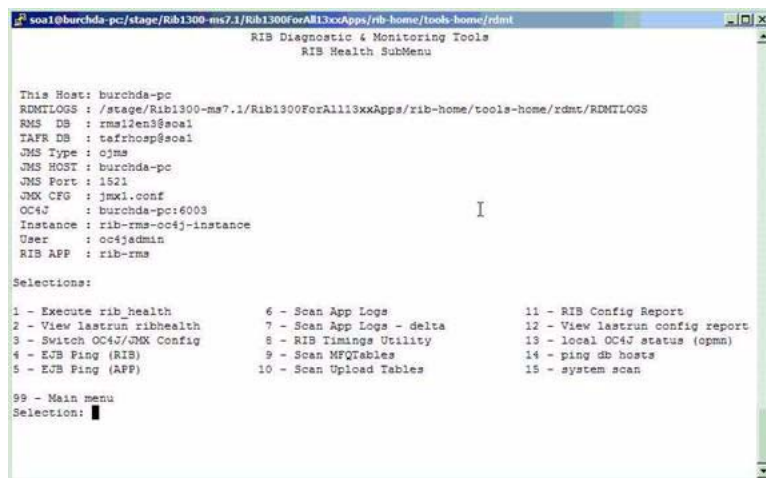
RIB Health Tools

Script Used:

rdmt_ribhealth_submenu

Description:

This option leads the user to the submenu through which the user can get the current RIB health status.



Script	Description
cron_ribhealth.sh	See "RIB Health" in this chapter.
ribejbping.sh	See "EJB Ping (RIB)" in this chapter.
appejbping.sh	See "EJB Ping (RIB)" in this chapter.

Script	Description
loglookoc4j.sh	See " Scan RIB Logs / Scan RIB Logs (Delta) " in this chapter.
loglookoc4j_delta.sh	See " Scan RIB Logs / Scan RIB Logs (Delta) " in this chapter.
timingsutil.sh	See " RIB Timings Utility " in this chapter.
ttestrms.sh	This script scans a list of RMS MFQ tables using a JDBC connection. (see mfqtables.conf).
ttestrdm.sh	This script scans a list of RWMS Upload tables using a JDBC connection. (see uploadtables.conf).
OC4JConfigReport.sh	See " RIB Configuration Report " in this chapter.

Hospital Scan Tools

Script Used:

rdmt_hosp_submenu

Description:

This option leads the user to the RIB hospital for various applications submenu through which the user can get the current RIB hospital status.

```

soal@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RIB Diagnostic & Monitoring Tools
Hospital Scan Submenu

This Host: burchda-pc
RDMTLOGS : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RDMTLOGS
RMS DB   : rms12en3@soal
TAFR DB  : tafrrhosp@soal
JMS Type : ojms
JMS HOST : burchda-pc
JMS Port : 1521
JMX CFG  : jmx1.conf
OC4J     : burchda-pc:6003
RIB APP  : rib-rms

1 - RMS Hospital Scan           7 - RMS Hosp Failures Scan
2 - RWMS Hospital Scan         8 - RWMS Hosp Failures Scan
3 - SIM Hospital Scan           9 - SIM Hosp Failures Scan
4 - TAFR Hospital Scan         10 - TAFR Hosp Failures Scan
5 - RPM Hospital Scan          11 - RPM Hosp Failures Scan
6 - AIF Hospital Scan          12 - AIF Hospital Scan

99 - Main Menu
Selection: █

```

Script	Description
htest.sh	This script calls a java class that uses JDBC to access the database(s) containing the Hospital tables. It scans the Hospital RIB_MESSAGES table and report thing such as: <ul style="list-style-type: none"> how many messages (row count), how many have exceed the retry count, how many messages of a topic as present.
htest_failures.sh	This script calls a java class to scan the RIB Hospital Message Failure table using a JDBC connection.

RIB Admin Tools

Script Used:

rdmt_ribadmin_submenu

Description:

The ribadmin script was stand-alone in previous RIB releases. Those functions have since been moved into this menu item. The ribadmin.sh script is sourced to make the existing functions available to the menu items and the variables that the scripts expected have been mapped to rdmt configuration files.

Since many of the functions expect execute permissions on opmnctl as well as read/write permissions on the OAS directory tree, this menu and the tools are designed for the ribadmin role.

If RDMT is installed in the RIB App Builder rib-home and that is accessible and configured, then this menu exposes the rib-app-builder menu selection. A test is performed to verify the rib-home is configured, if not, then the selection will not appear.

```

+ ssh1@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RIB Diagnostic & Monitoring Tools
OC4J ribadmin SubMenu

This Host: burchda-pc
RMS_HOME : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RMTLOGS
RMS_DB : rms12en@scal
TAFR_DB : taf12en@scal
JMS Type : ojms
JMS_HOST : burchda-pc
JMS_Port : 1351
JMK_CFG : jmk1.conf
OC4J : burchda-pc:6003
Instance : rib-rms-oc4j-instance
RIB_APP : rib-rms
Type : sub
Adapter : default

Selections:

 1 - bounce instance (opmn)      6 - stop instance (opmn)      11 - start instance (opmn)
 2 - bounce all adapters (jmk)   7 - stop all adapters (jmk)  12 - start all adapters (jmk)
 3 - bounce named adapter (jmk)  8 - stop Named adapter (jmk) 13 - start adapter (jmk)
 4 - local OC4J status (opmn)    9 - Status ALL Adapters(jmk) 14 - startForced adapters (jmk)
 5 - local RIB OC4J status (opmn) 10 - test opmn (opmn)        15 - startforced adapter (jmk)

16 - View managed adapter.xml    19 - View opmn.xml           22 - View adapter log
17 - View rib-app.properties    20 - View opmn.log           23 - Archive APP logs
18 - View rib-system.properties 21 - View log4j.xml          24 - Switch OC4J/JMK Config

25 - Edit managed adapter.xml
26 - Edit log4j.xml
27 - rib-app-builder tools menu

99 - Main Menu

Selection: █

```

Script	Description
ribadmin.sh	This script contains most all of the functions that are exposed by this menu.

RIB App Builder Tools

Script Used:

rdmt_ribappbuilder_submenu

Description:

This option leads the user to the RIB App Builder tools installed in the rib-home. For a description of the tools and usage, see Chapter 2, "[Application Builder](#)".

```

soa1@burchda-pc:/stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt
RIB Diagnostic & Monitoring Tools
RIB App Builder SubMenu

This Host: burchda-pc
RDMTLOGS : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home/tools-home/rdmt/RDMTLOGS
RIB-HOME : /stage/Rib1300-ms7.1/Rib1300ForAll13xxApps/rib-home
RMS DB : rms1en@soa1
TAFR DB : taf1rhap@soa1
JMS Type : eJMS
JMS HOST : burchda-pc
JMS Port : 1521
JMX CFG : jmx1.conf
OC4J : burchda-pc16003
Instance : rib-rms-oc4j-instance
RIB APP : rib-rms
Type : sub
Adapter : default

Selections:

1 - View/Edit rib-deployment-env-info.xml      5 -
2 - Execute rib-app-compiler                  6 - View compiler logfile
3 - Execute rib-app-deployer                  7 - View deployer logfile
4 - Execute inventory-management              8 - View inventory logfile

Adapter-controller functions

9 - Start Flow                                13 - Start Adapter
10 - Stop Flow                                14 - Stop Adapter
11 - Start Adapters By Type                   15 - Test Durable Subscriber For Adapter
12 - Stop Adapters By Type                   16 - Test Durable Subscriber For rib-app

99 - Main Menu

Selection: █
  
```

Scan RIB Logs / Scan RIB Logs (Delta)

Scripts Used:

loglookoc4j.sh, scan_logs.sh, loglookoc4j_delta.sh, scan_logs_delta.sh

Description:

These scripts perform a log scan to look for a pattern ("Exception") in all of the log files in a directory of the currently active OC4J instance. Since they perform file system scans, the RDMT tools must be installed on the host that contains these logs and must have read permissions on the directories and the files.

As the tool scans all of the logs it writes the matches to a single log file. This becomes the base file. A second script (delta) looks for the same pattern, but compares the matches against the base file, and outputs only new ones. The primary scripts are the scan_logs.sh and the scan_logs_delta.sh. The files created and used by these scripts are controlled by the rdmt.conf entries.

The location of these files should be sized to handle large text files, since it is possible for there to be many exceptions and these will contain the consolidated entries from potentially hundreds of logs. The location is the tmp files parameter set during RDMT install and is defaulted to RDMTLOGS/tmp.

RIB Health

Script Used:

cron_ribhealth.sh

Description:

This utility is a general purpose script that invokes other tools and functions in the tool kit to take a snapshot in time of the run-time state of all of the configured rib-apps. Because this script uses specific jar files as well as other tools in the tool kit, it requires that SCRIPTDIR be set to the rdmt base directory.

It produces a rib_health report on the console as well as a time-stamped log written to the RDMTLOGS/tmp directory. Each execution of the script produces one of the logs, and then over-writes a log called lastrun as well. There is a menu selection that views the lastrun report.

RIB Configuration Report

Script Used:

OC4JConfigReport.sh

Description:

After the RIB has been installed and configured on OAS, the user can verify all the installations and configurations using RDMT. In order to achieve this functionality a script has been provided and linked in the RDMT menu which scans the installations and configurations of rib applications deployed using the configuration settings in the RDMT configuration files.

It is recommended that after the installation is complete, the user runs the RIB Config Report utility under the RIB Health Menu option. This outputs the results of the scan on the console as well as in an output file under the specified TEMP FILES DIRECTORY. Each run produces a time-stamped log and updates a log called lastrun-config that is viewable from a menu selection.

This script was written to take a snapshot of the RIB environment and test for basic configuration issues. This utility performs the following functions.

- Provides the local oc4j status using opmnctl.
- Provides the status of all OC4J instances.
- Displays all the RIB instances and their status and PIDS.
- Displays all of the RIB apps and shows the status for each RIB OC4J instance and application.
- Scans the opmn.xml and displays the RIB instances configured and RIB instance settings.
- Provides the directory contents of ORACLE_HOME/j2ee directory.
- Provides the directory contents for each instance configured under the ORACLE_HOME/j2ee directory structure.
- Scans and displays the rib-system.properties for each rib-<app>

- Perform the JMX related functions like scanning configurations for each of jmxX.conf files and displays the status of the adapters, Exceptions is any by scanning the logs and so on.
- Performs checks using JMS configuration.
- Performs checks using Hospital configurations.

RIB Timings Utility

Script Used:

timingsutil.sh

Description:

The RIB can logs a set of timing entries whenever it creates, transform, routes, filters, or subscribes to messages on the RIB. This utility on functions when RDMT is installed on the host system where the logs are generated and the RDMT user has permissions to read the log directories.

The timingsutil.sh script is a wrapper to the RIBTimings java class. This script runs the RibTimings post processor on an adapter's timing file. It prompts for the adapter name then it analyzes the timings logs for that particular adapter. The output is to the screen as well as a file of CSV format in the RDMT temp files directory; RDMTLOGS/tmp/<adapter>.csv. which contains the detailed analysis of timings logs.

This csv file can be directly viewed by Excel. To use this function, the adapter timing log parameters must be set to DEBUG.

JMS Publish Utility

Script Used:

pubmsgutil.sh

Class:

RibJmsPublisherTester

Description:

This utility was developed to publish a message to a JMS topic. The pubmsgutil.sh is a wrapper script to RibJmsPublisherTester. It calls the JMS API and publishes the message on to the topic.

Usage:

- " java com.retek.rib.jms.RibJmsPublisherTester
- -j <JMS provider>
- -x <JMS URL>
- -u <JMS username>
- -p <JMS password>
- -t <topicName>
- -n <xmlFileName>
- -wm <should messages be wrapped in RIBMessage envelop>
- -f <messageFamily>

- -m <messageType>
- -ri <routingInfo>
- -tv<threadValue>
- -nt <<number of times - optional (default value is 1)>>

EJB Publish Utility

Script Used:

ejbpub_util.sh

Class:

RibMessagePublisherClient

Description:

This utility was developed to wrapper the EJB Message Publish Java API. The ejbpub_util.sh is a wrapper script to RibMessagePublisherClient. It calls the specified EJB service and publishes the message on to the AQ JMS. It uses the platform service to publish the message. The user needs to specify the necessary parameters.

Usage:

- " java com.oracle.rib.rdmt.util.RibMessagePublisherClient
- -host <<host | 1>>
- -port <<RMI port -- required>
- -app <<App name -- required>>
- -fa <<family -- required>>
- -ty <<type -- required>>
- -us <<user | optional>>
- -pw <<password | optional>>
- -fi <<file -- required>>

TAFR Msg Utility

Script Used:

tafrmsgutil.sh

Class:

TestAnyTafrBOImpl

Description:

This utility is developed to test any TAFR Business implementation. This helps to check the output of a particular TAFR by providing the necessary prompted arguments. It prompts the user for the TAFR name, the location of the input sample file, adapter id, and the output file name to direct the output (optional). If the output file name is not specified, the default output is routed to stdout. Once provided the valid arguments, the user can see the output of that particular TAFR.

Sample Output:

```

-----
TAFR TEST UTILITY
-----

This utility was developed to test any TAFR Business implementation.
These are designed to help diagnose/validate the TAFR implementation.

Usage: java TestAnyTafrBOImpl
      <tafr name -- required>
      <file path -- required>
      <true|false print message data -- required>
      <adapter-id -- required>
      <file name -- optional | default output routed to stdout>

Do you wish to continue ?
Enter to Continue? y/n/q [y]:

Existing parameter values:
StoresToStoresPhys /u00/rib-home/tools-home/rdmt/testmsgs/PODesc.xml true
StoresToStoresPhys_tufr_1

Do you wish to execute using existing values?

Enter to Continue? y/n/q [y]: n

Enter TAFR Name [StoresToStoresPhys]:
You entered: StoresToStoresPhys
Enter to Continue? y/n/q [y]:

Enter the Input message file and path
/u00/rib-home/tools-home/rdmt/testmsgs/PODesc.xml]:
/u00/rib-home/tools-home/rdmt/testmsgs/storedel.xml
You entered: /u00/rib-home/tools-home/rdmt/testmsgs/storedel.xml
Enter to Continue? y/n/q [y]:

Print Message Data? [ true | false] [true]:
You entered: true
Enter to Continue? y/n/q [y]:

Enter Adapter ID [StoresToStoresPhys_tufr_1]:
You entered: StoresToStoresPhys_tufr_1
Enter to Continue? y/n/q [y]:
Enter the Output file name and path if required (default output routed to stdout)
[]:
You entered:
Enter to Continue? y/n/q [y]:
log4j:WARN No appenders could be found for logger
(com.retek.rib.domain.ribmessage.bo.RibMessagesFactory).
log4j:WARN Please initialize the log4j system properly.
Trying to load rib-system.properties from
class.path=lib/rib-private-tafr-business-impl.jar:../../application-assembly-home/
rib-tafr/
rib-system.properties loaded from
file:/u00/rib-home/application-assembly-home/rib-tafr/rib-system.properties
Trying to load rib-tafr.properties from
class.path=lib/rib-private-tafr-business-impl.jar:../../application-assembly-home/
rib-tafr/
rib-tafr.properties loaded from
file:/u00/rib-home/application-assembly-home/rib-tafr/rib-tafr.properties

```

```

*****RIBMESSAGES TRANSFORMED DATA*****
<?xml version="1.0" encoding="UTF-8"?>
<RibMessages xmlns="http://www.oracle.com/retail/integration/rib/RibMessages"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.oracle.com/retail/integration/rib/RibMessages
file:///C:/rib-home/application-assembly-home/rib-tafr/integration/xsd/RibMessages
.xsd">
  <ribMessage>
    <family>Stores</family>
    <type>storedel</type>
    <ribmessageID>11.0.x|RIBMessagePublisherEjb|null|2006.01.23
11:45:46.052|510</ribmessageID>
    <routingInfo>
      <name>loc_type</name>
      <value>p</value>
    </routingInfo>
    <routingInfo>
      <name>dest_id</name>
      <value/>
      <detail>
        <dtl_name>loc_type</dtl_name>
        <dtl_value>p</dtl_value>
      </detail>
    </routingInfo>
    <publishTime>2006-01-23 11:45:46.052 CST</publishTime>
    <messageData>&lt;AllocDesc&gt;&lt;store&gt;5&lt;/store&gt;
&lt;/AllocDesc&gt;
&lt;/messageData>
    <customData/>
    <customFlag>F</customFlag>
  </ribMessage>
</RibMessages>
*****PAYLOAD DATA*****
<?xml version="1.0" encoding="UTF-8"?>
<AllocDesc>
<store>5</store>
</AllocDesc>
*****
***OUT MESSAGE WILL BE ROUTED TO THE FOLLOWING TOPIC(S)*****
*****
1) etStoresPhys
*****

```

EJB Ping (RIB)

Script Used:

ribejbping.sh

Class:

RibMessageInjectorClient

Description:

This utility is developed to ping any RIB-<app> EJB component. This helps to test the connectivity between the rib-<app> and the <app> where app refers to RMS, SIM, RWMS, RPM, and AIP. This uses the platform configuration to call the EJBs. The user needs to put the necessary config files namely services_*.xml, jndi_providers_*.xml and service_flavors_*.xml of the particular rib-<app> under \$HOME/rdmtXX/rib-app/extracted_conf_from_rib-<app>/retek folder before using this utility option. The user can also use the jndi_config_extractor.sh script for extracting the necessary config files from the system.

The jndi_config_extractor.sh script can be found under the RDMT home directory. The user needs to copy the jndi_config_extractor.sh script to the machine where the particular rib-<app> is deployed and then execute the script. The user can execute this script from any place in that machine. The user also needs to set JAVA_HOME before running this script. This script will extract the files namely services_*.xml, jndi_providers_*.xml and service_flavors_*.xml files of that particular rib-<app> instance by checking the entire file system. All the extracted xml files are finally zipped into xmlfiles.zip in the current directory from where this script was executed. The user then needs to transfer/ftp this xmlfiles.zip into the server where RDMT is installed and put these files under \$HOME/rdmtXX/rib-app/extracted_conf_from_rib-<app>/retek folder.

After performing the above steps, the user can execute the RIB EJB Ping menu option.

EJB Ping (APP)

Script Used:

appejbping.sh

Class:

RibMessagePublisherClient

Description:

This utility is developed to ping any <app> EJB component. This helps to test the connectivity between the rib-<app> and the <app> where app refers to only SIM, RPM and AIP. This uses the platform configuration to call the EJBs. The user needs to put the necessary config files namely services_*.xml, jndi_providers_*.xml and service_flavors_*.xml of the particular <app> under \$HOME/rdmtXX/app/extracted_conf_from_<app>/retek folder before using this utility option. The user can also use the jndi_config_extractor.sh script for extracting the necessary config files from the system.

The jndi_config_extractor.sh script can be found under the RDMT home directory. The user needs to copy the jndi_config_extractor.sh script to the machine where the particular <app> is deployed and then execute the script. The user can execute this script from any place in that machine. The user also needs to set JAVA_HOME before running this script. This script will extract the files namely services_*.xml, jndi_providers_*.xml and service_flavors_*.xml files of that particular <app> by checking the entire file system. All the extracted xml files are finally zipped into xmlfiles.zip in the current directory from where this script was executed. The user then needs to transfer/ftp this xmlfiles.zip into the server where RDMT is installed and put these files under \$HOME/rdmtXX/app/extracted_conf_from_<app>/retek folder.

After performing the above steps, the user can execute the APP EJB Ping menu option.

Tool Usage Examples

"How do I know if the RIB install is correct?"

1. Using the RDMT Menu system, select the RIB Health SubMenu.
2. Execute RIB Config Report option. This produces the basic report on installation.
 - This scans the installations and configurations of rib applications deployed in oc4j. It finally produces a RIB OC4J configuration report on the console as well as written into a file under the RDMT Temp directory, which contain the status of all the RIB configurations necessary to detect/diagnose any RIB related issues.
3. If you find any discrepancies, refer to the RIB Installation Guide and follow the steps mentioned there.

"How do I know if the local OC4J is running or not?"

1. Using the RDMT Menu system, select the RIB Health SubMenu.
2. Execute local OC4J status (opmn) option. It displays the current OC4j status.
3. If it is not running, start the local OC4J using the start instance (opmn) under the RIB Admin Menu.

"How do I know where my issue is occurring?"

1. Select RDMT Main Menu.
2. Execute the Scan RIB Logs option. It performs a log scan to look for a /pattern/ ("Exception") in all of the log files in a directory of the currently active OC4J instance.
3. Select JMS Topic Scan. Look for topics with messages stuck.

"How do I know if the adapter's status is up or down?"

1. Select OC4J/JMX Utilities Menu.
2. Execute Status ALL Adapters option. It displays the status of all the adapters, namely the publishers, subscribers, hospital and TAFR for the currently active OC4J instance.
3. If anything is down, use the Start ALL adapters option and start the same.

"How can I config/switch for a new OC4J instance?"

1. Select OC4J/JMX Utilities Menu.
2. Execute OC4J/JMX Config Utility option.
3. Provide the desired parameters and configure an instance.
4. You can switch to the desired instance using the same option.

"How do I know if the configured OC4J instance is running?"

1. Select OC4J/JMX Utilities Menu.
2. Execute Status all config'd OC4J. It displays the status of all the configured OC4J instances.
3. If it is not running, start the same.

"How do I know the subscriber for a particular JMS topic?"

1. Select RDMT Main Menu.
2. Then select JMS Utilities Menu.
3. Execute the JMS Topics Subscribe List option.
4. Provide the topic name for which the subscriber name is needed. It provides the same.

The RIB in Operation

Operational Considerations

This section contains common issues that need to be thought about and addressed by a retailer as they progress towards a production environment involving the RIB. It is not a comprehensive list, nor does it seek to answer the questions, since they are very dependent on the retailer implementation. The intent of this section is to provide a starting point for a site-specific RIB Operations planning effort.

Alerts and Notifications

The RIB has built in alerts and notification through JMX. An external system can subscribe to all of the built-ins.

Note: See Chapter 4, "RIB and JMX."

RIB Log File Monitoring

Because the RIB is a subsystem that runs with no console, it is important to monitor the various log file that are created. Not only for the content (looking for exceptions), but also their size and growth.

RDMT includes several tools to assist in scanning and can provide examples on how to customize them to conform to particular site.

Note: See "Scan RIB Logs / Scan RIB Logs (Delta)" in this manual.

Log File Archive and Purge

The RIB use log4j for all of its logging control. It manages the logs size via its control file.

Note: See Apache Software Foundation <http://logging.apache.org/log4j/docs/documentation.html> for details.

In various phases of deployment and in triaging a problem it is often desirable or necessary to archive the logs so the logs are smaller and scanning by tools or people is easier. RDMT includes tools to assist and can provide examples on how to customize them to conform to particular site.

Note: See Chapter 8, "[Diagnostic and Monitoring Tools](#)."

Hospital Size and Growth

The Hospital tables, wherever they are, need to be monitored for size and growth. They have a huge effect on the performance of the entire RIB. As it gets larger, several interfaces dramatically slow down.

RDMT includes tools to assist and can provide examples on how to customize them to conform to particular site.

Note: See "[Hospital Scan Tools](#)" in this manual.

RMS MFQ and RWMS UPLOAD Tables Sizes

The MFQ and Upload table size and growth need to be monitored. They can indicate a poorly performing (hung) adapter or forecast a slow interface because the Hospital tables are filling. In the case of some of the slower interfaces there will be slow down of dependency records being processed.

RDMT includes tools to assist and can provide examples on how to customize them to conform to particular site.

Note: See "[Hospital Scan Tools](#)" in this manual.

Remote RWMS

If the situation exists where a retailer is deploying instances of RWMS in different geographic locations connect by a WAN then there are several RIB deployment architectural alternatives that need to be considered and decided.

RIB Components Start and Stop

The RIB component must be started and stopped in particular order, and there are recommendations on when and how to do this and tools to assist in building out operational processes to suite a retailers site requirements.

It is always recommended that the order of startup be SUB, TAFR, PUB and the shutdown is in the reverse order. The RIB supplies tools to control the adapter start and stop process in the proper sequence in the rib-app-builder tool called rib-adapter-controller.

Note: See "[RIB App Builder Tools](#)" in this manual.

RIB Operation Support Staff Requirements

The RIB application environment often presents a new dimension to a retailer's infrastructure, and there are training and support issues that do not fit the existing organization and current staff skill sets.

RIB Components - Source Code Control

The RIB contains code and configurations that are critical to the Enterprise. This version of the RIB is designed to be centrally managed and contains tools for tracking inventory and versions and configuration changes. A backup strategy also needs to be developed specific to the site.

Note: See Chapter 2, [Application Builder](#)."

The RIB has an inventory tracking mechanism that is maintained by the tools in the RIB App Builder. These tools also manage the application of defects and tracking the defects applied in the inventory.

Note: See "[check-version-and-apply-defect-fix](#)" in this manual.

RIB HA Requirements

The RIB is usually considered a HA requirement, so an architecture and operations plan to handle this needs to be developed.

Note: See "The RIB and Oracle Database Cluster (RAC)" in the *Oracle Retail Integration Bus Installation Guide*. See also the Oracle® Application Server High Availability Guide 10g Release 3 (10.1.3.4) and the Oracle® Database Administrator's Guide 10g Release 2 (10.2)

RIB Disaster Recovery

In addition to the HA requirements there is the issue of message retention, auditing and recovery. It is a common issue that an end-point application experiences an issue such as a crash, and requires recovery or rebuild. Syncing the data that the other applications have been publishing and subscribing to during the down time presents a major challenge.

It is important for a site to develop a plan and approach for this. In a large volume site, the JMS topics can build to huge numbers very quickly and over-run a system or the ability of the recovered system to catch-up in a time frame the business finds acceptable.

Note: See "[RIB Audit Logs](#)" in this manual.

See also Chapter 8, "[Diagnostic and Monitoring Tools](#)."

RIB Admin Roles and Security

The users and roles for the production environment need to be determined and put in place.

Note: See "Appendix: Creating a RIB OC4J Admin Role" in the *Oracle Retail Bus Installation Guide*.

RIB Operation Support Staff Requirements

Regardless of the organization structure or where the staff reports to, there are two distinct sets of roles and capabilities needed; the RIB system administrator role and RIB application administrator role. The number of the persons filling those roles is dependent on the size of the deployment, breadth of the products being integrated, levels of customization and schedule compression.

Integration support is a team effort, with one or two strong RIB Admin people who can help work through difficult failure modes using the RIB logs to help isolate the issue and determine type. There also needs to be Oracle Retail Application knowledgeable persons (RMS, RWMS, SIM, etc.) that also have a good level of RIB understanding. As a team they triage the issue and then work them. By the Integration Test phase of an implementation, the types of RIB failure issues become more related to complicated data sets for business case tests. Gross level functionality issues are generally solved by then.

Production requirements are similar, but need to reflect the realities of pager rotation, 24x7 issues, as well as how many applications are deployed and over what geography.

RIB System Administrator

Technology Background

- UNIX (strong) - shell scripts, Unix tools
- Oracle Database and Stored Procedures
- Oracle Application Server (strong)
- JavaEE (strong) - ability to read and understand exceptions and log files.
- Message-Oriented-Middleware (MOM) or communication technologies.

Experience or Training on

- Oracle Application Server
- RIB
- JavaEE concepts
- JMS technology

Areas of Responsibilities:

- Installation of OAS and patches
- Configuration of Oracle Application Server
- Installation and configuration of the RIB
- Support and configuration of Adapters and well as patches.
- Operational issues such as backup/restore, failure analysis using RIBLOGS and App Server logs as well as tools and various UNIX scripts and programs, and aid in the determination of error causes resulting in RIB Hospital entries.

RIB Application Administrator

Technology Background

- UNIX - shell scripts, Unix tools
- Oracle Database and Stored Procedures
- Oracle Retail Applications - Strong (RMS, RWMS, RPM, AIP, SIM)

Experience or Training on

- RIB
- Oracle Retail Applications
- JMS technology

Areas of Responsibilities:

- Operational support and failure analysis using RIBLOGS and the RIB Hospital.

Hospital Monitoring and Maintenance

Under normal operations, messages go into the hospital, get retried and are automatically deleted from the hospital. But if there is a steady increase in hospitalized messages, the reasons should be immediately determined and worked.

Triage of messages placed in the RIB Hospital is a time consuming task. This is a tough task when only Oracle Retail applications are involved; adding other outside applications, as many retailers do, further complicates this process. Problems can be introduced at the application level, in the extract, or the transformation process.

Having the integration team take a first look at the messages is another common practice at Oracle Retail customer sites. This team's success at resolving and correcting data issues is dependant on their access to business analysts who understand the desired function.

The RIB Hospital tables need to be monitored for size and growth. The number of entries in the RIB Hospital has a large impact on the performance of the entire RIB. Each adapter checks the RIB Hospital for previous related failures for each message (to see if the message should be held until any previous errors have been resolved). As the RIB Hospital gets larger interfaces can dramatically slow down.

The RIB Hospital is a crucial component in the operation and performance of the RIB. Processes and procedures to handle it are very important, and should be decided on and practiced early. It is suggested that discussions and planning be started as soon as possible in the implementation phase to work through the possible scenarios and develop tools and procedures to handle them.

There are tools in RDMT that can be leveraged to not only build monitoring scripts but to aid in the initial triage of issues.

RIHA is the recommended tool for maintenance of the Hospital. It understands the Hospital table structure and how to appropriately correct, submit and, as needed, delete messages. The use of tools such as SQLDeveloper or TOAD is discouraged. Although they allow similar activities, they do not provide the safe guards of RIHA in maintaining the integrity of the tables and the JMS.

RIB Hospital tables are packaged with applications and therefore reside in the base schema of the applications. To reduce maintenance, upgrade and support concerns, users may choose to extract Hospital tables from application schemas.

Using the RIB Application Builder tool, error Hospital tables can be removed from the application space and placed under the control of the RIB kernel, where data sources meant for Hospital-related database operations are differentiated from application calls (such as GetNext and Consume). The datasource, hosp-managed-datasource, supports the separation of the Hospital schema from the application schema.

To facilitate the externalization of the RIB Hospital tables from the application schema, two placeholders (one for PL/SQL applications and one for JavaEE applications) exist in the rib-deployment-env-info.xml file, as described in Chapter 3 of this guide.

Testing the RIB

The RIB is difficult to test as a stand-alone sub-system. It is part infrastructure and part application, and needs to have the integrating application end-points for even a simple install.

To aid in the initial install and evaluation of the RIB, a test harness has been developed and made available. The test harness is comprised of the these components:

- `plsql-api-stubs` - An API simulator of the PL/SQL API applications; RMS and RWMS.
- `javaee-api-stubs` - An API simulator of those applications exposing JavaEE API's; SIM, RPM and AIP.
- `RDMT` - The RIB Diagnostic and Monitoring Tool kit is a collection of command line tools, written in UNIX shell script along with supporting Java classes packaged in jar files.
- `Sample XML files` - These samples conform to the message payloads (xsd's).
- `Message auditing` - This is a feature of RIB 13 that allows the end-to-end auditing of a message as it passes through all of the RIB components.

The ability to initially install and deploy the RIB has always been difficult because of the need to connect to the Oracle Retail applications to verify that messages could flow end-to-end. The RIB install requires that end-points exist and respond, and to test it requires that the end-points are configured to publish or subscribe.

This test harness is completely independent of the applications, but uses the same RIB artifacts (payloads and Oracle Objects) as the actual applications. Additional tools and artifacts support the construction of test messages and the publication of these test messages.

Note: See "[RIB Test Harness](#)" in this chapter.

See Chapter 8, "[Diagnostic and Monitoring Tools](#)."

See "[RIB Logging](#)" in Chapter 3.

RIB Test Harness

Overview

The ability to initially install and deploy the RIB has always been difficult because of the need to connect to the Oracle Retail applications to verify that messages could flow end-to-end. The RIB install requires that end-points exist and respond, and to test it requires that the end-points are configured to publish or subscribe.

The dependency on the application end-points can be not only a scheduling issue, but to produce messages for can require data seeding and coordination with the individual application teams.

RIB has several tools, including application API simulators that combine to provide a test harness that allows the installation, configuration, and testing of the RIB. These were developed to address the requirement for the full application to be present to validate a RIB installation as well as a providing a tool for integration and system tests.

This test harness is completely independent of the applications, but uses the same RIB artifacts (payloads and Oracle objects) as the actual applications. Additional tools and artifacts support the construction of test messages and the publication of these test messages.

Master Checklist

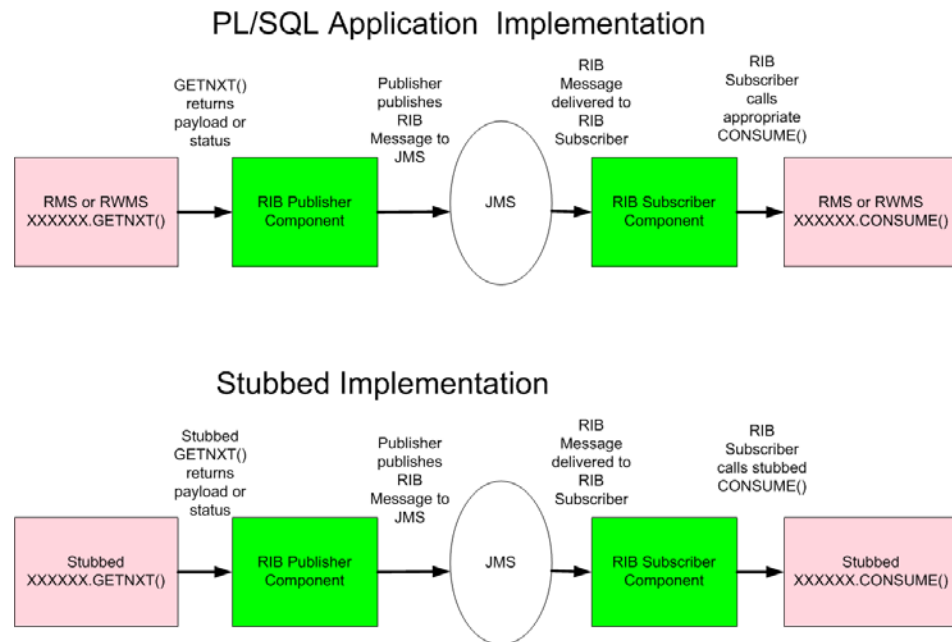
This check list covers all of the sequential steps required to create a stand-alone RIB Test Harness.

Task	Notes
Create the rib-home	Follow the guidelines in the Implementation Guide and Install Guide for the Prereqs. Do not invoke the installer yet.
Install the javaee-api-stubs and plsql-api-stubs into the rib-home/tools-home.	Follow the instruction in the tools section.
Install the pl/sql api stubs	Follow the instruction in the tools section. The plsql-api-stubs can simulate both RMS and RWMS from the same user, but if it is desired to test full flow including hospital, then install to two users.
For the PL/SQL app subs install a set of Hospital Tables in the same user account.	See the <i>Oracle Retail Integration Bus Installation Guide</i> See note about two stubs.
Deploy the javaee-api-stubs.	Follow the instruction in the tools section.
Install the RIB using the stubs as application end-points.	See the <i>Oracle Retail Integration Bus Installation Guide</i> .

PL/SQL Application API Stubs

The plsql-api-stubs is an API simulator designed to acts in the same manner as when the RIB is connected to the actual application, but at the same time, have means to process specific status and other parameters from a "stubbed" application. This set of tools is designed to emulate those applications exposing PL/SQL API's to the RIB; RMS and RWMS.

Architecture and Design



The tool set contains three main subsystems

- A common set of PL/SQL packages, stored procedures and database tables. These are used by the other subsystems.
- A thin API-specific set of packages and stored procedures that the RIB directly interfaces with. These interfaces map calls to the common subsystem to output parameters or statuses.
- The Stub Admin and Setup Application. A set of simple application function and a character based menu that allow installation and set up of specific behaviors for a specific API.

The Common Subsystem

The purpose of the common subsystem is to provide a standard means of implementing specific behavior by an API. The stubbed APIs simulate a real application by using the common subsystem which will be loaded during the installation through JDBC calls to the database. It is comprised of a group of tables, sequences and other database objects created for each stubbed API.

There is a set of tables and sequences created for each GETNXT procedure. These tables are generated with the OUT and IN/OUT parameters of the GETNXT procedure as the fields. The user is prompted to enter data into these tables when he is trying to test for a particular API.

For example:

If there is a GETNXT procedure in a package called RMSMFM_ORDER then the common subsystem for this procedure would be a table RMSMFM_ORDER_GE_TBL and sequence called RMSMFM_ORDER_GE_SEQ created in the data base.

For each PUB_RETRY Procedure in the API a set of tables and sequences are created the same as GETNXT except that the names of tables and sequences have PU instead of GE.

For a CONSUME API there is a table called RIB_CONSUME created with the O_STATUS_CODE, O_ERROR_MESSAGE and EXCEPTION_TO_THROW as the fields. If the user needs the CONSUME to throw a specific type of exception then the exception can be uploaded into the RIB_CONSUME table, so when the consume procedure is executed it will throw the specified exception type.

The Thin API layer

The API subsystem consists of packages and stored procedures that have the exact same signature as those found within the real application. This layer queries the appropriate common subsystem tables, sequences and other database objects to get the appropriate out parameters. These are then mapped to the API specific parameters of the stubbed application API.

The implementation of the stubbed API is written as java classes and loaded into the database during installation. The PL/SQL stubbed APIs are implemented in a way that these API internally call the java functions present in the classes then the PL/SQL OUT parameters are mapped with the java return types.

So when the RIB calls the GETNXT stubbed API as it normally calls the GETNXT API of a real application, the stubbed API internally calls the java class which uses the common subsystem tables to get messages as a CLOBs, it then converts the CLOB to an Oracle Object and then maps it with the PL/SQL OUT parameters and returns.

The Stub Admin and Setup Functions

These are a set of simple application functions written in java and wrapped by shell scripts and a character based menu that allow installation and set up of specific behaviors for a specific API.

Shell Script	Description
stubbymenu.sh	Simple character based menu that calls the wrapper scripts.
install.sh	Wrapper script that calls the java classes to install the RIB Objects and stubby java classes dynamically created from the metadata into the database (see stubby.properties).
configure_api.sh	Wrapper script that calls the java classes to set up the behavior and messages of a given consume or getnxt API.
read_metadata.sh	Wrapper script to call a java utility that will read a PL/SQL application (RMS, RWMS) schema and create a metadata file as input to create the stubbed API's.

Configuration Files

/conf directory files

Configuration File	Description
stubby.properties	Primary configuration file. Contains database url info and the metadata scripts to load.
commons-logging.properties	Apache logging conf
simplelog.properties	Apache logging conf
SqlToJavaMapper.java	generated from the storedproceduremetadat.xml specified in the Stubby.properties file. DO NOT EDIT!

Configuration File	Description
StoredProcedureMetaData_ RWMS.xml	DO NOT EDIT!
StoredProcedureMetaData_ RMS.xml	DO NOT EDIT!

Installation and Setup

Prerequisite Tasks

Task	Notes
Select a location for the plsqli-api-stubs to reside.	Recommended location is in the rib-app-builder/rib-home tree structure: rib-app-builder/rib-home/tools-home
Get the latest version of the plsqli-api-stubs.	The plsqli-api-stubs is packaged as a stand-alone tar (e.g. PlsqliApiStubs13.0.3ForAll13.x.xApps_eng_ga.tar).
Get the latest version of the rib-public-payload-database-object-types.	rib-public-payload-database-object-types.zip is packaged with the RibFuncArtifacts. (e.g. RibFuncArtifact13.0.3ForAll13.0.3Apps_eng_ga.tar) and should be extracted from there. If this install is in rib-home then the objects will be located in the rib-home/download-home/rib-func-artifacts
Create a database user that will own the plsqli-api-stubs schema and the objects.	The user requires no special permissions. CREATE USER "PLSQLSTUB" PROFILE "DEFAULT" IDENTIFIED BY " PLSQLSTUB " DEFAULT TABLESPACE "USERS" TEMPORARY TABLESPACE "TEMP" GRANT "CONNECT" TO " PLSQLSTUB " GRANT "RESOURCE" TO " PLSQLSTUB "
This version requires a path to jdk1.5 for compiling java stored procedures.	Be prepared to specify the path when prompted.

Installation

Task	Notes
Extract the tar file. cd rib-app-builder/rib-home/too ls-home tar xvf PlsqliApiStubs13.0.3ForAll13.x. xApps_eng_ga.tar	This will create the file folders and place the executables and config files. In rib-home/tool-home there is a directory already. It is a placeholder and this will over write it.
Place the database objects file in the scripts subdirectory	

Task	Notes
Extract the rib-public-payload-database-object-types.zip into the scripts directory.	
unzip rib-public-payload-database-object-types.zip	
Edit /conf/stubby.properties to point to the database url and user/password (see prerequisites).	# Database details hostname=linux1 port=1521
vi stubby.properties	sid=ora10g username=plsqlstub password=plsqlstub
Base Script File names	This is where the selection of either RMS or RWMS objects is made. ONLY one per install.
Execute the install. Menu item or install.sh in the stubby base directory	The install performs these actions: Runs a cleanup that will remove any existing RIB related tables, sequences, packages and types installed in the configured user schema.
cd rib-app-builder/rib-home/tools-home/ plsql-api-stubs	Runs all the scripts files in the udt sub-directory.
./install.sh	Runs a drop java utility to remove any existing classes in the configured user schema. Note -- The warnings generated by the drop java can be ignored.
Or	
./stubbymenu.sh	Runs the load java utility to load Java classes as objects in the configured user schema.
Then select the menu item to install.	All the RMS and RWMS packages are created in the configured user schema.
Install Hospital tables	See the <i>Oracle Retail Integration Bus Installation Guide</i> .
Enter the complete path for jdk1.5:	This version of stubby and the RDBMS requires jdk1.5 for compiling java stored procedures.

The installation is now complete and the tool is ready to be used.

Configure_api

The next step in using the tool set is to configure the desired behavior of the APIs under test. Use of the tool requires that the user understand the APIs involved at enough detail to understand and answer several prompts during the configuration process. See the *Oracle Retail Integration Bus Integration Guide* and the application operations guide for Oracle Retail Merchandising System and Oracle Retail Warehouse Management System.

Prerequisites

Task	Notes
Create a sub-directory for the test messages to configure the API to use. These can be any location on the same host where the tool user has permissions to read.	The RIB ships with sample xml files for each message family. These are packaged with RDMT and are located under the testmsg subdirectory in the rdmt directory. rib-public-payload-xml-samples.zip. These should be used as a basis for testing and modified to suit the test cases.
Understand and know which API and its type to configure. For example: API Type: GETNXT API Package name: RMSMFM_ITEMS Message Type: ITEMCRE	API Types supported: GETNXT CONSUME PUB_RETRY

Execute the configure_api.sh script or select the menu item and respond to the prompts.

Prompts during configuration of a GETNXT and PUB_RETRY.

Prompt	Notes
Status Code the GETNXT API should return: S for Success, H for hospital, N for no message, and E for exception	Case sensitive.
Enter Error Message to be returned [to be entered only for H or E Status Codes:	
Enter data for O_MESSAGE (Give the complete file name):	The complete file path of the message to uploaded.
Enter Business Object ID to be returned (Optional):	
Do want to enter Routing Information for the message?[Y/N]:N	
Enter the Thread Value for the message:	
Enter the No. of times the message needs to be replicated:	

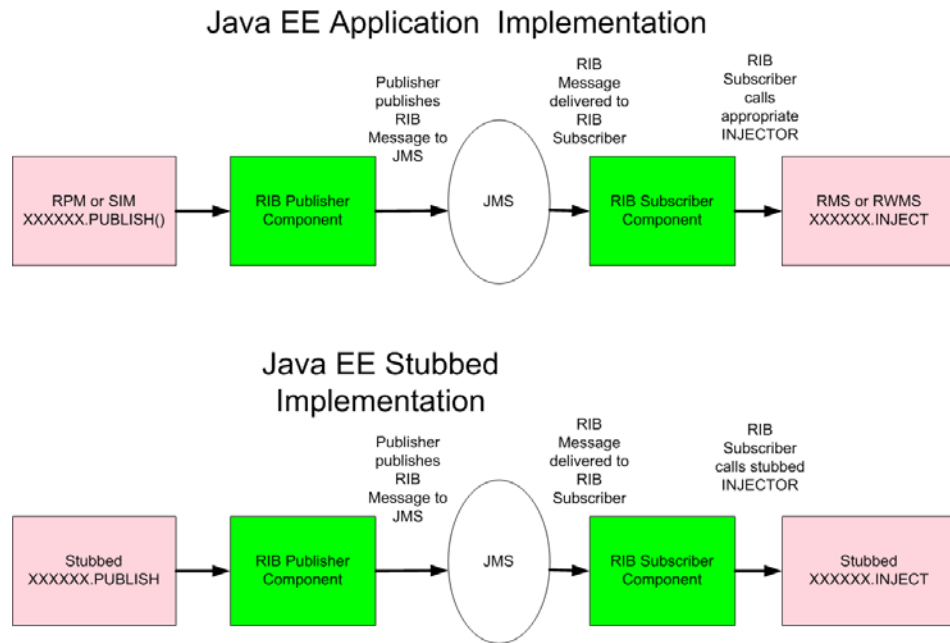
Prompts during configuration of a CONSUME.

Prompt	Notes
Enter Status Code the Consume should return [S-Success]/[E-Error]	
Enter the Exception to be Thrown eg:nullpointerexception:	The Exception_To_Throw and Error Message is prompted only if the status code is E.
Enter the Exception Message to be Thrown:	
Enter Message Type the Consume should return [CRE,MOD,DEL] eq:ITEMCRE:	

JavaEE Application API Stubs

The javaee-api-stubs is an API simulator designed to acts in the same manner as when the RIB is connected to the actual application, but at the same time, have means to process specific status and other parameters from a stubbed application. This set of tools is designed to emulate those applications exposing JavaEE APIs to the RIB; SIM, RPM and AIP.

Architecture and Design



Installation and Setup

Prerequisite Tasks

Task	Notes
Select a location for the javaee-api-stubs to reside.	Recommended location is in the rib-app-builder/rib-home tree structure: rib-app-builder/rib-home/tools-home/javaee-api-stubs
Get the latest version of the plsql-api-stubs.	The plsql-api-stubs is packaged as a stand-alone tar (e.g. JavaEeApiStubs13.0.3ForAll13.x.xApps_eng_ga.tar).
Create a database user that will own the javaee-api-stubs objects.	The user requires no special permissions. CREATE USER JAVAEEESTUB PROFILE DEFAULT IDENTIFIED BY STUBBY DEFAULT TABLESPACE USERS TEMPORARY TABLESPACE TEMP GRANT CONNECT TO JAVAEEESTUB GRANT RESOURCE TO JAVAEEESTUB

Installation

Task	Notes
Decide which OC4J instance to deploy the javaee-api-stubs.ear to.	It is recommend but not required that a separate instance be used from the rib-<app> instance.
Using the OAS console, select the oc4j instance and then deploy javaee-api-stubs-.ear.	Refer OAS deployment document for more details on how to deploy a Java EE application.
Verify install	Check logs in \$ORACLE_HOME/j2ee/<instance_name>/log/<instance_name_group_name>/oc4j/log.xml
Using the OAS console, configure the database resources for the javaee-api-stubs JDBC resources.	Refer to the OAS document for more details.
<ul style="list-style-type: none"> ■ Login to the application server console ■ Select Applications Tab ■ Select the javaee-api-stubs application ■ Select Administration Tab 	

Task	Notes
On the JDBC Resources line select Go to Task.	Select javaee-api-stubs-db-connection-pool-non-xa Update database credentials to the javaee-api-stubs user created in the prereqs. Select javaee-api-stubs-db-connection-pool Update database credentials to the javaee-api-stubs user created in the prereqs.
Test Connections	Select Test Connection and verify.
Install Hospital Tables	See the <i>Oracle Retail Integration Bus Installation Guide</i> .

Configuration of the rib-<app> to use Injection Stubs

Task	Notes
Decide which rib-<app> to configure for.	The stubbed implementation has been written to insert the payload to a database once inject has been called. Injectors.xml has been configured to include all the RPM,SIM subscribing families.
Using RIB App Builder or the RIB Installer configure and deploy the rib-app using the jndi information of the javaee-api-stubs in place of the app.	<pre> <jndi> <url>opmn:ormi://linux1:rib-javaeestub-oc4j-instance/javaee-api-stubs</url> <factory>oracle.j2ee.rmi.RMIInitialContextFactory</factory> <user>oc4jadmin</user> <password>welcome1</password> </jndi> </app> </pre>

Performance Considerations

The chapter discusses the performance characteristics of the Oracle Retail RIB, the factors that affect it, and a process to test it.

Performance of the RIB within a customer site is critical to the performance of the business, and is determined by factors that are very specific to a given deployment. Because of this is, it is recommended by Oracle Retail that a Performance Test be part of every deployment plan. Even if formal testing is not planned, the use of the tools and processes discussed can measure the relative performance of the RIB sub-system and can be used to diagnose bottlenecks.

It is beyond the scope of this document to discuss all of the tools and techniques available at the host, network, database, and application server level.

See the *See Oracle Retail Integration Bus Implementation Guide*.

Performance Factors

The performance of each of these components is influential in the overall performance of the system:

- The Application Server(s) topology and configuration.
- The RIB deployment approach.
- The hardware sizing and configuration of the RIB hosts.
- The hardware sizing and configuration of the applications that are connected to the RIB.
- The hardware sizing and configuration of the JMS provider host.
- The hardware sizing and configuration of the RIB Hospitals hosts.

There are other factors that determine the performance of the overall system. Some of these factors in a RIB environment are:

- Number of channels configured
- Number of messages present in the topic
- Size of the message
- Database clustering
- Application Server topology
- Number of TAFRs in the processing of the message
- Message aggregation

Performance Requirements

Each of the RIB Message Family volume requirements is almost always described for the end-to-end message flow. This is defined as from the publication to the completion of subscription by all Oracle Retail applications. Retail businesses express volume requirements in terms of details per hour and per day.

Each Message Family has different volume requirements and any given family may have an intermediate component between the originating publication and the end subscriber. These components are called TAFRs (Message Transform, Filtering and Routing). This is an important concept, since it means that in a given flow, a message published by the source system may be subscribed to and then re-published by a TAFR before it is subscribed to by the destination application. This is true in many of the Message Families.

Example volume requirements:

Family	Details Per Day	Details Per Hour
Purchase Orders	355,000	355,000
ASN Inbound	19,200,000	19,200,000
Appointments	240,000	30,000
PO Receipt	240,000	30,000
Store Receipt	4,000,000	2,000,000
Transfers	1,000,000	250,000
Stock Order Allocation	600,000	75,000
Stock Order Transfer	1,000,000	75,000
Stock Order Status	600,000	75,000
ASN Outbound (BOL)	285,000	285,000
Promotions	5,000,000	250,000
Item Locations	1,000,000	300,000
Items	100,000	20,000

Note: These examples are for illustration, but are representative of actual customer requirements.

Message construction is the same for all Oracle Retail Publishing applications and RIB adapters. There are configuration control points that allow flexibility in the size of the message. The application side has the ability to specify the number of details per message. The RIB has a setting that controls the aggregation of the messages (ribMessage) within the larger RibMessages envelope. There is a setting that controls the number of RibMessages published within a commit to the JMS.

See "[Message Aggregation](#)."

Multi-Channel

The RIB is designed to support parallel message handling to increase through-put via a mechanism call multi-channel. Multi-channel is a concept to logically partition the flow of messages within the JMS topic so that multiple publishers and subscribers can simultaneously use the same JMS topic without any contention or interference with each other and preserve publication message ordering within the logical channel.

Every adapter instance of a publisher, subscriber, or TAFR, configured in the RIB is considered to belong to a logical channel for processing messages. By multi-channel adapters, we mean multiple adapter instances for the same message family, each processing messages asynchronously and in parallel. When multiple channels are used, they must be defined and configured across all publisher, subscriber, and TAFRs that participate in an end-to-end message flow to and from all Oracle Retail applications for that message family.

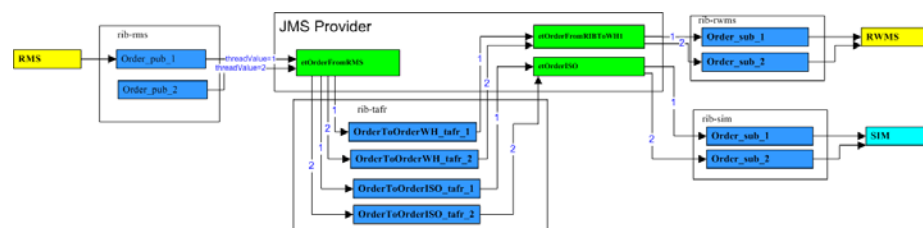
Each messaging RIB component involved in publishing or subscribing to a logical channel is distinctly identified by a JMS Message property known as "threadValue" with a specific value. This JMS message property and the value it contains define the logical channel.

JMS Message properties are user-defined additional properties that are included with the message. Message properties have types, and these types define application-specific information that message consumers can use to select the messages that interest them. Each RIB subscriber has the "threadValue" property and this value is part of its JMS Durable Subscriber selector and each RIB publisher sets the "threadValue" JMS message property to a specific value for each message it publishes.

Oracle Retail RIB components are capable of being multi-channelled by making configuration changes to the system. The base RIB configuration, as shipped GA, provides each Message Family with one channel where all components set or look for "threadValue" of 1 (one). The naming convention and the RIB kernel code identify the RIB adapters by adding the logical channel to the end of the adapter class name.

The example diagram demonstrates the multi-channeling of the Purchase Order flow to two channels.

Figure 11–1 Multi-channel Example



End-to-End Timing

As mentioned, the RIB's performance is judged by the average time a Message Family detail takes to flow from a publisher to consumption by all active subscribers. This is not a straight forward measurement.

Message through-put is not a calculation of the sum of the individual message times. Although the average time per message will remain fixed, messages are processed in parallel. So the total time to process n messages on a single channel will not be the serial sum of the individual messages.

Additionally, it is possible to configure multiple logical channels to increase overall through-put.

How to Calculate Average Message Size

It is important to understand the average messages in an integration flow. In the RIB where interfaces are separated into messages families with differing payloads per type of message, these calculations can be difficult. This section outlines an approach for arriving at averages using the sample XML files that ship with the RIB.

The RIB delivers sample files generated for each Message Family that contains all elements for a message type and payload *with all possible characters for each element*.

Note: Several Families have variable types of "details" per header so a close investigation is required to understand what the relationship is and what a representative message can be.

In practice, of course, this size will vary depending on the number of characters that a description element may contain, but for performance testing calculations, this is a reasonable start for calculations.

Note: An alternative is to use the audit feature of the RIB. These messages can then be used to estimate the average sizes.

The RIB message envelope, called a RibMessages contains a variable number of ribMessage nodes. Within a ribMessage node is a Message Family payload. A minimum payload for this exercise is defined as one header and a variable number of details.

The general process to determine the size in bytes of a Message Family message per detail using the RIB sample xml messages and xsds is as follows:

- Determine the RIB envelope size (RibMessages elements + ribMessage elements)
- Determine the size of a single header
- Determine the size of a detail

The RIB has a standard message envelope (RIBMessages.xsd) that can be easily calculated exclusive of the message family payload:

ribMessage header elements no payload	823 Bytes
RibMessages header elements	324 Bytes
RibMessages with 1 rM no payload	1147 Bytes

Each message family is comprised of message type and an associate payload (e.g. POCre uses PODesc.xsd). These relationships are defined in the RIB Integration Guide.

The sample XML messages for each release are packaged in the functional artifacts war file and with RDMT in the rib-home/tools-home/rdmt/testmsgs directory.

Select the message payload file and look at the byte count. This will always be 1 header and 1 detail(s). Be aware that this relationship will vary by family and can be complex for some message types (e.g. ItemCre and ItemDesc.xsd) where optional details can be present.

Select the payload file and remove all detail nodes and look at the byte count. This will be the standard header. Use the same procedure for the detail(s). This will be the detail size.

Example Message - PODesc	
Header Size (PODesc no detail)	9413
1 Detail Size (PODtl)	1943

The next step is to determine the average number of details per message. This will vary based on the business needs and the RIB configuration that is selected.

See "[Message Aggregation](#)."

Using the desired number of details per message, this calculation is the result:

Total 1 RibMessages + 1 ribMessage + 1 Header + 1 Detail	Avg Message Size
--	------------------

For example:

Total 1 RibMessages + 1 ribMessage + 1 PODesc + 1 PODtl	12,053
---	--------

Purchase Order Example

ribMessage header elements no payload	823
RibMessages header elements	324
RibMessages with 1 rM no payload	1147
Message - PODesc	
Header Size (PODesc no detail)	9413
1 Detail Size (PODtl)	1943
Total 1 RibMessages + 1 ribMessage + 1 PODesc + 1 PODtl	12,053

An example using the default settings; the RIB messages created by the Order publishing adapter for details per message:

- Contains a maximum of 20 ribMessages per RibMessage
- With 20 details per PODesc payload in a ribMessage

So for a 400 Details PO Message the calculation is:

RibMessage = 1 RibMessages header + 20 ribMessage headers + 20 PODesc + 400 PODtl

# ribMessage nodes	20
# Details	400
RibMessages Header (1)	324
ribMessage Header (20)	16,460
PODesc (20)	188,260
PODtI (400)	777,200
Total Bytes/Msg	982,644

Using the example volume requirement for the Purchase Orders using the same RIB message configuration settings:

Details per hour requirement (Total Through-put)	355,000
Details per Message	400
Total messages per hour (355,000/400)	887
Message/sec required (982 KB each - 60*60/887)	4.058

So:

End-to-End — 1 message with 400 details can take a max of 4.058 seconds.

End-to-End — 982,644 Bytes can take a max of 4.058 seconds (which in this example is 400 details).

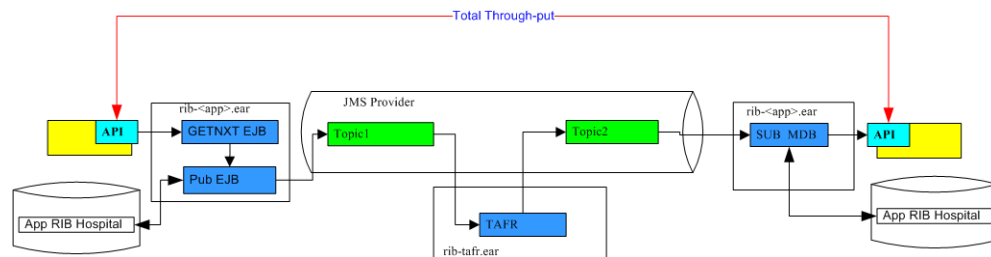
So:

$982644 \text{ Bytes} / 4.058 \text{ sec} = 242149.83 \text{ bytes/sec} = 0.2421498 \text{ MB/sec}$ Total end-to-end throughput to meet the Purchase Order example requirements.

Understand the Message Family

These are end-to-end processing time requirements across the entire message flow from Publisher to Subscription completion.

Figure 11–2 Generic Message Flow Diagram



To continue the Purchase Order example, the requirements and timings have to be broken down further. The Purchase Order flow has a TAFR as well as multiple subscribers. For purposes of this example, consider the Subscribers Consume times as equivalent. As the diagram depicts, for a flow like the Purchase Orders, there are multiple components and for a single message to flow there will be, at a minimum, a message published twice and subscribed twice, as well as a marshalling and un-marshalling of the message twice (Family dependent). There will be at least one, and possibly two, Hospital Dependency checks as well.

Figure 11–3 Logical View of the Oracle Retail Purchase Order Flow

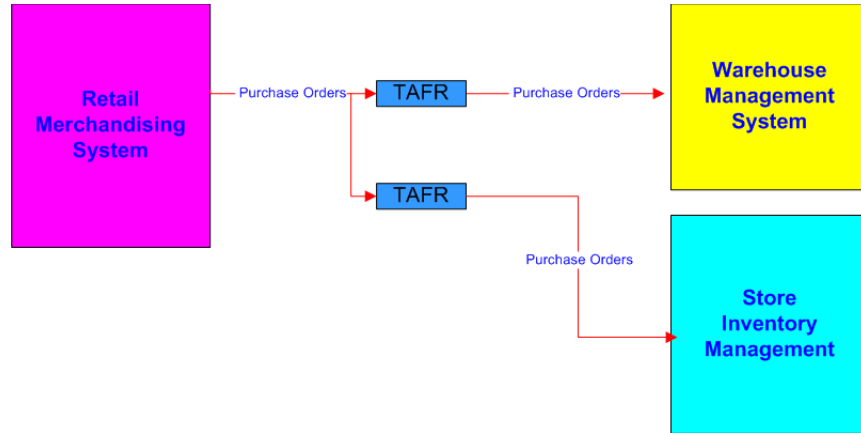
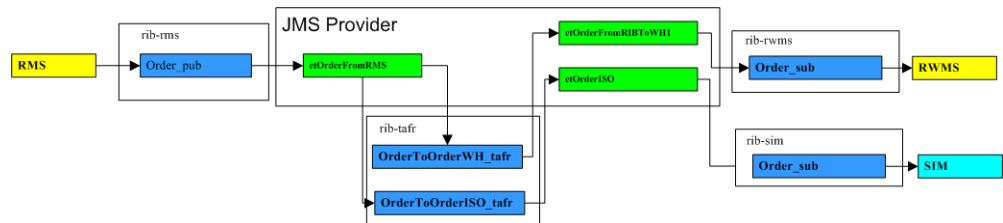


Figure 11–4 Functional Detailed View of the Oracle Retail Purchase Order Flow



RIB Timing Log Analysis

The performance of the RIB is a complicated subsystem to measure and involves not only host level performance, but database, network, and application server subsystems performance. To make measurement of the RIB components timing characteristics available for analysis, the RIB kernel code has been instrumented to log events as it processes events. The logging of these events is through log4j. The timings are logged per adapter. Once the timings are enabled the events are logging continuously to the file. The RIB RDMT supplies a post-processing tool to take the timing file and produce summary reports.

This table lists the currently pre-defined times that are tracked in the RIB Timings logs. The description is the definition of interval calculation.

	Timing Type	Description
T1	PUB_B4_GETNXT_CALL	Time interval between start of the publisher and the actual GETNXT call.
T2	PUB_TIME_IN_GETNXT_CALL	Time taken by the GETNXT call to the plsql app.
T3	PUB_TIME_IN_EJB_PUBLISH_CALL	Time taken for the publish call in the EJB, includes RIB overhead surrounding the actual publish to the JMS.
T4	PUB_TOTAL_PUBLISH_TIME	Time taken for the complete PUB process = GETNXT + hospital dependency + publish + commit.
T5	PUB_TIME_IN_REAL_JMS_PUBLISH	Time taken to publish a message to the AQ JMS.
T6	SUB_TIME_IN_CONSUME_CALL	Time taken by the CONSUME call to the plsql app.
T7	SUB_TOTAL_SUBSCRIBE_TIME	Time taken for the complete SUB process = CONSUME/INJECT + hospital dependency + subscribe + commit.
T8	SUB_TIME_IN_EJB_SUBSCRIBE_CALL	Time taken for the subscribe call in the EJB, includes RIB overhead surrounding the actual subscribe.
T9	SUB_TIME_IN_INJECT_CALL	Time taken by the INJECT call to the java app.
T10	TAFR_TOTAL_MSGPROCESS_TIME	Time taken in the complete message tafring Process = TAFRring + hospital dependency + publish + RIB overhead.
T11	TAFR_TIME_IN_EJB_CALL	Time taken for the TAFR call in the EJB, includes RIB overhead surrounding the actual TAFRring.
T12	TAFR_TIME_IN_REAL_JMS_PUBLISH_EJB	Time taken by the TAFR to publish a message to the AQ JMS.

Purchase Order Example

Note: These examples illustrate the process and concepts, not test results.

Order_pub_1 (Publisher)

TIMING_TYPE	COUNT	AVERAGE	TIME_SUM	MIN_TIME	MAX_TIME
PUB_B4_GETNXT_CALL	100	0.03787	3.7904	0.036	0.07
PUB_TIME_IN_GETNXT_CALL	100	0.06546	6.5528	0.061	0.254
PUB_TIME_IN_EJB_PUBLISH_CALL	100	0.04192	4.1961	0.039	0.308
PUB_TOTAL_PUBLISH_TIME	100	0.19675	19.6947	0.186	2.738
PUB_TIME_IN_REAL_JMS_PUBLISH_EJB	100	0.02931	2.9341	0.027	0.292

OrderToOrderTafr_1 (TAFR)

TIMING_TYPE	COUNT	AVERAGE	TIME_SUM	MIN_TIME	MAX_TIME
TAFR_TOTAL_MSGPROCESS_TIME	100	1.58708	158.708	1.296	4.135
TAFR_TIME_IN_EJB_CALL	100	1.51371	151.371	1.23	3.24
TAFR_TIME_IN_REAL_JMS_PUBLISH_EJB	100	1.1802	118.02	0.914	2.414

Order_sub_1

TIMING_TYPE	COUNT	AVERAGE	TIME_SUM	MIN_TIME	MAX_TIME
SUB_TIME_IN_CONSUME_CALL	100	1.359	135.9	0.671	2.203
SUB_TOTAL_SUBSCRIBE_TIME	100	1.93943	193.943	0.718	5.593
SUB_TIME_IN_EJB_SUBSCRIBE_CALL	100	1.92386	192.386	0.687	5.593

So in this example, to describe the serial processing through-put time to Publish 100 messages through the TAFR to Subscriber Consume:

Publisher (19.69 Sec) + TAFR (158.708 sec) + Subscriber (193.943 sec) = 372.341 seconds
 = Average 3.72 msg/sec

It is important to understand that the actual message through-put is not a calculation of the sum of the individual message times. Although the average time per message will remain fixed, messages are processed in parallel. So the total time to process n messages on a single channel will not be the serial sum of the individual messages.

Note: This is an illustration. The number of message needed to arrive at a calculation of through-put would require much higher counts and across a broad spectrum of time and system load. Other factors including average size of message used is also a determining variable.

Key Interfaces to Consider

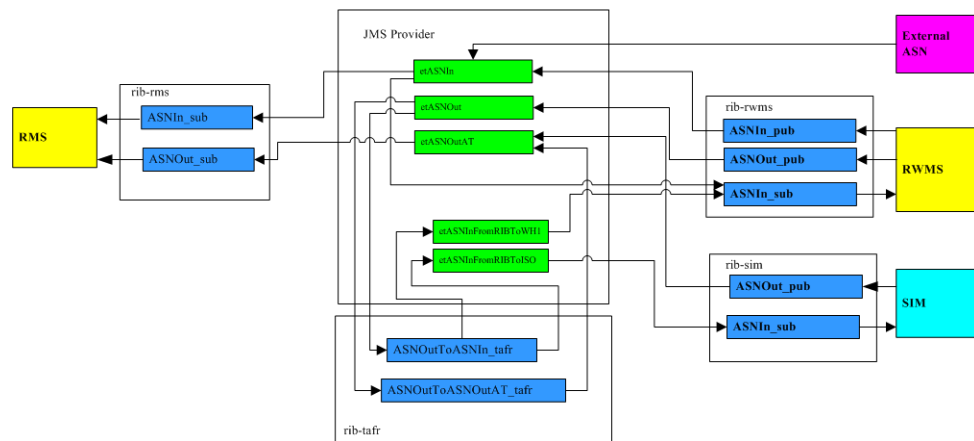
Every customer site has unique requirements and flows, so the ones to focus on will vary. However, there are ones that always make to the list.

- ASN
- Receipts (PO and Store)
- Promotions
- Stock Order (Allocation & Transfers)
- Item Locations
- Items

It is strongly recommended that during the deployment planning phase, the business requirements for these and others be gathered and analyzed. Then plan some form of performance testing, even if only a characterization by measuring the actual flows during other test phases (e.g. Integration Test).

ASN (Inbound/Outbound)

Figure 11–5 Functional Detailed View of the Oracle Retail ASNIn/ASNOut Flows



Receipts

Figure 11-6 Logical View of the Oracle Retail Receipts Flow

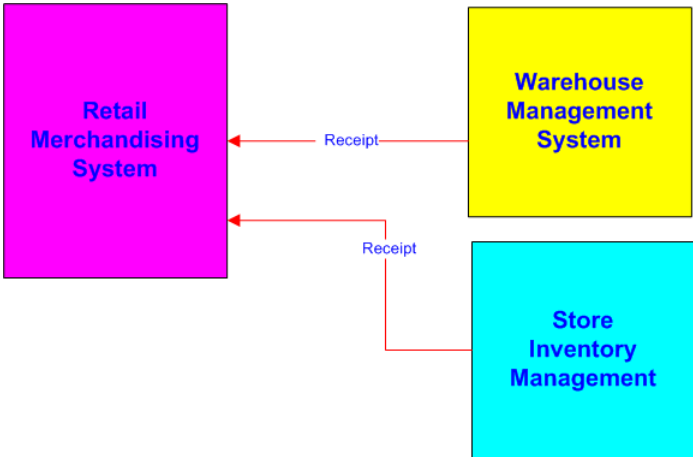
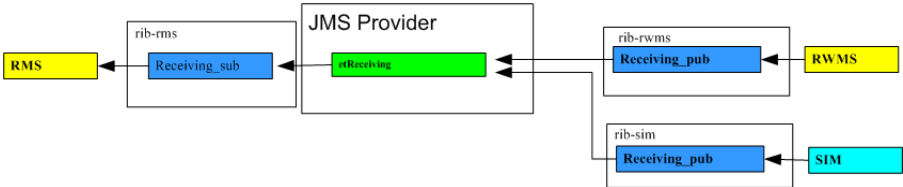


Figure 11-7 Functional Detail View of the Oracle Retail Receipts Flow



The Receipts Message Family is transactional data, and often a candidate for performance testing. Receiving consists of appointment and receipt messages that are published to the RIB for RMS providing open to buy visibility. An appointment is information about the arrival of merchandise at a location. A receipt message informs RMS when merchandise arrives in a warehouse or store system.

Stock Order (Allocations & Transfers)

Figure 11–8 Logical View of the Oracle Retail Stock Order Flow

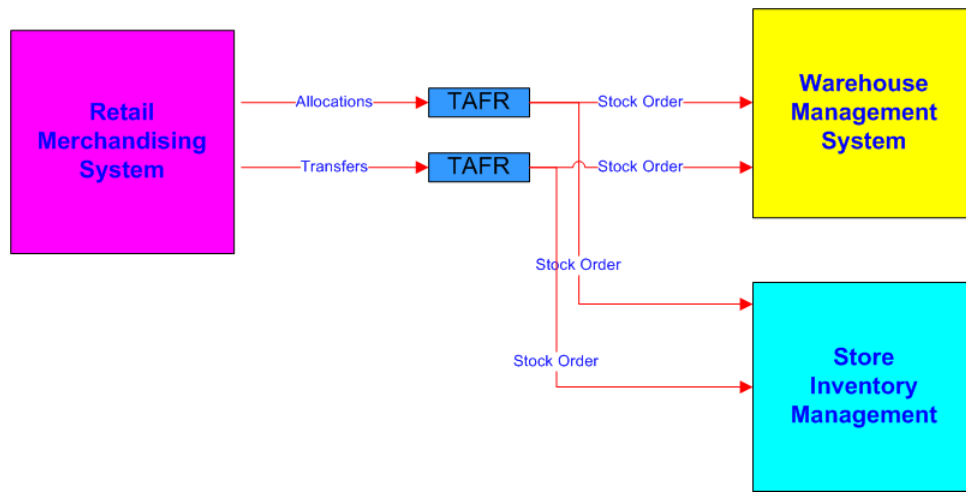
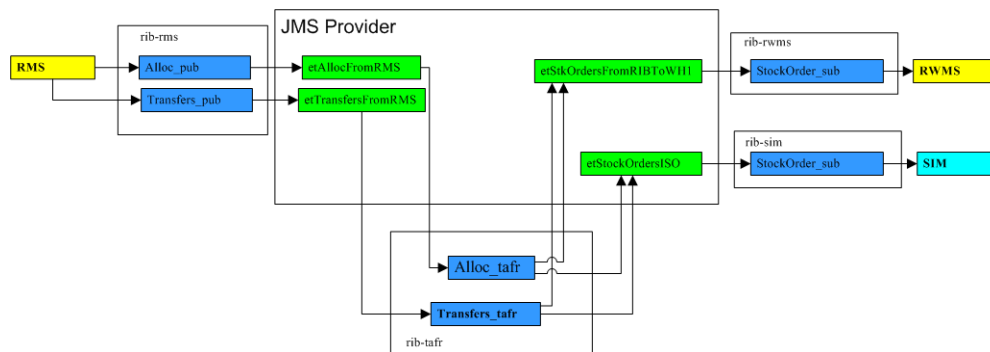


Figure 11–9 Functional Detail View of the Oracle Retail Stock Order Flow



How to Approach a RIB Performance Test

There are two distinct approaches to measuring RIB performance; using actual application end-points or using the RIB API simulators. Both are useful at different phases of deployment.

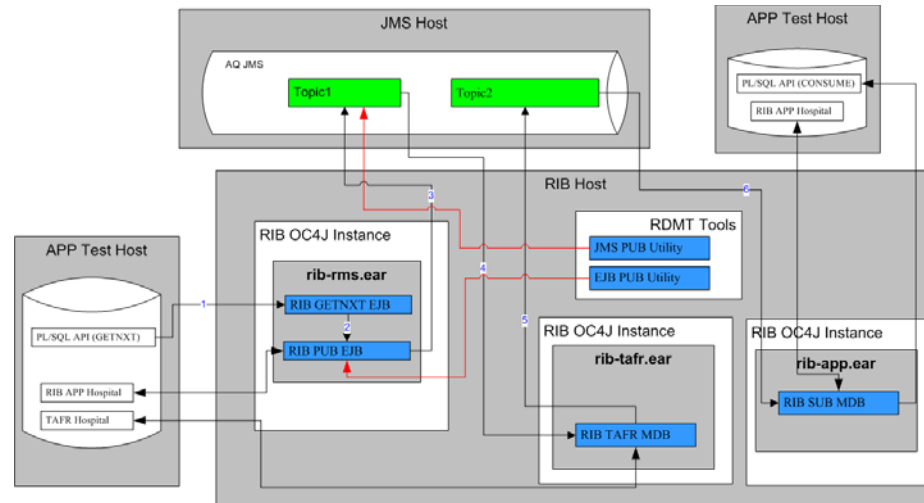
Keep in mind, that performance measuring is possible at any time in any phase, performance testing is more formal and requires planning, dedicated people and systems and test data. Building test data is difficult. Do not underestimate the complexity and this time consuming aspect of testing. To do testing with the applications involved, all of the data has to be consumable without errors.

There are tools available in RDMT to assist in this, as well as the audit feature of the RIB. By enabling audit on an interface all messages are saved to a file in a form that can be played back by RDMT utilities.

The API Simulators (PL/SQL and JavaEE) allow the focus to be on the RIB infrastructure and is possible without resources outside of the RIB team. The value is limited to profiling the deployment architecture independent of the application API behavior and is much simpler in terms of data generation.

The performance measures of the end-to-end flow using the application's API is the only way to match performance against requirements since the majority of the time spent in the flow is in the application API. Customers do not distinguish a separation between the RIB components and the application APIs.

Figure 11–10 RIB Performance Test Harness



The RIB supplied tools to support both forms of tests are the RIB Test Harness, the API simulators, and the RDMT tools; timing utility, JMS Publish and EJB Publish.

This is a general process on how to measure the flow end-to-end.

1. Prepare for the run.
 - Use RIB Admin GUI to stop all adapters (PUB, SUB, TAFR).
 - Use RDMT to archive all logs so that the run has clean logs.
 - Use RIB Admin GUI to enable timings logs (DEBUG) on all adapters.
 - Use RIB Admin GUI to set all other adapter logs to INFO.
2. Determine how to generate the messages.
 - Using the Oracle Retail Application (e.g. RMS to generate some orders).
 - Using RDMT EJB Publish (will use a portion of the PUB Adapter).
 - Using RDMT JMS Publish (will not use the PUB Adapter).
3. Start the appropriate adapters depending on the above decision.
 - Use RIB Admin GUI to start adapters (PUB, SUB, TAFR).
4. Generate the test messages.
5. Stop the adapters.
6. Analyze the data.
 - Use RDMT to run the Timing Analysis Utility on each adapter timing log. This will create a .csv file.
 - Upload the .csv files for display and further analysis using a tool such as Excel.

Multi-Channel Adapters

A channel is a solution approach to maintaining the previous RIB release concept of a "Logical Channel", also known as multi-threading.

Multi-channel is concept to logically partitioning the flow of messages within the JMS topic so that multiple publisher and subscriber can simultaneously use the same JMS topic without any contention or interference with each other and preserving publication message ordering within the logical channel.

Every adapter instance of a publisher, subscriber, or TAFR, configured in the RIB is considered to belong to a logical channel for processing messages. By multi-channel adapters we mean multiple adapter instances for the same message family, each processing messages asynchronously and in parallel.

There are critical rules of behavior that have to be observed and enforced to maintain the two primary RIB functional requirements of once-and-only-once successful delivery and guaranteed sequencing of messages within a message family.

To ensure that these rules are followed and to make the tasks of configuration of the RIB to support a multi-channel message flow as simple as possible, the process has been integrated into the RIB App Builder tools.

When multiple channels are being considered, they must be defined and configured across all publisher, subscriber, and TAFRs that participate in an end-to-end message flow to and from all Oracle Retail applications for that message family. The RIB App Builder tools have checks and verification logic to prevent deployment of incomplete flows.

Multi-channels can be a valuable tool to increase performance, but it does not help in every situation. There is overhead and complexity associated with implementing multiple channels so they should not be considered unless a defined and performance problem exists. The process of adding multi-channels to a message family should be part of a performance test and tuning process.

Logical Channels and threadValue

Each messaging RIB component involved in publishing or subscribing to a logical channel is distinctly identified by a JMS Message property known as "threadValue" with a specific value. This JMS message property and the value it contains define the logical channel.

JMS Message properties are user-defined additional properties that are included with the message. Message properties have types, and these types define application-specific information that message consumers can use to select the messages that interest them.

So each RIB subscriber has the "threadValue" property and this value as part of its JMS Durable Subscriber selector and each RIB publisher sets the "threadValue" JMS message property to a specific value for each message it publishes.

Oracle Retail RIB components are capable of being multi-channeled by making configuration changes to the system. The base RIB configuration, as shipped GA, provides each Message Family with one channel where all components set or look for "threadValue" of one. The naming convention and the RIB kernel code identify the RIB adapters by adding the logical channel to the end of the adapter class name.

Algorithm Used to Calculate Channel

Channels are calculated based on Business object ID(BOID) found in the RibMessages <id> tag. The algorithm used to calculate is as follows.

$$\text{MOD}(\text{MD5}(\text{family} + ":" + \text{businessObjectId}) \% \text{maxChannelNumber}) + 1$$

- First the algorithm calculates the message digest of the string family+":"+businessObjectId which produces a unique number.
- Then this number is divided by the maxChannelNumber, which is calculated by the number of configured channels for that message family.
- A 1 is added to the result so that the channel number is always greater than 0.

For example:

```
Family = Alloc
BusinessObjectID (BOID) = 10202123
MaxChannelNumber = 7 (Total number of channels configured for the Alloc family)
Then the channel number for the BOID is calculated as
sMOD(MD5(Alloc + ":" + 10202123)%7) + 1 = 4
which means that all the messages that have BusinessObjectID of 10202123
are ALWAYS sent through channel 4 (Alloc_pub_4).
```

Note: The channels have to be configured throughout the integration flow using the rib-app builder tool.

Example of a Message Family Flow with a TAFR:

```
Alloc_pub_1
Alloc_tafr_1
StockOrder_sub_1
```

How to Configure a Multi-Channel Flow

Generalized Process

1. Determine the Family to multi-channel
2. Examine the rib-integration-flows.xml to identify all participants in the full flow.
3. In the rib-home modify the appropriate configuration files for each of the rib-<apps>.
 - a. rib-<app>-adapters.xml
 - b. rib-<app>-adapter-resources.properties
4. For PL/SQL Application edit the RIB_SETTINGS table.
5. Compile and Deploy

Example

This example is to configure the Alloc message flow with five channels. Alloc is a complex flow in that it has multiple Oracle Retail application subscribers and a TAFR that transforms the messages from one family to another; Alloc to StockOrder.

Backup the following files.

- rib-home/application-assembly-home/rib-rms/rib-rms-adapters.xml
- rib-home/application-assembly-home/rib-rms/rib-rms-resources.properties.

The following is the message flow for the Alloc Family from rib-integration-flows.xml that this example uses.

```
<message-flow id="1">
  <node id="rib-rms.Alloc_pub" app-name="rib-rms" adapter-class-def="Alloc_pub"
    type="DbToJms">
    <in-db>default</in-db>
    <out-topic>etAllocFromRMS</out-topic>
  </node>
  <node id="rib-tafr.Alloc_tafr" app-name="rib-tafr" adapter-class-def="Alloc_tafr"
    type="JmsToJms">
    <in-topic>etAllocFromRMS</in-topic>
    <out-topic name="topic-name-key-iso">etStockOrdersISO</out-topic>
    <out-topic name="topic-name-key-wh">etStkOrdersFromRIBToWH{*}</out-topic>
  </node>
  <node id="rib-sim.StockOrder_sub" app-name="rib-sim"
    adapter-class-def="StockOrder_sub" type="JmsToDb">
    <in-topic>etStockOrdersISO</in-topic>
    <out-db>default</out-db>
  </node>
  <node id="rib-rwms.StockOrder_sub" app-name="rib-rwms"
    adapter-class-def="StockOrder_sub" type="JmsToDb">
    <in-topic>etStkOrdersFromRIBToWH1</in-topic>
    <out-db>default</out-db>
  </node>
</message-flow>
```

RIB-RMS

1. Modify rib-rms-adapters.xml to add multiple channels.

Following is a portion of rib-rms-adapters.xml

```
<publishers>
  <timer-driven id="Alloc_pub_1" initialState="running"
    timeDelay="10">
    <timer-task>
      <class
        name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl"/>
      <property name="maxChannelNumber" value="5" />
    </timer-task>
  </timer-driven>
  <timer-driven id="Alloc_pub_2" initialState="running"
    timeDelay="10">
    <timer-task>
      <class
        name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl"/>
      <property name="maxChannelNumber" value="5" />
    </timer-task>
  </timer-driven>
  <timer-driven id="Alloc_pub_3" initialState="running"
```



```

timeDelay="10">
    <timer-task>
        <class
name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl"/>
            <property name="maxChannelNumber" value="5" />
        </timer-task>
    </timer-driven>
    <timer-driven id="Alloc_pub_4" initialState="running"
timeDelay="10">
        <timer-task>
            <class
name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl"/>
                <property name="maxChannelNumber" value="5" />
            </timer-task>
        </timer-driven>
        <timer-driven id="Alloc_pub_5" initialState="running"
timeDelay="10">
            <timer-task>
                <class
name="com.retek.rib.app.getnext.impl.GetNextTimerTaskImpl"/>
                    <property name="maxChannelNumber" value="5" />
                </timer-task>
            </timer-driven>

```

2. Modify rib-rms-adapter-resources.properties.

```

Alloc_pub_1.name=Alloc Publisher, channel 1
Alloc_pub_1.desc=Publisher for the Alloc family through channel 1.

```

```

Alloc_pub_2.name=Alloc Publisher, channel 2
Alloc_pub_2.desc=Publisher for the Alloc family through channel 2.

```

```

Alloc_pub_3.name=Alloc Publisher, channel 3
Alloc_pub_3.desc=Publisher for the Alloc family through channel 3.

```

```

Alloc_pub_4.name=Alloc Publisher, channel 4
Alloc_pub_4.desc=Publisher for the Alloc family through channel 4.

```

```

Alloc_pub_5.name=Alloc Publisher, channel 5
Alloc_pub_5.desc=Publisher for the Alloc family through channel 5.

```

RIB-TAFR

1. Modify rib-tafr--adapters.xml to add channels for a family.

```

<tafrs>
    <message-driven id="Alloc_tafr_1" initialState="running"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.AllocToStockOrderFromRibB
OImpl" />
    <message-driven id="Alloc_tafr_2" initialState="running"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.AllocToStockOrderFromRibB
OImpl" />
    <message-driven id="Alloc_tafr_3" initialState="running"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.AllocToStockOrderFromRibB
OImpl" />
    <message-driven id="Alloc_tafr_4" initialState="running"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.AllocToStockOrderFromRibB
OImpl" />
    <message-driven id="Alloc_tafr_5" initialState="running"
tafr-business-impl="com.retek.rib.domain.tafr.bo.impl.AllocToStockOrderFromRibB
OImpl" />

```

2. Modify `rib-tafr-adapters-resources.properties`.

```
Alloc_tafr_1.name=AllocToStockOrder TAFR, channel 1
Alloc_tafr_1.desc=TAFR for converting Allocation messages to StockOrders and
routing them to the correct warehouse or store system
```

```
Alloc_tafr_2.name=AllocToStockOrder TAFR, channel 2
Alloc_tafr_2.desc=TAFR for converting Allocation messages to StockOrders and
routing them to the correct warehouse or store system
```

```
Alloc_tafr_3.name=AllocToStockOrder TAFR, channel 3
Alloc_tafr_3.desc=TAFR for converting Allocation messages to StockOrders and
routing them to the correct warehouse or store system
```

```
Alloc_tafr_4.name=AllocToStockOrder TAFR, channel 4
Alloc_tafr_4.desc=TAFR for converting Allocation messages to StockOrders and
routing them to the correct warehouse or store system
```

```
Alloc_tafr_5.name=AllocToStockOrder TAFR, channel 5
Alloc_tafr_5.desc=TAFR for converting Allocation messages to StockOrders and
routing them to the correct warehouse or store system
```

RIB-SIM

1. Modify `rib-sim-adapters.xml` to add channels for a family.

```
<subscribers>
  <message-driven id="StockOrder_sub_1" initialState="running"/>
  <message-driven id="StockOrder_sub_2" initialState="running"/>
  <message-driven id="StockOrder_sub_3" initialState="running"/>
  <message-driven id="StockOrder_sub_4" initialState="running"/>
  <message-driven id="StockOrder_sub_5" initialState="running"/>
</subscribers>
```

2. Modify `rib-sim-adapters-properties.properties`.

```
StockOrder_sub_1.name=StockOrder Subscriber, channel 1
StockOrder_sub_1.desc=Subscriber for the StockOrder family through channel 1.
```

```
StockOrder_sub_2.name=StockOrder Subscriber, channel 2
StockOrder_sub_2.desc=Subscriber for the StockOrder family through channel 2.
```

```
StockOrder_sub_3.name=StockOrder Subscriber, channel 3
StockOrder_sub_3.desc=Subscriber for the StockOrder family through channel 3.
```

```
StockOrder_sub_4.name=StockOrder Subscriber, channel 4
StockOrder_sub_4.desc=Subscriber for the StockOrder family through channel 4.
```

```
StockOrder_sub_5.name=StockOrder Subscriber, channel 5
StockOrder_sub_5.desc=Subscriber for the StockOrder family through channel 5.
```

RIB-RWMS

1. Modify `rib-rwms-adapters.xml` to add channels for a family.

```
<subscribers>
  <message-driven id="StockOrder_sub_1" initialState="running"/>
  <message-driven id="StockOrder_sub_2" initialState="running"/>
  <message-driven id="StockOrder_sub_3" initialState="running"/>
  <message-driven id="StockOrder_sub_4" initialState="running"/>
  <message-driven id="StockOrder_sub_5" initialState="running"/>
</subscribers>
```

2. Modify rib-rwms-adapters-properties.properties.

```
StockOrder_sub_1.name=StockOrder Subscriber, channel 1
StockOrder_sub_1.desc=Subscriber for the stockorder family through channel 1.
```

```
StockOrder_sub_2.name=StockOrder Subscriber, channel 2
StockOrder_sub_2.desc=Subscriber for the stockorder family through channel 2.
```

```
StockOrder_sub_3.name=StockOrder Subscriber, channel 3
StockOrder_sub_3.desc=Subscriber for the stockorder family through channel 3.
```

```
StockOrder_sub_4.name=StockOrder Subscriber, channel 4
StockOrder_sub_4.desc=Subscriber for the stockorder family through channel 4.
```

```
StockOrder_sub_5.name=StockOrder Subscriber, channel 5
StockOrder_sub_5.desc=Subscriber for the stockorder family through channel 5.
```

Edit the RIB_SETTINGS table

When a PL/SQL Publishing adapter is multi-channeled, the application code needs to designate the message to a specific thread. In order to do this, a change needs to be made in the RIB_SETTINGS table.

Find the Family of messages that is being multi-channeled, and adjust the column NUM_THREADS to the appropriate number. In this example, the number will be set to 4 for the Alloc Family.

Compile and Deploy

Using the RIB Installer or the RIB App Builder command line tools, compile and deploy the new rib-<app>.ears.

Message Aggregation

In order to improve message publication throughput within the integration system, the RIB provides multiple capabilities. The easiest way to increase throughput of any system without much effort is to start working on the collection of data units instead of single data units. Using that philosophy, RIB provides capabilities to process the collection of multiple detail payloads in one transaction. To control the number of details (payload details) per payload header, the user needs to update the **RIB_SETTING.MAX_DETAILS_TO_PUBLISH** column in the PLSQL retail applications database schema. Another way to look at this same configuration is that it allows you to control the size of the payload that gets published within the RIB system.

Another level to increasing throughput capabilities that RIB provides is to aggregate messages in a transaction, i.e. bundle multiple payloads within a single message that gets published to the JMS server. Through message aggregation (**<family>.maxNodesPerMessages**), you can control the number of ribMessage nodes that gets bundled into a single RibMessages message. Different families can have different nodes per message so this property is qualified (prefixed) by the family name. This property allows you to control the overall size of the RibMessages xml message.

The third capability that RIB provides is to optimize/minimize XA transaction overhead by allowing the system to commit multiple RibMessages to the JMS server in a single 2 phase XA commit. The number of messages that will get committed to the JMS server in a single XA commit is controlled by the property named **<family>.messagePerCommit**. Different families might need different RibMessages per commit so this property is qualified (prefixed) by the family name.

The configurable properties (**<family>.maxNodesPerMessages** and **<family>.messagePerCommit**) applies to each individual rib-<app>. To update the property and propagate the configuration to the app server, edit the corresponding rib-<app>.properties in rib-home and redeploy the updated rib-<app>.

Bigger is not always better; the bigger the payload size, the bigger the memory requirement. A process (JVM) can get only so much of Operating System memory, if the size is too large it will run out of memory and you will get an OutOfMemoryError.

If lots of ribMessageNode are bundled into the same RibMessages message, a single failure in one of the ribMessage will rollback the full transaction which will 1) fill up your error hospital table and 2) decrease your throughput by many factors as now it has to go through the retry process.

The general best practice is don't prematurely optimize; test with your business data and, only if the default values are not meeting your business needs, think about optimization by updating these properties.

How to Configure Message Aggregate

1. Edit the following file in rib-home:
 - rib-home/application-assembly-home/rib-<app>/rib-<app>.properties
2. Add the following properties:
 - <family>.maxNodesPerMessages=<your value>
 - <family>.MessagePerCommit=<your value>
3. Using the app-builder tool compile/deploy the application.
 - rib-app-compile.sh
 - rib-app-deployer.sh -deploy-rib-app-ear rib-<app>

Aggregation Example

Suppose there are **1300** payload details waiting to be published for a family. Suppose we have the following configuration in RIB:

```
MAX_DETAILS_TO_PUBLISH=100
maxNodesPerMessages=5
MessagePerCommit=2
```

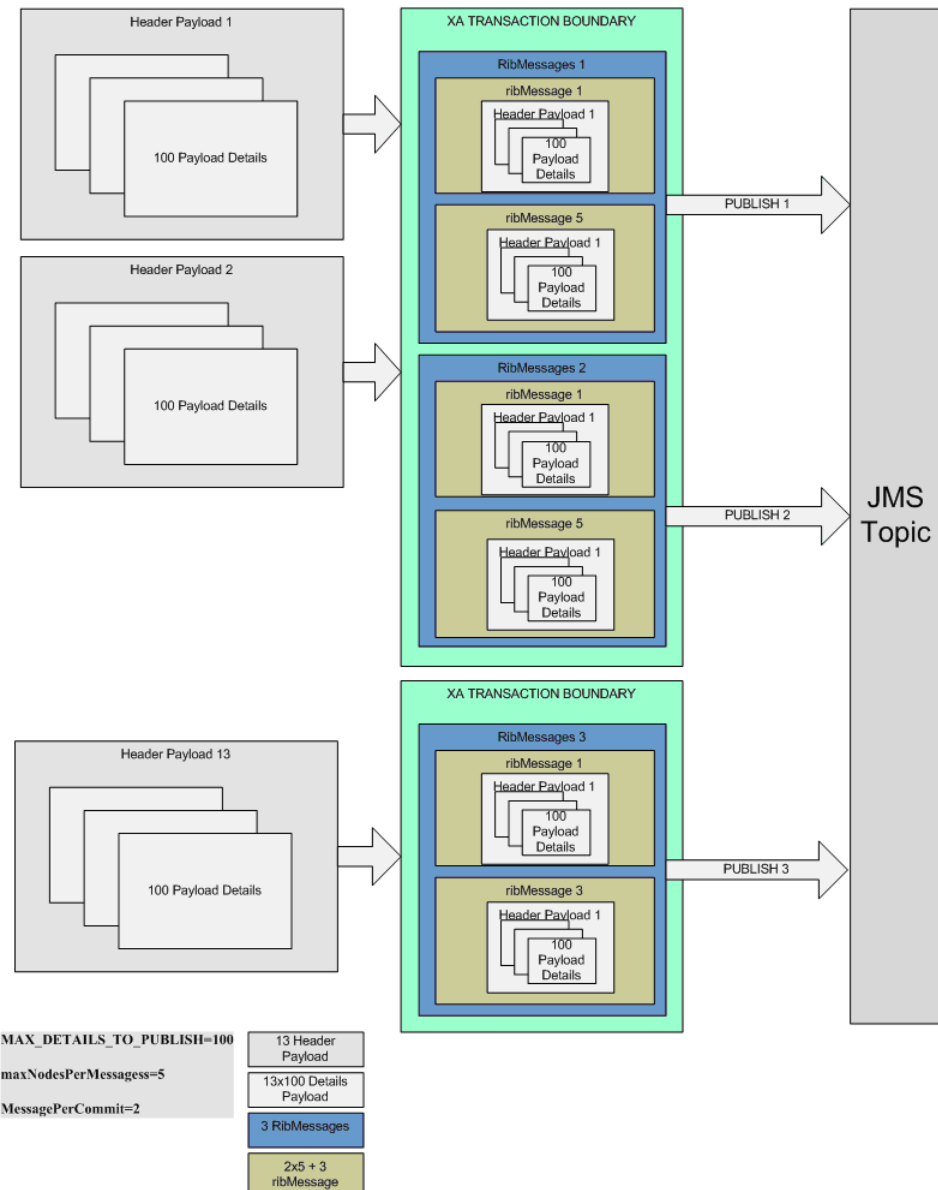
The diagram below explains the message aggregation in play in the RIB system. All the 1300 payload details will be published in 3 RibMessages within only two XA transaction commits. The first 2 RibMessages will have 5 ribMessage nodes each and each of the ribMessage node will have a payload with 100 payload details. Since in the example we have 1300 payload detail the 3rd RibMessages xml will have only 3 ribMessage node each with 100 payload details.

XA transaction 1 = (RibMessages1 + RibMessages2)
RibMessages1 = ribMessage1 + ribMessage2 + ribMessage3 + ribMessage4 + ribMessage5.

$\text{ribMessage1} = \text{PayloadHeader} + 100 * \text{PayloadDetail}$
 $\text{ribMessage2} = \text{PayloadHeader} + 100 * \text{PayloadDetail}$

 $\text{ribMessage5} = \text{PayloadHeader} + 100 * \text{PayloadDetail}$
 $\text{RibMessages2} \text{ equivalent to RibMessages1}$
 $\text{XA Transaction 2} = \text{RibMessages3}$
 $\text{RibMessages3} = \text{ribMessage1} + \text{ribMessage2} + \text{ribMessage3}$
 $\text{Total} = (\text{XA Transaction 1} + \text{XA Transaction 2})$
 $100 * 5 + 100 * 5 + 100 * 3 = 1300$

Figure 11-11 RIB Message Aggregation



Multiple Hospital Retry

Family Specific Hospital Retry Adapters

The RIB supports configuration of hospital retry adapters specific to message families. The family based adapters are configured to address performance issues when the error hospital gets very large--and a single retry adapter cannot handle the load.

How Family Specific Hospital Retry Works

Errors during processing result in messages in the error hospital. Reasons for errors include the following:

- Incomplete or partial data from RMS: In this case, the messages are inserted into the error hospital with a reason code of PUB.
- JMS related publication error conditions: (For example, the JMS server is down or not available due to network failures.) In this case, the messages are inserted into the error hospital with a reason code of JMS.
- The subscriber application is not able to consume the message: In this case, the messages are inserted into the error hospital with a reason code of SUB.

By default, there are three kinds of hospital adapters, as listed below:

- Sub retry adapter
- JMS retry adapter
- Pub retry adapter (RMS is the only application for which the Pub retry adapter is required.)

The sub retry adapter retries only those messages with a reason code of SUB. Similarly, the JMS retry adapter and the Pub retry adapter retry messages with reason codes of JMS and PUB, respectively.

Note: For more information about the hospital retry mechanism, see "RIB Hospital Retry" in the *See Oracle Retail Integration Bus Implementation Guide*.

Each message in the error hospital belongs to a particular message family. When the error hospital has a large number of messages from different families, the retry process becomes a performance bottleneck, as the default retry adapters retry the messages one by one (in a first in, first out manner), irrespective of message family.

To alleviate a bottleneck situation, retry adapters can be configured for a specific family and reason code. A family retry adapter can coexist with the default retry adapters. However, the default retry adapters will not retry those messages for which family retry adapters have been configured.

A family based retry adapter retries messages only for the family and reason code for which it is configured. For example, if a retry adapter is configured for the Order family and the SUB reason code, it retries only those messages from the Order family that failed with a reason code of SUB.

For each message family, a maximum of three family retry adapters can be configured--one for each reason code (PUB, SUB, and JMS).

How to Configure a Family Specific Retry Adapter

Process Overview:

1. Determine the rib-<apps> where the family specific hospital retry adapter is to be configured.
2. Determine the family for which the retry adapter should be configured.
3. Determine the reason code (for example, PUB, SUB, or JMS) for the family retry adapter.
4. In the rib-home, modify the appropriate configuration files for the rib-<apps>:
 - a. rib-<app>-adapters.xml
 - b. rib-<app>-adapter-resources.properties
5. Compile and deploy.

Example:

To configure a family specific adapter for the Order family, where reason code = SUB and application = rib-rms, complete the following steps:

1. Backup the following files:
 - rib-home/application-assembly-home/rib-rms/rib-rms-adapters.xml
 - rib-home/application-assembly-home/rib-rms-resources.properties
2. Modify rib-rms-adapters.xml to add the family specific hospital retry adapter. The following is a portion of rib-rms-adapters.xml:

```
<hospitals>
    <timer-driven          id="Order_familysubhosp_0"
initialState="stopped" timeDelay="10" >
    <timer-task>
        <class
name="com.retek.rib.j2ee.ErrorHospitalRegryTimerTask"/>
    </timer-task>
    </timer-driven/>
</hospitals>
```

3. Modify rib-rms-adapter-resources.properties as follows:
 - Order_familysubhosp_0.name=Order SUB Hospital Retry
 - Order_familysubhosp_0.desc=Inject messages into JMS from Error Hospital

Note: Only one instance of family retry adapter can be configured per family and per reason code.

4. Compile and Deploy:

Using the RIB Installer or the RIB App Builder command line tools, compile and deploy the new rib-<app>.ears.

