ORACLE
INSURANCE

Oracle® Documaker

Documaker Connector

Developer Guide

version 12.1

Part number: E22582-01

June 2012

THIRD PARTY SOFTWARE NOTICES

This product includes software developed by Apache Software Foundation (http://www.apache.org/).

THIS SOFTWARE IS PROVIDED "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes software distributed via the Berkeley Software Distribution (BSD) and licensed for binary distribution under the Generic BSD license.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes software developed by the JDOM Project (http://www.jdom.org/).

THIS SOFTWARE IS PROVIDED ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE JDOM AUTHORS OR THE PROJECT CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes software developed by the Massachusetts Institute of Technology (MIT).

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This product includes software developed by Jean-loup Gailly and Mark Adler. This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

This software is based in part on the work of the Independent JPEG Group (http://www.ijg.org/).

This product includes software developed by the Dojo Foundation (http://dojotoolkit.org).

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright (c) 2005-2009, The Dojo Foundation. All rights reserved.

This product includes software developed by W3C.

Copyright © 2009 World Wide Web Consortium, (Massachusetts Institute of Technology, Institut National de Recherche en Informatique et en Automatique, Keio University). All Rights Reserved. (http://www.w3.org/Consortium/Legal/)

This product includes software developed by Mathew R. Miller (http://www.bluecreststudios.com).

Copyright (c) 1999-2002 ComputerSmarts. All rights reserved.

This product includes software developed by Shaun Wilde and distributed via Code Project Open License (http://www.codeproject.com).

THIS WORK IS PROVIDED "AS IS", "WHERE IS" AND "AS AVAILABLE", WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OR GUARANTEES. YOU, THE USER, ASSUME ALL RISK IN ITS USE, INCLUDING COPYRIGHT INFRINGEMENT, PATENT INFRINGEMENT, SUITABILITY, ETC. AUTHOR EXPRESSLY DISCLAIMS ALL EXPRESS, IMPLIED OR STATUTORY WARRANTIES OR CONDITIONS, INCLUDING WITHOUT LIMITATION, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF TITLE OR NON-INFRINGEMENT, OR THAT THE WORK (OR ANY PORTION THEREOF) IS CORRECT, USEFUL, BUG-FREE OR FREE OF VIRUSES. YOU MUST PASS THIS DISCLAIMER ON WHENEVER YOU DISTRIBUTE THE WORK OR DERIVATIVE WORKS.

This product includes software developed by Chris Maunder and distributed via Code Project Open License (http://www.codeproject.com).

THIS WORK IS PROVIDED "AS IS", "WHERE IS" AND "AS AVAILABLE", WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OR GUARANTEES. YOU, THE USER, ASSUME ALL RISK IN ITS USE, INCLUDING COPYRIGHT INFRINGEMENT, PATENT INFRINGEMENT, SUITABILITY, ETC. AUTHOR EXPRESSLY DISCLAIMS ALL EXPRESS, IMPLIED OR STATUTORY WARRANTIES OR CONDITIONS, INCLUDING WITHOUT LIMITATION, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF TITLE OR NON-INFRINGEMENT, OR THAT THE WORK (OR ANY PORTION THEREOF) IS CORRECT, USEFUL, BUG-FREE OR FREE OF VIRUSES. YOU MUST PASS THIS DISCLAIMER ON WHENEVER YOU DISTRIBUTE THE WORK OR DERIVATIVE WORKS.

This product includes software developed by PJ Arends and distributed via Code Project Open License (http://www.codeproject.com).

THIS WORK IS PROVIDED "AS IS", "WHERE IS" AND "AS AVAILABLE", WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES OR CONDITIONS OR GUARANTEES. YOU, THE USER, ASSUME ALL RISK IN ITS USE, INCLUDING COPYRIGHT INFRINGEMENT, PATENT INFRINGEMENT, SUITABILITY, ETC. AUTHOR EXPRESSLY DISCLAIMS ALL EXPRESS, IMPLIED OR STATUTORY WARRANTIES OR CONDITIONS, INCLUDING WITHOUT LIMITATION, WARRANTIES OR CONDITIONS OF MERCHANTABILITY, MERCHANTABLE QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF TITLE OR NON-INFRINGEMENT, OR THAT THE WORK (OR ANY PORTION THEREOF) IS CORRECT, USEFUL, BUG-FREE OR FREE OF VIRUSES. YOU MUST PASS THIS DISCLAIMER ON WHENEVER YOU DISTRIBUTE THE WORK OR DERIVATIVE WORKS.

This product includes software developed by Erwin Tratar. This source code and all accompanying material is copyright (c) 1998-1999 Erwin Tratar. All rights reserved.

THIS SOFTWARE IS PROVIDED "AS IS" WITHOUT EXPRESS OR IMPLIED WARRANTY. USE IT AT YOUR OWN RISK! THE AUTHOR ACCEPTS NO LIABILITY FOR ANY DAMAGE/LOSS OF BUSINESS THAT THIS PRODUCT MAY CAUSE.

This product includes software developed by Sam Leffler of Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE

Copyright (c) 1988-1997 Sam Leffler
Copyright (c) 1991-1997 Silicon Graphics, Inc.

This product includes software developed by Guy Eric Schalnat, Andreas Dilger, Glenn Randers-Pehrson (current maintainer), and others. (http://www.libpng.org)

The PNG Reference Library is supplied "AS IS". The Contributing Authors and Group 42, Inc. disclaim all warranties, expressed or implied, including, without limitation, the warranties of merchantability and of fitness for any purpose. The Contributing Authors and Group 42, Inc. assume no liability for direct, indirect, incidental, special, exemplary, or consequential damages, which may result from the use of the PNG Reference Library, even if advised of the possibility of such damage.

This product includes software components distributed by the Cryptix Foundation.

THIS SOFTWARE IS PROVIDED BY THE CRYPTIX FOUNDATION LIMITED AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE CRYPTIX FOUNDATION LIMITED OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE

Copyright © 1995-2005 The Cryptix Foundation Limited. All rights reserved.

This product includes software components distributed by Sun Microsystems.

This software is provided "AS IS," without a warranty of any kind. ALLEXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANYIMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE HEREBY EXCLUDED. SUN AND ITS LICENSORS SHALL NOT BELIABLE FOR ANY DAMAGES SUFFERED BY LICENSEE AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE OR ITS DERIVATIVES. IN NO EVENT WILL SUN OR ITS LICENSORS BE LIABLE FOR ANY LOST REVENUE, PROFIT OR DATA, OR FOR DIRECT, INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF THE USE OF OR INABILITY TO USE SOFTWARE, EVEN IF SUN HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Copyright (c) 1998 Sun Microsystems, Inc. All Rights Reserved.

This product includes software components distributed by Dennis M. Sosnoski.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS'" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2003-2007 Dennis M. Sosnoski. All Rights Reserved

It also includes materials licensed under Apache 1.1 and the following XPP3 license

THIS SOFTWARE IS PROVIDED "AS IS'" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Copyright © 2002 Extreme! Lab, Indiana University. All Rights Reserved

---

This product includes software components distributed by CodeProject. This software contains material that is © 1994-2005 The Ultimate Toolbox, all rights reserved.

This product includes software components distributed by Geir Landro.

Copyright © 2001-2003 Geir Landro (drop@destroydrop.com) JavaScript Tree - www.destroydrop.com/hjavascripts/tree/version 0.96

This product includes software components distributed by the Hypersonic SQL Group.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE

This product includes software components distributed by the International Business Machines Corporation and others.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This product includes software components distributed by the University of Coimbra.

University of Coimbra distributes this software in the hope that it will be useful but DISCLAIMS ALL WARRANTIES WITH REGARD TO IT, including all implied warranties of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. In no event shall University of Coimbra be liable for any special, indirect or consequential damages (or any damages whatsoever) resulting from loss of use, data or profits, whether in an action of contract, negligence or other tortious action, arising out of or in connection with the use or performance of this software.

This product includes software components distributed by Steve Souza.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS "AS IS"' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes software developed by the OpenSymphony Group (http://www.opensymphony.com/.)"

CONTENTS

Preface

This manual contains information a developer can use to create custom applications for transferring documents using Oracle Documaker Connector.

AUDIENCE

This document is intended for developers who are creating new source or destination components for use with Documaker Connector. Experience as a Java developer is necessary, as well as programmer domain-knowledge in the APIs for the document source or destination product to be used.

DOCUMENTATION ACCESSIBILITY

Accessibility of Links to External Web Sites in Documentation

This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

TTY Access to Oracle Support Services

Oracle provides dedicated Text Telephone (TTY) access to Oracle Support Services within the United States of America 24 hours a day, seven days a week. For TTY support, call 800.446.2398.

Related Documents

For more information, refer to the following Oracle resources:

- Documaker Connector Installation Guide
- Documaker Connector Administration Guide
- Java programming resources
- API documentation for your source and destination systems

Conventions

The following text conventions are used in this document:

Convention	Description
bold	Indicates information you enter.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands, URLs, code in examples, and text that appears on the screen.

Chapter 1

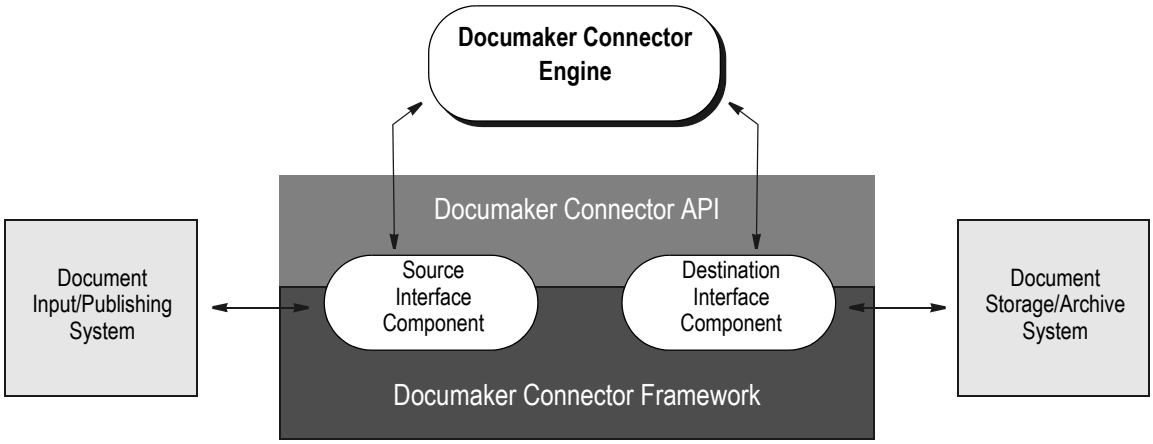
Introduction

This chapter provides an overview of Documaker Connector and the components that comprise it. This chapter includes these topics:

OVERVIEW

Moving documents between applications which do not have a common interface has traditionally been a manual and tedious job. You can create batch and/or cron jobs to automate this process, but these tend to be very specific and not reusable.

Documaker Connector provides a pipeline to move documents between applications. The basic model of the Documaker Connector is that there is a *source* of incoming or generated documents and a *destination* where those documents are to be sent or stored. It consists of these parts:



The source and destination interfaces are customizable and this chapter explains how to create new implementations of these components.

For example, the source might be a document automation solution, such as Oracle Documaker, which may run continuously or on demand. Such an application can, for example, push output documents into a file system directory or into database storage with the documents in large-objects (LOB).

The destination could be an electronic content management system such as Oracle WebCenter Content Core Capabilities, previously known as Oracle Universal Content Management (UCM), or another service such as a queue system or web service that leads to an archive or distribution, such as a printing or email.

Documaker Connector eases the fail-safe transfer of the documents from the source to the destination, providing status reporting and restart and recovery if necessary. The interfaces to the source and destination systems are encapsulated in replaceable components which adhere to defined interfaces to the core Documaker Connector engine.

In addition to the stand-alone Documaker Connector application, this same technology is integrated with Documaker Enterprise Edition and Document Factory. Destination components developed to work with Documaker Connector also function as destinations for Document Factory's Archiver.

It is important to note that sources and destinations are not designed to work with each other. Instead, they are each designed to work with Documaker Connector interfaces that are independent of any source or destination. This way, any source should work with any destination, and vice versa.

By implementing a new source or destination component which adheres to these defined interfaces, you can create a new pipeline without domain knowledge of the other systems involved (those for which you *are not* writing the interface components).

MOVING DOCUMENTS

Moving documents from a source application to a destination application via the Documaker Connector API consists of these steps:

1. The client application, such as Documaker Connector or the Archiver, acquires a Source instance from the Documaker ConnectorFramework, optionally specifying a Source and/or Destination identifier.

   ```
   Source aSrc = ConnectorFramework.getInstance().acquireSource();
   ```

2. The client application calls importDocuments on the Source instance.

   ```
   int docCount = aSrc.importDocuments();
   ```

3. The Source instance acquires a list of DocumentData objects, usually by querying the source application.

   For each document acquired in step 3, repeat the next three steps:

4. The Source instance sends a DocumentData object to its associated Destination instance.
5. The Destination instance imports the DocumentData object into the destination application and sets the DocumentData's result code and description based on the import result.
6. Once the destination process is complete for that DocumentData object, control returns to the Source instance where it processes the result of the import attempt and possibly updates the source application or some other system.
7. Finally, control is returned to the client application which may...

   - Return to step 2
   - Release the Source instance and continue processing

     ```
     ConnectorFramework.getInstance().returnSource(aSrc);
     ```

   - Release the Source instance and go back to step 1 and start over

The Documaker Connector client application executes these steps in one of these modes of operation:

Mode	In this mode, this process is
Server	Repeated by each source component instance for as long as the application is running.
Singleton	Executed until each source component replies with an empty document list. Then the application exits.

Note For more information about the configuration and execution of Documaker Connector, see the Documaker Connector Installation Guide.

DOCUMAKER CONNECTOR COMPONENTS

The Documaker Connector is comprised of a number of components that work together to provide its functionality. You can customize all of these components, except the Connector Framework component, to...

- Acquire documents from a new source
- Import documents into a new destination
- Provide additional document metadata to the destination

External to the import process are the periodic process components. These generally provide functionality to maintain Documaker Connector's environment. This includes tasks like cleaning up temporary files, updating services, and so on.

The Configuration Component

Class	oracle.documaker.ecmconnector.connectorapi.data.ConfigurationData

The configuration component is a list of name/value pairs that contain the configuration information for each of the other Documaker Connector components. This component is generally not customized but it can be customized if necessary. You can simply add name/value pairs to handle most situations without the need for specialization.

The Documaker Connector Framework

Class	oracle.documaker.ecmconnector.connectorapi.frameworks.ConnectorFramework

This is the main interface client applications use to interact with Documaker Connector. Along with managing the lifetimes of almost all of the other components, this singleton provides access to the source-to-destination channel, which consists of of a source, a destination, and phase listener components.

Destination Components

Class	oracle.documaker.ecmconnector.connectorapi.Destination

The interface between Documaker Connector and the destination system is implemented via a specialization of the destination component. Based on properties provided by the configuration component, the specific implementations establish connections to the destination system, correctly package documents and metadata, import those packages, and safely close destination system connections.

Document Data Components

Class	oracle.documaker.ecmconnector.connectorapi.data.DocumentData

Each document that passes through Documaker Connector has a set of associated metadata that can describe everything from the author to policy information to security to legal dispensation. All of this information is collected in the Document Data component that accompanies the document instance from the source to the destination components.

Periodic Processes

Class	oracle.documaker.ecmconnector.connectorapi.process.PeriodicProcess

Depending on the generation and importation of documents (the usage of the Documaker Connector), it may happen that there are additional functional steps that need to be taken outside the standard process. The periodic process component provides the framework for the implementation of this functionality as well as its integration into Documaker Connector.

Phase Listeners

Class	oracle.documaker.ecmconnector.connectorapi.PhaseListener

During the importation of a document or list of documents, a number of milestones (phases) occur. Examples of these phases are before the acquisition of the document list or after the destination imports a single document, and so on. The phase listener component gives the developer and system administrator the opportunity to insert additional functionality at each of these points.

Source Components

Class	oracle.documaker.ecmconnector.connectorapi.Source

Source components define the interaction between the Documaker Connector channel and the document generation (source) system. These specializations are responsible for acquiring a list of documents (along with metadata) to import, for sending each of these to the destination component, and for processing the results of the destination's import attempt.

THE DEVELOPMENT PHILOSOPHY

These Documaker Connector components were implemented using the concept of *inversion of control*:

- Source
- Destination
- Phase Listener
- Periodic Process

Their basic functional paths are set, although specializations can provide custom behavior at each step in their processing. Because of this rigor, implementations of these components generally do not need any internal knowledge of any others. The notable exception being periodic processes which are designed to work with particular source or destination implementations.

Chapter 2

Developing Source Components

This chapter contains information you can use to develop source components for use with Oracle Documaker Connector. This chapter includes these topics:

OVERVIEW

As described earlier, the source components define the interaction between the Documaker Connector channel and the document generation (source) system. This interaction follows series of steps that perform these tasks:

- Acquire a list of documents
- Individually send those documents to the destination component
- Process the results of each import attempt

While there are several pre-packaged source components, you may want to create a custom version to use with an unsupported document generation facility. When you create a new specialization of the Source class, consider these questions:

- Where are the documents stored and how will their contents be accessed by the source implementation?
- Where is the metadata (the information about, but not part of each document) associated with each document stored?
- What is required to maintain the environment in which each instance will be run?
- How will the results from the destination component be processed?

SOURCE COMPONENT DETAILS

To answer the source development questions, a detailed knowledge of the source component's functional steps is required (or at least highly desired). In the introduction, we saw where the main functions of the source component occur:

- At the beginning of the import request with the acquisition of the document list
- After each destination import attempt with the processing of the document's results

This list describes each activity that takes place during an import request, such as when a client application calls the Source.importDocuments function.

1. Each of the registered PREACQUIREDOCUMENTS phase listeners is executed followed by the Source.preAcquireDocumentList(List<DocumentData> documentList) function. Any custom functionality that needs to execute before the documents are acquired should either be implemented as a phase listener for this step or via the override method.
2. The Source.acquireDocumentList(List<DocumentData> documentList) function is called. This is normally where the source specialization interacts with the document generation system (database, file system, and so on) to acquire the list of documents and their metadata.
3. Each of the registered POSTACQUIREDOCUMENTS phase listeners is executed followed by the Source.postAcquireDocumentList(List<DocumentData> documentList) function.
4. Each of the registered PRESUBMITALLDOCUMENTS phase listeners is executed followed by the Source.preSubmitAllDocuments(List<DocumentData> documentList) function.

   The destination's PREIMPORTALLDOCUMENT phase is executed at this point.
5. A document is sent to the destination for import via the Destination.importSingleDocument(DocumentData documentData) function.
6. Each of the registered PREPROCESSRESULTS phase listeners is executed followed by the Source.preProcessResults(DocumentData documentData) function.
7. The Source.processResults(DocumentData documentData) function is called to process the results of the current document's import attempt.
8. Each of the registered POSTPROCESSRESULTS phase listeners is executed followed by the Source.postProcessResults(DocumentData documentData) function.

   Steps 5-8, are repeated for each document on the list acquired in step 2. Once all of the documents on the list have been through steps 5-8, the destination's PREIMPORTALLDOCUMENT phase is executed.

9. Each of the registered POSTSUBMITALLDOCUMENTS phase listeners is executed followed by the Source.postSubmitAllDocuments(List<DocumentData> documentList) function.
10. The number of documents in the acquisition list is returned as the function exits.

You can introduce custom functionality to the source component in these ways:

- Override one of the methods called from importDocuments
- Configure a phase listener which will execute at the appropriate point in the sequence

AN EXAMPLE SOURCE

Here is a brief description of the requirements for a source implementation that processes batch files generated by the Oracle WebCenter Content BatchLoader application (BatchLoader source component). The only objective is to be able to make the documents (files) from a batch file available to Documaker Connector.

The Batch Loader source reads a single plain text file which contains a sequence of multiline file reference entries. This file is called a *batch file*. Each file reference includes a path to the file and a variable length list of name/value pairs which provide metadata about each document. A sample from the WebCenter Content documentation is this:

```
#This is a comment...
Action=insert
dDocName=Sample1
dDocType=Report
dDocTitle=Title of first document to be checked in
dDocAuthor=sysadmin
dSecurityGroup=Public
primaryFile=sample1.doc
dInDate=5/14/04
<<EOD>>
```

The only supported action for the sample component is *insert*. Each entry must end with this end-of-data marker:

```
<<EOD>>
```

A pound sign (#) indicates a comment, which is ignored when the file is processed. The primaryFile field gives the path to the file to be stored. The other lines are properties for the document record.

The Batch Loader source can instead be configured with a *batch queue file* which is a plain text file that contains the paths to multiple above-described *batch files* listed one per line. This batch queue file can be appended to while Documaker Connector is running to add batch files to the queue. This allows the Batch Loader source to be usable with a Documaker Connector running as a service or daemon in *Server* mode.

Another process can add new lines to the end of the batch queue file. The Batch Loader source will read and remove the first line of the batch queue file and use it as a path to a batch file to process. When all the files in that batch file have been processed, the Batch Loader returns to the batch queue file for the next line. When the file is empty, the source returns an empty document list to Documaker Connector. If Documaker Connector is running in Server mode, the source will eventually be called again after a polling interval expires. Otherwise, the source instance is terminated.

The BatchLoader source implementation includes these classes:

Class Name	Extends Class	Description
BatchLoaderSource	Source	Uses the BatchLoaderSystem class to read a list of incoming files and translates that list into an acceptable source output list for the engine. Also, processes a list which is returned with result statuses.

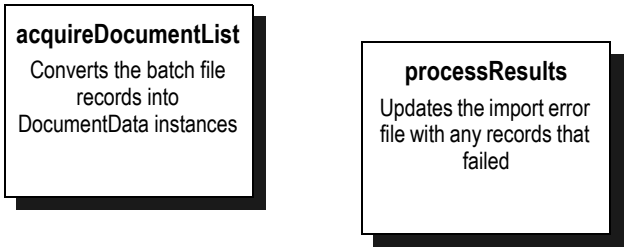
Class Name	Extends Class	Description
BatchLoaderSystem	(none)	Internal singleton class which handles maintaining state and reading the configuration and incoming batch input/definition files.
BatchLoaderDocumentData	DocumentData	An extension of DocumentData that remembers the document's original batch file name.
BatchLoaderProcess	PeriodicProcess	Implements the periodic cleanup of processed document files.
BatchLoaderSourceException	SourceException	Specializes the exception thrown on errors by some BatchLoader source classes.

THE SOURCE IMPLEMENTATION

The Source class acquires lists of documents to be processed by the destination component. It is the conduit between the document generation application and the configured Destination class. As such, it has a number of methods that need to be specialized to properly interact with the source application:

- The class constructor accepts a ConfigurationData object and a String identifier
- The acquireDocumentList method is called to query the Source for any documents waiting to be imported
- The processResults method is called after each set of documents have been imported
- The repair method is called periodically after an error has occurred in the Source instance to give it an opportunity to recover

The BatchLoaderSource implementation is shown here:



To see how this version of source was completed, let’s look at each method in more detail.

For the BatchLoader source implementation, you need to read from batch files. You also need to remember where in the batch you are between requests for document lists. A batch file could have records for a million documents. You cannot process all of them at once. If a batch queue file is being used to submit multiple batch files, you will need to span batch files if necessary and you will need to know which files have been processed.

For this implementation, you will create a singleton to manage these requirements and have the Source specialization interact with this class instead of the batch and other files directly. This simplifies the configuration of the BatchLoaderSource class. It reads one property (batchloader.source.max.records) and configures the singleton's instance.

The BatchLoaderSource's constructor

```
public BatchLoaderSource(ConfigurationData configData,
                         String sourceId) throws SourceException {
    super(configData, sourceId);
    maxBatchSize = Integer.parseInt(configData.getProperty(
                "batchloader.source.max.records", "1"));
     if (maxBatchSize < 1)
         maxBatchSize = 1;

     if (batchSystem == null) {
         batchSystem = BatchLoaderSystem.getInstance();
         batchSystem.configure(configData);
     }
}
```

The BatchLoaderSystem's configure method is more complicated as it:

- Reads and interprets more of the configuration data and stores it internally
- Checks for a configured batch file and if none, checks for a configured batch queue file
- Validates the path to the directory containing the various error files
- Opens the initial batch file, either the one configured or removes the first entry from the batch queue file and opens that one

As mentioned before, acquireDocumentList converts the batch records that contain each document's details into DocumentData objects that the Destination instance can process. The source of these records in this example is the BatchLoaderSystem class, which is in charge of managing the batch files.

The BatchLoaderSource's acquireDocumentList method

```
public void acquireDocumentList(List<DocumentData> documentList)
throws SourceException {
    Vector<Properties> fileRecords =
                      batchSystem.acquireBatchFileList(maxBatchSize);
    String batchId = UUID.randomUUID().toString();

    for (Properties fileRecord : fileRecords) {
        String primaryFile = fileRecord.getProperty("primaryFile");
        String batchFileName =

fileRecord.getProperty(BatchLoaderSystem.BATCHFILENAME);

        if (primaryFile == null || primaryFile.isEmpty() == true) {
            batchSystem.writeBadRecordToFile(fileRecord,
                  "\"primaryFile\" property is missing", null, false);
            continue;
        }

        ECMDocument ecmDoc = new FileECMDocument(primaryFile);
        DocumentData metaData =
```

```
                new BatchLoaderDocumentData(batchId, ecmDoc,
batchFileName);
        Enumeration keys = fileRecord.keys();

        try {
            while (keys.hasMoreElements()) {
                String key = (String)keys.nextElement();

                if ((key.equalsIgnoreCase("Action") == true) ||
                    (key.equals(BatchLoaderSystem.BATCHFILENAME) ==
true))
                        continue;

                if (key.toLowerCase().indexOf("date") >= 0)
                    metaData.put(new DataIdentifier(key, true),
                            dateFormat.format(batchDateFormat.parse(
                                    fileRecord.getProperty(key))));
                else
                    metaData.put(new DataIdentifier(key),
                                    fileRecord.getProperty(key));
            }

            documentList.add(metaData);
        } catch (Exception genErr) {
            batchSystem.writeBadRecordToFile(fileRecord,
                                "Invalid date format", null, false);
        }
    }
}
```

There are a number of items referenced in this method. The DocumentData class contains the following:

- Each document's information
- A reference to the document's content wrapper class (the ECMDocument implementation)
- After the import is complete, the result code and description

Since the destination component may processes date metadata differently from other types, the DataIdentifier class contains the name of each piece of metadata and whether it is a date or not.

Note The system assumes that if a property has the text *date* in its name, it is a date.

Looking through the code, you can see the tasks most source specializations need to complete.

- Get the list of document data from the source system or application (typically in that system's format)
- Determine the batch's identifier (this often comes from the source system)
- For each item from the source system...
    - Create an ECMDocument instance referencing the document's contents
    - Create a DocumentData instance to hold the document's metadata
    - Copy the document data into the DocumentData instance

- Add the DocumentData instance to the DocumentData list

Once the Destination has processed each document, the list is returned to the source implementation as a parameter to the processResults method call. This method lets each implementation update the source system with the results of the import attempts.

The BatchLoaderSource either places each imported record in a list to be deleted or writes the record to an error file (with any error message) based on the record's result code.

The BatchLoaderSource's processResults method

```
public void processResults(List<DocumentData> documentList) throws
SourceException {
    for (DocumentData docData : documentList) {
        if (docData.getResultCode() == DocumentData.IMPORTED)
            batchSystem.addDeletableFile(
                        (String)docData.getProperty("primaryFile"));
        else
            batchSystem.writeImportErrorRecordToFile(docData);
    }
}
```

Here are the additional methods you can override by a specialization. These methods are not used in the BatchLoader source example:

Method	Description
repair	Called periodically to provide opportunity for the Source instance to correct the issues that led to it being placed in the invalid source pool;
cleanUp	Called by the Documaker ConnectorFramework when the system is being closed. This provides an opportunity for the Source instance to clean up any system resources it has acquired and/or perform any required termination functions. For example, you could use this to reestablish a connection with the source system or database that was taken off-line.

Chapter 3

Developing Destination Components

This chapter contains information you can use to develop destination components for use with Oracle Documaker Connector. This chapter includes these topics:

OVERVIEW

Destination components define the interaction between the Documaker Connector channel and the document retention (destination) system. Typically the destination is a traditional content management system, but it can be most anything.

Destination implementations maintain the connection to the external system and convert the document and metadata into the appropriate format. Documaker Connection includes a number of already-created destination components and you can easily create a custom destination if necessary.

The questions you need to answer when creating a new destination implementation mirror those for the source:

- Where will the documents be stored and how will their contents be transmitted?
- Which metadata items associated with each document are required and which are optional?
- What is required to maintain the environment in which each instance will be run?
- How will the results from the import attempt be determined?

DESTINATION COMPONENT DETAILS

Just as you need a detailed knowledge of the source component to develop effective custom implementations, you need a detailed knowledge of the destination component to develop specializations that answer the destination questions. This list describes each activity that takes place during an importSingleDocument request:

1. Each of the registered PREIMPORTALLDOCUMENT phase listeners is executed followed by the Destination.preImportAllDocument(List<DocumentData> documentList) function. This functionality is called as part of the source component processing.
2. Each of the registered PREIMPORTDOCUMENT phase listeners is executed followed by the Destination.preImportDocument(DocumentData documentData) function.
3. All of the registered IMPORTDOCUMENT phase listeners is executed followed by the Destination.importDocument(DocumentData documentData) function.
4. Each of the registered POSTIMPORTDOCUMENT phase listeners is executed followed by the Destination.postImportDocument(DocumentData documentData) function.

   Steps 2-4 are repeated for each document in the list acquired by the source component.
5. Each of the registered POSTIMPORTALLDOCUMENT phase listeners is executed followed by the Destination.postImportAllDocument(List<DocumentData> documentList) function. This functionality is called as part of the source component processing.

Just as with the source component, you can introduce custom functionality to the destination component in one of these ways:

- Override one of the methods called
- Configure a phase listener which will execute at the appropriate point in the sequence

AN EXAMPLE DESTINATION

The FTP destination opens a session to the configured destination site and uploads each document into a subdirectory of the FTP base directory named after the document's batch name. The destination is configured with the properties file and contains these properties:

```
destination.ftp.server
destination.ftp.username
destination.ftp.password
destination.ftp.base.directory
```

The destination implementation for FTP includes these classes:

Class name	Description
FTPDestinationSystem	Internal singleton class which has all the real workhorse code in it.
FTPDestination	Interfaces destination calls from the engine to the internal FTPDestinationSystem object to process each document.

THE DESTINATION IMPLEMENTATION

Destination specializations process import requests from Source instances. They accomplish this by overriding a number of methods in the Destination class.

- The class constructor accepts a ConfigurationData object and a String identifier
- The importDocument method which imports a single document. This is called by the importDocuments method for each item in the DocumentData list
- The repair method is called periodically after an error has occurred in the Destination instance to give it an opportunity to recover

The FTPDestination has little functionality of its own. Most of what it does is to proxy requests through to the FTPDestinationSystem singleton. Because of this, you should understand how FTPDestinationSystem is used to process import requests.

The method called from the FTPDestination's importDocument function is *uploadDocumentContents*. This function performs these tasks:

- Checks the connection to the FTP server
- Moves to the batch directory (after creating it if necessary)
- Uploads the file using an input stream

This code shows how the FTPDestinationSystem gets access to the document contents.

```
// Store file using provided file name
ECMInputStream ecmInput = contents.acquireStream();
InputStream in = ecmInput.getInputStream();

ftpClient.storeFile(ecmInput.getFileName(), in);
```

To free the resources you have acquired, execute the following code in the method's finally block:

```
try { contents.release(); }
catch(Exception genErr) { /* ignore */ }
```

Where *contents* is a ECMDocument reference from the current DocumentData instance. From this, you get the ECMInputStream reference (ecmInput) that provides the java.io.InputStream reference to the document contents and the file name to be associated with them. These are all that are necessary for the FTP interface to store the document. Other external destination systems may require more from the list of document data.

Chapter 4

Developing Periodic Processes

This chapter contains information you can use to create periodic processes for use with Oracle Documaker Connector. This chapter includes these topics:

OVERVIEW

There are times when your implementation of Documaker Connector requires functionality that is associated with the import process, but is not executed as part of it. In this situation, you can define a periodic process specialization to satisfy the requirement.

Periodic processes are analogous to Java's *runnable implementations*. They do, in fact, indirectly implement this interface. To specialize the periodic process component, override the *process* method with the functionality you want to implement each time the component is executed.

Then, in the component's configuration, specify the number of and the wait time between iterations, as described in the Documaker Connector Administration Guide.

AN EXAMPLE PERIODIC PROCESS

The BatchLoaderSource implementation created earlier has an additional requirement, to delete the files that were successfully imported. The list of these files is managed by the batch system and you can access this list via its acquireDeletableFiles method call.

The following code gets the current list (all documents added since the last execution) and attempts to delete each one if it exists. If the file does not exist, the periodic process logs an error.

```
public void process() {
    Vector<String> filePaths = batchSystem.acquireDeletableFiles();

    for (String filePath : filePaths) {
        File deletableFile = new File(filePath);

        if (deletableFile.exists() == true)
            deletableFile.delete();
        else
            cleanUpErrors.println(
                 "Deletable file [" + filePath + "] does not exist.");
    }
}
```

Chapter 5

Developing Phase Listeners

This chapter contains information you can use to create phase listener components for use with Oracle Documaker Connector. This chapter includes these topics:

OVERVIEW

Phase listener components provide a configurable way to add functionality to a Documaker Connector channel regardless of the source and/or destination instances. When requesting the Documaker Connector channel from the ConnectorFramework, the client application can provide a list of identifiers for the desired phase listener components as well. These will be executed at their specified points in the import process.

As with the source and destination components, there are some questions that need to be answered when developing a new Phase Listener:

- Is the functionality applicable to more than one channel configuration? Does it make more sense as a new Source or Destination instead?
- At what point or points during the import process should the Phase Listener execute? Will it need the entire list of documents or just a single one?

PHASE LISTENER COMPONENT DETAILS

There are two primary methods any specialization of the phase listener component must implement/override:

- getActivePhaseIdentifiers()
- One or more of the execute() methods, based on the phases in which the listener is active

This table lists and describes the phases of the import process.

Name	execute() version	Context	Description
PREACQUIREDOCUMENTS	document list	Source	Executed before the Source component's acquisition of the list of documents for import.
POSTACQUIREDOCUMENTS	document list	Source	Executed after the Source component's acquisition of the list of documents for import.
PRESUBMITALLDOCUMENTS	document list	Source	Executed before sending the list of documents to the Destination for processing.
PREIMPORTALLDOCUMENTS	document list	Destination	Executed before receiving the list of documents from the Source for processing.
PREIMPORTDOCUMENT	single document	Destination	Executed before importing a single document from the list.
POSTIMPORTDOCUMENT	single document	Destination	Executed after importing a single document from the list.
PREPROCESSRESULTS	single document	Source	Executed after importing a single document from the list but before the results of that import attempt are processed.
POSTPROCESSRESULTS	single document	Source	Executed after the results from a single document's import attempt are processed.
POSTIMPORTALLDOCUMENTS	document list	Destination	Executed after the entire list of documents have been imported.
POSTSUBMITALLDOCUMENTS	document list	Source	Executed after sending the entire list of documents to the Destination for import.

The active phases for the listener determines if the execute method will have access to the entire list of documents or only individual documents.

AN EXAMPLE PHASE LISTENER

The Documaker Connector library contains a number of *mock* components for testing and sample implementations. The MockPhaseListener is a simple specialization of the Phase Listener component that may be used as a starting point for new implementations. It is configured with a list of phases that specify when it is active and its execute methods simply display the name of the phase for when they are called.

The Phase Listener implementation contains these classes:

Class name	Description
MockPhaseListener	The specialization of the PhaseListener base class that implements the getActivePhaseIdentifiers() method and overrides each of the execute(...) methods.

THE PHASE LISTENER IMPLEMENTATION

Like the other components, phase listener specializations get and process their configurations via their constructors. Generally, this is also where the list of active phases is created, so calls to getActivePhaseIdentifiers() only need to return the pre-constructed list.

The MockPhaseListener checks for and reads the phaselistener.mock.phase.list property, tokenizes it based on the comma (,) character, and adds the phase identifiers to its internal array.

```
    public MockPhaseListener(ConfigurationData configurationData,
                             String phaseId) throws PhaseException {
        super(configurationData, phaseId);

        activePhases = new ArrayList<Phases>();

        String phaseListString =
            configurationData.getPropertyWithModifier(PHASE_LIST,
phaseId);

        if (phaseListString != null) {
            String[] phaseList = phaseListString.split(",");

            for (String phaseStr : phaseList) {
                Phases phaseInst = Phases.valueOf(phaseStr.trim());

                if (phaseInst != null) {
                    activePhases.add(phaseInst);
                }
                else
                logger.debug("Invalid phase id string - " + phaseStr);
            }
        } else
          throw new PhaseException("A list of phases must be provided
for proper configuration of the MockPhaseListener.",
                                        ExceptionCodes.CNT0500000002,
                                      new Object[] { "A list of phases
must be provided for proper configuration of the MockPhaseListener."
});
    }
```

The execute(…) methods for specializing a phase listener component are normally not all overridden unless the active phases require this. When more than one phase causes the execute(…) method to fire, the implementation can use the provided phase identifier to specify which functionality should be executed. The MockPhaseListener's execute methods just display the name of the phase for which they are being fired.

```
    public void execute(List<DocumentData> documentList,
                        Phases phaseId) throws PhaseException {
       logger.debug("Executing phase (list) - " + phaseId.toString());
    }

    public void execute(DocumentData documentData,
                        Phases phaseId) throws PhaseException {
        logger.debug("Executing phase (single) - " +
phaseId.toString());
    }
```

There is a bit of leeway in the code you can add to the execute(..) methods. For example, the PDFBurster phase listener (included with Documaker Connector), removes PDF documents found in the list and replaces them with a series of new documents based on the Documaker forms found in the original. After the documents are imported, the original document is returned to the list and updated with the results of all the *PDFlet* import attempts.

Appendix A

Configuration Properties

This appendix documents the various configuration properties used by Documaker Connector. These include the following topics:

STANDARD SOURCE CONFIGURATION PROPERTIES

The following list of properties is available to any source implementation. Any additional properties needed by the implementation should be documented in the implementation's guide.

Name	Description	Default
source.name	The fully qualified name of the source implementation	-
source.administration.name	The fully qualified name of the SourceAdministration implementation	-
source.count	The number of instances of the source implementation to create	1
source.max.records	The maximum number of documents to return when the getMetaData method is called	1
source.administration.cleanupwait	The number of seconds between source system cleanup calls.	10
source.import.delete.imported.files	Delete the imported files from the file system.	True
source.import.delete.imported.files.count	The number of files to be deleted during each cleanUp call.	50
source.persistence.path	The directory path to contain any result data that cannot be updated in the source system.	-

STANDARD CONFIGURATION PROPERTIES

The following list of properties is available to any destination implementation. any additional properties needed by the implementation should be documented in the implementation's guide.

Name	Description	Default
destination.name	The fully qualified name of the destination implementation	-
destination.administration.name	The fully qualified name of the DestinationAdministration implementation	-
destination.active.wait	The number of seconds to wait for the destination system to return as active	10

Appendix B

Sample Implementations

This appendix provides the following sample implementations:

BATCHLOADERSOURCE IMPLEMENTATION

```
package oracle.documaker.ecmconnector.batchloadersource;

import java.text.SimpleDateFormat;

import java.util.Enumeration;
import java.util.List;

import java.util.Properties;
import java.util.UUID;
import java.util.Vector;

import org.apache.log4j.Logger;

import oracle.documaker.ecmconnector.connectorapi.Source;
import
oracle.documaker.ecmconnector.connectorapi.data.ConfigurationData;
import oracle.documaker.ecmconnector.connectorapi.data.DocumentData;
import
oracle.documaker.ecmconnector.connectorapi.data.DataIdentifier;
import oracle.documaker.ecmconnector.connectorapi.data.ECMDocument;
import
oracle.documaker.ecmconnector.connectorapi.data.FileECMDocument;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.SourceExceptio
n;

public class BatchLoaderSource extends Source {
    private static Logger logger =
        Logger.getLogger(BatchLoaderSource.class.getName());
    private static Integer maxBatchSize;
    private SimpleDateFormat dateFormat =
        new SimpleDateFormat("yyyy-MM-dd HH:mm:ss.SSS");
    private SimpleDateFormat batchDateFormat =
        new SimpleDateFormat("MM/dd/yy");
    private BatchLoaderSystem batchSystem;

    public BatchLoaderSource(ConfigurationData configData,
                             String sourceId) throws SourceException {
        super(configData, sourceId);
        if (maxBatchSize == null)
            maxBatchSize =

Integer.parseInt(configData.getProperty("batchloader.source.max.reco
rds",
                                                                "1"));
        if (maxBatchSize < 1)
            maxBatchSize = 1;
        logger.debug("Maximum batch size is " + maxBatchSize);

        if (batchSystem == null) {
            batchSystem = BatchLoaderSystem.getInstance();
            batchSystem.configure(configData);
        }
    }

   public void acquireDocumentList(List<DocumentData> documentList)
throws SourceException {
        Vector<Properties> fileRecords =
            batchSystem.acquireBatchFileList(maxBatchSize);
        String batchId = UUID.randomUUID().toString();

        logger.debug("BatchId=" + batchId);
```

```
        for (Properties fileRecord : fileRecords) {
          String primaryFile = fileRecord.getProperty("primaryFile");
            String batchFileName =
            fileRecord.getProperty(BatchLoaderSystem.BATCHFILENAME);

          if (primaryFile == null || primaryFile.isEmpty() == true) {
              batchSystem.writeBadRecordToFile(fileRecord,
                "\"primaryFile\" property is missing", null, false);
              continue;
            }

            ECMDocument ecmDoc = new FileECMDocument(primaryFile);
            DocumentData metaData =
                new BatchLoaderDocumentData(batchId, ecmDoc,
                                            batchFileName);
            Enumeration keys = fileRecord.keys();

            try {
                while (keys.hasMoreElements()) {
                    String key = (String)keys.nextElement();

                    if (key.equalsIgnoreCase("Action") == true) {
                       logger.debug("Skipping \"Action\" name/value
pair");
                        continue;
                    }

                    if (key.equals(BatchLoaderSystem.BATCHFILENAME)
== true) {
                        logger.debug("Skipping batch file name name/
value pair");
                        continue;
                    }

                    if (key.toLowerCase().indexOf("date") >= 0)
                        metaData.put(new DataIdentifier(key, true),

dateFormat.format(batchDateFormat.parse(fileRecord.getProperty(key))
));
                    else
                        metaData.put(new DataIdentifier(key),
                                     fileRecord.getProperty(key));
                }

                documentList.add(metaData);
            } catch (Exception genErr) {
                batchSystem.writeBadRecordToFile(fileRecord,
                                        "Invalid date format", null,
                                                false);
            }
        }
    }

   public void processResults(List<DocumentData> documentList) throws
SourceException {
        for (DocumentData docData : documentList) {
            if (docData.getResultCode() == DocumentData.IMPORTED)

batchSystem.addDeletableFile((String)docData.getProperty("primaryFil
e"));
            else
                batchSystem.writeImportErrorRecordToFile(docData);
        }
    }
```

```
    public boolean repair() {
        return false;
    }

    public void cleanUp() {
    }
}
```

BATCHLOADERSYSTEM IMPLEMENTATION

BatchLoaderSource Implementation section with the following code:

```
package oracle.documaker.ecmconnector.batchloadersource;

import java.io.BufferedReader;
import java.io.File;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
import java.io.PrintWriter;
import java.io.RandomAccessFile;

import java.nio.channels.FileLock;

import java.util.Collections;
import java.util.Enumeration;
import java.util.HashSet;
import java.util.Hashtable;
import java.util.Iterator;
import java.util.Properties;
import java.util.Set;
import java.util.Vector;

import oracle.documaker.ecmconnector.connectorapi.data.DocumentData;
import
oracle.documaker.ecmconnector.connectorapi.data.ConfigurationData;
import
oracle.documaker.ecmconnector.connectorapi.data.DataIdentifier;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.ExceptionCodes
;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.SourceExceptio
n;

import org.apache.log4j.Logger;

class BatchLoaderSystem {
    private static Logger logger =
        Logger.getLogger(BatchLoaderSystem.class.getName());
    private boolean configured;
    private String identifier;
    private String pathSep;
    private File currentBatchFile;
    private File batchQueueFile;
    private boolean queuedFiles;
    private String errorDirectory;
    private BufferedReader batchFileReader;
    private PrintWriter sourceRecordErrors;
    private PrintWriter importRecordErrors;
    private Set deletableFiles =
        Collections.synchronizedSet(new HashSet<String>());
    private Boolean deleteImportedFiles;
    private Integer deleteFileCount;
    private static BatchLoaderSystem batchSystem;
    private static Hashtable<String, BatchLoaderSystem>
alternateSystems;


    private BatchLoaderSystem() {
        // Hidden to prevent instances
        logger.debug("Executing");
```

```
            configured = false;
        }

        static synchronized BatchLoaderSystem getInstance() {
            logger.debug("Executing");

            if (batchSystem == null) {
                logger.debug("Creating singleton instance");
                batchSystem = new BatchLoaderSystem();
            }

            return batchSystem;
        }

        static synchronized BatchLoaderSystem getInstance(String
identifier) throws BatchLoaderSourceException {
            logger.debug("Executing");

            if (identifier == null)
                return getInstance();

            if (alternateSystems == null)
                alternateSystems = new Hashtable<String,
BatchLoaderSystem>();

            BatchLoaderSystem retVal = alternateSystems.get(identifier);

            if (retVal == null) {
                retVal = new BatchLoaderSystem();
                retVal.identifier = identifier;
                alternateSystems.put(identifier, retVal);
            }

            return retVal;
        }

       synchronized void configure(ConfigurationData configData) throws
SourceException {
            logger.debug("Executing");

            boolean configError = false;

            pathSep = System.getProperty("file.separator");

            // Read the cleanup data
            if (deleteImportedFiles == null)
                deleteImportedFiles =

Boolean.parseBoolean(configData.getPropertyWithModifier("source.impo
rt.delete.imported.files",
                                                                identifier,
                                                                 "false"));
          logger.debug("Delete imported files - " + deleteImportedFiles);

            if (deleteFileCount == null)
                deleteFileCount =

Integer.parseInt(configData.getPropertyWithModifier("source.import.d
elete.imported.files.count",
                                                                identifier,
                                                                     "0"));
            logger.debug("Number of files per deletion - " +
deleteFileCount);
```

```
        // Get the batch file or batch queue file
        if (currentBatchFile == null && batchQueueFile == null) {
            String path =

configData.getPropertyWithModifier("source.batchloader.batchfile",
                                                        identifier);

            if (path != null && path.isEmpty() == false) {
                currentBatchFile = new File(path);

                if (currentBatchFile.exists() == false) {
                    logger.error("Configured batch file [" + path +
                                 "] does not exist. Please check
configuration.");
                    configError = true;
                } else if (currentBatchFile.isFile() == false) {
                    logger.error("Configured batch file [" + path +
                                "] does not reference a file. Please
check configuration.");
                    configError = true;
                } else {
                 logger.debug("The configured batch file is " + path);
                    queuedFiles = false;
                }
            } else {
                path =
configData.getPropertyWithModifier("source.batchloader.batchqueuefil
e",
                                    identifier);

                if (path != null && path.isEmpty() == false) {
                    batchQueueFile = new File(path);

                    if (batchQueueFile.exists() == false) {
                       logger.error("Configured batch queue file ["
+ path +
                                    "] does not exist. Please check
configuration.");
                        configError = true;
                    } else if (batchQueueFile.isFile() == false) {
                       logger.error("Configured batch queue file ["
+ path +
                                    "] does not reference a file.
Please check configuration.");
                        configError = true;
                    } else {
                      logger.debug("The configured batch queue file
is " +
                                   path);
                        queuedFiles = true;
                    }
                } else {
                    logger.error("No batch file or batch queue file
property provided. Please check configuration.");
                    configError = true;
                }
            }

            if (errorDirectory == null) {
                errorDirectory =

configData.getPropertyWithModifier("source.batchloader.errordirector
y",
                                                            identifier);
```

```
                if (errorDirectory == null ||
                    errorDirectory.isEmpty() == true) {
                    logger.error("An error directory needs to be
defined. Please check configuration.");
                    configError = true;
                } else {
                    File errorDir = new File(errorDirectory);

                    if (errorDir.exists() == false)
                        errorDir.mkdir();

                    if (errorDir.isDirectory() == false) {
                        logger.error("The error directory path [" +
                                    errorDirectory +
                                "] does not point to a directory.");
                        configError = true;
                    } else if (errorDirectory.endsWith(pathSep) == false)
                            errorDirectory += pathSep;
                    }
                }

                // Validate operational mode
                // Todo - figure this out
            }

            if (configError == true)
               throw new SourceException("Failed to configure the Batch
Loader Source. Please check log for details.",
                                    ExceptionCodes.CNT0501500002, null);

            configured = true;
            openBatchFile();
        }

        synchronized Vector<Properties> acquireBatchFileList(int count)
throws SourceException {
            if (configured == false)
               throw new SourceException("The BatchLoaderSystem instance
has not been configured.",
                                    ExceptionCodes.CNT0501500002, null);

            Vector<Properties> batchFileList = new Vector<Properties>();

            if (batchFileReader == null) {
                openBatchFile();

                if (batchFileReader == null)
                    return batchFileList;
            }

            while (batchFileList.size() < count) {
                Properties batchData = readBatchRecord();

                // Check for end of file
                if (batchData == null || batchData.size() == 0) {
                    openBatchFile();

                    if (batchFileReader == null)
                        return batchFileList;
                    else
                        continue;
                }
```

```
            String actionType = batchData.getProperty(ACTIONLABEL);

            if (actionType == null)
              writeBadRecordToFile(batchData, "No action specified",
null,
                                   false);
          else if (actionType.equalsIgnoreCase(ACTIONINSERT) == false)
                writeBadRecordToFile(batchData,
                                "Unsupported action specified - " +
                                   actionType, null, false);
            else
                batchFileList.add(batchData);
        }

        return batchFileList;
    }

    synchronized void addDeletableFile(String filePath) {
        if (deleteImportedFiles == true)
            deletableFiles.add(filePath);
    }

    synchronized Vector<String> acquireDeletableFiles() {
        Vector<String> returnVal = new Vector<String>();

        if (deleteImportedFiles == true) {
            Iterator<String> fileIter = deletableFiles.iterator();

            while (returnVal.size() < deleteFileCount &&
fileIter.hasNext())
                returnVal.add(fileIter.next());

            for (String fileP : returnVal) {
                logger.debug("returning - " + fileP);

                deletableFiles.remove(fileP);
            }
        }

        return returnVal;
    }

    private void openBatchFile() throws SourceException {
        // Open configured batch file
        if (queuedFiles == false) {
            if (batchFileReader != null)
            throw new SourceException("Trying to reprocess configured
batch file. This is probably due to running in server mode without a
batch queue. Please check configuration.",
                                  ExceptionCodes.CNT0501500004, null);
            else {
                try {
                    batchFileReader =
                              new BufferedReader(new
FileReader(currentBatchFile));
                    return;
                } catch (Exception genErr) {
                throw new SourceException("Failed to open configured
batch file [" +

currentBatchFile.getAbsolutePath() +
                                        "] - " + genErr.getMessage(),
                                              genErr,
                                       ExceptionCodes.CNT0501500005,
```

```
                                                        new Object[] {
currentBatchFile.getAbsolutePath(),
                                                          genErr.getMessage()
});
                }
            }
        } else {
            try {
                String nextFilePath = readNextBatchFilePath();

               if (nextFilePath == null || nextFilePath.isEmpty() ==
true) {
                    logger.info("No batch file found in queue.");
                    batchFileReader = null;
                } else {
                    currentBatchFile = new File(nextFilePath);
                    batchFileReader =
                            new BufferedReader(new
FileReader(currentBatchFile));
                }
            } catch (SourceException srcErr) {
                throw srcErr;
            } catch (Exception genErr) {
               throw new SourceException("Failed to open batch queue
file or queue'd batch file - " +
                                          genErr.getMessage(), genErr,
                                        ExceptionCodes.CNT0501500006,
                                    new Object[] { genErr.getMessage()
});
            }
        }
    }

    private String readNextBatchFilePath() throws SourceException {
        if (batchQueueFile == null)
          throw new SourceException("No batch queue file configured.",
                                    ExceptionCodes.CNT0501500007, null);

        RandomAccessFile randFile = null;
        FileLock fileLock = null;

        try {
            randFile = new RandomAccessFile(batchQueueFile, "rwd");

            fileLock = randFile.getChannel().lock();

            BufferedReader fileRdr =
               new BufferedReader(new FileReader(randFile.getFD()));
            Vector<String> lines = new Vector<String>();
            String line = fileRdr.readLine();
            String nextFilePath = line;

            while (line != null) {
                lines.add(line);
                line = fileRdr.readLine();
            }

            randFile.seek(0);

            PrintWriter fileWtr =
                new PrintWriter(new FileWriter(randFile.getFD()));

            for (int lcv = 1; lcv < lines.size(); ++lcv) {
                fileWtr.println(lines.get(lcv));
```

```
                fileWtr.flush();
            }

            randFile.setLength(randFile.getFilePointer());

            return nextFilePath;
        } catch (Exception genErr) {
            throw new SourceException("Failed to get path for next
batch file - " +
                                      genErr.getMessage(), genErr,
                                      ExceptionCodes.CNT0501500008,
                                  new Object[] { genErr.getMessage() });
        } finally {
            if (fileLock != null)
                try {
                    fileLock.release();
                } catch (Exception genErr) { /* ignore */
                }
            if (randFile != null)
                try {
                    randFile.close();
                } catch (Exception genErr) { /* ignore */
                }
        }
    }

    private Properties readBatchRecord() throws
BatchLoaderSourceException {
        logger.debug("Executing");

        Properties fileData = new Properties();

        fileData.setProperty(BATCHFILENAME,
currentBatchFile.getName());
        try {
            String line = batchFileReader.readLine();

           while (line != null && line.equals(EODMARKER) == false) {
                if (line.startsWith("#") == false &&
                    line.trim().isEmpty() == false) {
                    int index = line.indexOf("=");

                    if (index < 1 || index == (line.length() - 1)) {
                        // Write current record to source error file
                        writeBadRecordToFile(fileData,
                                             "Line does not contain a
name value pair",
                                               line, true);

                        // Start new record
                        fileData.clear();
                    } else {
                      String name = line.substring(0, index).trim();
                     String value = line.substring(index + 1).trim();

                        if (name.isEmpty() || value.isEmpty()) {
                         // Write current record to source error file
                            writeBadRecordToFile(fileData,
                                                 "Line does not contain
a name value pair",
                                                     line, true);

                            // Start new record
                            fileData.clear();
```

```
                        } else
                            fileData.setProperty(name, value);
                    }
                }

                line = batchFileReader.readLine();
            }
        } catch (IOException ioErr) {
           writeBadRecordToFile(fileData, ioErr.getMessage(), null,
false);
            throw new BatchLoaderSourceException("Batch file read
exception - " + ioErr.getMessage(),
                                                 ioErr,
ExceptionCodes.CNT0501500009, new Object[] { ioErr.getMessage() });
        }

        return ((fileData.size() <= 1) ? null : fileData);
    }

    synchronized void writeBadRecordToFile(Properties record,
                                   String errorMessage, String line,
                                           boolean getRest) throws
BatchLoaderSourceException {
        try {
            getErrorWriter(SOURCEWRITER,
record.getProperty(BATCHFILENAME));
            sourceRecordErrors.println("### RECORD ERROR - " +
errorMessage);

            Enumeration keys = record.keys();

            while (keys.hasMoreElements()) {
                String key = (String)keys.nextElement();

                if (key.equalsIgnoreCase(BATCHFILENAME) == false)
                    sourceRecordErrors.println(key + "=" +
                                               record.getProperty(key));
            }

            if (line != null)
               sourceRecordErrors.println("### INVALID DATA IN BATCH
FILE - " +
                                               line);

            if (getRest == true) {
                String tempBuf = batchFileReader.readLine();

                while (tempBuf != null) {
                    sourceRecordErrors.println(tempBuf);

                    if (tempBuf.equals(EODMARKER) == true)
                        break;

                if ((tempBuf = batchFileReader.readLine()) == null) {
                        sourceRecordErrors.println("### Missing end
of data marker ... adding");
                        sourceRecordErrors.println(EODMARKER);
                    }
                }
            }
        } catch (IOException ioErr) {
            throw new BatchLoaderSourceException("Source Error File
write exception - " + ioErr.getMessage(),
```

```
                                                    ioErr,
ExceptionCodes.CNT0501500010, new Object[] { ioErr.getMessage() });
        } finally {
            if (sourceRecordErrors != null)
                sourceRecordErrors.close();
        }
    }

    synchronized void writeImportErrorRecordToFile(DocumentData
metaDatum) throws BatchLoaderSourceException {
        try {
            getErrorWriter(IMPORTWRITER,

((BatchLoaderDocumentData)metaDatum).getBatchFileName());
          importRecordErrors.println("### RECORD ERROR - Record Faied
to Import");

            Enumeration keys = metaDatum.keys();

            // Write the failure info
            importRecordErrors.println("### [" +
metaDatum.getResultCode() +
                                       "] - " +
                                   metaDatum.getResultDescription());
          // Add the action back to the record (will always be insert)
            importRecordErrors.println("Action=insert");

            while (keys.hasMoreElements()) {
             DataIdentifier key = (DataIdentifier)keys.nextElement();

                importRecordErrors.println(key.getName() + "=" +
                                           metaDatum.get(key));
            }

            // Add end of data marker
            importRecordErrors.println("<<EOD>>");
            importRecordErrors.println();
        } finally {
            if (importRecordErrors != null)
                importRecordErrors.close();
        }
    }

    synchronized void getErrorWriter(int writerType,
                                     String batchFileName) throws
BatchLoaderSourceException {
        StringBuffer errorFileName = new
StringBuffer().append(errorDirectory);

        if (writerType == SOURCEWRITER)
            errorFileName.append(batchFileName + ".SOURCEERRORS");
        else
            errorFileName.append(batchFileName + ".IMPORTERRORS");

        File errFile = new File(errorFileName.toString());

        if (errFile.length() > (100 * 1024)) {
            int nameCntr = 1;
            File newFile =
               new File(errFile.getAbsolutePath() + "." + nameCntr);

            while (newFile.exists() == true) {
                nameCntr += 1;
```

```
                newFile = new File(errFile.getAbsolutePath() + "." +
nameCntr);
            }

            errFile.renameTo(newFile);
        }

        try {
            if (writerType == SOURCEWRITER)
                sourceRecordErrors =
                        new PrintWriter(new
java.io.FileWriter(errorFileName.toString(),
                                                                true), true);
            else
                importRecordErrors =
                        new PrintWriter(new
java.io.FileWriter(errorFileName.toString(),
                                                                true), true);
        } catch (Exception genErr) {
            if (writerType == SOURCEWRITER) {
                sourceRecordErrors = null;
                throw new BatchLoaderSourceException("Could not open
source error file [" +
                                                    errorFileName.toString()
+ "] - " + genErr.getMessage(),
                                                                genErr,
ExceptionCodes.CNT0501500011, new Object[] {
errorFileName.toString(), genErr.getMessage() });
            } else {
                importRecordErrors = null;
                throw new BatchLoaderSourceException("Could not open
import error file [" +
                                                    errorFileName.toString()
+ "] - " + genErr.toString(),
                                                                genErr,
ExceptionCodes.CNT0501500012, new Object[] {
errorFileName.toString(), genErr.getMessage() });
            }
        }
    }


    private static final String EODMARKER = "<<EOD>>";
    private static final String ACTIONLABEL = "Action";
    private static final String ACTIONINSERT = "insert";
    public static final String BATCHFILENAME = "__BATCH_FILE_NAME__";
    private static final int SOURCEWRITER = 1;
    private static final int IMPORTWRITER = 2;
}
```

BATCHLOADERDOCUMENTDATA IMPLEMENTATION

In the BatchLoaderSource implementation, you need to maintain additional information about each document that will not be part of the import data (the batch file name that the record came from). To do this, you simply sub-class the DocumentData class and add an accessor for the information.

```
package oracle.documaker.ecmconnector.batchloadersource;

import oracle.documaker.ecmconnector.connectorapi.data.DocumentData;
import oracle.documaker.ecmconnector.connectorapi.data.ECMDocument;

public class BatchLoaderDocumentData extends DocumentData {
    private String batchFileName;

    public BatchLoaderDocumentData(String string, ECMDocument
ecmDocument, String batchFileName) {
        super(string, ecmDocument);
        this.batchFileName = batchFileName;
    }

    public String getBatchFileName() {
        return batchFileName;
    }
}

The BatchLoaderProcess Implementation
package oracle.documaker.ecmconnector.batchloadersource;

import java.io.File;

import java.io.PrintWriter;

import java.util.Vector;

import
oracle.documaker.ecmconnector.connectorapi.data.ConfigurationData;
import
oracle.documaker.ecmconnector.connectorapi.process.PeriodicProcess;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.SourceExceptio
n;

public class BatchLoaderProcess extends PeriodicProcess {
    private PrintWriter cleanUpErrors;

    public BatchLoaderProcess(ConfigurationData configurationData,
                          String identifier) throws SourceException {
        super(configurationData, identifier);
        configure(configurationData);
    }

    public BatchLoaderProcess(ConfigurationData configurationData)
throws SourceException {
        super(configurationData);
        configure(configurationData);
    }

   private void configure(ConfigurationData configurationData) throws
SourceException {
       BatchLoaderSystem.getInstance().configure(configurationData);

        String pathSep = System.getProperty("file.separator");
```

```
        String persistencePath =
           configurationData.getProperty("source.persistence.path",
".");

        try {
            cleanUpErrors =
             new PrintWriter(new java.io.FileWriter(persistencePath +
                            (persistencePath.endsWith(pathSep) ?
                               "" : pathSep) + "CLEANUP_ERRORS",
                                 true), true);
        } catch (Exception genErr) {
            throw new SourceException("Failed to create writer to
cleanup errors file.",
                                      genErr);
        }
    }

    public void process() {
        Vector<String> filePaths =
            BatchLoaderSystem.getInstance().acquireDeletableFiles();

        for (String filePath : filePaths) {
            File deletableFile = new File(filePath);

            if (deletableFile.exists() == true)
                deletableFile.delete();
            else
               cleanUpErrors.println("Deletable file [" + filePath +
                                     "] does not exist.");
        }
    }
}

< The FileECMDocument implementation is good to go >

< Drop the FTPDestinationAdministration implementation >

< Replace the FTPDestination Implementation code with the following >
package oracle.documaker.ecmconnector.ftpdestination;

import oracle.documaker.ecmconnector.connectorapi.Destination;
import
oracle.documaker.ecmconnector.connectorapi.data.ConfigurationData;
import oracle.documaker.ecmconnector.connectorapi.data.DocumentData;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.DestinationExc
eption;

import org.apache.log4j.Logger;

public class FTPDestination extends Destination {
    private static Logger logger =
        Logger.getLogger(FTPDestination.class.getName());
    private FTPDestinationSystem ftpSystem;

   public FTPDestination(ConfigurationData configurationData, String
destinationId) throws DestinationException {
        super(configurationData, destinationId);

        ftpSystem = FTPDestinationSystem.getInstance();
        ftpSystem.configure(configurationData);
    }
```

```
    public void importDocument(DocumentData documentData) throws
DestinationException {
        ftpSystem.uploadDocumentContents(documentData);
    }

    public boolean repair() {
        return ftpSystem.establishConnection();
    }

    public void cleanUp() {
    }
}
```

FILEECMDOCUMENT IMPLEMENTATION

```
public class FileECMDocument implements ECMDocument {
    private String filePath;
    private String fileName;
    private FileInputStream inputStream;
    private long contentLength;
    private Logger logger =
Logger.getLogger(FileECMDocument.class.getName());

    /**
     * Constructs a new FileECMDocument instance using the given file
path to identify the location of the document's contents.
     *
     * @param filePath The path to the file containing the document's
contents
     */
    public FileECMDocument(String filePath) {
        this.filePath = filePath;
        inputStream = null;

        File sourceFile = new File(filePath);

        contentLength = sourceFile.length();
        fileName = sourceFile.getName();
        logger.debug("fileName = " + fileName);
    }

    public String acquireFilePath() throws ECMDocumentException {
        if (filePath == null)
           throw new ECMDocumentException("No filepath available.");
        return filePath;
    }

   public ECMInputStream acquireStream() throws ECMDocumentException
{
        try {
            if (inputStream == null)
                inputStream = new FileInputStream(filePath);
            else
             throw new ECMDocumentException("Input stream associated
with previous instance.");
        } catch (FileNotFoundException fnfErr) {
            fnfErr.printStackTrace();
            throw new ECMDocumentException("Failed to create input
stream.",
                                           fnfErr);
        }

        return new ECMInputStream(fileName, inputStream);
    }

    public long getContentLength() {
        return contentLength;
    }

    public void release() throws ECMDocumentException {
        try {
            if (inputStream != null) {
                inputStream.close();
                inputStream = null;
            }
        } catch (IOException ioErr) {
```

```
                throw new ECMDocumentException("Failed to close input
stream.",
                                               ioErr);
            }
        }
}
```

FTPDESTINATION IMPLEMENTATION

```
public class FTPDestination implements Destination {
    private static Logger logger =
Logger.getLogger(FTPDestination.class.getName());
    private FTPDestinationSystem ftpSystem;

    public FTPDestination() {
        logger.debug("Executing");
    }

    public void configure(Properties properties) throws
DestinationException {
        logger.debug("Executing");

        if (ftpSystem == null)
            ftpSystem = FTPDestinationSystem.getInstance();
    }

    public void beginTransaction(TransactionTypes transactionTypes)
throws DestinationException {
        logger.debug("Executing");
    }

   public void executeTransaction(TransactionTypes transactionType,
MetaData metaData) throws DestinationException {
        logger.debug("Executing");

        switch (transactionType) {
        case IMPORT:
            ftpSystem.uploadDocumentContents(metaData);
            metaData.setResultCode(MetaData.IMPORTED);
            break;

        default:
            throw new DestinationException("Transaction type not
supported");
        }
    }

    public void endTransaction(TransactionTypes transactionTypes)
throws DestinationException {
        logger.debug("Executing");
    }
}
```

FTPDESTINATIONSYSTEM IMPLEMENTATION

```
class FTPDestinationSystem {
    private static Logger logger =
Logger.getLogger(FTPDestinationSystem.class.getName());
    private String ftpServer;
    private String userName;
    private String passWord;
    private String baseDirectory;
    private FTPClient ftpClient;
    private static FTPDestinationSystem ftpDestinationSystem;

    private FTPDestinationSystem() {
        logger.debug("Executing");
    }

    static FTPDestinationSystem getInstance() {
        logger.debug("Executing");

        if (ftpDestinationSystem == null) {
            logger.debug("Creating singleton instance");
            ftpDestinationSystem = new FTPDestinationSystem();
        }

        return ftpDestinationSystem;
    }

    synchronized void configure(Properties configData) {
        logger.debug("Executing");

        if (ftpServer == null)
            ftpServer =
configData.getProperty("destination.ftp.server");
        logger.debug("FTP server address - " + ftpServer);

        if (userName == null)
            userName =
configData.getProperty("destination.ftp.username");
        logger.debug("FTP user name - " + userName);

        if (passWord == null)
            passWord =
configData.getProperty("destination.ftp.password");
        logger.debug("FTP password acquired");

        if (baseDirectory == null)
            baseDirectory =
configData.getProperty("destination.ftp.base.directory");
        logger.debug("Base directory - " + baseDirectory);

        if (ftpClient == null) {
            try {
                ftpClient = new FTPClient();
                ftpClient.connect(ftpServer);

                if
(FTPReply.isPositiveCompletion(ftpClient.getReplyCode()) == false) {
                    ftpClient.disconnect();
                    ftpClient = null;
                }
             else if (ftpClient.login(userName, passWord) == false) {
                    ftpClient.logout();
                    ftpClient = null;
                }
```

```
                    else {
                        int retVal = ftpClient.cwd(baseDirectory);

                    if (FTPReply.isPositiveCompletion(retVal) == false) {
                            ftpClient.mkd(baseDirectory);
                            ftpClient.cwd(baseDirectory);
                        }
                    }
                }
                catch(IOException ioErr) {
                    try {
                        ftpClient.disconnect();
                        ftpClient = null;
                    }
                    catch(Exception genErr) {
                        // Ignore
                    }
                }
            }
        }

        synchronized boolean checkServer() {
            logger.debug("Executing");

            return (ftpClient != null && ftpClient.isConnected());
        }

       synchronized void uploadDocumentContents(MetaData metaData) throws
    DestinationException {
            logger.debug("Executing");

            if (ftpClient == null || ftpClient.isConnected() == false)
                throw new DestinationException("No destination system
    connection available.");

            ECMDocument contents = metaData.getECMDocument();

            try {
                int retVal = ftpClient.cwd(metaData.getBatchId());

                if (FTPReply.isPositiveCompletion(retVal) == false) {
                    ftpClient.mkd(metaData.getBatchId());
                    ftpClient.cwd(metaData.getBatchId());
                }

                // Change mode to binary
                ftpClient.setFileType(FTP.BINARY_FILE_TYPE);

                ftpClient.enterLocalPassiveMode();

                // Store file using provided file name
                ECMInputStream ecmInput = contents.acquireStream();
                InputStream in = ecmInput.getInputStream();

                ftpClient.storeFile(ecmInput.getFileName(), in);

                // Return to parent directory (baseDirectory)
                ftpClient.cwd("..");
            }
            catch(ECMDocumentException docErr) {
                throw new DestinationException("Failed getting document
    contents - " + docErr.getMessage());
            }
            catch(IOException ioErr) {
```

```
            try { ftpClient.disconnect(); } catch(IOException
innerIoErr) { /* ignore */ }
            ftpClient = null;
          throw new DestinationException("Error in destination system
communication - " + ioErr.getMessage());
        }
        finally {
           try { contents.release(); } catch(Exception genErr) { /*
ignore */ }
        }
    }
}
```

MOCKPHASELISTENER IMPLEMENTATION

```
package oracle.documaker.ecmconnector.mockphaselistener;

import java.util.ArrayList;
import java.util.List;

import oracle.documaker.ecmconnector.connectorapi.PhaseListener;
import oracle.documaker.ecmconnector.connectorapi.Phases;
import
oracle.documaker.ecmconnector.connectorapi.data.ConfigurationData;
import oracle.documaker.ecmconnector.connectorapi.data.DocumentData;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.ExceptionCodes
;
import
oracle.documaker.ecmconnector.connectorapi.exceptions.PhaseException
;

import org.apache.log4j.Logger;

public class MockPhaseListener extends PhaseListener {
    private static Logger logger =
        Logger.getLogger(MockPhaseListener.class.getName());
    private List<Phases> activePhases;

    public MockPhaseListener(ConfigurationData configurationData,
                             String phaseId) throws PhaseException {
        super(configurationData, phaseId);

        activePhases = new ArrayList<Phases>();

        String phaseListString =
            configurationData.getPropertyWithModifier(PHASE_LIST,
phaseId);

        if (phaseListString != null) {
            String[] phaseList = phaseListString.split(",");

            for (String phaseStr : phaseList) {
                Phases phaseInst = Phases.valueOf(phaseStr.trim());

                if (phaseInst != null) {
                    activePhases.add(phaseInst);
                }
                else
                logger.debug("Invalid phase id string - " + phaseStr);
            }
        } else
          throw new PhaseException("A list of phases must be provided
for proper configuration of the MockPhaseListener.",
                                       ExceptionCodes.CNT0500000002,
                                     new Object[] { "A list of phases
must be provided for proper configuration of the MockPhaseListener."
});
    }

    public List<Phases> getActivePhaseIdentifiers() {
        return activePhases;
    }

    public void execute(List<DocumentData> documentList,
                        Phases phaseId) throws PhaseException {
      logger.debug("Executing phase (list) - " + phaseId.toString());
```

```
    }

    public void execute(DocumentData documentData,
                        Phases phaseId) throws PhaseException {
        logger.debug("Executing phase (single) - " +
phaseId.toString());
    }

    public void execute(Phases phaseId) throws PhaseException {
      logger.debug("Executing phase (none) - " + phaseId.toString());
    }

    public void cleanUp() {
    }
```