

Oracle Real-Time Scheduler

Database Administrator's Guide

Release 2.1.0.1

E26601-02

February 2012

Copyright © 2000, 2012, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this software or related documentation is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS

Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License (December 2007). Oracle America, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications which may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third party content, products and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third party content, products or services.

Contents

Preface	i-i
Audience	i-i
Related Documents	i-i
Updates to this Documentation	i-i
Conventions	i-ii
Chapter 1	
Database Overview	1-1
Supported Database Platforms.....	1-2
Supported Platforms Summary Table.....	1-2
Support for Software Patches and Upgrades.....	1-2
Database Maintenance Rules	1-3
What Changes Are Permitted.....	1-3
What Changes Are Not Permitted	1-3
Chapter 2	
Database Installation	2-1
Installation Overview	2-2
Oracle Database Installation.....	2-3
Database Scripts and Utilities.....	2-3
Initial Install	2-3
Demo Install.....	2-6
Creating the Database	2-6
Security Configuration.....	2-8
Populating Language Data.....	2-9
Installing Service Packs and Patches.....	2-9
Chapter 3	
Database Design	3-1
Database Object Standard.....	3-2
Categories of Data	3-2
Naming Standards.....	3-2
Column Data Type and Constraints.....	3-6
User Defined Code.....	3-6
System Assigned Identifier	3-6
Date/Time/Timestamp	3-6
Number	3-6
Fixed Length/Variable Length Character Columns.....	3-6
Null Column Support.....	3-6
Cache and Key Validation Flags.....	3-7
Default Value Setting.....	3-7
Foreign Key Constraints	3-7
Standard Columns	3-7
Owner Flag	3-7

Version.....	3-7
--------------	-----

Chapter 4

Database Implementation Guidelines.....	4-1
Configuration Guidelines.....	4-2
Index.....	4-2
Table Partitioning Recommendations.....	4-2
Transparent Data Encryption Recommendations.....	4-2
Data Compression Recommendations.....	4-3
Database Vault Recommendations.....	4-3
Storage Recommendations.....	4-4
Database Configuration Recommendations.....	4-4
Database Syntax.....	4-5
Database Initialization Parameters.....	4-5
Oracle Database Implementation Guidelines.....	4-6
Oracle Partitioning.....	4-6

Appendix A

Oracle Real-Time Scheduler System Table Guide.....	A-1
Development and Implementation System Tables.....	A-2

Appendix B

Oracle Utilities Application Framework System Table Guide.....	B-1
About the Application Framework System Tables.....	B-2
System Table Standards.....	B-2
Guidelines for System Table Updates.....	B-3
Business Configuration Tables.....	B-3
Development and Implementation System Tables.....	B-5
Oracle Utilities Application Framework Only Tables.....	B-19
System Table List.....	B-20

Appendix C

License and Copyright Notices.....	C-1
Third Party Products.....	C-1
Notice concerning usage of ANTLR and Classycle.....	C-1
Notice concerning usage of Apache Software.....	C-1
Notice concerning usage of ASM.....	C-4
Notice concerning usage of Concurrent.....	C-5
Notice concerning usage of dom4j.....	C-5
Notice concerning usage of International Components for Unicode (ICU4J).....	C-6
Notice concerning usage of Jaxen.....	C-6
Notice concerning usage of JCIP Annotations.....	C-7
Notice concerning usage of XStream.....	C-10
Notice concerning usage of slf4j.....	C-11
Notice concerning usage of Perl.....	C-11
Notice concerning usage of Mime-Base64 Perl Module.....	C-13
Notice concerning usage of Mime-Lite Perl Module.....	C-13
Notice concerning usage of DBD::DB2 Perl Module.....	C-13
Notice concerning usage of DBI Perl Module.....	C-14

Preface

This guide provides instructions for installing and maintaining the database for Oracle Real-Time Scheduler.

This preface contains these topics:

- **Audience**
- **Related Documents**
- **Updates to this Documentation**
- **Conventions**

Audience

Oracle Real-Time Scheduler Database Administrator's Guide is intended for database administrators who will be installing and maintaining the database for Oracle Real-Time Scheduler.

Related Documents

For more information, see these Oracle documents:

- *Oracle Real-Time Scheduler Quick Install Guide*
- *Oracle Real-Time Scheduler Installation Guide*

Updates to this Documentation

This documentation is provided with the version of the product indicated. Additional and updated information about the operations and configuration of the product is available from the Knowledge Base section of My Oracle Support (<http://support.oracle.com>). Please refer to My Oracle Support for more information.

Conventions

The following text conventions are used in this document:

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

Chapter 1

Database Overview

This section provides an overview of the Oracle Real-Time Scheduler database, including:

- **Supported Database Platforms**
- **Database Maintenance Rules**

Supported Database Platforms

This section defines the platforms on which Oracle Real-Time Scheduler is verified to operate.

Supported Platforms Summary Table

Oracle Real-Time Scheduler is certified on the following platforms:

Platform	Database Version
AIX 6.1 TL4 (POWER 64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Oracle Linux 5.6 (64-bit) x86_64 (64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Red Hat Enterprise Linux 5.6 (64-bit) x86_64 (64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Solaris 10 (SPARC 64-bit)	Oracle Database Server 11.2.0.1 (64-bit)
Windows Server 2008 R2 (x86_64 64-bit)	Oracle Database Server 11.2.0.1 (64-bit)

Note: Oracle Real-Time Scheduler is tested on both Oracle Database Enterprise Edition and Standard Edition. Some features, such as Advanced Compression and Partitioning, require the Enterprise Edition.

Refer to My Oracle Support for additional details.

Support for Software Patches and Upgrades

Due to the ongoing nature of software improvement, vendors will issue patches and service packs for the operating systems, application servers and database servers on top of specific versions that Oracle Real-Time Scheduler has been tested with.

If it is necessary to apply an upgrade, please do so in a test environment that is running on the same platform as your production environment prior to updating the Oracle Real-Time Scheduler production environment.

The exceptions from this rule are Hibernate software version 3.3.2 ga and the Oracle Client version 11.2.0.1. These versions should not be upgraded.

Always contact Oracle Real-Time Scheduler support prior to applying vendor updates that do not guarantee backward compatibility.

Database Maintenance Rules

The database supplied with the product consists of the following elements:

- A set of users to administrate, execute and read the database schema provided.
- A set of database roles to implement security for each of the users provided.
- A tablespace and a schema containing the base database objects used by the product.

The installation of these components is outlined in the installation section of this document.

What Changes Are Permitted

During and after installation of the product the following changes may be performed by the database administrator personnel on site:

- Users supplied by product may be changed according to the site standards.
- Database objects may be added to the schema according to database naming standards outlined later in this document.
- Database views and indexes may be created against base database objects.
- Database storage attributes for base indexes and base tables may be changed according to site standards and hardware used.
- Tablespace names, attributes and locations may be changed according to site standards.
- Database topology (that is, base table/index to tablespace, tablespace to data file, data file to location) may be altered according to tuning and/or site standards.
- Database triggers may be created against base database objects unless they attempt to contravene base data integrity rules.
- Database initialization and parameter settings may be altered according to site standards unless otherwise advised by Oracle Support or outlined in this document.

What Changes Are Not Permitted

In order to maintain operability and upgradeability of the product, during and after the installation of the product the following changes may *not* be performed by the database administration personnel on site:

- Base objects must not be removed or altered in the following ways:
 - Columns in base tables must not be altered in anyway (altered, removed or added).
 - Columns in Indexes must not be altered or removed.
 - Tables must not be renamed or removed.
 - Base views must not be renamed or removed.
 - Base Triggers and Sequences must not be renamed or removed.
 - Base indexes must not be altered or removed.

Chapter 2

Database Installation

This section provides the steps required to install or upgrade the Oracle Real-Time Scheduler database, including:

- **Installation Overview**
- **Oracle Database Installation**

Installation Overview

Note: Refer to the Oracle Real-Time Scheduler *Installation Guide* for the hardware and software versions required for the installation on Unix or Windows.

The following type of installation is available for Oracle Real-Time Scheduler:

- **Initial Install** - a database with no demo data.
- **Demo Install** - a database populated with demo data.

The database installation requires a supported version of the Java Development Kit to be installed on the Windows desktop where the install package is staged and run from. Refer to the Supported Platform section of the Oracle Real-Time Scheduler *Installation Guide* for the required version of Java.

For an Initial Install or Demo Install you will create an empty database on the Unix or Windows server and then populate the database with data.

Review the Storage.xml file prior to an Initial Install . Information in this file is used by CDXDBI while installing the Oracle Real-Time Scheduler database objects.

For optimum storage allocation, database administrators should create multiple tablespaces with extents sized to store different types of tables/indexes. They can then edit this file before each upgrade and install process, to spread tables and indexes across these tablespaces. Tables and indexes can be created in parallel by editing degree of parallelism.

Tablespace, storage options, securefile options, Advanced Compression, and parallel information are used only for new objects. Therefore, for initial installs, information for each object should be reviewed. Be careful while editing this file. Make sure that tablespace names being used exist in the database. Do not change the basic format of this file.

Note: Prior to the installation of the database schema for the product, please ensure that the Database Management System software is installed according to your site standards and the installation guide provided by the database vendor.

Oracle Database Installation

This section describes how to install the Oracle Database for Oracle Real-Time Scheduler. It contains the following topics:

- **Database Scripts and Utilities**
- **Initial Install**
- **Demo Install**
- **Creating the Database**
- **Security Configuration**
- **Populating Language Data**
- **Installing Service Packs and Patches**

Note: The installation tools outlined in this guide run on Windows and UNIX/Linux only. Please refer to the supported platforms table in Chapter 1 for more information on supported platforms.

Database Scripts and Utilities

Follow these steps before you begin installing the database:

1. Unzip the ORS-2.1.0-database.zip file to your local machine. This file contains several files that will be referred to in the installation process.
2. Set up a Microsoft Windows desktop with the Oracle Client installed.

Initial Install

This section describes an initial installation of the database.

Note: You must have a supported version of the Java Development Kit installed on the Windows desktop where you stage and run the database installation package. Refer to the Oracle Real-Time Scheduler Installation Guide for more information.

Create Database

The Initial install requires the following before the installation can be started:

- You must create a database. Use site standard techniques or tools to create the database. The templates for creating the database are located under the relevant database version subdirectory of the FW/DatabaseCreation directory:
 - createdb.sql - Create Database
 - createdbcatalog.sql - Build database catalog tables.
 - createdbfiles.sql - Create data files for tablespaces
 - init.ora - Sample initialization parameters for the database
 - createcdxusers.sql - Create users
 - restartdb.sql - DB restart
- The users and roles for the product. Templates for this activity are located under the relevant database version subdirectory of the FW/DatabaseCreation directory as createcdxusers.sql.

Note: Please alter a copy of the above files for site specific changes.

The CDXDBA utility provided in the DatabaseCreation folder may be used to automate the process. See **Creating the Database** on page 1-1 for more details. For an initial install, do not import the demo install data when you create the database.

Pre-Install Tasks

To enable the geocoder feature:

- If the Oracle database was created without using CDXDBA, make sure the Oracle Locator component is installed.
- Execute “MWM_Geocoder_install.sql” with a DBA privileged user from the SQL prompt from the Pre-Installation folder under ORS.

Install the Database

Install Oracle Utilities Application Framework V4.1.0 prior to Oracle Real-Time Scheduler 2.1.0.

The files for Oracle Utilities Application Framework installation are located in the FW folder:

1. Install base FW V4.1.0 by running the CdxDBI.exe from under the FW folder.
2. Apply prerequisite Framework DB single fixes. See the Oracle Real-Time Scheduler *Installation Guide* for more details.

The files for the Initial Install of Oracle Real-Time Scheduler 2.1.0 are located in the Install-Upgrade folder under ORS.

The process prompts you for the names of three database users:

- A user that will own the application schema (for example, CISADM).
- A user that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CISUSER).
- A user with read-only privileges to the objects in the application schema. (for example, CISREAD).
- A database role that has read-write (select/update/insert/delete) privileges to the objects in the application schema. The application will access the database as this user. (for example, CIS_USER).
- A database role with read-only privileges to the objects in the application schema. (for example, CIS_READ).
- Location for jar files. (The Jar files are bundled with the database package.)
- Java Home (For example, C:/Java/jdk1.6.0_18)

To install the Oracle Real-Time Scheduler database, follow these steps:

1. Run CDXDBI.exe from under the ORS/Install-Upgrade folder. The utility prompts you to enter values for the following parameters:
 - The name of the target database.
 - The password for the SYSTEM user account in the database (in silent mode).
 - The name of the owner of the Database Schema.
 - The location of Java Home.
 - The location of TUGBU JAR files.
 - The password for the user (in silent mode).
 - The Oracle user with read-write privileges to the Database Schema.
 - The Oracle user with read-only privileges to the Database Schema.

- The Oracle database role with read-write privileges to the Database Schema.
 - The Oracle database role with read-only privileges to the Database Schema.
2. If you chose to continue, CDXDBI first checks for the existence of each of the users specified and prompts for their password, default tablespace, and temporary tablespace, if they do not exist.
 3. After setting up roles and users, the utility continues upgrading schema and system data definitions. If an error occurs while executing an SQL or another utility, it logs and displays the error message and allows you to re-execute the current step.

CDXDBI performs the following tasks:

- Interacts with the user to collect information about the name of Oracle account that will own the application schema (for example, CISADM), password of this account, password of the SYSTEM account in the database, and the name of the Oracle account that the application user will use (for example, CISUSER), and the name of the Oracle account that will be assigned read-only privileges to the application schema (for example, CISREAD).
- Connects to the database as SYSTEM account, checks whether the user already has the application schema installed to verify whether this is an initial installation.
- Verifies whether tablespace names already exist in Storage.xml file (if not, the process will abort).
- Installs the schema, installs the system data, and configures security.
- Maintains upgrade log tables in the database.
- Updates release ID when the upgrade is completed successfully.
- If an error occurs while executing a SQL script or another utility, it logs and displays the error message and allows you to re-execute the current step. Log files CDXDBI###.log are created in the same folder as CDXDBI and contains all the SQL commands executed against the database along with the results. The log files are incremental so that the results are never overwritten. If warning messages are generated during the upgrade, CDXDBI prompts the user at the end of the process. Users should check the log files to verify the warning messages. Warning messages are only alerts and do not necessary mean a problem exists.
- Stores the Schema owner and password in the feature configuration table. The password is stored in encrypted format.

Post-Install Tasks:

Refer to **Populating Language Data** on page 1-1 if the application is to run in another language other than English.

ORS Database Single Fixes

Apply prerequisite ORS database single fixes. See the *Oracle Real-Time Scheduler Installation Guide* for more details.

Importing Styles and Maps

To import styles and maps in the specified database, follow these steps:

1. Execute ImportSDOThemes.bat under the ORS/Post-Upgrade directory with the following parameters:


```
ImportSDOThemes.bat -u CISADM -p <PASSWORD> -c <DATABASE NAME>
```
2. After importing themes/styles/GEOM Metadata (zz_user_sdo_themes/zz_user_sdo_styles, zz_user_sdo_metadata), postImport.sql is invoked from target main schema. This will:

- Insert new styles/themes/sdo_geom_metadata in USER_SDO_THEMES/USER_SDO_STYLES/USER_SDO_GEOM_METADATA
- Drop ZZ_USER_SDO_THEMES, ZZ_USER_SDO_STYLES, ZZ_USER_SDO_GEOM_METADATA tables from target database.
- Create domain key indexes

Database Statistics Generation

During an install process, new database objects may be added to the target database. Before starting to use the database, generate the complete statistics for these new objects using the DBMS_STATS package.

Demo Install

Before the installation can be started:

- A database must be created. Site standard techniques or tools may be used to create the database. The templates for creating the database are located under the relevant database version subdirectory of the FW/DatabaseCreation directory under:
 - createdb.sql - Create Database
 - createdbcatalog.sql - Build database catalog tables.
 - createdbfiles.sql - Create data files for tablespaces
 - init.ora - Sample initialization parameters for the database
 - createcdxusers.sql - Create Users
 - restartdb.sql - restart database
- The users and roles for the product. Templates for this activity are located under the relevant database version subdirectory of the FW/DatabaseCreation directory as createcdxusers.sql.

Note: Please alter a copy of the above files for site specific changes.

Create the Database and Import Demo Data

The CDXDBA utility provided in the “Database Creation” folder may be used to automate the process. Complete the steps in **Creating the Database** on page 1-1 to create the database and import the Demo Install data into the database. The Database Creation folder contains the instructions for the import of the Demo Install data.

Creating the Database

Note: The Unix and Windows installs will create an empty database and at least one tablespace for storing the application objects before running the install. The default name of the application tablespace is CISTS_01. If you do not use the default name or want to spread application objects across multiple tablespaces, you must create the tablespaces of your choice and edit the Storage.xml file, supplied with the install package, before starting the installation process.

Unix

The files are located in FW/DatabaseCreation.

Follow these steps to create a database:

1. FTP the contents of the Database Creation folder to a temporary directory on the UNIX server.

2. To create the database set the ORACLE_HOME and ORACLE_BASE variables.
3. Execute the utility cdxdba.plx by entering following command:
perl cdxdba.plx
4. The script will prompt for parameter values:
 - Enter the instance name (DEMO):
 - Enter ORACLE_BASE: the directory where the setup files for the database will be created (/orasw/app/oracle):
 - Enter ORACLE_HOME: the folder where the current version of Oracle software is installed (/orasw/app/oracle/product/):
 - Enter ORACLE_DATA: the directory where the data files for the database will be created (/db05/oradata):
 - Enter the character set for the database (AL32UTF8):
Note: AL32UTF8 is the recommended database character set. The application also supports character sets for multi-languages.
5. Enter the values based on the settings of your database server. You can also accept the default values displayed if they match your database server settings. You will be prompted to confirm the settings and select Y or N to create the database.

```
ORACLE_SID: DEMO
ORACLE_HOME: /orasw/app/oracle/product/
ORACLE_BASE: /orasw/app/oracle
ORACLE_DATA: /db05/oradata
Character Set: AL32UTF8
Do you want to continue (Y/N)?
```

6. Once the database has been created, you will be prompted to either exit the utility or to install the demo database:

```
Do you want to import a demo database dump into this database (Y/N)?
```

- For an initial install, select N to exit the database utility. Follow the steps in **Initial Install** on page 1-1 to complete the database installation.
- For a demo install, select Y to import the demo database.

For the Demo Install use the dump file exp_demo.dmp.

```
Do you want to import a demo database dump into this database (Y/N)? Y
```

- Enter the name of the dump file (exp_demo.dmp):
- Enter the name of the dump file directory (data_pump_dir):
- Enter the name of the log file (exp_demo.log):

Note: The demo dump file is located in the following directory: /ORS/Demo

If no data is present, the demo data may have been posted separately. Please check the release notes or My Oracle Support for instructions on downloading appropriate demo data.

```
Ready to import the CISADM schema into the database, do you want to continue (Y/N)? Y
```

Notes:

- The data_pump_dir must exist in the database created above before continuing with the import. You should also copy the exp_demo.dmp file to the data_pump_dir.

- Update the oratab, tnsnames.ora and listener.ora files for the new database and check the connectivity to this database from another server and from your desktop.
- Start the demo database in US Eastern Time Zone.

After importing the demo install data, the demo install of the database is complete. You can now install the application server as described in the installation guide.

Windows

The files are located in FW\DatabaseCreation. You should be logged in as a user who is a member of local ORA_DBA group on that server. The ORA_DBA group should have “administrator” privileges assigned to it.

1. To create a database, run the utility CDXDBA.exe located in the Windows folder.

The utility will display a list with the following options:

- E - Export the SPLADM schema from the database
 - R - Refresh the SPLADM schema with a database dump.
 - C - Create/Recreate a local database.
 - H - See help for the command line options.
 - Q - Quit.
2. Select option C to create an empty database on your machine.
Follow the prompts to complete the creation of the database.
 3. Once the database has been created you can exit the utility or select “R - Refresh a schema with a database dump file” to load the Demo Install data.

Note: Do not load the demo install data for an initial install. Follow the steps in **Initial Install** on page 1-1 to complete the initial install of the database.

Option R causes the utility to drop all the objects from the schema and import the schema from a database dump file.

Notes:

- For the Demo Install use the dump file exp_demo.dmp. The demo dump file is located in the following directory: /ORS/Demo

If no data is present, the demo data may have been posted separately. Please check the release notes or My Oracle Support for instructions on downloading appropriate demo data.
- The data_pump_dir must exist in the database created above before continuing with the import. You should also copy the exp_demo.dmp file to the data_pump_dir.
- Update the oratab, tnsnames.ora and listener.ora files for the new database and check the connectivity to this database from another server and from your desktop.
- Start the demo database in US Eastern Time Zone.

After importing the demo install data, the demo install of the database is complete. You can now install the application server as described in the installation guide.

Security Configuration

The configuration utility and scripts are located in the ORS/Security folder.

To configure security, execute the OraGenSec.exe utility.

The script will prompt you for parameter values:

Enter the application read-only user or Schema Owner in the database (e.g. CISADM or CISREAD):

Enter the password for the user:

Enter the name of the Oracle Database: database name

Enter a comma-separated list of Oracle users in which synonyms need to be created (e.g. cisuser,cisread): cisuser,cisread

Select the following options:

(A/a): Generate security for All objects in the Database (e.g. A or a for all objects)

(O/o): Generate security for specific Objects inputted in this terminal (e.g. CI_ACCT,CI_ACCT_K)

Generate security for specific objects generated from an input File (e.g. Security_Objects.txt)

The utility configures security for the CISADM schema objects

Note: If you run Oragensec in Interactive Mode (without using the command line options), it will by default grant permissions to CIS_USER and CIS_READ Role. If you prefer to use site-specific roles then execute Oragensec after providing command line options.

For example:

```
(Oragensec.exe -d [Schema Owner],[Schema Owner's
Password],[Database Name] -u [Read/Write User],[Read Only User] -r
[Read Only Role],[Read Write Role] -a A -l [Logfile Name])
```

Note: Database vault must be disabled before running

Populating Language Data

At this point, the Oracle Real-Time Scheduler demo database is ready for use. Please note that this database contains data in the ENGLISH language only. If you use any other supported language, you can run the F1-LANG batch program to duplicate the entries for new language records. For more information on running this batch program, refer to the user documentation section “Defining Background Processes.”

You can also install the language specific demo data packages (if available) into the database. Please contact your Oracle representative to receive information on these packages

Installing Service Packs and Patches

Periodically, Oracle Utilities releases a service pack of single fixes for its products. A service pack is an update to an existing release that includes solutions to known problems and other product enhancements. A service pack is not a replacement for an installation, but a pack consisting of a collection of changes and additions for it. The service pack may include changes to be applied to the application server, the database, or both. The service pack includes all files necessary for installing the collection of changes, including installation instructions.

Between services packs, Oracle Utilities releases patches to fix individual bugs. For information on installing patches, see knowledge base article ID 974985.1 on My Oracle Support.

Service packs and patches can be downloaded from My Oracle Support (<https://support.oracle.com/>).

Chapter 3

Database Design

This section provides a standard for database objects such as tables, columns, and indexes, for products using the Oracle Utilities Application Framework. This standard helps smooth integration and upgrade processes by ensuring clean database design, promoting communications, and reducing errors. Just as Oracle Utilities Application Framework goes through innovation in every release of the software, it is also inevitable that the product will take advantage of various database vendors' new features in each release. The recommendations in the database installation section include only the ones that have been proved by vigorous QA processes, field tests and benchmarks. This section includes:

- **Database Object Standard**
- **Column Data Type and Constraints**
- **Standard Columns**

Database Object Standard

This section discusses the rules applied to naming database objects and the attributes that are associated with these objects.

Categories of Data

A table can belong to one of the three categories:

- Control (admin)
- Master
- Transaction

For purposes of physical table space design, metadata and control tables can belong to the same category.

Example of tables in each category:

- **Control:** SC_USER, CI_ADJ_TYPE, F1_BUS_OBJ
- **Master:** CI_PER, CI_PREM,
- **Transaction:** F1_FACT, CI_FT

All tables have the category information in their index name. The second letter of the index carries this information. See **Indexes** on page 3-3 for more information.

Naming Standards

The following naming standards must be applied to database objects.

Table

Table names are prefixed with the owner flag value of the product. For customer modification **CM** must prefix the table name. The length of the table names must be less than or equal to 30 characters. A language table should be named by suffixing **_L** to the main table. The key table name should be named by suffixing **_K** to the main table.

It is recommended to start a table name with the 2-3 letter acronym of the subsystem name that the table belongs to. For example, **MD** stands for metadata subsystem and all metadata table names start with **CI_MD**.

Some examples are:

- CI_ADJ_TYPE
- CI_ADJ_TYPE_L

A language table stores language sensitive columns such as a description of a code. The primary key of a language table consists of the primary key of the code table plus language code (LANGAGUE_CD).

A key table accompanies a table with a surrogate key column. A key value is stored with the environment id that the key value resides in the key table.

The tables prior to V2.0.0 are prefixed with CI_ or SC_.

Columns

The length of a column name must be less than or equal to 30 characters. The following conventions apply when you define special types of columns in the database.

- Use the suffix **FLG** to define a lookup table field. Flag columns must be CHAR(4). Choose lookup field names carefully as these column names are defined in the lookup table (CL_LOOKUP_FLD) and must be prefixed by the product owner flag value.
- Use the suffix **CD** to define user-defined codes. User-defined codes are primarily found as the key column of the admin tables.
- Use the suffix **ID** to define system assigned key columns.
- Use the suffix **SW** to define Boolean columns. The valid values of the switches are 'Y' or 'N'. The switch columns must be CHAR(1)
- Use the suffix **DT** to define Date columns.
- Use the suffix **DTTM** to define Date Time columns.
- Use the suffix **TM** to define Time columns.

Some examples are:

- ADJ_STATUS_FLG
- CAN_RSN_CD

Indexes

Index names are composed of the following parts:

[OF][*application specific prefix*][C/M/T]NNN[P/S]n

- **OF**- Owner Flag. Prior to Version 4.1.0 of the framework the leading character of the base Owner Flag was used. From 4.1.0 on the first two characters of product's owner flag value should be used. For client specific implementation of index, use CM for Owner Flag.
- Application specific prefix could be C, F, T or another letter.
- **C/M/T** - The second character can be either C or M or T. C is used for control tables (Admin tables). M is for the master tables. T is reserved for the transaction tables.
- **NNN** - A three-digit number that uniquely identifies the table on which the index is defined.
- **P/S** - P indicates that this index is the primary key index. S is used for indexes other than primary keys.
- **n** is the index number, unique across all indexes on a given table (0 for primary and 1, 2, etc., for the secondary indexes).

Some examples are:

- F1C066P0
- F1C066S1
- CMT206S2

Warning! Do not use index names in the application as the names can change due to unforeseeable reasons.

Updating Storage.xml

The storage.xml file that comes with the product allocates all base tables and indexes to the default tablespace CISTS_01. If you decide to allocate some tables or indexes outside of the default tablespace, then this has to be reflected in the storage.xml file by changing the tablespace name from the default value to a custom value, according to the format shown below:

Format:

```
<Table_Name>
  <TABLESPACE>CISTS_01</TABLESPACE>
  <PARALLEL>1</PARALLEL>
```

```
- <LOB>
- <Column Name>
  <TABLESPACE>CISTS_01</TABLESPACE>
  <SECUREFILE>Y</SECUREFILE>
  <CHUNK>8192</CHUNK>
  <CACHE>N</CACHE>
  <LOGGING>Y</LOGGING>
  <INROW>Y</INROW>
  <COMPRESS>N</COMPRESS>
</Column Name>
</LOB>
</Table_Name>
```

Where Parallel defines the number of threads, that Oracle DB Server will use to access a table or create an index.

For instance, if a DBA decided to allocate table CI_ACCT in a tablespace MyTablespace, then they would have to change the storage.xml as follows:

```
<CI_ACCT>
<TABLESPACE>MyTablespace</TABLESPACE>
</CI_ACCT>
```

The cdxdbi process uses the storage.xml file to place the new database objects into defined tablespaces. A tablespace referenced in the storage.xml file must exist in the database.

The storage.xml file has to be adjusted before each upgrade and/or new installation as required to allocate the tables and indexes across those tablespaces.

Table name is included as a comment for each of the indexes for clarity.

For initial installs, information for each object should be reviewed by a DBA. For upgrades, only tablespace information for the objects added in the new release needs to be reviewed by a DBA.

Be careful while editing this file. Make sure that the tablespace names being used exist in the database. Do not change the basic format of this file.

Sequence

The base sequence name must be prefixed with the owner flag value of the product.

The sequence numbers should be named as below

1. If the Sequence is used for a specific Table then use the following sequence name:

```
[OF][C/M/T]NNN_SEQ
```

- OF stands for Owner Flag. For example, Framework its F1. Other examples are M1,C1,D1,D2, etc.
- C/M/T stands for Control (Admin)/Master/Transaction Tables.
- NNN is a three digit unique Identifier for a Table on which the Sequence is defined.

For Example: F1T220_SEQ

2. If more than one Sequence is used for a specific Table then use the following Sequence Name:

```
[OF][C/M/T]NNN_Column_Name_SEQ
```

- OF stands for Owner Flag. For example, the framework is F1. Other examples are M1,C1,D1,D2, etc.
- C/M/T stands for Control (Admin)/Master/Transaction tables.
- NNN is a three digit unique identifier for a table on which the sequence is defined.

For Example: F1T220_BO_STATUS_CD_SEQ and F1T220_BUS_OBJ_CD_SEQ

3. If sequence is used for a generic requirement and not specific to a table, then use the following sequence name.

[OF]Column_Name_SEQ

- OF stands for Owner Flag. For example, the framework is F1. Other examples are M1,C1,D1,D2, etc.

For Example: F1FKVALID_SEQ

Trigger

The base trigger name must be prefixed with the owner flag value of the product.

When implementers add database objects, such as tables, triggers and sequences, the name of the objects should be prefixed by CM.

Column Data Type and Constraints

This section discusses the rules applied to column data type and constraints, and the attributes that are associated with these objects.

User Defined Code

User Defined Codes are defined as CHAR type. The length can vary by the business requirements but a minimum of eight characters is recommended. You will find columns defined in less than eight characters but with internationalization in mind new columns should be defined as CHAR(10) or CHAR(12). Also note that when the code is referenced in the application the descriptions are shown to users in most cases.

System Assigned Identifier

System assigned random numbers are defined as CHAR type. The length of the column varies to meet the business requirements. Number type key columns are used when a sequential key assignment is allowed or number type is required to interface with external software. For example, Notification Upload Staging ID is a Number type because most EDI software uses a sequential key assignment mechanism. For sequential key assignment implementation, the DBMS sequence generator is used in conjunction with Number Type ID columns.

Date/Time/Timestamp

Date, Time and Timestamp columns are defined physically as DATE in Oracle. Non-null constraints are implemented only for the required columns.

Number

Numeric columns are implemented as NUMBER type in Oracle. The precision of the number should always be defined. The scale of the number might be defined. Non-null constraints are implemented for all number columns.

Fixed Length/Variable Length Character Columns

When a character column is a part of the primary key of a table define the column in CHAR type. For the non-key character columns, the length should be the defining factor. If the column length should be greater than 10, use VARCHAR2 type in Oracle.

Null Column Support

Oracle Utilities Application Framework 4.1.0, Group Fix 2, supports Nullable columns. This means that the application can write NULLs instead of a blank space or zero (for numeric columns) by using NULLABLE_SW on CI_MD_TBL_FLD. If REQUIRED_SW is set to 'N' and the NULLABLE_SW is set to 'Y', the application will write a NULL in that column. The artifact generator will create hibernate mapping files with appropriate parameters so that the framework hibernate mapping types will know if a given property supports a null value.

NULLABLE_SW is not new, but has previously been used for certain fields such as dates, and some string and number foreign-key columns. Because of this, there is the possibility that there is incorrect metadata for some columns, and that turning on this new feature could result in incorrect behavior when using that metadata. The upgrade script added to FW410 Group Fix 2 fixes the metadata to make sure that the existing tables will not be affected.

This new feature only supports tables maintained by Java. Thus, enhancing any existing tables to use null columns must be done only after making sure that the tables are maintained by Java, and not COBOL.

Cache and Key Validation Flags

By default, the Cache Flag is set to NONE. For most of the admin tables the CACHE Flag should be 'Cached for Batch'. This specifies that the table is cached as L2 cache to reduce database trips.

By default the Key Validation Flag is set to ALL. For tables which have the user defined keys, the KEY_VALIDATION_FLG should be set as 'ALL'. This checks the existence of the key before inserting a new one.

Default Value Setting

The rules for setting the database default values are as follows:

- When a predefined default value is not available, set the default value of Non-null CHAR or VARCHAR columns to blank except the primary key columns.
- When a predefined default value is not available, set the default value Non-null Number columns to 0 (zero) except the primary key columns.
- No database default values should be assigned to the Non Null Date, Time, and Timestamp columns.

Foreign Key Constraints

Referential integrity is enforced by the application. In the database do not define FK constraints. Indexes are created on most of Foreign Key columns to increase performance.

Standard Columns

This section discusses the rules applied to standard columns and the attributes that are associated with these objects.

Owner Flag

Owner Flag (OWNER_FLG) columns exist on the system tables that are shared by multiple products. Oracle Utilities Application Framework limits the data modification of the tables that have owner flag to the data owned by the product.

Version

The Version column is used to for optimistic concurrency control in the application code. Add the Version column to all tables that are maintained by a Row Maintenance program irrespective of the language used (COBOL or JAVA).

Chapter 4

Database Implementation Guidelines

The following section outlines the general implementation guidelines for the database components, including:

- **Configuration Guidelines**
- **Oracle Database Implementation Guidelines.**

Note: Refer to My Oracle Support for more information.

Configuration Guidelines

This section includes general recommendations for configuring various database objects and includes a brief syntax overview. It covers the general aspects of the database objects and does not cover any specific implementation requirements.

Index

Index recommendations specify points that need to be considered when creating indexes on a table.

1. Indexes on a table should be created according to the functional requirements of the table and not in order to perform SQL tuning.
2. The foreign keys on a table should be indexes.

In an Oracle Utilities Application Framework environment, always make sure that the optimization parameters are set as follows:

```
optimizer_index_cost_adj=1
optimizer_index_caching=100
```

This will make sure that the optimizer gives a higher priority to index scans.

Table Partitioning Recommendations

Oracle Utilities recommends using a minimum of 'n' partitions for selective database objects, where 'n' is number of RAC nodes.

Transparent Data Encryption Recommendations

Oracle Utilities supports Oracle Transparent Data Encryption (TDE). Oracle 11gR1 supports tablespace level encryption. The application supports tablespace level encryption for all Application data. Make sure that the hardware resources are sufficiently sized for this as TDE uses additional hardware resources. The Oracle Advanced Security license is a prerequisite for using TDE.

Please consider the following when implementing TDE:

- Create a wallet folder to store the master key. By default, the wallet folder should be created under \$ORACLE_BASE/admin/<sid>.

- The wallet containing the master key can be created using the following command:

```
alter system set encryption key authenticated by "keypasswd"
```

- The wallet can be closed or opened using the following commands:

```
alter system set wallet open identified by "keypasswd";
alter system set wallet close;
```

- Column level encryption can be achieved using the following commands:

```
create table <table_name>
(name varchar2(200) default ' ' not null,
bo_data_area CLOB encrypt using 'AES128',
bo_status_cd char(12) encrypt using 'AES128')
lob (bo_data_area) store as securefile (cache compress)
tablespace <tablespace_name>;
```

- AES128 is the default encryption algorithm.
- Tablespace level encryption is also supported using the following command:

```
Create tablespace <tablespace_name> logging datafile '<datafile
location>' size <initial size> reuse autoextend on next <next size>
maxsize unlimited extent management local uniform size
<uniform size> encryption using 'AES128' default storage(encrypt) ;
```

- Indexed columns can only be encrypted using the NO SALT Option. Salt is a way to strengthen the security of encrypted data. It is a random string added to the data before it is encrypted, causing repetition of text in the clear to appear different when encrypted.

Data Compression Recommendations

Oracle Utilities supports Advanced Data Compression, available with Oracle 11gR1 onwards, to reduce the database storage footprint. Make sure that your resources are sufficiently sized for this as it uses additional system resources. Compression can be enabled at the Tablespace level or at the Table level.

For Exadata hardware the compression recommendations are:

- For the Final Measurement table (D1_MSRMT), keep the current table partition uncompressed. All of the older partitions will be compressed based on QUERY HIGH compression.
- For the Initial Measurement Data table (D1_INIT_MSMRT_DATA), always keep CLOBs in securefile and medium compressed. Also keep the current table partition uncompressed. All of the older partitions will be compressed based on QUERY HIGH compression.
- Load data into the uncompressed table partitions using a conventional load and then, once data is loaded using a CTAS operation, load into a temporary heap table. Then truncate the original partition. Alter the original partition into HCC compressed and then partition exchange this with the temporary heap table.
- All multi column Indexes (primary as well as secondary) will be compressed using the default compression. HCC or OLTP compression is not applicable on the top of compressed Indexes.

For non-Exadata hardware the recommendations are the same as above, except that you cannot use HCC compression (it is only available in Exadata database machine). Instead of HCC you can use any other compression tool available to you for non-Exadata hardware.

All CLOB fields should be stored as SecureFiles and Medium compressed. This requires a separate license for Advanced Data Compression. As a part of the schema, we create the product-owned tables with compression turned OFF at the LOB level . If you have the license for Advanced Data Compression, you can enable compression by updating the storage.xml.

Database Vault Recommendations

We support Database Vault from the Oracle Utilities Application Framework 4.1.0. All non-application User IDs can be prevented from using DDL or DML statements against the application schema. So SYS and SYSTEM cannot issue DDL or DML statements against CISADM schema.

The application-specific administration account can issue DDL statements but should not be able to perform any DML or DCL statements.

Application user must be given DML only permissions.

Database Vault can be used to control access during patch process and Install/Upgrade process. Configuration is also supported beginning with the Oracle Utilities Application Framework 4.1.0 patch application with Database Vault.

Storage Recommendations

This section specifies recommended options for storing the database objects.

SecureFile for Storing LOBs

Beginning with Oracle 11g, tables having fields with data type of CLOB or BLOBs should have the LOB Columns stored as SecureFiles.

- The storage options with SecureFiles for Heap Tables should be `ENABLE STORAGE IN ROW, CACHE and COMPRESS`.
- For the IOT Table the `PCTTHRESHOLD 50 OVERFLOW` clause should be specified and the storage options with SecureFiles should be `ENABLE STORAGE IN ROW, CACHE and COMPRESS`.
- The `PCTTHRESHOLD` should be specified as a percentage of the block size. This value defines the maximum size of the portion of the row that is stored in the Index block when an overflow segment is used.
- The `CHUNK` option for storage, which is the data size used when accessing or modifying LOB values, can be set to higher than one database block size if big LOBs are used in the IO Operation.
- For SecureFiles, make sure that the initialization parameter `db_securefile` is set to `PERMITTED` (the default).
- The Tablespace where you are creating the SecureFiles should be enabled with Automatic Segment Space Management (ASSM). In Oracle Database 11g, the default mode of Tablespace creation is ASSM so it may already be set for the Tablespace. If it's not, then you have to create the SecureFiles on a new ASSM Tablespace.

Note: To enable compression on SecureFiles, you must have an Oracle Advanced Compression license in addition to Oracle Database Enterprise Edition. This feature is not available for the standard edition of the Oracle database.

If you are using Oracle Database Enterprise Edition, please ensure that the “`COMPRESS`” flag is turned on by setting it to “`Y`” in `Storage.xml`.

See **Database Syntax** on page 4-5 for more information on SecurFiles.

Database Configuration Recommendations

This section specifies the recommended methods for configuring the database with a focus on specific functional area.

Large Redo Log File Sizes

The Redo Log files are written by the Log Writer Background process. These Log files are written in a serial manner. Once a Log File is full, a Log Switch occurs and the next Log file starts getting populated.

It is recommended that the size of the Redo Log files should be sufficiently high so that you do not see frequent Log Switches in the Alert logs of the database. Frequent Log Switches impact the IO performance and can be avoided by having a larger Redo log File size.

Frequent Log Switches impacts the IO performance and can be avoided by having a bigger Redo log File Size.

Database Syntax

SecureFile

```

CREATE TABLE <Table_Name>
  ( COLUMN1 ...,
    COLUMN2 (CLOB)
  )
LOB(COLUMN2) STORE AS SECUREFILE (CACHE COMPRESS);

CREATE TABLE <Table_Name>
  ( COLUMN1 ...,
    COLUMN2 (CLOB)
    CONSTRAINT <> PRIMARY KEY(...)
  )
ORGANIZATION INDEX PCTTHRESHOLD 50 OVERFLOW
LOB(COLUMN2) STORE AS SECUREFILE (ENABLE STORAGE IN ROW CHUNK CACHE
COMPRESS);

```

Database Initialization Parameters

The recommended Initialization Parameters are given below. These parameters are a starting point for database tuning. An optimal value for a production environment may differ from one customer deployment to another.

```

db_block_size=8192
log_checkpoint_interval=0
db_file_multiblock_read_count=8
transactions=3000
open_cursors=3000
db_writer_processes=12
optimizer_index_cost_adj=1
optimizer_index_caching=100
db_files=1024
dbwr_io_slaves=10 (Only if Asynchronous IO is not Supported)
sessions=4500
memory_target=0
memory_max_target=0
sec_case_sensitive_logon=FALSE
processes=3000
dml_locks=4860

```

Oracle Database Implementation Guidelines

This section provides specific guidelines for implementing the Oracle database.

Oracle Partitioning

If you use a base index for the partitioning key, rename the index to CM**.

If you use the primary key index of the table as the partitioning key:

- Make the index non-unique.
- Primary constraints should still exist.

The upgrade on the partitioned table will work the best if the partitioning key is not unique. This allows the upgrade tool to drop the PK constraints if the primary key columns are modified and recreate the PK constraints without dropping the index.

Appendix A

Oracle Real-Time Scheduler System Table Guide

This chapter lists the system tables owned by Oracle Real-Time Scheduler V2.1.0 and explains the data standards of the system tables. The data standards are required for Oracle Real-Time Scheduler installation, development within Oracle Real-Time Scheduler, configuration of Oracle Utilities products, and customization of the Oracle Utilities products. Adhering to the data standards is a prerequisite for a seamless upgrade to the next release of the product. For the general discussion of System Tables, refer to the System Table Guide for the Oracle Utilities Application Framework.

This section includes:

- **Development and Implementation System Tables**

Development and Implementation System Tables

Parameter Definition

Properties	Description
Tables	M1_PARM_DEF M1_PARM_DEF_L M1_DEPLOYMENT_PART M1_DEPLOYMENT_PART_L M1_DEPLOYMENT_ITEM
Standard Data Fields	Parameter Definition (PARM_DEF_CD).
Customer Modification	None

Appendix B

Oracle Utilities Application Framework System Table Guide

This section lists the system tables owned by the Oracle Utilities Application Framework V4.1.0 and explains the data standards of the system tables. The data standards are required for the installation of Oracle Utilities Application Framework, development within the Oracle Utilities Application Framework, and the configuration and customization of Oracle Utilities products. Adhering to the data standards is a prerequisite for seamless upgrade to future releases.

This section includes:

- **About the Application Framework System Tables**
- **System Table Standards**
- **Guidelines for System Table Updates**
- **System Table List**

About the Application Framework System Tables

System tables are a subset of the tables that must be populated at the time the product is installed. They include Metadata and configuration tables. The data stored in the system tables are the information that Oracle Utilities Application Framework product operations are based on.

As the product adds more functionality, the list of system tables can grow. The complete list of the system tables can be found in the **System Table List** section.

System Table Standards

System table standards must be observed for the following reasons:

- The product installation and upgrade process and customer modification data extract processes depend on the data prefix and owner flag values to determine the system data owned by each product.
- The standards ensure that there will be no data conflict in the product being developed and the future Oracle Utilities Application Framework release.
- The standards ensure that there will be no data conflict between customer modifications and future Oracle Utilities product releases.
- The data prefix is used to prevent test data from being released to production.

Developer's Note: All test data added to the system data tables must be prefixed by ZZ (all upper case) in order for the installation and upgrade utility to recognize them as test data.

Guidelines for System Table Updates

This section describes guidelines regarding the updating of the system table properties.

Business Configuration Tables

The majority of data in the tables in this group belongs to the customer. But these tables are shipped with some initial data in order for the customer to login to the system and begin configuring the product. Unless specified otherwise, the initial data is maintained by Oracle Utilities Application Framework and subject to subsequent upgrade.

Application Security and User Profile

These tables define the access rights of a User Group to Application Services and Application Users.

Properties	Description
Tables	SC_ACCESS_CNTRL, SC_USER, SC_USR_GRP_PROF, SC_USR_GRP_USR, SC_USER_GROUP, SC_USER_GROUP_L
Initial Data	User Group All SERVICES and default system user SYSUSER. Upon installation the system default User Group All SERVICES is given unrestricted accesses to all services defined in Oracle Utilities Application Framework.

Developer's Note: When a new service is added to the system, all actions defined for the service must be made available to the User Group All SERVICES.

Currency Code

The ISO 4217 three-letter codes are taken as the standard code for the representation of each currency.

Properties	Description
Tables	CI_CURRENCY_CD, CI_CURRENCY_CD_L
Initial Data	United States Dollar (USD).

DB Process

Properties	Description
Tables	CI_DB_PROC, CI_DB_PROC_L, CI_DB_INSTR, CI_DB_INSTR_L, L, CI_DB_INSTR_OVRD
Initial Data	Copy DB Process (CL-COPDB). This DB process allows users to copy a DB process from one database to another using Config Lab utility.

Display Profile

The Display Profile Code is referenced in the User (SC_USER) table.

Properties	Description
Tables	CI_DISP_PROF, CI_DISP_PROF_L
Initial Data	North America (NORTHAM) and Europe (EURO).

Installation Options

Installation Option has only one row that is shipped with the initial installation of the Oracle Utilities Application Framework. The updatable columns in these tables are customer data and will not be overridden by the upgrade process unless a special script is written and included in the upgrade process.

Properties	Description
Tables	F1_INSTALLATION, CI_INSTALL_ALG, CI_INSTALL_MSG, CI_INSTALL_MSG_L, CI_INSTALL_PROD
Initial Data	Option 11111.

Developer's Note: The system data owner of an environment is defined in the Installation Option. This Owner Flag value is stamped on all system data that is added to this environment. The installation default value is Customer Modification (CM). This value must be changed in the base product development environments.

Language Code

Language Code must be a valid code defined in ISO 639-2 Alpha-3. Adding a new language code to the table without translating all language dependent objects in the system can cause errors when a user chooses the language.

Properties	Description
Tables	CI_LANGUAGE
Initial Data	English (ENG).

To Do Priority and Role

New To Do Types released will be linked to the default To Do Role and set to the product assigned priority value initially. These initial settings can be overridden by the implementation.

Properties	Description
Tables	CI_ROLE(L), CI_TD_VAL_ROLE
Initial Data	F1_DFLT

Development and Implementation System Tables

This section defines the standards for the system tables that contain data for application development. The data in these tables implement business logic and UI functions shared by various products and product extensions in the same database.

Standards

When adding new data, the owner flag value of the environment must prefix certain fields of these tables. For example, when a developer adds a new algorithm type to an Oracle Utilities Customer Care and Billing environment, C1 should prefix the new Algorithm Type code. The fields that are subject to this rule are listed in Standard Data Fields property.

The data that is already in these tables cannot be modified if the data owner is different than the environment owner. This prevents the developers from accidentally modifying system data that belongs to the Oracle Utilities application framework or the base products. However, some fields are exempt from this rule and can be modified by Customer Modification. These fields are listed in the Customer Modification Fields property.

Starting with version 2.2 of the framework a new system data upgrade rule was introduced - Override Owner flag. If duplicate data rows (data row with same primary key values) are found at the time of upgrade, the owner flag values will get overridden. The lower level application system data will override the upper level system data. For example, F1 overrides C1, F1&C1 override CM, and so on. This rule will be applied to the following tables: CI_CHAR_ENTITY, CI_MD_MO_ALG, F1_BUS_OBJ_ALG, F1_BUS_OBJ_STATUS_ALG, CI_MD_MO_OPT, F1_BUS_OBJ_OPT, F1_BUS_OBJ_STATUS_OPT, F1_BUS_OBJ_STATUS, F1_BUS_OBJ_STATUS_L

Algorithm Type

Properties	Description
Tables	CI_ALG_TYPE, CI_ALG_TYPE_L, CI_ALG_TYPE_PRM, CI_ALG_TYPE_PRM_L
Standard Data Fields	Algorithm Type (ALG_TYPE_CD)
Customer Modification	None

Algorithm

Properties	Description
Tables	CI_ALG, CI_ALG_L, CI_ALG_PARM, CI_ALG_VER
Standard Data Fields	Algorithm (ALG_CD)
Customer Modification	None

Application Security

Properties	Description
Tables	SC_APP_SERVICE, SC_APP_SERVICE_L, CI_APP_SVC_ACC
Standard Data Fields	Application Service ID (APP_SVC_ID). Customer care and billing products prior to version 2.0 will continue to use CI as a prefix for the application service.
Customer Modification	None

Batch Control

Properties	Description
Tables	CI_BATCH_CTRL, CI_BATCH_CTRL_L, CI_BATCH_CTRL_P, CI_BATCH_CTRL_P_L
Standard Data Fields	Batch Process (BATCH_CD), Program Name (PROGRAM_NAME)
Customer Modification	Next Batch Number (NEXT_BATCH_NBR), Last Update Instance (LAST_UPDATE_INST), Last Update Date time (LAST_UPDATE_DTM) and the batch process update these columns. Time Interval (TIMER_INTERVAL), Thread Count (BATCH_THREAD_CNT), Maximum Commit Records (MAX_COMMIT_RECS), User (USER_ID), Language (LANGUAGE_CD), Email Address (EMAILID), Start program debug tracing (TRC_PGM_STRT_SW), End Program Debug trace (TRC_PGM_END_SW), SQL debug tracing (TRC_SQL_SW) and Standard debug tracing (TRC_STD_SW) on CI_BATCH_CTRL Table. Batch Parameter Value (BATCH_PARM_VAL) on Batch Control Parameters Table (CI_BATCH_CTRL_P)

Business Object

Properties	Description
Tables	F1_BUS_OBJ, F1_BUS_OBJ_L, F1_BUS_OBJ_ALG, F1_BUS_OBJ_OPT, F1_BUS_OBJ_STATUS, F1_BUS_OBJ_STATUS_L, F1_BUS_OBJ_STATUS_ALG, F1_BUS_OBJ_STATUS_OPT, F1_BUS_OBJ_STATUS_RSN, F1_BUS_OBJ_STATUS_RSN_L, F1_BUS_OBJ_STATUS_RSN_CHAR, F1_BUS_OBJ_TR_RULE, F1_BUS_OBJ_TR_RULE_L
Standard Data Fields	Business Object (BUS_OBJ_CD)
Customer Modification	Batch Control (BATCH_CD), Alert (BO_ALERT_FLG), Sequence (SORT_SEQ5), Status Reason (STATUS_REASON_FLG) fields on Business Object Status Table (F1_BUS_OBJ_STATUS). Instance Control (INSTANCE_CTRL_FLG), Application Service (APP_SVC_ID) on Business Object Table (F1_BUS_OBJ). Status Reason Selection (STATUS_REASON_SELECT_FLG) on Status Reason Table (F1_BUS_OBJ_STATUS_RSN)

Business Service

Properties	Description
Tables	F1_BUS_SVC, F1_BUS_SVC_L
Standard Data Fields	Business Service (BUS_SVC_CD)
Customer Modification	Application Service (APP_SVC_ID)

Characteristics

Properties	Description
Tables	CI_CHAR_TYPE, CI_CHAR_TYPE_L, CI_CHAR_ENTITY, CI_CHAR_VAL, CI_CHAR_VAL_L
Standard Data Fields	Characteristic Type (CHAR_TYPE_CD)

Properties	Description
Customer Modification	Adhoc Characteristic Value Validation Rule (ADHOC_VAL_ALG_CD) on Characteristic Entity Table (CI_CHAR_ENTTTY)

Data Area

Properties	Description
Tables	F1_DATA_AREA, F1_DATA_AREA_L
Standard Data Fields	Data Area Code (DATA_AREA_CD)
Customer Modification	None

Display Icon

Properties	Description
Tables	CI_DISP_ICON, CI_DISP_ICON_L
Standard Data Fields	Display Icon Code (DISP_ICON_CD)
Customer Modification	None

Foreign Key Reference

Properties	Description
Tables	CI_FK_REF, CI_FK_REF_L
Standard Data Fields	FK reference code (FK_REF_CD)
Customer Modification	Info Program Name (INFO_PRG), Zone (ZONE_CD)

Lookup

Properties	Description
Tables	CI_LOOKUP_FIELD, CI_LOOKUP_VAL, CI_LOOKUP_VAL_L, F1_EXT_LOOKUP_VAL, F1_EXT_LOOKUP_VAL_L

Properties	Description
Standard Data Fields	<p>Field Name (FIELD_NAME)</p> <ul style="list-style-type: none"> A lookup field name must have corresponding field metadata. The name of the lookup field column must be assigned to avoid conflicts among different products. If you follow the standards for database field names, a Customer Modification lookup field name will be automatically Customer Modification prefixed. <p>Field Value (FIELD_VALUE)</p> <ul style="list-style-type: none"> If a lookup field is customizable, Customer Modification can insert new lookup values. X or Y must prefix when implementers introduce a new lookup value. Product development can extend the Oracle Utilities Application Framework owned lookup field's value with caution. When it needs to be extended, prefix the first letter of the Owner Flag to the value. For example, when adding a new value to the algorithm entity flag (ALG_ENTITY_FLG), prefix with C1 if you are developing an Oracle Utilities Customer Care and Billing product. <p>Introduced in V 4.0.1: Value (F1_EXT_LOOKUP_VALUE)</p> <ul style="list-style-type: none"> This will allow storing longer value keys rather than the normal 4byte lookup values.
Customer Modification	Override Description (DESCR_OVRD) on Lookup Field Value Language Table (CI_LOOKUP_VAL_L)

A new Feature option is defined through adding a value to EXT_SYS_TYP_FLG. The field value for this look up field must be prefixed by the Owner flag value.

Map

Properties	Description
Tables	F1_MAP, F1_MAP_L
Standard Data Fields	UI Map (MAP_CD)
Customer Modification	None

Managed Content

Properties	Description
Tables	F1_MANAG_CONTENT, F1_MANAG_CONTENT_L
Standard Data Fields	Managed Content (MANAG_CONTENT_CD)
Customer Modification	None

Messages

Properties	Description
Tables	CI_MSG_CATEGORY, CI_MSG_CATEGORY_L, CI_MSG, CI_MSG_L

Properties	Description
Standard Data Fields	<p data-bbox="946 218 1406 243">Message Category (MESSAGE_CAT_NBR)</p> <ul data-bbox="946 254 1484 947" style="list-style-type: none"> <li data-bbox="946 254 1484 405">• Messages are grouped in categories and each category has message numbers between 1 and 99999. A range of message categories is assigned to a product. You must use only the assigned category for your product. <li data-bbox="946 426 1484 516">• Oracle Utilities Customer Care and Billing and Oracle Utilities Business Intelligence - 00001 thru 00100 <li data-bbox="946 537 1484 594">• Oracle Utilities Application Framework Java - 11001 thru 11100 <li data-bbox="946 615 1484 672">• Oracle Utilities Customer Care and Billing Java - 11101 thru 11200 <li data-bbox="946 693 1484 749">• Oracle Utilities Business Intelligence Java - 11201 thru 11300 <li data-bbox="946 770 1308 795">• Implementer COBOL - 90000 <li data-bbox="946 816 1263 842">• Implementer WSS - 90001 <li data-bbox="946 863 1256 888">• Implementer Java - 90002 <li data-bbox="946 909 1268 934">• Reserved for Tests - 99999 <p data-bbox="946 961 1484 1018">Message Number (MESSAGE_NBR) for COBOL message categories</p> <ul data-bbox="946 1029 1484 1119" style="list-style-type: none"> <li data-bbox="946 1029 1484 1119">• Message numbers below 1000 are reserved for common messages. Implementers must not use message numbers below 1000. <p data-bbox="946 1140 1484 1197">Message Number (MESSAGE_NBR) for Java message categories</p> <ul data-bbox="946 1207 1484 1913" style="list-style-type: none"> <li data-bbox="946 1207 1484 1264">• Subsystem Standard Messages - 00001 thru 02000 <li data-bbox="946 1285 1292 1310">• Reserved - 02001 thru 09999 <li data-bbox="946 1331 1403 1356">• Published Messages - 10001 thru 11000 <li data-bbox="946 1377 1383 1402">• Package Messages - 10001 thru 90000 <li data-bbox="946 1423 1292 1449">• Reserved - 90001 thru 99999 <li data-bbox="946 1470 1484 1526">• Each package is allocated 100 message numbers, each starting from 101. <li data-bbox="946 1547 1484 1801">• Published Messages are messages that are special-interest messages that implementations need to know about and are therefore published in the user docs. Examples of these include messages that are highly likely to be changed for an implementation, or messages that are embedded into other texts/messages and therefore the message number is never shown <li data-bbox="946 1822 1484 1913">• Reserved message number ranges are for future use and therefore must not be used by all products.

Properties	Description
Customer Modification	Override Description (DESCRLONG_OVRD), Message Text Override (MESSAGE_TEXT_OVRD)

Meta Data - Table and Field

Properties	Description
Tables	CI_MD_TBL, CI_MD_TBL_FLD, CI_MD_TBL_L, CI_MD_TBL_FLD_L, CI_MD_FLD, CI_MD_FLD_L, F1_DB_OBJECTS_REPO
Standard Data Fields	<p>Table Name (TBL_NAME)</p> <ul style="list-style-type: none"> Table names must match with the physical table name or view name in the database. Field Name (FLD_NAME) Field name must match with the physical column name in the database unless the field is a work field. Field name does not have to follow the prefixing standard unless the field is a work field or customer modification field. F1_DB_OBJECTS_REPO Table stores information about Indexes, Sequences, Triggers and other database objects excluding Tables and Fields (as they are already stored in the other Metadata tables)
Customer Modification	<p>Audit Switches (AUDIT_INSERT_SW, AUDIT_UPDATE_SW, AUDIT_DELETE_SW), Override label (OVRD_LABEL) on MD Table Field Table (CI_MD_TBL_FLD). Audit Program Name (AUDIT_PGM_NAME), Audit Table Name (AUDIT_TBL_NAME), Audit Program Type (AUDIT_PGM_TYPE_FLG), Key Validation (KEY_VALIDATION_FLG) and Caching strategy (CACHE_FLG) on MD Table (CI_MD_TBL). Override Label (OVRD_LABEL) and Customer Specific Description (DESCRLONG_OVRD) on Field Table.</p>

Meta Data - Constraints

Properties	Description
Tables	CI_MD_CONST, CI_MD_CONST_FLD
Standard Data Fields	Constraint Id (CONST_ID) <ul style="list-style-type: none"> • Index Name for Primary Constraints • <Index Name>Rnn for Foreign Key Constraints Where <ul style="list-style-type: none"> • nn: integer, 01 through 99
Customer Modification	None

Meta Data - Menu

Menus can be extended to support multiple products by adding a new menu line to an existing menu. The sequence number on the menu line language table (CI_MD_MENU_LINE_L) determines the order the menu lines appear. Within the same sequence, alphabetic sorting is used.

Properties	Description
Tables	CI_MD_MENU, CI_MD_MENU_L, CI_MD_MENU_ITEM, CI_MD_MENU_ITEM_L, CI_MD_MENU_LINE, CI_MD_MENU_LINE_L
Standard Data Fields	Menu Name (MENU_NAME), Menu Item Id (MENU_ITEM_ID), Menu Line Id (MENU_LINE_ID)
Customer Modification	Override Label (OVRD_LABEL) on Menu Line Language Table (CI_MD_MENU_LINE_L)

Meta Data - Program, Location and Services

Properties	Description
Tables	CI_MD_PRG_COM, CI_MD_PRG_LOC, CI_MD_SVC, CI_MD_SVC_L, CI_MD_SVC_PRG, CI_MD_PRG_REF, CI_MD_PRG_MOD, CI_MD_PRG_EL_AT, CI_MD_PRG_ELEM, CI_MD_PRG_SEC, CI_MD_PRG_SQL, CI_MD_PRG_VAR, CI_MD_PRG_TAB

Properties	Description
Standard Data Fields	Program Component Id (PROG_COM_ID), Location Id (LOC_ID), Program Component Name (PROG_COM_NAME), Service Name (SVC_NAME), Navigation Key (NAVIGATION_KEY)
Customer Modification	User Exit Program Name (USER_EXIT_PGM_NAME) on Program Components Table (CI_MD_PRG_COM),

Meta Data - Maintenance Object

Properties	Description
Tables	CI_MD_MO, CI_MD_MO_L, CI_MD_MO_TBL, CI_MD_MO_OPT, CI_MD_MO_ALG
Standard Data Fields	Maintenance Object (MAINT_OBJ_CD)
Customer Modification	None

Meta Data - Work Tables

Properties	Description
Tables	CI_MD_WRK_TBL, CI_MD_WRK_TBL_L, CI_MD_WRK_TBLFLD, CI_MD_MO_WRK
Standard Data Fields	Work Table Name (WRK_TBL_NAME)
Customer Modification	None

Meta Data - Search Object

Properties	Description
Tables	CI_MD_SO, CI_MD_SO_L, CI_MD_SO_RSFLD, CI_MD_SO_RSFLDAT, CI_MD_SO CG, CI_MD_SO CG_FLD, CI_MD_SO CG_FLDAT, CI_MD_SO CG_L, CI_MD_SO CG_SORT
Standard Data Fields	Search Object (SO_CD)
Customer Modification	None

Navigation Option

Properties	Description
Tables	CI_NAV_OPT, CI_NAV_OPT_L, CI_NAV_OPT_CTXT, CI_NAV_OPT_USG, CI_MD_NAV
Standard Data Fields	Navigation Option Code (NAV_OPT_CD), Navigation Key (NAVIGATION_KEY)
Customer Modification	None

Portal and Zone

Properties	Description
Tables	CI_PORTAL, CI_PORTAL_L, CI_PORTAL_ZONE, CI_ZONE, CI_ZONE_L, CI_ZONE_PRM, CI_ZONE_HDL, CI_ZONE_HDL_L, CI_ZONE_HDL_PRM, CI_ZONE_HDL_PRM_L, CI_UI_ZONE
Standard Data Fields	Portal Code (PORTAL_CD), Zone Code (ZONE_CD), Zone Type Code (ZONE_HDL_CD) <ul style="list-style-type: none"> A new Zone can be added to the Product owned Portal Pages. The existing Zones cannot be removed from the Product owned Portal Pages.
Customer Modification	Sort Sequence (SORT_SEQ) on Context Sensitive Zone Table (CI_UI_ZONE). Show on Portal Preferences (USER_CONFIG_FLG) on Portal Table (CI_PORTAL). Override Sequence (SORT_SEQ_OVRD) on Portal Zone Table (CI_PORTAL_ZONE). Customer Specific Description (DESCRLONG_OVRD) on Zone Language Table (CI_ZONE_L). Override Parameter Value (ZONE_HDL_PARM_OVRD) on Zone Type Parameters Table (CI_ZONE_HDL_PRM). Override Parameter Value (ZONE_PARM_VAL_OVRD) on Zone Parameters Table (CI_ZONE_PRM).

Sequence

Properties	Description
Tables	CI_SEQ
Standard Data Fields	Sequence Name (SEQ_NAME)
Customer Modification	Sequence Number (SEQ_NBR) This field is updated by the application process and must be set to 1 initially.

Schema

Properties	Description
Tables	F1_SCHEMA
Standard Data Fields	Schema Name (SCHEMA_NAME)
Customer Modification	None

Script

Properties	Description
Tables	CI_SCR, CI_SCR_L, CI_SCR_CRT, CI_SCR_CRT_GRP, CI_SCR_CRT_GRP_L, CI_SCR_DA, CI_SCR_FLD_MAP, CI_SCR_PRMP,CI, CI_SCR_PRMP_L, CI_SCR_STEP, CI_SCR_STEP_L
Standard Data Fields	Script (SCR_CD)
Customer Modification	None

To Do Type

Properties	Description
Tables	CI_TD_TYPE, CI_TD_TYPE_L, CI_TD_SRTKEY_TY, CI_TD_DRLKEY_TY, CI_TD_SRTKEY_TY_L
Standard Data Fields	To Do Type Code (TD_TYPE_CD)
Customer Modification	Creation Batch Code (CRE_BATCH_CD), Route Batch Code (RTE_BATCH_CD), Priority Flag (TD_PRIORITY_FLG) on To Do Type Table (CI_TD_TYPE)

XAI configuration

Properties	Description
Tables	CI_XAI_ADAPTER, CI_XAI_ADAPTER_L, CI_XAI_CLASS, CI_XAI_CLASS_L, CI_XAI_ENV_HNDL, CI_XAI_ENV_HNDL_L, CI_XAI_FORMAT, CI_XAI_FORMAT_L, CI_XAI_RCVR, CI_XAI_RCVR_L, CI_XAI_RCVR_CTX, CI_XAI_RCVR_RSP, CI_XAI_RCVR_RGRP, CI_XAI_SENDER, CI_XAI_SERNDER_L, CI_XAI_SNDR_CTX, CI_XAI_OPTION
Standard Data Fields	Adapter Id (XAI_ADAPTER_ID), Class Id (XAI_CLASS_ID), Envelope Handler Id (XAI_ENV_HNDL_ID), XAI Format Id (XAI_FORMAT_ID), Receiver Id (XAI_RCVR_ID), Sender Id (XAI_SENDER_ID)
Customer Modification	Option Value (OPTION_VALUE on XAI Option Table (CI_XAI_OPTION))

The following XAI tables might have system data installed upon the initial installation but a subsequent system data upgrade process will not update the content of these table unless the change is documented in the database upgrade guide : CI_XAI_RCVR, CI_XAI_RCVR_L, CI_XAI_RCVR_CTX, CI_XAI_RCVR_RSP, CI_XAI_RCVR_RGRP, CI_XAI_SENDER, CI_XAI_SERNDER_L, CI_XAI_SNDR_CTX

XAI Services

Properties	Description
Tables	CI_XAI_IN_SVC, CI_XAI_IN_SVC_L, CI_XAI_SVC_PARM
Standard Data Fields	XAI Inbound Service Id (XAI_IN_SVC_ID), XAI Inbound Service Name (XAI_IN_SVC_NAME)
Customer Modification	XAI Version (XAI_VERSION_ID), Trace (TRACE_SW), Debug (DEBUG_SW), Request XSL (INPUT_XSL), Response XSL (RESPONSE_XSL), Record XSL (RECORD_XSL and Post Error (POST_ERROR_SW) on XAI Inbound Service Table (CI_XAI_IN_SVC)

Oracle Utilities Application Framework Only Tables

All data of the tables in this group belong to the Oracle Utilities Application Framework. No data modification or addition is allowed for these tables by base product development and customer modification. When an environment is upgraded to the next release of the Oracle Utilities Application Framework, the upgrade process will refresh the data in these tables.

- CI_MD_AT_DTL / CI_MD_AT_DTL_L
- CI_MD_ATT_TY
- CI_MD_CTL / CI_MD_CTL_L
- CI_MD_CTL_TMPL
- CI_MD_ELTY / CI_MD_ELTY_L
- CI_MD_ELTY_AT
- CI_MD_LOOKUP / CI_MD_LOOKUP_F
- CI_MD_PDF / CI_MD_PDF_VAL
- CI_MD_MSG / CI_MD_MSG_L
- CI_MD_SRC_TYPE / CI_MD_SRC_TYPE_L
- CI_MD_TMPL / CI_MD_TMPL_L
- CI_MD_TMPL_ELTY
- CI_MD_TMPL_VAR / CI_MD_TMPL_VAR_L
- CI_MD_VAR / CI_MD_VAR_DTL / CI_MD_VAR_DTL_L
- CI_XAI_EXECUTER / CI_XAI_EXECUTER_L

System Table List

This section contains names of system tables, upgrade actions, and a brief description of tables. The upgrade actions are explained below.

Keep (KP): The data in the table in the customer's database is kept untouched. No insert or delete is performed to this table by the upgrade process. The initial installation will add necessary data for the system.

Merge (MG): The non-base product data in the table in the database is kept untouched. If the data belongs to the base product, any changes pertaining to the new version of the software are performed.

Refresh (RF): The existing data in the table is replaced with the data from the base product table.

Note. New product data is also inserted into tables marked as 'Merge'. If implementers add rows for a customer specific enhancement, it can cause duplication when the system data gets upgraded to the next version. We strongly recommend following the guidelines on how to use designated range of values or prefixes to segregate the implementation data from the base product data.

Table Name	Upgrade Action	Description
CI_ALG	MG	Algorithm
CI_ALG_L	MG	Algorithm Language
CI_ALG_PARM	MG	Algorithm Parameters
CI_ALG_TYPE	MG	Algorithm Type
CI_ALG_TYPE_L	MG	Algorithm Type Language
CI_ALG_TYPE_PRM	MG	Algorithm Type Parameter
CI_ALG_TYPE_PRM_L	MG	Algorithm Type Parameter Language
CI_ALG_VER	MG	Algorithm Version
CI_APP_SVC_ACC	MG	Application Service Access Mode
CI_BATCH_CTRL	MG	Batch Control
CI_BATCH_CTRL_ALG	KP	Batch Control Algorithm
CI_BATCH_CTRL_L	MG	Batch Control Language
CI_BATCH_CTRL_P	MG	Batch Control Parameters
CI_BATCH_CTRL_P_L	MG	Batch Control Parameters Language
CI_CHAR_ENTITY	MG	Characteristic Type Entity
CI_CHAR_TYPE	MG	Characteristic Type
CI_CHAR_TYPE_L	MG	Characteristic Type Language
CI_CHAR_VAL	MG	Characteristic Type Value
CI_CHAR_VAL_L	MG	Characteristic Type Value Language

Table Name	Upgrade Action	Description
CI_CURRENCY_CD	KP	Currency Code
CI_CURRENCY_CD_L	KP	Currency Code Language
CI_DB_INSTR	KP	DB Process Instruction
CI_DB_INSTR_ALG	KP	DB Process Instruction Algorithm
CI_DB_INSTR_L	KP	DB Process Instruction Language
CI_DB_INST_OVRD	KP	DB Process Instruction Override
CI_DB_PROC	KP	DB Process
CI_DB_PROC_L	KP	DB Process Language
CI_DISP_ICON	MG	Display Icon
CI_DISP_ICON_L	MG	Display Icon Language
CI_DISP_PROF	KP	Display Profile
CI_DISP_PROF_L	KP	Display Profile Language
CI_FK_REF	MG	Foreign Key Reference
CI_FK_REF_L	MG	Foreign Key Reference Language
CI_LANGUAGE	MG	Language Code
CI_LOOKUP_FIELD	MG	Lookup Field
CI_LOOKUP_VAL	MG	Lookup Field Value
CI_LOOKUP_VAL_L	MG	Lookup Field Value Language
CI_MD_ATT_TY	RF	MD Element Attribute Type
CI_MD_AT_DTL	RF	MD Element Attribute Type Detail
CI_MD_AT_DTL_L	RF	MD Element Attribute Type Detail Language
CI_MD_CONST	MG	Constraints
CI_MD_CONST_FLD	MG	Constraint Fields
CI_MD_CTL	RF	Generator Control
CI_MD_CTL_L	RF	Generator Control Language
CI_MD_CTL_TMPL	RF	Generator Control Template
CI_MD_ELTY	RF	MD Element Type
CI_MD_ELTY_AT	RF	Element Type Attributes
CI_MD_ELTY_L	RF	Element Type Language
CI_MD_FLD	MG	Field
CI_MD_FLD_L	MG	Field Language

Table Name	Upgrade Action	Description
CI_MD_LOOKUP	RF	MD Lookup Field Value
CI_MD_LOOKUP_F	RF	MD Lookup Field
CI_MD_MENU	MG	Menu Information
CI_MD_MENU_IMOD	MG	Menu Item Module Maint
CI_MD_MENU_ITEM	MG	Menu Item
CI_MD_MENU_ITEM_L	MG	Menu Item Language
CI_MD_MENU_L	MG	Menu Language
CI_MD_MENU_LINE	MG	Menu Line
CI_MD_MENU_LINE_L	MG	Menu Line Language
CI_MD_MENU_MOD	MG	Menu Product Components
CI_MD_MO	MG	Maintenance Object
CI_MD_MO_ALG	MG	Maintenance Object Algorithm
CI_MD_MO_L	MG	Maintenance Object Language
CI_MD_MO_OPT	MG	Maintenance Object Option
CI_MD_MO_TBL	MG	Maintenance Object Table
CI_MD_MO_WRK	MG	Maintenance Object Work Tables
CI_MD_MSG	RF	MD Message
CI_MD_MSG_L	RF	MD Message Language
CI_MD_NAV	MG	Navigation Key
CI_MD_PDF	RF	Predefined Fields
CI_MD_PDF_VAL	RF	Predefined Values
CI_MD_PRG_COM	MG	Program Components
CI_MD_PRG_ELEM	MG	UI Page Elements
CI_MD_PRG_EL_AT	MG	UI Page Element Attributes
CI_MD_PRG_LOC	MG	Program Location
CI_MD_PRG_MOD	MG	Program Module
CI_MD_PRG_SEC	MG	UI Page Sections
CI_MD_PRG_SQL	MG	MD SQL Meta Data
CI_MD_PRG_TAB	MG	UI Tab Meta Data
CI_MD_PRG_VAR	MG	Program Variable
CI_MD_SO	MG	Search Object
CI_MD_SOCCG	MG	Search Object Criteria Group

Table Name	Upgrade Action	Description
CI_MD_SOCG_FLD	MG	Search Object Criteria Group Field
CI_MD_SOCG_FLDAT	MG	Search Criteria Group Field Attribute
CI_MD_SOCG_L	MG	Search Object Criteria Group Language
CI_MD_SOCG_SORT	MG	Search Criteria Group Result Sort Order
CI_MD_SO_L	MG	Search Object Language
CI_MD_SO_RSFLD	MG	Search Object Result Field
CI_MD_SO_RSFLDAT	MG	Search Object Result Field Attribute
CI_MD_SRC_TYPE	RF	Source Type
CI_MD_SRC_TYPE_L	RF	Source Type Language
CI_MD_SVC	MG	MD Service
CI_MD_SVC_L	MG	MD Service Language
CI_MD_SVC_PRG	MG	MD Service Program
CI_MD_TAB_MOD	MG	UI Tab Module
CI_MD_TBL	MG	MD Table
CI_MD_TBL_FLD	MG	MD Table Field
CI_MD_TBL_FLD_L	MG	MD Table Field Language
CI_MD_TBL_L	MG	MD Table Language
CI_MD_TMPL	RF	Template
CI_MD_TMPL_ELTY	RF	Template Element Types
CI_MD_TMPL_L	RF	Template Language
CI_MD_TMPL_VAR	RF	Template Variable
CI_MD_TMPL_VAR_L	RF	Template Variable Language
CI_MD_VAR	RF	Variable
CI_MD_VAR_DTL	RF	Variable Detail
CI_MD_VAR_DTL_L	RF	Variable Detail Language
CI_MD_WRK_TBL	MG	Work Table
CI_MD_WRK_TBLFLD	MG	Work Table Field
CI_MD_WRK_TBL_L	MG	Work Table Language
CI_MSG	MG	Message
CI_MSG_CATEGORY	MG	Message Category

Table Name	Upgrade Action	Description
CI_MSG_CATEGORY_L	MG	Message Category Language
CI_MSG_L	MG	Message Language
CI_NAV_OPT	MG	Navigation Option
CI_NAV_OPT_CTXT	MG	Navigation Option Context
CI_NAV_OPT_L	MG	Navigation Option Language
CI_NAV_OPT_USG	MG	Navigation Option Usage
CI_PORTAL	MG	Portal
CI_PORTAL_L	MG	Portal Language
CI_PORTAL_ZONE	MG	Portal Zone
CI_SCR	MG	Script
CI_SCR_CRT	MG	Script Criteria
CI_SCR_CRT_GRP	MG	Script Criteria Group
CI_SCR_CRT_GRP_L	MG	Script Criteria Group Language
CI_SCR_DA	MG	Script Data Area
CI_SCR_FLD_MAP	MG	Script Field Mapping
CI_SCR_L	MG	Script Language
CI_SCR_PRMPPT	MG	Script Prompt
CI_SCR_PRMPPT_L	MG	Script Prompt Language
CI_SCR_STEP	MG	Script Step
CI_SCR_STEP_L	MG	Script Step Language
CI_SEQ	MG	Sequence
CI_TD_DRLKEY_TY	MG	To Do Type Drill Key
CI_TD_SRTKEY_TY	MG	To Do Type Sort Key
CI_TD_SRTKEY_TY_L	MG	To Do Type Sort Key Language
CI_TD_TYPE	MG	To Do Type
CI_TD_TYPE_L	MG	To Do Type Language
CI_USR_NAV_LINK	MG	User Favorite Links
CI_USR_PORTAL	KP	User Portal
CI_USR_ZONE	KP	User Zone
CI_XAI_ADAPTER	MG	XAI Adapter
CI_XAI_ADAPTER_L	MG	XAI Adapter Lang
CI_XAI_CLASS	MG	XAI Class
CI_XAI_CLASS_L	MG	XAI Class Language

Table Name	Upgrade Action	Description
CI_XAI_ENV_HNDL	MG	XAI Envelope Handler
CI_XAI_ENV_HNDL_L	MG	XAI Envelope Handler Language
CI_XAI_EXECUTER	RF	XAI Executer
CI_XAI_EXECUTER_L	RF	XAI Executer Language
CI_XAI_FORMAT	RF	XAI Format
CI_XAI_FORMAT_L	RF	XAI Format Language
CI_XAI_IN_SVC	MG	XAI Inbound Service
CI_XAI_IN_SVC_L	MG	XAI Inbound Service Language
CI_XAI_JNDI_SVR	KP	XAI JNDI Server
CI_XAI_JNDI_SVR_L	KP	XAI JNDI Server Language
CI_XAI_OPTION	KP	XAI Option
CI_XAI_RCVR	KP	XAI Receiver
CI_XAI_RCVR_CTX	KP	XAI Receiver Context
CI_XAI_RCVR_L	KP	XAI Receiver Language
CI_XAI_RCVR_RGRP	KP	XAI Receiver Rule Group
CI_XAI_RCVR_RSP	KP	XAI Receiver Response
CI_XAI_SENDER	KP	XAI Sender
CI_XAI_SENDER_L	KP	XAI Sender Language
CI_XAI_SNDR_CTX	KP	XAI Sender Context
CI_XAI_SVC_PARM	MG	XAI Inbound Service Parameters
CI_ZONE	MG	Zone
CI_ZONE_HDL	MG	Zone Type
CI_ZONE_HDL_L	MG	Zone Type Language
CI_ZONE_HDL_PRM	MG	Zone Type Parameters
CI_ZONE_HDL_PRM_L	MG	Zone Type Parameters Language
CI_ZONE_L	MG	Zone Language
CI_ZONE_PRM	MG	Zone Parameters
F1_BUS_OBJ	MG	Business Object
F1_BUS_OBJ_ALG	MG	Business Object Algorithm
F1_BUS_OBJ_L	MG	Business Object Language
F1_BUS_OBJ_OPT	MG	Business Object Option
F1_BUS_OBJ_STATUS	MG	Business Object Status

Table Name	Upgrade Action	Description
F1_BUS_OBJ_STATUS_AL G	MG	Business Object Status Algorithm
F1_BUS_OBJ_STATUS_L	MG	Business Object Status Language
F1_BUS_OBJ_STATUS_OP T	MG	Business Object Status Option
F1_BUS_OBJ_STATUS_RS N	MG	Status Reason
F1_BUS_OBJ_STATUS_RS N_CHAR	KP	Status Reason Characteristic
F1_BUS_OBJ_STATUS_RS N_L	MG	Status Reason Language
F1_BUS_OBJ_TR_RULE	MG	Business Object Transition Rule
F1_BUS_OBJ_TR_RULE_L	MG	Business Object Transition Rule Language
F1_BUS_SVC	MG	Business Service
F1_BUS_SVC_L	MG	Business Service Language
F1_DATA_AREA	MG	Data Area
F1_DATA_AREA_L	MG	Data Area Language
F1_DB_OBJECTS_REPO	MG	Database Objects Repository
F1_EXT_LOOKUP_VAL	MG	Extendable Lookup
F1_EXT_LOOKUP_VAL_ L	MG	Extendable Lookup Language
F1_INSTALLATION	KP	Installation Option - Framework
F1_MANAG_CONTENT	MG	Managed Content
F1_MANAG_CONTENT_ L	MG	Managed Content Language
F1_MAP	MG	UI Map
F1_MAP_L	MG	UI Map Language
F1_SCHEMA	MG	Schema
SC_ACCESS_CNTRL	MG	User Group Access Control
SC_APP_SERVICE	MG	Application Service
SC_APP_SERVICE_L	MG	Application Service Language
SC_USER	KP	User
SC_USER_GROUP	KP	User Group
SC_USER_GROUP_L	KP	User Group Language
SC_USR_GRP_PROF	MG	User Group Profile

Table Name	Upgrade Action	Description
SC_USR_GRP_USR	KP	User Group User

Appendix C

License and Copyright Notices

License and Copyright notices for associated products:

Third Party Products

Notice concerning usage of ANTLR and Classycle

[The BSD License]

Copyright (c) 2010 Terence Parr

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of the author nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

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.

Notice concerning usage of Apache Software

The following are covered under the Apache 2.0 license.

1. bsf-2.4.0.jar

-
2. castor-1.3.1-core.jar
 3. castor-1.3.1-xml.jar
 4. castor-1.3.1-xml-schema.jar
 5. cglib-2.2.jar
 6. classycle.1.1.jar
 7. commons-beanutils-core-1.8.1.jar
 8. commons-cli-1.1.jar
 9. commons-codec-1.4.jar
 10. commons-collections-3.1.jar
 11. commons-fileupload-1.2.1.jar
 12. commons-httpclient-3.0.1.jar
 13. commons-io-1.3.2.jar
 14. commons-lang-2.2.jar
 15. ehcache-1.2.3.jar
 16. log4j-1.2.15.jar
 17. qdox.1.6.1.jar
 18. serializer-2.7.1.jar
 19. stax2.jar
 20. velocity.1.4.jar
 21. wstx-asl-3.2.1.jar
 22. xalan-mod-2.7.1.jar
 23. xmlparserv2.jar

Apache License

Version 2.0, January 2004

<http://www.apache.org/licenses/>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

You must give any other recipients of the Work or Derivative Works a copy of this License; and
You must cause any modified files to carry prominent notices stating that You changed the files; and

You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such

NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License. You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

Notice concerning usage of ASM

Copyright (c) 2000-2005 INRIA, France Telecom

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holders nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

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.

Notice concerning usage of Concurrent

All classes are released to the public domain and may be used for any purpose whatsoever without permission or acknowledgment. <http://g.oswego.edu/dl/classes/EDU/oswego/cs/dl/util/concurrent/intro.html>

Notice concerning usage of dom4j

Copyright 2001-2010 (C) MetaStuff, Ltd. All Rights Reserved.

Redistribution and use of this software and associated documentation ("Software"), with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain copyright statements and notices. Redistributions must also contain a copy of this document.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. The name "DOM4J" must not be used to endorse or promote products derived from this Software without prior written permission of MetaStuff, Ltd. For written permission, please contact dom4j-info@metastuff.com.

4. Products derived from this Software may not be called "DOM4J" nor may "DOM4J" appear in their names without prior written permission of MetaStuff, Ltd. DOM4J is a registered trademark of MetaStuff, Ltd.

5. Due credit should be given to the DOM4J Project - <http://dom4j.sourceforge.net>

THIS SOFTWARE IS PROVIDED BY METASTUFF, LTD. AND CONTRIBUTORS "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 METASTUFF, LTD. OR ITS 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.

Notice concerning usage of International Components for Unicode (ICU4J)

COPYRIGHT AND PERMISSION NOTICE

Copyright (c) 1995-2010 International Business Machines Corporation and others

All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

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 OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR 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.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

Notice concerning usage of Jaxen

/*

Copyright 2003-2006 The Werken Company. All Rights Reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

- * Neither the name of the Jaxen Project nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

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.

*/

Notice concerning usage of JCIP Annotations

Attribution 2.5

CREATIVE COMMONS CORPORATION IS NOT A LAW FIRM AND DOES NOT PROVIDE LEGAL SERVICES. DISTRIBUTION OF THIS LICENSE DOES NOT CREATE AN ATTORNEY-CLIENT RELATIONSHIP. CREATIVE COMMONS PROVIDES THIS INFORMATION ON AN "AS-IS" BASIS. CREATIVE COMMONS MAKES NO WARRANTIES REGARDING THE INFORMATION PROVIDED, AND DISCLAIMS LIABILITY FOR DAMAGES RESULTING FROM ITS USE.

License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED.

BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE. THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

1. Definitions

1. "Collective Work" means a work, such as a periodical issue, anthology or encyclopedia, in which the Work in its entirety in unmodified form, along with a number of other contributions, constituting separate and independent works in themselves, are assembled into a collective whole. A work that constitutes a Collective Work will not be considered a Derivative Work (as defined below) for the purposes of this License.
2. "Derivative Work" means a work based upon the Work or upon the Work and other pre-existing works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which the Work may be recast, transformed, or adapted, except that a work that constitutes a Collective Work will not be considered a Derivative Work for the purpose of this License. For the avoidance of doubt, where the Work is a musical composition or sound recording, the synchronization of the Work in timed-relation with a moving image ("synching") will be considered a Derivative Work for the purpose of this License.
3. "Licensor" means the individual or entity that offers the Work under the terms of this License.
4. "Original Author" means the individual or entity who created the Work.
5. "Work" means the copyrightable work of authorship offered under the terms of this License.
6. "You" means an individual or entity exercising rights under this License who has not previously violated the terms of this License with respect to the Work, or who has received express permission from the Licensor to exercise rights under this License despite a previous violation.

2. Fair Use Rights. Nothing in this license is intended to reduce, limit, or restrict any rights arising from fair use, first sale or other limitations on the exclusive rights of the copyright owner under copyright law or other applicable laws.

3. License Grant. Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated below:

1. to reproduce the Work, to incorporate the Work into one or more Collective Works, and to reproduce the Work as incorporated in the Collective Works;
2. to create and reproduce Derivative Works;
3. to distribute copies or phonorecords of, display publicly, perform publicly, and perform publicly by means of a digital audio transmission the Work including as incorporated in Collective Works;
4. to distribute copies or phonorecords of, display publicly, perform publicly, and perform publicly by means of a digital audio transmission Derivative Works.
- 5.

For the avoidance of doubt, where the work is a musical composition:

1. Performance Royalties Under Blanket Licenses. Licensor waives the exclusive right to collect, whether individually or via a performance rights society (e.g. ASCAP, BMI, SESAC), royalties for the public performance or public digital performance (e.g. webcast) of the Work.

2. Mechanical Rights and Statutory Royalties. Licensor waives the exclusive right to collect, whether individually or via a music rights agency or designated agent (e.g. Harry Fox Agency), royalties for any phonorecord You create from the Work ("cover version") and distribute, subject to the compulsory license created by 17 USC Section 115 of the US Copyright Act (or the equivalent in other jurisdictions).

6. Webcasting Rights and Statutory Royalties. For the avoidance of doubt, where the Work is a sound recording, Licensor waives the exclusive right to collect, whether individually or via a performance-rights society (e.g. SoundExchange), royalties for the public digital performance (e.g. webcast) of the Work, subject to the compulsory license created by 17 USC Section 114 of the US Copyright Act (or the equivalent in other jurisdictions).

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. All rights not expressly granted by Licensor are hereby reserved.

4. Restrictions. The license granted in Section 3 above is expressly made subject to and limited by the following restrictions:

1. You may distribute, publicly display, publicly perform, or publicly digitally perform the Work only under the terms of this License, and You must include a copy of, or the Uniform Resource Identifier for, this License with every copy or phonorecord of the Work You distribute, publicly display, publicly perform, or publicly digitally perform. You may not offer or impose any terms on the Work that alter or restrict the terms of this License or the recipients' exercise of the rights granted hereunder. You may not sublicense the Work. You must keep intact all notices that refer to this License and to the disclaimer of warranties. You may not distribute, publicly display, publicly perform, or publicly digitally perform the Work with any technological measures that control access or use of the Work in a manner inconsistent with the terms of this License Agreement. The above applies to the Work as incorporated in a Collective Work, but this does not require the Collective Work apart from the Work itself to be made subject to the terms of this License. If You create a Collective Work, upon notice from any Licensor You must, to the extent practicable, remove from the Collective Work any credit as required by clause 4(b), as requested. If You create a Derivative

Work, upon notice from any Licensor You must, to the extent practicable, remove from the Derivative Work any credit as required by clause 4(b), as requested.

2. If you distribute, publicly display, publicly perform, or publicly digitally perform the Work or any Derivative Works or Collective Works, You must keep intact all copyright notices for the Work and provide, reasonable to the medium or means You are utilizing: (i) the name of the Original Author (or pseudonym, if applicable) if supplied, and/or (ii) if the Original Author and/or Licensor designate another party or parties (e.g. a sponsor institute, publishing entity, journal) for attribution in Licensor's copyright notice, terms of service or by other reasonable means, the name of such party or parties; the title of the Work if supplied; to the extent reasonably practicable, the Uniform Resource Identifier, if any, that Licensor specifies to be associated with the Work, unless such URI does not refer to the copyright notice or licensing information for the Work; and in the case of a Derivative Work, a credit identifying the use of the Work in the Derivative Work (e.g., "French translation of the Work by Original Author," or "Screenplay based on original Work by Original Author"). Such credit may be implemented in any reasonable manner; provided, however, that in the case of a Derivative Work or Collective Work, at a minimum such credit will appear where any other comparable authorship credit appears and in a manner at least as prominent as such other comparable authorship credit.

5. Representations, Warranties and Disclaimer

UNLESS OTHERWISE MUTUALLY AGREED TO BY THE PARTIES IN WRITING, LICENSOR OFFERS THE WORK AS-IS AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE WORK, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR THE ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OF ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO SUCH EXCLUSION MAY NOT APPLY TO YOU.

6. Limitation on Liability. EXCEPT TO THE EXTENT REQUIRED BY APPLICABLE LAW, IN NO EVENT WILL LICENSOR BE LIABLE TO YOU ON ANY LEGAL THEORY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS LICENSE OR THE USE OF THE WORK, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. Termination

1. This License and the rights granted hereunder will terminate automatically upon any breach by You of the terms of this License. Individuals or entities who have received Derivative Works or Collective Works from You under this License, however, will not have their licenses terminated provided such individuals or entities remain in full compliance with those licenses. Sections 1, 2, 5, 6, 7, and 8 will survive any termination of this License.

2. Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work). Notwithstanding the above, Licensor reserves the right to release the Work under different license terms or to stop distributing the Work at any time; provided, however that any such election will not serve to withdraw this License (or any other license that has been, or is required to be, granted under the terms of this License), and this License will continue in full force and effect unless terminated as stated above.

8. Miscellaneous

1. Each time You distribute or publicly digitally perform the Work or a Collective Work, the Licensor offers to the recipient a license to the Work on the same terms and conditions as the license granted to You under this License.

2. Each time You distribute or publicly digitally perform a Derivative Work, Licensor offers to the recipient a license to the original Work on the same terms and conditions as the license granted to You under this License.

3. If any provision of this License is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this License, and without further action by the parties to this agreement, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

4. No term or provision of this License shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party to be charged with such waiver or consent.

5. This License constitutes the entire agreement between the parties with respect to the Work licensed here. There are no understandings, agreements or representations with respect to the Work not specified here. Licensor shall not be bound by any additional provisions that may appear in any communication from You. This License may not be modified without the mutual written agreement of the Licensor and You.

Creative Commons is not a party to this License, and makes no warranty whatsoever in connection with the Work. Creative Commons will not be liable to You or any party on any legal theory for any damages whatsoever, including without limitation any general, special, incidental or consequential damages arising in connection to this license. Notwithstanding the foregoing two (2) sentences, if Creative Commons has expressly identified itself as the Licensor hereunder, it shall have all rights and obligations of Licensor.

Except for the limited purpose of indicating to the public that the Work is licensed under the CCPL, neither party will use the trademark "Creative Commons" or any related trademark or logo of Creative Commons without the prior written consent of Creative Commons. Any permitted use will be in compliance with Creative Commons' then-current trademark usage guidelines, as may be published on its website or otherwise made available upon request from time to time.

Creative Commons may be contacted at <http://creativecommons.org/>.

Notice concerning usage of XStream

Copyright (c) 2003-2006, Joe Walnes

Copyright (c) 2006-2007, XStream Committers

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of XStream nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

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.

Notice concerning usage of slf4j

SLF4J source code and binaries are distributed under the MIT license.

Copyright (c) 2004-2008 QOS.ch

All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

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.

Notice concerning usage of Perl

Perl Kit, Version 5

Copyright (C) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, by Larry Wall and others

All rights reserved.

This program is free software; it is being redistributed under the terms of the "Artistic License".

The Artistic License

Preamble

The intent of this document is to state the conditions under which a Package may be copied, such that the Copyright Holder maintains some semblance of artistic control over the development of the package, while giving the users of the package the right to use and distribute the Package in a more-or-less customary fashion, plus the right to make reasonable modifications.

Definitions:

"Package" refers to the collection of files distributed by the Copyright Holder, and derivatives of that collection of files created through textual modification.

"Standard Version" refers to such a Package if it has not been modified, or has been modified in accordance with the wishes of the Copyright Holder.

"Copyright Holder" is whoever is named in the copyright or copyrights for the package.

"You" is you, if you're thinking about copying or distributing this Package.

"Reasonable copying fee" is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)

"Freely Available" means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1.You may make and give away verbatim copies of the source form of the Standard Version of this Package without restriction, provided that you duplicate all of the original copyright notices and associated disclaimers.

2.You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3.You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:

1.place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.

2.use the modified Package only within your corporation or organization.

3.rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.

4.make other distribution arrangements with the Copyright Holder.

4.You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:

a)distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.

b)accompany the distribution with the machine-readable source of the Package with your modifications.

c)accompany any non-standard executables with their corresponding Standard Version executables, giving the non-standard executables non-standard names, and clearly documenting the differences in manual pages (or equivalent), together with instructions on where to get the Standard Version.

d)make other distribution arrangements with the Copyright Holder.

5.You may charge a reasonable copying fee for any distribution of this Package. You may charge any fee you choose for support of this Package. You may not charge a fee for this Package itself. However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that you do not advertise this Package as a product of your own.

6.The scripts and library files supplied as input to or produced as output from the programs of this Package do not automatically fall under the copyright of this Package, but belong to whomever generated them, and may be sold commercially, and may be aggregated with this Package.

7.C or perl subroutines supplied by you and linked into this Package shall not be considered part of this Package.

8.The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.

9.THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The End

Notice concerning usage of Mime-Base64 Perl Module

Copyright 1995-1999,2001-2004 Gisle Aas <gisle@ActiveState.com>

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

The standard version of the package that is used can be obtained from <http://www.cpan.org>.

Specifically, the software can be obtained from the following link :

<http://search.cpan.org/search%3fmodule=MIME::Base64>

Notice concerning usage of Mime-Lite Perl Module

This is MIME::Lite 3.01 Maintenance release

TERMS AND CONDITIONS

Copyright (c) 1997 by Eryq.

Copyright (c) 1998 by ZeeGee Software Inc.

Copyright (c) 2003 Yves Orton. demerphq (at) hotmail.com.

All rights reserved. This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This software comes with NO WARRANTY of any kind. See the COPYING file in the distribution for details.

The standard version of the package that is used can be obtained from <http://www.cpan.org>.

Specifically, the software can be obtained from the following link :

<http://search.cpan.org/search%3fmodule=MIME::Lite>

Notice concerning usage of DBD::DB2 Perl Module

License Agreement for DBD::DB2

PLEASE READ THIS AGREEMENT CAREFULLY BEFORE INSTALLING OR USING THIS PROGRAM. IF YOU INSTALL OR USE THIS PROGRAM, YOU AGREE TO THESE TERMS.

1. This DBD::DB2 code "Program" is owned by International Business Machines Corporation or its subsidiaries (IBM) or IBM's suppliers, and is copyrighted and licensed, not sold. IBM retains title to the Program, and grants the user of the Program "You" an:

irrevocable, worldwide, nonexclusive, perpetual, royalty-free and fully paid-up license

- (i) to use, execute, display, perform, and reproduce the Program,
- (ii) to prepare derivative works based on the Program,
- (iii) to distribute copies of the Program and derivative works thereof, and
- (iv) to authorize others to do all of the above.

2. You must reproduce the copyright notice and any other legend of ownership on each copy or partial copy of the Program.

3. IBM would appreciate receiving a copy of derivative works of the Program that You create. You may provide to IBM such derivative works pursuant to the terms of this Agreement and the directions in the README file contained within the Program directory. You represent and warrant to IBM that You are the sole author of, and/or have full exclusive right, title and interest to any and all derivative works You provide to IBM. You further represent that You are under no obligation to assign your rights in such derivative works to any third-party, including without limitation, any current or former employer.

4. You agree that IBM may utilize all information, ideas, concepts, know-how or techniques furnished by You to IBM in connection with any derivative works You make or have made to the IBM Program, and that You provide to IBM and IBM may, but shall not be obligated to, include such derivative works in the IBM Program or in any IBM product without accounting to You.

5. With respect to any derivative works of the Program You provide to IBM, You grant to IBM an:

irrevocable, worldwide, non-exclusive, perpetual, royalty--free and fully paid-up license

(i) to use, execute, display, perform, and reproduce your derivative works,

(ii) to prepare derivative works based upon your derivative works,

(iii) to distribute copies of your derivative works, and

(iv) to authorize others to do all of the above.

6. YOU UNDERSTAND THAT THE PROGRAM IS BEING PROVIDED TO YOU "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, QUALITY, PERFORMANCE, INTELLECTUAL PROPERTY INFRINGEMENT OR FITNESS FOR ANY PARTICULAR PURPOSE. IBM has no obligation to provide service, defect correction, or any maintenance for the Program. IBM has no obligation to supply any Program updates or enhancements to You even if such are or later become available.

7. IBM accepts no liability for damages You may suffer as a result of your use of the Program. Under no circumstances is IBM liable for any of the following:

1. third-party claims against You for losses or damages;

3. loss of, or damage to, your records or data; or

4. direct damages, lost profits, lost savings, incidental, special, or indirect damages or consequential damages, even if IBM or its authorized supplier, has been advised of the possibility of such damages.

8. Some jurisdictions do not allow these limitations or exclusions, so they may not apply to You.

9. You are responsible for the payment of any taxes resulting from this license.

10. You agree not to bring a legal action more than two years after the cause of action arose.

11. This license will be governed by and interpreted in accordance with the laws of the State of New York.

12. This license is the only understanding and agreement IBM has for your use of the Program.

The standard version of the package that is used can be obtained from <http://www.cpan.org>.

Specifically, the software can be obtained from the following link :

<http://search.cpan.org/search%3fmodule=DBD::DB2>

Notice concerning usage of DBI Perl Module

DBI by Tim Bunce. This pod text by Tim Bunce, J. Douglas Dunlop,

Jonathan Leffler and others. Perl by Larry Wall and the perl5-porters.

COPYRIGHT

The DBI module is Copyright (c) 1994-2004 Tim Bunce. Ireland.

All rights reserved.

This is distributed under the terms of the Artistic License.

The standard version of the package that is used can be obtained from <http://www.cpan.org>.

Specifically, the software can be obtained from the following link :

<http://search.cpan.org/search%3fmodule=DBD::DB2>

