



SERENA[®]

DIMENSIONS[®] RM 12.3

Administrator's Guide

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Preface

Objective

The purpose of this manual is to describe how to configure, manage, and administer Serena® Dimensions® RM projects, users, and groups. Dimensions RM is a comprehensive requirements management application that lets development teams capture, engineer, and manage requirements through the entire product life cycle.

Edition Status

The information in this manual supersedes earlier editions of this manual.

dbDoctor utility The dbdoctor database test and repair utility, which was documented prior to the Dimensions RM 2010 R1 edition of this guide, is now only available directly from Serena Support. If Serena Support provides you with this utility, you must only use it under their supervision.

Audience

This manual is intended for Dimensions RM administrators responsible for creating and managing projects, users, and groups.

E-Learning Tutorials

E-Learning tutorials for Dimensions RM can be accessed at the following public Web site:

<http://courseware.serena.com/>

Typographical Conventions

The following typographical conventions are used in the online manuals and online help. These typographical conventions are used to assist you when using the documentation; they are not meant to contradict or change any standard use of typographical conventions in the various product components or the host operating system.

<i>italics</i>	Introduces new terms that you may not be familiar with and occasionally indicates emphasis.
bold	Emphasizes important information and field names.
UPPERCASE	Indicates keys or key combinations that you can use. For example, press the ENTER key.
monospace	Indicates syntax examples, values that you specify, or results that you receive.
<i>monospaced italics</i>	Indicates names that are placeholders for values you specify; for example, <i>filename</i> .
monospace bold	Indicates the results of an executed command.
vertical rule	Separates menus and their associated commands. For example, select File Copy means to select Copy from the File menu. Also, indicates mutually exclusive choices in a command syntax line.
brackets []	Indicates optional items. For example, in the following statement: SELECT [DISTINCT] , DISTINCT is an optional keyword.
...	Indicates command arguments that can have more than one value.

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Language-specific technical support is available during local business hours. For all other hours, technical support is provided in English.

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- Obtain up-to-date technical support information, including that shared by our customers via the Web, automatic e-mail notification, newsgroups, and regional user groups.
- Access a knowledge base, which contains how-to information and allows you to search on keywords for technical bulletins.
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<http://support.serena.com/Download/Default.aspx>

Chapter 1

Dimensions RM Overview

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What is Dimensions RM?

Serena® Dimensions® RM is the Serena Software solution for requirements management. Dimensions RM delivers an enterprise-wide solution based on an Oracle® RDBMS (either a Serena-Supplied Runtime version or your own company's Oracle). Dimensions RM makes it easy for you to capture and organize requirements data by providing the tools you need to create, manage, and track such data throughout a project's lifecycle.

What is Requirements Management?

Requirements management is the process by which an engineering project records and maintains the official, binding description of what it plans to achieve.

The requirements management process includes the following activities:

- Requirement development.
- Reporting and traceability.
- Change management.
- Communication

Requirement Development

One of the first steps in every project is the specification of requirements. Tracking these requirements across different organizations and understanding the impact that various requirements have on cost, schedule, and time-to-market can have a dramatic effect on project success.

Dimensions RM stores requirements in a database. The requirements for a project can come from various sources, such as customers, management, Marketing, Quality Assurance (QA), Support, and field personnel. The requirements can be entered directly into Dimensions RM, or imported from a Microsoft® Word document, plain text document, comma separated value (CSV) file, or XML document (.xml) file. You synchronize Word documents or text documents with the database as requirements evolve.

You can also import requirements from other tools, such as Serena® Business Manager (formerly known as Serena® Business Mashups and TeamTrack), IBM® Rational® Software Modeler, HP Quality Center, and Microsoft® Project. For more information about the integration of Dimensions RM with these products, see the relevant manual in the complete Dimensions RM doc set.

Reporting and Traceability

With traceability, users can evaluate the effects of changes in requirements and identify potential problems. Traceability involves making explicit links between requirements and other entities.

For example, suppose you link marketing requirements to test cases. You then run a report on this relationship. The report shows marketing requirements on the left side of the report, and any associated test cases on the right side of the report. This format

allows you to easily determine which marketing requirements lack associated test cases. Another type of traceability report you can create in RM Browser shows the requirements in the relationship in a tree-like structure.

Change Management

Requirements change over time. The change management activity within a requirements management process involves preventing unauthorized changes, gathering the information necessary to make informed decisions about which changes to allow, and making those changes in a systematic way.

In Dimensions RM, you can submit a change request against a specific requirement. If a user has the appropriate permissions, he or she can accept or reject the change request.

Communication

Dimensions RM provides several ways to facilitate communication among team members.

- **Comments**—You can participate in discussion threads by adding comments to requirements. This functionality allows you to communicate issues and discuss their resolution without directly changing the requirement.

For information about adding comments in RM Browser, see the *Serena Dimensions RM Browser User's Guide*.
- **Polls**—Users with the appropriate permissions can start a poll on a requirement. The poll typically either solicits feedback on its content or asks whether a change request against the requirement should be accepted or rejected. If the e-mail service is running, and the user accounts include e-mail addresses, the poll participants receive an e-mail message that notifies them about the poll and provides a direct link to the RM Browser page from which they vote. For more information on polling, see the *Serena Dimensions RM Browser User's Guide*.
- **E-Mail Notification**—Users or administrators can set up rules that specify that an e-mail notification be sent when a particular event occurs. For example, you could set up a rule that causes an e-mail notification to be sent to you when any requirement you created changes. For more information on e-mail notification, see the *Serena Dimensions RM Windows Clients User's Guide*.

Dimensions RM Tools

The following sections briefly describe the Dimensions RM tools. The Dimensions RM tools are the various interfaces you use to perform specific tasks.

RM Browser

RM Browser is the primary user interface. It provides Web access to a core set of Dimensions RM functions. Using RM Browser, both remote and local users can use a Web browser to edit requirements, submit and review change requests, run reports, create filters and scripts, participate in discussions, run polls, create containers (baselines, collections, documents, or snapshots), manage categories, associate containers to Dimensions CM projects, and so on. RM Browser requires no installation.

RM Import

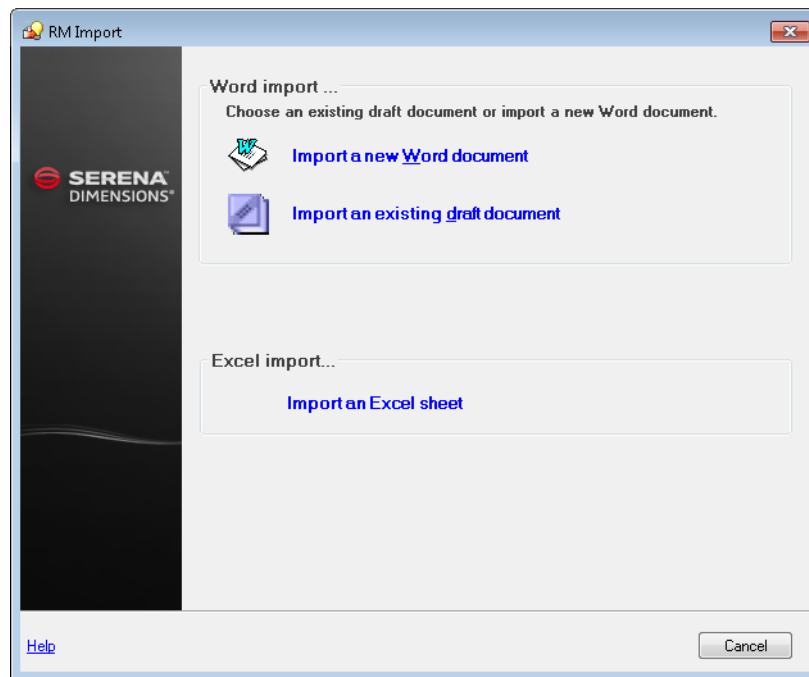


Figure 1-1. RM Import

RM Import allows users to preview a Word document as a draft document, change the description of chapters, reorganize the chapters, change the values of attributes, move attributes between chapters, and so on. When satisfied with the draft document, users can import the document into Dimensions RM as a document. For detailed information about using RM Import, see the *Serena Dimensions RM Windows Clients User's Guide*.

RM Import Designer

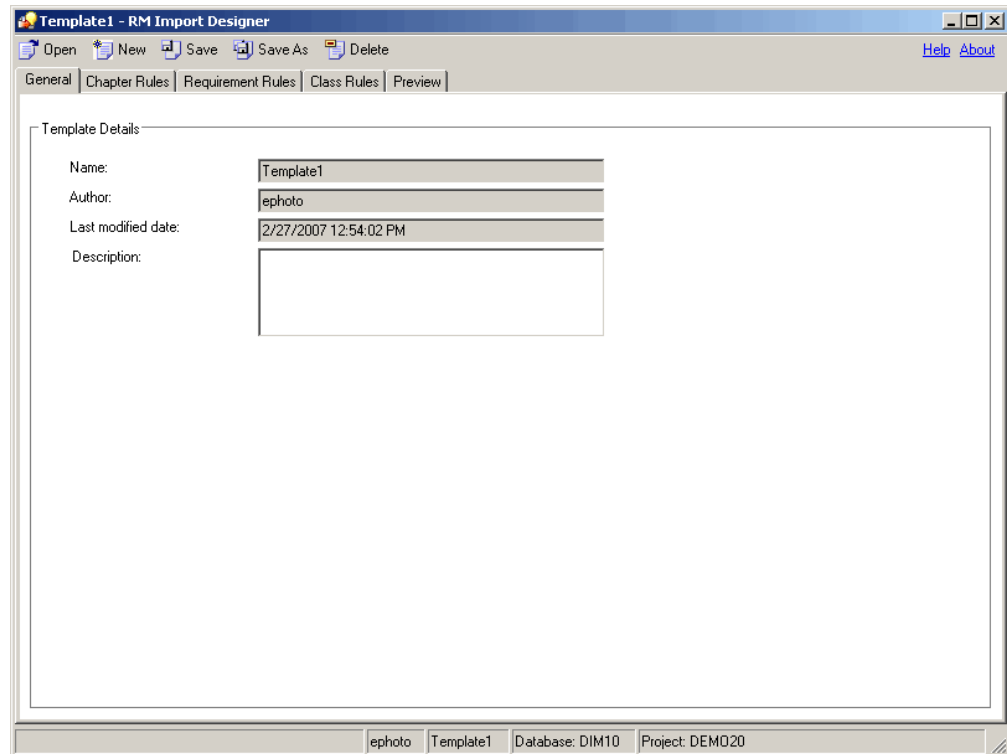


Figure 1-2. RM Import Designer

RM Import Designer allows administrators to design templates that users select when importing Word documents using RM Import. Templates define how to identify classes, attributes, chapters, requirements, and categories. Templates can be saved to the database for future use. Administrators who develop templates must be knowledgeable about class types and the structure of the Word documents that will be imported. For detailed information about using RM Import Designer, see ["RM Import Designer" on page 227](#).

RM Manage

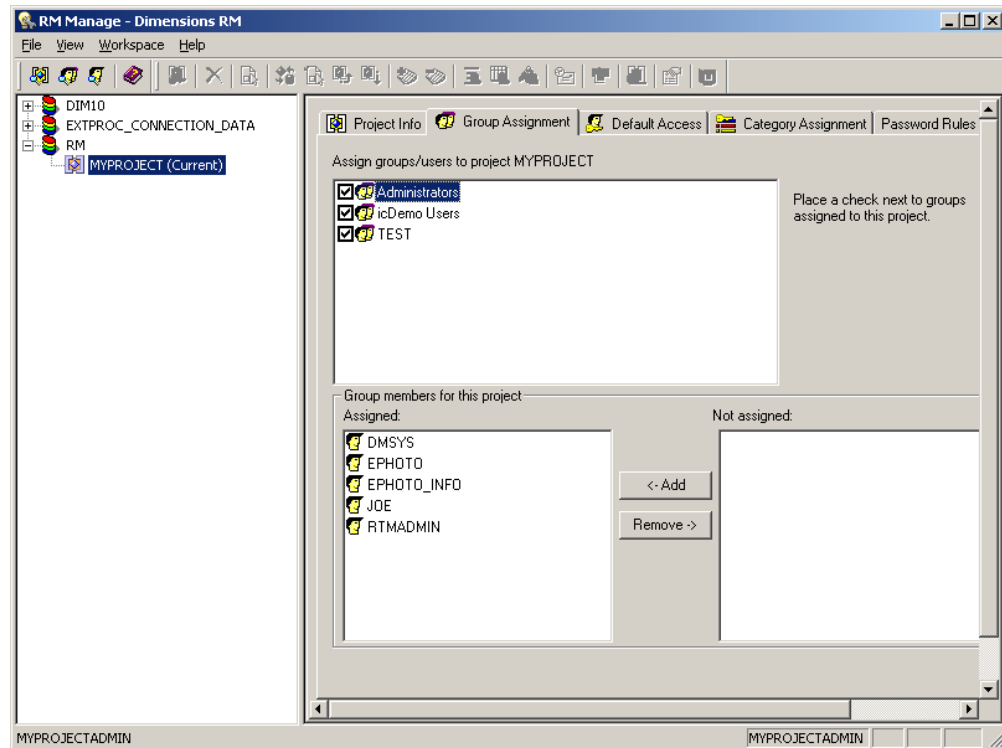


Figure 1-3. RM Manage

RM Manage allows project administrators to define users and groups, administer project security, configure the project database, organize data, and control user access and data routing. For detailed information about using RM Manage, see ["RM Manage" on page 41](#).

Class Definition

Class Definition allows project administrators to set up project schemas in class definition diagrams. This involves defining classes, relationships, attributes, and security. For detailed information about using Class Definition, see ["RM Import Designer" on page 227](#).

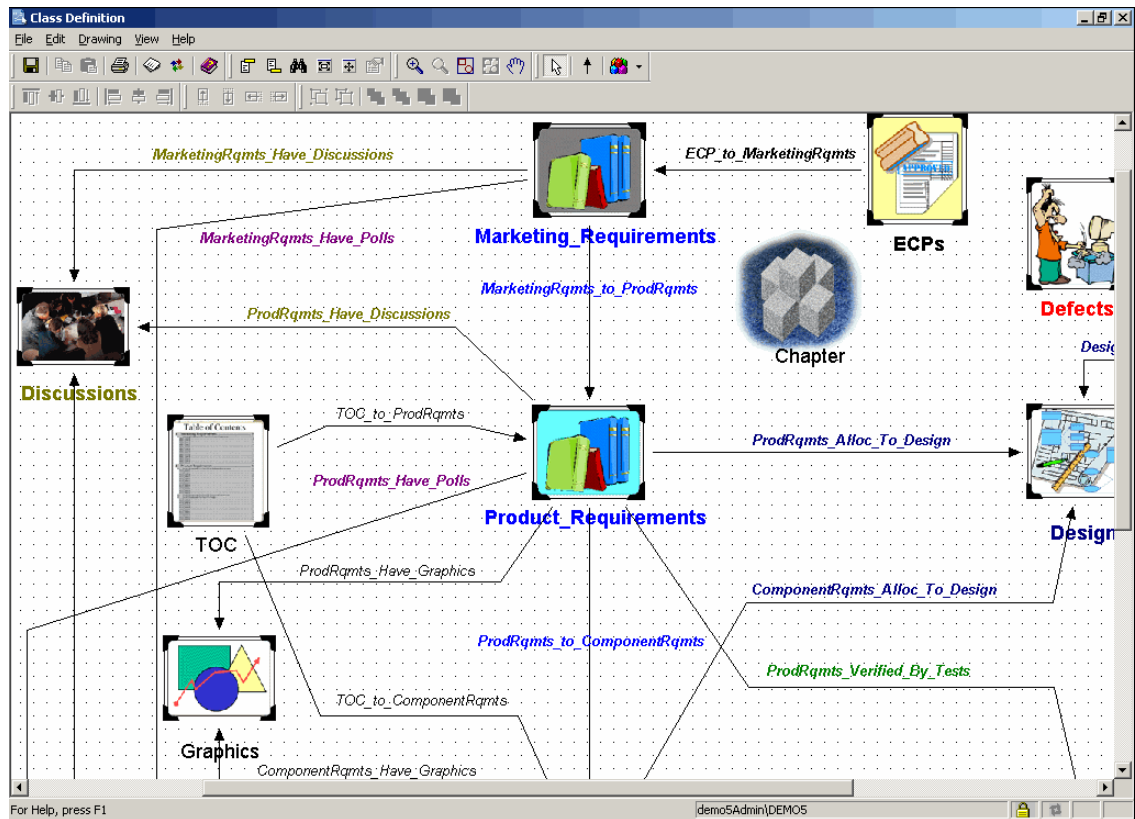


Figure 1-4. Class Definition

Dimensions RM Data Structure

The following diagram illustrates the Dimensions RM data structure.

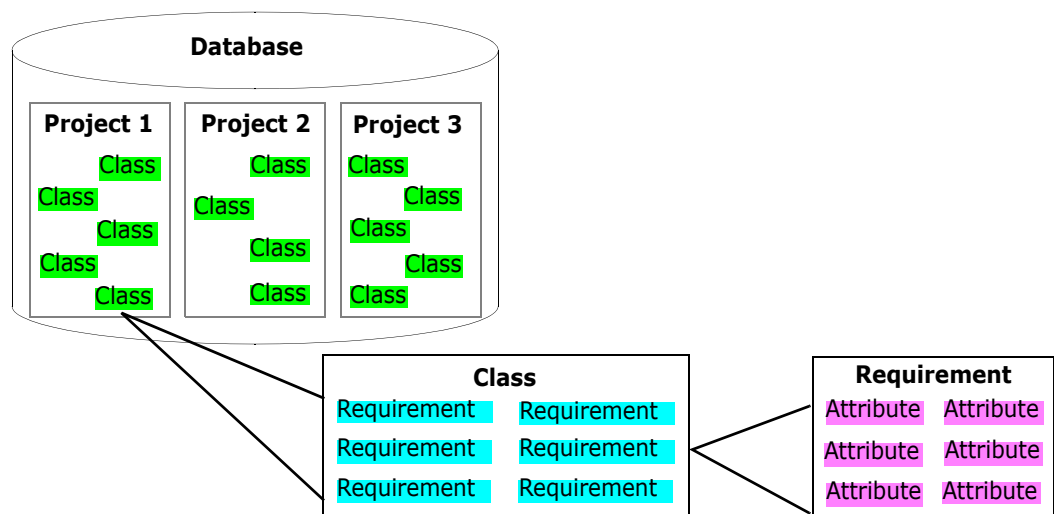


Figure 1-5. Dimensions RM Data Structure

The resources in the data structure are explained in detail later in this chapter. For purposes of illustration, however, consider the example in the following table.

Resource	Value
Project 1	RELEASE1
Class	Customer_Requirements
Requirement	CUST_000007
Attributes	Rqmt ID = <i>CUST_000007</i> Document ID = <i>Customer Requirements</i> Rollout Plan = <i>First Release</i> Priority = <i>Priority 1</i> Object ID = <i>7</i> Paragraph ID = <i>3.1.6</i> Paragraph Title = <i>Configuration</i> Current Status = <i>Current</i> Text = <i>All preferences shall be remembered between invocations.</i>

Dimensions RM Basics

This section provides an overview of basic Dimensions RM concepts.

Projects and Databases

Dimensions RM "projects" are the containers of related requirements and other engineering data along with the Dimensions RM customizations (forms, scripts, and so on) that users create to manipulate that data. The project is the main focus of activity within Dimensions RM. Dimensions RM stores projects in an Oracle database (that database being in either the Serena-Supplied Runtime RDBMS or your own company's Oracle RDBMS). A project in Dimensions RM typically corresponds to an actual project (for example, a product).



NOTE If you want to share requirements among projects, use categories to represent projects. For more information about categories, see ["Categories" on page 27](#).

As a Dimensions RM user, you can access any number of projects and databases from the Dimensions RM tools. Each project uses a single Oracle user account.

Administrators use the RM Manage tool to create and maintain projects. For information about RM Manage, see ["RM Manage" on page 41](#).

Users and Groups

Users and groups are defined within each Dimensions RM database and are associated with specific projects in the database.

Each Dimensions RM user has a password-protected account within Dimensions RM that identifies the user. The account stores information such as the user's first and last names, and e-mail address. The user name is associated with the modifications made to the project while the user is logged in to the account.



NOTE Dimensions RM user accounts are distinct from operating system user accounts and Oracle user accounts.

While access to project elements can be controlled on a single-user basis, Dimensions RM users are typically organized into groups that can share access privileges. Individual users can be associated with any number of projects through their group memberships. Dimensions RM user groups usually match organizational groups or roles such as Managers, Developers, QA Engineers, and System Engineers. Members of a pre-defined Administrators group can add additional members to the group.

Each Dimensions RM project has a special user account, the project administrator. The project administrator is automatically and irrevocably granted privileges that allow him or her to manage the project. Other users can be given administrative privileges at the discretion of the project administrator. The project administrator uses the RM Manage tool to create and manage users and groups. For information about using the RM Manage tool, see ["RM Manage" on page 41](#).



NOTE The project administrator is not part of the Administrators group.

Project Schemas

Each Dimensions RM project has its own schema that defines the kinds of information to be managed in the project. A schema contains a number of class and relationship definitions. Class definitions must be in place to create requirements, and relationship definitions must be in place to create links between requirements.

The project schema does not have to be completely defined before useful work can be accomplished; you only need the classes and relationships that you will use now. As the project evolves, other classes and relationships can be added and existing classes can be changed.

Schemas are created in a class definition diagram through the Class Definition tool. For an illustration of a class definition diagram, see ["Class Definition" on page 22](#). For information about using Class Definition, see ["RM Import Designer" on page 227](#).

Classes and Requirements

Dimensions RM classes are used to define and control the information types to be managed within a project. Typically, Dimensions RM classes correspond to the work products of the engineering processes that are to be supported. Common examples of classes include Marketing_Requirements, Customer_Requirements, Security_Requirements, Software_Requirements, Hardware_Requirements, Action_Items, Test_Cases, and Engineering_Change_Proposals.



NOTE Words in class names must be connected with underscores.

Dimensions RM predefines many classes to be used as templates for class definitions. You can also build your own classes. In class definition diagrams, a class is represented by an icon.

A requirement is an instance of a class.

Relationships and Links

Dimensions RM relationships define the associations between classes. For example, you can create a relationship between the Customer_Requirement and Test_Cases classes that enables you to link a test case to the customer requirements that it fulfills.

Relationships between classes enable the following functions:

- Generating reports containing data from multiple classes.
- Checking completeness of data.
- Building database subsets.
- Assessing impact analysis through traceability.

A *link* (for example, an association between a specific customer requirement and a specific test case) is an instance of a relationship. You can link two requirements together if a relationship between their corresponding classes is defined.

In class definition diagrams, a relationship is represented by an arrow connecting two classes. Relationships are directional, where a *primary* class points to a *secondary* class. This distinction is important when navigating and reporting on links between requirements. You can follow a link in either direction, but in many cases, you must know which class is primary and which class is secondary to create effective reports.



NOTE Words in relationship names must be connected with underscores.

Attributes

Classes and relationships represent logical groupings of information. Each class definition and each relationship definition includes its name and its attributes. Attributes characterize the class or relationship in terms of its properties. For example, a Customer_Requirements class could have attributes for a title, a rationale, a textual statement of the requirement, and a priority.

Dimensions RM supplies a core set of *implicit* attributes for each class and relationship. Dimensions RM uses implicit attributes to maintain the integrity of project information. Implicit attributes include intrinsic information such as the project unique identifiers (PUIDs), object IDs, and modification times. You cannot modify implicit attributes; however you can modify their display names.

You can create *user-defined* attributes for use in a specific class. Dimensions RM provides the following attribute types from which to create user-defined attributes:

Attribute Type	Description
Alphanumeric	Represents one line of alphanumeric text, such as the title of an acceptance test. It can be up to 1000 characters in length.
Date	Stores values that are based on user-defined date formats (for example, DDMMYY, YYYYMMDD, and so on). A date attribute, for example, could be used for dates in which test cases are performed.

Attribute Type	Description
File Attachment	<p>Holds a single file that can be accessed through RM Browser. For example, you could add the file attachment attributes <i>Use Cases</i>, <i>Customer Letter</i>, and <i>Business Justification</i> to the Marketing Requirements class. You can then use RM Browser to add the applicable file for each attribute. Users can then view the file or download it to their computers.</p> <p>File attachments can also be included as links in Word documents published from Document View. The links are displayed as icons. You can double-click the icon in the published document to open the associated file.</p>
List	<p>Provides a list of values from which users make a selection. For example, you could list <i>Pass</i>, <i>Fail</i>, and <i>Untested</i> as valid values for a list attribute named <i>test_result</i>.</p>
Numeric	<p>Holds numeric values, such as reference numbers. The numbers can include decimal points.</p>
Text	<p>Holds up to 64 KB of plain text or HTML text that can span more than one line. It is suitable for long descriptions, such as the description of an acceptance test.</p> <p>In RM Browser, when you click in or tab to a text attribute, an HTML editor opens. The HTML editor provides many common features of word processors.</p>

When you create a user-defined attribute, you can also specify additional properties such as constraints on possible values, and whether an attribute value is mandatory. You can provide a default value to be used for a mandatory attribute when an actual value is not yet available.

Security

Access rights are associated with each resource defined in a Dimensions RM database. Access rights determine if you can perform a task on a target resource.

The project administrator uses the Class Definition tool to grant or deny access to resources defined in the project schema. This includes all classes, relationships, attributes, and source documents. The list of valid transactions for each of these different resources varies. If the project administrator does not grant or deny access to a specific resource in Class Definition, the default access defined in RM Manage for the resource category is used.

Categories

Categories provide a way to organize and access requirements, scripts, and filters. You can use categories to restrict access to requirements, scripts, and filters to a group of users. You can also use categories to organize and access projects and sub-projects. After you grant a user access to a category through group membership, the privileges available to the individual user or to the group through which you granted the user access are applied.

Categories are represented by a hierarchical structure inside a Dimensions RM project. Each node of the hierarchy can have different permissions settings for groups of users. All nodes in the hierarchy share the same schema. The category structure is displayed in RM Browser in the category tree pane of Requirement View, in the Customize Home page, and in query dialogs. For more information about RM Browser, see the *Serena*

Dimensions RM Browser User's Guide. An example of a category tree pane in Requirements View is shown in the following illustration.



Figure 1-6. Category Tree Pane

A requirement can belong to only one category. In RM Browser, you can move a requirement from one category to another. The category to which a requirement belongs can be viewed in the **Edit Attributes** dialog, in other areas of RM Browser, and in other Dimensions RM tools. Categories can have subcategories, but each category can be a child of only one category. Each category can have requirements from all classes. The default root category has the same name as the project.

An administrator assigns group permissions to categories in RM Manage, and can add, delete, and rename categories in RM Browser. For more information about performing these tasks, see ["RM Manage" on page 41](#).

Requirement Creation

You can use the following methods to create requirements:

- Capture requirements from documents

You can capture requirements from Microsoft Word documents using RM Import Designer and RM Import, and with Microsoft Word Tables using RM Browser. Excel files saved as tab separated text, comma separated or semi-colon separated files can also be imported using the browser.
- Enter and modify requirements also using RM Browser.
- Import requirements from another tool such as Serena® Business Manager (formerly known as Serena® Business Mashups and TeamTrack), IBM® Rational® Software Modeler, HP Quality Center, Microsoft® Project, and Microsoft® Excel®.

Requirement Evolution

As you evolve requirements within Dimensions RM, their history is retained so that you can trace the evolution of a requirement from its creation through to the current version. There is an implicit parent-child link between successive versions of a requirement.

Audit Trail

As you evolve requirements within your project, Dimensions RM retains the various versions of your requirements. This historical trace, known as the *audit trail*, allows you to

reconstruct requirement evolution when needed (for example, to evaluate progress over time). At each stage of the evolution, you can record a rationale for changes, thus retaining project knowledge as well as the physical changes.

Current Status

A special implicit attribute, Current Status, identifies the state of the requirement. The Current Status values are described in the following table.

Current Status	Description
Current	The requirement is the most recent or current version.
Replaced	The requirement has been replaced by a newer version.
Proposed	A change request has been made to either change the current requirement or create a new requirement.
Accepted	A change request was accepted.
Rejected	A change request was rejected.
Deleted	The Current Status of the requirement is changed to Deleted, but the requirement remains in the project. The prior version of the requirement, if any, is given a current status of Current.

Operations on Requirements

There are two commands for saving changes you made to a requirement:

- **Update**—The Update command changes the content of the requirement as you specify, leaving all other attributes, including Current Status, intact. Update is often best reserved for minor changes such as correcting typographical errors. Because the requirement is not versioned with the Update command, it is highly recommended that only project administrators have permission to perform updates.
- **Replace**—The Replace command creates a new version of the requirement with the changes you made. With Replace, the Current Status of the original requirement is changed from Current to Replaced, a parent-child link is created from the original requirement to the new requirement, and the Current Status of the new requirement is set to Current.
- **Copy**—The Copy command creates a new requirement with the same attribute values as another requirement. You specify the attributes to be copied in Class Definition. For more information, see ["Attributes" on page 140](#).

There are three commands that allow you to correct mistakes or undo changes you made:

- **Delete**—The Delete command changes the Current Status of a requirement to Deleted, but leaves the requirement in the project.
- **Undelete**—The Undelete command changes a Deleted requirement back to a Current requirement.
- **Remove**—The Remove command physically removes the requirement from the project. Only requirements with the Current status can be removed. It is highly recommended that only project administrators have permission to remove requirements.

When someone submits a change request to change a current requirement or create a new requirement, a copy of the current requirement is created with the current status of Proposed. There are two commands that can be used on a Proposed requirement:

- **Accept**—The Accept command accepts a proposed change. The current status of the proposed requirement becomes Accepted, and a copy of that requirement is created with the current status of Current.
- **Reject**—The Reject command rejects a proposed change. The current status of the proposed requirement becomes Rejected.

Requirement Lifecycle

The requirement lifecycle is shown in the following illustration.

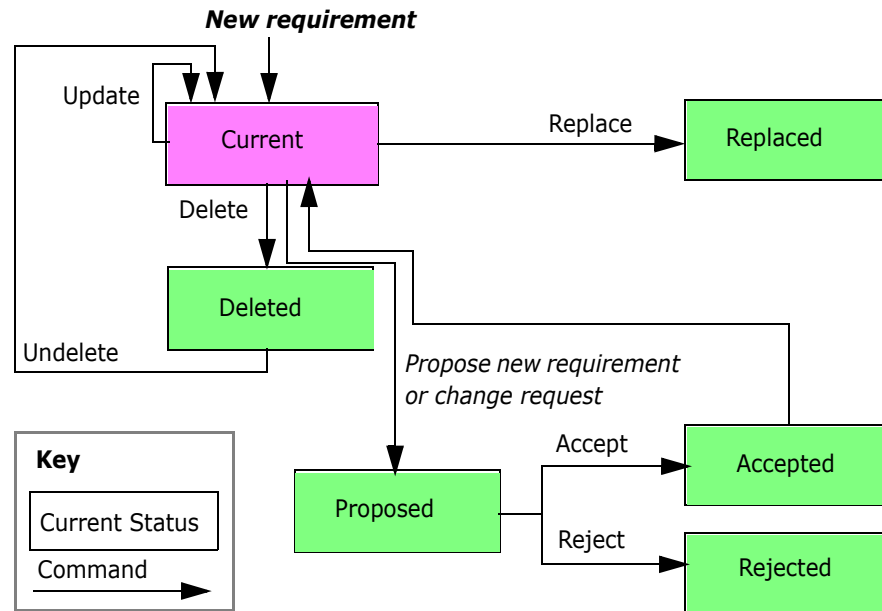


Figure 1-7. Object Lifecycle

Requirement Views

You can view data in a source document from its native tool (for example, Microsoft Word). There are four other ways to view objects in Dimensions RM:

- Form view
- Grid view
- Paragraph layout
- Grid layout

Form View

The form view displays one object at a time. From the form view you can edit object attributes. The form view is available from the Requirements View.

Dimensions RM generates a default form for each class based on its attribute definitions.

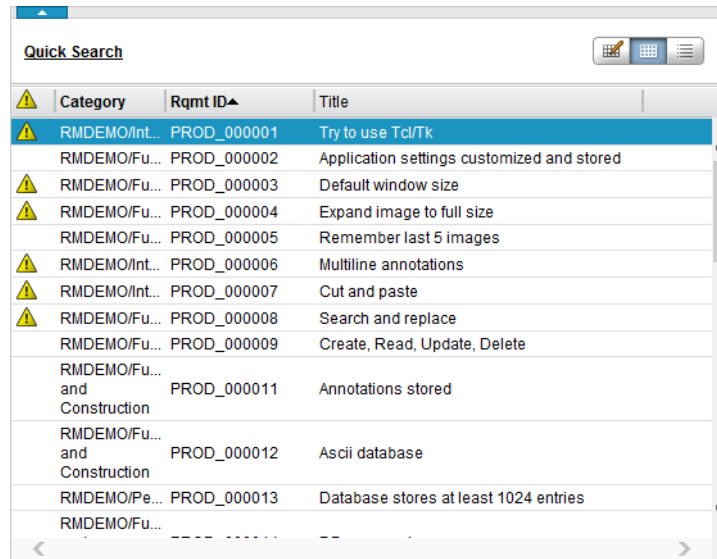
The following illustration shows the form view in RM Browser.

The screenshot shows the 'Form View' in the RM Browser. At the top, there is a 'Quick Search' bar and navigation icons. Below this is a header bar with the title 'Marketing_Requirements: MRKT_000004' and a 'Category: RMDemo' label. The main content area is divided into sections: 'Standard Attributes', 'Custom Attributes', 'System Attributes', 'File Attachments', 'Comments', 'Links', 'History', 'Polls', and 'Container'. The 'Standard Attributes' section is expanded, showing 'Reqmt ID: MRKT_000004' and 'Title: Annotate photos with text'. Below the title, there is a text field containing 'Text: The user shall be able to annotate all their photos with textual descriptions.'.

Figure 1-8. Form View in RM Browser

Grid View

The grid view displays multiple objects in a table-like list. The column headings represent attributes of the object. The rows contain the data stored in the attributes. The following illustration shows the grid view in RM Browser.

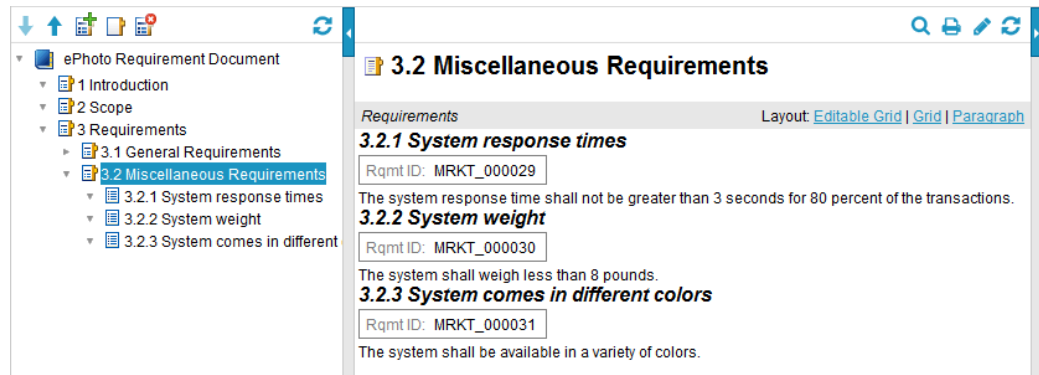


Category	Rqmt ID	Title
RMDEMO/Int...	PROD_000001	Try to use Tcl/Tk
RMDEMO/Fu...	PROD_000002	Application settings customized and stored
RMDEMO/Fu...	PROD_000003	Default window size
RMDEMO/Fu...	PROD_000004	Expand image to full size
RMDEMO/Fu...	PROD_000005	Remember last 5 images
RMDEMO/Int...	PROD_000006	Multiline annotations
RMDEMO/Int...	PROD_000007	Cut and paste
RMDEMO/Fu...	PROD_000008	Search and replace
RMDEMO/Fu...	PROD_000009	Create, Read, Update, Delete
RMDEMO/Fu... and Construction	PROD_000011	Annotations stored
RMDEMO/Fu... and Construction	PROD_000012	Ascii database
RMDEMO/Pe...	PROD_000013	Database stores at least 1024 entries
RMDEMO/Fu...	---	---

Figure 1-9. Grid View in RM Browser

Paragraph Layout

The paragraph layout in the Document View of RM Browser displays requirements as paragraphs in a list.



3.2 Miscellaneous Requirements

Requirements Layout: [Editable Grid](#) | [Grid](#) | [Paragraph](#)

3.2.1 System response times
 Rqmt ID: MRKT_000029
 The system response time shall not be greater than 3 seconds for 80 percent of the transactions.


3.2.2 System weight
 Rqmt ID: MRKT_000030
 The system shall weigh less than 8 pounds.

3.2.3 System comes in different colors
 Rqmt ID: MRKT_000031
 The system shall be available in a variety of colors.

Figure 1-10. Paragraph Layout in Documents View in RM Browser

Grid Layout

The grid layout in the Document View of RM Browser displays multiple objects in a table-like list. The column headings represent attributes of the object. The rows contain the data stored in the attributes.



Requirements				Layout: Editable Grid Grid Paragraph
#	Rqmt ID	Title	Text	
3.2.1	MRKT_000029	System response times	The system response time shall not be greater than 3 seconds for 80 percent of the transactions.	
3.2.2	MRKT_000030	System weight	The system shall weigh less than 8 pounds.	
3.2.3	MRKT_000031	System comes in different colors	The system shall be available in a variety of colors.	

Figure 1-11. Grid Layout in Documents View of RM Browser

Queries

Queries are filters and scripts, expressed in terms of the project schema, that you use to retrieve selected objects. Filters are queries against a single class. Scripts are queries against one or more classes. Traceability reports are queries based on relationships. Dimensions RM has an SQL-like language that handles input parameters and performs simple computations. In general, searches of project data are based on selection criteria in which you specify constraints on attribute values and links.

The following describes filters and scripts:

- **Filters** are stored queries that you can create, name, and store.
 - **Form filters** are the simplest kind of filter, but they are limited in terms of the complexity of the selection criteria. Form filters can select for simple attribute value combinations from among the objects of a class.
 - **Complex filters** provide greater expressive power for the selection criteria. With complex filters, you can construct detailed logical expressions that use attribute values, ranges of attribute values, and membership in relationships as selection criteria.
- **Scripts** are the most comprehensive way to perform searches. They can be used to combine the selection criteria capabilities provided by complex filters, with complex link traversal, parameterization, basic calculations, and output formats. You can use any of these search mechanisms to locate data for review, modification, or export.
- **Traceability reports** are scripts that use relationships as the selection criteria. You specify a top-level class, and then select classes that have a relationship with the top-level class. You can constrain the report based on a container (baseline, collection, document, or snapshot) or category.

You can create and run filters, scripts and traceability reports.

In Requirements View, you can use the quick search feature to quickly run a query to see the content of any category based on criteria you specify.

Query Terminology

As described earlier in this chapter, a relationship connects a primary and secondary class. Relationship constraints are logical expressions that are used as filters to constrain searches. This section describes terminology and concepts that you encounter when you construct relationship constraints in queries.



NOTE Source and immediate relationships can be used to construct relationship constraints.

Relationship Operators

The relationship operators PRIMARY_IN and SECONDARY_IN are used to identify objects that are either at the origin or termination of a link. The relationship operators NOT_PRIMARY_IN and NOT_SECONDARY_IN identify objects that may participate in such links, but do not. These operators are useful in locating objects that you are interested in

linking. For example, given a relationship that connects system requirements to test cases, you could use the "not" operators to find requirements that are not associated with test cases.

Source and Immediate Relationships

Source and immediate relationships are special relationships that are used to locate versions of objects.

- A *source* relationship refers to the original object in a chain of versions.
- An *immediate* relationship refers to the immediate predecessor or successor of an object.

Relationship Operators in Source and Immediate Relationships

The following table lists relationship operators and describes their meanings in source and immediate relationships.

Operator	Source	Immediate
PRIMARY_IN	Requirements that have no parents (source requirements)	Requirements that have children (not the lowest level requirements)
SECONDARY_IN	Requirements that have no children (the lowest level requirements)	Requirements that have parents (derived requirements)
NOT_PRIMARY_IN	Requirements that have parents (derived requirements)	Requirements that have no children (the lowest level requirements)
NOT_SECONDARY_IN	Requirements that have children (not the lowest level requirements)	Requirements that have no parents (the source requirements)

Reports

Reports are the results of queries made through filters and scripts. You can create scripts to generate documents, traceability matrices, and other types of reports. Named scripts are stored in the database as project resources and can be exported to the file system as text files where they can be used from the command line.

You can execute scripts from the command line or RM Browser. You can export the reports to files in a variety of formats, including Microsoft® Word, Microsoft® Excel®, Rich Text Format (RTF), Comma Separated Value (CSV), HTML, and XML.

Containers

Containers are a higher grouping of any of the following objects:

- Baselines
- Collections
- Documents

- Snapshots

Collections

Collections are a way to group objects of any class. Once a collection is created, it can be associated with an object by linking the object to the collection. Each object can be linked to many different collections, and each collection can be linked to many different objects. Collections can be referenced in scripts, making script creation simpler.

Parent collections contain child collections. Child collections contain objects. The hierarchy formed by the parent-child connections allows collections to be grouped into larger collections. For example, a parent collection called *Operations* can contain child collections for several types of operations, such as *Administrative*, *Storage*, and *Retrieval*.

A common use of collections is baselining. A baseline is a snapshot of objects at a particular time. You can create a collection called Baseline 1 that is a snapshot of all objects at the Alpha phase of the project. Later in the release cycle, you can create a collection called Baseline 2 that is a snapshot of all objects at the Beta phase. You can run reports that show the differences between objects in Baseline 1 and Baseline 2.

Traceability and Impact Analysis

Links allow you to specify precisely which objects are related and why they are related. The relationships that you set up in your class definition diagram, and the corresponding links among objects that you subsequently create or import, form interconnections throughout your documents, models, test assets, and other work products. These physical connections model logical connections among the project data.

Traceability and impact analysis are two ways you can analyze linkages. You can view traceability and impact analysis through reports run in RM Browser.

Traceability

Different kinds of traceability result from different kinds of relationships. Relationships between different requirements classes can be used to show dependencies, such as the connection between operational requirements and software requirements.

Dimensions RM also manages relationships between successive versions of a particular object. This gives you the history of the object and allows you to trace its evolution through your project life cycle.

You can use traceability to answer questions about the completeness and consistency of your requirements management effort. Such questions include:

- How many operational requirements have not yet been addressed by software or hardware requirements?
- How many software requirements are not covered by test cases?
- How many requirements had successful tests for the current build?

Impact Analysis

Having established traceability, you can perform impact analysis to examine the effects of certain changes. For example, if a particular system requirement is changed, what parts of the dependent software or hardware requirements are affected? What parts of the

design, code, or test plan are affected? The answers to these questions help you scope the effort required to absorb requirements changes.

Change Management

As discussed in ["Requirement Evolution" on page 28](#), change management allows you to propose new objects or changes to existing objects, while keeping them separate from the existing objects. A proposed change object is an instance of the appropriate class, with its Current Status attribute set to Proposed.

Dimensions RM also provides a class type with which to build Engineering Change Proposals (ECPs). As you create a set of related proposed objects, you can link them to an ECP object so that they are easily accessible for review as a group.

ALM Integration with Dimensions CM

The Application Lifecycle Management (ALM) integration lets you associate Dimensions RM requirements to Serena® Dimensions® CM requests. When you add a requirement to or remove a requirement from a collection, Dimensions CM is notified with the relevant information. Dimensions RM baselines flow to Dimensions CM, and Dimensions CM baselines flow to Dimensions RM.

You can associate:

- Multiple Dimensions RM projects to multiple Dimensions CM products.
- One or more Dimensions RM containers (baselines, collections, documents, or snapshots) to one or more Dimensions CM projects/streams.

For more information, see the common *Dimensions CM-Dimensions RM ALM Integration Guide*.

The above referenced guide also documents a Use Case for using Dimensions CM requests to augment Dimensions RM requirement management and traceability

Demonstration Projects

The QLARIUS_RM demonstration project lets business analysts and product managers quickly understand how the key functionality of Dimensions RM is beneficial in their own requirement lifecycles. QLARIUS_RM demonstrates how requirements are categorized and stored, and how the requirements lifecycle is automated and enforced. QLARIUS_RM provides predefined requirement classes, links between classes, and built-in reporting.



IMPORTANT! Do NOT use the QLARIUS or RMDemo sample projects as a starting point for an actual production project. Always start with the BLANK project or a project of your own that was created from the BLANK project and then saved (see the Saved Projects tab).

The default users and passwords for the QLARIUS_RM project are listed in the following table.

QLARIUS_RM	
User Name	Password
DMSYS	rtm
MARK	mark
PETA	peta
QLARIUSADMIN	rtm
QUIN	quin
SALLY	sally
TED	ted

RMDEMO is another demonstration project that provides a rich set of Dimensions RM features and functionality.

The default users and passwords for the RMDEMO project are listed in the following table.

RMDEMO	
User Name	Password
ADMINISTRATION	rtm
DEVELOPMENT	rtm
ENGINEERING	rtm
EPHOTO	rtm
EPHOTO_INFO	rtm
JOE	joe
MANAGEMENT	rtm
MARKETING	rtm
RMDEMOADMIN	rtm
RTMADMIN	rtm
SALES	rtm
SUPPORT	rtm
TECH_PUBS	rtm
TEST	rtm
TRAINING	rtm

Oracle Accounts Used by Dimensions RM

Dimensions RM uses three Oracle user accounts at the core of the product interface:

- ICDBA

- ICADMIN
- ICPROJECTS

Additional Oracle user accounts are created for each Dimensions RM project, such as RMDemo, QLARIUS, etc. Each new Dimensions RM project is an Oracle database user account. The project accounts are schema owners in Oracle. The RM Manage tool creates a new tablespace with an associated data file for each new project (Oracle account) and assigns the default profile to it. Alternatively, for new RM projects, DBAs can create a tablespace then have RM Manage use that existing tablespace to install the schema etc. A profile other than the default can be set by DBAs after RM Manage creates the new project/Oracle account.



IMPORTANT! Special function profiles are not recommended for this purpose, such as BATCH_USER, as they may not allow real-time and transaction processing to occur correctly.

ICDBA Account

Dimensions RM only uses the SYS account to create the Oracle user: ICDBA. After that, all SYSDBA functions are performed by ICDBA. ICDBA creates new projects (named Oracle users) in new or user selected tablespaces. When the first project is created, additional Oracle user accounts are created for icAdmin and icProjects.

Dimensions RM is designed not to require an Oracle Database Administrator (DBA); the RM administrator can perform the necessary Oracle maintenance functions without having to access Oracle directly.

However, large customers with Oracle DBAs on staff can simply reset the ICDBA password after the system is in production and allow the DBA staff to perform the Oracle maintenance tasks. After initial system setup, configuration, and verification, access to the ICDBA account is rarely needed if DBAs perform the Oracle maintenance tasks. For the rare occasion where the ICDBA account is needed in RM, the DBA simply enters the password in the RM client.

For shops without a DBA staff, Dimensions RM administrators would use the ICDBA account to perform Oracle Maintenance tasks.

For information on creating the ICDBA account, see ["Creating the ICDBA Account" on page 44](#).

Oracle Account Password Management

ICADMIN, ICPROJECTS, and RM Project account (RMDemo, QLARIUS, etc.) passwords are managed and maintained by Dimensions RM. Note that only UPPERCASE passwords are allowed for these accounts. In addition, Dimensions RM has its own password rules (see ["Setting Password Rules" on page 125](#)).



TIP Department of Defense customers, and others with a requirement for mixed-case passwords, can compensate for the lack of case-sensitive passwords by increasing the minimum length of the passwords by four characters.

The ICDBA account is managed by Oracle and must conform to the rules of your Oracle installation. Oracle 11 can use a mixed-case password for the ICDBA account.

It is recommended that these accounts be set to never expire or lock. Then, on a regular basis, use RM Manage to change the ICADMIN, ICPROJECTS, and RM Project account passwords. RM administrators will not receive the Oracle notice that the account is about to expire. As a result, the RM administrator must remember to change the account password before they expire or they will be locked out of the system. Once locked out due to password expiration, it is challenging to get the Oracle password changed while RM learns the new password. Dimensions RM stores these passwords for application access using 3DES security with the option for customer supplied keys.

Accounts Granted the Oracle RESOURCE Role

When RM Manage performs Oracle maintenance (such as recreating database indexes, database procedures, and project triggers), the ICADMIN, ICDBA, and ICPROJECTS user accounts and the RTM_USER profile are granted the RESOURCE role.

Locking RM Oracle User Accounts

Dimensions RM Oracle accounts generally cannot be locked without causing problems. The following list indicates the problems associated with locking the various accounts:

- **ICADMIN:** If locked, Dimensions RM will not function.
- **ICPROJECTS:** If locked, Dimensions RM will not function.
- **ICDBA:** It has been reported that some customers have locked the ICDBA account until it is needed for RM Manage functions. While the account is locked, RM Manage and Class Definition will sometimes throw exceptions and errors--putting all RM administrative functions at risk of failure. The user interface appeared to function without issue. This is **NOT** a supported or tested configuration.

The recommended approach to protect DBA access is to change the ICDBA password to something unknown to the Dimensions RM team. During the brief times when RM needs access to perform maintenance, change the password back to the one expected by RM. After the maintenance is complete, change the password back to something unknown to the RM administration team.

- **RM Projects:** There is one account of this type for every RM project. You can lock users out of the database and prevent access to all project data by locking the project accounts. If a user tries to access Dimensions RM project data while the project account is locked, they will receive errors.

Chapter 2

RM Manage

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Overview

RM Manage is the Serena® Dimensions® RM tool for administering databases and projects. The data is organized by Oracle instances (databases) and Oracle users (projects) within the Serena-Supplied Runtime RDBMS or your own company's Oracle RDBMS. You can access the user and group data through separate views in the RM tool.

Only the databases in the Oracle "tnsnames.ora" file are displayed in the graphical tree in the left window. This file is located in the following sub-directory of the top-level installation directory of the Serena-Supplied Runtime RDBMS or your own company's Oracle RDBMS:

- Local or Remote Windows RDBMS

NETWORK\ADMIN

- Remote UNIX RDBMS

network/admin

To access projects in a database, you must first log in using a valid Dimensions RM administrator ID and password. When you have been authenticated for a database, the projects for which you have been assigned as an administrator are displayed as subfolders of the database. Any tools launched from RM Manage use the current user, password, database, and project settings.



IMPORTANT! When using RM Manage or RM Class Definition from a client machine, the changes will not take effect until the Serena Dimensions RM Pool Manager is restarted on the RM server.

Configuration

The following sections describe how to view current configuration settings or specify new ones for Dimensions RM.



NOTE Configuration information that is stored in the registry during installation can be changed after installation.

Setting RTM_HOME

RTM_HOME must be set to the Dimensions RM installation directory if it is not already correctly set by default. This value is stored in the registry and is used to locate the executables for other Dimensions RM tools.



CAUTION! If this value is not set properly, you cannot launch other Dimensions RM tools from RM Manage.

To check or set RTM_HOME:

- 1 Select **Workspace | Options**.

- 2 Click the **Mandatory** tab.
- 3 In the **RTM_HOME** field, if currently incorrectly set, enter the location of Dimensions RM or browse to the Dimensions RM installation directory.
- 4 Click **Apply**.

Setting ORACLE_HOME

ORACLE_HOME must be set to the Oracle installation directory if it is not already correctly set by default. This value is stored in the registry and is used to determine the top-level installation directory of the Serena-Supplied Runtime RDBMS or your own company's Oracle RDBMS (which enables RM Manage to determine where the `tnsnames.ora` file is located):



CAUTION! If this value is not set properly, you will not be able to see any database instances that are not local to the machine you are using.

To check or set ORACLE_HOME:

- 1 Select **Workspace | Options**.
- 2 Click the **Mandatory** tab.
- 3 In the **ORACLE_HOME** field, if currently incorrectly set, enter the location of Oracle or browse to the Oracle installation directory (for example, `C:\Oracle\ora10g`).
- 4 Click **Apply**.

Setting the Header Text

To check or set header text:

- 1 Select **Workspace | Options**.
- 2 Select the **Optional** tab.
- 3 If you want to change the header text, type the text of the header in the **Header Text** field.
- 4 Select **Apply**.

Setting the Footer Text

To check or set footer text:

- 1 Select **Workspace | Options**.
- 2 Select the **Optional** tab.
- 3 If you want to change the header text, type the text of the footer in the **Footer Text** field.
- 4 Select **Apply**.

Setting the License Server

To check or set the license server:

- 1 Select **Workspace | Options**.
- 2 Select the **License** tab.
- 3 In the **License Server** field, if currently incorrectly set, type the name of the license server
- 4 Select **Apply**.

Setting the Location of the Database Password File

The database password security file (`security.dat`) contains a security token and the encrypted database password for the Oracle users ICADMIN and ICPROJECTS. If an administrator changes the default location of this file, you will be requested to modify the location.

To check or set the location of the `security.dat` file:

- 1 Open RM Manage.



NOTE You do not need to log into Dimensions RM to perform this task.

- 2 Select **Workspace | Options**.
- 3 The **Workspace Options** dialog opens.
- 4 Click the **Security** tab.
- 5 In the **Security File** dialog box, if currently incorrectly set, type the full path to the `security.dat` file or browse to it.
- 6 Click **OK**.

Creating the ICDBA Account

Starting with Dimensions RM 11.2.1, you now have the option of creating the ICDBA Oracle account (and associated password) from RM Manage.




NOTE Knowledgeable DBAs can continue to run as an Oracle SYSDBA user, for example, SYS) the SQL script `setupRM.sql` located at:

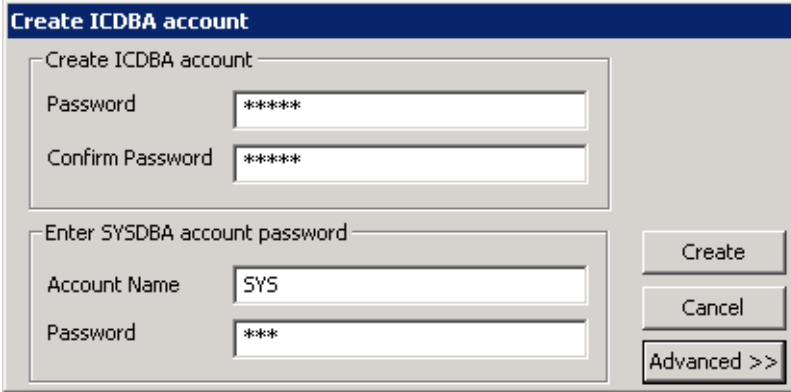
`C:\Program Files\Serena\Dimensions 11.2.1\RM\sql`

However if you run your own SQL script, it should be noted that Dimensions RM requires both the user account ICDBA and its associated password to be in upper case.

For the Serena-Supplied Runtime RDBMS, the default password for SYS is `CHANGE_ON_INSTALL`.

To create the ICDBA account:

- 1 Select the database in which you want to create the ICDBA account (for example, RM).
- 2 Select **File | Create ICDBA Account**, click the **Create ICDBA Account** button , or right-click the database and select **Create ICDBA Account**.
- 3 The **Create ICDBA account** dialog box opens.



- 4 In the **Password** field of the **Create ICDBA account area**, type the password that you want to assign to the Dimensions RM ICDBA account.



IMPORTANT! The password must be in upper case only.

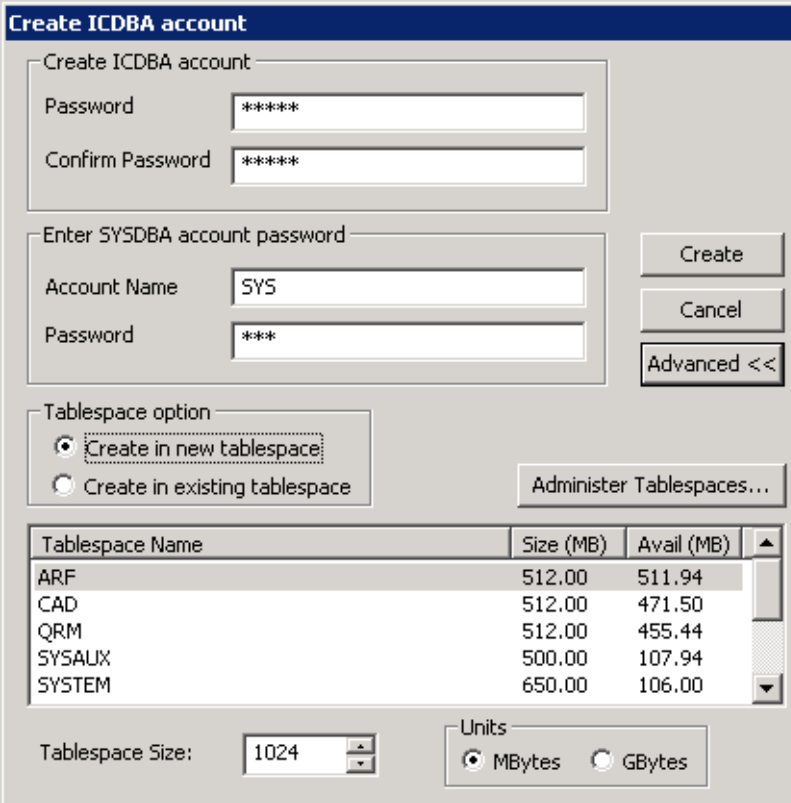
- 5 In the associated **Confirm Password** field, re-type the password.
- 6 In the **Account Name** field of the **Enter SYSDBA account password** area, enter the appropriate SYSDBA Oracle account that you want to use, for example, SYS.
- 7 In the associated **Password** field, type the associated password for the account name.



NOTE For the Serena-Supplied Runtime RDBMS, the default password for the SYS account is CHANGE_ON_INSTALL.

- 8 By default, the ICDBA account is created in a new SERENA_RM_ADMIN tablespace for the ICDBA account and its size is set to 1024 MB. To set a different size or create the

ICDBA account in an existing tablespace, click the **Advanced** button. The dialog expands to display the advanced features.



The dialog box is titled "Create ICDBA account". It contains three main sections:

- Create ICDBA account:** Fields for Password (masked with *****) and Confirm Password (masked with *****) with a "Create" button to the right.
- Enter SYSDBA account password:** Fields for Account Name (containing "SYS") and Password (masked with ***). Buttons for "Create", "Cancel", and "Advanced <<" are to the right.
- Tablespace option:** Radio buttons for "Create in new tablespace" (selected) and "Create in existing tablespace". An "Administer Tablespaces..." button is to the right.

Below the tablespace options is a table listing existing tablespaces:

Tablespace Name	Size (MB)	Avail (MB)
ARF	512.00	511.94
CAD	512.00	471.50
QRM	512.00	455.44
SYS_AUX	500.00	107.94
SYSTEM	650.00	106.00

At the bottom, there is a "Tablespace Size:" field set to "1024" and a "Units" section with radio buttons for "MBytes" (selected) and "GBytes".

- To set a different size for the SERENA_RM_ADMIN tablespace, set the **Tablespace** and **Units** values as desired.
- To create the ICDBA account in an existing tablespace, select the **Create in existing tablespace** option, and select the desired tablespace from the list.
- If you wish to resize one of the tablespaces or create a new one with a specific name, click the **Administer Tablespaces** button and complete the fields as necessary.

9 Click **Create**.



IMPORTANT! For the Oracle 11g RDBMS and the 11g versions of the Serena-Supplied Runtime RDBMS, Oracle account passwords expire by default after 180 days. Unless your DBA has re-configured such RDBMS to override this default and allow permanent passwords, you must to change the ICDBA password before 180 days elapse using the RM Manage **Change Administrator Password** menu item, see ["Database Administrator Accounts: Changing Passwords and Unlocking"](#) on page 85.

Managing Projects

Dimensions RM allows you to administer projects and databases through the RM Manage and Class Definition tools. You can perform all administrative tasks, including setting up and configuring directories, creating projects, setting up user accounts and passwords

and restoring projects from backup. Using the Class Definition tool, you can organize information according to types and define the attributes for each type.




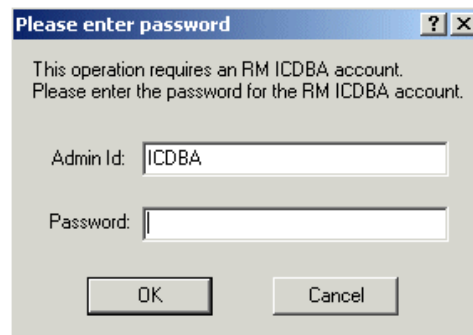
IMPORTANT! When using RM Manage or RM Class Definition from a client machine, the changes will not take effect until the Serena Dimensions RM Pool Manager is restarted on the RM server.

Creating a New Project

A project is a work area where information is created and maintained. Dimensions RM provides you with the ability to create and delete project accounts, backup and restore projects and administer user accounts.

To create a new project:

- 1 Select the database in which you want to add the new project.
- 2 Select **File | New Project**, click the **New Project** button , or right-click the database and select **New Project**.
- 3 The **Please enter password** dialog box opens. In the **Password** field, type the password for the Dimensions RM ICDBA account.




NOTE [Step 4](#) only occurs when creating the first project in a given database. For subsequent projects, go directly to [Step 5](#).

- 4 Starting in Dimensions RM 11.2.1, the passwords for Oracle user accounts ICDBA, ICADMIN, and ICPROJECTS are no longer hard coded. The password for the ICDBA account has to be assigned first when creating that account (as explained in ["Creating the ICDBA Account" on page 44](#)); whereas, the passwords for the ICADMIN and

ICPROJECTS accounts have to be assigned on first-project creation within a database as explained here.



IMPORTANT!

- You must ensure that you create the ICDBA account and associated password before assigning passwords to ICADMIN and ICPROJECTS. There is no software check to ensure that this has been done in the correct order.
- When creating the accounts for ICADMIN and ICPROJECTS, Dimensions RM automatically generates a new security.dat file. The old version of this file is renamed and retained as a backup.
- For the Oracle 11g RDBMS and the 11g versions of the Serena-Supplied Runtime RDBMS, Oracle account passwords expire by default after 180 days. Unless your DBA has re-configured such RDBMS to override this default and allow permanent passwords, you must to change the ICADMIN and ICPROJECTS passwords before 180 days elapse using the RM Manage **Change Administrator Password** menu item, see ["Database Administrator Accounts: Changing Passwords and Unlocking"](#) on page 85.

- a The **Enter ICADMIN/ICPROJECTS password** dialog box opens. In the **ICADMIN Password** field, type the password to be assigned that account.

Tablespace Name	Size (MB)	Avail (MB)
SYSAUX	350.00	74.19
SYSTEM	700.00	203.38
TEMP	0.00	0.00
UNDOTBS1	75.00	64.63
USERS	20.00	13.63

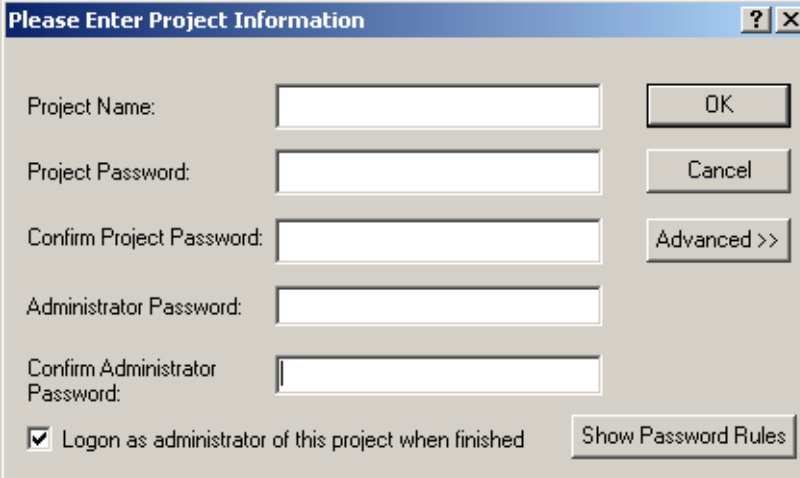


IMPORTANT! The password must be in upper case only.

- b Serena recommends that you use the same password for the ICADMIN and ICPROJECTS accounts. This is done by default.

However, if you want to assign a different password to ICPROJECTS, select the **Change ICPROJECTS password** checkbox and enter an appropriate upper case password in the **ICPROJECTS Password** field.

- c By default, the account is created in a SERENA_RM_ADMIN tablespace. To create the account in an existing tablespace, click the **Advanced** button. The dialog expands to display the advanced features:
 - To create the account in an existing tablespace, select the **Create in existing tablespace** option, and select the desired tablespace from the list.
 - If you wish to resize one of the tablespaces or create a new one with a specific name, click the **Administer Tablespaces** button and complete the fields as necessary.
 - d Click **OK**.
- 5 The **Please Enter Project Information** dialog box opens. Complete the following fields as needed.

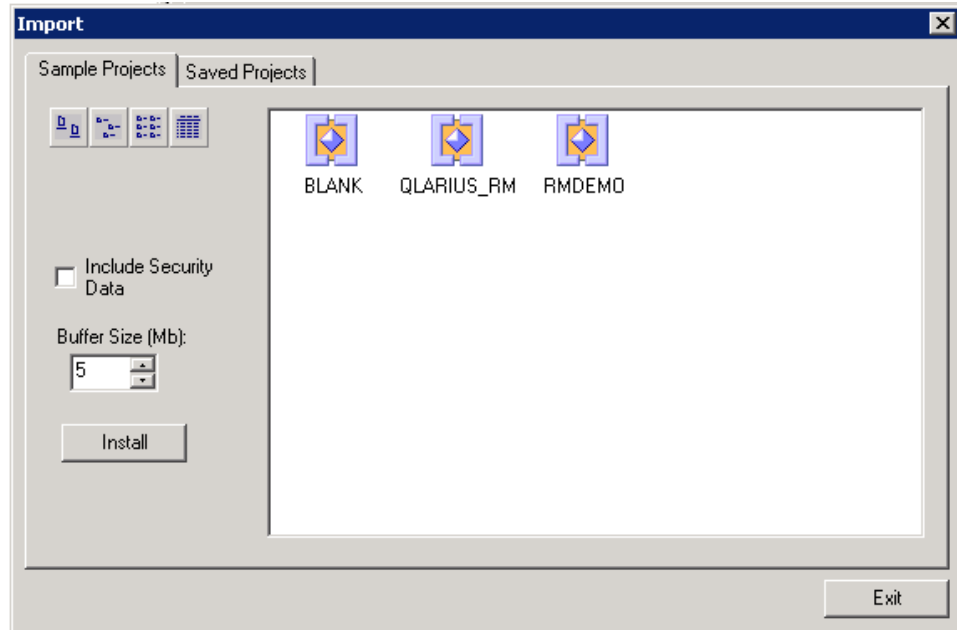


The image shows a Windows-style dialog box titled "Please Enter Project Information". It contains five text input fields: "Project Name:", "Project Password:", "Confirm Project Password:", "Administrator Password:", and "Confirm Administrator Password:". To the right of the "Project Password:" field is an "OK" button. To the right of the "Confirm Project Password:" field is a "Cancel" button. To the right of the "Administrator Password:" field is an "Advanced >>" button. At the bottom left, there is a checked checkbox labeled "Logon as administrator of this project when finished". At the bottom right, there is a "Show Password Rules" button. The dialog box has a standard title bar with a question mark icon and a close button (X).

Please Enter Project Information Dialog	
Field	Description
Project Name	Enter a project name (for example, MYPROJECT).
Project Password	Enter a project password (for example, MYPROJECT). This password is used by Dimensions RM to access Oracle. RM users do not use it directly in Dimensions RM. NOTE Project passwords cannot begin with a number. For example, 12345 causes an error; however, a12345 is accepted. Click Show Password Rules for a summary of the rules.
Confirm Project Password	Re-enter the project password.
Administrator Password	Enter a password for the project's administrator account. You will need this password to administrate the project. NOTE The ID for this account is the project name with Admin appended to the end, for example MyprojectAdmin. Starting with RM 11.2.1, this account only has access rights to the RM Manage tool itself. No other RM tools can be accessed with this account.
Confirm Administrator Password	Re-enter the administrator password.
Logon as administrator	Upon completion of the create operation, opens the new project and logs you in as the administrator.
Advanced	See "Advanced Options for Creating a New Project" on page 53 .

- 6 Click **OK**. The create operation runs.
- 7 **Tablespace Error** dialog boxes may open during project creation to indicate that particular tables are not large enough. If this occurs, do the following for each **Tablespace Error** dialog box:
 - a Read and take note of the error message in the dialog box. You will need to refer to the values recommended here later.
 - b Click **Yes**. A **Resize Tablespace** dialog box opens.
 - c Increase the value in the **New Datafile Size** field by at least the amount recommended in [Step a](#).
 - d Click **Resize**. A **Resize** dialog box opens.
 - e In the **Resize** dialog box, click **Yes**.
 - f In the **Resize Tablespace** dialog box, click **Close**.
- 8 A Success dialog appears. Click **OK**.

9 The **Import** dialog opens.



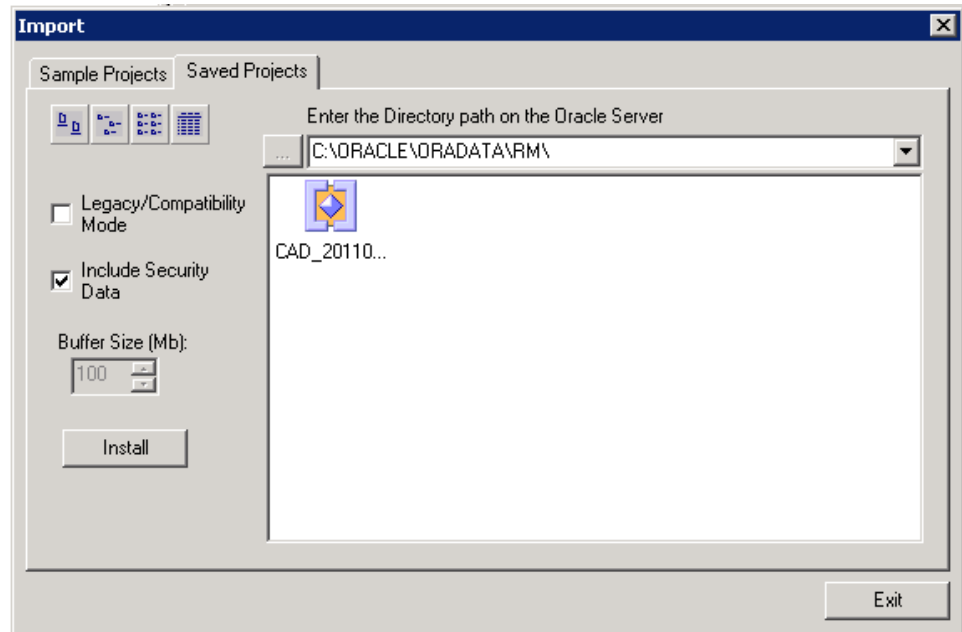
The **Import** dialog allows tables to be installed in the newly created project. Do one of the following:




- **Do not install tables**—Click **Exit** without selecting any files. You are done with this procedure. You can either remove the project or install tables into it later.
- **Install RM tables only**—Select the **Blank** project from the **Sample Projects** tab.
- **Install a sample project**—Select one of the sample projects (other than the Blank project) from the **Sample Projects** tab.



IMPORTANT! Do NOT use the QLARIUS or RMDEMO sample projects as a starting point for an actual production project. Always start with the BLANK project or a project of your own that was created from the BLANK project and then saved (see the Saved Projects tab).

- **Install a saved project**—Select the project from the **Saved Projects** tab.

**TIP**

- Projects displayed with a project icon  contain data. Projects displayed with a class icon  contain only the project schema.
- To view the modification date and size of the files, click the Details button .

- 10 Set the import options as needed:

Import Dialog	
Field	Description
Legacy/Compatibility Mode	<p>NOTE Saved Projects tab only.</p> <p>Select this checkbox if you wish to import from a backup file that was created with RM 11.2.1 or older, or that was created in Legacy Mode with RM 11.2.2 or newer.</p>
Security Data	Imports all the users in the backed up project, as well as their permissions.
Buffer Size	<p>NOTE Legacy Mode and Sample Projects tab only.</p> <p>This sets the temporary space available for the operation.</p>

- 11 Click **Install**. The import operation runs.

- 12 When prompted, click **Yes** to view a log of the import operation, or **No** to exit without looking at the log.



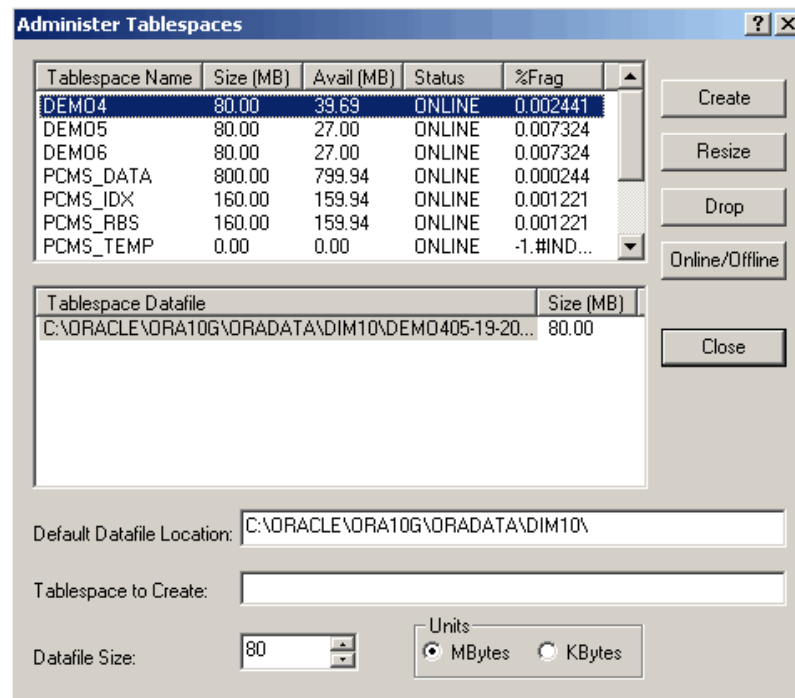
TIP The log file is saved in the directory where the backup was created. It has the same name as the project, but with a .log extension instead of a .dmp extension. It also includes the letters "Imp" and a time stamp based upon the restore operation, e.g. *ProjectName_ExpDate_ExpTime_Imp_ImpDate_ImpTime.log*



NOTE See the Dimensions RM readme for information on possible Oracle errors that can be safely ignored.

- 13 The default tablespace size for new projects is 160 MB. If this is not large enough to accommodate data contained in the project that is being imported, you can resize the tablespace by using the **Administer Tablespaces** dialog box.

To resize an existing tablespace, highlight the database and select **Administer Tablespace**. The **Administer Tablespaces** dialog box opens.



- 14 Select a datafile size and click **Resize**. A prompt asks "Do you wish to resize an existing datafile?".
- 15 Click **Yes**.
- 16 Click **Close**.

Advanced Options for Creating a New Project

The **Advanced** button on the **Please Enter Project Information** dialog box provides access to advanced tablespace options for new projects, such as inserting the new project into a pre-existing tablespace and changing the default tablespace size.

To use advanced options:

- 1 In the **Please Enter Project Information** dialog box, click **Advanced**. The dialog box expands to show advanced options.

Please Enter Project Information

Project Name: OK

Project Password: Cancel

Confirm Project Password: Advanced <<

Administrator Password:

Confirm Administrator Password:

☒ Logon as administrator of this project when finished Show Password Rules

Tablespace option

☒ Create in new tablespace Administer Tablespaces...

☐ Create in existing tablespace

Tablespace Name	Size (MB)	Avail (MB)
MYPROJECT	1024.00	983.81
RAY1	512.00	471.88
SYSAUX	400.00	108.63
SYSTEM	618.00	118.56
TEMP	0.00	0.00


Tablespace Size: Units: ☒ MBytes ☐ GBytes

- 2 To insert the new project into a pre-existing tablespace, click **Create in existing tablespace**, and then select a tablespace from the list. Otherwise, the project will be created in a new tablespace.
- 3 If you choose to create the project in a new tablespace, you can change its size from the default size of 160 MB by editing the value in the **Tablespace Size** list box and selecting a **Units** option (megabytes or gigabytes).
- 4 If you choose to create the project in an existing tablespace and you want to adjust the size of that tablespace to ensure it has enough space to hold the new project, click **Administer Tablespaces** to access the tablespace management features (described in ["Administering Tablespaces" on page 94](#)).

Changing the Project Password

See also ["Database Administrator Accounts: Changing Passwords and Unlocking" on page 85](#) and ["Changing a Project Administrator Password" on page 87](#).

To change the project password:

- 1 Select the project for which you want to change the password.
- 2 Select **File | Change Project Password**, click the **Change Project Password** button , or right-click the project and select **Change Project Password**.
- 3 Enter your system administrator password.

- 4 Click **OK**.
- 5 Enter a new password and confirm the password for the project.
- 6 Click **OK**.

Backing Up a Project Account



IMPORTANT! When you back up a project account, you back up an Oracle account containing:

- Oracle tables holding the entire Dimensions RM schema metadata.
- Other Oracle tables holding the actual requirement data.

To back up a project account:

- 1 Ensure that no users are accessing Dimensions RM.
- 2 It is advisable to first place each project account offline, see ["Placing a Project Account Offline" on page 65](#).
- 3 Stop the **Serena Dimensions RM E-Mail Service** service. This can be done from the following locations:
 - RM Mail **Control** tab (see ["Control Tab" on page 112](#))
 - Windows **Services** (from the Windows **Control Panel**, double-click **Administrative Tools** and then double-click **Services**).
- 4 Select the project you want to back up.
- 5 Select **File | Backup/Restore Project Account**.
- 6 If prompted, enter your administrator password and click **OK**.

- 7 The Backup/Restore Project dialog appears. Complete the following fields as needed.

Backup/Restore Project Dialog

Field	Description
Legacy/Compatibility Mode	<p>Formats the backup so that it is compatible with RM 11.2.1 or older.</p> <p>NOTE Oracle 11 Standard edition requires the use of Legacy mode regardless of the version of RM. The Enterprise edition is free of this limitation. Alternatively, you can use a workaround to take a manual backup using the current (DataPump) mode. See "Manual DataPump Backup for Oracle 11 Standard Edition" on page 57.</p>
Oracle Directory Path	<p>This field is automatically populated with the last modified server directory path for the selected project. Edit the path as needed.</p> <p>NOTE This field is not available in Legacy Mode.</p>
File Name	<p>This field is automatically populated with a name for the backup file. The name is based upon the project name and the current date and time. Edit this name as needed.</p> <p>NOTE In normal mode, the location is relative to the Oracle directory path. In Legacy Mode, the path to the Saved Projects directory of the RM installation is prepended to the file name.</p>
Security Data	<p>Exports all the users that have been assigned to this project, as well as their permissions, so that they may be imported into another project.</p>
Buffer Size	<p>NOTE Legacy Mode only.</p> <p>This sets the temporary space available for the operation. The default, and maximum, buffer size is 100MB. You can adjust the amount if needed.</p>

- 8 Click the **Backup** button. The backup operation runs.

- 9 Click **Display Log** to view a log of the backup operation.



TIP The log file is saved in the directory where the backup was created. It has the same name as the project, but with a .log extension instead of a .dmp extension. It also includes the letters "Exp" and a time stamp based upon the backup operation, e.g. *ProjectName_ExpDate_ExpTime_Exp.log*

- 10 Restart the **Serena Dimensions RM E-Mail Service** service.
- 11 Place each project account back online if you placed it offline to do the back up, see ["Placing a Project Account Online" on page 65.](#)

Manual DataPump Backup for Oracle 11 Standard Edition

The following is a workaround for a limitation in Oracle 11 Standard Edition that prevents it from taking a DataPump backup via RM Manage or the regular command line.

To manually take a DataPump backup:

- 1 Log into SQLplus as ICDBA.
- 2 Execute the following SQL commands:


```
Sql> CREATE OR REPLACE DIRECTORY RM_BACKUP_DIR_<PROJECT NAME> AS
      '<Full Oracle SERVER directory path for files>';
      Sql> GRANT READ, WRITE ON DIRECTORY RM_BACKUP_DIR_<PROJECT NAME> TO
      <PROJECT NAME>;
      Sql> EXIT;
```

- 3 Run the RM ExpDp command:

```
Expdp <PROJECT NAME>/<PROJECT PASSWORD>@<DataBase>
  Directory=RM_BACKUP_DIR_<PROJECT NAME> DUMPFILE=<PROJECT
  NAME>_<make file name unique>.dmp logfile=<PROJECT NAME>_<make
  file name unique>_EXMPDP.log JOB_NAME=SerenaDimRM_<PROJECT
  NAME><CURRENT TIME NUMBERS ONLY> TRANSPORT_FULL_CHECK=Y
  REUSE_DUMPFILLES=Y
```

EXAMPLE of EXPDP command:

```
EXPDP QLARIUS/*****@RM.11.2.1.P2639
  Directory=RM_BACKUP_DIR_QLARIUS
  DUMPFILE=QLARIUS_20110912_101406237.dmp
  logfile=QLARIUS_20110912_101406237_Exp.log
  JOB_NAME=SerenaDimRM_QLARIUS20110912101406237
  TRANSPORT_FULL_CHECK=Y REUSE_DUMPFILLES=Y
```

Restoring a Project Account from a Backup



IMPORTANT! When you back up a project account, you back up an Oracle account containing:

- Oracle tables holding the entire Dimensions RM schema metadata.
- Other Oracle tables holding the actual requirement data.

To restore a project account from a backup using the RM Manage interface:

- 1** Stop the **Serena Dimensions RM E-Mail Service** service. This can be done from the following locations:
 - RM Mail **Control** tab (see ["Control Tab" on page 112](#))
 - Windows **Services** (from the Windows **Control Panel**, double-click **Administrative Tools** and then double-click **Services**).
- 2** Check that the project you wish to restore has (Current) next to its name. If this is not the case (for example it has a suffix of (VRM2010 R1 GA)), then you will first need to run the **Convert Database** command on the database and its project accounts before performing the project account restores. Proceed as follows:
 - a** Right click on the Dimensions RM database in the left-hand graphical tree.
 - b** Select **Convert Database**. The **Database Validation** dialog box opens.
 - c** Click the Dimensions RM database in the **Database Validation** dialog box graphical tree. The **ICDBA Password** dialog box opens.
 - d** Enter the ICDBA Password and click **OK**.
 - e** The **Database Validation** dialog box displays the various project accounts and their current status.
 - f** Select a project account that requires updating and click **Upgrade**. The **Conversion Progress** dialog box opens.
 - g** Click **Continue**.
 - h** When the **Conversion Progress** dialog box reports successful upgrading of the project, click **Close**.
 - i** Repeat [Step f](#) to [Step h](#) for any other projects that require upgrading.
 - j** When all projects have been upgraded, click **Close** in the **Database Validation** dialog box.
- 3** Select the project you want to restore.
- 4** Select **File | Backup/Restore Project Account**.

- 5 The Backup/Restore Project dialog appears. Complete the following fields as needed.

Backup/Restore Project Dialog

Field	Description
Legacy/Compatibility Mode	Select this checkbox if you wish to restore from a backup file that was created with RM 11.2.1 or older, or that was created in Legacy Mode with RM 11.2.2 or newer.
Oracle Directory Path	This field is automatically populated with the last modified server directory path for the selected project. Edit the path as needed. NOTE This field is not available in Legacy Mode.
File Name	Enter the name of the file to restore from, or click the Browse button to select one. NOTE In normal mode, the file location is relative to the Oracle directory path and you can only see the DMP files that were made from the currently selected project; however, you can manually enter the name of the DMP file instead of selecting from those that are visible. In Legacy Mode, the browse dialog opens to the Saved Projects directory of the RM installation, but you can navigate to any location.
Security Data	Imports all the users in the backed-up project, as well as their permissions.
Buffer Size	NOTE Legacy Mode only. This sets the temporary space available for the operation. The default, and maximum, buffer size is 100MB. You can adjust the amount if needed.

- 6 Click **Restore**. The restore operation runs.



NOTE The existing tablespace may not be large enough to accommodate the data contained in the project that is being restored. In this case, you will be asked if you would like to resize the tablespace before continuing. The process of resizing the tablespace is discussed in ["Resizing a Tablespace" on page 95](#).

- 7 Click **Display Log** to view a log of the backup operation.



NOTE When importing in Legacy mode, you might receive these error messages:

- ORA-39082 "... created with compilation warnings"
- ORA-39083: Object type JOB failed to create with error

You can safely ignore these errors.



TIP The log file is saved in the directory where the backup was created. It has the same name as the project, but with a .log extension instead of a .dmp extension. It also includes the letters "Imp" and a time stamp based upon the restore operation, e.g. *ProjectName_ExpDate_ExpTime_Imp_ImpDate_ImpTime.log*

- 8 Restart the **Serena Dimensions RM E-Mail Service** service.

Backing Up Projects from the Command Line

In addition to using the **Backup/Restore Project Account** option in RM Manage, you can back up a project from the command line. The security information for the project is automatically included in the backup.



NOTE Projects cannot be restored using the command line. You must use the RM Manage tool to restore a backed-up project, regardless of how the backup file was created.

The following table describes the backup command line parameters:

Parameter	Description
icmanage	If <RM Install Dir>\bin is not specified in your PATH environment variable, you must navigate to the <RM Install Dir>\bin directory.
-location	Oracle database instance name (connection stream).
-project	Name of the project to be backed up.
-password	Password that is used for the project, <i>not</i> the Dimensions RM user account password.
-buffer (optional)	Valid values: 1...100 Size of the buffer, as a positive integer. This is the amount of temporary space needed to complete the Oracle import/export command. For example, -buffer 65 reserves 65 MB of buffer space. The buffer size can be a maximum of 100 MB, and the default is 50 MB.

Parameter	Description
-dumpfile	Name and location of the backup file. When it is created, the name is appended with a <DateTimeStamp> and a .dmp extension. The timestamp format is DD_MM_YYYY_HH_MI_SS. In Legacy Mode, if no path is specified, the file is stored in the Saved Projects folder of the <RM Install Dir> directory. In non-legacy mode, the location is relative to the Oracle directory path on the server.
-legacy	Valid values: yes, no Yes creates a backup file using the legacy, RM 11.2.1 or older, format. No uses the 11.2.2 and newer format.
-rmdbausername	Valid value: ICDBA The Oracle user ID for icmanage.
-rmdbapassword	The password of the Oracle user ID for icmanage.
-encrypt	Valid values: yes, no Specify Yes when using encrypted passwords. Specify No or do not use the -encrypt option when using passwords which are not encrypted.

Backing up in Normal Mode

The normal mode creates the backup file format for Dimensions RM 11.2.2 or higher. Note that Oracle 11 Standard edition requires the use of Legacy mode regardless of the version of RM (see chapter ["Backing up in Legacy Mode" on page 62](#)). The Enterprise edition is free of this limitation.

Alternatively, you can use a workaround to take a manual backup using the current (DataPump) mode. See ["Manual DataPump Backup for Oracle 11 Standard Edition" on page 57](#).

To create your backup in **Normal Mode**, use the following syntax (all in one line):

```
icmanage -location <DatabaseInstanceName>
-project <ProjectName>
-password <ProjectPassword>
[-buffer <BufferSize>]
-dumpfile <PathAndNameOfBackupFileToCreate>
-legacy no
-rmdbausername ICDBA
-rmdba_password <ICDBAPassword>
```

Example

The following command backs up RMProject with a password of pwd to a file named rmprojectbackup in the backup directory of the E drive. The Oracle instance name is orcl1.

```
icmanage -location orcl1 -project rmproject -password pwd -dumpfile
e:\backup\rmprojectbackup -legacy no -rmdbausername ICDBA
-rmdbapassword ICDBA
```

When you execute this command, the backup file rmprojectbackup<timestamp>.dmp is created in the backup folder on drive E. If the backup folder does not exist, it is also created. The buffer size is the default of 50 MB.

Backing up with Encrypted Passwords in Normal Mode

```
icmanage -location <DatabaseInstanceName>
-project <ProjectName>
-password <encrypted_ProjectPassword>
[-buffer <BufferSize>]
-dumpfile <PathAndNameOfBackupFileToCreate>
-legacy no
-rmdbausername ICDBA
-rmdbapassword <encrypted_ICDBAPassword>
-encrypted yes
```

To learn how to get encrypted passwords, see chapter ["Backing up with Encrypted Password" on page 63](#).

Example

The following command backs up RMProject with encrypted passwords to a file named `rmprojectbackup` in the backup directory of the E drive. The Oracle instance name is `orcl1`.

```
icmanage -location orcl1 -project rmproject -password 8548FE01CD673210
-dumpfile e:\backup\rmprojectbackup -legacy no -rmdbausername ICDBA
-rmdbapassword 9674BA5269718A05 -encrypt yes
```

When you execute this command, the backup file `rmprojectbackup<timestamp>.dmp` is created in the backup folder on drive E. If the backup folder does not exist, it is also created. The buffer size is the default of 50 MB.

Backing up in Legacy Mode

The legacy mode creates a backup which can be used with versions prior to Dimension RM 11.2.2. It has to be used when using Oracle 11 Standard edition. If none of these conditions apply to your system it is recommended to use the Normal Mode (see chapter ["Backing up in Normal Mode" on page 61](#)).

To create your backup in **Legacy Mode**, use the following syntax (all in one line):

```
icmanage -location <DatabaseInstanceName>
-project <ProjectName>
-password <ProjectPassword>
[-buffer <BufferSize>]
-dumpfile <PathAndNameOfBackupFileToCreate>
-rmdbausername ICDBA
-rmdbapassword <encrypted_ICDBAPassword>
-legacy yes
```

Example

The following command backs up RMProject with a password of `pwd` to a file named `rmprojectbackup` in the backup directory of the E drive. The Oracle instance name is `orcl1`.

```
icmanage -location orcl1 -project rmproject -password pwd -dumpfile
e:\backup\rmprojectbackup -legacy yes -rmdbausername ICDBA
-rmdbapassword ICDBA
```

When you execute this command, the backup file `rmprojectbackup<timestamp>.dmp` is created in the backup folder on drive E. If the backup folder does not exist, it is also created. The buffer size is the default of 50 MB.

Backing up with Encrypted Passwords in Legacy Mode

```
icmanage -location <DatabaseInstanceName>
-project <ProjectName>
-password <encrypted_ProjectPassword>
[-buffer <BufferSize>]
-dumpfile <PathAndNameOfBackupFileToCreate>
-legacy yes
-rmdbausername ICDBA
-rmdbapassword <encrypted_ICDBAPassword>
-encrypted yes
```

To learn how to get encrypted passwords, see chapter ["Backing up with Encrypted Password" on page 63](#).

Example

The following command backs up RMProject with encrypted passwords to a file named `rmprojectbackup` in the backup directory of the E drive. The Oracle instance name is `orcl1`.

```
icmanage -location orcl1 -project rmproject -password 8548FE01CD673210
-dumpfile e:\backup\rmprojectbackup -legacy yes -rmdbausername ICDBA
-rmdbapassword 9674BA5269718A05 -encrypt yes
```

When you execute this command, the backup file `rmprojectbackup<timestamp>.dmp` is created in the backup folder on drive E. If the backup folder does not exist, it is also created. The buffer size is the default of 50 MB.

Backing up with Encrypted Password

For both, Normal Mode and Legacy Mode, you can use encrypted passwords. When using encrypted passwords, you have to add `-encrypt yes` to the command line. Note that you have to encrypt both, project password and RMDBA password.

To get the encrypted password, follow these steps:


- 1 Open a Command Prompt.
- 2 Change directory to `<RM Install Dir>\bin`.
- 3 Type `AlfEventEmitter -l c:\test -p YOUR_PASSWORD`
(Replace `YOUR_PASSWORD` with the password you want to encrypt.)
- 4 Hit **Enter**.
The next line in the Command Prompt shows:
`Encrypted value ="YOUR_ENCRYPTED_PASSWORD"`
- 5 Copy the encrypted password into your `icmanage` command line.

Deleting a Project Account

When you delete a project account, the project user account and all data associated with the account is deleted from Oracle. You cannot retrieve deleted project data.


To delete a project account:

- 1 Select the project you want to delete.

- 2 Select **File** | **Delete Project Account**, click the **Delete** button , or right-click the project and select **Delete Project Account**.
- 3 Click **Yes** to confirm the deletion.


Defining the Project Schema

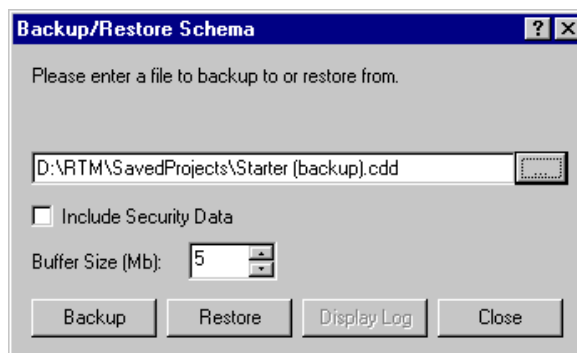
To define the project schema:

- 1 Select the project for which you want to define the schema.
- 2 Select **File** | **Define Project Schema**, click the **Define Project Schema**  button, or right-click and select **Define Project Schema**. The Class Definition tool appears.
- 3 Define the project schema in the Class Definition tool. Refer to ["Class Definition" on page 129](#) for information about Class Definition.

Backing Up a Project Schema

To back up project schema:

- 1 Select the project you want to back up.
- 2 Select **File** | **Backup/Restore Project Schema**, click the **Backup/Restore Project Schema** button , or right-click the project and select **Backup/Restore Project Schema**. (See also ["Backing Up a Project Account" on page 55](#), which explains the difference between a project account and a project schema.)
- 3 Enter a file name to store the project schema backup. You can type the file name or select it by clicking **Browse** and searching for the file.
- 4 Click **Open**. The **Backup/Restore Schema** dialog box opens.




- 5 To include the security information for this project, select the **Include Security Data** check box. This will export all the user accounts that have been assigned to this project schema, as well as user permissions, so that this data can be imported into another project.
- 6 Change buffer size, if desired. For most imports and exports, a buffer size of 1 MB should be sufficient, but for large project schemas you may increase the buffer size. This is the amount of temporary space that is needed to complete the Oracle import/export command. The amount of buffer space used by the Oracle import/export command may be increased up to 100 MB.
- 7 Click **Backup**.

- 8 Click **Display Log** to view the output from the backup. The log file is saved in the directory where the dump file exists and has the same name with a .log extension instead of a .cdd extension.

Restoring a Project Schema from a Backup

To restore a project schema from backup:


- 1 Select the project you want to restore.
- 2 Select **File | Backup/Restore Project Schema**, click the **Backup/Restore Project Schema** button , or right-click the project and select **Backup/Restore Project Schema**. (See also ["Restoring a Project Account from a Backup" on page 57](#), which explains the difference between a project account and a project schema.)
- 3 Enter the name of the file to restore from. You can type the file name or select it by clicking **Browse** and searching for the file in the directory.
- 4 To include the security information for this project, select the **Include Security Data** check box. This will import all the users that have been assigned to the project that is being imported as well as their permissions.
- 5 Change buffer size if needed. For most imports/exports a buffer size of 1 MB should be sufficient, but for large project schemas you may wish to increase the buffer size. This is the amount of temporary space that is needed to complete the Oracle import/export command. The amount of buffer space used by the Oracle import/export command may be increased up to 100 MB.
- 6 Click **Restore**.

The existing tablespace may not be large enough to accommodate the data contained in the project that is being restored. In this case, you will be asked if you would like to resize the tablespace prior to continuing. See ["Resizing a Tablespace" on page 95](#) for information about resizing the tablespace.
- 7 Click **Display Log** to view the output from the backup. The log file is saved in the directory where the dump file exists and has the same name with a .log extension instead of a .dmp extension. To close the dialog box, click **Close**.

Placing a Project Account Online

If you have placed a project offline to perform backups or to prevent users from accessing a project, you can place it online again.


To place a project account online:

- 1 Select the project you want to place online.
- 2 Select **File | Place Project Account Online**, click the **Place Project Account Online** button , or right-click and select **Place Project Account Online**.

Placing a Project Account Offline


Placing a project offline is a convenient way to stop users from accessing a project. You can also place a project offline when performing backups.

To place a project account offline:

- 1 Select the project you want to place offline.
- 2 Select **File | Place Project Account Offline**, click the **Place Project Offline**  button, or right-click and select **Place Project Account Offline**.


Installing Project Tables

To install project tables:

- 1 Select the project for which you want to install tables.
- 2 Select **File | Install Project Tables**, click the **Install Project Tables** button , or right-click the project and select **Install Project Tables**.
- 3 Click **Yes** to confirm the installation.

Dropping Project Tables


To drop project tables:

- 1 Select the project for which you want to drop tables.
- 2 Select **File | Drop Project Tables**, click the **Drop Project Tables** button , or right-click the project and select **Drop Project Tables**.
- 3 Click **Yes** to confirm the deletion.

Recreating Database Procedures

Use this function to ensure that you are using the most recent database procedures. For example, you may want to recreate database procedures after a compilation failure. Recreating the database procedures will synchronize them with the installed version of Dimensions RM.

To recreate database procedures:


- 1 Select the project for which you want to recreate the database procedures.
- 2 Select **File | Recreate Procedures**, click the **Recreate Database Procedures** button , or right-click the project and select **Recreate Database Procedures**.
- 3 Click **Yes** to confirm the recreation.

Recreating Database Indexes

Recreating database indexes increases Dimensions RM performance. This function rebuilds the database trees of Dimensions RM, which may become fragmented during use.

To recreate database indexes:


- 1 Select the project for which you want to recreate the database indexes.

- 2 Select **File | Recreate Indexes**, click the **Recreate Database Indexes** button , or right-click the project and select **Recreate Database Indexes**.
- 3 Click **Yes** to confirm the recreation.

Recreating Database Resources

You can recreate database resources if the database becomes damaged. This function verifies that a unique ID is assigned to the database resources.

To recreate database resources:

- 1 Select the project for which you want to recreate the database resources.
- 2 Select **File | Recreate Resources**, click the **Recreate Resources** button , or right-click the project and select **Recreate Resources**.
- 3 Click **Yes** to confirm the recreation.


Setting Link Options for Baselines

By default, users cannot modify (create or delete) links between objects that are in the *same* baseline. However, you can enable this ability on a baseline by baseline basis in RM Manage.



NOTE Users can always modify links if the objects are in different baselines or if only one of the objects is in a baseline. The setting described here does not affect that ability.

To set link options for baselines:

- 1 Select the project containing the baselines you want to modify.
- 2 Click the **Baseline Link(s)**  button. The **Baseline link(s)** dialog box opens. All baselines in the current project appear.
- 3 To allow users to modify links in a baseline, deselect the baseline. To prevent users from modifying links in a baseline, select the baseline.
- 4 Click **OK**.

Managing Users and Groups

In the Dimensions RM environment, a project represents a work area within which information is created and maintained. Only projects that the current user is allowed to administer will be available.

Administering Users

Dimensions RM users are maintained for each database and the users are shared across all projects contained within that database. Dimensions RM users are used to maintain security with the Dimensions RM tools.

In order to administer users, at least one Dimensions RM project must exist in the database and a project administrator must have logged onto the database. Only project administrators are allowed to modify user information.




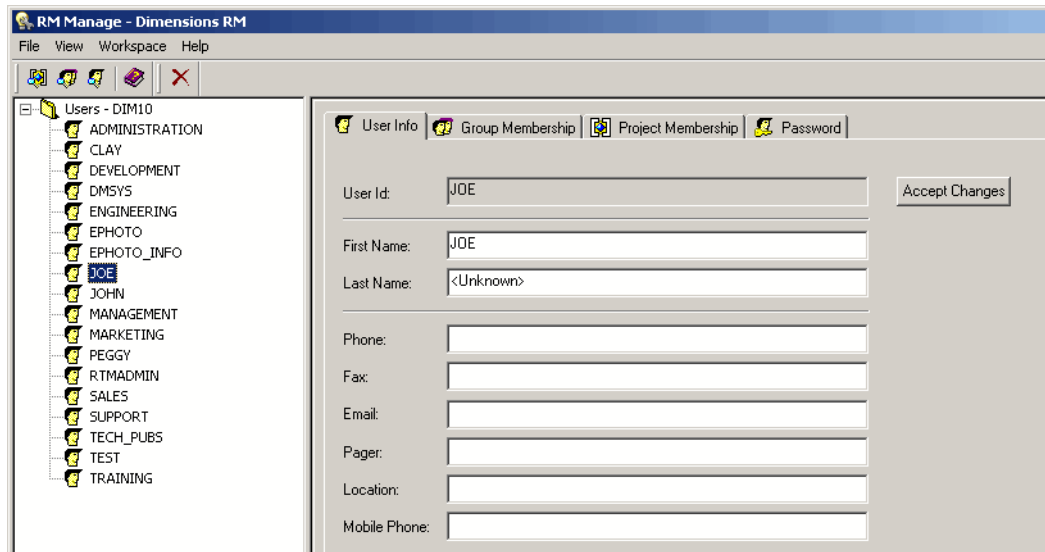
IMPORTANT! Each user ID is valid for only ONE login source.

- To allow a user the ability to login from two different login sources, you must create two unique user IDs for that user, one for each login source. For example: JohnS_sso and JohnS_ldap.
- Once a user ID is created, the login source associated with it cannot be changed. If you manually create a user ID with RM Manage, that user ID will only work with the RM login source. If a user ID is auto created in RM by an external login source (LDAP or SSO), that user ID will only work with the login source that created it.

Creating a New User

To create a new user:

- 1 Select **View | Users**.
- 2 Select the "Users - <Dimensions_RM_active_database_name>" folder at the top of the left-hand graphical tree (for example, **Users - RM**).
- 3 Select **File | New User**, click the **New User**  button, or right-click and select **New User**.
- 4 Type the name of the new user.
- 5 Press **Enter**. The user information dialog box opens.



The screenshot shows the 'RM Manage - Dimensions RM' application window. On the left, a tree view under 'Users - DIM10' lists various user roles like ADMINISTRATION, CLAY, DEVELOPMENT, etc., with 'JOE' highlighted. On the right, the 'User Info' tab is active, displaying a form with the following fields: User Id (JOE), First Name (JOE), Last Name (<Unknown>), Phone, Fax, Email, Pager, Location, and Mobile Phone. An 'Accept Changes' button is located at the top right of the form.

- 6 On the **User Info** tab, type the general user information and then click **Accept Changes**.
- 7 Click the **Password** tab and enter a password in the **Password** field.
- 8 Enter the password again in the **Confirm Password** field.
- 9 Select one or more of the following password options:

- **User Must Change Password at Next Logon**
- **User Cannot Change Password**
- **Password Never Expires**
- **Account Disabled**



NOTE If you do not select a password option, users must change their passwords every 60 days. Users get a warning that gives them the opportunity to change their password 14 days before their current password is due to expire. The warning is displayed every time users log in using any Dimensions RM tool.


10 Click **Accept Changes**.



NOTE For information about password security, see ["Setting Up Password Security" on page 125](#).

Deleting a User

To delete a user:

- 1** Select **View | Users**.
- 2** Select the user in the left-hand graphical tree that you want to delete.
Only users that have not been assigned to any projects should be deleted. If the user profile is deleted it will be removed from every project that it has been assigned to.
- 3** Select **File | Delete User**, click the **Delete User**  button, or right-click and select **Delete User**.
- 4** Click **Yes** to confirm the deletion.

Changing User General Information

To change general information for a user:

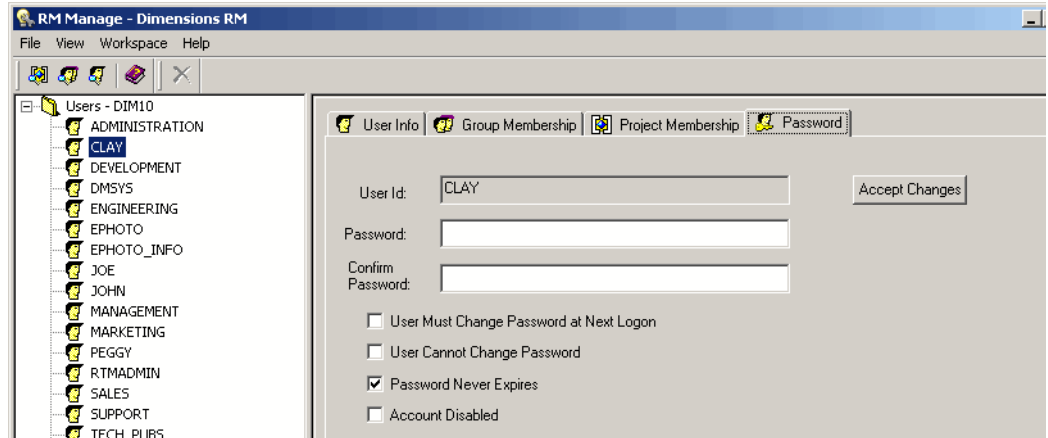
- 1** Select **View | Users**.
- 2** Select the user in the left-hand graphical tree for which you want to change the general information.
- 3** Click the **User Info** tab.
- 4** Enter new user information.
- 5** Click **Accept Changes**.

Changing User Password Information

To change user password information:

- 1** Select **View | Users**.
- 2** Select the user in the left-hand graphical tree for which you want to change the password information.

- 3 Click the **Password** tab.

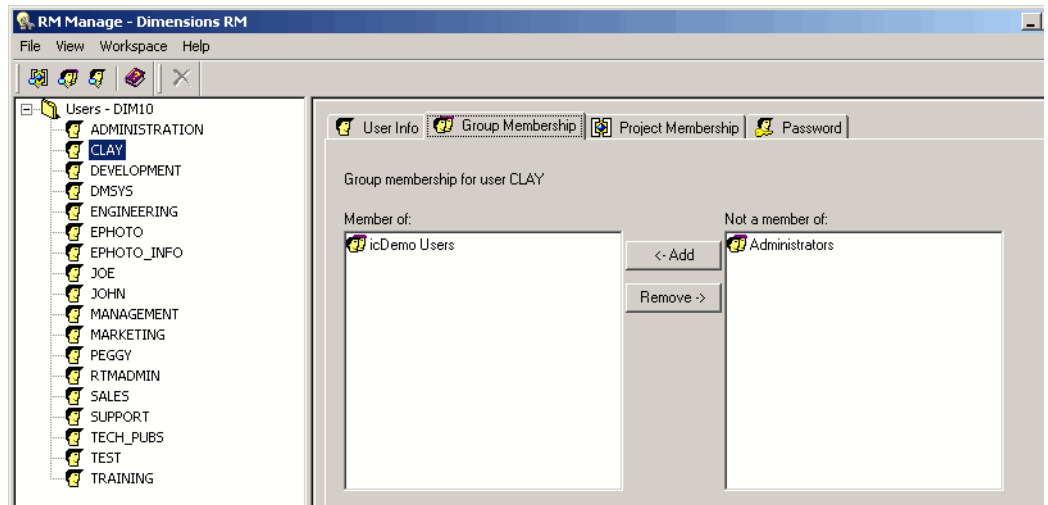


- 4 Enter new user password information.
- 5 Click **Accept Changes**.

Adding a User to a Group

To add a user from the user view:

- 1 Select **View | Users**.
- 2 Select the user in the left-hand graphical tree you want to add to a group.
- 3 Click the **Group Membership** tab.



- 4 Select the groups to which you want to add the user from the list on the right.
- 5 Click **Add**.

To add a user from the group view:

- 1 Select **View | Groups**.
- 2 Select the group in the left-hand graphical tree to which you want to add a user.
- 3 Click the **Members** tab.

- 4 Select the users that you would like to add to the group from the list on the right.
- 5 Click **Add**.

Removing a User from a Group

To remove a user from the user view:

- 1 Select **View | Users**.
- 2 Select the user in the left-hand graphical tree you want to remove from a group.
- 3 Click the **Group Membership** tab.
- 4 Select the groups from which you want to remove the user from the list on the left.
- 5 Click **Remove**.

To remove a user from the group view:

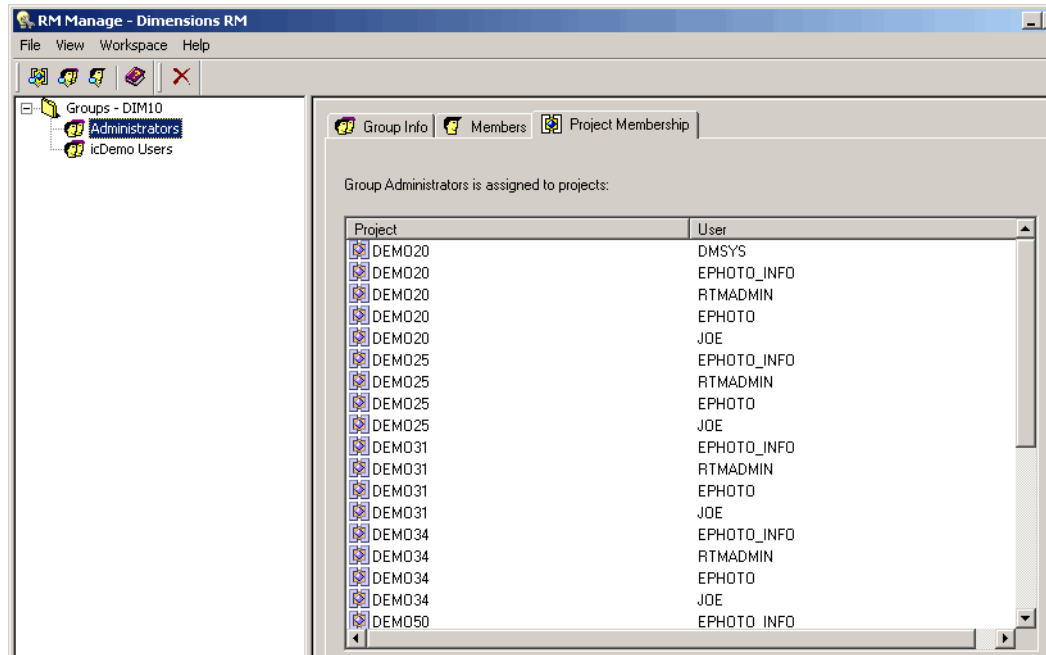
- 1 Select **View | Groups**.
- 2 Select the group in the left-hand graphical tree to which you want to remove a user.
- 3 Click the **Members** tab.
- 4 Select the users that you would like to remove from the group from the list on the left.
- 5 Click **Remove**.

Viewing Project Assignment

To view project assignment:

- 1 In the left-hand graphical tree either:
 - select **View | Users**, or
 - select **View | Groups**.and select the user or group for which you want to view project assignment.

- 2 Click the **Project Membership** tab.




Administering Groups

Dimensions RM groups are maintained for each database. The groups are shared across all projects contained within that database. Dimensions RM groups are used to maintain security within the Dimensions RM tools.

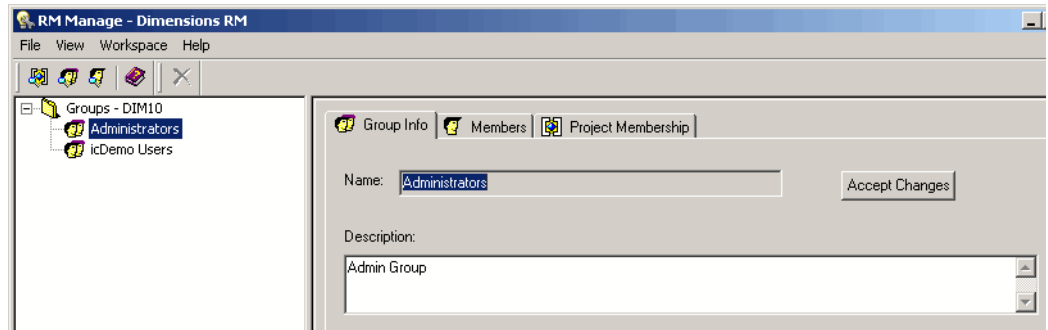
In order to administer groups, at least one Dimensions RM project must exist in the database and a project administrator must have logged onto the database. Only project administrators are allowed to modify group information.

Creating a New Group

To create a new group:

- 1 Select **View | Groups**.
- 2 Select the "Groups - <Dimensions_RM_active_database_name>" folder at the top of the left-hand graphical tree (for example, **Groups - RM**).
- 3 Select **File | New Group**, click the **New Group**  button, or right-click and select **New Group**.

- 4 Type the name of the new group and press **Enter**. The group information dialog box opens.



- 5 Click the **Group Info** tab and enter a user description.
- 6 Click **Accept Changes**.

Deleting a Group

To delete a group:

- 1 Select **View | Groups**.
- 2 Select the group in the left-hand graphical tree that you want to delete.



NOTE Do not delete a group if a member of that group is assigned to a project. If such a group is deleted, all members of the group will be removed from every project to which they are assigned.

- 3 Select **File | Delete Group**, click the **Delete Group**  button, or right-click and select **Delete Group**.



NOTE This action cannot be undone.

- 4 Click **Yes** to confirm the deletion.

Changing Group General Information

To change general information for a group:

- 1 Select **View | Groups**.
- 2 Select the group in the left-hand graphical tree for which you want to change the general information.
- 3 Click the **Group Info** tab.
- 4 Enter new group information.
- 5 Click **Accept Changes**.

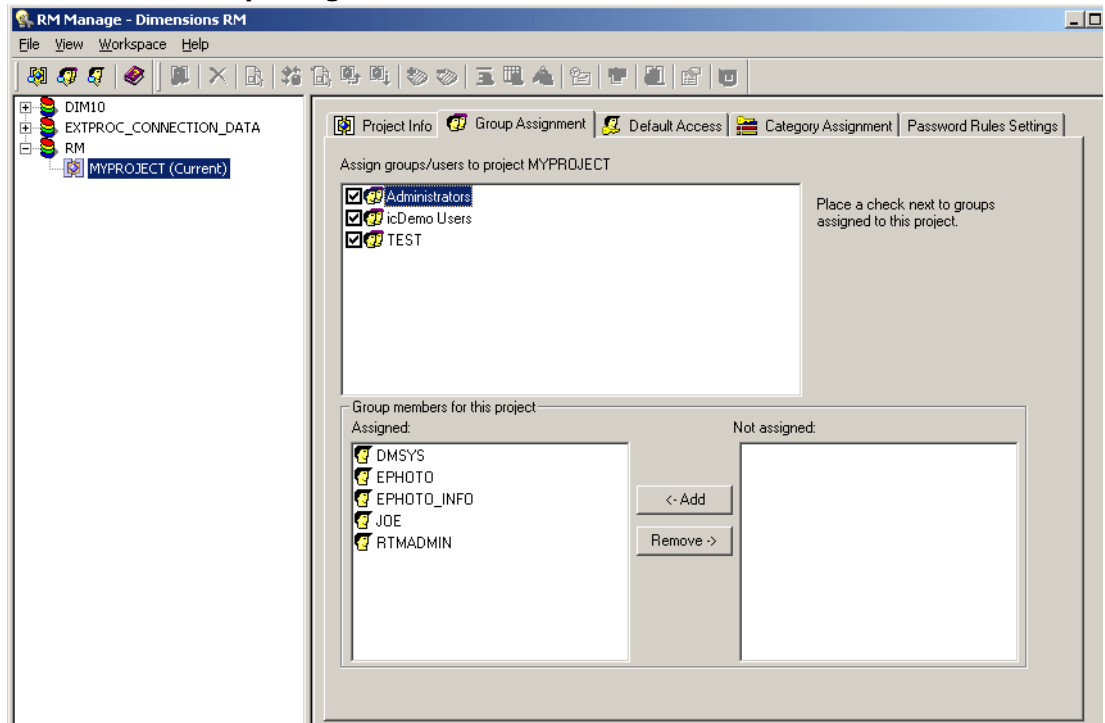
Assigning Users to Groups

A user must be assigned to a project through group membership before being allowed access to the project.

Adding a User to a Project

To add a user to a project:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree to which you want to add the user.
- 3 Click the **Group Assignment** tab.



- 4 Select the group that contains the user you want to add to the project. Selecting the check box automatically adds all members of that group to the project. Clearing the check box automatically removes all members of that group from the project.
- 5 Select the users from the **Not Assigned** list.
- 6 Click **Add**.

Adding an Administrator to a Project

To add an administrator to a project:

- 1 Add the user to the Administrators group (see ["Adding a User to a Group" on page 70](#)).
- 2 Select **View | Projects**.
- 3 Select the project in the left-hand graphical tree to which you want to add the administrator user.

- 4 Click the **Group Assignment** tab.
- 5 Select the **Administrators** group.
- 6 Select the user from the **Not Assigned** list.
- 7 Click **Add**.

Removing a User from a Project

To remove a user from a project:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree from which you want to remove the user.
- 3 Click the **Group Assignment** tab.
- 4 Select the group that contains the user you want to remove from the project. Selecting the check box automatically adds all members of that group to the project. Clearing the check box automatically removes all members of that group from the project.
- 5 Select the users from the **Assigned** list.
- 6 Click **Remove**.

Group Security

Resource Types

A resource is a data item such as a class, an attribute, or a document. A resource type represents a grouping of resources into a class of items. For example, a specific document falls into the type of "RMWord Documents." Each resource type has transactions that are appropriate for that type of resource. Transactions represent what can be done with that resource.

Setting Default Group Access



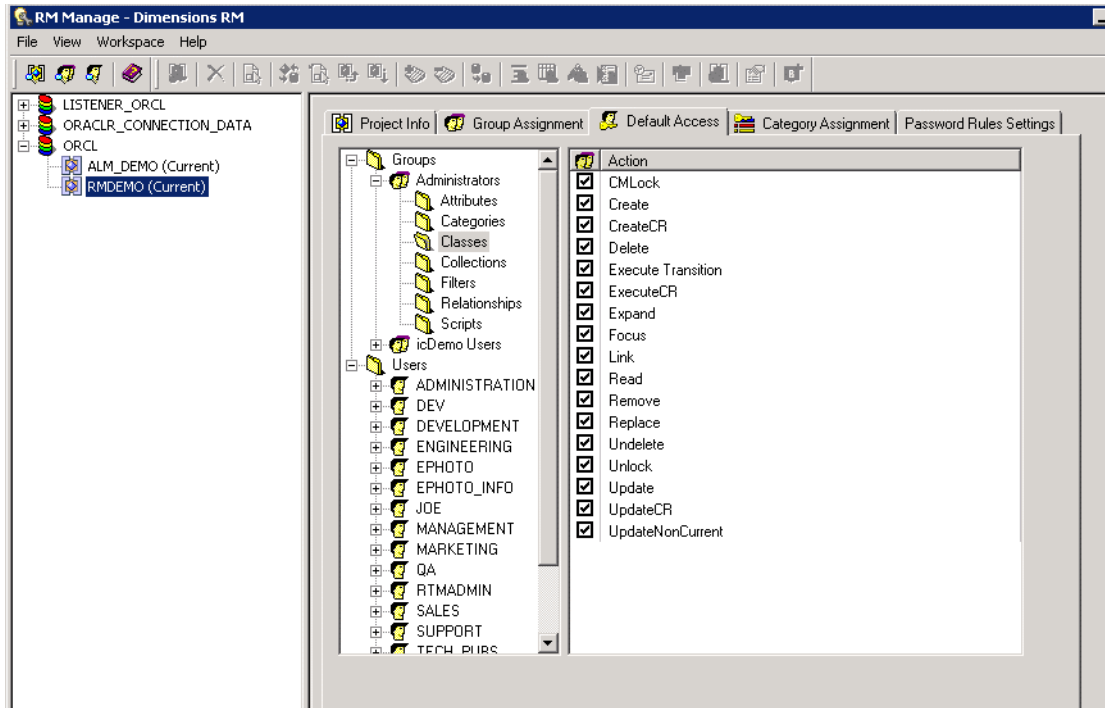
NOTES As a good general practice, Serena recommends that no Dimensions RM group ever be granted the class access rights for: REMOVE, UPDATE, and UPDATE NON_CURRENT.

Update should not be granted to anyone on the system. All requirements changes should be performed with the replace function. This approach allows a fully auditable change history to be maintained and thus exposes Dimensions RM full capabilities. But this approach does require that you baseline requirements to capture the versions that you are currently capturing with the replace button. If users start using baselines and snapshots with other usage models (primarily updates and replace to version), they will be forced to create a new version just because someone else created a baseline. This may also limit the compare functions in Dimensions RM.

Default access rights may be set for a group. When you set default group access, all members of a group that do not have explicit access granted or denied (that is, they have inherited access) receive the access rights of their collective parent groups. The access

rights that are granted are for types of entities, rather than for explicit instances of those entity types. The access rights that are granted here may be overridden for explicit instances. See ["Security" on page 171](#) for details on overriding class definition default access.

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to set default access.
- 3 Click the **Default Access** tab.



- 4 Click + to expand the **Groups** folder.
- 5 Expand the group to see the types of resources that may be assigned default access.
- 6 Select the type (for example, Classes).
- 7 Click the transaction to toggle the access rights. Select the check box to assign group access rights ☒ or to unassign rights ☐.

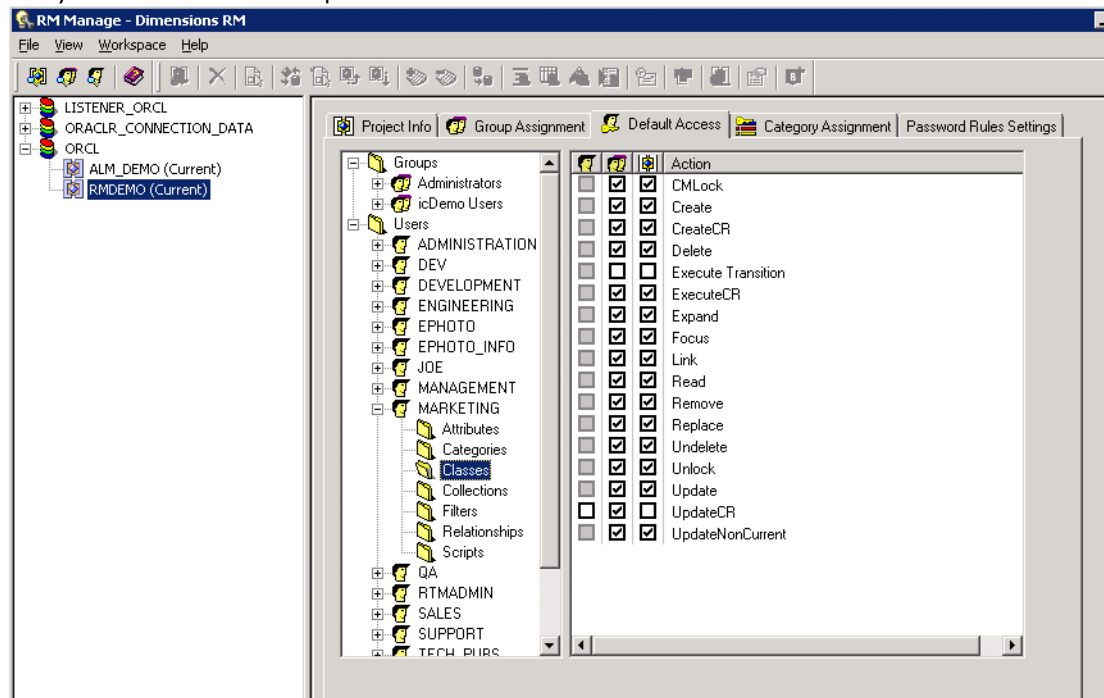
Setting Default User Access






NOTES As a good general practice, Serena recommends that no Dimensions RM user (including Administrators) ever be granted the class access rights for: REMOVE, UPDATE, and UPDATE NON_CURRENT.


Update should not be granted to anyone on the system. All requirements changes should be performed with the replace function. This approach allows a fully auditable change history to be maintained and thus exposes Dimensions RM full capabilities. But this approach does require that you baseline requirements to capture the versions that you are currently capturing with the replace button. If users start using baselines and snapshots with other usage models (primarily updates and replace to version), they will be forced to create a new version just because someone else created a baseline. This may also limit the compare functions in Dimensions RM.

Default access rights can be set for users. A user may be granted access, denied access, or may inherit the access rights of his or her parent groups. The access rights are for types of entities, rather than for explicit instances of those entity types. The access rights may be overridden for explicit instances in other tools.



The group column  in the right-hand list represents the access that has been set for the collective default access of the groups of which the user is a member. If the group column is checked (☒) , the transaction has been granted for one or more of the groups. If the group column is not checked (☐) , the group has not been given default access.

The user column  in the right-hand list represents the access that has been set for the individual user. The rows that are gray () in the user column indicate that the user does not have any default access set for this transaction and will inherit the collective access from the group. The rows that are unchecked in the user column indicate that the user has been explicitly denied default access for this transaction. The rows that are checked in the user column indicate that the user has been explicitly granted default access for this transaction.

The project column  in the right-hand list indicates the net effect of the user and group default access for the project. If this column is checked, the user has default access, either because it has been explicitly granted for the user or has been inherited from his or her groups. If this column is not checked, the user does not have default access, either because it has been explicitly denied or because default access has not been granted for any groups and the access has been inherited.

Granting All

Granting All Access Rights to a Group:

Groups may be granted access rights to all transactions within a specific resource type or to all transactions within every type. A resource is a data item such as a class, an attribute, or a document. A resource type represents a grouping of resources into a class of items. For example, a specific document falls into the resource type "RMWord Documents." Each resource type has transactions that are appropriate for that type of resource. Transactions represent what can be done with that resource. For instance, scripts may be created, read, updated, renamed and removed.



NOTE **Grant All** does not grant the following transactions:

Classes:

- Remove
- Update
- UpdateNonCurrent

Collections:

- Delete Baseline

To grant access rights for every transaction within a single resource type:

- 1** Select **View | Projects**.
- 2** Select the project in the left-hand graphical tree for which you want to grant default access.
- 3** Click the **Default Access** tab.
- 4** Click + to expand the **Groups** folder.
- 5** Expand the group to see the types of resources that may be assigned default access.
- 6** Right-click the *resource type* you want to grant all access rights for and select **Grant All**. This sets all of the transactions in this resource type to be explicitly granted for this group.

To grant access rights for every transaction in every resource type:

- 1** Select **View | Projects**.
- 2** Select the project in the left-hand graphical tree for which you want to grant default access.
- 3** Click the **Default Access** tab.
- 4** Click + to expand the **Groups** folder.

- 5 Right-click the *group* you want to grant all access rights to and select **Grant All**. This sets all of the transactions in every resource type to be explicitly granted for this group.

Granting All Access Rights to a User:

Users may be explicitly granted access rights to all transactions within a specific resource type or to all transactions within every resource type. A resource is a data item such as a class, an attribute, or a document. A resource type represents a grouping of resources into a class of items. For example, a specific document falls into the type "RMWord Documents". Each resource type has transactions that are appropriate for it. Transactions represent what can be done with that resource. For instance, scripts may be created, read, updated, renamed, and removed.

To grant access rights for every transaction within a single resource type:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to grant default access.
- 3 Click the **Default Access** tab.
- 4 Click + to expand the **Users** folder.
- 5 Expand the user to see the types of resources that may be assigned default access.
- 6 Right-click the *resource type* you want to grant all access rights for and select **Grant All**. This sets all of the transactions in this resource type to be explicitly granted for this user.

To grant access rights for every transaction in every resource type:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to grant default access.
- 3 Click the **Default Access** tab.
- 4 Click + to expand the **Users** folder.
- 5 Right-click the *user* to which you want to grant all access rights and select **Grant All**. This sets all of the transactions in every resource type to be explicitly granted for this user.

Revoking All

Groups may be denied access rights to all transactions within a specific resource type or to all transactions within every type. Users may be explicitly denied access rights to all transactions within a specific type or to all transactions within every type.

A resource is a data item such as a class, an attribute, or a document. A resource type represents a grouping of resources into a class of items. For example, a specific document falls into the type "RMWord Documents." Each resource type has transactions that are appropriate for that type of resource. Transactions represent what can be done with that resource. For example, scripts may be created, read, updated, renamed, and removed.

To revoke access rights for every transaction within a single resource type:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to revoke default access.
- 3 Click the **Default Access** tab.
- 4 Click + to expand the **Groups** or **Users** folder.
- 5 Click + next to the relevant group or user to see the types of resources that may be assigned default access.
- 6 Right-click the *resource type* for which you want to revoke all access rights and select **Revoke All**. This sets all of the transactions in this resource type to be denied for this group or user.
- 7 When prompted, click **Yes** to confirm the revoke all action.

To revoke access rights for every transaction in every resource type:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to revoke default access.
- 3 Click the **Default Access** tab.
- 4 Click + to expand the **Groups** or **Users** folder.
- 5 Right-click the *group or user* for which you want to revoke all access rights and select **Revoke All**. This sets all of the transactions in every resource type to be denied for this group or user.
- 6 When prompted, click **Yes** to confirm the revoke all action.

Inheriting All Access Rights for a User

Users can inherit access from their groups for all transactions within a specific resource type or all transactions within all resource types. A resource is a data item such as a class, an attribute, or a document. A resource type represents a grouping of resources into a class of items. For example, a specific document falls into the type "RMWord Documents." Each resource type has transactions that are appropriate for that type of resource. Transactions represent what can be done with that resource. For instance, scripts may be created, read, updated, renamed and removed.

To grant access rights for every transaction within a single resource type:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to inherit default access.
- 3 Click the **Default Access** tab.
- 4 Click + to expand the **Users** folder.
- 5 Click + next to the relevant *user* to see the types of resources that may be assigned default access.

- 6 Right-click the *resource type* for which you want to inherit all access rights and select **Inherit All**. This sets all of the transactions in this resource type to be inherited for this user. The user does not have access rights explicitly granted or denied for any transaction in this resource type, but instead inherits his or her group access rights for these transactions.

- 7 When prompted, click **Yes** to confirm the inherit all action.

To grant access rights for every transaction in every resource type:

- 1 Select **View | Projects**.
- 2 Select the project in the left-hand graphical tree for which you want to inherit default access.
- 3 Click the **Default Access** tab.
- 4 Click + to expand the **Users** folder.
- 5 Right-click the *user* for whom you want to inherit all access rights and select **Inherit All**. This sets all of the transactions in every resource type to be inherited for this user. The user does have access rights explicitly granted or denied for any transaction, but instead inherits his or her group access rights.
- 6 Click **Yes** to confirm the inherit all action.

Assigning Categories




In Dimensions RM you can grant or deny access to requirements, dashboards, documents, reports, collections and baselines for a category. To do this, you can use two different methods:

- [Role Based Category Access](#)
- [User Based Category Assignment](#)

Role based category assignment only allows a per-group assignment. User based category assignment allows to assign rights on categories for groups or users.

Role Based Category Access

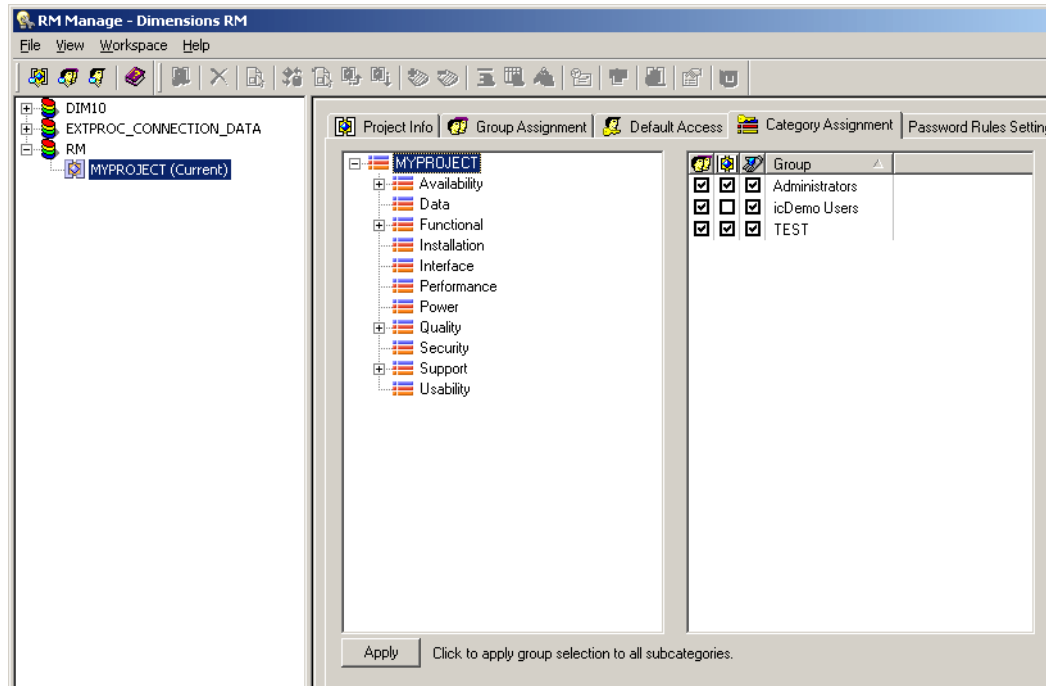
Permissions are assigned to categories through groups. Only users who are members of groups assigned to a category are able to view this category. The permissions for each category are determined by the permissions the user has from belonging to groups that are assigned to this category. The Administrators group always has permissions to all categories.

- The group column  in the right-hand list allows you to grant a user access, deny a user access, or allow a user to inherit the access rights of his or her parent groups.
- The project column  in the right-hand list shows the access that is provided from the project level. If this check box is selected, the group is explicitly allowed access to the category at the project level. It shows whether the group has full access at a global level. You cannot explicitly change this check box selection.
- The actual column  in the right-hand list shows the effective access at the category level. It shows what the group rights are after you change them.

To assign permissions to categories:

- 1 Select **View | Projects**.

- 2 Select the project in the left-hand graphical tree for which you want to set default access.
- 3 Click the **Category Assignment** tab.



- 4 In the tree in the left pane, select the category to which you want to assign permissions.
- 5 In the right pane, select the check box next to each group you want to assign permissions to this category.
- 6 If you want the group selection to apply to all subcategories, click **Apply** at the bottom of the tab.

User Based Category Assignment

Permissions are assigned to categories through groups. However, in RM Browser you can define which users are fulfilling this role for a category.



NOTE When adding a user to a group, the user has the rights of the group on all categories the group is assigned on.

Follow these steps to prepare a group for category assignment:

- 1 Start **RM Manage**.
- 2 Select the database your project resides in.
- 3 Log in and select the project.
- 4 Create a group (e.g. *Project_Manager*) if necessary.
- 5 Assign users to the desired group.

- 6 In Project View, select the **Default Access** tab.
- 7 Expand the *Project_Manager* group.
- 8 Select the **Categories** folder.
- 9 Clear the **FullAccess** box.
- 10 Assign other rights as required.

You can now assign users as a role to categories. For further information, see chapter "Assigning Access Rights" in *RM Browser User's Guide*.

Password Rules Settings Tab

The use of the **Password Rules Settings** tab is described in ["Setting Password Rules" on page 125](#).

Deleting a User from a Project

Users cannot be deleted once assigned to a project through any group. Users must be unassigned from projects before being deleted from the database. Only project administrators can remove users from projects. The administrative user that is generated for a project cannot be deleted under any circumstances. Dimensions RM maintains this ID internally.

Managing Security



NOTES As a good general practice, Serena recommends that no Dimensions RM group or user (including Administrators) ever be granted the class access rights for: REMOVE, UPDATE, and UPDATE_NON_CURRENT.

Update should not be granted to anyone on the system. All requirements changes should be performed with the replace function. This approach allows a fully auditable change history to be maintained and thus exposes Dimensions RM full capabilities. But this approach does require that you baseline requirements to capture the versions that you are currently capturing with the replace button. If users start using baselines and snapshots with other usage models (primarily updates and replace to version), they will be forced to create a new version just because someone else created a baseline. This may also limit the compare functions in Dimensions RM.

Group and user access rights are maintained within RM Manage. The administrator can assign default access to group and user accounts. For example, a user can be granted read-only privileges, but not be granted the ability to update data. In addition to granting specific privileges to users, the administrator can also allow a user to inherit rights from his or her groups. Users can be given access to more than one group and have different privileges for each. Therefore, a user can have specified privileges for different projects. The administrator can also grant or deny privileges at the group level.

Access rights are associated with each resource defined in a Dimensions RM database. Access rights determine whether a user can perform a particular task on a target

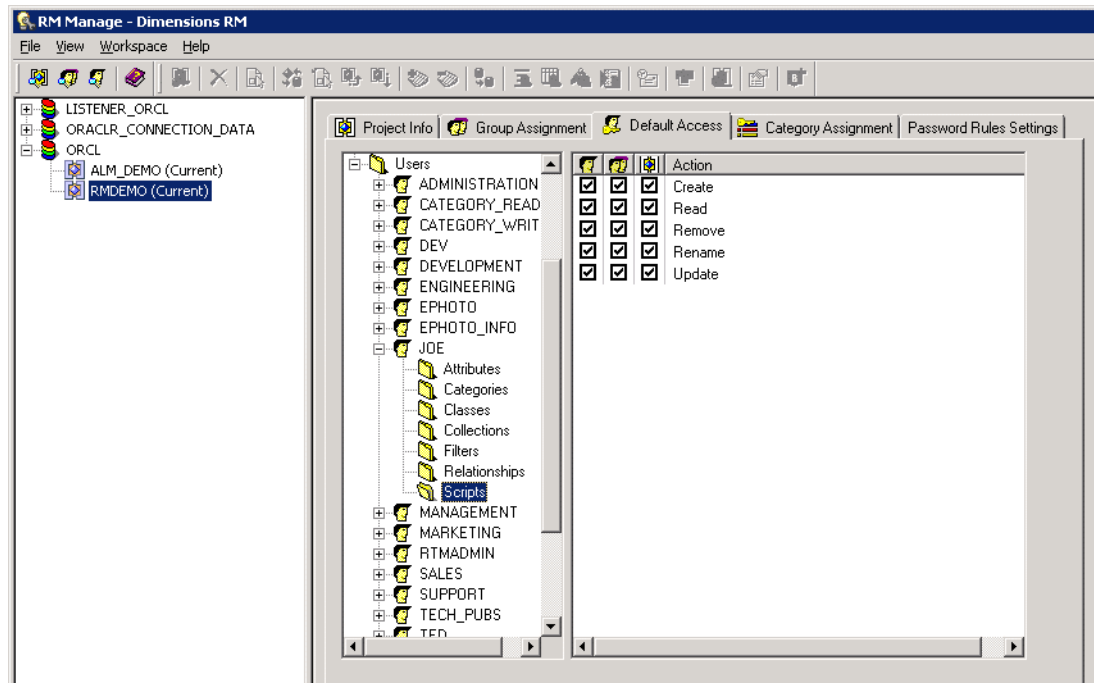
resource. (A user refers to an Dimensions RM user, not an Oracle or Windows user.) This section describes the relationships between the various entities that represent users and their permissions and the various means used to manipulate permissions.

Default Access


Dimensions RM security is maintained by assigning access rights for groups and users. The administrator may assign default access to a group or user, thereby eliminating the need to assign access to each item that is created in the other tools. The default access may be overridden. Refer to ["Class Definition" on page 129](#) and ["Order of Precedence" on page 88](#) for information on overriding default access.

It is through group membership that a user is added to a project. Once the user has been assigned to a project, default access may be set for the groups, as well as for the individual user. Each group has two states for default access: granted or not granted. Each user has three states for default access: granted, revoked or inherited. The combination of the user default access as well as the default access for the groups that he or she has been assigned to through the project determines the default access for that user for the project.

For example, in the following illustration, the user has been assigned to Project MYPROJECT through a group that the user is a member of and has default **Read** and **Create** access granted for the **Scripts** resource type as a user, but does not have this access granted as a default for the associated group.



The user's default access for **Scripts** shows that the **Create** and **Read** transactions are not selected in the group column . Those transactions have not been granted for the groups to which the user belongs. The user column represents the access that has been set for the user. The rows that are gray in the user column indicate that the user does not have any default access set for this transaction and will inherit the collective access of group. The rows that are unchecked ☐ indicate that the user has been explicitly denied default access for this transaction. The rows that are checked ☒ indicate that the user has been explicitly granted default access for this transaction.


The project column  indicates the net effect of the user and group default access for the project. In this case, the user has **Read** and **Create** access for the resource type of *Scripts*.


Database Administrator Accounts: Changing Passwords and Unlocking

See also ["Changing the Project Password" on page 54](#) and ["Changing a Project Administrator Password" on page 87](#).

Starting with Dimensions RM 11.2.1, for the Dimensions RM database administrator Oracle accounts ICDBA, ICADMIN, and ICPROJECTS you now have the option of changing their passwords or unlocking them from within RM Manage. The unlock function unlocks an account and enables the user.

To change the ICDBA, ICADMIN, or ICPROJECTS account password:

- 1 Select the database whose administrator accounts (one or more of ICDBA, ICADMIN, or ICPRROJECTS) you want to change associated passwords.
- 2 Select **File | Change Administrator Password**, click the **Change Administrator Password** button , or right-click the database and select **Change Administrator Password**.
- 3 The **Change administrator password** dialog box opens.



The dialog box titled "Change administrator password" contains the following sections:

- Select account to modify:** A dropdown menu labeled "Account" with "ICADMIN" selected.
- Unlock account:** An unchecked checkbox.
- Change account password:** Two text input fields labeled "Password" and "Confirm Password".
- Enter ICDBA account password:** Two text input fields labeled "Account Name" (containing "ICDBA") and "Password".
- Buttons: "Change" and "Cancel" at the bottom.

- 4 In the **Select account to modify area**, select the ICDBA, ICADMIN, or ICPROJECTS account as appropriate from the **Account** drop-down list.
- 5 In the **Change account password** area, type the new password that you want to assign to the chosen account.



IMPORTANT! The password must be in upper case only.


- 6 In the associated **Confirm Password** field, re-type the password.

- 7 In the **Enter ICDBA account password** area (note for ICDBA, this will be entitled **Enter current ICDBA account password**), type the current ICDBA password.
- 8 Click **Change**.



IMPORTANT! For the Oracle 11g RDBMS and the 11g versions of the Serena-Supplied Runtime RDBMS, Oracle account passwords expire by default after 180 days. Unless your DBA has re-configured such RDBMS to override this default and allow permanent passwords, you must to change the ICDBA password before 180 days elapse using the RM Manage **Change Administrator Password** menu item, see ["Database Administrator Accounts: Changing Passwords and Unlocking"](#) on page 85.

To unlock the ICDBA, ICADMIN, or ICPROJECTS account:

- 1 Select the database whose administrator accounts (one or more of ICDBA, ICADMIN, or ICPROJECTS) you want to unlock.
- 2 Select **File | Change Administrator Password**, click the **Change Administrator Password** button , or right-click the database and select **Change Administrator Password**.
- 3 The **Change administrator password** dialog box opens.

- 4 In the **Select account to modify area**, select the ICDBA, ICADMIN, or ICPROJECTS account as appropriate from the **Account** drop-down list.
- 5 Check the **Unlock account** check box. This will gray out the **Password** and **Confirm Password** fields in the **Change account password** area.
 - If you chose the ICADMIN or ICPROJECTS account, simply type the ICDBA password in the **Password** field of the **Enter ICDBA account password** area and click **Unlock**.

- If you chose the ICDBA account, the **Enter ICDBA account password** area will be replaced by an **Enter SYSDBA account password** area.

The screenshot shows a Windows-style dialog box titled "Change administrator password". It contains three main sections. The first section, "Select account to modify", has a dropdown menu labeled "Account" with "ICDBA" selected. The second section, "Change account password", is preceded by a checked checkbox labeled "Unlock account:". It contains two text boxes: "Password" and "Confirm Password", both of which are empty. The third section, "Enter SYSDBA account password", contains two text boxes: "Account Name" (pre-filled with "sys") and "Password" (empty). At the bottom of the dialog are two buttons: "Unlock" and "Cancel".

The **Account Name** field of the **Enter SYSDBA account password** area will be pre-populated with the SYSDBA account you specified when you created the ICDBA account (for example, SYS).

In the associated **Password** field, type the associated password for the account name.




NOTE For the Serena-Supplied Runtime RDBMS, the default password for the SYS account is CHANGE_ON_INSTALL.

Click **Unlock**.

Changing a Project Administrator Password

See also ["Changing the Project Password" on page 54](#) and ["Database Administrator Accounts: Changing Passwords and Unlocking" on page 85](#).

To change the administrator password for the currently selected project:

- 1 Select the database (for the current selected project) for which you want to change the project administrator password.
- 2 Select **File | Change User Password**, click the **Change User Password** button , or right-click the database and select **Change User Password**. The **Change ProjectPassword/ProjectAdmin Password** dialog box opens.
- 3 Enter a new password and confirmation password for the current project administrator.
- 4 Click **OK**.

Order of Precedence

The use of groups and the ability to explicitly allow and disallow users access to a resource make it possible that a user may be both allowed and denied access to a specific resource. To resolve this potential conflict into a simple Boolean condition or access right, an order of precedence is used by Dimensions RM security from highest to lowest precedence:

Source of Access	Allowed Status
An individual user has been explicitly denied access to a resource/transaction.	Denied
An individual has been granted explicit access to a resource/transaction.	Allowed
An individual has been granted access to a resource/transaction through membership in a group, which has been granted access.	Allowed
An individual has been explicitly denied access to an entire resource type through default access rights.	Denied
An individual has been explicitly allowed access to an entire resource type through default access rights.	Allowed
An individual has been allowed to an entire resource type through membership in a group, which has been granted access rights to a resource type.	Allowed
There exist no entries specifying access rights for the individual or any groups that the individual is a member of in the access rights list.	Denied



NOTE Even if the administrator denied certain users the Delete Baseline and Rename Baseline transactions, these users can delete and rename a baseline if they created the baseline. In this situation, the permissions that are denied by the administrator are overridden.

Valid Transactions

The valid transactions for Dimensions RM entities are listed in the following table.

Transaction	Definition
Attribute Transactions	
Read	The user can see the attribute value.
Update	The user can change the attribute value.
Category Transactions	

Transaction	Definition
FullAccess	For users, for internal use only. For groups, the users in the group have project level permission to move or copy scripts, filters, and traceability reports into other categories, and move requirements between categories, even if they are not in a group that has permissions to the individual categories. For information about assigning groups permissions to individual categories, see "Assigning Categories" on page 81 . NOTE: To add, delete, rename, or move categories, users must be in the Administrator's group. The FullAccess transaction has no effect on the ability to perform these actions.
Class Transactions	
CMLock	The user can lock class objects for configuration management purposes.
Create	The user can create new class objects.
CreateCR	The user can create new change requests for class objects.
Delete	The user can mark class objects as deleted.
ExecuteCR	The user can accept or reject change requests.
Expand	The user can expand class objects.
Focus	The user can focus class objects.
Link	The user can create generic links to class objects.
Read	The user can read class objects.
Remove	The user can remove class objects.
Replace	The user can replace class objects.
Undelete	The user can undelete class objects.
Unlock	The user can unlock class objects.
Update	The user can update objects with a status of "Current."
UpdateNonCurrent	The user can update objects where the status is not "Current."
UpdateCR	The user can update an object with a status of "Proposed."
Container Transactions	
Link Requirement to Dimensions Project	The user can add a requirement to a container (including collection) that is associated with a Dimensions CM project.
Associate to a Dimensions Project	The user can associate a container (including collection) with a Dimensions CM project.
Collection Transactions	
Link Requirement to Dimensions Project	The user can add a requirement to a collection that is associated with a Dimensions CM project.

Transaction	Definition
Associate to a Dimensions Project	The user can associate a collection with a Dimensions CM project.
Create	The user can create a new collection.
Create Baseline	The user can create a baseline from a collection.
Create Collection Based on Existing	The user can create a collection based on an existing collection.
Delete Baseline	The user can delete baselines.
Link	The user can create links to collections.
Remove	The user can remove a collection.
Rename Baseline	The user can rename a baseline.
Unlock	The user can unlock collections that are not locked.
Update	The user can create/edit alias's and modify parent/child links for a collection.
Filter Transactions	
Create	The user can create new filters.
Read	The user can see and execute filters.
Remove	The user can remove filters.
Update	The user can change filters.
Relationship Transactions	
Clear Suspect Links	The user can clear suspect links of one requirement at a time.
Create	The user can create new links for relationships.
Delete	The user can delete links for relationships.
Mass Clear Suspect Links	The user can delete suspect links of one or several requirements at a time.
Modify	The user can change relationship attribute values.
Read	The user can look at relationship links.
Remove	The user can remove relationship links.
Undelete	The user can undelete relationship links.
Update	The user can update relationship links with a status of "Current."
Script Transactions	
Create	The user can create new scripts. NOTE: If you do not have Create permission, you can create a new script; however, you cannot save it.
Read	The user can see and execute scripts.
Remove	The user can remove scripts.
Rename	The user can rename scripts.
Update	The user can change scripts.

Database Password Encryption


Database password encryption lets you control the password for the ICADMIN and ICPROJECTS Oracle user accounts. This prevents unwanted personnel from connecting to the Serena-Supplied Runtime database or your own Oracle database to read and modify data.

To accomplish this, you use a file named `security.dat` that contains the password in an encrypted form. Starting in Dimensions RM 11.2.1, the encryption algorithm used was enhanced to 3-DES using three encryption keys, and these keys can be changed using the RM Manage **Change Encryption Keys** dialog box.

For the database concerned, the `security.dat` file contains :

- A database identifier (for example, [RM]).
- The three encryption keys.
- The encrypted password for ICADMIN.
- The encrypted password for ICPROJECTS. By default this will be the same as that for ICADMIN but can be different (these two encrypted passwords are generated by the **Enter ICADMIN/ICPROJECTS password** dialog box whose password fields you have to fill in when creating the first project in a database—see ["Creating a New Project" on page 47](#)).

To change the ICADMIN and ICPROJECTS encryption keys:

- 1 Select the database whose ICADMIN and ICPROJECTS encryption keys you want to change.
- 2 Select **File | Change Encryption Keys**, click the **Change Encryption Keys** button , or right-click the database and select **Change Encryption Keys**.
- 3 The **Change Encryption Keys** dialog box opens.



- 4 In the **Change encryption keys** area, type the new keys in the **Key1**, **Key2**, and **Key3** fields.
- 5 In the associated **Confirm Password** field, re-type the password.
- 6 In the **Enter ICDBA account password** area, type the current ICDBA password.
- 7 Click **Change**.

Changing the Location of the security.dat File

The default `security.dat` file is automatically installed in top-level of the Dimensions RM installation directory (RTM_HOME). You can change the default location during installation or move it to another location later. If you do so, each user must then use RM Manage to specify its location.



NOTE If no `security.dat` file is found in the specified location, the default encrypted passwords are used. These are the same encrypted passwords that are in the default `security.dat` file that was installed.

For information about using RM Manage to specify the location of the `security.dat` file, see ["Setting the Location of the Database Password File" on page 44](#).

Managing Databases

In the Dimensions RM environment, a database represents an instance of Oracle. The database can contain multiple Dimensions RM projects. The databases that are displayed are determined by the contents of the `tnsnames.ora` file.

Before you can access the projects contained in a database, you must first log on using a valid Dimensions RM user and password. Once you have been validated, the projects that you are able to administer will be available. The list of users and groups is defined once for a database and is shared across all projects contained within that database.

You can have any number of Dimensions RM projects in the Serena-Supplied Runtime RDBMS database or your own company's Oracle database. When you create a project, you can import data from a saved project or create a "blank" project. Dimensions RM allows you to choose the size of the tablespace datafile, which is a unit of storage where data is physically stored. You also can convert a database from a previous version of Dimensions RM.

Logging onto a Database

To log on to a database:


- 1 Click a database or expand the database folder.

The **Logon Information** dialog box opens.

- 2 Enter an administrator user name and password.
- 3 Click **OK**.

Logging on as a Different User

To log on as a different user:

- 1 Select the database to which you want to log on.
- 2 Select **File | Change User**, click the **Change User** button , or right-click the database and select **Change User**.
- 3 Enter the new user name and password and click **OK**.

Converting a Database or Project

The conversion tool allows you to upgrade older versions of a Dimensions RM project database to the current version. If you upgrade Dimensions RM to take advantage of improved features, you must convert the database and projects.


This tool converts any Dimensions RM project database after version 3.7.2. If you have a version that predates 3.7.2, you must upgrade to at least 3.7.2 before the upgrade to the current version can take place.

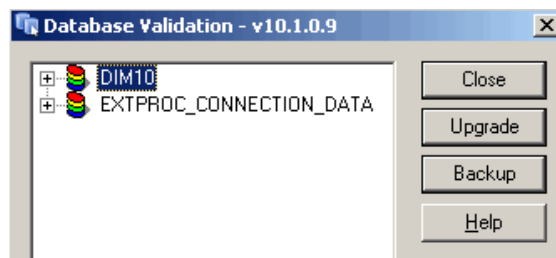
For versions prior to version 5, any users who had access rights within the project or who were allowed access to the project will be given a login for the converted project. Administrators for the project must have administrator privileges for the converted project. Before you upgrade any project, perform a backup, see ["Backing Up a Project Account" on page 55](#). The backup file should be kept in your archives.

During the upgrade, the project is incrementally converted until it gets to the current version. The last step may take some time while it generates stored procedures within the project area and then creates users and their access rights for that project.

Pre-existing user accounts with access to the project or access rights within the project will be created in the new converted database. Pre-existing users will have unknown last names and will need to be modified manually using RM Manage after the upgrade has completed. Any administrator for the project will be able to administer the project when logging on. In addition to existing administrators, pre-existing user profiles will be generated with the name <project>Admin (for example, SECURITYAdmin).

To convert a database or project:

- 1 Select the database that contains the project you want to convert.
- 2 Select **File | Convert Database**, click the **Convert Database** button , or right-click the database and select **Convert Database**. This starts the conversion tool.



- 3 To expand the database that contains the project you want to convert, click +.
- 4 Enter the ICDBA password.
- 5 Select the project and click **Upgrade**.
- 6 To start the upgrade, click **Continue**. The upgrade may take several minutes to complete.



NOTES

- The Document View perspective in RM Browser requires title and description attributes. When you upgrade a project that does not have a title and description attribute set for each class, a message is displayed that informs you that the upgrade process will add attributes if no existing attributes are acceptable.

After you upgrade, review each class and class type and, if necessary, select or create more appropriate attributes to use for the title and description.

The upgrade process could select an implicit attribute such as *Created by* for the title or description attribute. If a Class Definition diagram includes an implicit attribute for the title or description attribute, you must change the attribute to a user-defined attribute, or you will be unable to save the Class Definition diagram. If an appropriate user-defined attribute does not exist, you must create one.

For information about setting the title and description attributes, see ["Specifying Attributes" on page 158](#). For more information about Document View, see the *Serena Dimensions RM Browser User's Guide*.

- The upgrade process detects any non-unique attribute name and prompts you for a new name. For example, the upgrade process prompts you for a new name for a user-defined attribute named *Category* and changes the attribute name to the new name. This is done to prevent a conflict with a user-defined attribute named *Category* and the implicit attribute named *Category*.

- 7 When the resources have been updated, click **Close** to exit the conversion tool.


Administering Tablespaces

A tablespace is a logical storage unit. Each project is physically stored in one or more data files associated with a tablespace. Initially, only one file is associated with the tablespace, but you can add more files as you need them.

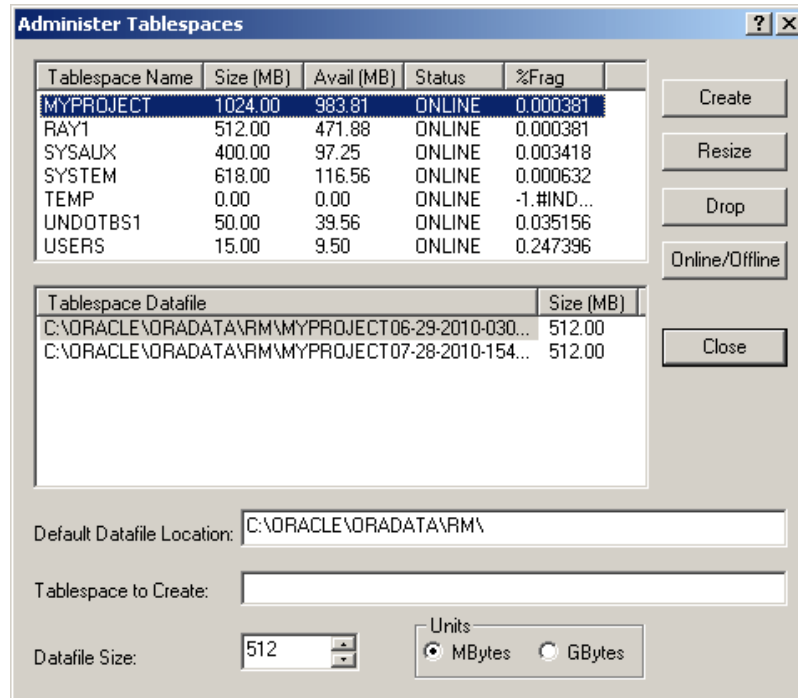
The size of the tablespace is determined by the size of the data file or combined data files that make up the tablespace.

Creating a Tablespace

To create a tablespace:

- 1 Select the database in which you would like to create a tablespace.
- 2 Select **File | Administer Tablespaces**, click the **Administer Tablespaces** button , or right-click the database and select **Administer Tablespaces**.
- 3 If prompted, enter the ICDBA password and click **OK**.

The **Administer Tablespaces** dialog box opens.




- 4 Enter a name in **Tablespace to Create** for the tablespace.
- 5 In the **Datafile Size** field, enter or select a datafile size.
- 6 Select a unit for the size. You can choose megabytes or gigabytes.
- 7 Click **Create**.

Dropping a Tablespace

When you drop a tablespace, the tablespace and all data in it are deleted.


To drop a tablespace:

- 1 Select the database in which you would like to drop a tablespace.
- 2 Select **File | Administer Tablespaces**, click the **Administer Tablespaces** button , or right-click the database and select **Administer Tablespaces**.
- 3 If prompted, enter the ICDBA password and click **OK**. The **Administer Tablespaces** dialog opens.
- 4 Select the tablespace you want to drop from the top list.
- 5 Click **Drop**.
- 6 Click **Yes** to confirm the deletion when prompted.


Resizing a Tablespace

You can resize a tablespace when you are running low on available space. In general, you should consider increasing tablespace when available space is about 5 MB. How much you resize the tablespace varies, depending how much work you intend to do, how much disk space is available, and at what stage you are in your project.


To resize a tablespace:

- 1 Select the database in which you would like to resize a tablespace.
- 2 Select **File | Administer Tablespaces**, click the **Administer Tablespaces** button , or right-click the database and select **Administer Tablespaces**.
- 3 If prompted, enter the ICDBA password and click **OK**. The **Administer Tablespaces** dialog box opens.
- 4 Select a tablespace in the top list.
- 5 If you want to resize an existing tablespace file, select the file in the bottom list. If you want to create another tablespace file, do not select anything in the bottom list.
- 6 Click **Resize**. You will be asked if you want to resize an existing tablespace file. Select **Yes** if you want to resize an existing tablespace file; otherwise a new tablespace file will be created.

Placing a Tablespace Online or Offline**To place a tablespace online:**

- 1 Select the database which you would like to place online or offline.
- 2 Select **File | Administer Tablespaces**, click the **Administer Tablespaces** button , or right-click the database and select **Administer Tablespaces**.
- 3 If prompted, enter the ICDBA password and click **OK**. The **Administer Tablespaces** dialog box opens.
- 4 Select an offline or online tablespace in the top list.
- 5 If you want to place the tablespace online, select the file in the bottom list. If you want to create another tablespace file, do not select anything in the bottom list.
- 6 Click **Online/Offline**.

Setting Default Location for Tablespace**To set the default location for a tablespace:**

- 1 Select the database in which you would like to set a default tablespace location.
- 2 Select **File | Administer Tablespaces**, click the **Administer Tablespaces** button , or right-click and select **Administer Tablespaces**.
- 3 If prompted, enter the ICDBA password. The **Administer Tablespaces** dialog box opens.
- 4 Enter a location in the **Default Datafile Location** box.

Managing Locks

Dimensions RM classes, objects, collections, and source documents are implemented as sets of values within database tables. The set of values that defines a single object or collection is referred to as a *record*. When records are locked, they cannot be modified.

RM Manage locks objects in use, such as documents opened by users. However, open records may remain locked after a system crash. Lock management is provided as a means of freeing records that have been locked as a result of a system crash.

It is also desirable to lock records temporarily to prevent others from changing the contents while some other action takes place. Lock management also provides a configuration management lock (CMLock), which is a way to lock records that should not be changed.

For security, only those records that are locked by the current user will be available to unlock; or, if the current user has been granted Unlock privileges, all of the user locked records will be available to unlock. Only users who have been granted CMLock privileges will be allowed to lock records for CM purposes. Only users who have been granted CMLock privileges will be allowed to unlock CM locked records.




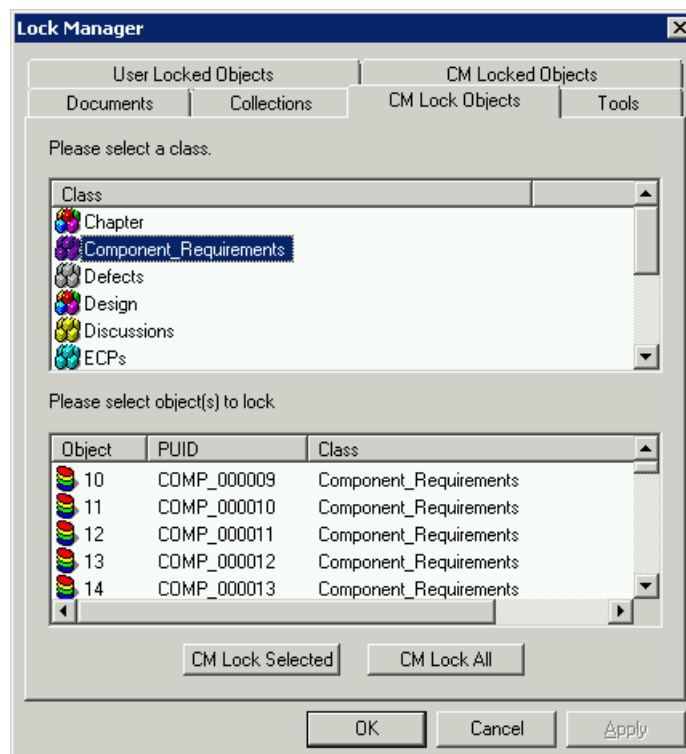
NOTE You cannot use CMLock to unlock objects that are baselined.

Locking Objects

Use CM Lock when you want to keep an object from being modified. CM Lock can be used only for objects.

To lock objects:

- 1 Select a project.
- 2 Select **File | Administer Locks**, click the **Administer Locks** button , or right-click a project and select **Administer Locks**. The **Lock Manager** dialog box opens. .





- 3 Click the **CM Lock Objects** tab.

- 4 Select a class from the class list.
- 5 Select the objects you want to lock from the object list.
- 6 Click **CM Lock Selected** to lock only the selected objects, or **CM Lock All** to lock all of the objects for the selected class.



Unlocking Collections

To unlock collections:

- 1 Select a project.
- 2 Select **File | Administer Locks** or click the  button. The **Lock Manager** dialog box opens.
- 3 Click the **Collections** tab.
- 4 Select the locked collections you want to unlock from the list. Locked collections are indicated by a  icon.
- 5 Do one of the following:
 - Click **Unlock Selected** to unlock only the selected collections or **Unlock All** to unlock all the locked collections.
 - Right-click and select **Unlock**.

Unlocking Documents

To unlock documents:

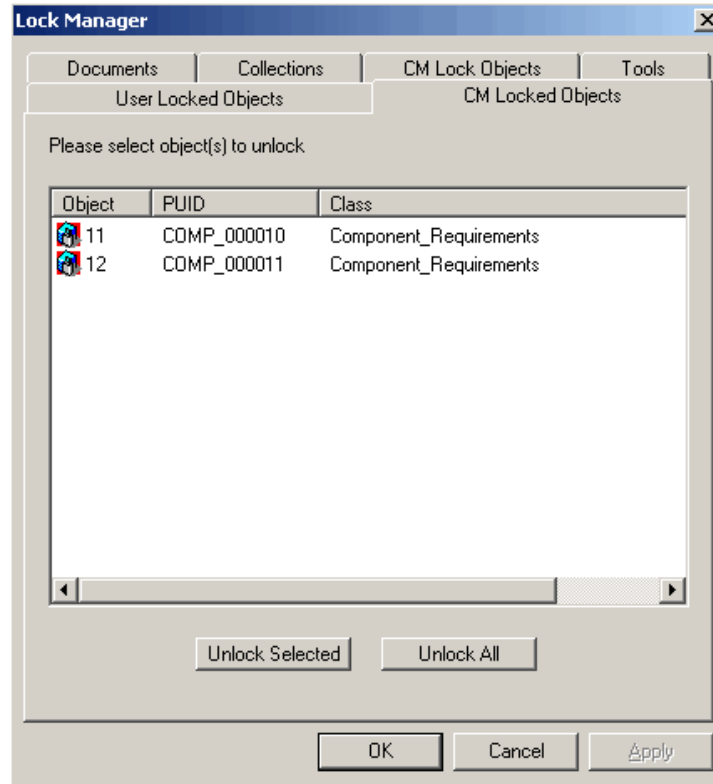
- 1 Select a project.
- 2 Select **File | Administer Locks** or click the  button. The **Lock Manager** dialog box opens.
- 3 Click the **Documents** tab.
- 4 Select the locked documents you want to unlock from the list. Locked documents are indicated by a  icon.
- 5 Do one of the following:
 - Click **Unlock Selected** to unlock only the selected documents or **Unlock All** to unlock all of the locked documents.
 - Right-click and select **Unlock**.


Unlocking Objects

To unlock objects:

- 1 Select a project.
- 2 Select **File | Administer Locks** or click the  button. The **Lock Manager** dialog box opens.


- 3 Click the **CM Locked Objects** tab.



- 4 Select the locked objects you want to unlock from the list. Locked objects are indicated by an  icon.
- 5 Do one of the following:
 - Click **Unlock Selected** to unlock only the selected objects or **Unlock All** to unlock all of the locked objects.
 - Right-click and select **Unlock**.

Unlocking Tools

To unlock tools:

- 1 Select a project.
- 2 Select **File | Administer Locks** or click the  button. The **Lock Manager** dialog box opens.
- 3 Click the **Tools** tab.
- 4 Select the tools you want to unlock from the tool list.
- 5 Click **Unlock Selected** to unlock only the selected tools or **Unlock All** to unlock all of the locked tools.

E-mail Registration

The project administrator can administer e-mail rules on a project-by-project basis. This section contains information on configuring e-mail messages and rules, and creating, modifying, and deleting rules.

Configuring E-Mail Messages and Rules

You can configure the following items from the **E-Mail Registration** dialog box:

- **Classes**—Individual classes can be enabled and disabled, thereby providing a simple method of disabling all rules that have been defined for a specific class.
- **Display Attributes**—A list of attributes that should be included in all e-mails can be specified. Each user can define their own set of attributes to be included in the e-mail that will be inserted after the administrator-defined attributes.
- **Message Text**—A paragraph of pre- and post-message text can be defined. The pre-message text will be inserted at the start of the e-mail message, and the post-message text will be inserted at the end.
- **Subject Text**—The subject line for the e-mail can be defined. Attribute values can be included in the subject line.
- **Users**—Rules for all users can be administered in a single place. Rules can be created, modified and deleted for any user.

Enabling and Disabling Classes

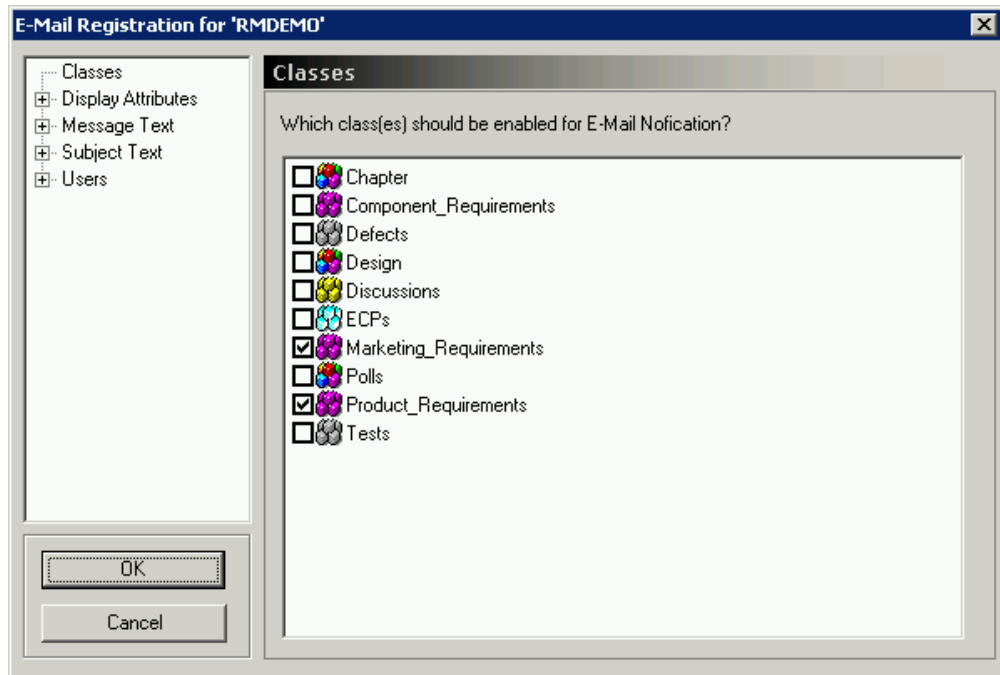
You can define which class or classes should be enabled for e-mail notification. The RM Mail service only processes rules for classes that have been enabled.

You typically want to temporarily disable e-mail notification for a class while performing a large update operation, such as a batch update. Disabling e-mail notification for a class does not delete the rules that have been defined for the class; it simply suppresses the processing of rules for the class.

To enable or disable e-mail notification for a class:

- 1 Right-click the project, and select  **Administer Email**. The **E-Mail Registration** dialog box opens.

- 2 Select the **Classes** branch. A list of all classes for the project is displayed in the right part of the dialog. Classes that are enabled have a checkmark in the check box next to them, while classes that are disabled have an empty check box next to them.



- 3 Select the check box to the left of the desired class to enable or disable e-mail notification for it.

Defining Display Attributes

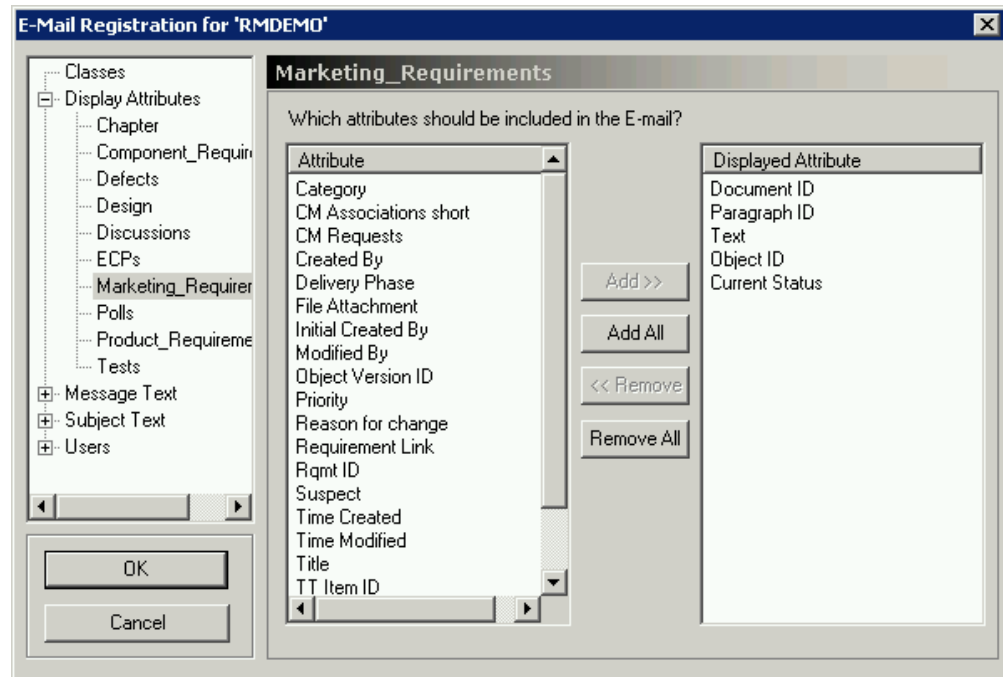
You can define a list of attributes that should be included with all e-mails sent for a specific class.

You can include a default set of attributes for all classes that do not have a specific set of attributes defined. The values for the administrator-defined attributes will be included in the e-mail prior to the attributes that the user selects to display when creating a rule.

To define which attributes should be included:

- 1 Right-click the project, and select **Administer Email**. The **E-Mail Registration** dialog box opens.
- 2 Expand the **Display Attributes** branch in the left-hand graphical tree and select the desired class.

On the right, two lists are displayed: the left list contains a list of attributes that will not be included with the e-mail, while the list on the right displays a list of attributes that will be included.



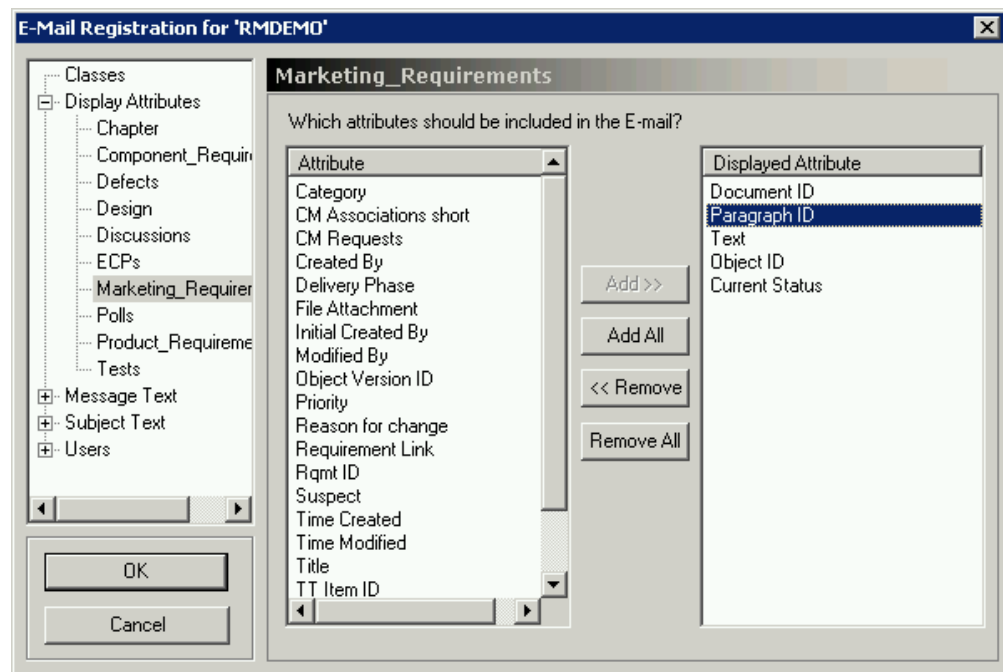
- 3 Select the attribute in either list and click **Add** or **Remove**.

To change the order of attributes:

- Drag-and-drop the attributes in the **Displayed Attribute** list to the desired order.

To define a default set of attributes:

- 1 Select the **Displayed Attributes** branch.



- 2 Add or remove attributes as described earlier in this section.

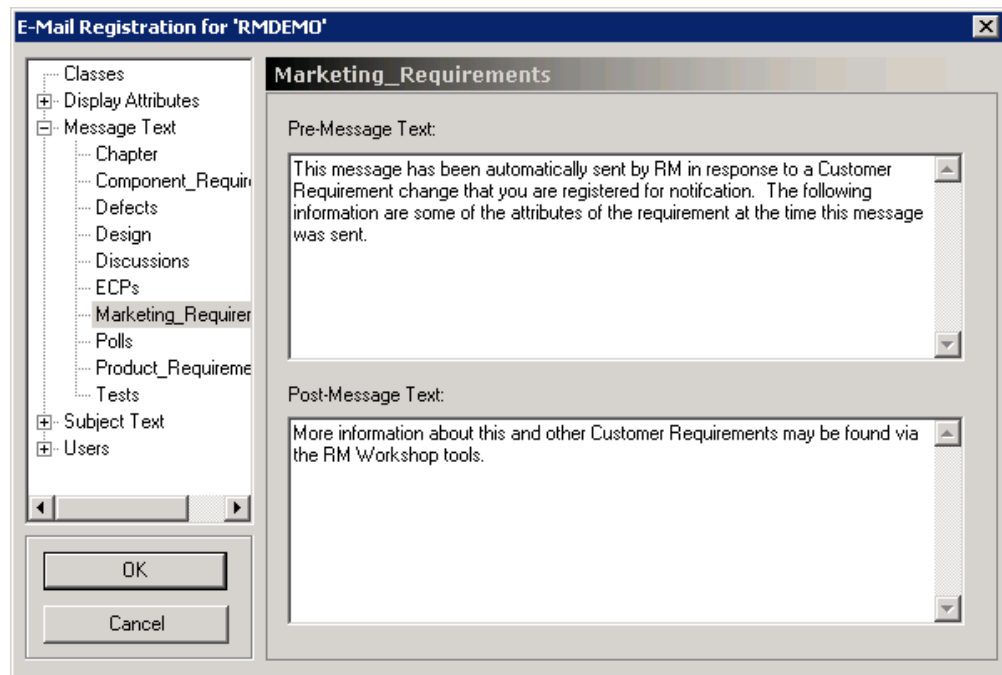
Defining Message Text

You can define a block of pre- and post-message text for each class. The pre- and post-message text is included with all e-mails generated by rules for the class. The pre-message text is included as the very first item in the e-mail while the post-message text will be included as the last item in the e-mail.

You can include a default pre- and post-message for all classes that do not have specific pre-message or post-message text defined.

To define pre-message and post-message text:

- 1 Expand the **Message Text** branch and select the appropriate class.



- 2 Enter the pre-message and post-message text into the appropriate field in the right pane.



NOTE Attribute values cannot be included in this text.

To define default pre-message and post-message text:

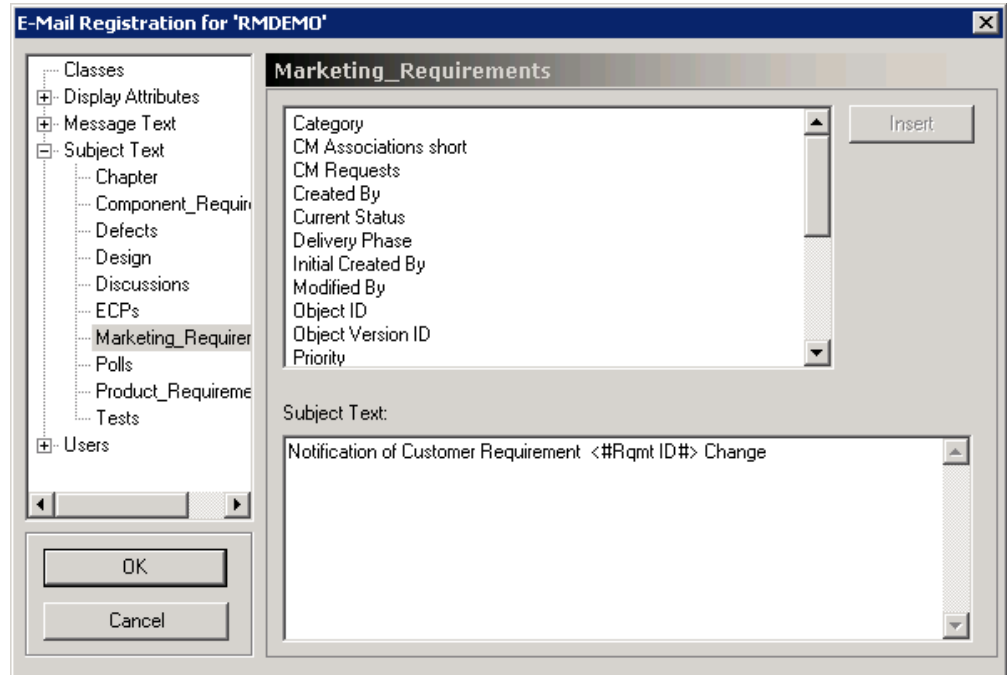
- 1 Select the **Message Text** branch.
- 2 Enter text as described earlier in this section.

Defining the Subject Text

You can define the text that goes into the subject line for the e-mail for each class. The subject text can contain placeholders for attribute values that will be expanded before the e-mail is sent. Default subject text can be defined for all classes that do not have a specific subject line.

To define subject text:

- 1 Expand the **Subject Text** branch and select the appropriate class.



- 2 Type the subject text.
- 3 To include an attribute value in the subject line, either select the desired attribute from the list shown above the subject text and click **Insert** or type the attribute's display name into the string surrounded by the strings <# and #>.

To define default subject text:

- 1 Select the **Subject Text** branch.
- 2 Enter the subject text as described earlier in this section.

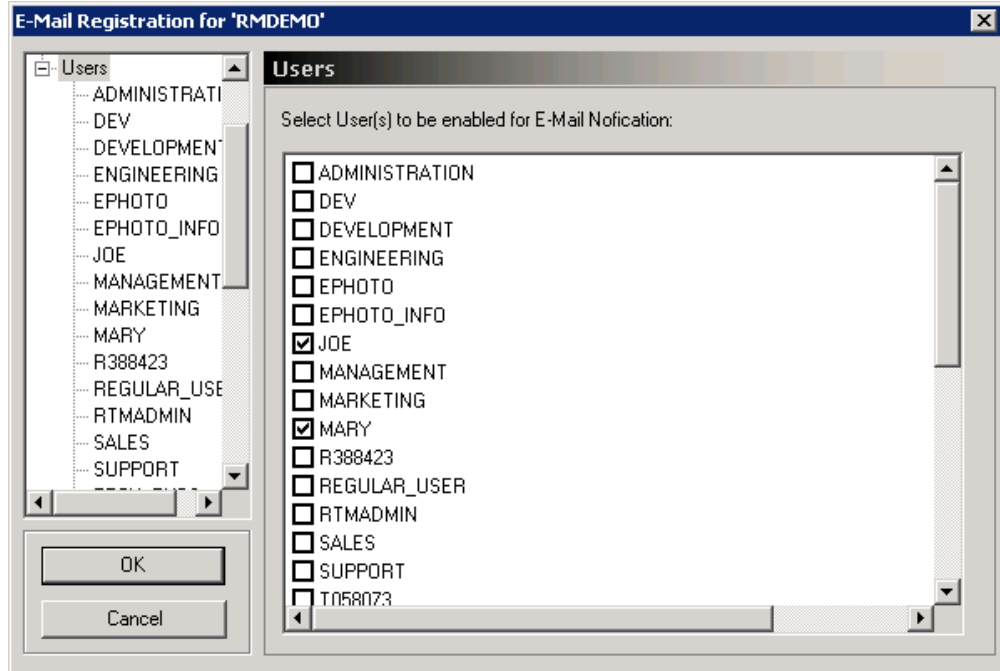
Enabling User Rules

You can define which users have e-mail notifications enabled. The RM Mail service only processes rules for users that have e-mail notification.

You typically disable e-mail notification temporarily for users while they are on vacation. Disabling e-mail notification for a user does not delete the rules that have been defined by the user. It simply suppresses the processing of rules for the user.

To enable or disable e-mail notification for a user:

- 1 Expand the **Users** branch.



User rules that are enabled have a selected check mark next to them, and user rules that are disabled have a cleared check box next to them.

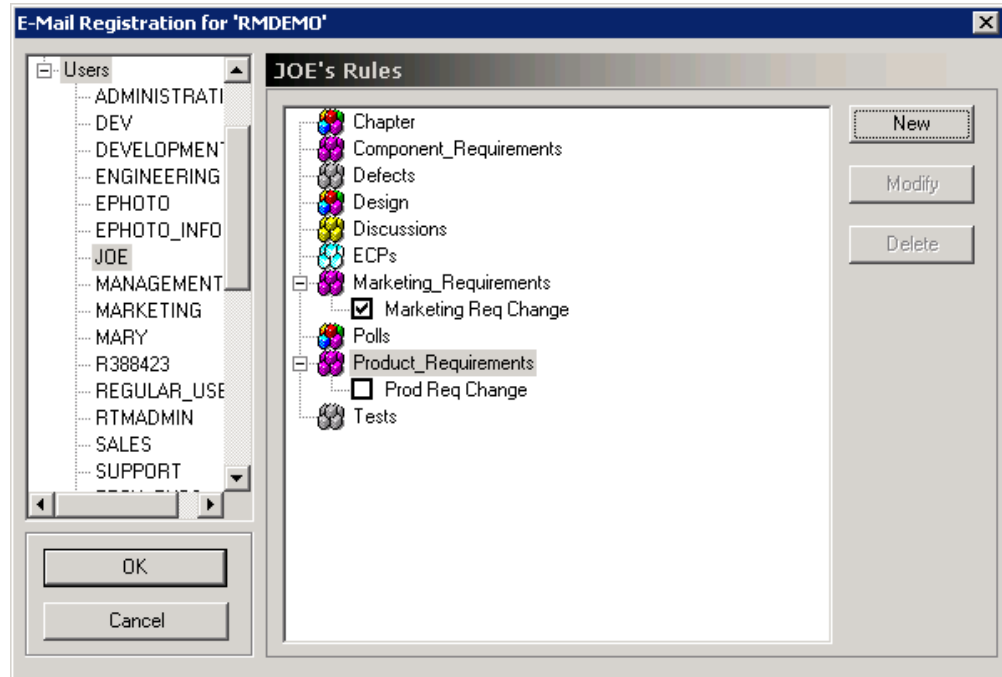
- 2 Select the check box to the left of the user to enable or disable e-mail notification.

Editing User Rules

The project administrator has access to the rules created by all users. As a result, the administrator can add, modify, or delete rules for any users that have been assigned to the project.

To edit user rules:

- 1 Expand the **Users** branch and select a user.



The right pane will show a list of all classes that can be expanded to show the rules that have been created for the class. Rules that are enabled have a selected check box next to them, while rules that are disabled have a cleared check box next to them.

- 2 Click the check box to the left of the desired rule to enable or disable rules.

Creating a Rule

The following sections describe the E-Mail Rules wizard, which guides you through the creation of a new rule.

To start the wizard:

- 1 In the **E-Mail Registration** dialog box, select the class for which the rule should be created.
- 2 Click **New**.

Naming the Rule

Each rule that is created must have a descriptive name associated with it that is displayed in the tree control. To name a rule:

- 1 Provide the name for the rule in the **What should the rule be called?** field of the **E-Mail Rules Wizard**.
- 2 Configure whether the rule should be initially enabled or disabled.

Defining the Trigger Condition

The second step of creating a new rule is to define the triggering condition for when the e-mail should be sent:

The triggering conditions falls into the following two broad categories:

- **When an object created by me is modified**

Choose this option if you want to be notified whenever an object that you create has been changed. This will trigger an e-mail to be sent to you regardless of the change. If this option is selected, the remainder of the items on the page are hidden because they are no longer applicable.

- **When attribute has value...**

Choose this option to specify that an e-mail should only be sent if the specified set of constraints are met. To add constraints, select the attribute from the **Attribute** drop-down menu and select the value that the object must have before an e-mail is sent from the **Value** drop-down menu. Multiple constraints can be added and these constraints are totaled to determine if an e-mail should be sent. Constraints can only be added to list attributes.

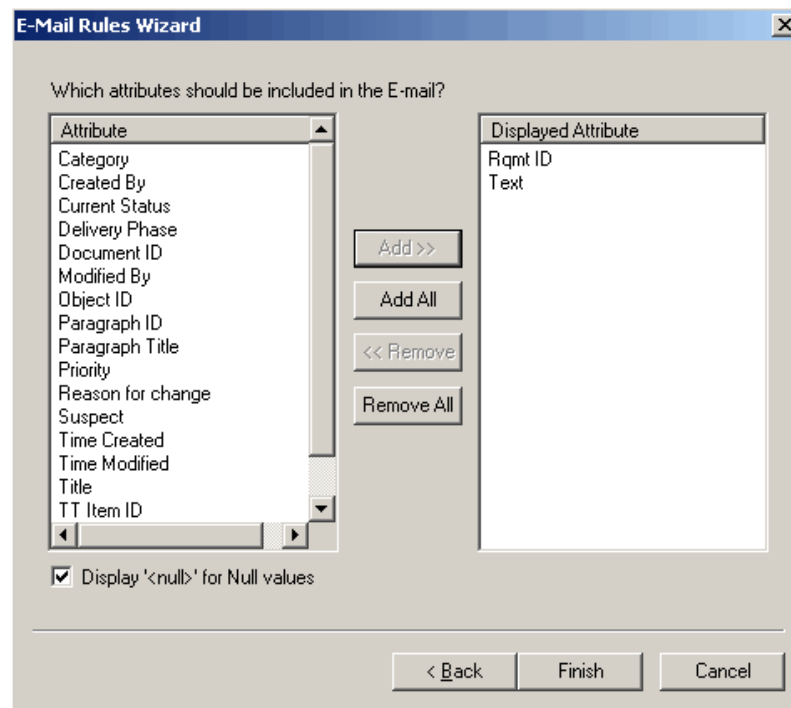
Defining the Attributes to be Monitored

If you selected **When attribute has value ...** in the previous step, you must determine which attribute should be monitored for a change in value. The mail service only processes a rule if the values change for attributes selected in this step.

This page of the **E-Mail Rules Wizard** is not displayed if you selected **When object created by me is modified** in the previous step, because an e-mail is sent regardless of which attributes change.

Selecting the Attribute to Include in the E-Mail

Finally, you need to determine which attributes to include in the e-mail. The list on the left contains a list of attributes that will not be included with the e-mail, while the list on the right displays a list of attributes that will be included.



To add an attribute to the list of attributes included with the e-mail, either double-click the attribute in the left hand list or select the attribute and click **Add**. To remove an attribute from the list of attributes included with the e-mail, either double-click the attribute in the right list or select the attribute and click **Remove**.

Dragging and dropping the attributes in the **Displayed Attribute** list changes the order in which the attributes are included in the e-mail. Note that the attributes are included in the e-mail in the order they appear in the **Displayed Attribute** list.

The values for the administrator-defined attributes will be included in the e-mail prior to the attributes that you select to display when creating a rule.

If the **Display <null> for Null values** check box is selected, the string "<Null>" is included next to the attribute display name in the e-mail if the attribute does not have a value assigned to it. If it is not selected, nothing will be displayed after the attribute display name.

Modifying a Rule for a User

To modify a rule for a user:

- 1 Expand the users branch.
- 2 Select the user.
- 3 In the right-hand pane, expand the class for which the rule is defined.
- 4 Select the rule.

- 5 To run the **E-Mail Rules Wizard**, click **Modify**.

Deleting a Rule for a User

To delete a rule for a user:

- 1 Expand the users branch.
- 2 Select the user.
- 3 In the right hand pane, expand the class for which the rule is defined.
- 4 Select the rule.
- 5 Click **Delete**.

RM Mail Service

The RM Mail service is designed to provide an automated mechanism for sending e-mail to registered users when a user-defined set or criteria is matched by an object in the database. The functionality is implemented in three different segments:

- **NT Service**—At least one Windows machine on the network must be configured to run the RM Mail service. RM Mail monitors the selected projects and dispatches e-mails as the specified criteria are met. Note that a single instance of RM Mail can monitor multiple projects on multiple database locations. In order to install the RM Mail server components, you must perform a custom installation and install the *RM Mail* component.
- **Configuration Panel Applet**—The system on which RM Mail is installed has a Windows applet that is used to configure the various aspects of the mail service.
- **Rule Configuration**—Project administrators and users must configure the e-mail rules processed by RM Mail.



NOTE Some e-mail clients modify the formatting of incoming e-mail messages by removing what they consider "extra" formatting. To prevent this, disable the options in your e-mail client that cause this modification.

To configure the RM Mail service:

- 1 Select **Programs | Serena | Dimensions RM version | RM Mail Configuration** from the Windows **Start** menu. The RM Mail configuration applet starts.

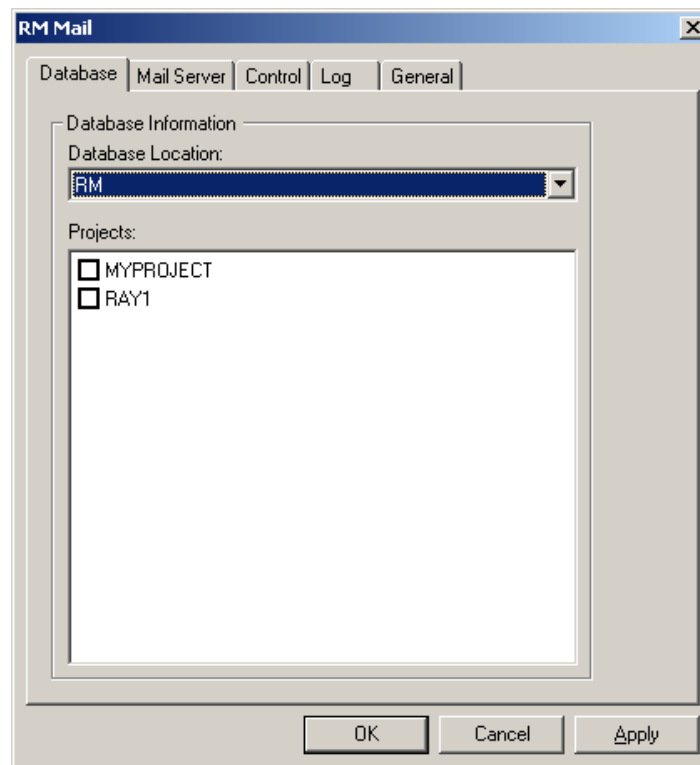
The **RM Mail** dialog box has five tabs:

- **Database**—Used to select the database location and projects that the mail service should monitor (see ["Database Tab" on page 110](#)).
- **Mail Service**—Used to specify the name of the SMTP mail server to be used for sending mail, as well as the name and e-mail address from which the e-mail should be sent (see ["Mail Server Tab" on page 111](#)).
- **Control**—Used to start and stop the e-mail service, as well as specify the interval at which the service should run (see ["Control Tab" on page 112](#)).

- **Log**—Used to configure the amount of log information that is appended to the system application log (see ["Log Tab" on page 113](#)).
 - **General**—Used to specify the RM Browser URL for RM Mail service (see ["Log Tab" on page 113](#)).
- 2 Specify RM mail settings.
 - 3 Click **Apply**.
 - 4 Stop and then restart the **Serena Dimensions RM E-Mail Service** service.
This can be done from the following locations:
 - RM Mail **Control** tab (see ["Control Tab" on page 112](#))
 - Windows **Services** (from the Windows **Control Panel**, double-click **Administrative Tools** and then double-click **Services**).

Database Tab

Initially, the list of projects will be blank until a database location is selected from the **Database Location** drop-down list. When a database location is selected, a list of all Dimensions RM projects resident at that location is displayed.

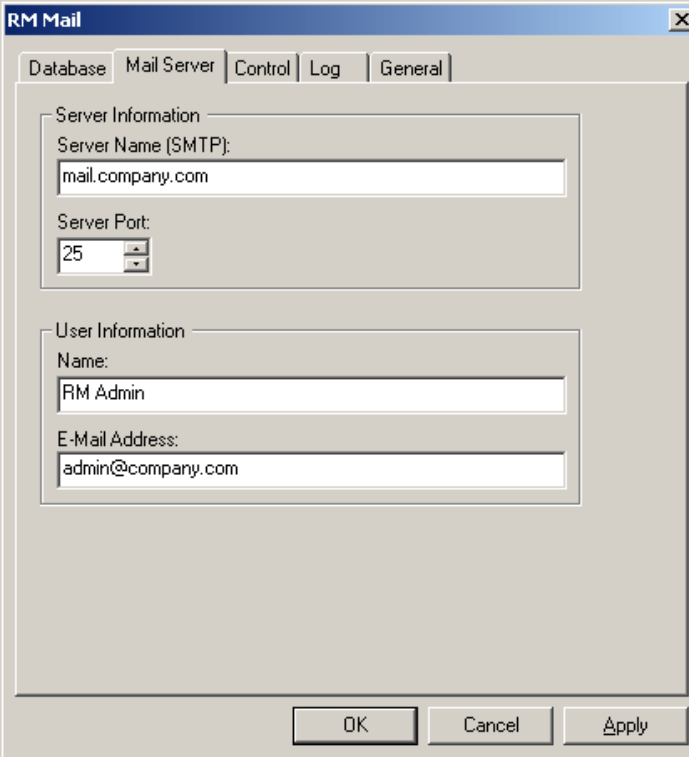


In the check box next to each project, select the projects this service should monitor. The mail service can monitor multiple projects at many locations.

Disabling e-mail notifications for a project does not delete the rules that have been defined for the project. It simply informs the RM Mail service to ignore them. You typically disable notifications when performing tasks such as batch updates.

Mail Server Tab

For the RM Mail service to send e-mail, it must have access to an SMTP mail server that has already been set up on the network. Enter the name of the system on which the SMTP mail server is installed in the **Server Name (SMTP)** field. In the **Server Port** field, enter the port that is used to communicate with the mail server. This defaults to 25 and is the normal port that the mail server uses.



The screenshot shows a window titled "RM Mail" with a tabbed interface. The "Mail Server" tab is selected. Inside the tab, there are two main sections: "Server Information" and "User Information".

Server Information:

- Server Name (SMTP):** A text field containing "mail.company.com".
- Server Port:** A spin box set to "25".

User Information:

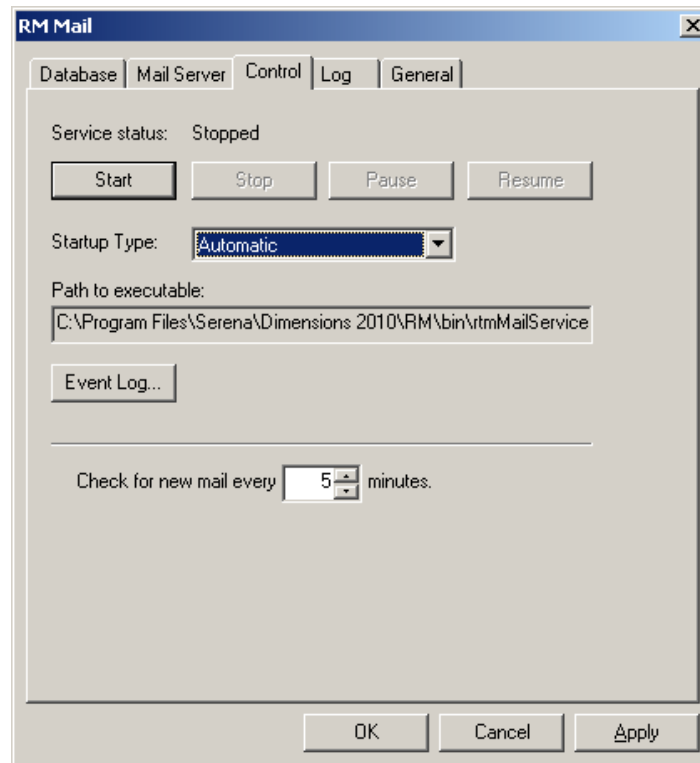
- Name:** A text field containing "RM Admin".
- E-Mail Address:** A text field containing "admin@company.com".

At the bottom of the window are three buttons: "OK", "Cancel", and "Apply".

Additionally, you can specify a name and e-mail address that is displayed in the "From" field in the e-mail. Ideally, this information is for a project administrator for the site. If you do not want users to reply to the e-mail, leave these fields blank. (Not all e-mail servers allow a blank e-mail address in the "From" field.)

Control Tab

The control tab provides a simple way to control the status of the RM Mail service.



The current status of the service is displayed at the top of the dialog box.

To save changes made to the configuration before starting the RM Mail service, click **Apply**. To start the service, click **Start**. To stop the service, click **Stop**.

The **Startup Type** drop-down list provides three options:

- **Automatic**—The service is started automatically at system boot time.
- **Manual**—The user must start the service manually, either from the RTM Mail Configuration applet or the Services applet on the control panel.
- **Disabled**—The service cannot be started either automatically or manually.

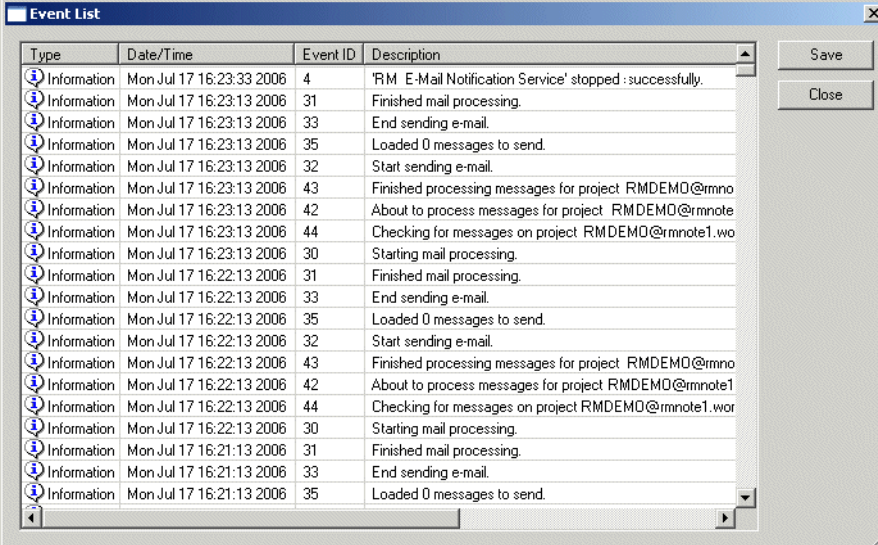


NOTE The service can also be started and stopped from Windows **Services** (from the Windows **Control Panel**, double-click **Administrative Tools**, and then double-click **Services**).

The interval at which the mail service should process the e-mail rules can be selected by changing the value for the **Check for New E-mail** field. The default value for this field is 5 minutes, although the actual value used depends on the number of changes being made to the project data and maximum acceptable delay between a change occurring and the e-mail being sent. Generally, the more operations that are being performed on the data, the shorter the interval should be.

The path to the *rtmMailService.exe* executable is provided for reference.

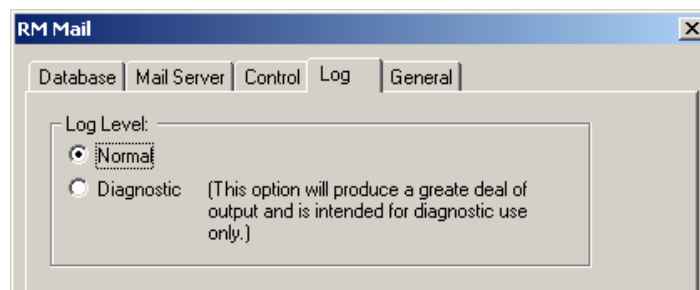
Click **Event Log** to view a list of events that have been logged by the RM Mail service.



Type	Date/Time	Event ID	Description
Information	Mon Jul 17 16:23:33 2006	4	'RM E-Mail Notification Service' stopped : successfully.
Information	Mon Jul 17 16:23:13 2006	31	Finished mail processing.
Information	Mon Jul 17 16:23:13 2006	33	End sending e-mail.
Information	Mon Jul 17 16:23:13 2006	35	Loaded 0 messages to send.
Information	Mon Jul 17 16:23:13 2006	32	Start sending e-mail.
Information	Mon Jul 17 16:23:13 2006	43	Finished processing messages for project RMDemo@rmno
Information	Mon Jul 17 16:23:13 2006	42	About to process messages for project RMDemo@rmnote
Information	Mon Jul 17 16:23:13 2006	44	Checking for messages on project RMDemo@rmnote1.wo
Information	Mon Jul 17 16:23:13 2006	30	Starting mail processing.
Information	Mon Jul 17 16:22:13 2006	31	Finished mail processing.
Information	Mon Jul 17 16:22:13 2006	33	End sending e-mail.
Information	Mon Jul 17 16:22:13 2006	35	Loaded 0 messages to send.
Information	Mon Jul 17 16:22:13 2006	32	Start sending e-mail.
Information	Mon Jul 17 16:22:13 2006	43	Finished processing messages for project RMDemo@rmno
Information	Mon Jul 17 16:22:13 2006	42	About to process messages for project RMDemo@rmnote1
Information	Mon Jul 17 16:22:13 2006	44	Checking for messages on project RMDemo@rmnote1.wor
Information	Mon Jul 17 16:22:13 2006	30	Starting mail processing.
Information	Mon Jul 17 16:21:13 2006	31	Finished mail processing.
Information	Mon Jul 17 16:21:13 2006	33	End sending e-mail.
Information	Mon Jul 17 16:21:13 2006	35	Loaded 0 messages to send.

Log Tab

The RM Mail service writes information to the system application log to inform the user of events that have happened. The **Log** tab allows you to specify the log level.

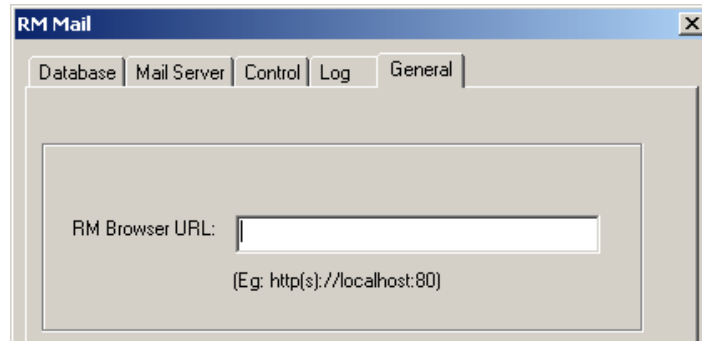


The default log level is **Normal**, which logs a minimum of information to the system application log and is the recommended option for normal use.

The **Diagnostic** option helps locate problems that might occur and logs every operation that the RM Mail service performs. This generates much information in the system application log, which could fill the log. When running in verbose mode, it is recommended that the application log be configured to overwrite older events to avoid generating warning messages by the operating system.

General Tab

The **General** tab is used to specify the RM Browser URL for RM Mail service.



Configuring Login Sources

Dimensions RM supports multiple login sources, including:

- **LDAP:** Lightweight Directory Access Protocol. Use this source to authenticate user IDs and passwords against an LDAP server.
- **SSO:** Single Sign On. Use this source to authenticate users against a Serena SSO server (the Serena SSO server is an optional part of Dimensions CM and SBM installations, not a part of Dimensions RM). SSO streamlines login across the products and within RM. It also enables CAC (Common Access Card) authentication.



NOTE Before you can use SSO with your RM clients, you must configure the RM server to connect to the Serena SSO server. See the *Serena Dimensions RM Installation Guide*.

- **RM:** Use this source to authenticate user IDs and passwords that are stored in Dimensions RM.

You can specify that multiple sources be used to authenticate users, and specify the order in which they should be used. If multiple sources are specified and the first login attempt fails because the user is not found, Dimensions RM looks for the user in the next enabled source. For the LDAP source, you can specify multiple LDAP servers and their order. A new Dimensions RM user can be automatically created after a user has been authenticated against LDAP or SSO, if so configured.



NOTE If the login fails due to an invalid password, no attempt is made to authenticate against the next login source.



IMPORTANT! Each user ID is valid for only ONE login source.

- To allow a user the ability to login from two different login sources, you must create two unique user IDs for that user, one for each login source. For example: JohnS_sso and JohnS_ldap.
- Once a user ID is created, the login source associated with it cannot be changed. If you manually create a user ID with RM Manage, that user ID will only work with the RM login source. If a user ID is auto created in RM by an external login source (LDAP or SSO), that user ID will only work with the login source that created it.

The following steps describe the process that takes place when LDAP is used as a login source:

- 1 The user's credentials are authenticated against the LDAP server.
- 2 The user's LDAP user name is used to log the user into Dimensions RM. If a password is stored for the user in Dimensions RM, it is ignored.
- 3 If the user does not already exist in Dimensions RM, the user is created using specified criteria (this is optional).



NOTE The group and project to be associated with new users must be set up before configuring LDAP as a login source.


Specifying Login Sources

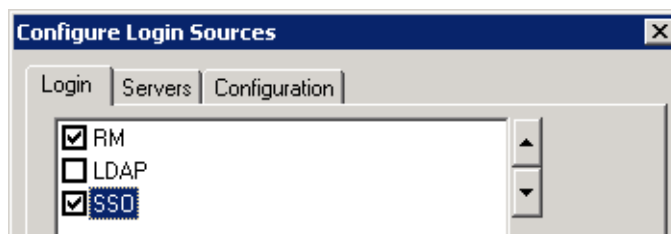
You can specify multiple login sources, or just one of them. You can also change the order in which the sources are used to authenticate users.



NOTE Deselecting the SSO login source does not disable the configuration changes that were made during the installation of the SSO components. See ["Fully Disabling SSO" on page 118](#).

To specify login sources:

- 1 Select the database for which you want to set login sources.
- 2 Select **File | Configure Login Sources**, and click the **Configure Login Sources** button , or right-click the database and select **Configure Login Sources**.
- 3 Enter the password for the ICDBA account if prompted to do so. The **Configure Login Sources** dialog box opens.



- 4 Select the login sources that you want Dimensions RM to use.

- 5 Use the up and down arrow buttons to change the order of the sources. The order that you define here is the order in which Dimensions RM attempts to authenticate users.



IMPORTANT! Each user ID is valid for only ONE login source.

- To allow a user the ability to login from two different login sources, you must create two unique user IDs for that user, one for each login source. For example: JohnS_sso and JohnS_ldap.
- Once a user ID is created, the login source associated with it cannot be changed. If you manually create a user ID with RM Manage, that user ID will only work with the RM login source. If a user ID is auto created in RM by an external login source (LDAP or SSO), that user ID will only work with the login source that created it.


- 6 Do one of the following:
 - If you did not select LDAP or SSO as a login source, click **OK**.
 - If you selected SSO, proceed to ["Specifying SSO Configuration" on page 116](#).
 - If you selected LDAP, proceed to ["Specifying an LDAP Server" on page 119](#).

Specifying SSO Configuration

Optionally, you can specify whether RM users are automatically created when a new SSO authenticated user logs in.



NOTE Before you can use SSO with your RM clients, you must configure the RM server to connect to the Serena SSO server. See the *Serena Dimensions RM Installation Guide*.

- 1 If the **Configure Login Sources** dialog box is not already open, do the following:
 - a Select the database for which you want to configure SSO.
 - b Select **File | Configure Login Sources**, click the **Configure Login Sources** button , or right-click the database and select **Configure Login Sources**.
 - c Enter the password for the ICDBA account if prompted to do so.
The **Configure Login Sources** dialog box opens.

- 2 Select the Configuration tab.

The screenshot shows the 'Configure Login Sources' dialog box with the 'Configuration' tab selected. The dialog has three tabs: 'Login', 'Servers', and 'Configuration'. The 'Configuration' tab contains the following settings:

- ☐ Use SSL (Secure Socket Layer)
- ☐ Follow Referrals
- Base User Context:
- User Naming Attribute:
- ☐ Bind Anonymously
- User DN:
- Password:
- Connection Timeout: seconds
- LDAP/SSO New Users:
 - ☒ Auto create users
 - in this group:
 - and this project:

At the bottom are buttons for 'OK', 'Cancel', and 'Help'.



NOTE Only the **LDAP/SSO New Users** area of this tab applies to SSO configurations. The rest applies to LDAP only.

- 3 To automatically create user IDs in Dimensions RM for users authenticated through SSO, select the **Auto create user** check box.
- 4 To specify information for when a new user is automatically created, do the following:
 - a From the **in this group** list, select the group in which the user is to be created.
 - b From the **and this project** list, select the project to which the user is allowed access.



NOTE After the users are auto created, you can assign them to additional projects through RM Manage.

- 5 Click **OK**.

Changing the SSO Provider Host Name

If your SSO installation is moved to another host, you need to change the SSO configuration files to be able to log on to Dimensions RM.

To change the SSO provider host name, follow these steps:

- 1 Change the redirection of web client login:
 - a On the RM server, open the following file in a text editor:
`RM_Install\Common Tools \#. #\tomcat\#. #\conf\gatekeeper-core-config.xml`
 - b Change protocol (http or https), host name and port to match the new server connection for the parameter tags with these names:
 - SecurityTokenService
 - SecurityTokenServiceExternal
 - FederationServerURL
 - c Save the file.
 - d Restart **Serena Common Tomcat** service.
- 2 On systems using remote fat clients to access the RM server via SSO do the following:
 - a Open a registry editing application (select **Run**, enter `regedit`, and click **OK**).
 - b Navigate to one of the following, depending upon whether your Windows installation is 32-bit or 64-bit:
32-bit:
`HKEY_LOCAL_MACHINE\SOFTWARE\Serena
Software\RTM\Environment\Default`
64-bit:
`HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Serena
Software\RTM\Environment\Default`
 - c Change Registry value **SSOServer** to match protocol, host name and port of the new connection.
 - d Change Registry value **SSO_HOST** to match the new SSO host name.
 - e Change Registry value **SSO_PORT** to match the new SSO port.



NOTE After changing the SSO host name it might become necessary to import the certificate with the new host name. For mor information about importing refer to chapter "SSO and CAC Configuration" in the *Dimensions RM Installation Guide*.

Fully Disabling SSO

When you install the Single Sign On (SSO) components, changes are made to certain configuration files and registry entries. Deselecting the SSO login source in the Configure Login Sources dialog does not undo the configuration changes that were made during installation of the SSO components.

To disable SSO follow these steps:

- 1 Deselect the **SSO** login source via the Configure Login Sources dialog. See ["Specifying Login Sources" on page 115](#).
- 2 Disable the redirection of web client login:
 - a On the RM server, open the following file in a text editor:

```
RM_Install\Common Tools \#. #\tomcat\#. #\conf\
gatekeeper-services-config.xml
```

- b** Comment out all lines where the **requestURI** attribute contains **/rtmBrowser/**.
Examples:

- `<URIMatcher requestURI="/rtmBrowser/*"/>`
- `<URIMatcher requestURI="/rtmBrowser/css/*"/>`



NOTE To comment out an XML section, use the `<!--` and `-->` statements, for Example: `<!--<URIMatcher requestURI="/rtmBrowser/*"/>-->`

- c** Save the file.
- d** Restart **Serena Common Tomcat** service.
- 3** Remove the SSO registry key on systems using remote fat clients to access the RM server via SSO:
- a** Open a registry editing application (select **Run**, enter `regedit`, and click **OK**).
- b** Navigate to one of the following, depending upon whether your Windows installation is 32-bit or 64-bit:
- 32-bit:**
`HKEY_LOCAL_MACHINE\SOFTWARE\Serena`
`Software\RTM\Environment\Default`
- 64-bit:**
`HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Serena`
`Software\RTM\Environment\Default`
- c** Delete the **SSOserver** key.




TIP Make a note of the registry key and its value in case you want to restore it in the future.

- d** Close the registry tool.
- 4** Restart the RM server.

Specifying an LDAP Server

If you plan to use LDAP as a login source, you must specify one or more LDAP servers.

To specify an LDAP server:

- 1** If the **Configure Login Sources** dialog box is not already open, do the following:
 - a** Select the database for which you want to specify an LDAP server.
 - b** Select **File | Configure Login Sources**, click the **Configure Login Sources** button , or right-click the database and select **Configure Login Sources**.
 - c** Enter the password for the ICDBA account if prompted to do so.
The **Configure Login Sources** dialog box opens.
- 2** Click the **Servers** tab.

- 3 To add a server to the **LDAP Servers** list, complete the following fields:
 - a **Server Name:** Enter the host name or IP address of the LDAP server. For example, `myserver.mydomain.com`
 - b **Server Port:** Enter the port number of the LDAP server. LDAP servers are typically configured to use port 389 (no Secure Socket Layer (SSL)) or 636 (SSL).
 - c **Add:** Click to add the server to the **LDAP Servers** list.




NOTE If you are using redundant servers, add each server to the list. If you are using referrals to search among unique servers, only one server is needed in the list.

- 4 Select a server in the **LDAP Servers** list and do any of the following:
 - To reposition the selected server in the LDAP Servers list, click the up or down arrow button. Dimensions RM searches for login authorization starting from the top of this list.
 - To delete the selected server from the list, click **Delete**.
 - To test the connection to the selected server, click **Test**.
- 5 Proceed to "[Specifying the LDAP Configuration](#)," next.

Specifying the LDAP Configuration

If you are using LDAP as a login source, you must specify an LDAP configuration.

To specify an LDAP configuration:

- 1 If the **Configure Login Sources** dialog box is not already open, do the following:
 - a Select the database for which you want to specify an LDAP server.
 - b Select **File | Configure Login Sources**, click the **Configure Login Sources** button , or right-click the database and select **Configure Login Sources**.
 - c Enter the password for the ICDBA account if prompted to do so.The **Configure Login Sources** dialog box opens.

- 2 Click the **Configuration** tab.

The screenshot shows the 'Configure Login Sources' dialog box with the 'Configuration' tab selected. The dialog has three tabs: 'Login', 'Servers', and 'Configuration'. The 'Configuration' tab contains the following settings:

- ☐ Use SSL (Secure Socket Layer)
- ☐ Follow Referrals
- Base User Context:
- User Naming Attribute:
- ☐ Bind Anonymously
- User DN:
- Password:
- Connection Timeout: seconds
- LDAP/SSO New Users:
 - ☒ Auto create users
 - in this group:
 - and this project:

At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

- 3 To enable Secure Socket Layer, select the **Use SSL (Secure Socket Layer)** check box.
- 4 To allow Dimensions RM to follow referrals from one LDAP server to another, select the **Follow Referrals** check box. Use this feature to support properly configured non-redundant distributed servers.
- 5 In the **Base User Context** field, specify the base user context (distinguished name). This is the base from which to search for users.
- 6 In the **User Naming Attribute** field, specify the user naming attribute. This is the attribute in which the LDAP server holds the user ID value. With Active Directory Servers, this is sAMAccountName.
- 7 Select a method for querying the LDAP server to retrieve the list of users:

- To query anonymously, select the **Bind Anonymously** check box. This requires that the LDAP server is configured to allow anonymous users to retrieve a list of users and attributes.



NOTES

- With the default configuration of Active Directory, you cannot bind anonymously to a Microsoft Active Directory Server.
 - The **User DN** and **Password** fields are disabled if the **Bind Anonymously** check box is selected.
- To require a user ID and password for queries:
 - a In the **User DN** field, specify a full user DN.
 - b In the **Password** field, specify a user password.
 - 8 To set the idle time in seconds before the connection to the LDAP server times out, enter a value in the **Connection Timeout** field.
 - 9 To automatically create user IDs in Dimensions RM for users authenticated through LDAP, select the **Auto create user** check box.
 - 10 To specify information for when a new user is automatically created, do the following:
 - a From the **in this group** list, select the group in which the user is to be created.
 - b From the **and this project** list, select the project to which the user is allowed access.



NOTE You can assign users to additional projects through RM Manage.

- 11 Click **OK**.

Example LDAP Configuration

The following illustration follows shows a typical non-SSL LDAP configuration for Microsoft Active Directory Server.

The screenshot shows a configuration window with two main panels. The left panel has a table with columns 'Name' and 'Port', and buttons 'Delete' and 'Test'. Below it is a 'New LDAP Server' section with 'Server Name' (myserver.mydomain.com) and 'Server Port' (389) fields, and an 'Add' button. The right panel contains several checkboxes and text fields: 'Use SSL (Secure Socket Layer)' (unchecked), 'Follow Referrals' (checked), 'Base User Context' (ou=people, dc=mydomain, dc=com), 'User Naming Attribute' (sAMAccountName), 'Bind Anonymously' (unchecked), 'User DN' (cn=User One, cn=Users, dc=com), 'Password' (masked), 'Connection Timeout' (30 seconds), and 'LDAP Sourced New Users' section with 'Auto create users' (checked), 'in this group' (icDemo Users), and 'and this project' (DEMO5).

The full content of fields that are truncated in the illustration follows:

- **Base User Context**—ou=people, dc=mydomain, dc=com

- **User DN**—cn=User One, cn=Users, dc=mydomain, dc=com



TIP By using an LDAP browser, you can retrieve the values for **Base User Context**, **User DN** and **User Naming Attribute**. If you can log on to the LDAP server, you can use ldp.exe.

Configuring LDAP to Use SSL

If your LDAP server is configured to use Secure Sockets Layer (SSL), but there is not a certificate database in the LDAP_Certificates_Directory or the database is missing the required SSL certificates, you will receive errors, such as:

"Failed to connect to LDAP server." or "You cannot access this project because your login account, UserName, is invalid. . . ."

Importing Certificates

In order to use SSL you need to import a public key certificate to the Trusted Root Certification Authorities on the server which runs Dimensions RM.



IMPORTANT! The certificate must match these requirements:


- The *Subject* field must include the fully qualified name to the LDAP server (e.g. myldapservers.mydomain.com).
- The *Enhanced Key Usage* (EKU) field must contain the *Server Auth* value. If the field contains <All>, it cannot be used for server authentication.
- The certificate must be issued from a trusted Certificate Authority, within the scope of the LDAP server or within the domain of the LDAP server.
- The certificate is valid (current date is within range of the date in the *Valid from* and *Valid to* fields).

To import the certificate, follow these steps:

- 1 Double-click the certificate file.
- 2 On the **General** tab, click **Install Certificate...** which opens the **Certificate Import Wizard**.
- 3 Click **Next**.
- 4 Select the **Place all certificates in the following store** option.
- 5 Click **Browse...**
- 6 Select **Trusted Root Certification Authorities**.
- 7 Click **OK**.
- 8 Click **Next**.
- 9 Click **Finish**.

Enabling SSL

To create and populate a certificate database follow these steps:

- 1 Start RM Manage and login into the appropriate database.
- 2 Open the **Configure Login Sources** dialog box as follows:
 - a Select the database for which you want to specify an LDAP server.
 - b Select **File | Configure Login Sources**, click the **Configure Login Sources** button , or right-click the database and select **Configure Login Sources**.
 - c Enter the password for the ICDBA account if prompted to do so.

The **Configure Login Sources** dialog box opens.

- 3 Select **LDAP** as a Login Source.
- 4 Select the **LDAP Servers** tab.
- 5 For the new LDAP server, enter the appropriate details in the **Server Name** and **Server Port** fields. The default port for SSL is 636.



NOTE You **must** use the fully qualified server name (e.g. myldapserver.mydomain.com). If your RM server cannot resolve the name, enter the IP address and name into the hosts file (C:\Windows\system32\drivers\etc\hosts).



TIP To check if your server can resolve the LDAP server name, follow these steps:

- Open a command prompt.
- Enter `tracert` followed by the fully qualified server name (e.g. `tracert myldapserver.mydomain.com`).
- Hit Enter.
- If the `tracert` command returns **Unable to resolve target system name** followed by the server name you entered, you must modify the hosts file as described above.

- 6 Click **Apply**.
- 7 Select the **LDAP Configuration** tab.
- 8 Check the **Use SSL (Secure Socket Layer)** check-box, and fill in the other data as needed for your site (see ["Specifying the LDAP Configuration" on page 120](#)).
- 9 Click **OK** to update the information within your RM Projects database.
- 10 Select the **LDAP Servers** tab.
- 11 Click **Test**. You should receive the message **LDAP Test Connection successful**.
- 12 LDAP is now configured to use SSL.

Setting Up Password Security

Password security is set in the **Password Rules Settings** tab that can be accessed in the project view.

Setting Password Rules

Password rules are common to all user accounts. Any changes made to password settings affect all user accounts.



NOTES Password rules only apply to RM user accounts (RM Login Source). They *do not* apply to RM access using LDAP accounts.

Password rules apply to RM databases, not to individual projects.

Whenever a new user is created, the default password is `rtm`.

To set password rules for all user accounts:

- 1 Select **View | Projects**.
- 2 Click the **Password Rules Settings** tab.
- 3 Provide entries for the following settings:

Setting	Description
eMail account for notifications	The administrator's e-mail address for users who want to contact the administrator when their account is locked.
Minimum number of characters to be changed	The minimum number of characters that users must change in their old password when creating a new one. The maximum number for this setting is 99. NOTE When you reset the password for an existing user, this setting is not validated.
Minimum number of digits	The minimum number of digits that a password must contain. The maximum number for this setting is 99.
Minimum number of letters	The minimum number of letters that a password must contain. The maximum number for this setting is 99.
Minimum number of special characters	The minimum number of special characters that a password must contain. The following special characters are allowed: <div style="text-align: center;"> ! " # \$ % & ' () * + , - _ / : ; < = > ? [\] ^ { } ~ ` </div> The maximum number for this setting is 99.

Setting	Description
Minimum length of password	The minimum number of digits, letters, and special characters that the password must contain, based on the previous three settings. The maximum number for this setting is 99.
Minimum number of failed logins before auto disable	This is the number of allowable attempts with the wrong password before the account is locked. The maximum number for this setting is 99.
Password expiration days	The number of days until users must change their password. The maximum number for this setting is 9999.
Number of days before password expiry warning	The number of days before a password is due to expire, when users are notified of the pending expiration date and given the opportunity to change their password. A warning message is displayed every time users log in using any Dimensions RM tool. The maximum number for this setting is 999.
Number of previous passwords (history) to be stored	The number of passwords to be stored for each user. Users will not be allowed to reuse any of these passwords. The maximum number for this setting is 9999.
Number of days to store previous passwords (history)	The number of days to store any previously used passwords. When the limit is reached, the stored passwords are deleted. The maximum number for this setting is 9999.
Start date to apply password rules for on-expiring passwords.	By default, unless changed as described below, password rules for non-expiring passwords will be enforced starting on 31-DEC-2099. If you do not wish for this to occur, uncheck the associated tick mark. Alternatively, to assign an alternative date for password rules to be enforced, either: <ul style="list-style-type: none"> ■ select and overtype, as appropriate, the day, month, and year; or ■ click the down-arrow and use the calendar dialog box that appears.

4 Click **Accept Changes**.

ALM Integration Between Dimensions CM and Dimensions RM

The Application Lifecycle Management (ALM) integration between Dimensions CM and Dimensions RM lets you associate Dimensions RM requirements to Dimensions CM requests.

The ALM integration enables you to manage Dimensions RM requirements in Dimensions CM and, conversely, manage Dimensions CM requests in Dimensions RM. For example, when you add a requirement to or remove a requirement from a Dimensions RM

container, Dimensions CM is notified with the relevant information; also, Dimensions RM baselines flow to Dimensions CM and Dimensions CM baselines flow to Dimensions RM.

In the context of an ALM integration, you can:

- Associate Dimensions RM projects a Dimensions CM products.
- Associate Dimensions RM containers (baselines or collections only) to Dimensions CM projects/streams.

See the common *Dimensions CM-Dimensions RM ALM Integration Guide* for details.

Logging In to a Dimensions CM Server

See the common *Dimensions CM-Dimensions RM ALM Integration Guide* for details.

Associating Dimensions RM Projects to Dimensions CM Products

See the common *Dimensions CM-Dimensions RM ALM Integration Guide* for details.

Associating Dimensions RM Baselines or Collections to Dimensions CM Projects/Streams

See the common *Dimensions CM-Dimensions RM ALM Integration Guide* for details.

Command Line Parameters

The Dimensions RM tools provide some command line commands that you can use for common tasks.

Tool	Action	Command
RM Manage	Launch RM Manage.	icmanage -user user -password password -location database -project project -buffer buffer -dumpfile dumpfile
	Back up database	icmanage -location <database instance name> -project <project name> -password <project password> [-buffer <buffer size>] -dumpfile <name and path of backup file to be created>
Synch Engine	Run the Synch Engine	syncengine [-f file] [-c] [-e level] [-E file] [-L priority] [-k {install config uninstall start stop}] [-n serviceName] [-v] [-h] [-p password] [-P eventName]

Tool	Action	Command
ALF Emitter	Run ALF emitter service, see "Application Lifecycle Framework (ALF)" on page 257	<code>ALFEventEmitter [-f <i>file</i>] [-c] [-e <i>level</i>] [-E <i>file</i>] [-L <i>priority</i>] [-k {install config uninstall start stop}] [-n <i>name</i>] [-v] [-h]</code>
Class Definition	Launch class definition.	<code>clasdef -user user -password password -location database -project project</code>

Chapter 3

Class Definition

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Overview



CAUTION! All users must be off the system before making any changes in Class Definition to preclude schema changes during user operations. There should *never* be an exception to this rule on a production system.

It is best practice, before saving from class definition, to always:

- 1 Stop the Tomcat Web Server.
- 2 Stop the pool manager service.
- 3 Review and drop all locks.
- 4 Backup projects.
- 5 Post/save Class Definition changes.
- 6 Start the Tomcat Web Server.
- 7 Start the pool manager service.

The class definition process, also known as the schema creation process, is the first step in Serena® Dimensions® RM project management. This process sets up project flows and logical groupings of information and is the responsibility of the project administrator.

Defining classes for a project enables you to perform the following functions:

- Organize information according to meaningful categories (classes).
- Qualify the information within each class according to attributes you define for the class. This enables you to search the project based on specific criteria.
- Maintain relationships between the classes for traceability.
- Specify the user access rights and the source documents associated with each class.

The class definition process produces the logical information model for the project. Dimensions RM illustrates this model in a Class Definition diagram, a graphic representation of the classes and relationships you have defined. You can point-and-click to manipulate the diagram and to open associated definition windows for additions or changes.



IMPORTANT! When using RM Manage or RM Class Definition from a client machine, the changes will not take effect until the Serena Dimensions RM Pool Manager is restarted on the RM server.

Defining the Project Schema

A project administrator can use the Class Definition tool to construct the information model for a project in the form of a Class Definition diagram. You use the Class Definition tool to perform the following tasks:

- Define new classes; rename, modify or delete existing classes
- Define or delete attributes for each class and relationship
- Specify user access rights to each class

- Create relationships between classes
- Manipulate the class definition diagram

Class Definition Tasks

There are three broad categories of class definition tasks:

- Project assessment—An examination of the project in terms of its development phases and available information.
- Class development—The definition of classes and class attributes, relationships, users and source documents.
- Process documentation—The documentation of all critical information used and decisions made throughout the class definition process.

Examining the Information in Terms of Project Phasing

Before defining classes, it is important to evaluate the type and scope of information to be modeled. The following information will help you understand your project so that the most effective class definition model can be developed.

- Identify the type of project. Is it a feasibility study, a project plan, a prototype, or a full-scale development project? This will help you determine the phasing for the project and decide how much information needs to be modeled, where the emphasis should be placed and what kinds of reports will be needed.
- Assess the documentation and reporting requirements for the project. They vary with the type of project and are also influenced by reports that your organization may have produced in the past. For example, if the project is a feasibility study, risk assessment is a major issue, and you will probably want to report on high-risk components of the project.
- Identify the customer and proprietary information that should be modeled and tracked through the successive phases of the project.
- Assess which subsets of the project information will be the most significant and/or useful to the project.
- Consider how previous experience can assist in identifying what information needs to be modeled. You may be able to use a modified version of an existing Dimensions RM information model.
- Identify the development phases for your project.
- Identify the information classes needed for the beginning phase, such as functional specifications.
- Identify the information classes needed for the final phase, such as test results (unit, integration and acceptance).
- Determine the required information flow between phases. This helps to identify the relationships between classes.
- Determine if some of the project will be subcontracted to off-site development teams and requires partitioning of the information.

Assessing the Project Information

Assess the detail level of the information available, and capture some basic assumptions about the structure of the information. Information assessment helps you to determine the structure of your information model. The following table describes the categories of information typically associated with projects.

Detail Level	Description
Very General	General or summarized information, such as operational scenarios or marketing plans.
High-level	High-level information, such as system specification narratives that cover design constraints, desired features and elements that should not be included in the solution.
Detailed	Detailed information, such as subsystem specifications that provide implementation level details.
Low-level	Low-level details, such as a requirement for a certain version of software or hardware.

Assessing Operations Parameters

Assess and define the project's operational parameters, such as:

- The required level of tracking among requirements, other project information, and information generated by CASE tools.
- The members of the project team, their responsibilities, and the access rights each will require for various types of project information during specific phases. User access rights assist you in determining which classes need to be created, which documents will be associated with each class and what is the logical breakdown of the data.

Identifying the reports that are generated helps you determine the attributes that will be needed later for searching, sorting, and printing.

Naming Classes, Attributes, and Categories

Names of classes, attributes, and categories can contain only letters (A–Z and a–z), numbers (0–9), and underscores (_).

Class Definition

A class definition consists of the following components:

- A description of the class.
- The definition of attributes for the class.
- The specification of user access rights for the data assigned to the class.
- The identification of the class's relationship to other classes.

The first steps in class development are: adding classes to the class definition diagram, specifying the class types, and assigning names to each class.

The following table lists the core class types. You can create any kind class type.

Core Class Type	Description
Comment	For associating comments with objects in other class types. The comment class is particularly useful when using RM Browser, as the comment class allows users to store comments using the Internet.
ECP	For Engineering Change Proposals.
Generic	For general information (other than requirements or CASE tool data), such as acceptance test descriptions and software problem reports.
Poll	For storing polling data associated with requirements.
Requirement	For different levels of requirements information.

Class Attributes

Attributes allow you to manage a known set of properties for each class. Attributes are distinctive pieces of information. When class attributes are present, it becomes possible for project members to search for project information based on specific criteria (specific values of the attributes).

User Access to Classes

Once a class type is defined, and attributes are assigned to the class, user access rights must be defined. This determines who can access the information associated with the class. Users can be granted access at the project level, thereby granting them access to all classes.

Relationships Between Classes

After you have defined the classes, you can set up (and name) relationships between pairs of classes. Typically, each class is related to at least one other class. Without this connection, it is not possible to establish traceability between sets of information.

A relationship identifies how information in one class is connected to information in another class. For example, if you would like to tie a test result back to a program, you would state the relationship as "module is tested by acceptance tests." In this example, *module* is the name of the first class (also known as the primary class), *is tested by* is the name of the relationship, and *acceptance test* is the name of the second class (also known as the secondary class). This will set up the relationship between test results and modules, and enable traceability to occur between them. Engineers could then check for specific objects associated with either class.

In other words, you can retrieve information based on specific search criteria. Establishing links between objects based on certain attribute values does this. For example, a link could be created between a change request and a requirement based on the value of its approval status attribute (the values being *approved* or *disapproved*). These links are governed by the rules you set up for the relationship.

Dimensions RM relationships identify related classes. When a Dimensions RM relationship is defined, the primary class and the secondary class are identified for the relationship. A

primary class can be thought of as the *source class*, and a secondary class can be thought of as the *target class*. Every RM relationship, even recursive or re-entrant relationships, must have a primary and a secondary class. In the class definition diagram, the class at the base of the relationship connector is considered the primary class. The class at the tip of the connector is considered the secondary class.

Relationship Rules

You can set up relationship rules to govern user creation of links and determine the impact of their object edits on the relationship. For example, you can limit the number of links from one object to another, specify what should happen to an object link if the user edits the object, or only allow links based on the value of the attribute.

Process Documentation Phase

It is important to document all critical information throughout the project assessment and class definition phases, as this information forms the basis of your project configuration decisions and will need to reference it later. Other reasons for this documentation include:

- Referencing earlier decisions for the purpose of maintaining consistency.
- Maintaining this information for future projects.
- Helping others understand the rationale for information modeling decisions.

The following are examples of this information:

- The purpose and meaning of each class, attribute and relationship.
- A code of practice defining responsibilities for each aspect of Dimensions RM operation.
- The results and rationale for every information-modeling decision.

You can print the details of each class definition to store with your documentation.

Attributes for Specific Classes

When users add a comment, by default, the comment dialog contains a **Role** dropdown list. You can omit this list when you define the comment class.


To define the comment class to omit the Role menu:

- 1 Start Class Definition (see ["Starting Class Definition" on page 135](#)).
- 2 Select a comment class on the Class Definition diagram.
- 3 Right-click and select **Define**. The **Definition of class** dialog box opens.
- 4 Click the **Attribute** tab.
- 5 In the list of attributes, under **User Defined**, double-click **Role**. The **Definition of attribute 'Role'** dialog box opens.
- 6 Click the **Core** tab.
- 7 Clear the **Attribute Editable** check box, and then click **OK**.

- 8 In the **Definition of class** dialog box, click **OK**.

Starting Class Definition

To start Class Definition:

- 1 Start RM Manage.
- 2 Select the project to be configured.
- 3 Click the **Define Project Schema** button .

If you are a project administrator, the project schema is launched in a Read/Write mode if another user is not currently modifying the schema. If you are a project administrator and another user is modifying the project schema, the **Project Schema Locked** dialog box is displayed, identifying the user currently holding the lock. A user locks a project schema whenever it is open in read/write mode.

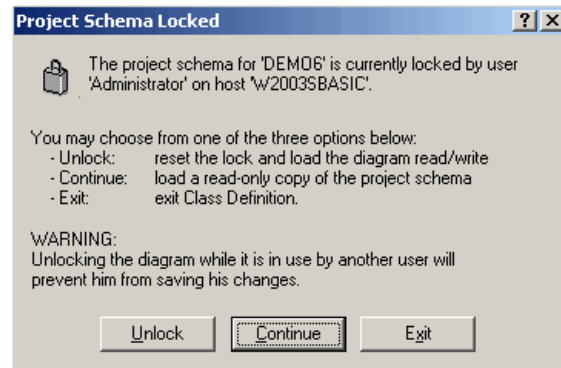


Figure 3-1. Project Schema Locked

If you are sure the user identified is not currently modifying the project schema, click **Unlock** to reset the lock and load the schema in read/write mode. Alternatively, you can click **Continue** to load the schema in read-only mode or click **Exit**.

Working with the Class Definition Diagram

The topics in this section describe how to work with the Class Definition diagram.

Editing the Project Header and Footer

You define the project-wide header and footer in the Class Definition diagram. A default header and footer are created when a new project is created.

To edit the header or footer:

- 1 Do one of the following:
 - Double-click the header or footer object on the canvas.







- Select **Edit | Header** or **Edit | Footer**.
- On the **Edit** toolbar, click the **Edit Header**  or **Edit Footer**  button.

2 Type the header or footer text you want in the space provided on the canvas.

If a header or footer is not required for the project, it can be removed from the diagram by selecting the object and clicking **Delete**.

Aligning Components

You can line up multiple components using the alignment buttons, or align a component by any edge or by its center. For a multiple selection, use the gray selection handles as the point of reference to which components align. The following six alignment commands can be accessed from the **Alignment** toolbar or the **Drawing** menu.

-  Align Top
-  Align Middle
-  Align Bottom
-  Align Left
-  Align Center
-  Align Right

Canvas Grid

The grid is a set of evenly spaced points on the canvas that are used to align components when they are moved. When the snap-to-grid option is enabled, the top left corner of a component is aligned to a grid point when the component is moved. The snap-to-grid feature can be enabled and disabled using by selecting **Snap to Grid** from the **View** menu. Grid visibility can be turned on and off by selecting **Grid** from the **View** menu.

To change the distance between the points of the grid, or to change the color of the grid, select **Grid Properties** from the **View** menu.

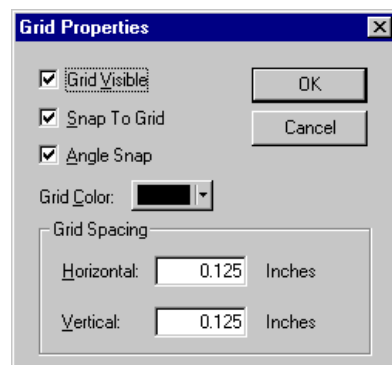



Figure 3-2. Grid Properties

Centering the Diagram

To center a diagram:


- Select **Edit | Center Diagram** or click the **Center Diagram** button  on the **Edit** toolbar.

All components in the project schema become centered, providing equal area on each side of the diagram for adding additional components.

Changing the Canvas Size

You can resize the canvas if it is too large or too small to hold the project schema.

To change the canvas size:

- 1 Select **Edit | Resize Canvas** or click the  button on the **Edit** toolbar. The **Resize Canvas** dialog box opens.

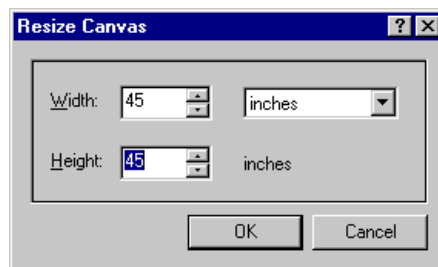


Figure 3-3. Resize Canvas


- 2 Enter the new width and height in the dialog box. You can enter the new dimensions in inches, millimeters, or centimeters.
- 3 Click **OK**.

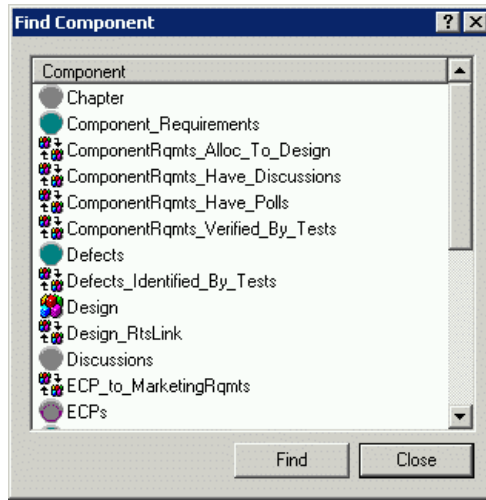
This operation may take time to complete, depending on the complexity of the project schema. Once the schema has been resized, the components will be centered on the canvas, giving an equal amount of space on all sides to add new classes and relationships.

Finding a Class or Relationship

A class or relationship can be located on the Class Definition diagram.

To find a class or relationship:

- 1 Select **Find** from the **Edit** menu, or click the **Find** button  on the **Edit** toolbar. The **Find Components** dialog box opens.




**Figure 3-4. Find Component**

- 2 Select a component and then click **Find**.

Nudging Objects

When Class Definition is in selection mode, you can move selected components by clicking and dragging the mouse. When you place the pointer over a component that you can move, the cursor changes to a crosshair. If the **Snap to Grid** option is enabled, the top-left corner of the component's bounding box aligns with the grid.

You can move selected components by using Nudge commands. The Nudge commands move the components one unit by default and five units if you are holding the Shift key. You can access four nudge commands from the **Nudge** toolbar or the **Drawing** menu.

-  Nudge Up
-  Nudge Down
-  Nudge Left
-  Nudge Right





Ordering Objects

The components on the Class Definition diagram can be stacked (also known as Z-order). Stacking determines where each component is drawn in the stack. In other words, the order determines which component is drawn last. The component drawn last overwrites the components already on the canvas. Z-order is determined by the order in which the components are added to the model. The last component to be added will be on top.

You can change the Z-order using order commands. The **Bring Forward** command moves a component one place in the direction of the top of the stack. The **Send Backward** command moves a component one place in the direction of the bottom of the



stack. A component can be moved directly to either the top or bottom of the stack using the **Bring to Front** or **Send to Back** commands.

Each of these commands is available either from the **Structure** toolbar or the **Drawing** menu.


-  Bring to Front
-  Send to Back
-  Bring Forward
-  Send Back

Panning the Diagram

To pan the diagram:

- 1 To pan to different areas of the diagram, click the **Pan** button .
- 2 Click and drag the mouse to navigate the diagram.
- 3 To return to editing the diagram, click the **Select** button .

Selecting Objects


Class Definition starts in selection mode. You can access selection mode by clicking the **Select** button .

You can select a single component by left-clicking it in selection mode. If you want to select multiple components, hold the CTRL key and then left-click each of the components you want to include in the selection, or click and drag to draw a selection rectangle. Gray selection handles distinguish the last-selected component. Class Definition uses anchor components as a reference for alignment operations. If you want another component to serve as the anchor, hold the CTRL key and click another component within the selection.


Zooming the Diagram

The Class Definition tool provides several options for zooming.


- **Zoom to Fit**

Click the **Zoom to Fit** button  to scale the diagram such that all components on the diagram are visible in the viewport.


- **Zoom to Selection**

Click the **Zoom to Selection** button  to scale the diagram such that all selected components are visible in the viewport. To select multiple components, hold down the Shift key while clicking the left mouse button on the class or relationship you want to add to the selection. This button will only be enabled when multiple classes, relationships or both have been selected.

- **Zoom Normal**

Click the **Zoom Normal** button  to scale the diagram to its default zoom of 100%. This button will only be enabled when the diagram is zoomed other than 100%.

■ Zoom

Click the **Zoom** button  to zoom in or out on the canvas. The pointer becomes a magnifying glass when you place it in the client area. In zoom mode, you can click the left mouse button to zoom in or the right mouse button to zoom out. You can set the zooming percentage by selecting **Zoom Custom** from the **View** menu.

To zoom in on a selected area, click and hold the left mouse button while in zoom mode. When you hold the mouse button and drag in zoom mode, the Class Definition tool draws a rectangle to indicate the zoom area. When you have the rectangle positioned in an area of the viewport, release the mouse button to select the area for zooming.

To return to the diagram, click the **Select Tool** button .

Attributes









Attributes specify the exact nature of the information within a class or relationship. You can define any number of attributes for each class and relationship. In addition to these user-defined attributes, there are implicit predefined attributes.



NOTE There are two implicit attributes that represent who created a requirement. The "Initial Created by" attribute contains the name of the user who initially created a requirement, and is retained when the requirement is replaced by another user. The name of the user who replaced the requirement is stored in the "Created by" attribute.

Attribute Types

The following sections describe the attribute types. If the attribute has a second tab specific to the attribute, its parameters are included in the description.

	Attribute Type	Description	Page
	Alphanumeric	A single line of text up to 1000 characters.	141
	Date	A date, the format of which (including length, default, minimum, and maximum values) can be defined by the administrator.	142
	File Attachment	Holds a file to be accessed from RM Browser.	142
	Group	Like a list attribute, but composed of a series of sub attributes. The choices available to the user <i>depend</i> upon the selections they made in the higher level, or parent, attributes within the group attribute.	143
	List	A list of values configured by the administrator for user selection.	145
	Numeric	Accepts only numeric values.	148
	Text	A block of text up to 64Kb in size.	149
	User	A list of user names, which can be configured by group or individual user names.	149

Alphanumeric Attribute

An alphanumeric attribute represents one line of alphanumeric text, such as the title of an acceptance test. It can be up to 1000 characters in length.

The screenshot shows a dialog box titled "Definition of attribute 'Requirement Status'". It has four tabs: "Core", "AI Alphanumeric", "Description", and "Security". The "AI Alphanumeric" tab is active. Inside the dialog, there are three text input fields labeled "Minimum Value:", "Maximum Value:", and "Default Value:". Below these are two spinners: "Maximum Length:" with a value of 1000, and "Display Length:" with a value of 10. There is also a "Case:" dropdown menu currently set to "Sentence". At the bottom are "OK" and "Cancel" buttons.

Figure 3-5. Alphanumeric Attribute Definition

The alphanumeric attribute properties are described in the following table.

Property	Description
Minimum Value	A minimum value that can be associated with the attribute, if any. Dimensions RM performs a string comparison on the minimum and maximum values. For example, if you enter a minimum value of A and a maximum value of C, Dimensions RM will inform you that a value of D is out of range.
Maximum Value	A maximum value that can be associated with the attribute, if any. Dimensions RM performs a string comparison on the minimum and maximum values. For example, if you enter a minimum value of A and a maximum value of C, Dimensions RM will inform you that a value of D is out of range.
Default Value	A default value for initial instances of the attribute, if required.
Maximum Length	The maximum length of the value allowed for the attribute. The valid range is 1 to 1000 characters.
Display Length	The default number of characters to display for this attribute. The valid range is 1 to 1000 characters.
Case	Whether the attribute value should be upper case, lower case, or sentence (mixed) case.

Date Attribute

A date attribute can have values that are based on user-defined formats. A date attribute, for example, could be used for test dates.

Figure 3-6. Date Attribute Definition

The date attribute properties are described in the following table.

Property	Description
Minimum Value	A minimum value that can be associated with the attribute, if any.
Maximum Value	A maximum value that can be associated with the attribute, if any.
Default Value	A default value for initial instances of the attribute, if required.
Maximum Length	The maximum length of the value allowed for the attribute. The valid range is 1 to 1000 characters.
Display Length	The default number of characters to display for this attribute. The valid range is 1 to 1000 characters.
Display Format	The date format. NOTE: The default date formats use the string "RRRR" to represent a four-digit year. This is preferable to using "YYYY" because when the year is entered as two digits, this format will correctly populate the century based on the rules described in "RRRR Date Format Elements" on page 180 .

File Attachment Attribute

A file attachment attribute holds a single file that can be accessed through RM Browser. Add one or more file attachment attributes to the class to which the file or files will be attached. For example, you could add the file attachment attributes *Use Cases*, *Customer Letter*, and *Business Justification* to the Marketing Requirements class. Users then use RM Browser to add the applicable file for each attribute, view the file, or download it to their computers.

For more information about using RM Browser to view and manage file attachments, see the *Serena Dimensions RM Browser User's Guide*.




NOTE The file attachment attribute has no attribute type tab.

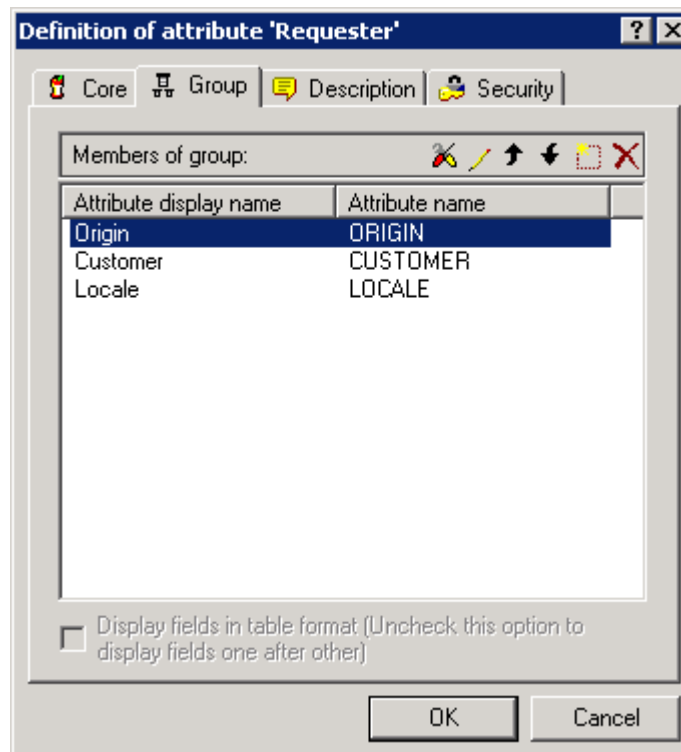
Group Attribute


A group attribute is like a list attribute in that it provides a predefined list of values for user selection. But unlike a simple list attribute, a group attribute is composed of a series of sub attributes. The choices available to the user depend upon the selections they made in the higher level, or parent, attributes within the group attribute.

For example, a group attribute named Requester contains the sub (member) attributes: Origin, Customer, and Locale. Origin is the first (parent) attribute in the group and includes the following values for selection: External, Marketing, Development, and Support. If External is selected, customer names are available for selection in the Customer sub attribute. If one of the other values is chosen in Origin, there are no values available for selection in the Customer sub attribute since those values are only relevant in the case of an external customer.



Defining a group attribute:


- 1 To add members (sub attributes) to the group attribute, click the **New**  button (or press the **Insert** key) and enter a name. The name must be unique within the group attribute.

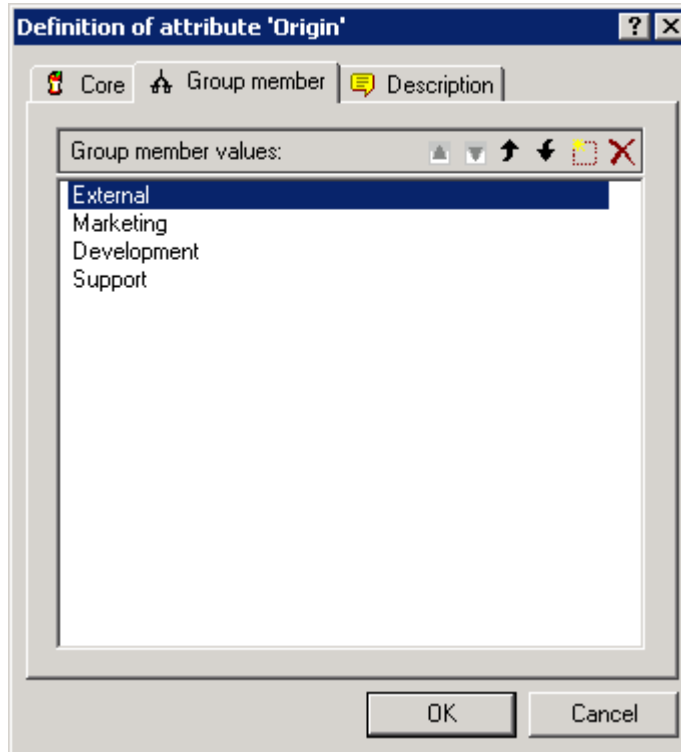








To delete a member attribute from the group, highlight the attribute and click the **Delete**  button, or press the **Delete** key.

- 2 The first attribute in the group is the parent of the second, and the second is the parent of the third, etc. To reorder the attribute members to reflect the dependency

logic that you want to enforce, select the attribute you want to move and click the **Move Up**  or **Move Down**  button, or drag and drop the attribute to the desired position.

- 3 To define the values available for a member attribute, select the attribute and click the **Fields Options**  button. A Definition of attribute dialog opens for the group member (note the **Group member** tab).



- a To add values for a group member (sub attribute), click the **New**  button (or press the **Insert** key) and enter a name. The name must be unique within the group member.
 - b The end user will see the values in the same order shown in this dialog. To reorder the list of values, do any of the following:
 - To manually order the values, select a value and click the **Move Up**  or **Move Down**  button, or drag and drop the value to the desired position.
 - To alphanumerically sort the entire list of values, click the **Sort Ascending**  or **Sort Descending**  button.
 - c Once you have defined and ordered the values for a group member, click the **OK** button to return to the Definition of attribute dialog for the group attribute (which has a **Group** tab rather than the **Group member** tab).
- 4 To define the dependencies between the values in a parent attribute and those in a child attribute, select a member attribute and click the **Edit value restrictions**  button. The Valid values dialog opens.

On the left is the list of values available for the selected group member. To the right is the name of the first-order child of the selected group member and the list of values available for that child attribute.

Valid values - group attribute 'Requester'

Select attribute: **Origin** Dependent: **Customer**

Check all Uncheck all

☒ Apple
☒ HP
☒ IBM
☒ Oracle
☒ Other

OK Cancel

- a** Select a member attribute from the **Select attribute** drop-down list.



TIP Start with the topmost member attribute in the group and work your way in order through the child attributes.

- b** In the left pane, select a value from the list available for the selected group member.
- c** In the right (Dependent) pane, select the values to display for the child attribute whenever a user selects the value selected in [Step b](#) for the parent attribute.
- d** Once you have defined the dependencies between member values, click the **OK** button to return to the Definition of attribute dialog for the group attribute.

List Attribute

A list attribute is a configurable attribute that provides a list of values for user selection. For example, you could define Passed, Failed, and Incomplete as the valid values for a

list attribute `Verification_Status`, and require that the user choose one or more of these values.

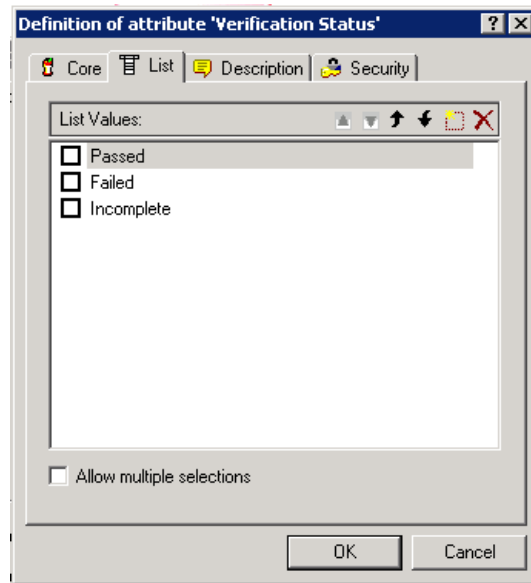




Figure 3-7. List Attribute Definition



The list attribute properties are described in the following table.



Property	Description
List Values	A list of possible values that have been defined for the list attribute. A check in the box to the left of the value indicates this is a default value. Selecting the check box next to the desired attribute value can change the default value state.
Allow multiple selections	Whether the user can select one or more values from the list. If the box is not checked, you can select only a single value from the list.

To add a new value to the list of possible values click the  button (or press the **Insert** key) and enter a name to the list. The name for the value must be unique within the list.

To delete a value from the list, highlight the value by left-clicking it and either click the **Delete**  button or press the **Delete** key.

The end user will see the values in the same order shown in this dialog. To reorder the list of values, do any of the following:

- To manually order the values, select a value and click the **Move Up**  or **Move Down**  button, or drag and drop the value to the desired position.

- To alphanumerically sort the entire list of values, click the **Sort Ascending**  or **Sort Descending**  button.



IMPORTANT! Removing Existing List Values from the Schema:

- When you remove a List Value from the schema, it is no longer selectable for new entries, but it will continue to display in reports for any requirement versions where this value had already been set.
- If you remove an existing List Value from the project schema, any time a requirement that has that value is opened in the editor, the default value (if any) will be automatically selected. If no default has been set, the list will default to having no value; if the field is required, you will have to select a value.
- Deleting/Editing an existing List Value in the project schema changes the value available for selection going forward. It does not directly change the value stored in existing requirement versions. If you want to replace an old/obsolete value in requirement versions, see ["Changing a List Value on Existing Data" on page 147](#).

Changing a List Value on Existing Data

This section describes a suggested best practice for changing a List Value that has been in use and thus exists in non-current requirement versions. It presupposes that you need to replace an obsolete List Value in non-current versions and that an audit trail must be maintained.

- 1 Do a backup of the project, including security.
- 2 Add the new List Value to the project schema. (Do not remove the old value.)
- 3 Ensure that you have both Update and Update Non-Current access to the class that includes the modified list.
- 4 Create a report that lists:
 - PUID
 - Object_ID
 - The relevant list field with the obsolete value
- 5 Save the report as CSV.
- 6 Edit the CSV to change the obsolete value to the new value.
- 7 Add a **Reason for change** column and populate it with whatever statement satisfies your audit requirements. (This will overwrite existing **Reason for Change** entries.)
- 8 Use CSV Import in **Update** mode to match on Object_DF and map the list and reason for change attributes.
- 9 Verify that the data was correctly imported.
- 10 Remove your Update and Update Non-Current access to the class (assuming you added these just for this procedure).
- 11 Remove the old List Value from the project schema.

Numeric Attribute

A numeric attribute accepts only numeric values, such as a reference number. The value can include a decimal point.

The screenshot shows a dialog box titled "Definition of attribute 'Priority'". It has four tabs: "Core", "1.2 Numeric", "Description", and "Security". The "1.2 Numeric" tab is selected. Inside the dialog, there are five input fields: "Minimum Value" with the value "1", "Maximum Value" with the value "5", "Default Value" which is empty, "Maximum Length" with the value "10", and "Display Length" with the value "10". At the bottom of the dialog are "OK" and "Cancel" buttons.

Figure 3-8. Numeric Attribute Definition

The numeric attribute properties are described in the following table.

Property	Description
Minimum Value	A minimum value that can be associated with the attribute, if any.
Maximum Value	A maximum value that can be associated with the attribute, if any.
Default Value	A default value for initial instances of the attribute, if required.
Maximum Length	The maximum length of the value allowed for the attribute. The valid range is 1 to 1000 characters.
Display Length	The default number of characters to display for this attribute. The valid range is 1 to 1000 characters.

Text Attribute

A text attribute is a text block (up to 64Kb) that can span more than one line. It is suitable for long descriptions, such as the description of an acceptance test.

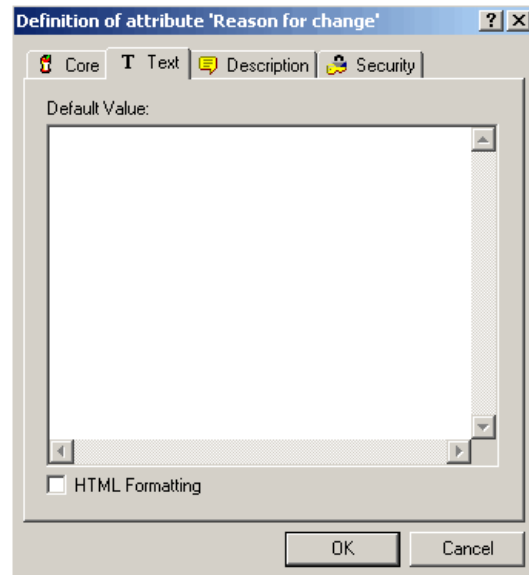


Figure 3-9. Text Attribute Definition

The text attribute properties are described in the following table.

Property	Description
Default Value	A default value for initial instances of the attribute, if required.
HTML Formatting	<p>A check box that allows you to specify whether this text attribute is enabled for HTML formatting.</p> <p>When you edit an HTML-enabled text attribute in RM Browser, a special HTML edit control is displayed in place of the normal text area.</p> <p>NOTE: The HTML Formatting property cannot be disabled in the Chapter class.</p>

User Attribute

A user attribute is a configurable attribute that provides a list of user names for user selection. It can store one single value and can be configured to list all users, all members of one or several groups or individual users.

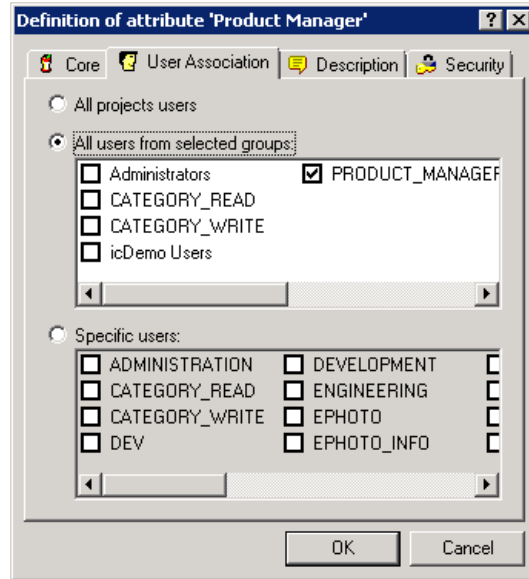


Figure 3-10. User Attribute Definition

To list all users, follow these steps:

- 1 Select option **All project users**.
- 2 Click **OK**.

To list users of one or several groups, follow these steps:

- 1 Select option **All users from selected groups**.
- 2 Select the groups you want to be included in the list.
- 3 Click **OK**.

To list individual users, follow these steps:

- 1 Select option **Specific users**.
- 2 Select the users you want to be included in the list.
- 3 Click **OK**.

Rqmt ID Attribute

The Rqmt ID implicit attribute represents the PUID of a requirement. The PUID is a unique identifier that does not change. *There is no button associated with this attribute, because it is automatically included in every class.*

Figure 3-11. Rqmt ID Attribute Definition

The Rqmt ID attribute properties are described in the following table.

Property	Description
PUID format	Any string of characters and then <#>. The <#> variable is replaced by the PUID number. NOTE: If you want # to appear in the PUID as a character, type it in the string of characters without the brackets.
Number style	The style of numbering to use for the PUID.
Next	The next PUID number to be assigned.
Pad with leading zeros	Whether zeros precede the PUID to make the PUID number the number specified in the PUID Length list.
PUID Length	The number of numbers that can replace the <#> variable.



NOTE The PUID tab is displayed only if the class is empty (no objects/requirements exist in the class).

Adding an Attribute

To add a new attribute to a class or relationship definition:

- Do one of the following to open the **Definition of class** or **Definition of relationship** dialog box:
 - Double-click the desired class or relationship.
 - Right-click the desired class or relationship and select **Define**.

- 2 To add the attribute to the class or relationship definition, click the appropriate button at the left of the panel for the user-defined attribute type you want to add. For further information about attribute types, see chapter ["Attribute Types" on page 140](#).
- 3 Click **OK**.

Defining an Attribute

To define an attribute:

- Double-click the attribute in the tree control, or highlight it and press **Enter**.
The **Definition of attribute** dialog box opens.

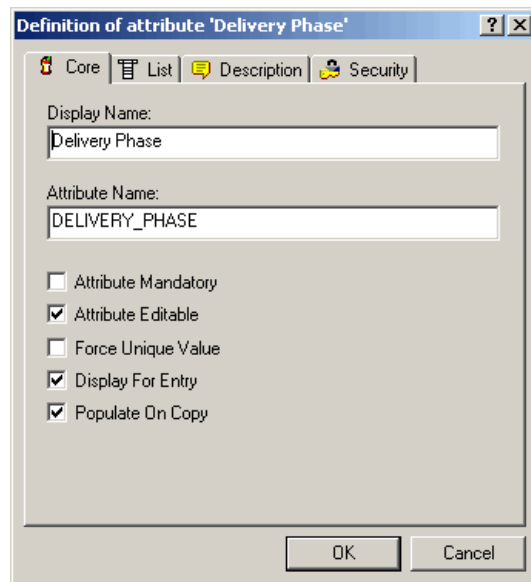


Figure 3-12. Attribute Definition

Core Tab

The **Core** tab is displayed for all attribute types and is used to define attribute properties that are common to all attribute types. The core attribute properties are defined in the following table.

Property	Description
Display Name	The name of the attribute that will be displayed by the other Dimensions RM tools. The display name can be up to 1000 characters in length and can contain any printable characters.
Attribute Name	The internal name of the attribute, which can be up to 1000 characters in length, but cannot contain spaces. This field is populated automatically for a new attribute based on the display name if no value is provided.
Attribute Mandatory	Whether you are required to specify values for the attribute during the information storage or capture process.
Attribute Editable	Whether you can edit the attribute values. Conversely, making an attribute non-editable is useful when no further changes to the attribute are allowed.

Property	Description
Force Unique Value	Whether you must enter a unique value for an instance of this attribute (no duplicate values are allowed). This may be grayed out.
Display For Entry	Whether the attribute will be displayed in forms and list views of object content. If unchecked, the attribute will not be presented in these views. This is generally used for security.
Populate on Copy	Whether the attribute will be pre-populated when you copy a requirement. To prevent the situation where duplicate requirements are created by mistake, it is a good practice <i>not</i> to copy the Title and Description attributes.

Attribute Type Tab

The second tab is specific to the attribute type selected in [Step 2 on page 152](#). The file attachment attribute has no attribute type tab. The attribute type tabs are described under ["Attribute Types" on page 140](#).

Description Tab

The **Description** tab is used to add a description to the attribute.

Security Tab


The **Security** tab allows a security profile to be created for the attribute. For information about entering properties on the **Security** tab, see ["Security" on page 171](#).



NOTE You can edit an attribute definition at any time after having defined it. This could mean that values of the attribute are no longer valid for certain instances of the class. For example, if a Force Unique Value property is added to a numeric attribute, existing values of this attribute that are not unique must be identified and altered by making it unique through replacement or batch update.

Deleting an Attribute

To delete an attribute from a class or relationship definition:

- Do one of the following:
 - Double-click the desired class or relationship.
 - Right-click the desired class or relationship and select **Define**. The **Attribute Definition** dialog box opens.
- Select the attribute you want to delete from the definition.
- Click the **Delete** button  or press the **Delete** key.
- Click **OK**.



NOTE Implicit attributes cannot be deleted from the class or relationship definition.

Classes

Classes act as repositories for the data held in the project. Creating classes involves configuring the attributes of the class to tailor the class for the project-unique information that it will hold, as well as setting up the security profiles for individual groups and users to each of the classes.




CAUTION! The Poll, Chapter, and Comment classes are for internal use only and must not be modified.

Adding a New Class

Adding a class symbol to the Class Definition diagram creates an information class.

To add a class:

- 1 Click the **Add Class** button , or right-click a blank area of the canvas and select a class from the context menu.
- 2 Move the cursor to where you want to place the class and click the left mouse button. The class symbol is displayed on the diagram and the title is highlighted for editing.
- 3 Enter a unique name for the class that describes the data held in the class.



NOTES

- Class names cannot contain spaces, tabs, the @ symbol, or Oracle reserved words. For a complete list of Oracle reserved words, see Knowledgebase Article 5004035, dated 9/19/06.
- Class names must contain at least one alphabetic character.

- 4 Click a blank area of the canvas to save the new name.

Changing Display Properties for a Class

When a class is added to the project schema, it is added with a default set of properties that relate to the graphic representation used for the class.

To configure the display properties for a class:

- Right-click the class and select **Properties**. The **Component Properties** dialog box opens.

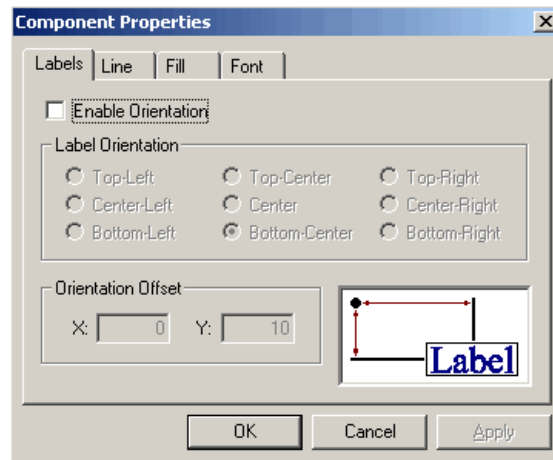


Figure 3-13. Component Properties

The **Component Properties** dialog box consists of four tabs:

- Labels**—Allows the location of the label to be specified. The **X Offset** and **Y Offset** fields allow the offset of the label to be specified relative to the selected control point. To reposition a class label relative to the bitmap, use the X and Y Offset values rather than dragging the label to its new location. This leaves the label attached to the bitmap so that it will move when the class bitmap is moved. If the label is repositioned by dragging it on the canvas, it will not move when the class bitmap is moved. To reattach the label, select one of the control points and click **OK** or **Apply**.
- Line**—Allows the outline for the label to be defined. By default the line is not visible but it can be displayed by clearing the **Transparent** check box.
- Fill**—Allows the background fill for the class label to be defined. The default is transparent.
- Font**—Allows the font for the class label to be defined. The font, size, style and color can all be configured on this page.

Changing a Class Image

When a class is added to the project schema it is created with the default image associated with the type definition. The image for a class can be customized to uniquely identify a class on the diagram.

To change the image for a class:

- Obtain or prepare an image file to be used for the class.



NOTE Class Definition only allows bitmaps of up to 8-bit color.

- Right-click the class and select **Change Image**.

- 3 Locate the image file to be used for the class. The image bitmap is displayed in the preview area of the dialog. Bitmaps are the only file types allowed for this procedure.
- 4 Click **Open**.

Copying a Class

You can copy a class definition to create a duplicate class definition on the project schema diagram. The duplicate class must have a unique name, but will initially contain the same attributes as the original class.

To copy a class:

- 1 Select the class.
- 2 Right-click the class and select **Copy**.
- 3 Right-click the canvas where the class is to be displayed and select **Paste**.



NOTE This does not copy the data associated with the class.

Creating a Class Type from a Class

Class types provide a way to reuse all or part of a class definition within a project schema. You can define a class type from an existing class definition. The class type serves as a template for new class information.

To create a new class type from an existing class instance:

- 1 Right-click the class.
- 2 Select **Create as Class Type**. This creates a new class type with the same name as the existing class.
- 3 Modify the new class type in the **Definition of Class Type** dialog box (see ["Defining a Class" on page 157](#)).

Deleting a Class

To delete a class from the project schema:

- 1 Right-click the class you want to delete.
- 2 Select **Delete**, or select the class and then press the **Delete** key.



NOTE This will not only delete the class definition from the project schema, but will also delete all data associated with the class. Therefore, use this procedure with caution.

Purging Class Data

To purge the data from a class:

- 1 Right-click the class and select **Purge**.

- 2 Select one of the following options:
 - **Deleted Objects** purges all objects that have a status of deleted.
 - **All Objects** purges all objects.
 - **Selected Objects** runs the Batch Update wizard, which allows you to constrain the set of objects to be purged with attribute values.



CAUTION! Purging data permanently removes the objects from the project.

Renaming a Class

To rename a class:

- 1 Position the cursor over the class title.
- 2 To select the text, double-click the class title.
- 3 Type a new name for the class.



NOTES

- Class names cannot contain spaces, tabs, the @ symbol, or Oracle reserved words. For a complete list of Oracle reserved words, see Knowledgebase Article 5004035, dated 9/19/06.
- The class name should describe the data you intend to associate with the class. Each class name must be unique.

- 4 To commit the name change, click an empty area of the canvas.

Defining a Class

To define a class:

- 1 Select a class on the Class Definition diagram.

- 2 Right-click and select **Define**. The **Definition of Class** dialog box opens.

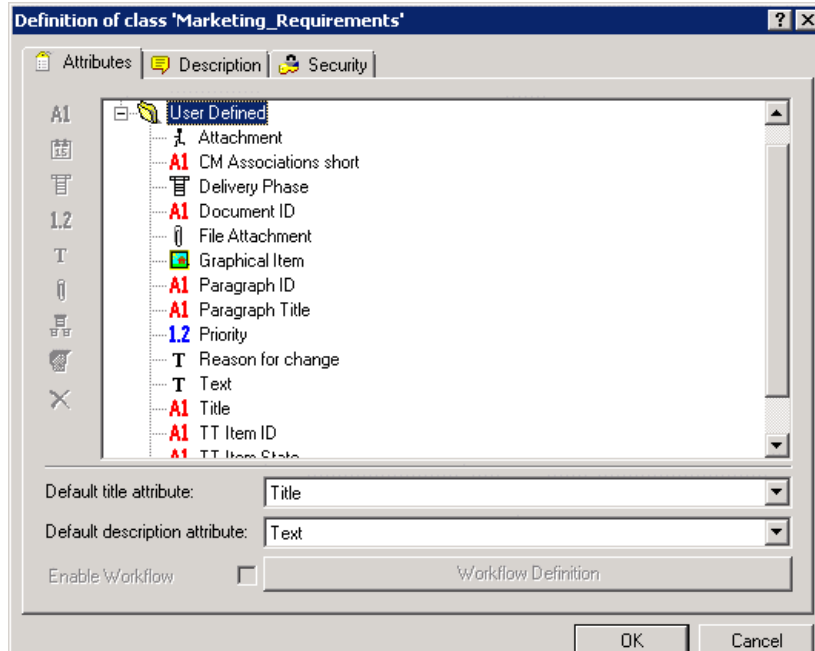


Figure 3-14. Class Definition

This dialog box contains four tabs:

- **Attributes**—Used to manage the attributes of the class
- **Description**—Used to add a description to the class
- **Security**—Used to create security profiles for the class

Specifying Attributes

Each class has to have the following:

- A default title attribute
- A default description attribute

In RM Browser, Documents View uses the default title attribute and default description attribute to display meaningful data. Only the title for each chapter and requirement is displayed in the navigation tree. In the paragraph layout, the title, description, and any additional attributes that were selected in the **Properties** dialog box are displayed.

The default title attribute and default description attribute are also displayed in the prebuilt queries in Home View, in the query results from running a quick search from Requirement View, and in the detail pane for a selected requirement in Traceability View.

For more information about these views, see the *Serena Dimensions RM Browser User's Guide*.

To specify values on the Attributes tab:

- 1 In the **Default title attribute** list, select an attribute. All alphanumeric attributes that are defined for the class are listed. You must set the default title attribute to an existing alphanumeric attribute or create a new alphanumeric attribute if none is available.

- 2 In the **Default description attribute** list, select an attribute. All text attributes that are defined for the class are listed. You must set the default description attribute to an existing text attribute or create a new text attribute if none is available.



NOTE For information about defining individual attributes, see ["Attributes" on page 140](#).

Specifying a Description

The Class Definition tool allows a description to be associated with all items defined in the project schema. Use this field to clarify items. For example, an attribute, "Build Version" might have the description "Enter the build version in which the feature was released."

- 1 Double-click the class.
The **Definition of class** dialog box opens.
- 2 Click the **Description** tab.
- 3 Type the description.

Specifying Security


For information about specifying security, see ["Security" on page 171](#).

Relationships

A relationship represents a logical association between two classes. The two classes are referred to as the primary class (the class from which the relationship flows), and the secondary class (the class to which the relationship flows).

Adding a New Relationship

Adding a relationship to the Class Definition diagram creates a link between two classes allowing the traceability or flow of information to be created between objects of the classes. A relationship can be created in one of three ways:

- Click the **Add Relationship** button  and move the cursor over one of the classes to be linked. Click the left mouse button to start the relationship and then trace the route of the relationship by moving the mouse and clicking the left mouse button to create a vertex. Finally, click on the destination class with the left mouse button to complete the relationship.
- Right-click a blank area of the canvas and select **Add Relationship**. Move the cursor over one of the classes to be linked. Click the left mouse button to start the relationship and then trace the route of the relationship by moving the mouse and clicking the left mouse button to create a vertex. Finally, click the destination class with the left mouse button to complete the relationship.
- Move the cursor over one of the classes to be linked and press the left mouse button while holding down the control key. Trace the route of the relationship by moving the

mouse and clicking the left mouse button to create a vertex. Finally, click on the destination class with the left mouse button to complete the relationship.

The relationship will appear on the diagram and the name will be highlighted. Enter a unique name for the relationship which describes the data which will be held in the relationship, and click on a blank area of the canvas to commit the new name.



NOTES

- Relationship names cannot contain spaces, tabs, the @ symbol, or Oracle reserved words. For a complete list of Oracle reserved words, see Serena Support Knowledgebase Article 5004035, dated 9/19/06.
- Do not create a relationship from any class to a Chapter class.
- You cannot put more than one Chapter class into a diagram.

Changing the Display Properties for a Relationship

When a relationship is added to the project schema, it is added with a default set of properties that relate to the label style used for the relationship.

To configure the display properties for the relationship label:

- 1 Right-click the relationship and select **Properties**. The **Component Properties** dialog box opens.

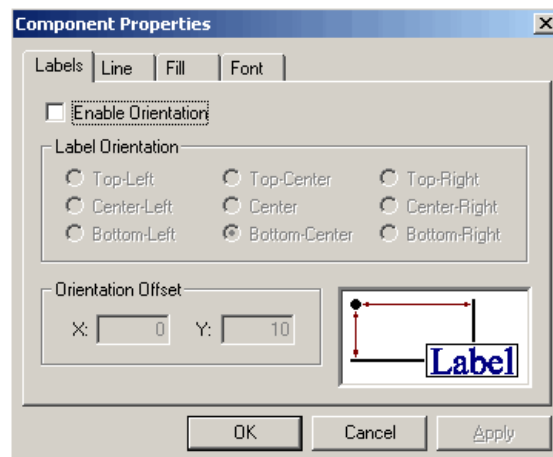


Figure 3-15. Component Properties

The **Component Properties** dialog box consists of four tabs.

- **Labels**—Allows the location of the label, relative to the bitmap, to be specified. The X Offset and Y Offset fields allow the offset of the label to be specified relative to the selected control point. In order to reposition a relationship's label relative to the bitmap, you should use the X and Y Offset values instead of dragging the label to its new location. This will still leave the label attached to the bitmap so that it will move when the relationship's bitmap is moved. If the label is repositioned by dragging it on the canvas it will no longer move when the relationship's bitmap is moved. To reattach the label, select one of the control points above and click **OK** or **Apply**.

- **Line**—Allows the definition of the outline for the label to be defined. By default the line is transparent (that is, not visible) but it can be displayed by clearing the **Transparent** check box.
 - **Fill**—Allows the background fill for the relationship's label to be defined. Once again the default is for a transparent background.
 - **Font**—Allows the font used for the relationship's label to be defined. The font, size, style and color can all be configured on this page.
- 2 Specify properties.
 - 3 Click **OK**.

Deleting a Relationship

Deleting a relationship not only deletes the relationship definition from the project schema. It also deletes all links associated with the relationship and should be used with caution.

To delete a relationship from the project schema:


- 1 Right-click the desired relationship.
- 2 Either select **Delete** from the context menu or press the Delete key.

Editing Vertices

When a relationship is selected, Class Definition places control handles on every vertex that defines the relationships shape. These vertices can be manipulated to change the path of a relationship.


Moving a Vertex

To move a vertex:

- 1 Select the relationship.
- 2 Hover your cursor over a control handle. The cursor changes  to signal that you can move this vertex.
- 3 Click the control handle and then drag it to a new position.
- 4 Release the mouse button to place the vertex at its new coordinates.


Inserting a Vertex

To insert a vertex:

- 1 Select the relationship.
- 2 Move your cursor between two control points and hold down the Control key. The cursor changes  to signal that you can insert a vertex.
- 3 Click to place the vertex on the line segment.

Removing a Vertex

To remove a vertex:

- 1 Select the relationship.
- 2 Move your cursor over a vertex and hold down the Control key. The cursor changes  to signal that you can delete the vertex.
- 3 Click to delete the vertex from the component.

Purging Relationship Data



CAUTION! Purging data permanently removes links from the project.

To purge the links from a relationship:

- 1 Right-click the relationship.
- 2 Select one of the following:
 - **Purge | Deleted** to purge deleted links.
 - **Purge | All** to purge all links.

Renaming a Relationship

The relationship name should describe the data you intend to associate with the relationship. Each relationship name must be unique to the diagram. Names can include any printable character with the exception of spaces, tabs, or the @ symbol.

To rename a relationship:

- Double-click the relationship name.

To commit the name change:

- Click on a blank area of the canvas.

Reversing a Relationship

If the information does not seem to flow in the direction that the relationship was initially created, you can reverse it.

To reverse a relationship:

- 1 Right-click the relationship and select **Reverse**.
- 2 Select one of the following options. The selected option is applied to all existing links when the relationship is reversed.
 - **Retain Links**—Reverses the direction of the relationship while leaving all existing links in place.
 - **Remove Links**—Reverses the direction of the relationship, and removes all existing links for the relationship.

Defining a Relationship

To define a relationship:

- Right-click the relationship and select **Define**.

The **Definition of relationship** dialog box opens.

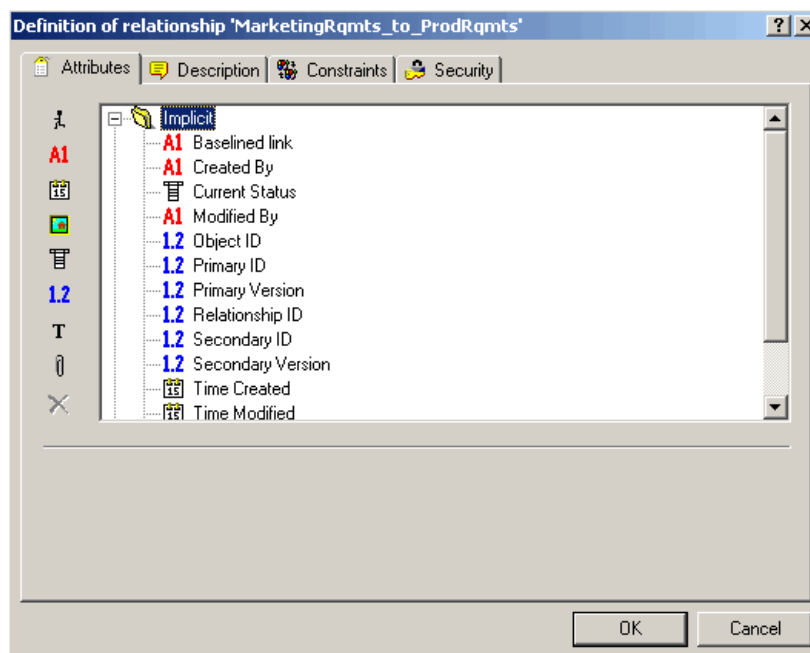


Figure 3-16. Relationship Definition

This dialog box has four tabs:

- **Attributes**—Used to manage the attributes of the relationship
- **Description**—Used to add a description to the relationship
- **Constraints**—Used to add constraints to the relationship
- **Security**—Used to create security profiles for the relationship

Specifying Attributes

For information about specifying attributes, see ["Attributes" on page 140](#).

Specifying a Description

The Class Definition tool lets you describe all items defined in the project schema. Use descriptions to clarify a particular item. For example, an attribute or build version may have a description of "Enter the build version in which the version was released."

- 1 Right-click the object and select **Define**.
- 2 The **Definition of relationship** dialog box opens.
- 3 Click the **Description** tab.

- 4 Type the description.

Specifying Constraints

Relationship rules enable you to specify the properties of a relationship. You can constrain the creation of links by the user, and also specify the actions to be performed when either the primary or secondary objects participating in an AND or OR relationship are edited.

To add constraints to a relationship:

- 1 Right-click the relationship and select **Define**.
The **Definition of relationship** dialog box opens.
- 2 Click the **Constraints** tab.

Definition of relationship 'ComponentRqmts_Verified_By_Tests'

Attributes | Description | **Constraints** | Security

Primary Cardinality: 1 Secondary Cardinality: n

Primary Links:

- ☒ transfer to child
- ☐ delete from parent
- ☐ transfer to parent on deletion of child
- ☐ mark secondary as suspect on change
- ☐ populate attributes on create and link

Secondary Links:

- ☒ transfer to child
- ☐ delete from parent
- ☐ transfer to parent on deletion of child
- ☐ mark primary as suspect on change
- ☐ populate attributes on create and link

Attribute Constraints: ☒ OR ☐ AND

Class	Attribute	Constraint	Value

OK Cancel

Figure 3-17. Definition of Relationship—Constraints Tab

- 3 Click **OR** or **AND** in the **Attribute Constraints** area to specify the type of logical relationship you are about to specify.
- 4 Specify the constraints as described in the following sections.
- 5 Click **OK**.

Cardinality


Cardinality rules control the number of links that you can make between objects of the classes in a relationship. For example, a cardinality of 2:3 (2 for the primary cardinality and 3 for the secondary cardinality) means that no more than two links can be made from an object of the primary class to objects of the secondary class. Also, no more than three links can be made from an object of the secondary class to objects of the primary class. To indicate that links cannot be made to objects of either the primary or secondary class, enter a value of 0 in the appropriate field. To indicate that the number of links created to

objects of the either the primary or secondary class should be unconstrained, enter a value of **n** in the appropriate field.

Constraints

Relationship constraints allow rules to be created that govern the creation of links between objects of the primary and secondary class.

To add a new constraint:


- 1 Click the **New Constraint** button  in the **Attribute Constraints** area.
A new row is added to the table and the **Class** and **Attribute** cells are populated based on the relationship you selected previously. If needed, click on these cells to select different values from a drop-down menu.
- 2 Click in the **Constraint** cell and select the desired constraint type from the drop-down menu. The following constraint types are available:
 - **=** The attribute *exactly* equals the value.
 - **!=** The attribute does NOT equal the value.
 - **Like** The attribute includes the value as part of a larger string. When using Like, you would include one or more asterisks (*) as wild cards to indicate where the value fits into the larger attribute string. For example, taken in order, these values: *UNIX, *UNIX*, or UNIX* would match with these attributes: HP-UNIX, HP-UNIX-11, or UNIX-11.
- 3 Click in the **Value** cell. If the selected attribute is a list, select the value from the list of values displayed; otherwise, type the value into the cell.



NOTE If using a **Like** constraint, use asterisks as wild cards.

- 4 **apply on link creation only:** Select this checkbox to limit the constraint to when a link is being created.
- 5 Click **OK**.

To delete a constraint:

- 1 Highlight the row and click the **Delete** button  in the **Attribute Constraints** area.
- 2 Click **OK**.

To change an existing constraint rule:

- 1 Click the cell to be changed and modify the value.
- 2 Click **OK**.

Transfer Rules

Transfer rules govern what happens to an object link if you edit an object participating in the relationship. Toggling the desired values on or off sets the link transfer rules.

The following table describes the types of link transfer rules.

Rule Type	Description
Primary links transfer to child	When the primary object in the relationship is edited and a new object is created (the child object), the links from the primary object are copied to the child
Primary links delete from parent	When the primary object in the relationship is edited and a new object is created (the child object), the links from the primary object are deleted.
Primary links transfer to parent on deletion of child	When the child object is deleted in the primary class, links to the primary object are transferred to the parent.
Secondary links transfer to child	When the secondary object in the relationship is edited and a new object is created (the child object), the links from the secondary object are copied to the child
Secondary links delete from parent	When the secondary object in the relationship is edited and a new object is created (the child object), the links from the secondary object are deleted.
Secondary links transfer to parent on deletion of child	When the child object is deleted in the secondary class, links to the object are transferred to the parent.

Suspect Link Rules

Suspect link rules allow you to mark each side of a specific relationship as suspect when changes occur. If the **mark secondary as suspect on change** check box is selected under **Primary Links**, all secondary links of the relationship type are marked as suspect if the primary object changed. If the **mark primary as suspect on change** check box is selected under **Secondary Links**, all primary links of the relationship type are marked as suspect if the secondary object changed.

When you select either of these check boxes, the **transfer to child** check box is automatically selected.

Note the following:

- Any attribute change causes an object to be marked as suspect.
- There is no relationship between the transfer rules and the suspect link rules; however, they are processed at the same time.
- The object itself is marked as suspect as well as the link. If the object is replaced and it does not have the links transferred, it is no longer linked to the suspect object; however the suspect flag on the object itself still needs to be cleared.

Populate Attributes Rule

In some situations it is desirable to populate the attributes of a new object with the values of the attributes of another object. For example, suppose you have a `TestCaseTemplate` class, and you want to use it as a template for all test cases.

To populate the attributes of a new object with the attributes of an existing object:

- 1 Create a new class (for example, TestCase) and create a relationship from the TestCaseTemplates class to the new class.
- 2 Edit the relationship in the **Definition of relationship** dialog box in Class Definition. (In this example, you would select the **populate attributes on create and link** check box for the secondary link.)
 - If the **populate attributes on create and link** check box is selected for the secondary links, the attributes for the object that is secondary in the relationship are populated with attributes based on values in the primary object that already exists.
 - If the **populate attributes on create and link** check box is selected for the primary links, the attributes for the object that is primary in the relationship are populated with attributes based in the values in the secondary object that already exists.
 - If the **populate attributes on create and link** check box is selected for both the primary and secondary links, the attributes are populated depending on whether you are linking to the primary object or the secondary object.

**NOTES**

- Only attributes with the same internal name and the same type are populated.
- The default behavior is for the **populate attributes on create and link** check box to be cleared.
- This behavior might not be desirable for all relationships in the schema.

Specifying Security

For information about specifying security, see ["Security" on page 171](#).

Class Types

This section describes how to work with class types.

Defining a Class Type

To define a class type:

- 1 Right-click a blank place in the grid.
- 2 Select **Add Class | Manage class types**.

The **Manage Class Types** dialog box opens.

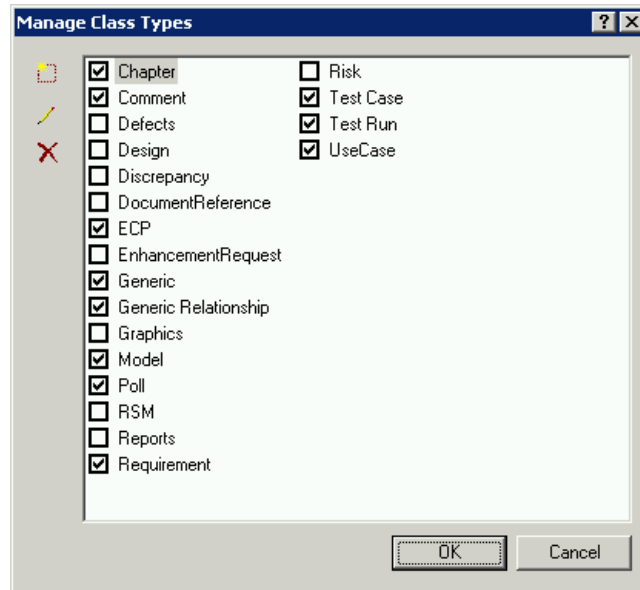


Figure 3-18. Manage Class Types

A selected check box indicates that the class type is valid and can be added to the project schema.

- 3 Click **OK**.

Adding a New Class Type

To add a new class type definition:

- 1 Click the **Add** button  on the **Manage Class Types** dialog box. The **New Class Type** dialog box opens.

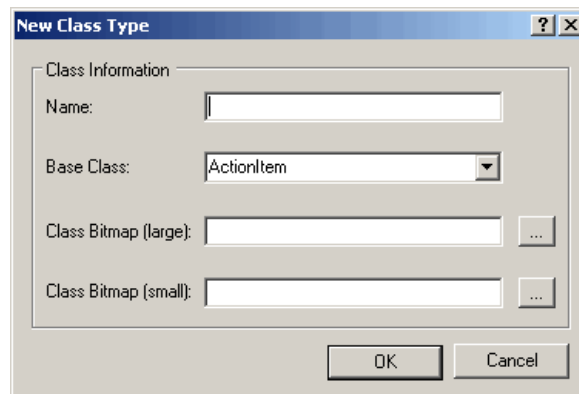



Figure 3-19. New Class Type

- 2 Specify properties as described in the following table.

Property	Description
Name	The name of the class type.
Base Class	The class type from which the new class is derived. To create a new class type that has no attributes defined yet, you should derive the class from the Generic class, which contains only the attributes that all class types must have.
Class Bitmap (large)	The large class bitmap field points to the file that is used by Class Definition as the default symbol on the schema diagram.
Class Bitmap (small)	The small class bitmap field points to the file that is used by the Dimensions RM tools to identify the class type.

Deleting a Class Type

To delete a class type from the project schema:

- 1 Select the type on the **Manage Class Types** dialog box.
- 2 Click the **Delete** button .



NOTE This only removes the type definition. It does not affect any class instances for this type.

Editing a Class Type Definition

To edit an existing class type definition:

- 1 Select the class type on the **Manage Class Types** dialog box.
- 2 Click the **Edit** button .



NOTE This only affects the class type definition. It does not affect any existing class instances of this type.

The **Definition of class** dialog box opens.

Specifying Attributes

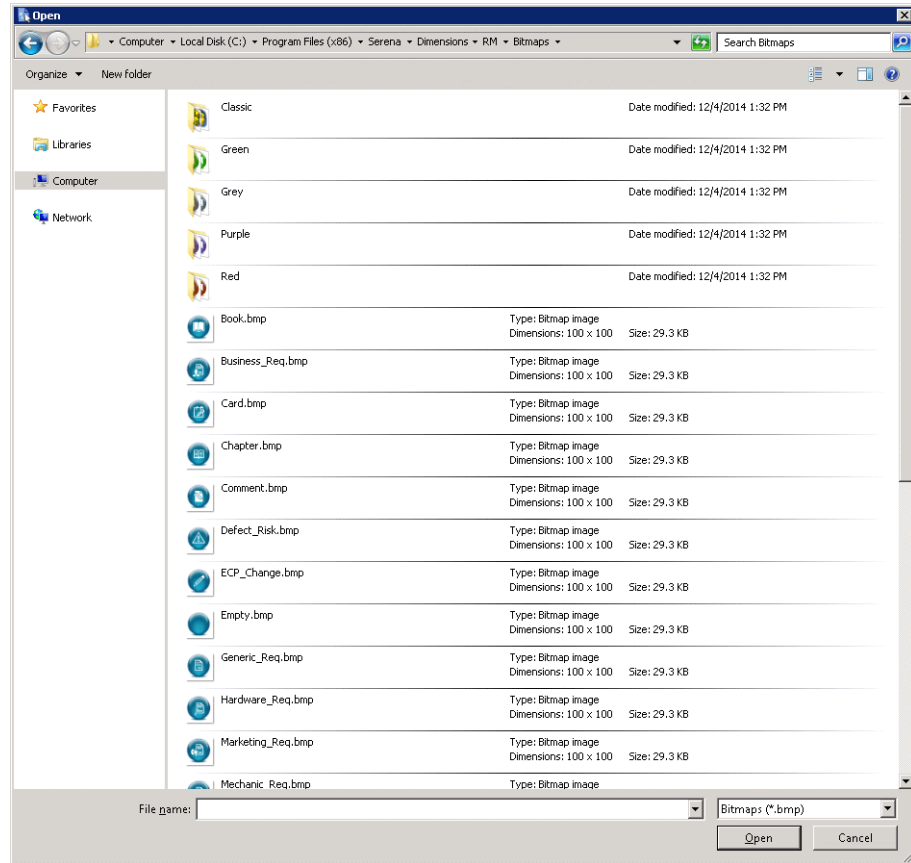
For information about specifying attributes, see ["Attributes" on page 140](#).

Changing the Class Definition Bitmap

Class Definition allows the user to define the image that is used on the schema diagram as well as associate a small bitmap that will be used by the other tools to identify the class type.

To change the image:

- 1 Right-click the image and select **Change Image**.

**Figure 3-20. Class Type Definition Visual**

- 2 Locate the Windows bitmap file containing the image. A preview of the bitmap appears on the main property page.



NOTE There are no constraints on the size of the bitmap, but for performance, the size should be reasonable and the image should only be up to 8-bit color.

Changing the Class Icon

To change the icon used to represent a class type, click **Open** to the right of the **File name** list and locate the Windows bitmap file. A preview of the bitmap is displayed on the main property page. The bitmap should be 16x16 pixels and 8-bit color.



NOTE Only bitmaps of up to 8-bit color can be used.

Changing the Label Properties for Class Types

To change the default properties for the label associated with a class type:

- 1 Right-click the object and select **Properties**. The **Component Properties** dialog box opens.
- 2 Click the **Labels** tab.

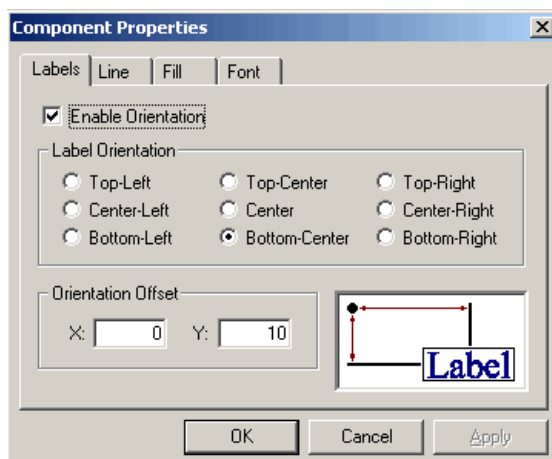


Figure 3-21. Component Properties

- 3 Customize the format of the label for the class type.
- 4

Security



NOTES As a good general practice, Serena recommends that no Dimensions RM group or user (including Administrators) ever be granted the class access rights for: REMOVE, UPDATE, and UPDATE NON_CURRENT.

Update should not be granted to anyone on the system. All requirements changes should be performed with the replace function. This approach allows a fully auditable change history to be maintained and thus exposes Dimensions RM full capabilities. But this approach does require that you baseline requirements to capture the versions that you are currently capturing with the replace button. If users start using baselines and snapshots with other usage models (primarily updates and replace to version), they will be forced to create a new version just because someone else created a baseline. This may also limit the compare functions in Dimensions RM.

Access rights are associated with each resource defined in a Dimensions RM database. Access rights determine if you can perform a task on a target resource.

Class Definition allows the project administrator to grant or deny access to resources defined in the project schema. This includes all classes, relationships, attributes and source documents. The list of valid transactions for each of these different resources will vary (see the appropriate table in this section for specific details about the transactions available for each resource type), but the method for defining the security profile is the same. If the project administrator does not grant or deny access to a specific resource in

Class Definition, the default access defined in RM Manage for the resource category will be used.



NOTE The security constraints placed on any individual entity in class definition will apply to that entity only. Use RM Manage to apply more general security policies across the entire project.

Granting Group Access

To change the access of a group to the selected resource:

- 1 Right-click the resource and select **Define**.
- 2 Click the **Security** tab.

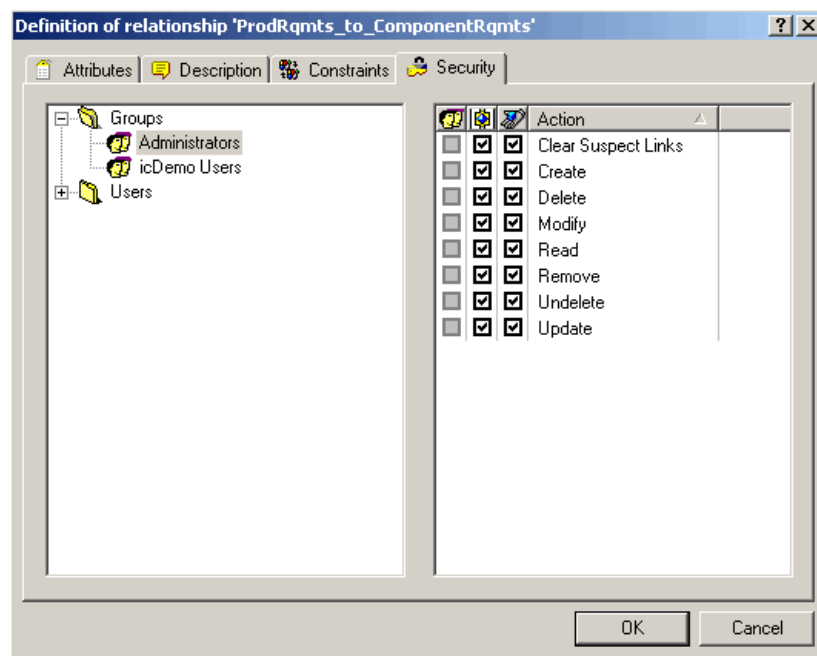


Figure 3-22. Definition of Relationship—Security Tab

- 3 Click + next to **Groups**.
- 4 Select the group.
- 5 Click the required transaction to toggle the access rights. For group access rights the group is allowed ☒ or denied ☐ access.
- 6 Click **OK**.
- 7 Save the project schema.

Granting User Access

To change the access of a user to the selected resource:

- 1 Right-click the class and select **Define**.

- 2 Click the **Security** tab.
- 3 Click + next to **Users**.
- 4 Select the user.
- 5 Click the required transaction to toggle the access rights. For user access rights, the user can be granted one of three access levels:
 - Explicit access is indicated by a checked box ☒
 - Explicit denial is indicated by an unchecked box ☐
 - Inherited access is indicated by a grayed box ☐.
- 6 Click **OK**.
- 7 Save the project schema.

Order of Precedence

The use of groups and the ability to allow and disallow users from access to a resource make it possible that a user may be both allowed and denied access to a specific resource. To resolve this potential conflict, an order of precedence is used by the Dimensions RM security system. The order of precedence (from highest precedence to lowest precedence) is shown in the following table.

Source of Access	Allowed Status
An individual user has been explicitly denied access to a resource or transaction.	Denied
An individual has been granted explicit access to a resource or transaction.	Allowed
An individual has been granted access to a resource or transaction through membership in a group that has been granted access.	Allowed
An individual has been explicitly denied access to an entire category of resources through default access rights.	Denied
An individual has been explicitly allowed access to an entire category of resources through default access rights.	Allowed
An individual has been allowed access to an entire category of resources through membership in a group that has been granted access rights to a category of resources.	Allowed
No entries exist specifying access rights for the individual or any groups of which the individual is a member in the access rights list.	Denied

Valid Transactions

The tables in the following sections list the valid transactions for classes, relationships, and source documents.

Valid Transactions for Classes

The following table lists the valid transactions for classes and describes what the transactions allow a user or group to do.

Transaction	Description
CM Lock	Define the class object as CMLocked (configuration management locked).
Create	Create objects for the class.
CreateCR	Create new change requests for objects in the class. NOTE: To create change requests, a user or group must have explicit access to the "CreateCR" and "Read" actions at the class level, and to the "Read" action at the relationship level.
Delete	Mark the class objects as deleted.
ExecuteCR	Accept or reject change requests.
Expand	Expand class objects.
Focus	Focus class objects.
Link	Create generic links to the class objects.
Read	Read the class objects.
Remove	Remove the class objects.
Replace	Replace the class objects.
Undelete	Undelete the class objects.
Unlock	Unlock the class objects that are locked.
Update	Update the class objects with a status of Current.
Update NonCurrent	Update the class objects with a status other than Current.
UpdateCR	The user can update an object with a status of "Proposed."

Valid Transactions for Relationships

The following table lists the valid transactions for relationships and describes what the transactions allow a user or group to do.

Transaction	Description
Clear Suspect Links	The user can clear the "suspect" flag on suspect links.
Create	The user can create a link across the relationship(s) if the class also has corresponding link access granted.
Delete	Not currently implemented.
Modify	Not currently implemented.
Read	Read links and relationship names.
Remove	Remove the link without keeping a record of it.
Undelete	Not currently implemented.

Valid Transactions for Source Documents

The following table lists the valid transactions for source documents and describes what the transactions allow a user or group to do.

Transaction	Description
Capture	Capture class objects from documents.
Create	Register new documents.
Read	View registered documents.
Remove	Unregister documents.
Unlock	Unlock documents.

Saving the Project Schema

To save the project schema, select **File | Save** or click the **Save**  button.



IMPORTANT! When using RM Manage or RM Class Definition from a client machine, the changes will not take effect until the Serena Dimensions RM Pool Manager is restarted on the RM server.

If there are one or more users currently working with other tools in the project you have changed, the **Tool Locks** dialog is displayed, identifying the names and computers of the current users, as well as the tools they are using.

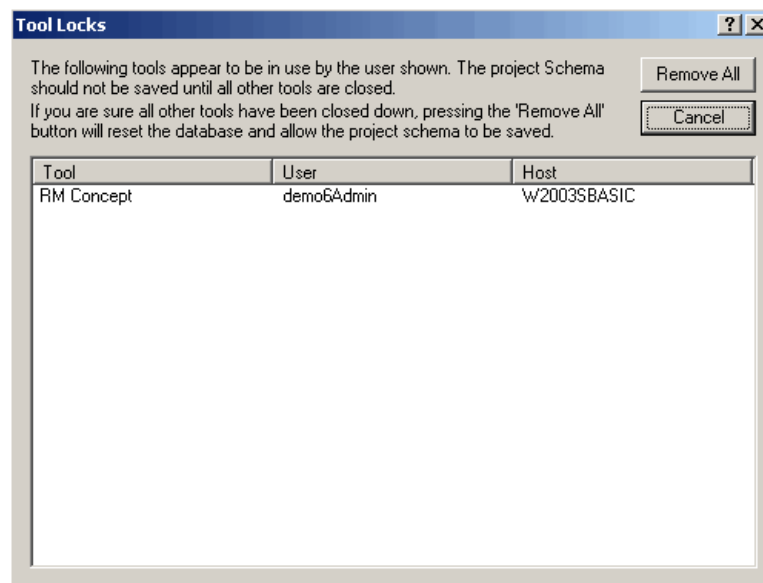


Figure 3-23. Tool Locks

You can cancel the save operation until other users have finished working, or you can click **Remove All** to remove the tool locks. This allows you to save the project schema, but it may adversely effect the operations being performed by the other users.

Reloading the Project Schema

If changes have been made to the project schema since the last save operation, you can discard them by selecting **File | Reload**. This discards all changes and reloads the project schema. If you are a project administrator, **Reload** locks the project schema so that changes can be made.

Releasing the Project Schema Lock

If the project schema is loaded in read/write mode and you do not want to make changes, the schema lock can be released by selecting **Release Lock** from the **File** menu. This allows another user to make changes to the project schema while you are still able to view the read-only version. If any changes have been made, you will be warned that the changes will be lost, and will be allowed to save the changes or cancel the operation.

Exporting the Project Schema


You can export the project schema to a *dump* file so that it can be used as a template for another project. Project data is not exported.

To export the project schema:

- 1 Select **File | Export Definitions**.
- 2 Click **Yes**.
- 3 Enter a file name and select the directory in which you would like to store the exported file.
- 4 Click **Save** to export the file.

Printing the Project Schema Diagram

To print the project schema:

- 1 Select **File | Print** or click the **Print** button .
- 2 Select print options.
- 3 Click **OK**.

Printing the Project Schema Definitions

You can print definitions for each of the classes and relationships to a printer or to an RTF file.

To print project schema definitions:

- 1 Select **Print Definitions** from the **File** menu.
- 2 Select the definitions you would like to print.
- 3 Click **Next**.
- 4 Select how you would like to print the definitions. You have four types of options: class, relationship, form, and source document. These options allow you to select which class or relationship definitions will be printed, and which data will be printed.
- 5 Click **Next**.
- 6 Click **Print**.
- 7 Click **Finish** to exit.



NOTE On the preview page you can choose to save the output to an RTF file, which can subsequently be formatted using an RTF-capable editor such as WordPad.

Implementing Suspect Links

To implement the suspect links feature, use Class Definition to define constraints and security on relationships.



NOTE For detailed information about the suspect links feature, see the *Serena Dimensions RM Browser User's Guide*.

To implement the suspect links feature:

- 1 Specify suspect link constraints on the relationships that you want to participate in the suspect links feature. For more information, see ["Specifying Constraints" on page 164](#).
- 2 Specify the **Clear Suspect Links** action for each user and group that should have permission to clear suspect links. For more information, see ["Security" on page 171](#).

Implementing Documents View

To implement the Documents View perspective, use Class Definition to add a Chapter class to the project. Do not create any relationships between this class and other classes.



NOTE For detailed information about Documents View, see the *Serena Dimensions RM Browser User's Guide*.

Defining the Date Format

When you define a date attribute in the **Date Attribution Definition** dialog box, the display format for the date can also be defined. This format will be used for both displaying the date attribute, and validating the date attribute when entering a new value.

To define the date format:

- Select or type a format in the **Display Format** box.

The screenshot shows a dialog box titled "Definition of attribute 'Maintenance Expiration Date'". It has four tabs: "Core", "Date", "Description", and "Security". The "Date" tab is active. Inside the dialog, there are several input fields: "Minimum Value:" (empty), "Maximum Value:" (empty), "Default Value:" (containing "08 JUNE, 2007"), "Maximum Length:" (a spinner box set to 22), "Display Length:" (a spinner box set to 11), and "Display Format:" (a dropdown menu showing "DD MONTH, RRRR"). At the bottom right are "OK" and "Cancel" buttons.

Figure 3-24. Date Attribute Definition Dialog

Date Format Elements

When entering a new date any of the format elements shown below can be used, but format items cannot appear twice and also format items that represent similar information cannot be combined. For example, you cannot use "YYYY" and "BC" in the same format string.

Element	Meaning
D	Day of week (1-7)
J	Julian day; the number of days since January 1, 4712 BC. Numbers specified with "J" must be integers.
Q	Quarter of year (1,2,3,4; 1=January—March)
W	Week of month (1-5) where week 1 starts on the first day of the month and ends on the seventh
AD A.D.	A.D. indicator with or without periods
AM A.M.	Meridian indicator with or without periods

Element	Meaning
BC B.C.	B.C. indicator with or without periods
PM P.M.	Meridian indicator with or without periods
CC SCC	Century; "S" prefixes BC dates with "-"
DD	Day of month (1-31)
DY	Abbreviated name of day
IW	Week of year (1-52 or 1-53) based on the ISO standard
MI	Minute (0-59)
MM	Month (01-12; Jan=01)
RM	Roman numeral of month (I-XII; Jan=I)
WW	Week of year (1-53) where week 1 starts on the first day of the year and continues to the seventh day of the year
SS	Second (0-59)
DAY	Name of day, padded with blanks to length of 9 characters
DDD	Day of year (1-366)
MON	Abbreviated name of month
IYY IY I	Last 3, 2 or 1 digit(s) of the ISO year
YYY YY Y	Last 3, 2, or 1 digit(s) of year
Y YYY	Year with comma in this position
HH HH12	Hour of the day (1-12)
HH24	Hour of the day (0-23)
MONTH	Name of month, padded with blanks to length of 9 characters
IYYY	4-digit year based on the ISO standard
RRRR	4-digit year; allows entry of 2 digit year and calculates century based on the 2 digit year value entered. See "RRRR Date Format Elements" on page 180 . NOTE: This is the preferred format for 4-digit years.
SSSSS	Seconds past midnight (0-86399)
YEAR SYEAR	Year spelled out; "S" prefixes BC dates with "-"
YYYY SYYYYY	4-digit year; "S" prefixes BC dates with "-"

Date Format Element Suffixes

The following table lists suffixes that can be added to date format elements:

Suffix	Meaning	Example Element	Example Value
TH	Ordinal Number	DDTH	4TH
SP	Spelled Number	DDSP	FOUR
SPTH or THSP	Spelled, Ordinal Number	DDSPTH	FOURTH

When you add one of these suffixes to a date format element, the return value element is always in English.



NOTE Date suffixes are only valid on output and should not be used when entering a date (for example, a date attribute with the format defined as "DDTH Mon, YYYY" will be displayed as "12th Jan, 1999" but should be entered as "12 Jan, 1999").

Capitalization of Date Format Elements

Capitalization in a spelled-out word, abbreviation, or Roman numeral follows capitalization in the corresponding format element. For example:

- "DAY" produces "MONDAY"
- "Day" produces "Monday"
- "day" produces "monday"

RRRR Date Format Elements

The RRRR date format element is similar to the YYYY date format element, but it provides additional flexibility for storing date values in other centuries when you enter a two-digit year. For example, it allows you to store twenty-first century dates in the twentieth century when you specify only the last two digits of the year.

The following table describes the behavior of the RRRR date format element.

Last Two Digits of Current Year	Digits Entered in Oracle	Century in which Date is Created
00–49	00–49	Current
	50–99	Prior
50–99	00–49	Next
	50–99	Current

The following table provides examples of this behavior.

Current Year	Digits Entered in Oracle	Date Created
2004	09	2009
	99	1999
2094	09	2109
	99	2099

Punctuation and Character Literals in Date Format Models

You can also include these characters in a date format model:

- Punctuation marks such as hyphens, slashes, commas, periods, and colons
- Character literals

These characters appear in the displayed value in the same location as they appear in the format model, and must be entered in the same location for a new date value to be valid.

Workflows

A workflow ensures the proper flow of requirements using a defined process that consists of attributes, states and transitions. Requirements must follow this workflow from the time they are submitted. You design workflows in the Workflow Definition Designer of the Class Definition tool.

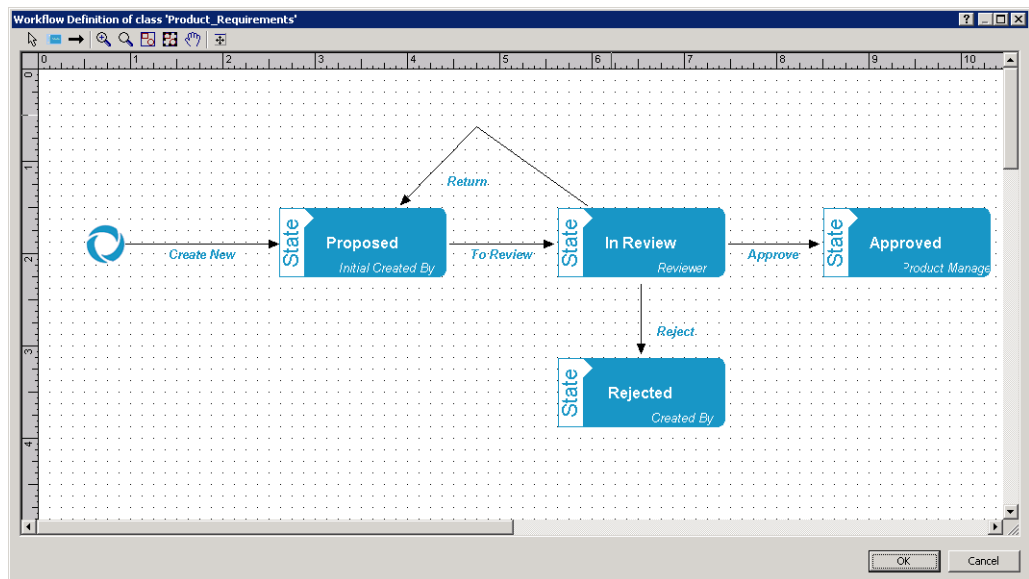


Figure 3-25. Workflow for class Product Requirements

Workflow Elements

A workflow consists of two elements: states and transitions.

State: A state is a position in a workflow where a requirement resides. While a requirement resides in a given state, it has an owner who is responsible for performing a specific task with the requirement.

Transition: A transition activates the movement of a requirement from one state to another in the workflow.

Creating or Editing a Workflow

You can create workflow only for a class. It is not possible to create one workflow which handles several classes.


To create a workflow, follow these steps:

- 1 Start the **Class Definition** tool.
- 2 Log in with an administrator account.
- 3 Right-click the desired class and select **Define** from the shortcut menu.
- 4 Ensure that the **Enable Workflow** box is selected.
- 5 Click the **Workflow Definition** button. This opens the Workflow Definition Designer.
- 6 Design your workflow by adding, modifying or deleting states and transitions.
- 7 Click **OK** to close the Workflow Definition Designer.
- 8 Click **OK** to close the *Definition of class 'Class Name'* dialog.
- 9 Save the class definition.

Workflow States

Adding a Workflow State

To add a state, follow these steps:

- 1 Click the  button in the toolbar. Alternatively, you can right-click the work area and select **Add State** from the shortcut menu.
- 2 Click the position of the work area where you want the state to be located.
- 3 Enter a state name and press **Enter**.



NOTE State names must be unique.

Changing a Workflow State Name

To change a state name, double-click the name and enter the new name. Then, press **Enter**.



NOTE State names must be unique.

Changing a Workflow State Definition

To change a state definition you can either double click the state or right-click the state and select **Define...** from the shortcut menu. This opens the *Definition of state 'State Name'* dialog which allows you to change these definitions:

- [Common Settings](#)
- [Description Text](#)
- [Form Settings](#)
- [Security Settings](#)

Common Settings

The Common settings dialog is opened when you open the *Definition of state 'State Name'* dialog. To change Common settings after you changed other settings, select the **Common** tab. The Common settings dialog allows you to change the requirement owner.

Description Text

To change the description text, select the **Description** tab.

Form Settings

To change the form settings, select the **Form** tab. The Forms settings dialog provides two lists:

Sections: Defines which sections are shown when the user opens the requirement.

User Defined Attributes: Defines how to process user defined attributes.

Setting	Description
Display	Display the attribute if its parent section is also displayed.
Editable	The attribute can be changed
Mandatory	The attribute must have a value.

Security Settings

To change the security settings, select the **Security** tab. The security settings define which user or group can read, replace or update a requirement of the selected state.

Group Rights



Group

The **Group** setting defines if all users of a group gain access. Note that the **Group** setting cannot deny a right gained on project level.



Project

The **Project** column shows the right gained on project level. Note that you cannot change the right here.

To change the **Read**, **Replace** or **Update** right, follow these steps:

- 1 Start RM Manage.
- 2 Select the database the project resides in and log in.
- 3 Select the project.
- 4 Select the **Default Access** tab.
- 5 Expand the group you want to modify.
- 6 Select the **Classes** folder.
- 7 Select or clear the right you want to change (**Read**, **Replace** or **Update**).



Actual

The **Actual** setting defines the actual right of the group. Note that the **Actual** box is always selected if the right is gained on project level.

User Rights



User

The **User** setting defines if a user of a group gains access. Note that the User setting cannot deny a right gained on group or project level.



Group

The **Group** column shows the right gained on group level. Note that you cannot deny a right gained on group level. To change a group right, see ["Group Rights" on page 184](#).

**Project**

The **Project** column shows the right gained on project level. Note that you cannot change the right here.

To change the **Read**, **Replace** or **Update** right, follow these steps:

- 1 Start RM Manage.
- 2 Select the database the project resides in and log in.
- 3 Select the project.
- 4 Select the **Default Access** tab.
- 5 Expand the user you want to modify.
- 6 Select the **Classes** folder.
- 7 Select or clear the right you want to change (**Read**, **Replace** or **Update**).

**Actual**

The **Actual** setting defines the actual right of the group. Note that the **Actual** box is always selected if the right is gained on project level or group level.

Deleting a Workflow State

To delete a state, follow these steps:

- 1 Select the state you want to delete.
- 2 Press the **Delete** key or right-click the state and select **Delete** from the shortcut menu.
- 3 Confirm the following dialog.



NOTE A state can only be deleted if no requirement is within that state.

Workflow Transitions**Adding a Workflow Transition**

In order to add a transition you need at least 2 states in your workflow diagram.

To add a transition, follow these steps:

- 1 Click the ➡ button in the toolbar. Alternatively, you can right-click the work area and select **Add Transition** from the shortcut menu.
- 2 Click the state you want the transition to start from.
- 3 Click the state you want the transition to end.



TIP You can create a "angled" transition arrow (e.g. a 90° angle) by clicking at several points in the work area before clicking the end state.

- 4 Enter a transition name and press **Enter**.

Changing a Workflow Transition Name

To change a transition name, double-click the name and enter the new name. Then, press **Enter**.

Changing a Workflow Transition Definition

To change the transition definition you can either double click the transition arrow or right-click the transition arrow and select Define... from the shortcut menu. This opens the *Definition of transition 'Transition Name'* dialog which allows you to change these definitions:

- [Description Text](#)
- [Form Settings](#)
- [Constraint Settings](#)
- [Security Settings](#)

Description Text

To change the description text, select the **Description** tab. The text you enter is used as a tool tip which pops up when the user hovers the button for that transition.

Form Settings

To change the form settings, select the **Form** tab. The Form settings allow you to define if a transition is a regular or a quick transition. Quick transitions do not show any form, so users cannot modify any attributes of a requirement. To turn a regular transition into a quick transition, select the **Quick Transition** box. If you clear the **Quick Transition** box, the Forms settings dialog provides two lists:

Sections: Defines which sections are shown when the user opens the requirement.

User Defined Attributes: Defines how to process user defined attributes.

Setting	Description
Display	Display the attribute if its parent section is also displayed.
Editable	The attribute can be changed
Mandatory	The attribute must have a value.

Constraint Settings

To change the constraint settings, select the **Constraints** tab. By creating or modifying constraints you define under which conditions the transition can be executed.

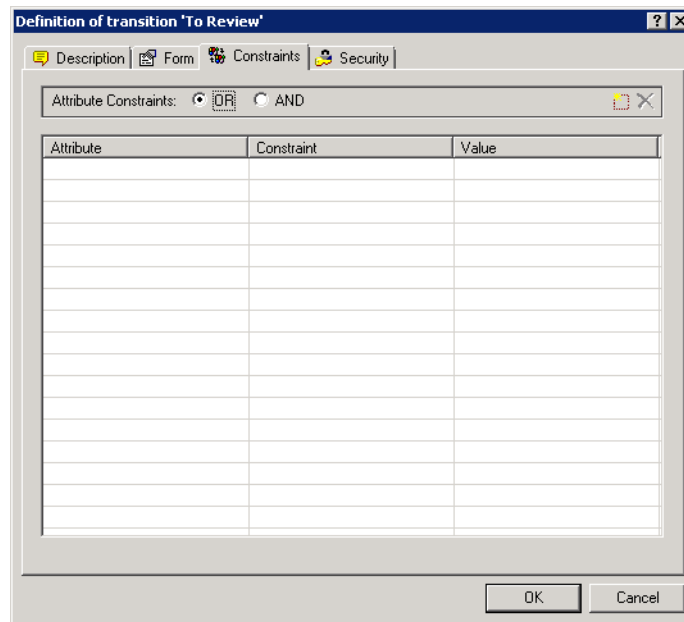


Figure 3-26. Constraint Settings dialog




NOTE Constraints are checked when clicking the associated button.

To add constraints:

- 1 Click **OR** or **AND** in the **Attribute Constraints** area to specify the type of logical relationship you are about to specify.
- 2 Specify the constraints as described in the following sections.
- 3 Click **OK**.

To add a new constraint:

- 1 Click the **New Constraint** button  in the **Attribute Constraints** area.
A new row is added to the table and the **Attribute** cell is populated. If needed, click on the **Attribute** cell to select a different attribute from a drop-down menu.
- 2 Click in the **Constraint** cell and select the desired constraint type from the drop-down menu. The following constraint types are available:
 - **=** The attribute *exactly* equals the value.
 - **!=** The attribute does NOT equal the value.
 - **Like** The attribute includes the value as part of a larger string. When using Like, you would include one or more asterisks (*) as wild cards to indicate where the value fits into the larger attribute string. For example, taken in order, these values:

*UNIX, *UNIX*, or UNIX* would match with these attributes: HP-UNIX, HP-UNIX-11, or UNIX-11.


- 3 Click in the **Value** cell. If the selected attribute is a list, select the value from the list of values displayed; otherwise, type the value into the cell.



NOTE If using a **Like** constraint, use asterisks as wild cards.

- 4 Click **OK**.

To delete a constraint:

- 1 Highlight the row and click the **Delete** button  in the **Attribute Constraints** area.
- 2 Click **OK**.

To change an existing constraint rule:

- 1 Click the cell to be changed and modify the value.
- 2 Click **OK**.

Security Settings

To change the security settings, select the **Security** tab. The security settings define which user or group can execute a transition of the selected state.

Group Rights



Group

The **Group** setting defines if all users of a group gain access. Note that the **Group** setting cannot deny a right gained on project level.



Project

The **Project** column shows the right gained on project level. Note that you cannot change the right here.

To change the **Execute Transition** right, follow these steps:

- 1 Start RM Manage.
- 2 Select the database the project resides in and log in.
- 3 Select the project.
- 4 Select the **Default Access** tab.
- 5 Expand the group you want to modify.
- 6 Select the **Classes** folder.
- 7 Select or clear the **Execute Transition** right.



Actual

The **Actual** setting defines the actual right of the group. Note that the **Actual** box is always selected if the right is gained on project level.

User Rights



User

The **User** setting defines if a user of a group gains access. Note that the User setting cannot deny a right gained on group or project level.



Group

The **Group** column shows the right gained on group level. Note that you cannot deny a right gained on group level. To change a group right, see ["Group Rights" on page 188](#).



Project

The **Project** column shows the right gained on project level. Note that you cannot change the right here.

To change the **Read** or **Update** right, follow these steps:

- 1 Start RM Manage.
- 2 Select the database the project resides in and log in.
- 3 Select the project.
- 4 Select the **Default Access** tab.
- 5 Expand the user you want to modify.
- 6 Select the **Classes** folder.
- 7 Select or clear the **Execute Transition** right.



Actual

The **Actual** setting defines the actual right of the group. Note that the **Actual** box is always selected if the right is gained on project level or group level.

Deleting a Workflow Transition

To delete a transition, follow these steps:

- 1 Select the transition you want to delete.
- 2 Press the **Delete** key or right-click the transition and select **Delete** from the shortcut menu.
- 3 Confirm the following dialog.

Deleting a Workflow

A workflow can only be deleted if there are no requirements within any state of that workflow. If this is not the case, the workflow can only be disabled.

To delete a workflow, follow these steps:

- 1 Start the **Class Definition** tool.
- 2 Log in with an administrator account.
- 3 Right-click the desired class and select **Define** from the shortcut menu.
- 4 Click the **Workflow Definition** button. This opens the Workflow Definition Designer.
- 5 Delete all states and transitions except the **New** state.

- 6** Click **OK**.
- 7** Clear the **Enable Workflow** box.
- 8** Click **OK** to close the Workflow Definition Designer.
- 9** Click **OK** to close the *Definition of class 'Class Name'* dialog.
- 10** Save your class definition.

To disable a workflow, follow these steps:

- 1** Start the **Class Definition** tool.
- 2** Log in with an administrator account.
- 3** Right-click the desired class and select **Define** from the shortcut menu.
- 4** Clear the **Enable Workflow** box.
- 5** Click **OK**.
- 6** Save your class definition.

Chapter 4

Customizing Web Forms and Templates

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Customizing Web Forms

You can customize the RM Browser Web forms and dialog boxes that contain Dimensions RM attribute fields. To perform the customization, you edit an XML file to create a user-defined template.

In this section, when *attribute* is cited, it refers to Dimensions RM attributes, not JavaScript attributes.

The following list specifies the things you can do to customize Web forms and dialog boxes (referred to as *forms* in the remainder of this section):

- Change the order of attributes within a section.
- Specify the attributes to be included in a section.
- Create a subgroup of the attributes within a section. This subgroup can be a group box or an expandable heading that contains the attributes.
- Add a button, hyperlink, or other HTML element to the form that is linked to an external source that may return values to Serena® Dimensions® RM fields.
- Add your own sections and distribute attributes among them however you prefer.
- Change the number of columns that a section uses to lay out the attributes.
- Change or hide lists in query-style forms (for example, the operator list).

The user-defined template consists of an XML file that contains sections for the global items contained in the form (for example, scripts, cascading style sheets [CSS], and so on), dialog sections and their order, and the order of fields within each section.



NOTE The user-defined template is described in detail in ["Template Layout" on page 193](#).

Template Processing

A templates directory (`RM_Install\Common Tools \#. #\tomcat\#. #\webapps\rtmBrowser\forms`) contains all the template files for the custom forms. Each database and project can have its own set of template files. A template file represents the custom layout for a single class type, an entire project, or all projects.

The templates are processed as follows:

- 1 RM Browser looks for a class-specific XML file, and loads it if it is found.
- 2 If a class-specific XML file is not found, RM Browser looks for the default file for the project (`forms\database\project\default.xml`), and loads it if it is found.
- 3 If a project-specific XML file is not found, RM Browser loads the global default file (`forms\common\default.xml`). This file creates a standard Dimensions RM appearance.

The naming of the database and project directories match their visible names. Template file names match the class name with a ".xml" extension.



NOTE If you rename a database, project, or class, you must rename the template directories or files.

Template Layout

As mentioned earlier, the template layout is an XML file.

The following illustration shows the layout of the global default file (the file that ships with Dimensions RM). This form applies to classes across projects.

```
<?xml version="1.0" encoding="UTF-8"?>
<form xmlns="http://schemas.serena.com/2005/01/rtmform" animationspeed="1">
  <section type="prioritized"/>
  <section type="standard"/>
  <section type="custom"/>
  <section type="groupattribute"/>
  <section type="system"/>
  <section type="attachments"/>
  <section type="comments"/>
  <section type="links"/>
  <section type="history"/>
  <section type="polls"/>
  <section type="dimensions"/>
  <section type="container"/>
</form>
```

The following illustration shows the layout of an example user-defined XML file that is specific to a single class name within a project. The table that follows the illustration describes the tags in the file. The table is ordered logically, rather than by the appearance of the tags in the XML file.

```

1      <?xml version="1.0" encoding="UTF-8"?>
2      <form xmlns="http://schemas.serena.com/2005/01/rtmform" animationspeed="5">
3      <script src="../jsrpt/myCustomScript.js"/>
4      <stylesheet src="../cssmyCustomStylesheet.css"/>
5      <section type="user" label="My First Section" cols="3" labelplacement="top">
6      <attribute id="ACTUAL_FIX_TIME"/>
7      <attribute id="DESCRIPTION" colspan="2"/>
8      <group label="Release Information" cols="2" labelplacement="left"
9      expandable="no">
10     <attribute id="RELEASE_ID" label="Id"/>
11     <attribute id="RELEASE_DATE" label="Date"/>
12     <attribute id="RELEASE_STATUS" label="Status"/>
13   </group>
14   <text><![CDATA[<a href="http://www.serena.com"></a>]]></text>
16   </section>
17   <section type="user" label="My second Section" cols="2">
18     <attribute id="RESPONSIBLE_ANALYST" type="Custom" label="Analyst"
19     colspan="2">
20     <writeable>
21     <xhtml>
22       <input name="myField" type="text" value="" size="30" maxlength="10"
23       onchange="dosomethingspecial()" onfocus="dosomethingspecial()" />
24       <button type="button" id="myButton"
25       onclick="dosomethingspecial()">Search...</button>
26     </xhtml>
27     </writeable>
28   </attribute>
29 </section>
30 <section type="prioritized"/>
31 <!--
32 <section type="standard" label="Standard Attributes"/>
33 <section type="custom" label="Custom Attributes"/> -->
34 <section type="groupattribute" label="Group Attributes"/>
35 <section type="system" label="My System"/>
36 <section type="attachments" label="File Attachments"/>
37 <section type="comments" label="Discussions"/>
38 <section type="links" label="Relationships"/>
39 <section type="history" label="History"/>
40 <section type="polls" label="Polls"/>
41 <section type="dimensions" label="Dim CM Associations" />
42 <section type="container"/>
43 </form>

```



CAUTION! Attributes can only be defined in one section.

Tag	Description
1	<p>Sections in forms are set by default to open and close by a scrolling mechanism. The <code>animationspeed</code> option determines one of the following:</p> <ul style="list-style-type: none"> ■ The speed of the scrolling (default <code>animationspeed=0</code>) ■ Whether the scrolling mechanism is used. If it is not used (<code>animationspeed=0</code>), the sections open and close immediately when the user clicks + or -. <p>For information about how to configure the <code>animationspeed</code> option, see "Configuring the Expansion and Collapse of RM Browser Sections" on page 214.</p>
2	<p>The <code><script></code> tag contains a user-defined JavaScript file. You can include more than one JavaScript file.</p> <p>If a custom JavaScript file needs to perform processing after the form loads, unloads, gains focus, or loses focus, you can hook into the standard JavaScript <code>onload</code>, <code>onunload</code>, <code>onfocus</code>, and <code>onblur</code> events. These are dialog specific and occur after the form finishes its own processing of these events.</p> <p>The function names for each form follow:</p> <p>New Requirement, Edit Attributes, Change Request, Comments, Form View, Documents View: <code>objOnLoad</code>, <code>objOnUnload</code>, <code>objOnFocus</code>, <code>objOnBlur</code>, <code>objHistoryOnLoad</code> (NOTE: The Documents View form is displayed only after you click a requirement in the navigation tree.)</p> <p>Query by Class, Query by Relationship: <code>queryOnLoad</code>, <code>queryOnUnload</code>, <code>queryOnFocus</code>, <code>queryOnBlur</code></p> <p>Edit Query: <code>editQueryOnLoad</code> (NOTE: This function is called after editing an existing query in the Query by Class or Query by Relationship dialogs after the field data has been entered.)</p> <p>Link Objects: <code>linkOnLoad</code>, <code>linkOnUnload</code>, <code>linkOnFocus</code>, <code>linkOnBlur</code></p> <p>Organize by Collection: <code>collOnLoad</code>, <code>collOnUnload</code>, <code>collOnFocus</code>, <code>collOnBlur</code></p> <p>Approve Change Request: <code>crOnLoad</code>, <code>crOnUnload</code>, <code>crOnFocus</code>, <code>crOnBlur</code></p> <p>Organize by Category: <code>catOnLoad</code>, <code>catOnUnload</code>, <code>catOnFocus</code>, <code>catOnBlur</code></p> <p>Add to Chapter: <code>atcOnLoad</code>, <code>atcOnUnload</code>, <code>atcOnFocus</code>, <code>atcOnBlur</code></p> <p>There are other JavaScript functions that you can use with query-style forms and other forms that contain attributes. See "Query-Style Form Functions" on page 197 and "Helper Functions" on page 200 for details.</p> <p>The <code>rtmObjCustomHtmlPrint(attrName)</code> function is called for any custom HTML attribute to get the read-only (print) value. The <code>attrName</code> parameter is the internal attribute name.</p> <p>The return value is a string that contains that value, which can be any HTML text or plain text that is used in the printed page to represent the value of that attribute.</p> <p>This function applies to the New Requirement and Edit Attributes dialog boxes only.</p>
3	<p>The <code><stylesheet></code> tag contains a user-defined stylesheet. You can include more than one stylesheet tag.</p>

Tag	Description
4	<p>The <code><section></code> tag contains either a predefined section or a user-defined section.</p> <p>A predefined section contains a type, a label (defaults to the standard title for the section), the label placement (left or top; defaults to left), and the number of columns (defaults to two). A predefined section contains no other elements.</p> <p>Predefined section types include standard, custom, system, attachments, comments, links, history, polls, and dimensions.</p> <p>Predefined section types are used in the template (.xml) file. You can rearrange the placement of these sections.</p> <p>If a predefined type exists within the template file but would not normally be shown for an object, it is not displayed. If a predefined section does not exist within the template file, the section is not displayed.</p> <p>A user-defined section allows you to specify the order and grouping of attributes, and allows you to place custom fields on the form. A user-defined section contains a specific type (that is, "user"), a label, the label placement (left or top; defaults to left), and the number of columns (defaults to two). The label is the section label, but the label placement refers to attribute labels within that section.</p>
5	<p>The <code><attribute></code> tag can specify a standard attribute or a custom field that populates an attribute. The layout of the fields within a section or group is from left to right. You can specify a custom label or use the default label for the attribute from the database. You can also specify the placement of the label (left or top, defaults to whatever the group or section is set to). The label is the section label, but the label placement refers to attribute labels within that section.</p> <p>You can specify a custom attribute type. RM Browser automatically generates a hidden attribute associated with a custom field by using the <code>attribute id</code> that is provided. You can specify how many columns the field consumes (defaults to one).</p> <p>See the description for tag 9 for options when you use XHTML/HTML inside an <code><attribute></code> tag.</p>
6	<p>The <code><group></code> tag allows you to physically group attributes, but in the confines of a section. A section could have several different groupings of attributes.</p> <p>The group specifies the attributes contained in it, a label, the label placement (left or top; defaults to left), the number of columns (defaults to two), and whether it is expandable or not (defaults to not expandable).</p>
7	<p>The CDATA element can be used in <code><text></code> and <code><attribute></code> tags. It is used to insert HTML that is not well formed into an XML file. Use CDATA if you do not know that the additional text is XHTML compliant.</p>

Tag	Description
8	<p>The <code><writeable></code> tag contained in the attribute definition indicates that if the form is displayed for editing, this is the XHTML/HTML that will be used. Alternatively, a <code><read-only></code> tag means that if the form is displayed as read-only, this is the XHTML/HTML that will be used. It is your responsibility to transfer data to a hidden field.</p> <p>You have three options when you use XHTML/HTML:</p> <ul style="list-style-type: none"> ■ The custom XHTML/HTML can apply to both editable and read-only forms (if specified directly inside the <code><text></code> or <code><attribute></code> tag). ■ Different XHTML/HTML can be provided for editable as opposed to read-only forms (if specified in <code><writeable></code> and <code><read-only></code> elements inside the <code><text></code> or <code><attribute></code> tag). ■ The XHTML/HTML can only apply to editable forms (if specified in <code><writable></code> only elements inside the <code><text></code> or <code><attribute></code> tag). With this option, read-only forms display the attribute in the standard way. <p>The <code><writeable2></code> tag and <code><readonly2></code> tag are the same as the <code><writeable></code> tag and <code><readonly></code> tag, except that they are used whenever a range control is shown (any query-style dialog when between or not between is the selected operator). If these tags are not present, then the <code><writeable></code> tag and <code><readonly></code> tag are used for both controls. However, this is generally not recommended because it provides no way to specify a unique control ID and could cause the custom JavaScript to work in unexpected ways.</p>
9	<p>The <code><xhtml></code> tag can be used in <code><text></code> and <code><attribute></code> tags. It allows you to insert XHTML-compliant code that adds elements such as buttons to the form.</p> <p>You can also add text boxes inside <code><xhtml></code> tags with sizes set to any number of columns and rows, optionally with scrolling. For example, the following tag:</p> <pre><xhtml> <TEXTAREA name="New_custom11" id="new_id11" rows="4" cols="25" wrap="off"> </TEXTAREA> </xhtml></pre> <p>Adds a text box that allows four rows and 25 columns (in characters). The <code>wrap="off"</code> attribute enables scrollbars for this text box.</p>

Query-Style Form Functions

The following functions can be used to customize the **Attribute Constraints** tab on query-style dialogs. They can be used to either change the form or the lists that appear when you hover over the down arrow button ▾ on either side of an attribute control. Query-style dialog boxes include:

- **Query by Class**
- **Query by Relationship**
- **Organize by Category**
- **Link**
- **Organize by Collection**
- **Add to Chapter**

The following functions can be used to customize query-style form lists that appear when you hover over the down arrow button ▾ on either side of an attribute control.

Function	Description
<code>rtmQueryOnOperatorSelection(attrId, operator)</code>	Called whenever an operator is selected in any query-style dialog. This function must return <code>true</code> if the selection is allowed or <code>false</code> if it is not allowed.
<code>rtmQueryOnValueOptionSelection(attrId, option)</code>	Called whenever a value option is selected in the list that opens to the right of the attribute control (Query by Class and Query by Relationship only). This function must return <code>true</code> if the selection is allowed or <code>false</code> if it is not allowed.
<code>rtmQueryAddCustomAttributeOperators(attrId)</code>	<p>Called for any Web form custom attribute because the default operator list may or may not be appropriate. It should define the list in the same way as the <code>rtmQueryAdd...</code> functions, or may simply call one of them to get the same list.</p> <p>The <code>rtmQueryAdd...</code> functions are listed below:</p> <ul style="list-style-type: none"> ■ <code>rtmQueryAddAlphaOperators</code> ■ <code>rtmQueryAddNumericOperators</code> ■ <code>rtmQueryAddDateOperators</code> ■ <code>rtmQueryAddListOperators</code> ■ <code>rtmQueryAddTextOperators</code> <p>and are defined in <code>icObjectFormsMenus.js</code> (located in <code><RM Install Dir>\rtmBrowser\jscript</code>).</p> <p>To customize the operator list, use the <code>rtmQueryAdd...</code> functions to build the list the way you want. Use the calls at the end of the functions to set the default operator. These calls include <code>rtmQueryLike</code> and <code>rtmQueryIn</code>.</p>
<code>rtmQueryAddCustomAttributeOperators(attrName)</code>	Called for custom attributes when a query constraints dialog box that contains that attribute is opened.
<code>rtmQueryGetCustomValues(attrId, operator)</code>	Called whenever a query-style dialog is generating a script for each attribute. This function should generally not be necessary, but is provided in case the default processing is not sufficient. This function must return an array of values for any attributes using custom processing and <code>null</code> for any attributes using the default processing.

Function	Description
<code>rtmQuerySetCustomValues(attrId, values)</code>	Called to set in and not in custom attributes when loading an existing query for editing. This function is used in the case where a custom Web form hides an attribute that is part of an IN clause. When this occurs, Dimensions RM checks for the existence of the function and calls it so that the custom JavaScript can set the custom control to the correct value or values. This function returns true if the attribute was handled and false if it was not handled.
<code>rtmQueryShowValueOptions(attrId)</code>	Called to tell Dimensions RM to not show the list that opens to the right of the attribute control and contains the Fixed or Entered at runtime options.

Query-Style Form Function Parameters

The parameters for the ["Query-Style Form Functions" on page 197](#) are described in the following table.

Parameter	Description
<code>attrId</code>	The attribute name with the dialog name appended to it. This parameter is used to uniquely identify an attribute. For example, PUIDQryRS or PUIDQryRT for the PUID on the Constraints-Source or Constraints-Target tabs on the Query by Relationship form.
<code>operator</code>	A string with the internal operator (LIKE, IN, INITIALIZED, and so on) or pseudo-operator (BETWEEN and NOT BETWEEN).
<code>option</code>	FIXED (specified during the creation of the script) or RUNTIME (specified by the user in response to a prompt during the execution of the script).
<code>values</code>	The values in the IN list of the script.

Helper Functions

The following functions are helper functions for Web form custom attributes. They are used to get and set the attribute values that Dimensions RM uses.

Function	Description
<code>rtmUtilGetAttributeElementId(attrId, isRangeCtrl)</code>	Builds an ID string based on the attribute name and the context from which it is being called. This function is not validated.
<code>rtmUtilGetAttributeValue(attrId, isRangeCtrl)</code>	Gets the value of the specified attribute from the Web form. If the element (as determined by <code>rtmUtilGetAttributeElementId</code>) is an INPUT tag (whether it was defined in a custom or standard section), it returns its value. Otherwise, it returns the <code>innerHTML</code> value of the element. If the attribute is not found, the function returns null.
<code>rtmUtilSetAttributeValue(attrId, value, isRangeCtrl)</code>	Sets the value of the specified attribute.

Helper Function Parameters

The parameters for the ["Helper Functions" on page 200](#) are described in the following table.

Parameter	Description
<code>attrId</code>	The attribute name. This parameter is used to uniquely identify an attribute.
<code>value</code>	A string value to put into the Dimensions RM attribute in the Web form. This parameter does not work for non-Dimensions RM attributes.
<code>isRangeCtrl</code>	Valid values are <code>true</code> or <code>false</code> . This parameter is used with ranges (BETWEEN and NOT BETWEEN) that have two controls for a single attribute. The parameter would be <code>true</code> to show the second control.

Customizable Web Forms

The behavior of customized Web forms falls into two categories.

Editable Mode

Web Page	Behavior
New Requirement Edit Requirement Change Request Query by Class Query by Relationship Link Requirements Organize by Collection Organize by Category Add to Chapter	Each of these forms use the user-defined template for the object in "editable" mode with respect to customized attribute fields. For custom user fields, the "editable" XHTML/HTML that you provided is displayed. The header and footer sections of these forms are not customizable.

Read-Only Mode

Web Page	Behavior
Comments Form View Approve Change Request Documents View Traceability View	Each of these forms use the user-defined template for the object in "read-only" mode with respect to customized attribute fields. They display the layout without any user-editable fields. For custom user fields, they display either the "read-only" XHTML/HTML that you provided, or if none, the value of the specified field. If there is no <writeable> or <read-only> tag, the same XHTML/HTML is displayed in both editable and read-only forms. The header and footer sections of these forms are not customizable. NOTE: The Documents View and Traceability View forms are displayed only after you click a requirement in the navigation tree or traceability tree.

Allowable Tags

The following listing shows the allowable tags that you can use when customizing Web forms.

<script>:

src - URL to JavaScript file

<stylesheet>:

src - URL to Cascading Style Sheet (CSS) file

<section>:

labelplacement - left or top (whether label is placed beside or above attribute value)

cols - number of attribute columns within the section

header - yes or no (whether to show the expandable section header or not)

justified - left or right (how to justify an attribute within the attribute column)

section type - prioritized, standard, system, custom, links, polls, comments, attachments, user, dimensions

user section tags:

<attribute>:

id - attribute name (not display name)

colspan - number of attribute columns occupied by this attribute

type - field or custom (field shows the attribute in the standard way)

custom attribute tags:

<readonly> - how the custom attribute gets displayed in read-only forms (for example, plain text)

<xhtml> - for well-formed HTML

<![CDATA[]]> - for standard HTML (not well-formed HTML)

<writeable> - how the custom attribute gets displayed in editable requirement forms

<xhtml> - for well-formed HTML

<![CDATA[]]> - for standard HTML (not well-formed HTML)

NOTE: If neither custom attribute tag is used, the contents apply to both editable and read-only forms.

<group> (a subgroup within a section):

cols - number of attribute columns within a section

expandable - yes or no (whether the group can be expanded and collapsed or displayed in a fieldset)

tags: <attribute> and <text>, just like in <section>

<text>:

colspan - number of attribute columns occupied by this attribute

type - if set to "url", generates and displays the URL to the requirement. For example, <text label="Requirement Link" type="url"/>

tags: <xhtml> and <![CDATA[]]>, just like in <attribute>

Defining Custom Styles for Published Documents

The basic reason you define custom styles is to change the style of chapter and requirement headings. However, you can customize any styles that are used in a document unless they are used as in-line styles. (Some of the styles introduced when you edit a requirement using the HTML editor in RM Browser are in-line styles and cannot be changed.)



IMPORTANT! Using custom styles is only supported if the chapter is formatted as **Paragraph**. To ensure that all chapters formatted as **Paragraph** follow these steps:

- 1 Open the document in Document View.
- 2 Click on **Format Document** in the **Documents** group in the **Action** pane.
- 3 **Requirement Layout:** Select **Paragraph**.
- 4 Click the **Reset all chapters** button.
- 5 Click the **OK** button.

To define custom styles:

- 1 Create or open a Microsoft Word document that contains the template format.
- 2 Save the Word document as filtered HTML document.



IMPORTANT! You must set the file **Save as type** in Word to: **Web Page, Filtered (*.htm;*.html)**.

Do **NOT** select "Single File Web Page (*.mht;*.mhtml)" or "Web Page (*.htm;*.html)".



NOTE This is the only chapter which requires to save the file using Web Page, Filtered. The chapters [Creating Templates to Publish Requirements](#) and [Defining Headers and Footers for Published Documents](#) require a different format.

- 3 If it does not exist, create the directory *DataBase_Name* in this directory
RM_Install\Common Tools #.#\atomcat\#.#\webapps\rtmBrowser\conf



NOTE *Database_Name* is identical with the database name from the login dialog.

- 4 If it does not exist, create the directory *Project_Name* inside the *DataBase_Name* directory from [Step 3](#).



NOTE *Project_Name* is identical with the project name from the login dialog.

- 5 In a text editor, create a file named `DocumentPublishTemplate.txt`, and place it in the following directory:

RM_Install\Common Tools #.#\atomcat\#.#\webapps\rtmBrowser

`\conf\Database_Name\Project_Name`

- 6 Open the HTML file you created in step 2 in text editor (e.g. Notepad).
- 7 The HTML file might contain more than one style section. Some of these style sections might be surrounded by an HTML comment (`<!--` and `-->`). You need to copy all styles and include their `<style>` and `</style>` tags as well as the HTML comments if applicable and paste them into the `DocumentPublishTemplate.txt` file.



NOTE

- Include the `<style>` and `</style>` tags in the text that you copy. A style section might look like this:

```
<style>
<!--
/* Font Definitions */
@font-face
{font-family:"Cambria Math";
panose-1:2 4 5 3 5 4 6 3 2 4;
mso-font-charset:1;
mso-generic-font-family:roman;
mso-font-format:other;
mso-font-pitch:variable;
mso-font-signature:0 0 0 0 0 0;}
...
</style>
```

- If a style is surrounded by an HTML comment (`<!--` and `-->`), the comment tags must be copied as well. A commented style definition might look like this:

```
<!--[if gte mso 10]>
<style>
/* Style Definitions */
...
</style><![endif]>
```

- 8 Find the text `WordSection1` and replace it with **Section1**. You should be offered these texts:

```
@page WordSection1
div.WordSection1
{page:WordSection1;}
```

- 9 Save the file `DocumentPublishTemplate.txt`.

Creating Templates to Publish Requirements

There can be many templates for each project. Each template is contained in the `Publish Templates` directory. This directory contains files that provide formatting for

requirements from any class that you want to customize. This directory can also contain style, header and footer files.



IMPORTANT! Using templates is only supported if the chapter is formatted as **Paragraph**. To ensure that all chapters formatted as **Paragraph** follow these steps:

- 1 Open the document in Document View.
- 2 Click on **Format Document** in the **Documents** group in the **Action** pane.
- 3 **Requirement Layout:** Select **Paragraph**.
- 4 Click the **Reset all chapters** button.
- 5 Click the **OK** button.



NOTE These templates are not related to form templates (chapter "[Customizing Web Forms](#)" on page 192).

Users can select the template to be used for each document using the **Format Document** dialog box in Documents View.



NOTE You must select **Paragraph** in the **Requirement Format** section of the **Format Document** dialog box, not **Grid**.

To create a new requirement template:

- 1 Create or open a Microsoft Word document that contains the template format.
- 2 Add attribute names (not attribute display names) as placeholders for the content of an attribute.

The following illustration shows an example of a portion of such a Word document.

Priority:	<PRIORITY>	Delivery Phase:	<DELIVERY_PHASE>
<TITLE>			
<TEXT>			



IMPORTANT! When applying formatting to attribute names, <ATTRIBUTE>, you **MUST** select the entire attribute name **including** the angle brackets, < >. Otherwise the attribute name and angle brackets will be published rather than the value of the attribute.

- 3 Save the Word document in HTML format.



IMPORTANT!

- The file name must match the name of the class.
- You must set the file **Save as type** in Word to: **Web Page (*.htm;*.html)**. Do **NOT** select "Single File Web Page (*.mht;*.mhtml)" or "Web Page, Filtered (*.htm;*.html)".

- 4 Use Windows Explorer to manually change the file extension to:
.txt

- 5 Open the text file with a text editor (e.g. Notepad)
- 6 Find the text *WordSection1* and replace it with **Section1**. You should be offered these texts:
@page WordSection1
div.WordSection1
{page:WordSection1;}
- 7 Find all directory references of *WordFileName_files* and rename *WordFileName_files* to **PublishDoc_files**.
- 8 If it does not exist, create the directory *DataBase_Name* in this directory
RM_Install\Common Tools \#.#\tomcat\#.#\webapps\rtmBrowser\conf



NOTE *DataBase_Name* is identical with the database name from the login dialog.

- 9 If it does not exist, create the directory *Project_Name* inside the *DataBase_Name* directory from [Step 8](#).



NOTE *Project_Name* is identical with the project name from the login dialog.

- 10 If it does not exist, create the directory *publish templates* inside the *Project_Name* directory from [Step 9](#).
- 11 Copy the .txt file and the *WordFileName_files* directory to the following location:
RM_Install\Common Tools \#.#\tomcat\#.#\webapps\rtmBrowser\conf
\DataBase_Name\Project_Name\publish templates\TemplateDirectory
\ClassName.txt

Where *TemplateDirectory* is the name you want displayed in the **Publish Requirement Template** list on the Format Document dialog.

- 12 The template is now available for users to select. Repeat this procedure for each class for which you want a custom template.



NOTE If there are files in the following directory:

RM_Install\Common Tools \#.#\tomcat\#.#\webapps\rtmBrowser\conf
\DataBase_Name\Project_Name\publish templates\TemplateDirectory

They are used and are available from the **Format Document** dialog box from the **Documents View Actions** pane. If this directory is empty, the style and header files defined for each project (if any) in the following directory are used:

RM_Install\Common Tools \#.#\tomcat\#.#\webapps\rtmBrowser\conf
\DataBase_Name\Project_Name

For information about creating the style and header files in the latter case, see ["Defining Custom Styles for Published Documents" on page 203](#) and ["Defining Headers and Footers for Published Documents" on page 207](#).

Defining Headers and Footers for Published Documents

By default, no header and footer information is published from Document View in RM Browser. This is the case even if the document you imported from RM Import has a header and footer.

You can define header and footer information to be included in such documents.



IMPORTANT! Using headers and footers is only supported if the chapter is formatted as **Paragraph**. To ensure that all chapters formatted as **Paragraph** follow these steps:

- 1 Open the document in Document View.
- 2 Click on **Format Document** in the **Documents** group in the **Action** pane.
- 3 **Requirement Layout:** Select **Paragraph**.
- 4 Click the **Reset all chapters** button.
- 5 Click the **OK** button.



NOTE The methods described in this section require no configuration in RM Import.

Creating a General Header and Footer File

A general header and footer file is used for all published documents, unless a specific template overrides the default. For creating a template header and footer file see chapter ["Creating a Template Header and Footer File" on page 208](#).

To create a new header and footer file:

- 1 Create or open a Microsoft Word document that contains the header or footer. Save the Word document in HTML format.



IMPORTANT! You must set the file **Save as type** in Word to: **Web Page (*.htm;*.html)**.

Do **NOT** select "Single File Web Page (*.mht;*.mhtml)" or "Web Page, Filtered (*.htm;*.html)".

- 2 If it does not exist, create the directory *DataBase_Name* in this directory
RM_Install\Common Tools \#. \#tomcat\#. \#webapps\rtmBrowser\conf



NOTE *DataBase_Name* is identical with the database name from the login dialog.

- 3 If it does not exist, create the directory *Project_Name* inside the *DataBase_Name* directory from [Step 2](#).



NOTE *Project_Name* is identical with the project name from the login dialog.

- 4 If it does not exist, create the directory `publish templates` inside the `Project_Name` directory from [Step 3](#).
- 5 The save causes Word to create a subdirectory: `WordFileName_files`. Copy the file `header.htm` from that directory to:
`RM_Install\Common Tools \#. \tomcat\#. \webapps\rtmBrowser\conf
\Database_Name\Project_Name`

Creating a Template Header and Footer File

A template header and footer file resides in the same directory as the class template(s) created in chapter ["Creating Templates to Publish Requirements" on page 204](#) or alone. If you created a class template, you can start with step [Step 5](#).



NOTE These templates are not related to form templates (chapter ["Customizing Web Forms" on page 192](#)).

To create a new header and footer file:

- 1 If it does not exist, create the directory `DataBase_Name` in this directory
`RM_Install\Common Tools \#. \tomcat\#. \webapps\rtmBrowser\conf`



NOTE `Database_Name` is identical with the database name from the login dialog.

- 2 If it does not exist, create the directory `Project_Name` inside the `DataBase_Name` directory from [Step 1](#).



NOTE `Project_Name` is identical with the project name from the login dialog.

- 3 If it does not exist, create the directory `publish templates` inside the `Project_Name` directory from [Step 2](#).
- 4 Create the directory `TemplateDirectory` inside the `publish templates` directory from [Step 3](#). `TemplateDirectory` is the name you want displayed in the **Publish Requirement Template** list on the Format Document dialog.
- 5 Create or open a Microsoft Word document that contains the header or footer. Save the Word document in HTML format.



IMPORTANT! You must set the file **Save as type** in Word to: **Web Page (*.htm;*.html)**.

Do **NOT** select "Single File Web Page (*.mht;*.mhtml)" or "Web Page, Filtered (*.htm;*.html)".

- 6 In the same directory your HTML file is in, Word created a directory `WordFileName_files`. Copy the file `header.htm` from that directory to:


```
RM_Install\Common Tools \.#\atomcat\#.#\webapps\rtmBrowser\conf  
\DataBase_Name\Project_Name\publish templates\TemplateDirectory
```

**NOTE**

- You must create the *Database_Name* and *Project_Name* directories in the conf directory.
- A template header and footer file overrides a general header and footer file.

Publishing a Document with File Attachments from a Separate Server

To be able to publish documents with file attachments from Documents View in RM Browser, Microsoft Word must be installed on the server. This is not acceptable for some customers. To resolve this issue, a separate machine with Word installed on it can be used to redirect the publishing of a document. This machine also must have Dimensions RM installed on it and is referred to as a "publishing server." You configure the publishing server through a configuration file.



NOTE Both servers must have the same version of Dimensions RM installed on them, and both servers must point to the same Oracle instance.

To configure the publishing server:

Create a text file named *rm.cfg* in the following directory:

```
RM_Install\Common Tools \.#\atomcat\#.#\webapps\rtmBrowser\conf
```

The format of the *rm.cfg* file follows:

```
[Document]  
PublishServerURL=URL_of_publish_server  
Database=Database_name
```

For example: *PublishServerURL*=http://server/rtmBrowser

If any specified information cannot be found, the current server or current database is used.

Customizing RM Browser Menus and Title Bars

You can use JavaScript to customize the menus in RM Browser. You can change the following items:

- Menu text
- Tooltips
- Images

- Sequence
- Number of columns
- Title of the view in the title bar

You can also add extra menu items. The extra menu items can point to any HTTP address (for example, <http://www.serena.com>).

There is a separate JavaScript file that you use to define menus for each RM Browser view. The JavaScript files are at the following location:

RM_Install\Common Tools #.#\tomcat\#.#\webapps\rtmBrowser\jscript

The following table shows the file name for each view.

View	File
My Work	icWebCreateMy WorkMenus.js
Requirements	icWebCreateRequirementViewMenus.js
Document	icWebCreateDocumentViewMenus.js
Traceability	icWebCreateTraceabilityViewMenus.js

JavaScript Methods

The following sections describe the JavaScript methods you can use to create menus and change the name of the view in the title bar.

The JavaScript `rtmMenuNew` object is responsible for creating menus. You can use the following `rtmMenuNew` methods to create top level menus, columns, and menu items.

Method Name	Return Value	Description
<code>rtmAddTopLevelItemNew("<top menu name>")</code>	Object representing top menu	Creates the top menu items (for example, View , Requirements , Change Request). It is called on the <code>rtmMenu</code> object.
<code>rtmAddColumnNew()</code>	Object representing column in the top menu	Creates a new column under the top menu item. It is called on the top menu object.
<code>rtmAddMenuItem(<menu item image>, <menu item name>, <menu item ID>, <menu item tooltip>, <menu item image when enabled>, <menu item image when disabled>, <JavaScript method called when menu item is clicked>)</code>	Void	Creates a menu item and sets up its image display name, ID, tooltip, image displayed when the menu item is enabled, image displayed when the menu item is disabled, and the JavaScript method that is called when the menu item is clicked.

Title Bar Methods

You can use the following JavaScript methods to change the name of the view that is displayed in the title bar.

The main toolbar buttons	The additional toolbar button
<code>rtmCreateMy WorkTitleNew()</code>	<code>rtmCreateMy WorkTitleNewMore()</code>
<code>rtmCreateDocumentViewTitleNew()</code>	<code>rtmCreateDocumentViewTitleNewMore()</code>
<code>rtmCreateRequirementViewTitleNew()</code>	<code>rtmCreateRequirementViewMenuNewMore()</code>
<code>rtmCreateTraceabilityViewTitleNew()</code>	<code>rtmCreateTraceabilityViewTitleNewMore()</code>

Example 1: Adding a Menu Item to the View Menu

The following code example shows an `icWebCreateMy WorkMenus.js` file that has been modified to add a **Serena** menu item under the **View** menu on the My Work page. The code that was added to the file is in boldface type.

```
function rtmCreateMy WorkMenuNew()
{
    var menu = new rtmMenuNew();
    var reqMenu = menu.rtmAddTopLevelItemNew("My Work");
    var reqMenuColumn1 = reqMenu.rtmAddColumnNew();
    //Add new menu item that goes to Serena website
    reqMenuColumn1.rtmAddMenuItem("../images/menu_dot.gif", "Serena", "serenaMenu", "Go to
    Serena official website", "../images/menu_dot.gif", "../images/menu_dot_gray.gif",
    "http://www.serena.com", false, false, false);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/req_new.gif", "New", "newMenu", "Create
    new requirement", "../imagesnew/req_new.gif", "../imagesnew/req_new_d.gif",
    "javascript:rtmCvSubmitContentForm('blankForm', null, null, null, true);", false,
    false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/req_edit.gif", "Edit", "editMenu", "Edit
    selected requirement", "../imagesnew/req_edit.gif", "../imagesnew/req_edit_d.gif",
    "javascript:rtmCvSubmitContentForm('editForm');", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/req_delete.gif", "Delete", "deleteMenu",
    "Delete selected requirement", "../imagesnew/req_delete.gif", "../imagesnew/
    req_delete_d.gif", "javascript:rtmCvDeleteRequirement();", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/link_create.gif", "Create Link",
    "linkObjectsMenu", "Search for Requirements to be linked to selected Requirement",
    "../imagesnew/link_create.gif", "../imagesnew/link_create_d.gif",
    "javascript:rtmCvSubmitContentForm('linkObjectsForm');", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/import_csv.gif", "CSV import",
    "importObjectsMenu", "Import requirements from CSV document", "../imagesnew/
    import_csv.gif", "../imagesnew/import_csv_d.gif",
    "javascript:rtmCvSubmitContentForm('importObjectsCSVForm', false, 900, 550);",
    false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/import_xml.gif", "XML Import",
    "importObjectsMenu", "Import requirements from XML document", "../imagesnew/
    import_xml.gif", "../imagesnew/import_xml_d.gif",
    "javascript:rtmCvSubmitContentForm('importObjectsForm');", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/import_word.gif", "Word Import",
    "importObjectsMenu", "Import requirements from Word document", "../imagesnew/
    import_word.gif", "../imagesnew/import_word_d.gif",
    "javascript:rtmCvSubmitContentForm('importWordsForm');", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
}
```

```
reqMenuColumn1.rtmAddMenuItem("../imagesnew/req_comment.gif", "Add Comment",
    "addCommentMenu", "Add comment to selected requirement", "../imagesnew/
    req_comment.gif", "../imagesnew/req_comment_d.gif",
    "javascript:rtmCvSubmitContentForm('commentForm');", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/poll.gif", "Create Poll",
    "createPollMenu", "Create poll for selected requirement", "../imagesnew/poll.gif",
    "../imagesnew/poll_d.gif",
    "javascript:rtmCvSubmitContentForm('definePollForm');", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/cr_new_2.gif", "Propose New",
    "proposeNewChangeRequestMenu", "Create proposal for a new requirement", "../
    imagesnew/cr_new_2.gif", "../imagesnew/cr_new_2_d.gif",
    "javascript:rtmCvProposeNew();", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/cr_change_2.gif", "Propose Change",
    "submitChangeRequestMenu", "Propose a Change for the selected Requirement", "../
    imagesnew/cr_change_2.gif", "../imagesnew/cr_change_2_d.gif",
    "javascript:rtmCvSubmitContentForm('changeRequestForm');", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/cr_approve_reject_2.gif", "Approve/
    Reject", "reviewChangeRequestMenu", "Approve/reject change requests for selected
    requirement", "../imagesnew/cr_approve_reject_2.gif", "../imagesnew/
    cr_approve_reject_2_d.gif",
    "javascript:javascript:rtmCvSubmitContentForm('reviewCRForm');", false, false,
    true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/more.gif", "", "moreMenu", "Additional
    toolbar buttons", "", "", "javascript:enablemoremenu(1,0);", false, false, true);
var crMenu = menu.rtmAddTopLevelItemNew("Requirement");
var crMenu1 = menu.rtmAddTopLevelItemNew("Document");
var crMenu2 = menu.rtmAddTopLevelItemNew("Traceability");
document.writeln(menu.rtmGenerateMenuNew());
}
```

Example 2: Adding Two Menu Items to the Additional Toolbar Buttons

The following code example shows an `icWebCreateMy WorkMenus.js` file that has been modified to add two menu items in the additional toolbar buttons: Google and Yahoo. The code that was added to the file is in boldface type.

```
function rtmCreateMy WorkViewMenuNewMore()
{
    var menu = new rtmMenuNew();
    var reqMenu = menu.rtmAddTopLevelItemNew("My Work");
    var reqMenuColumn1 = reqMenu.rtmAddColumnNew();
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/less.gif", "", "lessMenu", "Previous
        toolbar buttons", "../imagesnew/less.gif", "../imagesnew/less_d.gif",
        "javascript:enablemoremenu(0,0);", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
        "", "", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/req_locks.gif", "Requirement Locks",
        "administerLocksMenu", "View and unlock currently locked requirements", "../
        imagesnew/req_locks.gif", "../imagesnew/req_locks_d.gif",
        "javascript:rtmCvSubmitContentForm('administerLocksForm');", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/doc_locks.gif", "Document Locks",
        "DocumnetLocksMenu", "View and unlock currently locked documents", "../imagesnew/
        doc_locks.gif", "../imagesnew/doc_locks_d.gif",
        "javascript:rtmCvSubmitContentForm('DocumentLocksForm');", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
        "", "", false, false, true);
    reqMenuColumn1.rtmAddMenuItem("../imagesnew/customize_home.gif", "Customize My Work",
        "customizeRTMMy WorkMenu", "Customize content of RM My Work page", "../imagesnew/
        customize_home.gif", "../imagesnew/customize_home_d.gif",
```

```

    "javascript:rtmCvSubmitContentFormCommandView('customizeRTMMy WorkForm', true);",
    false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/manage_container.gif", "Manage
    Containers", "manageCollectionsMenu", "Create, rename, and delete containers", "../
    imagesnew/manage_container.gif", "../imagesnew/manage_container_d.gif",
    "javascript:rtmCvSubmitContentForm('otherCollectionTasksForm', false, 800, 600);",
    false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/Organize.gif", "Organize by Collection",
    "organizeCollectionsMenu", "Add/remove requirements to collections", "../imagesnew/
    Organize.gif", "../imagesnew/Organize_d.gif",
    "javascript:rtmCvSubmitContentForm('manageCollectionsForm', true);", false, false,
    true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/manage_categories.gif", "Manage
    Categories", "manageCategoriesMenu", "Create, rename, move and delete categories
    (admin only)", "../imagesnew/manage_categories.gif", "../imagesnew/
    manage_categories_d.gif",
    "javascript:rtmCvSubmitContentForm('otherCategoryTasksForm', false, 800, 600);",
    false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/Organize_cat.gif", "Organize by Category",
    "organizeCategoriesMenu", "Move requirements into different category", "../
    imagesnew/Organize_cat.gif", "../imagesnew/Organize_cat_d.gif",
    "javascript:rtmCvSubmitContentForm('manageCategoriesForm', true);", false, false,
    true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/cont_move.gif", "Move Containers",
    "organizeContainersMenu", "Move containers into different category", "../imagesnew/
    Organize_cat.gif", "../imagesnew/Organize_cat_d.gif",
    "javascript:rtmCvSubmitContentForm('manageContainersForm');", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/vert_break.gif", "", "sepMenu", "", "",
    "", "", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/bline_new.gif", "Baseline",
    "createBaselineMenu", "Create new baseline", "../imagesnew/bline_new.gif", "../
    imagesnew/bline_new_d.gif",
    "javascript:rtmCvShowOnlyDialog('otherCollectionTasksDialogForm',
    'createbaseline');", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../imagesnew/cont_compare.gif", "Compare Containers",
    "compareCollectionMenu", "Compare Containers", "../imagesnew/cont_compare.gif",
    "../imagesnew/cont_compare_d.gif",
    "javascript:rtmCvSubmitContentForm('compareCollectionForm', false, 450, 300);",
    false, true, true);
reqMenuColumn1.rtmAddMenuItem("../images/menu_dot.gif", "Google", "googlemenuitem",
    "Launch Google", "../images/menu_dot.gif", "../images/menu_dot_gray.gif", "http://
    www.google.com", false, false, true);
reqMenuColumn1.rtmAddMenuItem("../images/menu_dot.gif", "Yahoo", "yahoomenuitem",
    "Launch Yahoo", "../images/menu_dot.gif", "../images/menu_dot_gray.gif", "http://
    www.yahoo.com", false, false, true);
var crMenu = menu.rtmAddTopLevelItemNew("Requirement");
var crMenu1 = menu.rtmAddTopLevelItemNew("Document");
var crMenu2 = menu.rtmAddTopLevelItemNew("Traceability");
document.writeln(menu.rtmGenerateMenuNew());
}

```

Changing the Default Settings of the RM Browser Text Editor

The "off-the-shelf" default font size of the RM Browser text editor is 10 points. A Serena-specific setting in the `tinymce_custom.css` file changes this value to 12 points. The `tinymce_custom.css` file is located in the following directory:

```
<RM_Install\Common Tools #.#\tomcat\#.#\webapps\rtmBrowser\css\tiny_mce
```



NOTE This setting applies to all projects hosted on the server.

For more information about using and customizing the text editor for RM Browser, please refer to the information about TinyMCE found on the Moxiecode Systems AB Web site.

Customizing the Editable Grid

You can customize the look and behavior of the Editable Grid by using JavaScript. This is done by adding JavaScript to the following file on the RM Server:

```
Install_Dir\RM\rtmBrowser\jscripts\Extensions.js
```

Initially, the `Extensions.js` file is empty. To add a customization, copy the appropriate JavaScript from the example file, paste it into `Extensions.js`, and then edit it to meet your specific needs. The example file is:

```
Install_Dir\RM\rtmBrowser\jscripts\Extensions_example.js
```

Using JavaScript, you can achieve the following customizations of the Editable Grid:

- Remove the **Add New Record** button from the Editable Grid toolbar.
- Hide specific columns of the Editable Grid.
- Set specific columns to be Read-Only.
- Set specific cells to be Read-Only/Writable or Mandatory/Optional based upon the value of other cells in the row.
- Limit the items displayed in a Pick List based upon the current value.
- Add buttons that can call other functions, or external links, to populate a cell with data.

See the `Extensions_example.js` file for commented JavaScript examples of Editable Grid customizations.

Configuring the Expansion and Collapse of RM Browser Sections

You can control whether sections on RM Browser Web pages use a scrolling mechanism to open and close or whether the sections open and close immediately when users click **+** or **-**. If you want the sections to scroll, you can specify the speed of the scrolling.

You configure this functionality using the `animationspeed` option in the `default.xml` file, which is located in the following location:

```
RM_Install\Common Tools #.#\tomcat\#.#\webapps\rtmBrowser\forms\common
```

You can also configure this functionality in custom Web forms.

By default, the scrolling speed is set to 0, and is set on the root form element in the default.xml file. When the animationspeed option is set on the root form element, it affects all sections. For an example of the option set on the root form element, see item 1 in the illustration under ["Template Layout" on page 193](#).

To set different scrolling speeds for sections, set the animationspeed option on the individual section. For example:

```
<section type="standard" label="Standard Attributes" animationspeed="0"
/>
```

To set no scrolling, set the animationspeed option to 0.

Creating Custom Login Alert Pages for RM Browser

You can optionally require users to review and accept an alert page before displaying the RM Browser client. When you do this, users are presented with the page after entering their login credentials. Once they accept the page, the RM Browser client appears. This is a useful way to communicate important new information to users before they use RM Browser. You can change this as often as needed.

To configure a custom login alert page for RM Browser:

- 1 Create either or both of the following files in the following directory on the RM server:

RM_Install\Common Tools \#. \#atomcat\#. \#webapps\rtmBrowser

- If your users use Internet Explorer: warning.html (make sure that the file extension is .html, **not** .htm)
- If your users use Firefox: warning.txt

- 2 Add the text to these files. If you used Microsoft Word to edit the HTML file for Explorer, you must save as a Web Page, Filtered to ensure that any Microsoft Office tags are removed. A true HTML editor is recommended.

Customizing Headers and Footers of RM Browser Interface

You can customize the header and footer of the RM Browser interface. This allows you to add your company name, logo graphic, or a security banner to differentiate between test and production databases.

To customize RM Browser headers and footers:

- 1 Make a backup copy of the spring.xml file. It is on the server in the following location:

RM_Install\Common Tools \#. \#atomcat\#. \#webapps\rtmBrowser\WEB-INF

- 2 Open the spring.xml file in a text editor.
- 3 Locate the last "bean id" in the file. It begins :
<bean id="rmHeaderAndFooterText"

4 Beneath this entry, there are two property tags:

- `<property name="header">`
- `<property name="footer">`

Uncomment the property section you want to enable. To do this, remove the opening (`<!--`) and closing (`-->`) comment tags from around that property section.

5 In the relevant `<property name="URL">` statement, replace the placeholder *enter your link to custom footer here...* with the path to your header or footer file. The recommended directory is the `html` folder under `rtmBrowser`.

For example:

If you have named your file `securityheader.htm` and placed it in the directory:
`RM_Install\Common Tools \#.#\tomcat\#.#\webapps\rtmBrowser\html`

Then, the URL property value would be:

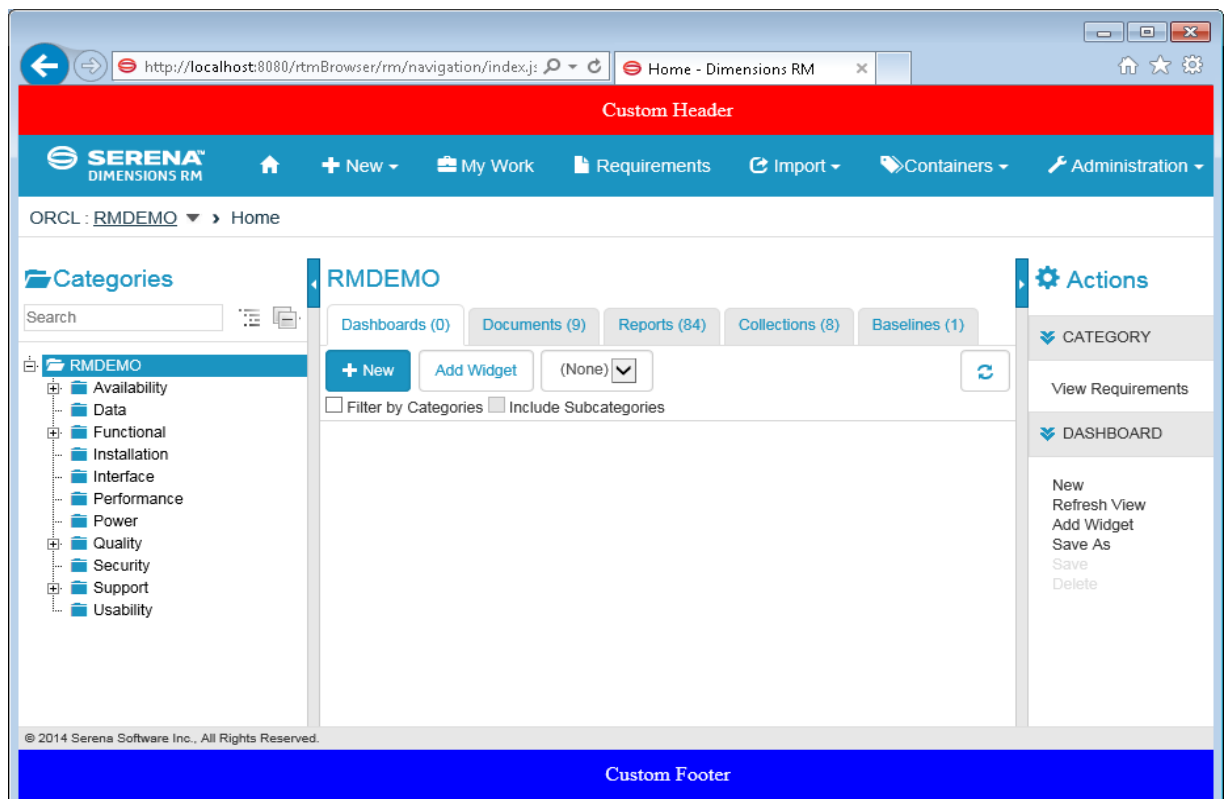
```
<property name="URL"><value>/rtmBrowser/html/securityheader.htm</value></property>
```



IMPORTANT! Do not include quotation marks (") in the URL value.

6 Optionally, in the relevant `<property name="height">` statement, you can change the value (default: 20) with the desired height.**7** Save the file and restart RM's Tomcat service (Serena Common Tomcat).

The following screen shot shows the location of the custom header and footer.



Chapter 5

RM Import

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What is RM Import?

RM Import allows you to import Word documents, Draft Requirement documents and Excel spreadsheets. For Word documents, import templates are required. These templates can be created with RM Import Designer. For further information on how to create templates, see chapter ["RM Import Designer" on page 227](#).



IMPORTANT!

- Word uses unique, proprietary styles and formatting; therefore, the styles and formatting of the Word document (for example, lists, bullets, and fonts) are not necessarily preserved in Document View. However, the text is always imported, so there is no data loss.
- You cannot import the changes you make in Document View back into the original Word document. Roundtripping between Dimensions RM and Word is not supported.
- Documents in Document View are *not* the same as the Word documents from which they were imported. Dimensions RM does *not* store the Word document; it parses the data into classes (requirements and so on) so the data is available to the entire project.
- Users can optionally import directly using RM Browser, without having to first design an import template. Please see the *Dimensions RM Browser User's Guide* for more on importing using the RM Browser client.

Note the following:

- Everything in the Word document up to the first heading, except for the Table of Contents, becomes the document description. The document description is captured as an HTML-enabled attribute and can include tables, images, and so on.
- Chapters are automatically captured based on Word headings.
- All subheadings become subchapters until and unless they are later identified as requirements.
- RM Import attempts to import the bodies of the chapters that are not identified as requirements into the description of the chapter. This helps ensure that all data from the Word document is captured.
- Chapters do not need to contain any requirements.
- You can import the requirements from the documents into one class or multiple classes. However, each chapter can contain requirements from only one class.
- On the Dimensions RM server, a 32-bit edition of Microsoft Office 2010 SP1 or newer or Microsoft Office 2007 SP1 or newer must be installed to support Document Publishing, RM Import and RM Import Designer tools.
On the client, Word and Excel must be installed to support RM Import.

The minimum set of pre-installed Microsoft Office components required for the above tools is:

- Microsoft Office Excel (32-bit).
- Microsoft Office Excel .NET Programmability Support.
- Microsoft Office Word (32-bit).
- Microsoft Office Word .NET Programmability Support.

The following should also be noted:

- A message warns you if you do not have Office installed on your computer.
- For consistent and reproducible use of the Document Publishing, RM Import, and RM Import Designer tools, it is advisable to ensure that all users use the same version of Microsoft Office.
- If you import requirements using the Word import feature in the RM Browser client, a 32-bit edition of Word 2007, 2010 or 2013 must be installed on the server.
- To be able to view Microsoft Word OLE-linked or embedded attachments when using Dimensions RM Document Publishing, the Windows user concerned must have been assigned administrator rights. This is a general Microsoft Word prerequisite for utilizing OLE-linked or embedded attachments.
- RM Import needs the PIA (Primary Interop Assembly) that is installed by default. No special permissions are required. Before you use RM Import, be sure that Word is activated (that is, open Word at least once before using RM Import).
- The RM Import installation configures the user to run as an interactive user; no other permissions are required. Make sure that any other program associated with the Word document is activated (for example, if you publish a Word document with a .pdf attachment, make sure that Adobe® Reader® is activated on the server).

Logging in to RM Import

Logging in to RM Import is a two-part process:

- Validating the server
- Logging in to the Dimensions RM project

The server validation must occur before you can log in to a Dimensions RM project. If you are using secure socket layers (SSL), which is an advanced security feature, a certificate selection dialog may be displayed during the server validation. The situation in which this dialog is displayed is discussed later in this procedure.



NOTE Before you log in, you must know the URL or name and port number (if not 80) of the server running the RM Web service, and have access to at least one project running on that service.

To log in to RM Import:

- Do one of the following:
 - Select **Start | Programs | Serena | Dimensions RM version | RM Import**.
 - Double-click the RM Import shortcut on your desktop.

- The **RM Import login** dialog box opens.



Figure 5-1. Login Dialog

- In the **Server** field, type the name of the server that hosts the RM Web service. You can type a full URL or just type the server name and then press the Tab key, and the default URL is built. If the port number is not 80, type the port number after the server name, separated by a colon.

An example URL is `http://PC2040:8080/rtmBrowser/WebServices`



NOTE It is a good practice to copy the complete URL that is in the **Server** field to the address bar of a Web browser window and test that it connects to the server on which your Web service is hosted. This is a good test for http and https to validate that the Web service is up and running.

- If your URL includes `https://` for SSL, an additional dialog box can be displayed that lets you choose which personal certificate you want to use. This dialog box is displayed if more than one certificate is in your personal store.



NOTES

- This dialog box shows personal certificates only.
- The certificate information is not cached, so you are prompted for a certificate every time you log in.

- The **User Name** field is populated with the last value you entered, if any. If necessary, type your user name.



NOTES

- The server connection is attempted when you click on or tab to the **User Name** field.
- The **Password**, **Database**, and **Project** fields are enabled only after the server is connected.

- In the **Password** field, type your password.
- In the **Database** field, select the Dimensions RM database from which you want to work.

- In the **Project** field, select the project with which you want to work.



NOTE The projects in the list are those that you have permission to log in to. If no projects appear in the list, then either an error occurred or you do not have permissions for any project on the server.

- Click **OK**. This opens the Import File Format dialog.

Input File Format Dialog

The Import File Format dialog allows you to choose the format of the file to import. These file formats are supported:

- Word Documents (*.doc, *.docx, *.dot or *.dotx)
- Draft Requirement Documents (*.drd or *.xml)
- Excel Spreadsheets (*.xls or *.xlsx)

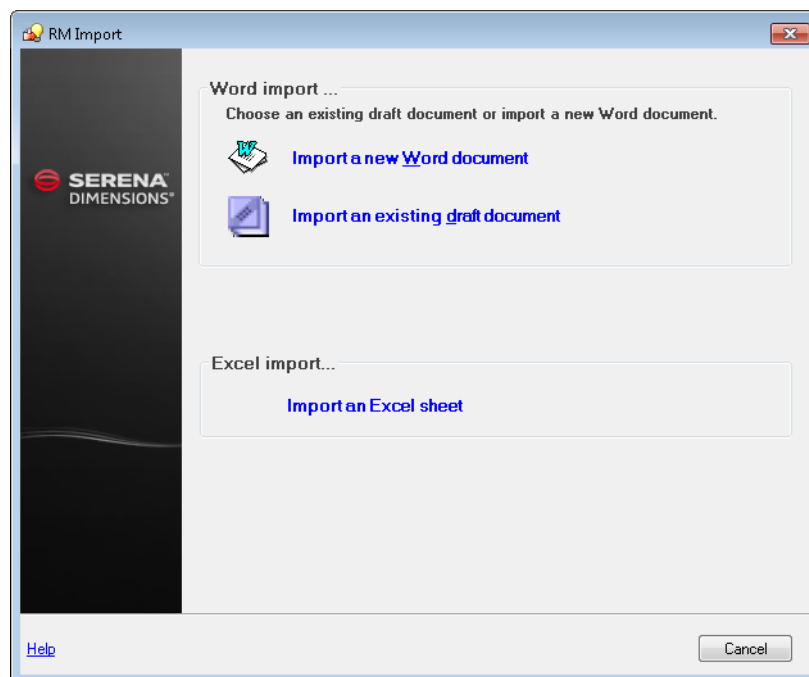


Figure 5-2. Import File Format Dialog

- 6 Do one of the following:
 - To import a Word document, click on **Import Word document**
 - To import a Draft Requirement document, click on **Import an existing draft document**
 - To import an Excel spreadsheet, click on **Import an Excel sheet**

Word Import

The Word Import function of RM Import allows you to import Word files with .doc, .docx, .dot and .dotx file extension. RM Import can import the Word document as a whole document or extract requirements from it and store them in Dimensions RM with the classes defined in the template. The following dialog allows you to select a template and a Word document.

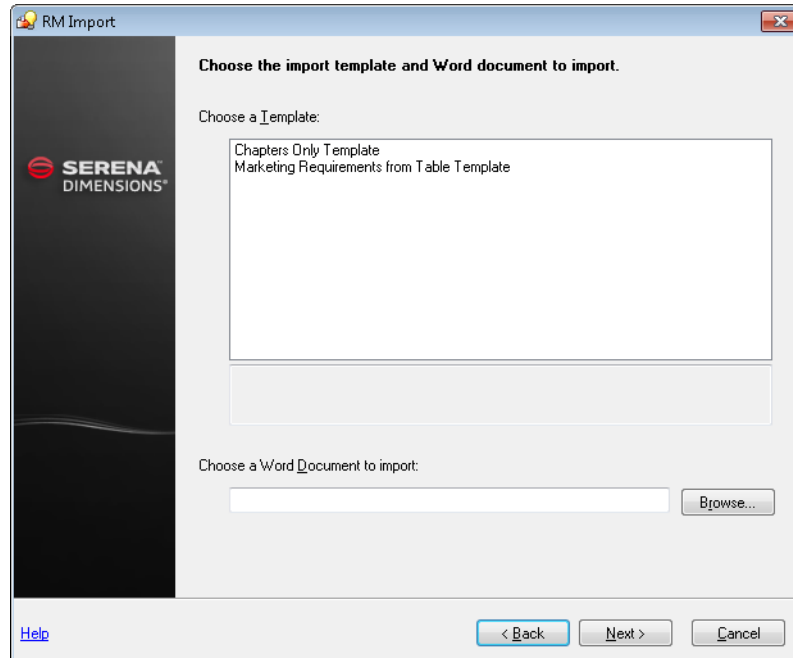


Figure 5-3. Template and Word Document Dialog

To complete the Template and Word Document dialog:

- 1 Choose a Template list** shows all available templates. Select a template you want to use for import.
- 2 Choose a Word Document to import** allows you to enter the path to an existing Word document. Alternatively, you can click on **Browse...** to select the Word document through the *Open file* dialog.
- 3** Clicking **Next >** loads the document and shows the preview screen (see chapter "[Preview Dialog](#)" on page 223).
 - Clicking **< Back** returns the import format selection screen.
 - **Cancel** exits RM Import.

Preview Dialog

After parsing the document, RM Import loads it into the **Preview** dialog. Depending on the size of your Word document, the parsing process can take some time. The **Preview** dialog allows to view and to modify the document before uploading it to Dimensions RM.

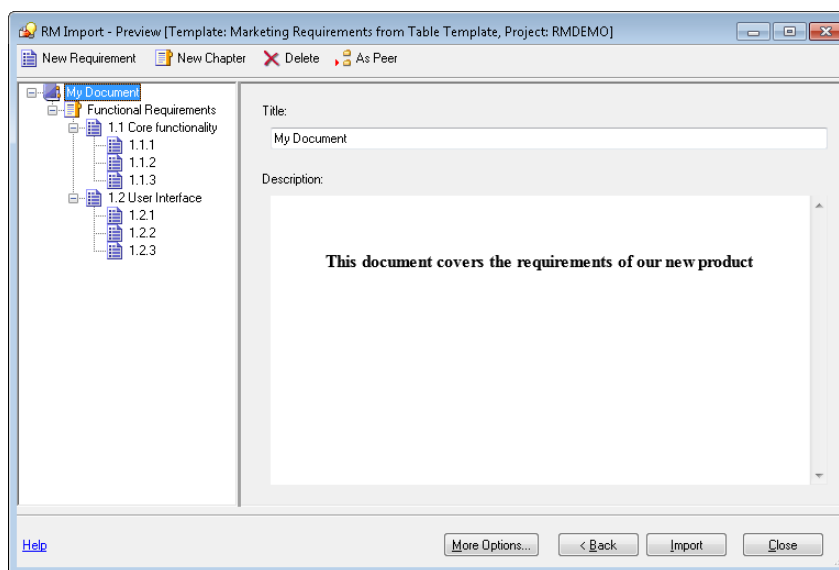


Figure 5-4. Preview Dialog

On the left hand side you find a tree, representing the document chapters and requirements found in the Word document. By using different templates, you might get different parsing results. The document tree uses these icons:



Document This icon represents the document which can contain chapters or requirements.



Chapter This icon represents a chapter which can contain text, tables or images. A chapter can also contain sub-chapters or requirements.



Chapter Import OK This icon shows that the chapter was imported to the Dimensions RM document.



Chapter Import Error This icon shows that an error occurred when importing the chapter to the Dimensions RM document.



Requirement This icon represents a requirement which can contain text, tables or images. A requirement can also contain sub-requirements.



Requirement Import OK This icon shows that the requirement was imported to Dimensions RM.



Requirement Import Error This icon shows that an error occurred when importing the requirement to Dimensions RM.



Resolve Requirement This icon shows that the requirement has invalid attributes.

The Preview dialog also allows to modify a parsed document before importing it to Dimensions RM. To modify a chapter or requirement, select the desired chapter or requirement in the document tree. To use different formatting it is recommended to edit the text in Microsoft Word and paste it into the document).



NOTE The modifications you made are not written to the original Word document.

You can make further modifications by using these functions from the Toolbar:



New Requirement Adds a new requirement to the document. Alternatively, you can add a requirement by right-clicking a chapter or requirement and selecting **New Requirement** from the shortcut menu.



New Chapter Adds a new chapter to the document. Alternatively, you can add a chapter by right-clicking a chapter or requirement and selecting **New Chapter** from the shortcut menu.



Delete Deletes a chapter or requirement from the document. Alternatively, you can delete a chapter or requirement by right-clicking a chapter or requirement and selecting **Delete** from the shortcut menu.



As Peer When adding a chapter or requirement, it is added on the same level as the chapter or requirement which is selected in the document tree.



As Child When adding a chapter or requirement, it is added as a child of the chapter or requirement which is selected in the document tree.

You can access further functions by clicking any of these buttons:

- **More Options** Provides these functions:
 - **View Source** Opens the original Word document.

- **Append contents from draft...** Appends the contents of a *Draft Requirements Document* to the current document.
- **Save contents to draft...** Saves the current document as a *Draft Requirements Document*.
- **Import into existing document...** Opens the **Select Document** dialog, which allows you to select an existing Dimensions RM document. Confirming this dialog appends the contents of the current document to the document you selected.
- **About** Opens the **About RM Import** dialog which provides
 - Version number and Copyright
 - Additional information on the homepage of Serena
 - Information about your computer
- **< Back** Returns to the previous dialog (**Select Template and Word Document** or **Select Draft Requirements Document** dialog).
- **Import** Imports the current document to Dimensions RM.
- **Close** Closes RM Import.

To complete the Preview dialog:

- 1 Make the desired modifications
- 2 Click the **Import** button or select Import into existing document... after clicking the **More Options...** button

Draft Requirements Document Import

A **Draft Requirements Document** is a document you created earlier by saving a document from the **Preview** dialog. By using a **Draft Requirements Document** you can continue work at a later time or join two or more documents.

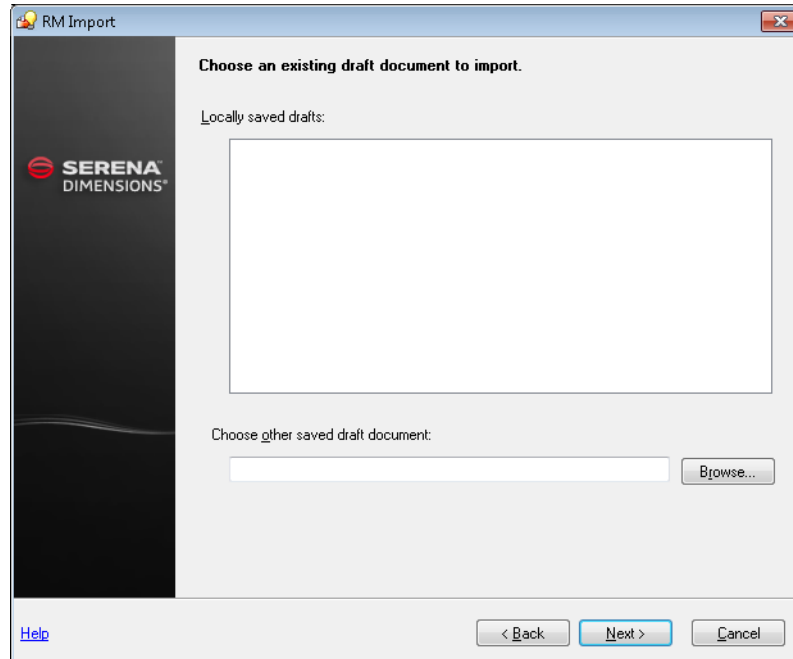


Figure 5-5. Select Draft Requirements Document Dialog

To complete the Select Draft Requirements Document dialog:

- 1 Select an entry from the **Locally saved drafts** list. Alternatively, you can enter the path to a Draft Requirements Document into the **Choose other saved draft document text box** or click the **Browse...** button and navigate to a Draft Requirement Document.
- 2 Clicking **Next >** loads the document and shows the preview screen (see chapter "[Preview Dialog](#)" on page 223).
 - Clicking **< Back** returns the import format selection screen.
 - Clicking **Cancel** exits RM Import.

Chapter 6

RM Import Designer

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What is RM Import Designer?

RM Import Designer allows you to design templates that users select when importing Microsoft® Word documents into Serena® Dimensions® RM. Templates define how to identify classes, attributes, chapters, requirements, and categories. Templates can be saved to the database for future use. You must be knowledgeable about class types and the structure of the Word documents that will be imported.

The RM Import tool allows users to preview a Word document, change the description of chapters, reorganize the chapters, change the values of attributes, move attributes between chapters, and so on. When satisfied with the document, users can import it into Dimensions RM as a document that can be viewed and edited from Document View.



IMPORTANT!

- Word uses unique, proprietary styles and formatting; therefore, the styles and formatting of the Word document (for example, lists, bullets, and fonts) are not necessarily preserved in Document View. However, the text is always imported, so there is no data loss.
- You cannot import the changes you make in Document View back into the original Word document. Roundtripping between Dimensions RM and Word is not supported.
- Documents in Document View are *not* the same as the Word documents from which they were imported. Dimensions RM does *not* store the Word document; it parses the data into classes (requirements and so on) so the data is available to the entire project.
- Users can optionally import directly using RM Browser, without having to first design an import template. Please see the *Dimensions RM Browser User's Guide* for more on importing using the RM Browser client.

For more information about RM Import, see the chapter ["RM Import" on page 217](#). For more information about Document View, see the *Serena Dimensions RM Browser User's Guide*.

Note the following:

- Everything in the Word document up to the first heading, except for the Table of Contents, becomes the document description. The document description is captured as an HTML-enabled attribute and can include tables, images, and so on.
- Chapters are automatically captured based on Word headings.
- All subheadings become subchapters until and unless they are later identified as requirements.
- RM Import attempts to import the bodies of the chapters that are not identified as requirements into the description of the chapter. This helps ensure that all data from the Word document is captured.
- Chapters do not need to contain any requirements.
- You can import the requirements from the documents into one class or multiple classes. However, each chapter can contain requirements from only one class.
- A 32-bit edition of Microsoft Office 2010 SP1 or newer or Microsoft Office 2007 SP1 or newer, must be installed on the Dimensions RM server to support Document

Publishing, RM Import, and RM Import Designer tools; and additionally on the client Word must be installed to support RM Import.

The minimum set of pre-installed Microsoft Office components required for the above tools is:

- Microsoft Office Excel (32-bit).
- Microsoft Office Excel .NET Programmability Support.
- Microsoft Office Word (32-bit).
- Microsoft Office Word .NET Programmability Support.

The following should also be noted:

- A message warns you if you do not have Office installed on your computer.
- For consistent and reproducible use of the Document Publishing, RM Import, and RM Import Designer tools, it is advisable to ensure that all users use the same version of Microsoft Office.
- If you import requirements using the Word import feature in the RM Browser client, a 32-bit edition of Microsoft Word 2010 SP1 or newer or Microsoft Word 2007 SP1 or must be installed on the server.
- To be able to view Microsoft Word OLE-linked or embedded attachments when using Dimensions RM Document Publishing, the Windows user concerned must have been assigned administrator rights. This is a general Microsoft Word prerequisite for utilizing OLE-linked or embedded attachments.
- RM Import needs the PIA (Primary Interop Assembly) that is installed by default. No special permissions are required. Before you use RM Import, be sure that Word is activated (that is, open Word at least once before using RM Import).
- The RM Import installation configures the user to run as an interactive user; no other permissions are required. Make sure that any other program associated with the Word document is activated (for example, if you publish a Word document with a .pdf attachment, make sure that Adobe® Reader® is activated on the server).



IMPORTANT! Before you prepare a template that will be used to import a Word document, save the document as HTML and examine the results. This is the way the document will be displayed in RM Browser after it is imported. If you see any formatting problems that are unacceptable (for example, problems with lists, bullets, and fonts), adjust the styles used in the Word document until the results are satisfactory.



CAUTION! If you do not enable the Description attribute for HTML, then formatting and images are not imported. For instructions for enabling the Description attribute for HTML, see ["Text Attribute" on page 149](#).

Logging in to RM Import Designer

Logging in to RM Import Designer is a two-part process:

- Validating the server
- Logging in to the Dimensions RM project

The server validation must occur before you can log in to a Dimensions RM project. If you are using secure socket layers (SSL), which is an advanced security feature, a certificate selection dialog may be displayed during the server validation. The situation in which this dialog is displayed is discussed later in this procedure.



NOTE Before you log in, you must know the URL or name and port number (if not 80) of the server running the RM Web service, and have access to at least one project running on that service.

To log in to RM Import Designer:

- 1 Do one of the following:
 - Select **Start | Programs | Serena | Dimensions RM version | RM Import Designer**.
 - Double-click the RM Import Designer shortcut on your desktop.

The **RM Import Designer login** dialog box opens.

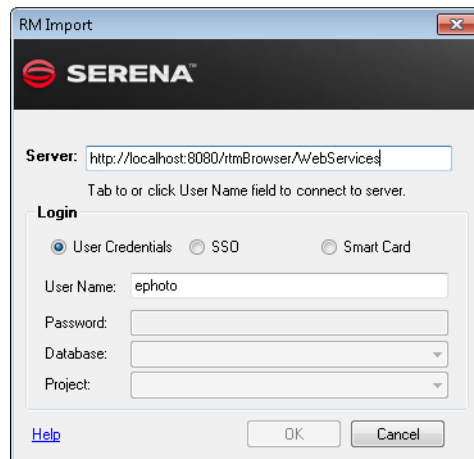


Figure 6-1. Login Dialog

- 2 In the **Server** field, type the name of the server that hosts the RM Web service. You can type a full URL or just type the server name and then press the Tab key, and the default URL is built. If the port number is not 80, type the port number after the server name, separated by a colon.

An example URL is `http://PC2040:8080/rtmBrowser/WebServices`



NOTE It is a good practice to copy the complete URL that is in the **Server** field to the address bar of a Web browser window and test that it connects to the server on which your Web service is hosted. This is a good test for http and https to validate that the Web service is up and running.

If your URL includes `https://` for SSL, an additional dialog box can be displayed that lets you choose which personal certificate you want to use. This dialog box is displayed if more than one certificate is in your personal store.



NOTES

- This dialog box shows personal certificates only.
- The certificate information is not cached, so you are prompted for a certificate every time you log in.

- 3 The **User Name** field is populated with the last value you entered, if any. If necessary, type your user name.



NOTES

- The server connection is attempted when you click on or tab to the **User Name** field.
- The **Password**, **Database**, and **Project** fields are enabled only after the server is connected.

- 4 In the **Password** field, type your password.
- 5 In the **Database** field, select the Dimensions RM database from which you want to work.
- 6 In the **Project** field, select the project with which you want to work.



NOTE The projects in the list are those that you have permission to log in to. If no projects appear in the list, then either an error occurred or you do not have permissions for any project on the server.

- 7 Click **OK**. The **RM Import Designer** window opens to the **General** tab.

Commands

The following sections describe how to perform the commands that are available on the RM Import Designer toolbar.

Opening an Existing Template

To open an existing template:

- 1 Click **Open** on the RM Import Designer toolbar.

The **Open Template** dialog box opens.

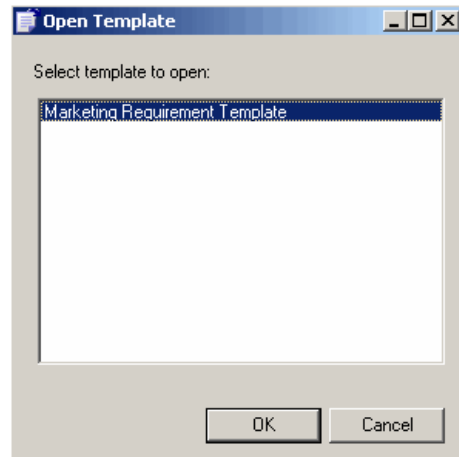


Figure 6-2. Open Template

- 2 Select the template you want to open and click **OK**.

Creating a New Template

To create a new template:

- 1 Click **New** on the RM Import Designer toolbar.
The number of the template in the title bar and in the **Name** field is incremented by one.
- 2 Complete the tabs in RM Import Designer as described in this chapter.
- 3 Click **Save** on the RM Import Designer toolbar.

Saving a Template

To save a template:

- Click the **Save** button on the RM Import Designer toolbar.

Saving a Template with Another Name

To save a template with another name:

- 1 Click **Save As** on the RM Import Designer toolbar.

The **Save As** dialog opens.

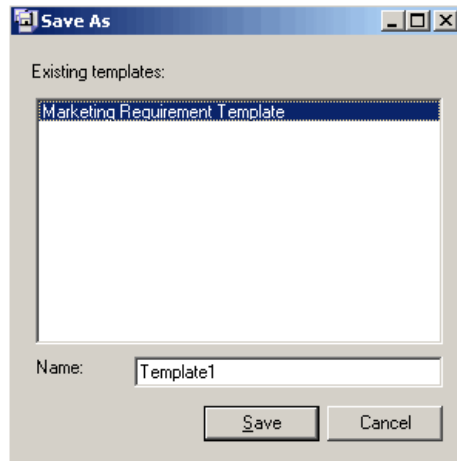


Figure 6-3. Save As

- 2 To save this template with another name, type the name in the **Name** field.
- 3 Click **Save**.

Deleting a Template

To delete a template:

- 1 Open the template you want to delete.
- 2 Click **Delete** on the RM Import Designer toolbar.
- 3 Confirm the deletion in the confirmation dialog box that opens.

General Tab

After you log in to RM Import Designer, the **RM Import Designer** dialog box opens to the **General** tab.

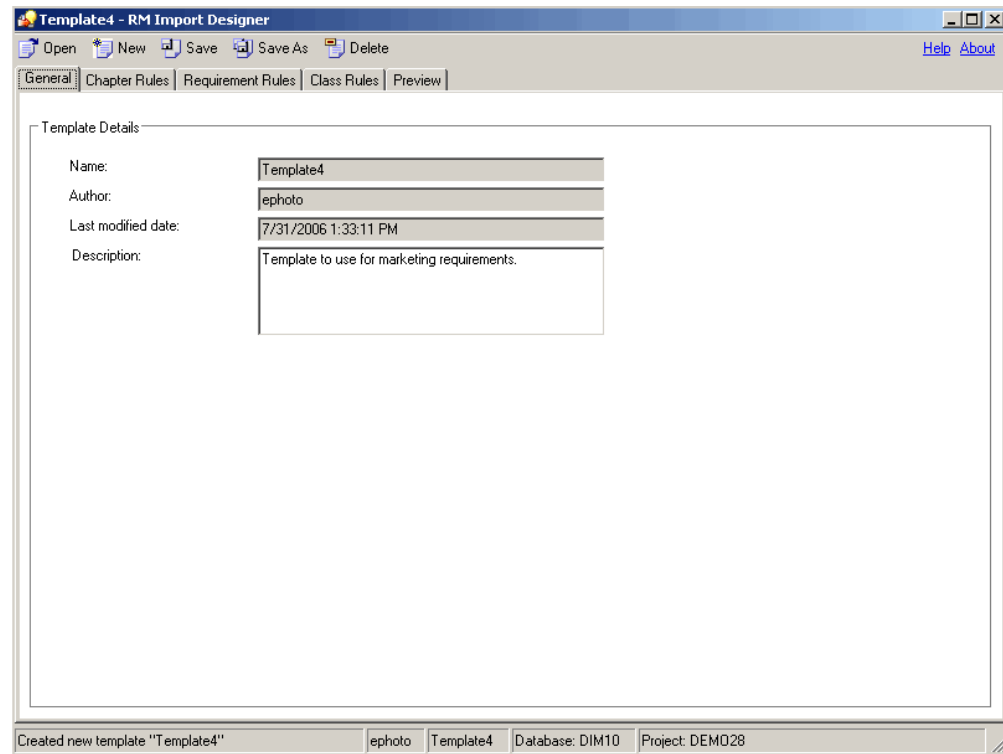


Figure 6-4. General Tab

To complete the General tab:

- 1 **Name** is a read-only field that contains the name of the template. When you create the template, the name is Template<*n*>, where <*n*> is the next numbered template. You can change the name by clicking **Save As** and typing a new file name.
- 2 **Author** is a read-only field that contains the user name of the person who created the template. If this is a new template, this field contains the user name of the person who just logged in to RM Import Designer.
- 3 **Last modified date** is a read-only field that contains the date and time that the template was created or saved. For a template that has not yet been saved, this field contains the date and time that the user logged in.
- 4 In the **Description** field, type an optional description of the template. Any description you type in this field is displayed in import mode, and helps the user determine which template to select for the import.

Chapter Rules Tab

The **Chapter Rules** tab gives you choices for identifying chapters. Chapters are captured automatically according to Word headings, similar to the way Word builds a table of

contents. The automatic capture of headings as chapters helps maintain the structure and organization of documents.



NOTE By default, all headings are captured as chapters. If the requirement rules identify these headings as requirements, then the requirement rules take precedence and the headings and subheadings are identified as requirements.

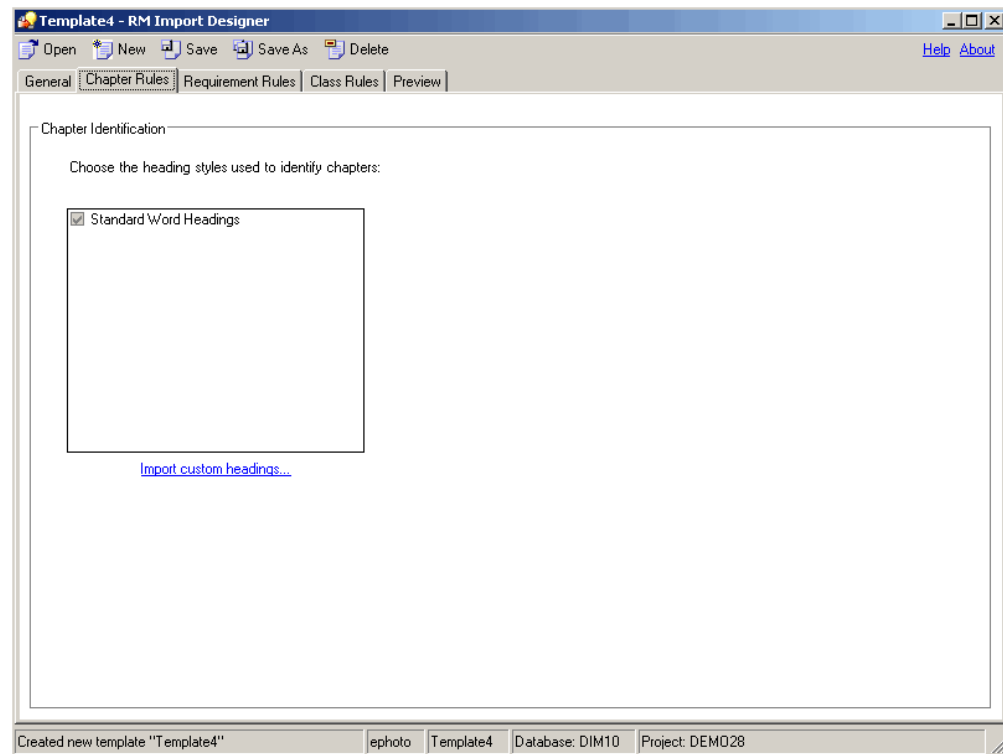


Figure 6-5. Chapter Rules Tab



NOTE If the document you are importing uses custom headings (headings other than the standard nine Word headings), you can load the headings from the document and select the ones you want to use in the document. The same list of custom headings are presented on the **Requirement Rules** tab.

To complete the Chapter Rules tab:

- 1 If you want to use custom heading styles in addition to standard Word headings to identify the beginning of a chapter in a document, click **Import custom headings**. The **Open** dialog box opens.
- 2 Type or browse to the Word document from which you want to load heading styles, and click **Open**.
The custom headings from the document are displayed in the list box.
- 3 Select the custom headings that you want to use to identify chapters.

Requirement Rules Tab

The **Requirement Rules** tab is used to identify the requirements in the document, and varies depending on the option you select under **Requirement Identification**. Each option presents a pattern in which requirements can be identified. The option you select affects the attribute patterns available on the **Class Rules** tab.



NOTES

- You can use the **Preview** tab to see how each option affects the import.
- A red exclamation mark indicates that a mandatory default value must be specified.

Table Option

The choices presented with the **Table** option allow you to distinguish rows in tables that contain requirements from those that do not. Use the **Table** option if requirements are in table rows.

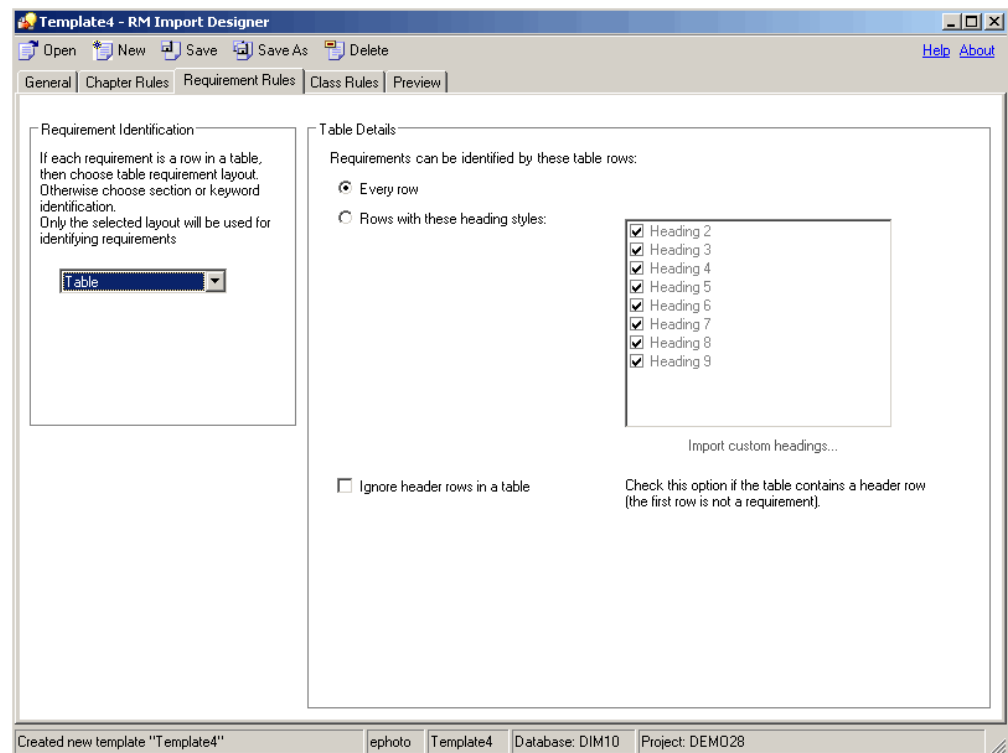


Figure 6-6. Requirement Rules Tab—Table Layout

To complete the Requirement Rules tab for the Table option:

- 1 Under **Requirement Identification**, select **Table**.

- 2 Under **Table Details**, select one of the options described in the following table.

Option	Description
Every row	Select this option for documents in which all tables contain requirements.
Rows with these heading styles	<p>Select this option when a requirement is in a table with a table cell containing a standard Word heading style. Tables that do not contain a heading are not identified as containing requirements and become part of the chapter description.</p> <p>If you want to use custom headings, click Import custom headings, and type to or browse to the Word document from which you want to load custom styles. Select those headings that you want to use to identify requirements.</p> <p>NOTE: If you imported custom headings on the Chapter Rules tab, this list is automatically populated with the headings from the document you specified there.</p>

- 3 Select the **Ignore header rows in a table** check box if the table contains a header row (that is, the first row in the table contains the names of columns and not a requirement).

Section Option

Use the **Section** option to identify sections of the Word document that contain requirements.

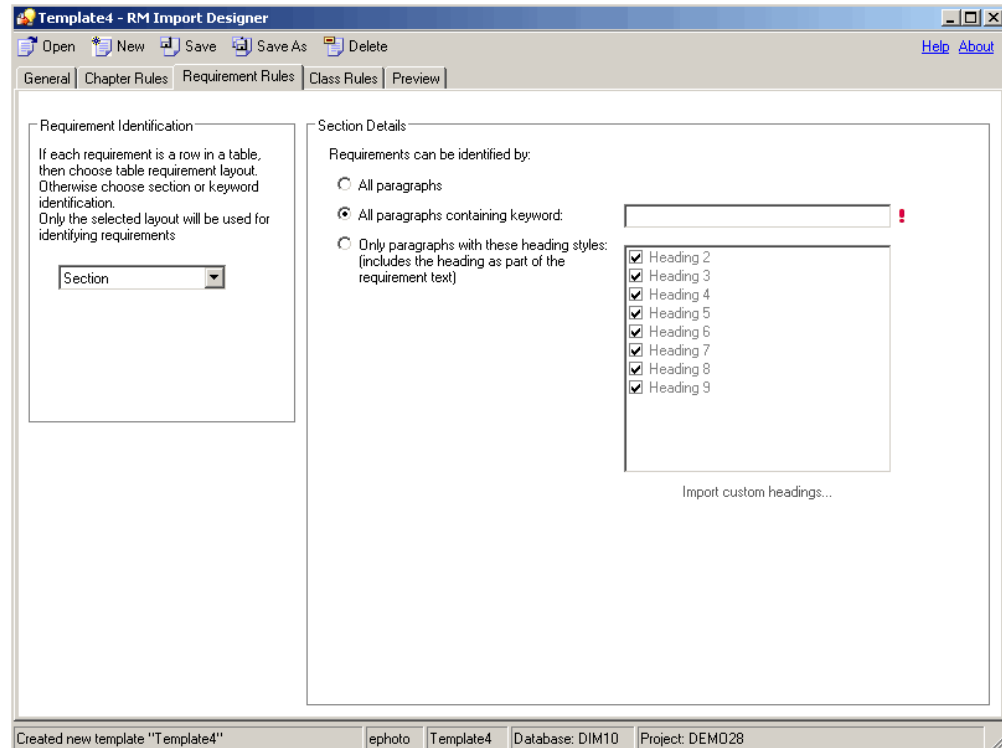


Figure 6-7. Requirement Tab—Section Option

To complete the Requirement Rules tab for the Section option:

- 1 Under **Requirement Identification**, select **Section**.
- 2 Under **Section Details**, select one of the options described in the following table.

Option	Description
All paragraphs	Select this option to identify every paragraph in a chapter as a requirement. This option is useful for numbered lists, bulleted lists, and so on.
All paragraphs containing keyword	<p>Select this option to identify every paragraph in the chapter as a requirement only if it contains the keyword or keywords you type in the field. <i>Shall</i>, <i>will</i>, and <i>must</i> are examples of keywords you could type here. You can also type regular Word expressions in this field. For examples of regular Word expressions, see "Word Regular Expressions" on page 252.</p> <p>NOTE: When there is information between two paragraphs that contain keywords, that information is captured into the first requirement.</p> <p>To perform an OR search, separate multiple keywords with spaces. If you want to search for an exact string, enclose multiple keywords in quotation marks.</p> <p>To perform a customized search, use a regular expression.</p>
Only paragraphs with these heading styles...	<p>Select this option to identify any block of text with a specific heading style as a requirement. The heading is included as part of the requirement.</p> <p>If you want to include custom headings, click Load custom headings and type or browse to the Word document from which you want to load custom styles. Select those headings that you want to use to identify requirements.</p> <p>NOTE: If you imported custom headings on the Chapter Rules tab, this list is automatically populated with the headings from the document you specified there.</p>

Keyword Option

If requirements cannot be identified using the table or section rules, you can specify a pattern using a keyword or Word regular expression that identifies requirements. The pattern can span paragraphs and the first match of the "begin pattern" keyword represents the beginning of the requirement. You can identify an entire table representing a requirement using this option.

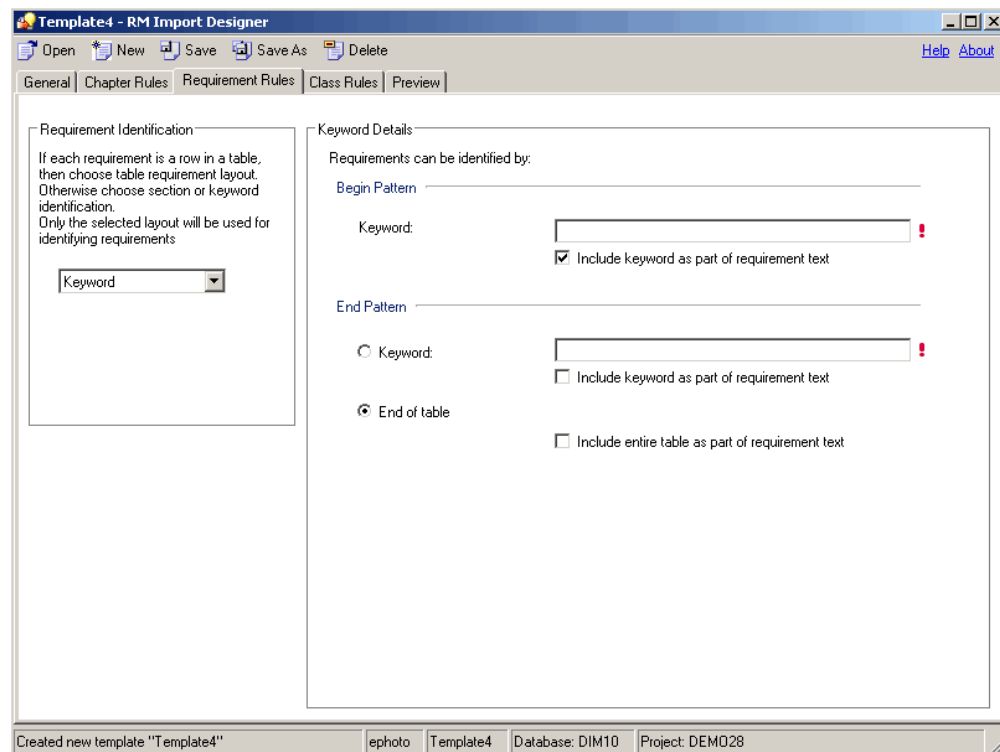


Figure 6-8. Requirement Tab—Keyword Option

To complete the Requirement Rules tab for the Keyword option:

- 1 Under **Requirement Identification**, select **Keyword**.



NOTES

- Keywords are case sensitive. To search for either case, type both words in the **Keyword** box, separated by a space. For example, type **design Design**.
- To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

- 2 Under **Begin Pattern**, type the keyword or keywords or Word regular expression that marks the beginning of the requirement. If you want to include the keyword as part of the requirement, select the **Include keyword as part of requirement text** check box.

This field is mandatory.

- 3 Under **End Pattern**, do one of the following:
 - Select **Keyword** and type the keyword or keywords or Word regular expression that marks the end of the requirement. If you want to include the keyword as part of the requirement, select the **Include keyword as part of requirement text** check box.
 - Select **End of table** if the beginning keyword is before the table and the entire table after the beginning keyword represents a requirement. If you want to include the entire table as part of the requirement, select the **Include entire table as part of requirement text** check box.

Class Rules Tab

The **Class Rules** tab allows you to identify classes in a document and set up default attributes and categories. By default, the title and description attributes and other attributes that are specified as "mandatory" in Class Definition are included in each class.

RM Import attempts to capture everything that is not a requirement as the chapter description. It attempts to capture portions of a requirement that are not captured into any attribute into the default Description attribute of that class.



CAUTION! If you do not enable HTML formatting for the default Description attribute or any other text attribute, then formatting and images are not imported. For instructions for enabling HTML for text attributes, see ["Text Attribute" on page 149](#).



CAUTION! If you delete a class that is referenced in a template from Class Definition, or remove "read" permission for it, the template becomes invalid.



NOTE If the entire requirement can be captured into the default Description attribute, then you do not have to make any additional choices on the **Class Rules** tab.

Class Information



NOTE A red exclamation mark indicates that a mandatory default value must be specified.

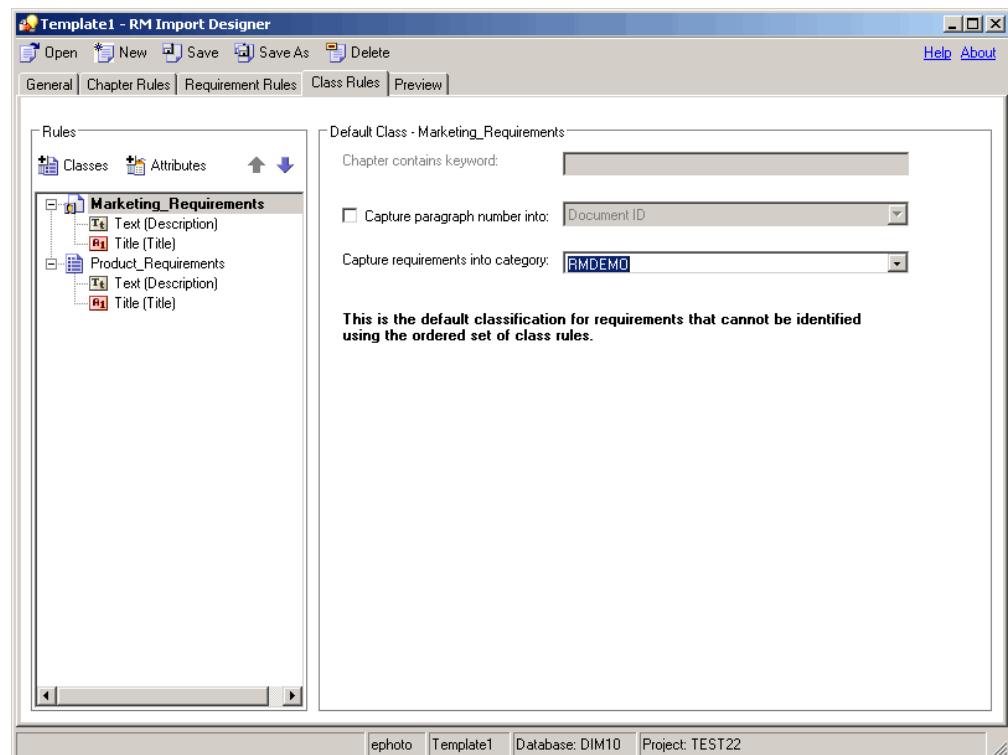


Figure 6-9. Class Rules Tab—Default Class

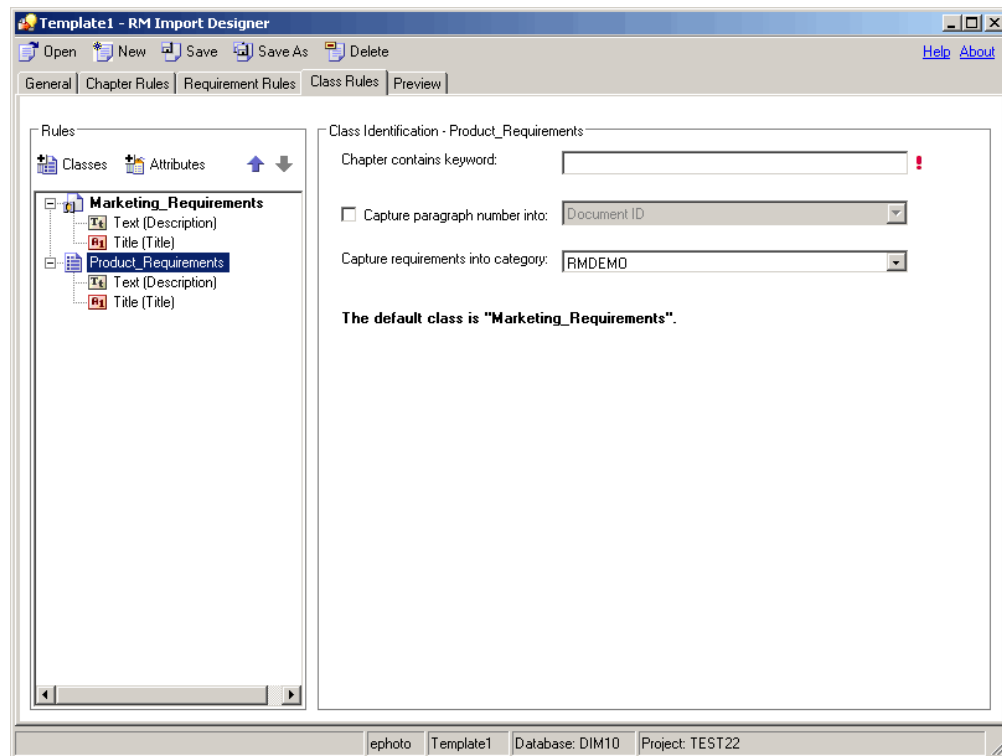


Figure 6-10. Class Rules Tab—Non-Default Class

To complete the Class Rules tab for a class:

- 1 Do one of the following:
 - If you are creating a new template, the **Add/Remove Class Rules** dialog box automatically opens when you click the **Class Rules** tab. Proceed to the next step.
 - If you need to change the classes that are included in an existing template, click **Classes**, or right-click in the left pane and select **Add/Remove Classes**.

The **Add/Remove Class Rules** dialog box opens.

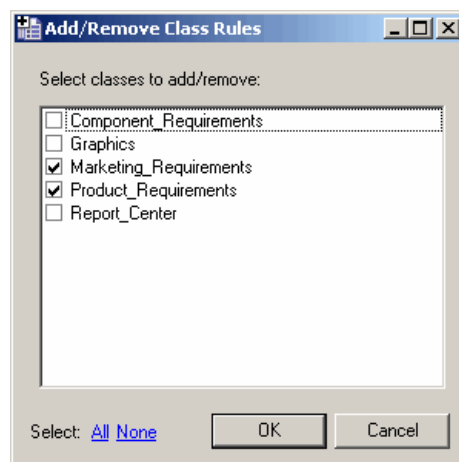


Figure 6-11. Add/Remove Class Rules

- 2 A set of class types that are defined for the project are listed. Select the classes into which you want to import requirements and click **OK**. To select all of the classes, click **All** at the bottom of the dialog box and click **OK**.
- 3 By default, the first class listed in the **Add/Remove Class Rules** dialog box becomes the default class for all requirements, and is displayed in boldface type. To change the default class, select the class you want as the default class, right-click in the left pane, and click **Mark as default**.



NOTE You can define only one default class for each template.

- 4 To remove a class, click the **Classes** button, or right-click in the left pane and select **Add/Remove Classes**. In the **Add/Remove Class Rules** dialog box that opens, clear the check box for the class and click **OK**.

Alternatively, you can right-click the class in the left pane and click **Remove**.

- 5 Each chapter that contains requirements is searched for keywords. In the **Chapter contains keyword** box, type the keyword or Word regular expression that identifies the class. If there is a match, then requirements found in the chapter are imported as requirements of that class.

This is important when multiple classes can be identified from the document. The keywords are searched in the order in which the classes are specified in the **Add/Remove Class Rules** dialog. To reorder the classes, select the class and then click the up or down arrow in the left pane.



NOTES

- The **Chapter contains keyword** field is disabled for the default class, because all requirements found in the document are of the same class.
- To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

- 6 If you want to import the paragraph ID (for example, 5.3.2) into an attribute, select the **Capture Paragraph Number into** check box and select the attribute from the list.
- 7 Select the category to which the requirement will belong from the **Capture requirements into category** list. The default is the root category (the project). The category that you select respects the category permissions for the user.

Attribute Information

When a class in the left pane is expanded, you can select an attribute and specify how the attributes within a requirement are identified, specify default values, and so on. The information in the right pane varies depending on the **Requirement Identification** option selected on the **Requirement Rules** tab, and the type of attribute that is selected.

The option that was selected on the **Requirements Rules** tab is displayed at the top of the **Class Rules** tab when an attribute is selected in the left pane.



CAUTION! If you delete an attribute that is referenced in a template from Class Definition, the template becomes invalid.



NOTES

- The same region within a requirement can be captured into multiple attributes. For example, the third column in a table can be captured into more than one attribute.
- A red exclamation mark indicates that a mandatory default value must be specified. The title and description attributes always require default values, as well as attributes that are marked as mandatory in Class Definition.

Adding and Removing Attributes

To add and remove attributes from a class:

- 1 Select the class to which you want to add attributes.
- 2 Click **Attributes**, or right-click in the left pane and click **Add/Remove Attributes**.

The **Add/Remove Attributes** dialog box opens. All of the attributes that are defined for the class are listed.

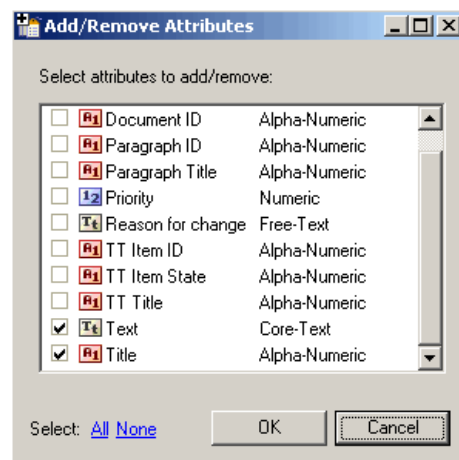


Figure 6-12. Add/Remove Attributes

- 3 Select the attributes that you want to add and click **OK**. To select all attributes, click **All** at the bottom of the dialog box and click **OK**.
- 4 To remove an attribute, click **Attributes**, or right-click the attribute in the left pane and click **Add/Remove Attributes**. In the **Add/Remove Attributes** dialog box that opens, clear the attribute check box and click **OK**. To remove all attributes, click **None** at the bottom of the dialog box and click **OK**.



NOTE Default and mandatory attributes for the selected class are always selected and cannot be removed.

Alphanumeric Attributes with Section or Keyword Option

The following illustration shows the **Class Rules** tab for alphanumeric attributes with the Section or Keyword option:

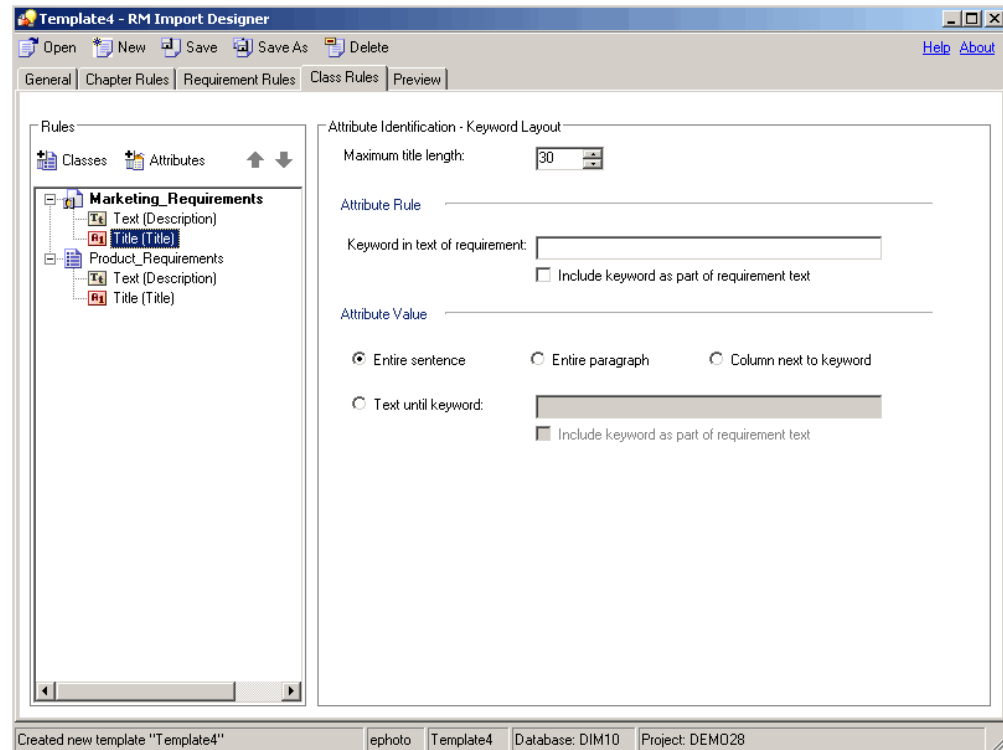


Figure 6-13. Class Rules Tab—Section or Keyword Option—Alphanumeric Attributes

To complete the Class Rules tab for alphanumeric attributes with the Section or Keyword option:

- 1 In the **Maximum title length** field, select the number of characters for the attribute title. The default value is **30**.
- 2 In the **Keyword in text of requirement** field, type the keyword, keywords, or Word regular expression to identify the attribute. If you want to include the keyword as part of the requirement, select the **Include keyword as part of requirement text** check box. If no rule is specified in this field, by default the first 30 characters are captured as the title.



NOTE To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

- 3 Under **Attribute Value**, specify one of the options described in the following table:

Option	Description
Entire sentence	The entire sentence in which the keyword is found is the attribute value.
Entire paragraph	The entire paragraph in which the keyword is found is the attribute value.

Option	Description
Column next to keyword	The requirement includes a table, and the entire content of the cell to the right of the first cell containing the keyword is the attribute value. When the cell that contains the keyword is the last cell in a row, the content of the first cell in the next row is the attribute value. NOTE: This does not pertain to the Table option.
Text until keyword	The text up to the specified keyword is the attribute value. Select the Include keyword as part of requirement check box if you want to include the keyword in the attribute value. The default is to exclude the keyword.

Alphanumeric Attributes with Table Option

The following illustration shows the Class Rules tab for alphanumeric attributes with the Table option:

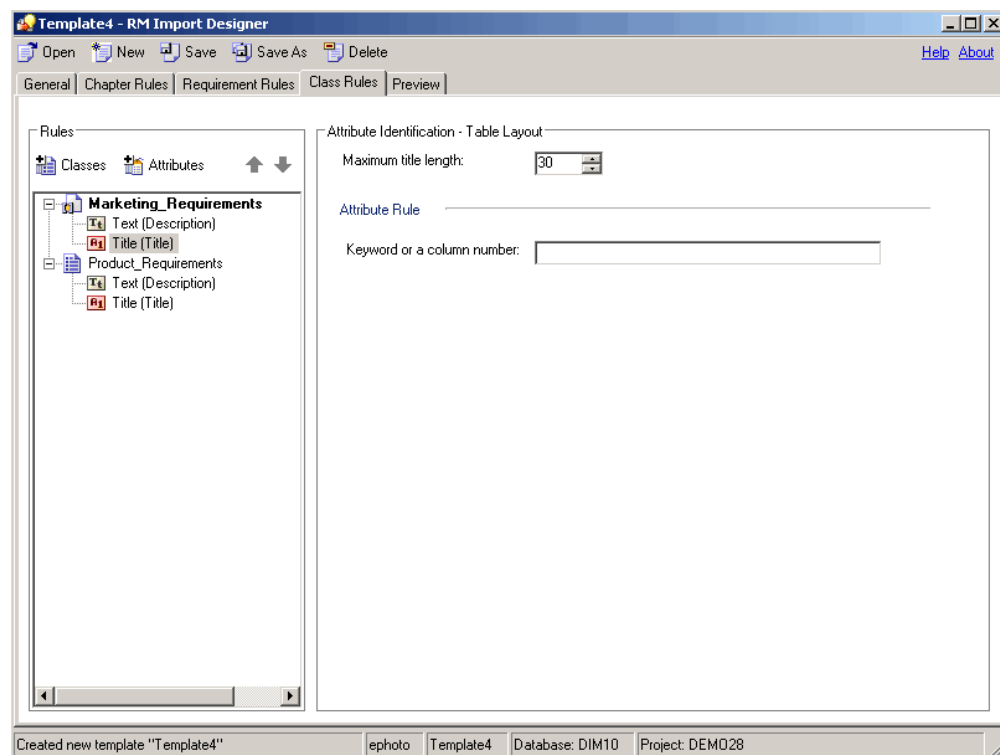


Figure 6-14. Class Rules Tab—Table Option—Alphanumeric Attributes

To complete the Class Rules tab for alphanumeric attributes with the Table option:

- 1 In the **Maximum title length** field, select the number of characters for the attribute title. The default value is **30**.
- 2 In the **Keyword or column number field**, type the keyword or column number to identify the attribute. For example, if the **Priority** attribute is in the third column, you could specify 3. The information specified in the cell below the column heading represents the value of the attribute (for example, High). If no rule is specified in this field, by default the first 30 characters are captured as the title.

Text or Numeric Attributes with Section or Keyword Option

The following illustration shows the **Class Rules** tab for text or numeric attributes with the Section or Keyword option:

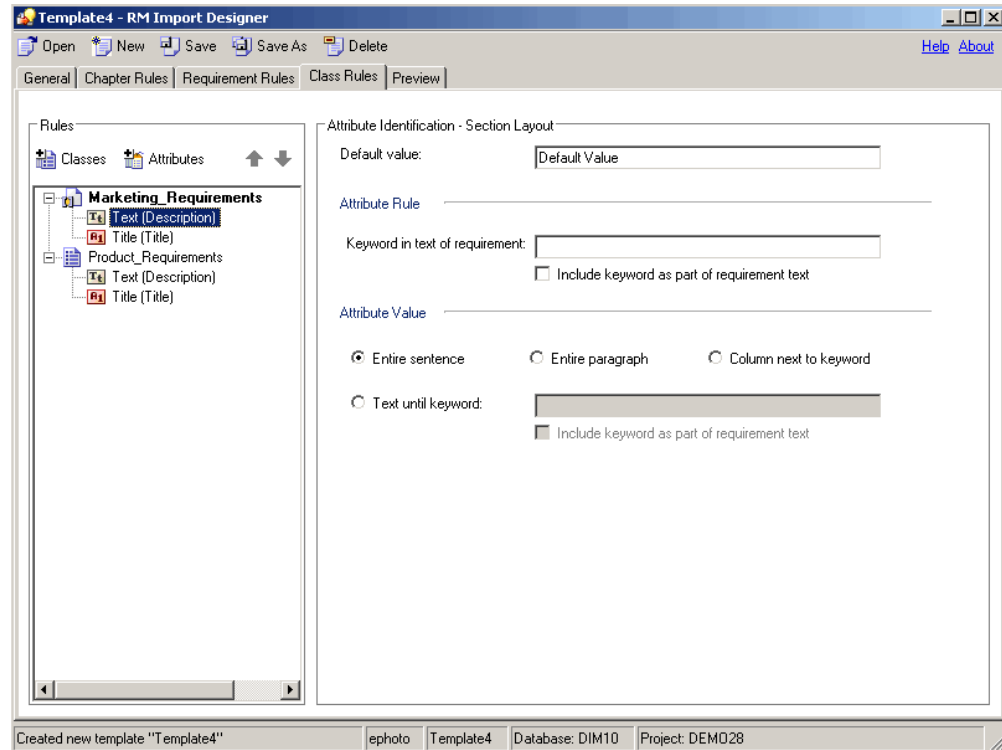


Figure 6-15. Class Rules Tab—Section or Keyword Option—Text or Numeric Attributes

To complete the Class Rules tab for text or numeric attributes with the Section or Keyword option:

- 1 In the **Default value** field, type a default value for the attribute value if the attribute value cannot be found in the document. For numeric attributes, you must enter a number. This field must be filled in for mandatory attributes.

For example, for the **Owner** attribute, you could set the default value to the name of the team lead for the project.

- 2 In the **Keyword in text of requirement** field, type the keyword, keywords, or Word regular expression to identify the attribute. If you want to include the keyword as part of the requirement, select the **Include keyword** check box.



NOTE To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

3 Under **Attribute Value**, specify one of the options described in the following table:

Option	Description
Entire sentence	The entire sentence in which the keyword is found is the attribute value.
Entire paragraph	The entire paragraph in which the keyword is found is the attribute value.
Column next to keyword	The requirement includes a table, and the entire content of the cell to the right of the first cell containing the keyword is the attribute value. When the cell that contains the keyword is the last cell in a row, the content of the first cell in the next row is the attribute value. NOTE: This does not pertain to the Table option.
Text until keyword	The text up to the specified keyword is the attribute value. Select the Include keyword check box if you want to include the keyword in the attribute value. The default is to exclude the keyword.



NOTE If you do not choose an **Attribute Value** option, the attribute value is the text following the keyword until the next keyword is found or the end of the chapter or document is reached.

Text or Numeric Attributes with Table Option

The following illustration shows the **Class Rules** tab for text or numeric attributes with the Table option:

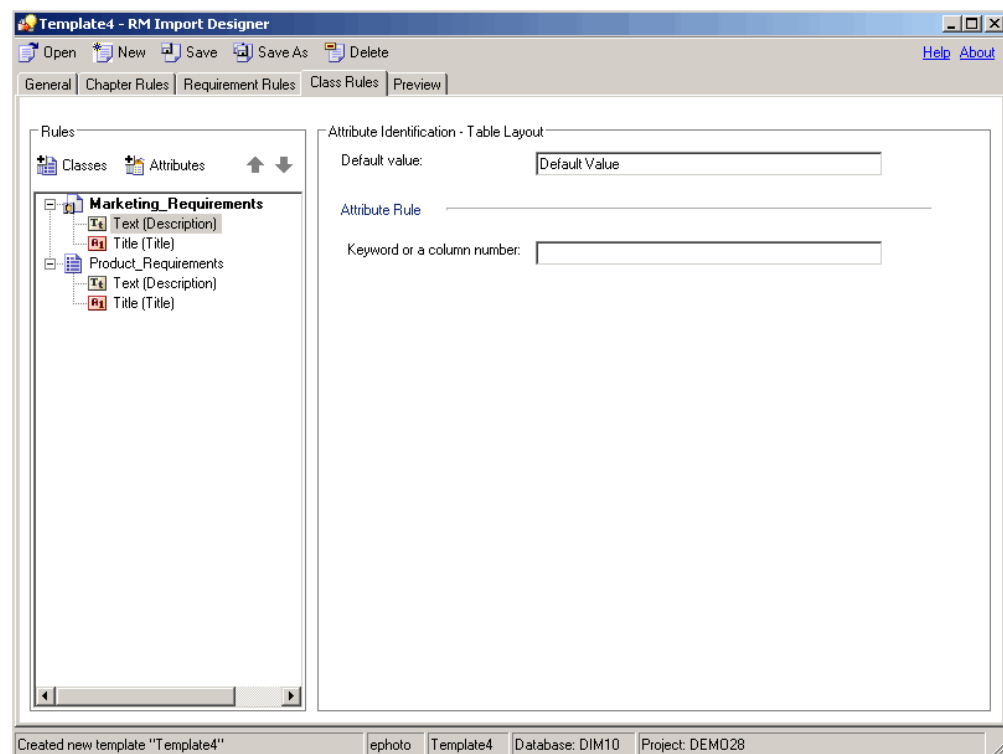


Figure 6-16. Class Rules Tab—Table Layout—Text or Numeric Attributes

To complete the Class Rules tab for text or numeric attributes with the Table option:

- 1 In the **Default value** field, type a default value for the attribute value if the attribute value cannot be found in the document. For numeric attributes, you must enter a number. This field must be filled in for mandatory attributes.

For example, for the **Priority** attribute, you could set the default value to Low.



NOTE A red exclamation mark indicates that a mandatory default value must be specified. The title and description attributes always require default values, as well as attributes that are marked as mandatory in Class Definition.

- 2 In the **Keyword or a column number** field, type the keyword or column number to identify the attribute. For example, if the **Priority** attribute is in the third column, you could specify 3. The information specified in the cell below the column heading represents the value of the attribute (for example, High).



NOTE To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

List or User Attributes with Section or Keyword Option

The following illustration shows the **Class Rules** tab for list or user attributes with the Section or Keyword option:

The screenshot shows the 'Template4 - RM Import Designer' window with the 'Class Rules' tab selected. The 'Rules' pane on the left shows a tree structure with 'Marketing_Requirements' expanded, containing 'Text (Description)', 'Title (Title)', and 'Delivery Phase'. The 'Attribute Identification - Section Layout' section on the right has the following fields and options:

- Default value:** A dropdown menu showing 'TBD'.
- Attribute Rule:** A text input field.
- Keyword in text of requirement:** A text input field with a checkbox labeled 'Include keyword'.
- Attribute Value:** A section with three radio buttons: 'Entire sentence' (selected), 'Entire paragraph', and 'Column next to keyword'. Below these is a text input field for 'Text until keyword:' and a checkbox labeled 'Include keyword'.
- Custom Mapping:** A table with two columns: 'RM Value' and 'Document Value'.

RM Value	Document Value
Build1	
Build2	
Build3	
Build4	
TBD	

The status bar at the bottom shows: 'Created new template "Template4"', 'ephoto', 'Template4', 'Database: DIM10', and 'Project: DEMO28'.

Figure 6-17. Class Tab—Section or Keyword Layout—List or User Attributes

To complete the Class tab for list or user attributes with a Section or Keyword layout:

- 1 In the **Default Value** field, select the default value for the attribute if the attribute value cannot be found in the document. For example, for a **Delivery Phase** attribute, you could select TBD (To Be Determined).
- 2 In the **Keyword in text of requirement** field, type the keyword, keywords, or Word regular expression to identify the attribute. If you want to include the keyword as part of the requirement, select the **Include keyword** check box. The **Keyword in text of requirement** field must be filled in for mandatory attributes.



NOTES

- A red exclamation mark indicates that a mandatory keyword must be specified.
- To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

- 3 Under **Attribute Value**, specify one of the options described in the following table:

Option	Description
Entire sentence	The entire sentence in which the keyword is found is the attribute value.
Entire paragraph	The entire paragraph in which the keyword is found is the attribute value.
Column next to keyword	The requirement includes a table, and the entire content of the cell to the right of the first cell containing the keyword is the attribute value. When the cell that contains the keyword is the last cell in a row, the content of the first cell in the next row is the attribute value. NOTE: This does not pertain to the Table option.
Text until keyword	The text up to the specified keyword is the attribute value. Select the Include keyword check box if you want to include the keyword in the attribute value. The default is to exclude the keyword.

- 4 If you want to map values from the document to the actual values in the Dimensions RM database, under **Custom Mapping**, enter the values under **Document Value**. Separate multiple values with commas. If you map values, the Dimensions RM values appear in the imported document instead of the document values. For example, Build 3 is the value in the Dimensions RM database, but Alpha is the corresponding value in the document.

List or User Attributes with Table Option

The following illustration shows the **Class Rules** tab for list or user attributes with the Table option:

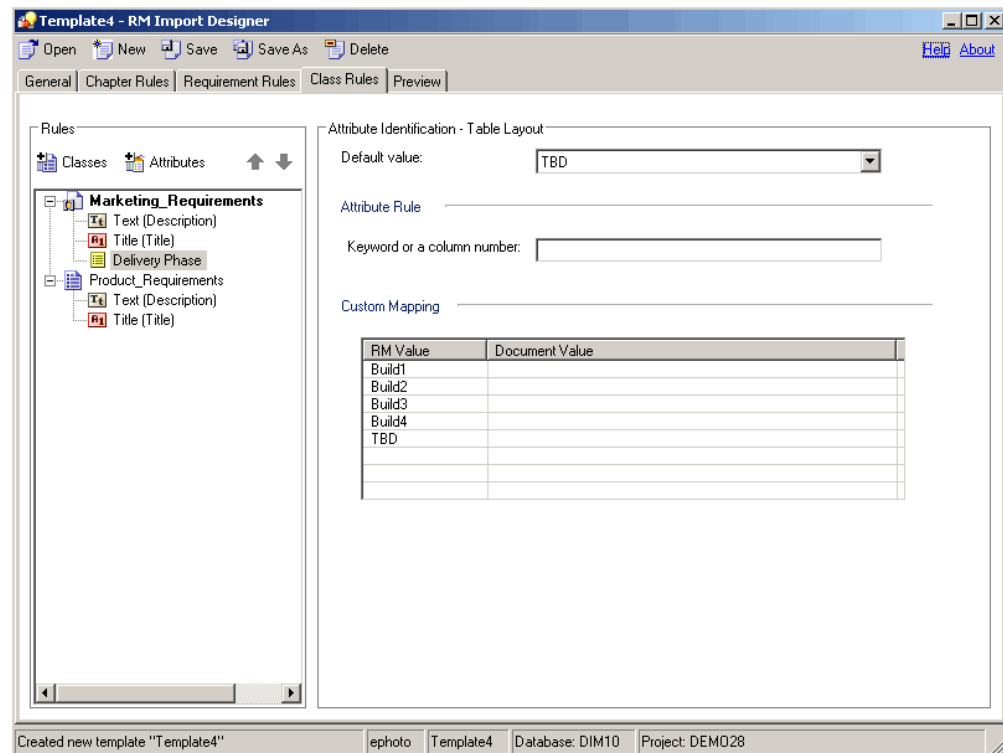


Figure 6-18. Class Rules Tab—Table Layout—List or User Attributes

To complete the Class Rules tab for list or user attributes with the Table option:

- 1 In the **Default value** field, select the default value for the attribute if the attribute value cannot be found in the document. For example, for a **Verification Status** attribute, you could select **Not Scheduled**.
- 2 In the **Keyword or a column number** field, type the keyword or column number to identify the attribute. For example, if the **Verification Status** attribute is in the third column, you could specify 3. The information specified in the cell below the column heading represents the value of the attribute (for example, **Passed**).



NOTE To perform a customized search, use a regular expression. For information about regular expressions, see ["Word Regular Expressions" on page 252](#).

- 3 If you want to map values from the document to the actual values in the Dimensions RM database, under **Custom Mapping**, enter the values under **Document Value**. Separate multiple values with commas. If you map values, the Dimensions RM values appear in the imported document instead of the document values. For example, **Scheduled** is the value in the Dimensions RM database, but **Committed** is the corresponding value in the document.

Preview Tab

The **Preview** tab allows you to see approximately how the document would look in Documents View if it were imported using the template you are working with. The preview appears in a tree-like structure in the left pane.



NOTE If the Word document is set to "Protected" mode with a read-only restriction, an error message could be displayed in the preview screen. To prevent this problem, copy all of the information from the protected Word document and paste it into a new Word document.

To preview the document:

- 1 Click the **Preview** tab.

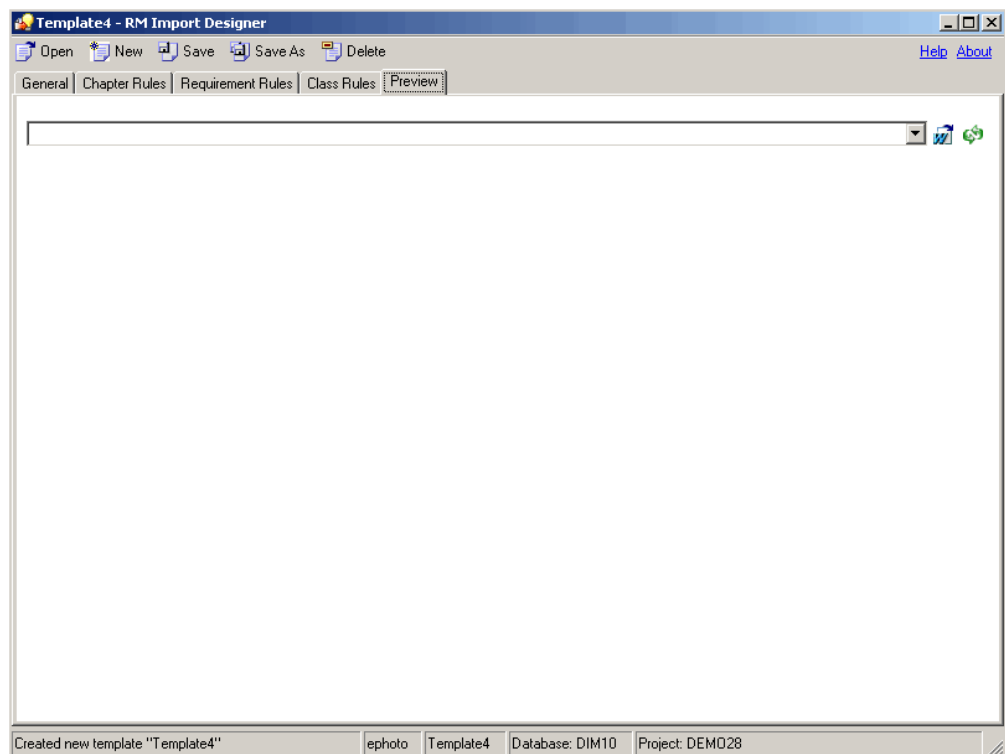




Figure 6-19. Empty Preview Tab

- 2 Do one of the following:
 - Click the **Select a document to load** button . The **Open** dialog box opens. Select the document you want to preview and click **Open**.
 - Click the **Load the currently selected document** button . Use this option if you made changes to the Word document and want to rerun the parser, or if you selected a previously viewed document in the dropdown list.

The **Parsing Word Document** dialog box shows you the progress of the document parsing. Click **Close** when the parsing is complete. The document structure is displayed in the left pane.

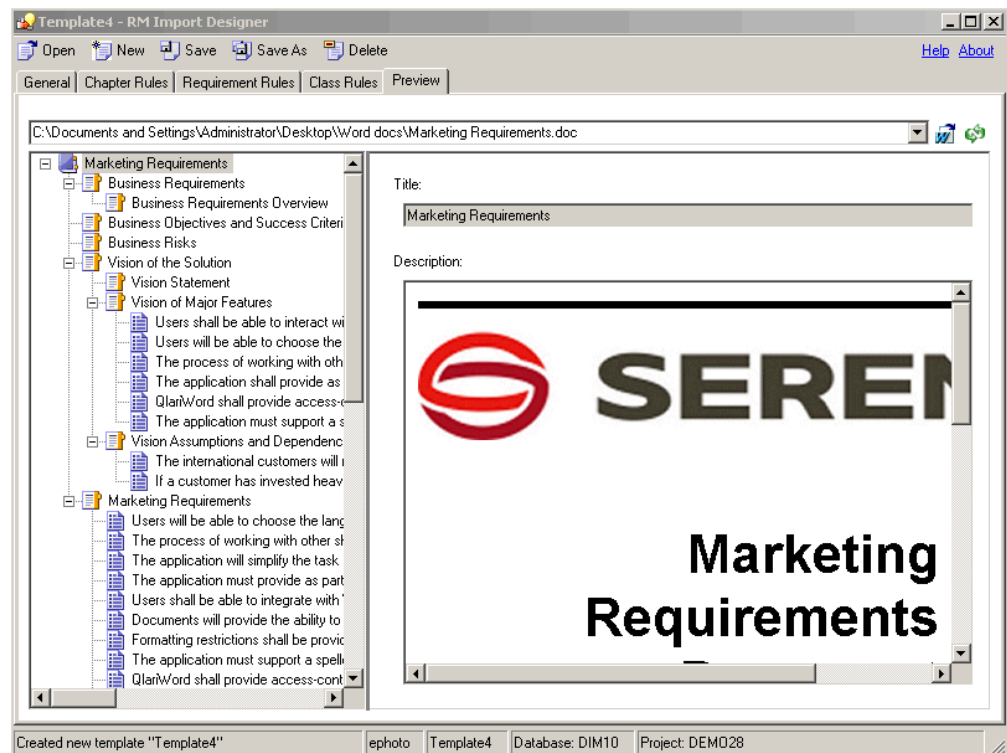


Figure 6-20. Preview Tab

Word Regular Expressions

A number of fields can contain keywords or regular expressions. The content of these fields can either be text that is to be matched (such as "shall") or a Word regular expression.



TIP Before you type a regular expression in a field in RM Import Designer, test it in Word on the document you are going to parse. To do so, open the Word document, Select **Edit | Find**, click **More**, select **Use Wildcards**, and then type the expression in the **Find What** field. You can also click **Special** to select wildcard characters that can be used to build regular expressions.

This section briefly describes how to use Word regular expressions, and provides some examples of their use.



NOTE For comprehensive information about using Word regular expressions, refer to Microsoft documentation.

Word provides a set of wildcard characters that you can use to build regular expressions.

- A **wildcard character** is a keyboard character that represents one or many characters.

- A **regular expression** is a combination of literal and wildcard characters that you use to find text patterns. For example, if you want to search for "manage" but not "management," type **<manage>** instead of **manage**.

The following table lists the wildcard characters that you can use in Word.

Text to Search	Wildcard Character	Examples
Single character	?	a?t finds "act" and "art." It also finds these characters within a word (for example, "action" and "artist").
String of characters	*	p*d finds "pad" and "passed." The asterisk returns all characters and spaces that are between the specified literal characters.
Beginning of word	<	<(para) finds all words that start with "para," such as "parakeet" and "paragraph."
End of word	>	(out)> finds all words that end with "out," such as "about" and "without" but not "outstanding."
One or more specified characters	[]	s[io]n finds "sin" and "son," but not "skin," because "k" is not specified within the brackets.
Single character in a range of characters	[x-z]	[b-s]ought finds "bought," "fought," and "sought." The range must be in ascending order (for example, b-s is correct, but not s-b)
Single character except the characters in the range inside the brackets	[!x-z]	h[!a-m]ck finds "hock," but not "hack" or "hick."
Exactly <i>n</i> occurrences of the previous character or expression	{ <i>n</i> }	me{2}t finds "meet" but not "met." h[a-z]{2}d finds "heed," "hand," and "hind," but does not find "hid" or "had". h([a-z]){2}d finds "heed" but not "hand" or "hind."
At least <i>n</i> occurrences of the previous character or expression	{ <i>n</i> ,}	lo{1,}t finds "loot" and "lot."
From <i>n</i> to <i>m</i> occurrences of the previous character or expression	{ <i>n</i> , <i>m</i> }	30{1,3} finds "30," "300," and "3000."
One or more occurrences of the previous character or expression	@	ro@t finds "rot" and "root."
Any wildcard character	\wildcard_character	[\?] finds all question mark wildcards, [*] finds all asterisk wildcards, and so on.
To group characters and set orders of evaluation	()	h([a-z]){2}d finds "heed" but not "hand," "hind" or "had."



NOTE Wildcard searches are case sensitive.

Example Word Regular Expressions

The following table contains example Word regular expressions that you could use in your templates.

Word Regular Expression	Description
RQMT_[0-9]@	Finds sequences that start with "RQMT_" and any number of numbers. For example, RQMT_0009 .
\<\<SYS[0-9]@\>\>	Finds sequences that start with <<, then "SYS" and any number of numbers, and that end with >>. for example, <<SYS0109>> .
[0-9].	Finds sequences that start with any number and a period. For example, 24..
0[0-9]@	Finds sequences that start with 0 followed by any number of numbers. For example, 0008 .
[0-9].[0-9].[0-9]	Finds sequences that start with three numbers separated by decimal points. For example, 1.2.6 .

Limitations

This section describes some limitations of the RM Import tool. Be sure to take these limitations into consideration when you design templates.



IMPORTANT! Before you prepare a template that will be used to import a Word document, save the document as HTML and examine the results. This is the way the document will be displayed in RM Browser after it is imported. If you see any formatting problems that are unacceptable (for example, problems with lists, bullets, and fonts), adjust the styles used in the Word document until the results are satisfactory.

- Microsoft Word uses unique, proprietary styles and formatting; therefore, the styles and formatting of the Word document (for example, lists, bullets, and fonts) are not necessarily preserved in Document View. However, the text is always imported, so there is no data loss.
- You cannot import the changes you make in Document View back into the original Word document. Roundtripping between Dimensions RM and Word is not supported.
- Custom headings that you create based on standard Word headings are imported as standard Word headings, not as custom headings.
- On the **Requirement Rules** tab for the Keyword option:
 - If you select the **Include entire table as part of requirement text** check box, the keyword must be in the table to be included as part of the requirement. The entire table that contains the keyword is the requirement.
 - If you do *not* select the **Include entire table as part of requirement text** check box, and if the **Begin Pattern** keyword is found and the end of the chapter is reached, the table is included as part of the requirement.

- If the keyword you typed under **Begin Pattern** is found and the end of the chapter is reached, the requirement is captured, even if the keyword you typed under **End Pattern** is not at the end of the chapter.
- Importing every cell in a table as a requirement is not supported.
- If a list number in the Word document is preceded by text (such as *Requirement#*), the text is not imported. Therefore, *Requirement #1* in the Word document is imported as *1*.
- If you use the **Entire sentence** option to capture attributes, lists in the Word document might not be imported.

Examples

["RM Import Designer Examples" on page 287](#) contains examples of Word documents and explains how their structure determines how you set up templates for them.

Chapter 7

Application Lifecycle Framework (ALF)

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Overview

This chapter describes how to emit Application Lifecycle Framework (ALF) events from Serena® Dimensions® RM and the Web services needed to implement an integration between Dimensions RM and another application, for example, Dimensions CM.

The following prerequisites must be met before you can implement integration:

- Serena® Mashup Composer—A visual interface for creating and designing mashups, which are Web applications that mix information from more than one source into a single application. Mashup Composer lets you manipulate applications and orchestration workflows to meet specific business needs.
- Web services—You must understand Web services and how they interoperate in custom ways.
- ALF—You must have a working knowledge of ALF. ALF defines an open source framework which, when adhered to, enables applications to interact using Web services, events, and BPEL process. Download the archived ALF project home page on www.eclipse.org/alf for more information.

Architecture

To be involved in an ALF-based integration, Dimensions RM must emit ALF events and send notifications to the ALF Event Manager, which starts ALF service flows that are defined in Mashup Composer. The service flows contain the rule that decides when and how to create items in each application.

The following flowchart illustrates the integration architecture.

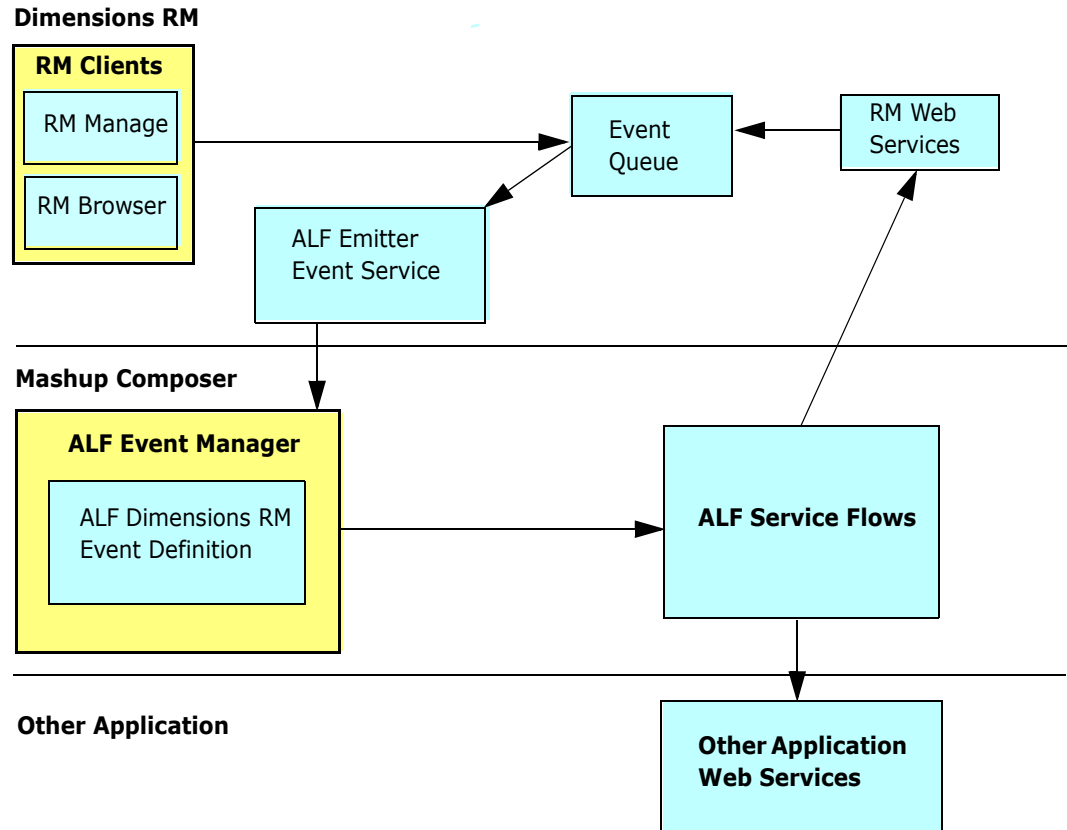


Figure 7-1. Integration Architecture

Emitting ALF Events

An *event* is a Web service message sent from Dimensions RM to the ALF infrastructure. The Event Manager defines an event Web service as the interface for ALF events, and Dimensions RM calls this Web service to emit events.



NOTE Before emitting an event, Dimensions RM determines whether the Dimensions RM project is an ALF-enabled project. The check box on the **Configure ALF Options** dialog box determines this. For more information about making a project an ALF-enabled project, see ["Enabling a Project for ALF" on page 262](#).

The following flowchart illustrates the process of emitting an event from Dimensions RM.

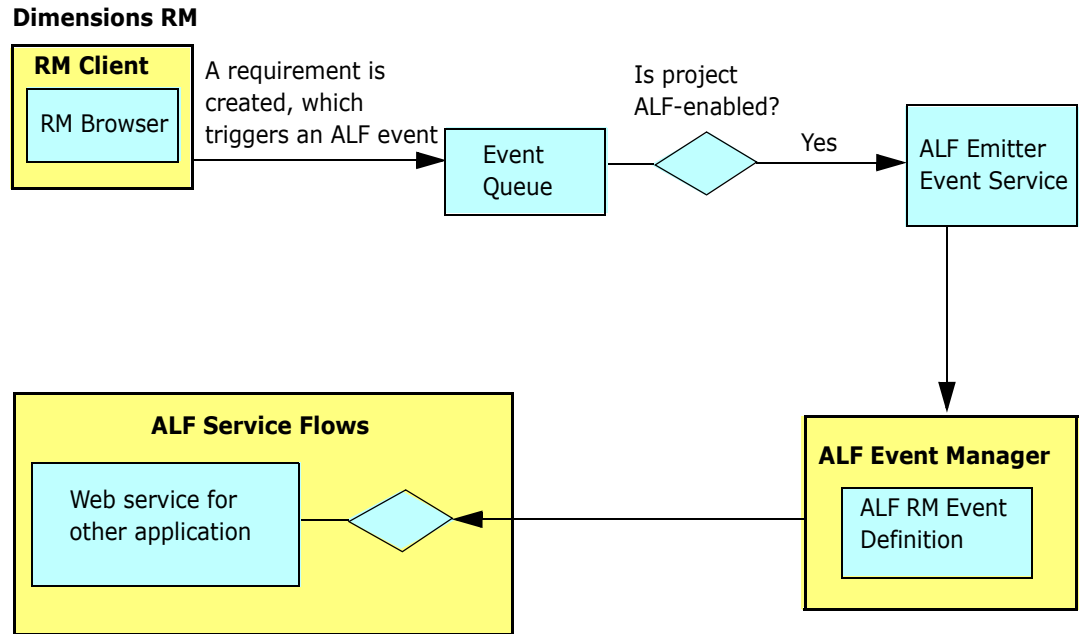


Figure 7-2. Emitting an Event from Dimensions RM



NOTE The decision block in the **ALF Service Flows** segment of the flowchart depends on the service flow design. For example, suppose you want to create an item in another application when a Dimensions RM requirement is moved to a collection named "Scoping." The decision block would determine whether the event type is "Add to Collection" and accordingly it should create the item in the other application.

Dimensions RM emits events on predefined trigger points, which are defined in the following section. Any condition check for the integration data synchronization is handled in the service flow.

Trigger Points

The following table describes the trigger points that cause Dimensions RM to emit ALF events.

Trigger Point	Object Type	Event Type
Requirement is created	Requirement	create
Requirement is updated or replaced	Requirement	update
Requirement is deleted or removed	Requirement	delete
Requirement is moved to a collection	Requirement	addToCollection
Requirement is removed from a collection	Requirement	removeFromCollection
Attachment is added to a requirement	Requirement	attachmentAdded
Attachment is removed from a requirement	Requirement	attachmentRemoved
Attachment is updated	Requirement	attachmentUpdated

Trigger Point	Object Type	Event Type
Requirement is linked	Link	create
Requirement is unlinked	Link	delete

Event Definition

The ALF event definition consists of the following:

- ALF Object Type—A string (for example, *Requirement*).
- ALF Event Type—A string (for example, *create*, *delete*, and so on).
- Custom extension data structure for a requirement or link. The custom extension data structure consists of database name, project name, requirement type, object ID, PUID, and user name. For the "addToCollection" and "removeFromCollection" events, the collection name is included in the extension data. For link events, the target requirement information is added to the extension data.

If there is a failure in the invocation of the event, error messages will be logged in the log file. For information about logging, see ["Logging" on page 266](#).

Event Emitter

A standalone Microsoft® Windows service emits queued ALF events according to the interval specified in the ALFEventConfig.xml file. Events (for example, creating requirements) are not sent in real time, but according to these intervals.

The ALFEventConfig.xml file is stored in the <RM Install Dir>\conf directory.

Event Emitter Service

For information about starting and running the event emitter service, see ["Configuring the ALF Emitter Service" on page 263](#).

Dimensions RM Web Services

Dimensions RM provides CRUD (create, read, update, delete) Web services that can be used for ALF service flows.

The following methods have been added to the existing Web services to support ALF.

Method	Description
AddSyncXrefLink	Creates a reference entry in the SYNC_XREF table, which can be used to store association information between Dimensions RM and the other tool.
CreateObject	Creates a requirement in the specified class.
DeleteAttachment	Deletes the specified requirement attachment.

Method	Description
DeleteObjects	Deletes the requirement. This is a soft delete, which deletes the requirement from the project but not from the database.
DeleteSyncXrefLink	Removes the reference entry between Dimensions RM and the other tool.
GetObjectsInCollection	Gets objects in specific collections.
LinkObjects	Creates a link between two requirements.
ListCollections	Gets a list of collections in the project.
ListObjectLinks	Lists all of the links for a requirement.
ReadObject	Returns information about a requirement.
ReadObjectAttachment	Returns information about requirement attachments.
ReadObjects	<p>Returns information about requirements by reading multiple requirement identities (ids) at once. This is similar to ReadObject, but improves performance as multiple Requirements can be read by their ids in one call.</p> <p>Parameters:</p> <ul style="list-style-type: none"> -sessionid The current session identifier. -requirements A list combination of PUID/ Classname or objectID/ Classname that specifies project requirements.
ReadSyncXRefLink	Gets the reference item information.
UnLinkObjects	Removes the link between two requirements.
UpdateObject	Updates a requirement.
UpdateObjectAttachment	Updates requirement attachments.

For the full syntax and the parameters for these methods, see the Web services HTML reference information downloadable as a zip file from the Serena Support Web site.

Enabling a Project for ALF

If a project is an ALF-enabled project, ALF events are emitted. Otherwise, ALF events are not emitted.

To enable a project to emit ALF events:

- 1 Start RM Manage.
- 2 Expand the database and select a project.

- 3 Select **File | Configure ALF Options**. The **Configure ALF Options** dialog box opens.

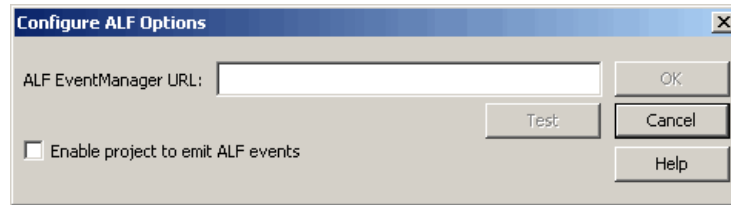


Figure 7-3. Configure ALF Options

- 4 In the **ALF Event Manager URL** field, type the URL of the Event Manager server.
- 5 Click **Test** to validate the Event Manager URL. If the test fails, a message is displayed.
- 6 Select the **Enable project to emit ALF events** check box if you want to make the project an ALF-enabled project.



NOTE The ALF Event Manager URL follows this format:

`http://servername:port/eventmanager/services/ALFEventManager`

Example: `http://myserver:8085/eventmanager/services/ALFEventManager`

Configuring the ALF Emitter Service

The following sections describe how to configure the ALF emitter service.

Usage

The command-line usage for the emitter service is as follows:

```
ALFEventEmitter [-f file] [-c] [-e level] [-E file] [-L priority]
                [-k {install|config|uninstall|start|stop}] [-n name] [-v] [-h]
```

Options

The options shown in [Usage](#) are described in the following table.

Option	Description
-c	Validates the <code>AlfEventConfig.xml</code> file against the associated schema document. The schema document is specified at the top of the <code>AlfEventConfig.xml</code> file. By default, this file is <code>ALFEventEmitter.xsd</code> and is located in the <code><RM Install Dir>\conf</code> directory. After validating the document and logging any errors, the emitter service quits without any further processing.
-e <i>level</i>	Shows startup errors of the following levels: debug, info, warn, error.
-E <i>file</i>	Logs startup errors to a file.
-f <i>file</i>	Specifies an alternative configuration file.
-h	Lists the available command-line options.
-k <i>install</i>	Installs an <code>AlfEventEmitter</code> service.
-k <i>config</i>	Changes the startup options of an <code>AlfEmitter</code> service.
-k <i>uninstall</i>	Uninstalls the emitter service.
-k <i>start</i>	Starts the emitter service.
-k <i>stop</i>	Stops the emitter service.
-L <i>priority</i>	Sets the Windows system priority for the emitter service. <code>servicePriority</code> must be LOW, BELOWNORMAL, NORMAL, ABOVENORMAL, HIGH, or REALTIME. If you do not specify this option, the emitter service runs under the default priority of BELOWNORMAL.
-n <i>name</i>	Sets the service name.
-v	Displays the version number.

Installation

To install the emitter service, use the `-k install` option. This creates an instance of the service with all the other parameters you specify.

To uninstall the emitter service, use the `-k uninstall` option. You must specify the same service name (`-n name`) that you used when you installed the service; otherwise, the service will not be uninstalled correctly.

Using SSL Authentication with ALF

If you have configured secure sockets layer (SSL) as your authentication method for Serena Business Manager (SBM) and you are using ALF to integrate with SBM (formerly called Serena Business Mashups), you must complete the steps in this section. These steps are required in order to use Dimensions RM and ALF with SBM with SSL security enabled.

To use SSL authentication with ALF:

- 1 Open the following file in a text or XML editor:

RM_HOME\conf\ALFEventConfig.xml

- 2 Make sure that section such as the following is present and set correctly:

```
<SslAuthentications>
<SslAuthentication authenticationtype="SOAP_SSL_DEFAULT"
cafilename="server.cer"
cafilepath=""
keyfile="client.pem"
keyfilepassword="password" />
</SslAuthentications>
```

- 3 Set the attributes as follows:

- **authenticationtype**

Set to any of the following:

- SOAP_SSL_DEFAULT - Default Authentication mode
- SOAP_SSL_NO_AUTHENTICATION - Disable server authentication
- SOAP_SSL_REQUIRE_SERVER_AUTHENTICATION - If the client requires the server to authenticate
- SOAP_SSL_REQUIRE_CLIENT_AUTHENTICATION - If the server requires the client to authenticate
- SOAP_SSL_SKIP_HOST_CHECK - If the client does not check the common name of the host in certificate
- SOAP_SSL_RSA - Use RSA
- SOAP_SSLv3_TLSv1 - Use SSL v3 and TLS v1 support by default
- SOAP_TLSv1 - Use TLS v1 only

To have more than one authentication type, use a pipe to separate the types (|). For example: SOAP_SSL_DEFAULT | SOAP_SSL_SKIP_HOST_CHECK

If "authenticationtype" is blank then the emitter service will interpret the setting as SOAP_SSL_NO_AUTHENTICATION

For details on authentication types, refer to the gSOAP guide:

<http://www.cs.fsu.edu/~engelen/soapdoc2.html>

- **cafilename**
Trusted certificate file name (this is needed to verify the server).
 - **cafilepath**
Path to the directory with the trusted certificates.
 - **keyfile**
Required only when the client must authenticate to the server.
 - **keyfilepassword**
Password to read the key file.
- 4 Save the file.

Logging

The emitter service provides log files that contain information about its current state. Furthermore, the `AlfEventConfig.xml` file can return to the emitter service information that needs to be written to the log file.



NOTE The file named `ALFEvents.log` contains startup information. The startup information describes what happens during the parsing of the `AlfEventConfig.xml` file and other activities by the emitter service before starting an event cycle.

This file contains information about the event cycles themselves. This is the file that you will check the most often.

Logging Configuration File

The logging configuration file (`<RM Install Dir>\conf\log4cpp.conf` by default) controls some of the behavior of the integration between Dimensions RM and another application:

- Level of detail (DEBUG, INFO, WARN, ERROR)
- Location of the log file
- Name of the log file
- Maximum size of the log file

The maximum number of log files that are maintained as a result of "rolling" to additional files after a log file reaches the maximum size limit

The `log4cpp.conf` file contains five categories:

- `fileBrowser`
- `fileSyncEngine`
- `fileWebService`
- `fileDbDoctor`
- `fileAlfEventEmitter`

You can change the level of detail by replacing the default value (WARN) with one of the other values. DEBUG output includes all step-by-step information about the processing of events. INFO output includes ERROR output plus WARN output plus any state information. ERROR output includes only conditions that result in one or more actions not being performed (such as server failure). WARN output includes ERROR output plus problems with the database or XML file configuration, undefined fields, or value truncation.

You can change the location of the log file by updating the `log4cpp.conf` file. You can also change the name of the log file.

To control the size of the log file, see "[Controlling Log File Size](#)," below.

The layout of the output of the log file is controlled by the `log4j.appender.fileALFEventEmitter.layout` settings, which use standard log4j formatting.



CAUTION! You should not change anything else in the `log4cpp.conf` file.

Controlling Log File Size

There are two possible settings for `log4jappenderfile<category>`, which controls how information gets appended to the log. The simplest configuration lets the log file grow indefinitely:

```
log4j.appender.fileALFEventEmitter=org.apache.log4j.FileAppender
```

However, it is more likely that you want to limit the maximum size of the log file so that it does not consume excessive system resources. To do this, specify a "rolling file appender", which starts a new file (such as `ALFEvents.log2`) after the first file exceeds the specified size limit. In the following example, the maximum file size is 5,000,000 bytes, and no more than three (the most recent three) log files are retained.

```
log4j.appender.fileALFEventEmitter=org.apache.log4j.
    RollingFileAppender
log4j.appender.fileALFEventEmitter.maxFileSize=5000000
log4j.appender.fileALFEventEmitter.maxBackupIndex=3
```

Note that if you set `log4j.appender.fileALFEventEmitter.append` to `false` and you are using the rolling file appender, the emitter service starts a new log file each time that you start the service, regardless of whether the maximum file size was reached.

If you are not using the rolling file appender and you set `log4j.appender.fileALFEventEmitter.append` to `false`, the emitter service overwrites the log file each time the service starts.

Chapter 8

Logging Administrative Activities

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About Administrative Logging

Dimensions RM logs administrative activity by recording relevant data, such as the user ID of the administrative user and the change that they made. This information is stored in the RM database in a table named ADM_USERS_ACTIVITY.

Using SQL*Plus, administrative users can invoke three types of operations upon this data:

- **Archive** operations move data of a certain age from the ADM_USERS_ACTIVITY table to the ADM_USERS_ACTIVITY_HISTORY table. This allows you to reduce the size of the active table while still retaining the data for future reference. See ["Archive Operations" on page 270](#).
- **Remove** operations delete data of a certain age from both tables. See ["Remove Operations" on page 271](#).
- **Show** operations display, or export to a file, data that meets specified arguments, such as activity that occurred during a specific date range or that was performed by a specific user. See ["Show Operations" on page 272](#).

In all cases, the administrative user must first connect to the Oracle database via SQL*Plus. See the following sections for details specific to each type of operation.



NOTE See ["Actions for which Data Is Recorded" on page 274](#) for a list of the data that is recorded for each administrative action.

Archive Operations

Archive operations move data of a certain age from the ADM_USERS_ACTIVITY table to the ADM_USERS_ACTIVITY_HISTORY table. This allows you to reduce the size of the active table while still retaining the data for future reference.

Syntax

```
"exec ICADMIN.PKG_AUDIT.ARCHIVE_USERS_ACTIVITY  
  ( ' ARG_FROM_DATE' , ' ARG_TO_DATE' , ' ARG_DATE_FORMAT' ) ;"
```

This command can be run via SQL*Plus on either the server or a client system.

Arguments

Archive operations have three optional arguments. The arguments are position dependent, so you must specify them in the correct order and include a null value for any argument that is being skipped over on the way to a later argument in the sequence.

ARG_FROM_DATE

Specifies the date, or date and time, of the oldest records to be moved. The default is 01-JAN-1900.

ARG_TO_DATE

Specifies the date, or date and time, of the newest records to be moved. The default is the current date minus three months.

ARG_DATE_FORMAT

Specifies the date and time format used by the ARG_FROM_DATE and ARG_TO_DATE arguments. By default, the format defined by the NLS_TIMESTAMP_FORMAT parameter of the current session is used.

Examples

Example 1: Default

```
"exec ICADMIN.PKG_AUDIT.ARCHIVE_USERS_ACTIVITY();" 
```

Result: All records between January 1, 1900 and the current date minus three months are moved to the History table.

Example 2: Specific Date Range

```
"exec ICADMIN.PKG_AUDIT.ARCHIVE_USERS_ACTIVITY('15-JAN-2011','30-MAY-2011');" 
```

Result: All records between January 15, 2011 and May 30, 2011 are moved to the History table.

Example 3: Specific Starting Date and Date Format

```
"exec ICADMIN.PKG_AUDIT.ARCHIVE_USERS_ACTIVITY('15/01/2011','null','dd/mm/yyyy');" 
```

Result: All records between January 15, 2011 and the current date minus three months are moved to the History table. For this operation, the value of the NLS_TIMESTAMP_FORMAT parameter is overridden allowing the use of the dd/mm/yyyy format.

Remove Operations

Remove operations delete data of a certain age from the ADM_USERS_ACTIVITY and ADM_USERS_ACTIVITY_HISTORY tables. Both tables are acted upon; you cannot act on just one of the tables.

Syntax

```
"exec ICADMIN.PKG_AUDIT.REMOVE_USERS_ACTIVITY  
('ARG_FROM_DATE','ARG_DATE_FORMAT');" 
```

This command can be run via SQL*Plus on either the server or a client system.

Arguments

Remove operations have two optional arguments. The arguments are position dependent, so you must specify them in the correct order.

ARG_FROM_DATE

Specifies the date, or date and time, of the newest records to be deleted. All records equal to or older than the specified date will be deleted. The default is to delete all records older than 12 months.

ARG_DATE_FORMAT

Specifies the date and time format used by the ARG_FROM_DATE argument. By default, the format defined by the NLS_TIMESTAMP_FORMAT parameter of the current session is used.

Examples

Example 1: Default

```
"exec ICADMIN.PKG_AUDIT.REMOVE_USERS_ACTIVITY();"
```

Result: All records older than 12 months are deleted.

Example 2: Specific Starting Date

```
"exec ICADMIN.PKG_AUDIT.REMOVE_USERS_ACTIVITY('30-MAY-2011');"
```

Result: All records equal to or older than May 30, 2011 are deleted.

Show Operations

Show operations display, or export to a file, data that matches specified arguments, such as activity that occurred during a specific date range or that was performed by a specific user.

Syntax

The data can be output to the system screen or exported to a CSV file. The syntax to export to a CSV differs from the screen output syntax and must be run on a client system.

Screen Dump Syntax

```
"set serveroutput on size 1000000;"  
"exec ICADMIN.PKG_AUDIT.SHOW_USERS_ACTIVITY  
  ('ARG_USER', 'ARG_ACTION', 'ARG_FROM_DATE', 'ARG_TO_DATE',  
   'ARG_DATE_FORMAT', 'ARG_USE_ARCHIVE');"
```

This command can be run via SQL*Plus on either the server or a client system.

Export to CSV File Syntax

```
spool "OutPutPath\FileName.csv"
set heading off
set serveroutput on size 1000000
exec ICADMIN.SHOW_USERS_ACTIVITY
    (' ARG_USER' , ' ARG_ACTION' , ' ARG_FROM_DATE' , ' ARG_TO_DATE' ,
    ' ARG_DATE_FORMAT' , ' ARG_USE_ARCHIVE' );
spool off
```

This command is to be run on a client system via SQL*Plus. The results are exported to a CSV file on the client system.

Arguments

Show operations have six optional arguments. The arguments are position dependent, so you must specify them in the correct order and include a null value for any argument that is being skipped over on the way to a later argument in the sequence.

ARG_USER

Specifies a user name. If a name is specified, only records of that user's actions will be displayed. Else, the records of all users will be displayed.

ARG_ACTION

Specifies a specific user action. If an action is specified, only records of that type of action will be displayed. Else, records of all action types will be displayed. See ["Actions for which Data Is Recorded" on page 274](#) for a list of the actions that can be specified.

ARG_FROM_DATE

Specifies the date, or date and time, of the oldest records to be displayed. The default is 01-JAN-1900.

ARG_TO_DATE

Specifies the date, or date and time, of the newest records to be displayed. The default is 01-JAN-2049.

ARG_DATE_FORMAT

Specifies the date and time format used by the ARG_FROM_DATE and ARG_TO_DATE arguments. By default, the format defined by the NLS_TIMESTAMP_FORMAT parameter of the current session is used.

ARG_USE_ARCHIVE

Specifies whether records are displayed from just the ADM_USERS_ACTIVITY table (the default) or from both it and the ADM_USERS_ACTIVITY_HISTORY table. To include records from the History table, use **1** as the value for this argument.

Examples

Example 1: Default - Output to File

```
spool "C:\RM_audit.csv"  
set heading off  
set serveroutput on size 1000000  
exec ICADMIN.SHOW_USERS_ACTIVITY();  
spool off
```

Results: Creates a file named RM_audit.csv on the client system. It contains all records in the ADM_USERS_ACTIVITY table of events that occurred between January 1, 1900 and January 1, 2049. Records that have been moved to the ADM_USERS_ACTIVITY_HISTORY table are not included.

Example 2: Specific User and Date Range - Output to Screen

```
"set serveroutput on size 1000000;"  
"exec ICADMIN.PKG_AUDIT.SHOW_USERS_ACTIVITY  
  ('bsmith', 'null', '01-JAN-2011', '30-MAY-2011');"
```

Results: Outputs to the screen the records of all actions taken by the user **bsmith** between January 1, 2011 and May 30, 2011. Records that have been moved to the ADM_USERS_ACTIVITY_HISTORY table are not included.

Example 3: Specific Action and Include History - Output to File

```
spool "C:\RM_audit_AddUsers.csv"  
set heading off  
set serveroutput on size 1000000  
exec ICADMIN.SHOW_USERS_ACTIVITY('null', 'ADD_USER_TO_PROJECT', 'null',  
  'null', 'null', '1');  
spool off
```

Results: Creates a file named RM_audit_AddUsers.csv on the client system. It contains all records where a user was added to a project between January 1, 1900 and January 1, 2049. The results include records in the ADM_USERS_ACTIVITY table as well as those that have been moved to the ADM_USERS_ACTIVITY_HISTORY table.

Actions for which Data Is Recorded

The following table lists the data that is recorded specific to each administrative action. The strings shown in the **Action** column are the values that can be used for the ARG_ACTION argument of a Show operation.



NOTE In all cases, the user ID that initiated the action and the date and time are recorded.

Information Recorded by Activity	
Action	Data Recorded
ADD_GROUP_TO_PROJECT	Group name Project name
ADD_USER_TO_GROUP	User name Group name
ADD_USER_TO_PROJECT	User name Project name
ADMINISTER_EMAIL	Project name Class name
ASSOCIATE_TO_DIM_CM	Association information
BACKUP_PROJECT	Project name
BACKUP_PROJECT_SCHEMA	Schema name
CHANGE_PASSWORD_RULES	Settings that were changed Modified values before and after
CHANGE_PROJECT_PASSWORD	User name (if ProjectAdmin PW) Project name (if Oracle PW)
CHANGE_USER_PASSWORD	User name
CLASS_ATTRIBUTES_CHANGED	Project name Class name Attribute name Modified values before and after
CLASS_CREATED	Project name Class name
CLASS_DELETED	Project name Class name
CLASS_MODIFIED	Project name Class name Modified values before and after
CLASS_TYPE_CREATED	Project name Class type name
CLASS_TYPE_DELETED	Project name Class type name
CLASS_TYPE_MODIFIED	Project name Class type name Modified values before and after
CLASS_TYPE_ATTRIBUTES_CHANGED	Project name Class type name Attribute name Modified values before and after
CONFIGURE_ALF_OPTIONS	Project name Modified values before and after
CONFIGURE_LOGIN_SOURCES	Project name Modified values before and after
CREATE_GROUP	Group name

Information Recorded by Activity	
Action	Data Recorded
CREATE_PROJECT	Project name
CREATE_USER	User name
DELETE_GROUP	Group name
DELETE_PROJECT	Project name
DELETE_USER	User name
DROP_PROJECT_TABLES	Project name
GRANT_ACCESS_RIGHT_TO_USER	Project name User name Access right granted
GRANT_ACCESS_RIGHT_TO_GROUP	Project name Group name Access right granted
GRANT_CATEGORY_TO_GROUP	Project name Group name Category name
INSTALL_PROJECT_TABLES	Project name
LOGIN_ATTEMPT_TO_DATABASE	User name Database name Client name Failure reason
LOGIN_ATTEMPT_TO_PROJECT	User name Project name Client name Failure reason
LOGIN_USER_TO_DATABASE	User name IP address Database name Client name
LOGIN_USER_TO_PROJECT	User name IP address Project name Client name
LOGOUT_FROM_DB	User name
LOGOUT_FROM_PROJ	Project name User name
MODIFY_GROUP	Group name Modified values before and after
MODIFY_USER	User name Modified values before and after
PLACE_PROJECT_OFFLINE	Project name
PLACE_PROJECT_ONLINE	Project name
PROPERTIES_PROJECT	Project name Modified values before and after

Information Recorded by Activity	
Action	Data Recorded
RECREATE_DATABASE_INDEXES	Project name
RECREATE_DATABASE_PROCEDURES	Project name
RECREATE_DATABASE_RESOURCES	Project name
RELATIONSHIP_ATTRIBUTES_CHANGED	Project name Relationship name Attribute name Modified values before and after
RELATIONSHIP_CONSTRAINTS_CHANGED	Project name Relationship name Constraint name Modified values before and after
RELATIONSHIP_CREATED	Project name Relationship name
RELATIONSHIP_DELETED	Project name Relationship name
RELATIONSHIP_MODIFIED	Project name Relationship name Modified values before and after
REMOVE_GROUP_FROM_PROJECT	Project name Group name
REMOVE_USER_FROM_GROUP	Group name User name
REMOVE_USER_FROM_PROJECT	Project name User name
RESTORE_PROJECT	Project name
RESTORE_PROJECT_SCHEMA	Schema name
REVOKE_ACCESS_RIGHT_FROM_GROUP	Project name Group name Access right
REVOKE_ACCESS_RIGHT_FROM_USER	Project name User name Access right
REVOKE_CATEGORY_FROM_GROUP	Project name Group name Category name
REVOKE_EXPLICITLY_ACCESS_RIGHT_FROM_GROUP	Project name Group name Access right
REVOKE_EXPLICITLY_ACCESS_RIGHT_FROM_USER	Project name User name Access right
REVOKE_EXPLICITLY_CATEGORY_FROM_GROUP	Project name Group name Category name

Chapter 9

Web Service Logging

[Starting Web Service Logging](#)

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Starting Web Service Logging

You can create a log file that helps you troubleshoot problems with Web services. RM Import and RM Import Designer use Web services.

To start a log file for Web services:

- 1 Create a `SERENA_LOGGER_CONFIG_CPP` system environment variable and set the value to `<RM Install Dir>\conf\log4cpp.conf`.
- 2 Reboot your machine.
- 3 Start RM Import or RM Import Designer.

An `RMImport.log` file is generated in the `<RM Install Dir>\logs` directory, and reports errors that are generated, if any.

The logging levels that can be reported in the `RMImport.log` file are shown in the following table:

Logging Level	Description	Logging Levels Included in Log File
Error	Shows operations that failed. Error is the most restrictive level of logging.	Error
Warning	Provides notification that an operation completed, but there were potential problems with the operation.	Error, Warning
Info	Provides general information about an operation.	Error, Warning, Info
Debug	Helps trace a problem. Debug is the highest level of logging.	Error, Warning, Info, Debug

- 4 Set the logging level that you want to use.
- 5 Restart the Web server.

Chapter 10

Troubleshooting

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Resolving "Password May be Incorrect in Security File or Security File May Not be Found" Error

The database encryption feature is a security measure designed to address the fact that there was a static, hard-coded password for the ICADMIN and ICPROJECT Oracle accounts. Before this feature was implemented, this hard-coded password was called by the Dimensions RM tools. With database password encryption, a customer can change the password for these accounts at any time, keeping them fully secure. For more information about database password encryption, see ["Database Password Encryption" on page 91](#).

There are situations in which you may receive the "Password May be Incorrect in Security File or Security File May Not be Found" error when logging in to a Dimensions RM tool. The following table describes such scenarios and provides ways you can correct the problem.

Case	Potential Problem	Troubleshooting Procedure
1	No Dimensions RM project exists on the server.	Make sure you have a Dimensions RM project on the server. You can test for this by selecting your database instance in RM Manage, right clicking, and selecting Change User from the context menu. If you get the same error message again instead of a prompt to log in, then there is probably no project in the database instance.
2	You know a Dimensions RM project exists. The security file could be in the wrong location.	In RM Manage, select Workspace Options . Click the Security tab and verify the location and name of the security file.
3	You know the security file is in the correct location. The database instance might need to be updated to match the current security settings.	In RM Manage, select the database instance, right-click, and select Convert Database . When the database validation tool starts, select your instance and click Upgrade . When it prompts whether you want to recreate the stored procedures, click Yes .
4	The ICADMIN or ICPROJECT account could be locked.	In SQL Plus, try to log in as ICADMIN by typing the following command: <pre>sqlplus icadmin/<dummy password>@<database instance></pre> If Oracle returns a message that the account is locked, type the following commands to unlock it: <pre>sqlplus icdba/icdba@<database instance> alter user icadmin account unlock; exit</pre> Perform the same procedure to check and unlock ICPROJECTS.
5	The Dimensions RM or Oracle path could be wrong.	In RM Manage, select Workspace Options . Click the Mandatory tab, and confirm that the RTM_HOME and ORACLE_HOME values are correct.

RM Browser hangs on Publish of Documents

Under certain conditions RM Browser might hang when publishing documents. After preparing the server, it might be necessary to cancel existing **winword.exe** tasks on the server.

Windows Server is not prepared for Microsoft Office

RM Browser hangs on creating a document, if the server has not been prepared for publishing documents. For information on how to prepare your server, refer to ["Support for Publishing / Word Import" on page 53](#) in *Dimensions RM Installation Guide*.

Adobe Reader is installed on Windows Server

If the document contains PDF file as file attachment of a requirement, RM Browser might hang. For instructions on how to prevent Adobe Reader affecting publishing documents, see ["Using Adobe Reader on Windows Server" on page 56](#) in *Dimensions RM Installation Guide*.

Publish of Document creates DOC files

Publish creates DOC files under these conditions:

- Microsoft Office is not installed or the installed version is older than Microsoft Office 2007.
- The user tries to publish a PDF file and the installed version is older than Microsoft Office 2007 SP 2.
- The server is running a 64-bit edition of Microsoft Office.
- The server is not prepared for publishing. For information on how to prepare your server, refer to ["Support for Publishing / Word Import" on page 53](#) in *Dimensions RM Installation Guide*.
- If Word fails on opening a DOC file, refer to ["Word cannot open Documents," on page 283](#).

Word cannot open Documents

If Documents contain many lists or sub-documents (which are complete Word documents within another Word document), it is possible that Word is unable to open this document. In this case, you can configure a Word document post processing step which executes on the Dimensions RM server and corrects these problems in the Word document. Note that this will increase publish time.

To configure Word document post processing, follow these steps:

- 1 Open Windows Registry editor (select **Run**, enter `regedit` and click **OK**).

- 2 Navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Serena Software\RTM\Environment\Default`
- 3 Right-click the **Default** key and select **New | DWORD (32-bit) Value** from the shortcut menu.
- 4 Name the new entry **WordDocumentPostProcessing_Timeout** and press **Enter**.
- 5 Double-click **WordDocumentPostProcessing_Timeout**.
- 6 Select option **Decimal** in the **Base** group.
- 7 Enter the number of seconds for the timeout into the **Value data** box. A good default is 600 (10 minutes).
- 8 Click **OK**.



NOTES

- The value of **WordDocumentPostProcessing_Timeout** enables and disables Word document post processing. To disable Word document post processing, set the value to 0.
- The value of **WordDocumentPostProcessing_Timeout** defines the maximum time WordDocumentPostProcessor.exe can use for correcting the document. If the timeout is exceeded, Dimensions RM will continue without using the corrected document. Note that this can result in a Document which cannot be opened by Microsoft Word.

Improving Poor Performance

Please consult Oracle documentation or your database administrator (DBA) for tuning changes that could improve performance. For example, you might change the `CURSOR_SHARING` parameter to "force" or change the `STATISTICS_LEVEL` parameter to "all."

Empty Window in Internet Explorer 11

When using Internet Explorer 11 with Windows's built-in Administrator account, there might be situations when an empty window remains on the screen. If you need to use the built-in Administrator account, follow these steps to change the Admin approval mode and solve the problem:

- 1 Open a command prompt.
- 2 Type `secpol.msc` and hit Enter. This opens the local *Security Policy Management Console*.
- 3 Open the **Local Policies** folder.
- 4 Select the **Security Options** folder.

- 5 Locate the item **User Account Control: Admin Approval Mode for the Built-in Administrator account** and double-click it.
- 6 Set the value to **Enabled**.
- 7 Click the **OK** button.
- 8 Restart the computer.

For further info about this problem see <https://connect.microsoft.com/IE/feedback/details/812072/ie-11-window-open-issue>.

Unable to Save Query Results or Publish Documents

Depending on the settings of your Web browser, you may be unable to save query results or publish documents. To prevent this problem, disable the pop-up blocker and allow Dimensions RM as an allowed site.

For Internet Explorer, follow these steps:

- 1 In Internet Explorer, select **Tools | Internet Options**.
- 2 In the **Internet Options** dialog, click the **Security** tab.
- 3 On the **Security** tab, click **Custom Level**. The **Security Settings** dialog opens.
- 4 Under **Downloads**, enable the following options:
 - **Automatic prompting for file downloads**
 - **File download**
 - **Font download**
- 5 Under **Miscellaneous**, disable the **Use Pop-up Blocker** option.

Appendix A

RM Import Designer Examples

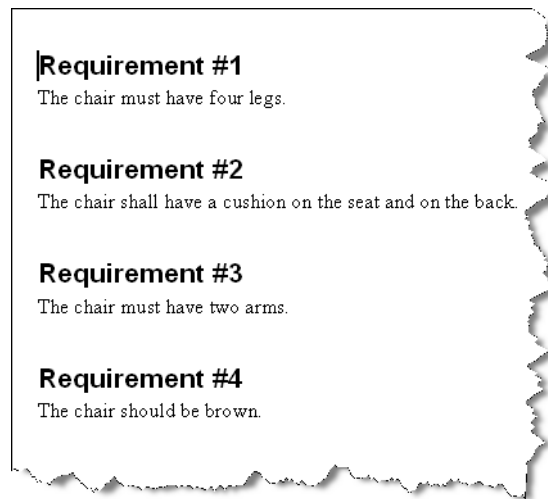
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Overview

This appendix contains examples of Word documents and explains how their structure determines how you set up templates for them in RM Import Designer. It also contains illustrations of how the document looks in Document View in RM Browser after you import it using RM Import.

Begin and End Keyword

In this example, all four requirements are captured, because when the keyword you typed under **Begin Pattern** is found and the end of the chapter is reached, the requirement is captured, even if the keyword you typed under **End Pattern** is not at the end of the chapter.



Begin and End Keyword - RM Import Designer

Open New Save Save As Delete Help About

General Chapter Rules Requirement Rules Class Rules Preview

Requirement Identification

If each requirement is a row in a table, then choose table requirement layout. Otherwise choose section or keyword identification. Only the selected layout will be used for identifying requirements

Keyword

Keyword Details

Requirements can be identified by:

Begin Pattern

Keyword: Requirement ☒ Include keyword as part of requirement text

End Pattern

☒ Keyword: Requirement ☒ Include keyword as part of requirement text

☐ End of table ☐ Include entire table as part of requirement text

ephoto Begin and End Keyword Database: DIM10 Project: TEST22

Begin and End Keyword

Requirements Layout: [Editable Grid](#) | [Grid](#) | [Paragraph](#)

#	Rqmt ID	Title	Text
1	MRKT_000037	Requirement #1	The chair must have four legs.
2	MRKT_000038	Requirement #2	The chair shall have a cushion on the seat and on the back.
3	MRKT_000039	Requirement #3	The chair must have two arms.
4	MRKT_000040	Requirement #4	The chair should be brown.

Entire Table with a Keyword is the Requirement

In this example, the entire table is captured because the **End of table** option was selected in the **End Pattern** group, and the **Include entire table as part of requirement text** check box was selected.

Requirement Title:	Limited Documentation
Benefits:	1. Limited training shall be required to use product.
Proofs:	1. The ePhoto system uses online Help so that no guides other than a "Getting Started" Guide needs to be supplied. This has proven to be adequate according to customer feedback. 2. The product contains embedded Help so the customer can do basic tasks with no online Help or guide at all. 3. The product uses a standard Windows user interface, so the learning curve is diminished.
Constraints:	<None>

EntireTableKeyword - RM Import Designer

Open New Save Save As Delete Help About

General Chapter Rules Requirement Rules Class Rules Preview

Requirement Identification

If each requirement is a row in a table, then choose table requirement layout. Otherwise choose section or keyword identification. Only the selected layout will be used for identifying requirements

Keyword

Keyword Details

Requirements can be identified by:

Begin Pattern

Keyword: Requirement

☒ Include keyword as part of requirement text

End Pattern

☐ Keyword: Documentation

☒ Include keyword as part of requirement text

☒ End of table

☒ Include entire table as part of requirement text

ephoto EntireTableKeyword Database: DIM10 Project: TEST22

1.1 Limited Documentation

Propose Refresh Edit Print

Category: RMDemo

Standard Attributes

Rqmt ID: MRKT_000041 Title: Limited Documentation

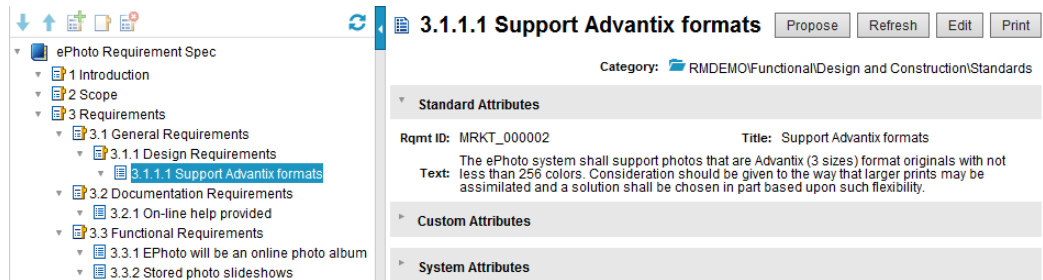
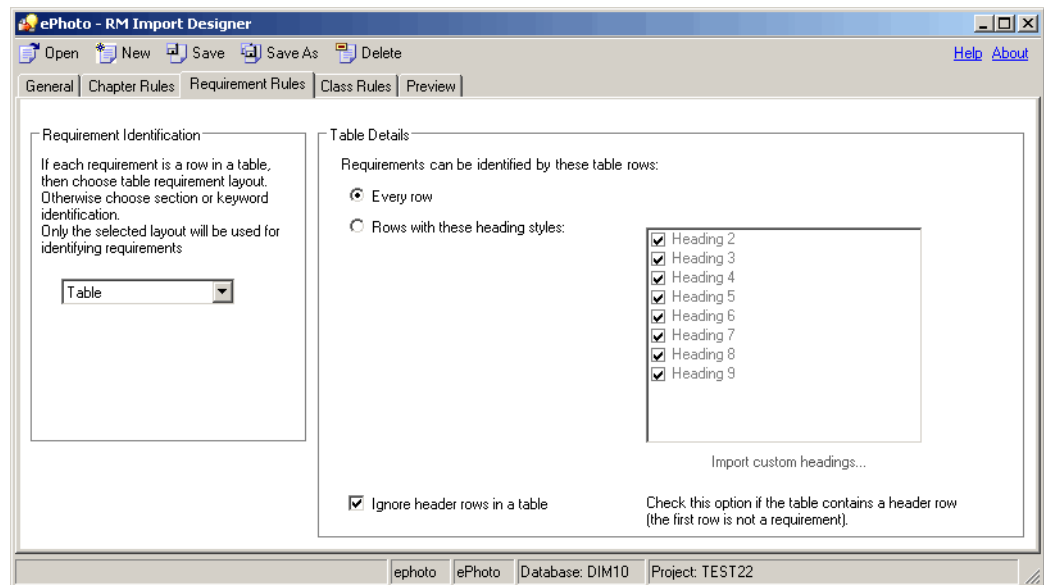
Text:

Requirement Title:	Limited Documentation
Benefits:	1. Limited training shall be required to use product.
Proofs:	1. The ePhoto system uses online Help so that no guides other than a "Getting Started" Guide needs to be supplied. This has proven to be adequate according to customer feedback. 2. The product contains embedded Help so the customer can do basic tasks with no online Help or guide at all. 3. The product uses a standard Windows user interface, so the learning curve is diminished.
Constraints:	<None>

Table Option with Every Row

In this example, the title is captured because the title is in the third column of the tables, and on the **Class Rules** tab, for the **Title** attribute, **3** was typed in the **Keyword or a column number** box under **Attribute Rule**.

3 REQUIREMENTS			
3.1 General Requirements			
3.1.1 Design Requirements			
#	Rqmt ID	Title	Text
3.1.1.1	MRKT_000002	Support Advantix formats	The ePhoto system shall support photos that are Advantix (3 sizes) format originals with not less than 256 colors. Consideration should be given to the way that larger prints may be assimilated and a solution shall be chosen in part based upon such flexibility.
3.1.2 Documentation Requirements			
#	Rqmt ID	Title	Text
3.1.2.1	MRKT_000007	On-line help provided	The ePhoto system shall make the use of on-line help so that no documentation other than a "Getting Started" guide needs to be supplied.
3.1.3 Functional Requirements			
#	Rqmt ID	Title	Text
3.1.3.1	MRKT_000001	EPhoto will be an online photo album	The ePhoto system shall enable the user to browse an on-line photo album. It shall look and feel like an electronic photo album, just like the one on the coffee table.
3.1.3.1	MRKT_000001	Stored photo	The ePhoto system shall provide the ability to create a photo album for



Section Option with Keywords

In this example, every paragraph containing the specified keywords is captured as a requirement.

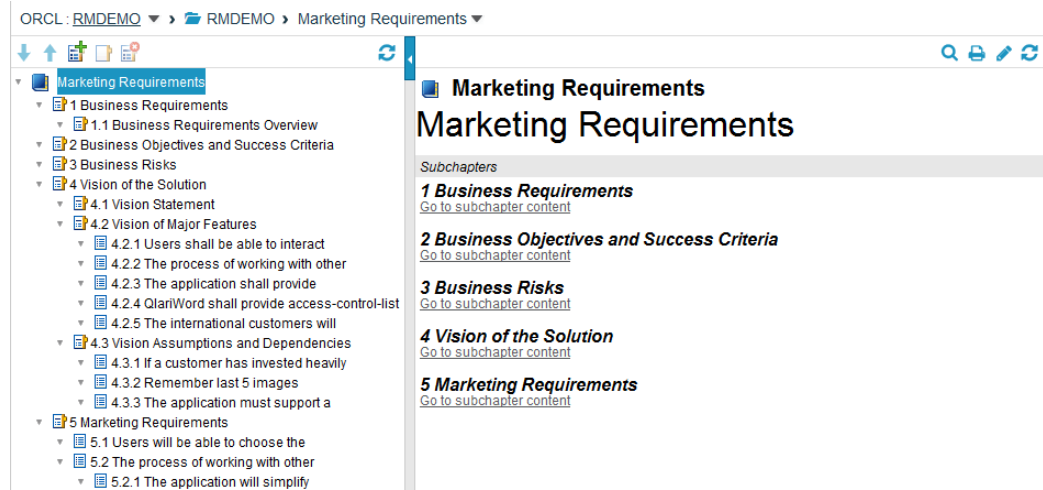
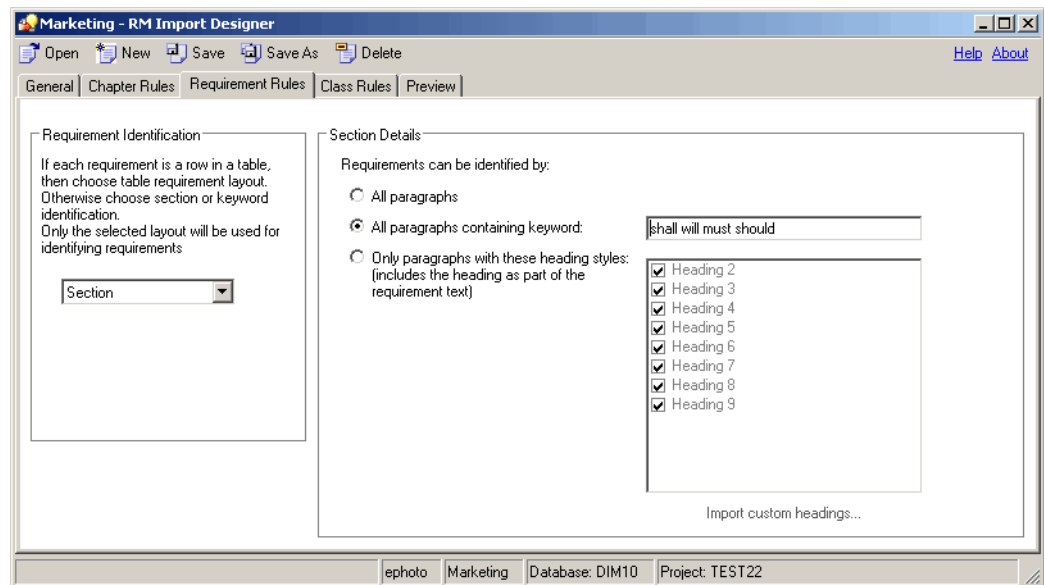
- The process of working with other shall be made easier by using document workspaces.
- The application shall provide as part of the GUI a means for users to check for updated versions of files, confirm if team members are online, view lists of related files, and view file properties.
- QlariWord shall provide access-control-list management (ACLM) for all documents.
- The application must support a spellchecker and grammar checker.

4.3. Vision Assumptions and Dependencies

- The international customers will require QlariWord to support their local language.
- If a customer has invested heavily in Word, QlariWord must be able to communicate with it bi-directionally.

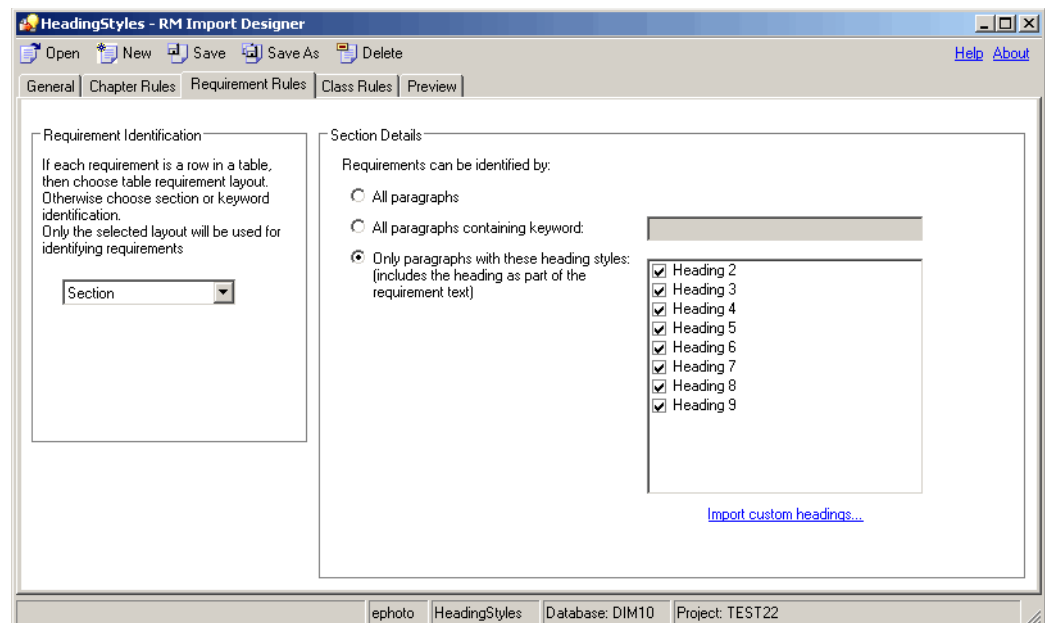
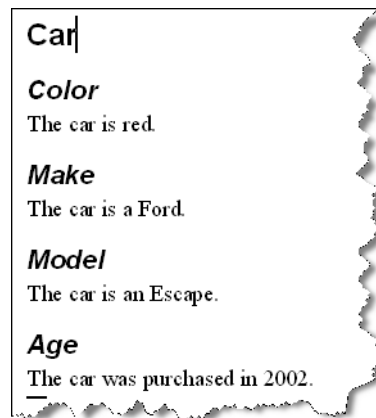
5. Marketing Requirements

Req. #	Description
5.1.	Users will be able to choose the language they wish to work in. The default will be U.S. English.
5.2.	The process of working with other shall be made easier by using document workspaces.
5.3.	The application will simplify the task of working with others to co-author, edit, and review files.
5.4.	The application must provide as part of the GUI a means for users to check for updated versions of files, confirm if team members are online, view lists of related files, and view file properties.



Heading Styles

In this example, the Section layout is used. Color, Make, Model, and Age have the Heading 2 style, while Car is a Heading 1 and therefore is not captured as a requirement.

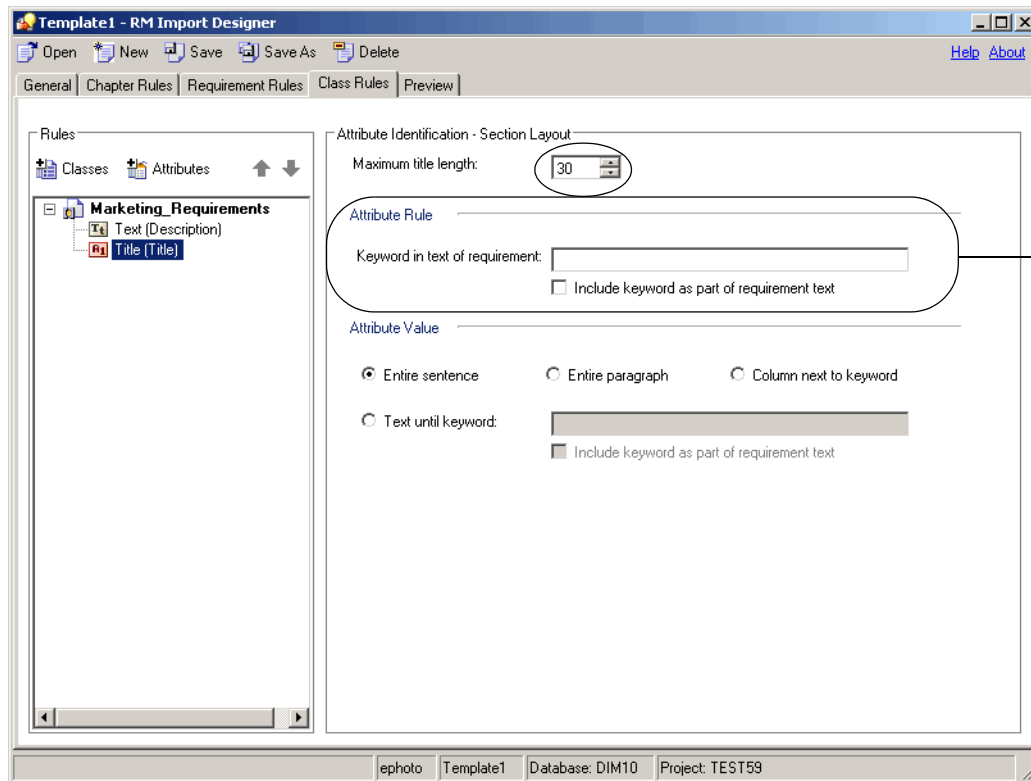


ORCL: RMDemo > RMDemo > Car

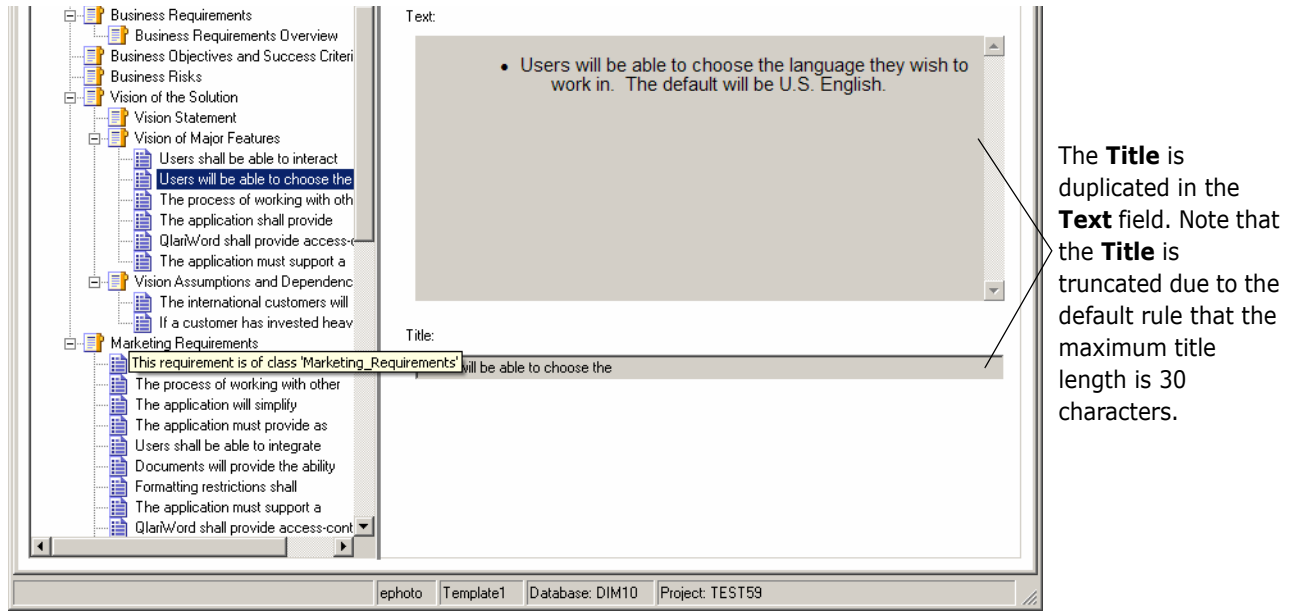


Capturing Title and Description with No Title Rule

When you add a class to the Class Rules tab in RM Import Designer, the Title and Description attributes, along with the mandatory attribute, are added to the class rules. You can specify a rule for each of these attributes that indicates how the values should be identified and captured from the Word document. These rules are optional. For attributes other than Title and Description, if no rules are specified, default values are used. The following illustration shows the case where the **Attribute Rule** field is empty; thus there is no rule.



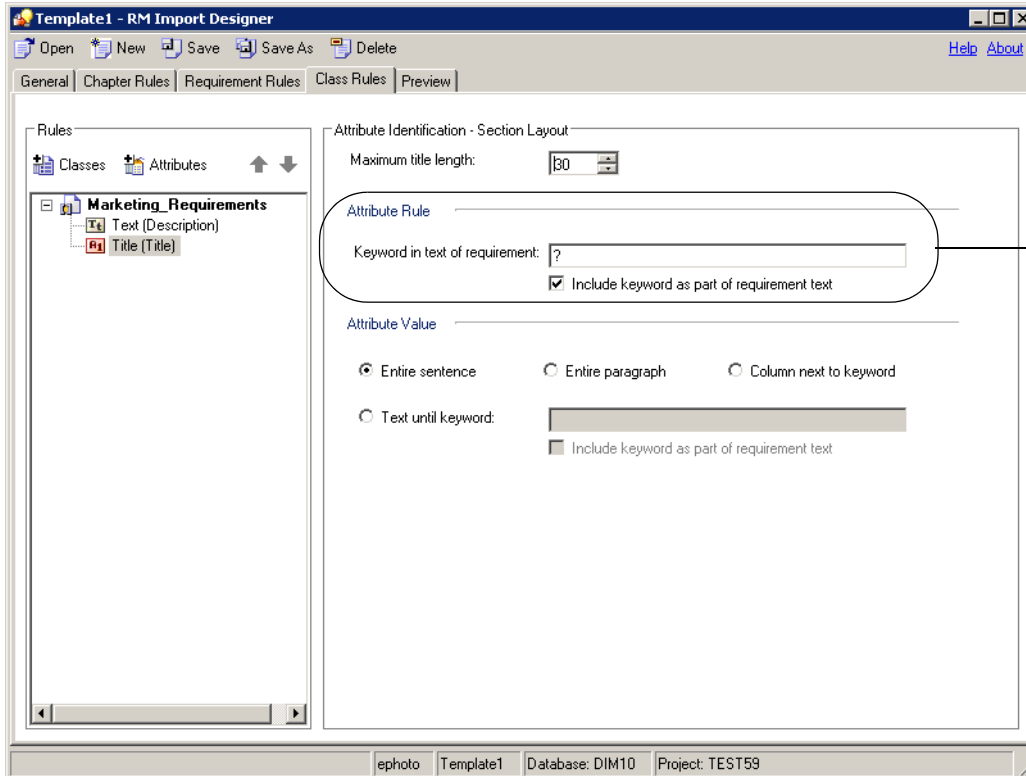
No rule is specified



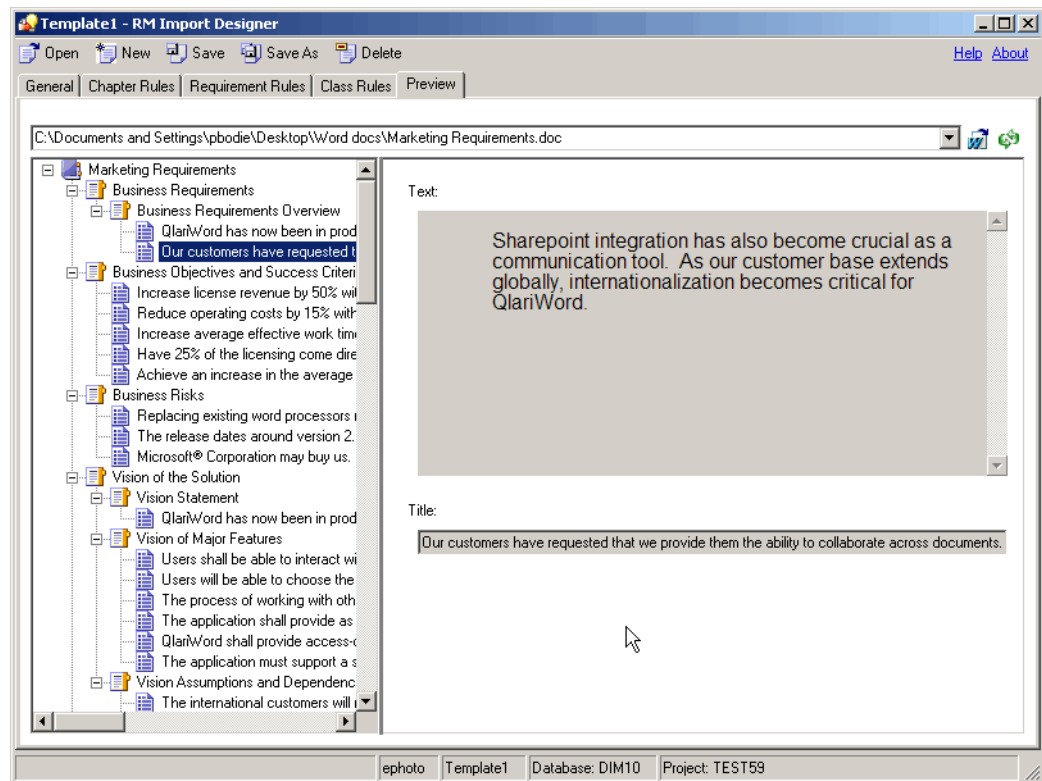
The next example shows what happens when you add a rule for the Title attribute.

Capturing Title and Description with Title Rule

In this example, a wildcard character is specified in the **Attribute Rule** field, and the **Include keyword as part of requirement text** check box is selected. Using the ? wildcard character means that the first sentence with any character will be captured as a title. Because there is a rule, the title will not be duplicated in the description.



A rule is specified, so there is no duplication between the **Text** and **Title** fields below.



NOTE For more information about wildcards, see ["Word Regular Expressions"](#) on page 252 and Microsoft Word documentation.

URL Syntax

How to Manually Specify a URL for URL Addressable Views

The *Serena Dimensions RM Browser User's Guide* and the RM Browser Help show how to copy an object's URL from within RM Browser. However, if you wish to enter URLs by hand or use a script or program to invoke them, see the following for information on the correct syntax.



NOTE If an object name includes a space character, replace the space with: %20

URL to a Document

```
http://ServerName/rtmBrowser/  
?goto=doc&db=DataBaseName&proj=ProjectName&doc=DocumentName
```

URL to a Chapter of a Document

```
http://ServerName/rtmBrowser/  
?goto=doc&db=DataBaseName&proj=ProjectName&doc=DocumentName&class=C  
hapter&o=ChapterID
```

URL to a Snapshot of a Document

```
http://ServerName/rtmBrowser/  
?goto=doc&db=DataBaseName&proj=ProjectName&doc=SnapshotName
```

URL to a Collection

```
http://ServerName/rtmBrowser/  
?goto=collection&db=DataBaseName&proj=ProjectName&collection=Collec  
tionName
```

URL to a Specific Version of a Requirement

```
http://ServerName/rtmBrowser/  
?goto=req&db=DataBaseName&proj=ProjectName&class=ClassName&puid=Req  
uirement'sPUID&ver=VersionNumber
```



NOTE If no version is specified, it will default to 1.

URL to compare History Versions of a Requirement

compare Requirement by object Ids

```
http://ServerName/rtmBrowser/
?goto=req&db=DataBaseName&proj=ProjectName&class=ClassName&o=Object
ID1&comparewithID=ObjectID2
```

compare current Requirement with object Id

```
http://ServerName/rtmBrowser/
?goto=req&db=DataBaseName&proj=ProjectName&class=ClassName&puid=Req
uiement'sPUID&comparewithID=ObjectID
```

compare Requirement by object Id and version

```
http://ServerName/rtmBrowser/
?goto=req&db=DataBaseName&proj=ProjectName&class=ClassName&o=Object
ID&comparewith=Version
```

compare two versions of a Requirement

```
http://ServerName/rtmBrowser/
?goto=req&db=DataBaseName&proj=ProjectName&class=ClassName&puid=Req
uiement'sPUID&ver=Version1&comparewith=Version2
```

compare current Requirement with a version

```
http://ServerName/rtmBrowser/
?goto=req&db=DataBaseName&proj=ProjectName&class=ClassName&puid=Req
uiement'sPUID&comparewith=Version
```

URL to the Current Version of a Requirement

```
http://ServerName/rtmBrowser/
?d=DataBaseName&p=ProjectName&f=2&c=ClassID&id=Requiemment'sPUID&u=U
serName&pwd=Password
```



NOTE This type of URL uses an older syntax that is different from the others. See the table below for more details on the options available in this syntax.

Option	Usage
d=	Oracle database that RM uses. Example: d=RTM
pid=	RM project ID number. You can specify pid= or p=, but not both (see "p=" below). Example: pid=2
p=	RM project name. You can specify pid= or p=, but not both (see "pid=" above). Example: p=RMDEMO
f=	RM Action to perform. f=2 opens an object for viewing. f=4 opens an edit dialog for the specified object. f=5 opens the RM browser home page.









Option	Usage
c=	RM Class ID (this is a numeric value). Example: c=7
o=	RM Object ID (this is a numeric value). Example: o=21
u=	RM username. Example: u=ephoto
pwd=	RM password. Example: pwd=rtm

RM Manage Icons and Toolbars

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RM Manage Icons

The following table describes the icons used in RM Manage.

Icon	Description
	Database
	Project
	Offline Project
	User
	Group
	Granted Access Rights
	Denied Access Rights
	Inherited Access Rights





RM Manage Toolbars

This section describes the RM Manage toolbars.

Main Toolbar













The following table describes the buttons on the main toolbar in RM Manage.

Button	Action
	View project information
	View group information
	View user information
	Show Help topics

Database Toolbar



The following table describes the buttons on the Database toolbar in RM Manage.

Button	Action
	New project
	Change user
	Change user password
	Configure login sources
	Convert database
	Administer tablespaces
	Properties
	Create ICDBA Account
	Change Administrator Password
	Change Encryption Keys

Project Toolbar



The following table describes the buttons on the Project toolbar in RM Manage.

Button	Action
	Change project password
	Delete project account
	Define project schema
	Backup or restore project account
	Backup or restore project schema
	Place project account online
	Place project account offline
	Install project tables
	Drop project tables
	Recreate database procedures
	Recreate database indexes
	Recreate resources
	Administer email
	Administer locks
	Associate to Dimensions CM
	(Show) Properties
	Baseline link(s)

Group Folder Toolbar




The following table describes the button on the Group Folder toolbar in RM Manage.

Button	Action
	New group

Group Toolbar




The following table describes the button on the Group toolbar in RM Manage.

Button	Action
	Delete group

User Folder Toolbar




The following table describes the button on the User Folder toolbar in RM Manage.

Button	Action
	New user

User Toolbar



The following table describes the button on the User toolbar in RM Manage.

Button	Action
	Delete user

Appendix D

WIRIS Editor

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Overview

The WIRIS editor allows to enter mathematical formulas in Dimensions RM. This functionality is only available for texts in HTML format, e.g. HTML enabled text attributes in requirements or chapters in documents. In order to use this component go to www.wiris.com and download the **WIRIS Plugin for TinyMCE and Java**.

WIRIS Editor Server Component

For installing the WIRIS editor server component, you need the pluginwiris_engine.war file. The pluginwiris_engine.war file is part of **WIRIS Plugin for TinyMCE and Java** ZIP archive.

Installing the WIRIS Editor Server Component

To install the server component, follow these steps:

- 1 Unarchive the **WIRIS Plugin for TinyMCE and Java** ZIP archive.
- 2 Copy the pluginwiris_engine.war file into the *RM_Install*\Common Tools #.#\tomcat\#.#\webapps directory.
- 3 If you stopped the Tomcat service, restart it now.
- 4 In Windows Explorer, navigate to *RM_Install*\Common Tools #.#\tomcat\#.#\webapps\rtmBrowser\WEB-INF.
- 5 Open the file spring.xml with a text editor (e.g. Notepad).
- 6 Search for *tempDirectory* and copy the complete path between <value> and </value> to the Clipboard.
- 7 Paste the copied path into the address box of Windows Explorer and press Enter. This navigates to the path you copied.
- 8 Create a new folder and name it *wiris*.
- 9 Navigate to *RM_Install*\Common Tools #.#\tomcat\#.#\webapps \pluginwiris_engine\WEB-INF\pluginwiris.
- 10 Check if the file configuration.ini exists. If it does not exist, rename configuration.ini.dist to configuration.ini.
- 11 Open the file configuration.ini with a text editor (e.g. Notepad).
- 12 Find the variable wiriscachedirectory.
- 13 Remove the # in front of the variable
- 14 Replace the existing path (following the = sign) with the path you previously copied to the Clipboard.
- 15 Duplicate the backslash characters in the path for the wiriscachedirectory variable, so it might look like this: C:\\Program Files


```
(x86)\\Serena\\Dimensions #.#.#\\Common Tools  
#.#.#.#\\tomcat\\#.#\\webapps\\rtmBrowser\\temp
```

- 16 To the path add `\\wiris`, so the path might look like this: `C:\\Program Files (x86)\\Serena\\Dimensions #.#.#\\Common Tools #.#.#.#\\tomcat\\#.#\\webapps\\rtmBrowser\\temp\\wiris`.
- 17 Copy the whole path of the `wiriscachedirectory` variable to the Clipboard.
- 18 Find the variable `wirisformuladirectory`.
- 19 Remove the `#` in front of the variable
- 20 Replace the existing path (following the `=` sign) with the path you previously copied to the Clipboard.
- 21 Save the file.

Registry Configuration

After installing the Server component, you need to make some changes to the Dimensions RM configuration by following these steps:

- 1 Start the Registry Editor.
- 2 Navigate to `HKEY_LOCAL_MACHINE\\SOFTWARE\\Wow6432Node\\Serena Software\\RTM\\Environment` and select the **Default** registry key.
- 3 Right-click **Default**, point to **New** and then click **String Value**.
- 4 Name the new registry value `WIRIS_cache_path`.
- 5 Copy the path you assigned to `wiriscachedirectory` variable to the Clipboard (see chapter ["Installing the WIRIS Editor Server Component" on page 312](#)).
- 6 Double-click the registry value `WIRIS_cache_path` and paste the path into the **Value data** box.
- 7 Click **OK**.
- 8 Right-click **Default**, point to **New** and then click **DWORD (32 bit) Value**.
- 9 Name the new registry value `WIRIS_max_retries`.
- 10 Double-click registry value `WIRIS_max_retries`.
- 11 Click the **Decimal** option.
- 12 Enter `1200` into the Value box. This specifies the maximal number of tries to read the equation picture from the cache.
- 13 Click **OK**.

Registering the WIRIS Editor in TinyMCE

For installing the WIRIS editor, you need the `tiny_mce_wiris` directory which contains additional directories and files. The `tiny_mce_wiris` directory is part of **WIRIS Plugin for TinyMCE and Java** ZIP archive.

To add the WIRIS plug-in, follow these steps:

- 1 Copy the `tiny_mce_wiris` directory into the `RM_Install\Common Tools`
`.\#\tomcat\#\#\webapps\rtmBrowser`
`\jscript\tiny_mce\plugins` directory. If the `plugins` directory already contains a `tiny_mce_wiris` directory, delete that directory.
- 2 Navigate to the `RM_Install\Common Tools`
`.\#\tomcat\#\#\webapps\rtmBrowser`
`\jscript` directory and open the file `htmlEditor.js` with a text editor (e.g. Notepad).
- 3 Locate the **tinyMCE.init** function call.
- 4 In the **theme_advanced_buttons1** section, add
`tiny_mce_wiris_formulaEditor` to the existing collection if it does not exist.
- 5 Save the file.

Test Case Management

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Overview

The following chapters describe how to setup up Test Case Management with Dimensions RM. Test Case Management allows creation of Test Cases and Test Runs. In order to provide the Test Case Management functionality, it is required to create or modify classes and forms.

Class Definition

For Test Case Management, you require 2 classes: One class for the test case and one class for the test run. You can name the classes as you like. For simplification, the following chapters use the names *Test_Case* and *Test_Run*.

Creating Test Management Classes from Templates

Dimensions RM brings templates for the Test Case and Test Run classes. These class templates simplify the process of setting up Test Management. To create a custom class or modify your existing class, see chapter ["Using Custom Classes with Test Management" on page 317](#).


To create the classes, follow these steps:

- 1** Start **RM Manage**.
- 2** Expand the database in which your project resides.
- 3** Fill the fields of the **Logon Information** dialog and click **OK**.
- 4** Right-click your project and select **Define Project Schema** in the shortcut menu.
- 5** In the Class Definition dialog, right-click on a free space and select **Add Class | Test Case** from the shortcut menu.
- 6** Click on a free space to place the new class.
- 7** Change the name to your liking, e.g. *Test_Case*.
- 8** Right-click on a free space and select **Add Class | Test Run** from the shortcut menu.
- 9** Click on a free space to place the new class.
- 10** Change the name to your liking, e.g. *Test_Run*.
- 11** Save the class definition.
- 12** Execute the steps in chapter ["Setting the Default Value for Test Steps" on page 317](#).
- 13** Execute the steps in chapter ["Creating a Relationship between the Test Management Classes" on page 318](#).

Using Custom Classes with Test Management

If using a custom class with Test Management, it is essential that the classes *Test_Case* and *Test_Run* have the **Test Steps** attribute.

To modify a class for Test Management, follow these steps:

- 1 Create a class or use an existing class in your class definition.
- 2 Double-click the class you just created or the existing class you want to modify.
- 3 Click the  button.
- 4 Enter *Test Steps* into **Display Name** box.
- 5 Ensure that the **Attribute Name** box contains **TEST_STEPS**.
- 6 Select the **Text** tab.
- 7 Ensure that the **HTML Formatting** box is selected.
- 8 Open the file `RM_Install\TestStepForm.html` with a text editor.
- 9 Copy the html code between
`<!-- please copy this html into the form -->`
and
`<!-- end of text for Form -->`
to the Clipboard.
- 10 Paste the copied HTML code into the **Default Value** box.
- 11 Click **OK** to close the **Definition of attribute** dialog.
- 12 Click **OK** to close the **Definition of class** dialog.
- 13 Save the class definition.

Setting the Default Value for Test Steps

In order allow entering test steps, the **Test Steps** property needs to provide the user interface. This requires to set the default value of the **Test Steps** property for classes *Test_Case* and *Test_Run*.

To set the Default Value, follow these steps:


- 1 Open the file `RM_Install\TestStepForm.html` with a text editor, e.g. Notepad.
- 2 Copy the html code between `<!-- please copy this html into the form -->` and `<!-- end of text for Form -->` to the Clipboard.
- 3 Double-click the class *Test_Case*.
- 4 On the **Attributes** tab, expand the **User Defined** folder.
- 5 Double-click the **Test Steps** property.
- 6 Select the **Text** tab.
- 7 Ensure that the **HTML Formatting** box is selected.

- 8 Paste the previously copied HTML code into the **Default Value** box.
- 9 Click **OK** to close the **Definition of attribute** dialog.
- 10 Click **OK** to close the **Definition of class** dialog.
- 11 Double-click the class *Test_Run*.
- 12 Repeat steps 4 through 10 for the class *Test_Run*.
- 13 Save the class definition.

Creating a Relationship between the Test Management Classes

In order to connect a test case and one or several test runs, it is required to create a relationship between the classes *Test_Case* and *Test_Run*.

To create the relationship follow these steps:

- 1 Click the  button in the toolbar.
- 2 Select class **Test_Case**.
- 3 Select class **Test_Run**.
- 4 Name the relationship, e.g. *Test_Case_Has_Test_Runs*.
- 5 Double-click the relationship arrow or right-click the relationship arrow and select **Define** from the shortcut menu.
- 6 Select the **Constraints** tab.
- 7 For Primary Links and Secondary Links, ensure that these check boxes are selected:
 - transfer to child
 - populate attributes on create and link
- 8 Click **OK**.
- 9 Save the class definition.

Forms

For the Test Case Management functionality it is required that the classes use forms. The forms are located under this path:

RM Install\Common Tools #.#\tomcat\#.#\webapps\rtmBrowser\forms which will be referred to as *RM Forms*.

Creating Forms for Test Management

The following steps describe how to create a form if no form for the desired class exists. If you use a class for which a form already exists, see chapter ["Modifying Forms for Test Management" on page 319](#).

Follow these steps to create a form:

- 1 If it does not exist, create the directory DataBase_Name in this directory:
`RM Install\Common Tools \.#\atomcat\#.#\webapps\rtmBrowser\forms.`



NOTE *Database_Name* is identical with the database name from the login dialog.

- 2 If it does not exist, create the directory Project_Name inside the DataBase_Name directory from [Step 1](#).



NOTE *Project_Name* is identical with the project name from the login dialog.

- 3 Copy the file `RM Install\RM\tutorial\TestManagement\Test_Case.xml` into this directory:
`RM Install\Common Tools \.#\atomcat\#.#\webapps\rtmBrowser\forms.`
- 4 Rename the file `Test_Case.xml` to resemble the class name of your class, but keep the .xml file extension.



IMPORTANT! The class needs to have the Test Steps attribute.

- 5 Copy the file `RM Install\RM\tutorial\TestManagement\Test_Run.xml` into this directory:
`RM Install\Common Tools \.#\atomcat\#.#\webapps\rtmBrowser\forms.`
- 6 Rename the file `Test_Run.xml` to resemble the class name of your class, but keep the .xml file extension.



IMPORTANT! The class needs to have the Test Steps attribute.

Modifying Forms for Test Management

When using an existing class for Test Management, you might need to add the Test Management functionality to an existing form.

To modify the form of your Test Case class, follow these steps:

- 1 In Windows Explorer, navigate to this directory:
`RM Install\RM\tutorial\TestManagement`
- 2 Open the file `Test_Case.xml` in a text editor, e.g. Notepad.
- 3 Select the code between the `<form>` tag and the first `<section>` tag and copy it to the Clipboard.
- 4 In Windows Explorer, navigate to this directory:
`RM Install\Common Tools \.#\atomcat\#.#\webapps\rtmBrowser\forms`
- 5 Open the XML file which resembles the name of the class that handles test cases, e.g. `Test_Case.xml`, with a text editor like Notepad.
- 6 Paste the code you copied to the Clipboard into your XML file between the `<form>` tag and the first `<section>` tag.

- 7 Save the file.

To modify the form of your Test Run class, follow these steps:

- 1 In Windows Explorer, navigate to this directory:
RM Install\RM\tutorial\TestManagement
- 2 Open the file *Test_Run.xml* in a text editor, e.g. Notepad.
- 3 Select the code between the `<form>` tag and the first `<section>` tag and copy it to the Clipboard.
- 4 In Windows Explorer, navigate to this directory:
RM Install\Common Tools \#.#\tomcat\#.#\webapps\rtmBrowser\forms
- 5 Open the XML file which resembles the name of the class that handles test runs, e.g. *Test_Run.xml*, with a text editor like Notepad.
- 6 Paste the code you copied to the Clipboard into your XML file between the `<form>` tag and the first `<section>` tag.
- 7 Save the file.

Command Line Tools

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Overview

Serena® Dimensions® RM provides `doc_out` as the command line tool. `doc_out` allows you to run scripts from the DOS prompt. The command line tool can be run when you want to create large reports on links among entities created in or removed from the database.

Setting Your Path

`doc_out` is normally installed in `RTM_HOME\bin`. This directory must be in your path for the tools to be visible. Check with your project administrator for the location in your installation. Alternatively, you can search for the tool (`doc_out.exe`) using the **Search** command from the Windows **Start** menu.

To add the Dimensions RM bin directory to your path:

- 1 Right-click the **My Computer** icon on your desktop.
- 2 Select **Properties**.
- 3 Click the **Environment** tab.
- 4 Select the Path variable from the system variables list.
- 5 In the **Value** box at the bottom of the page, insert the Dimensions RM bin path into the value string. Separate that path from the next one with a semi-colon (;).
- 6 Click **Set**, **Apply**, and then **OK**.

Using `doc_out`

The `doc_out` tool allows you to run a Dimensions RM reporting script from the command line and to generate the output to a variety of formats. Using `doc_out` enables you to extract data from Dimensions RM without invoking a Windows-based Dimensions RM session. Scripts can be prepared before extraction for batch processing of reports.

Invoking `doc_out`

To invoke the `doc_out` tool:

Type the following command at the command line prompt:

```
doc_out required_arguments [optional_arguments]  
script_identification
```

where:

required_arguments are:

```
-user username -pwd password -project projectname -location dblocation
```

- username is your Dimensions RM user account name.
- password is your Dimensions RM user account password.
- projectname is the project from which you want to extract data.
- dblocation is the database name in which the project resides. Your local *tnsnames.ora* file contains the database names of each database to which you have visibility.

optional_arguments are:

`[-m format] [-#variablename value]* [-o outputfile] [-e] [-v] [-s[n|u terminatorstring]`

- format—The format in which you want the output to be represented. The accepted formats are described in the following table.

Format	Description
csv	Comma Separated Values format
rtf	Rich text format used by Microsoft Word
rtf_table	Rich text table format
sgml	SGML markup format
sgml_table	SGML table format
html	HTML format
html_table	HTML table format
none	No markup (that is, plain ASCII)
ascii_table	ASCII text with spacing to create a tabular effect. NOTE: This is the default output format.

- variablename is the name of a variable defined in the script and **value** is the actual value that you want substituted for that variable. You will need to define **- #variablename value** pairs for each variable defined in the script.
- outputfile is the filename or path in which the results are to be stored. Enclose the path in double quotation marks when spaces or punctuation characters are included in the filename.
- -e suppresses word processor markup at the beginning of the outputfile (not accepted for RTF or SGML formats). Omitting markup is useful when you will be appending the output to an existing file.
- -v requests program arguments be echoed to the console or DOS window.
- -s (used only with the -m none option) with no argument causes a standard end-of-record marker ("#### End of Record ####") to be appended to each record in the report.
- -su (used only with the -m none option) terminatorstring provides a textual end-of-record marker for the -su option. Enclose terminatorstring in double quotation marks when spaces or punctuation characters are included the string.
- -sn (used only with the -m none option) eliminates blank lines in the unformatted output. Blank lines are otherwise inserted for empty attribute values. -sn can be used in combination with -su, but overrides -s.

script_identification is:

scriptfilename | -n scriptname

- scriptfilename is the path of the script stored in the file system.
- -n scriptname identifies a script stored in the project. Scriptname is required with the -n option. If the script name in the project includes blanks or punctuation characters, you will need to enclose the name in double quotes (for example, -n "my favorite script").

Using doc_out from the Command Line

Various ways to use the doc_out tool from the command line are illustrated in the following DOS examples.

Example 1

Minimum arguments. Assumes that doc_out is in the path, the script text is in the current folder, and the results are to be displayed on the screen. The output format defaults to ascii_table.

```
C:\>doc_out -user fred -pwd fredspassword  
-project myproject -location bigserver.ic  
getCustomerRequirements.rmdoc
```

Example 2

Similar to Example 1, but references a script inside the project and an output file in the current folder in which to save the results.

```
C:\>doc_out -user fred -pwd fredspassword  
-project myproject -location bigserver.ic  
-n "Get Customer Requirements" -o CustomerRequirements.txt
```

Example 3

Similar to Example 2, but requests the output in a csv file that can then be imported into other tools.

```
C:\>doc_out -user fred -pwd fredspassword -project  
myproject -location bigserver.ic -n "Get Customer  
Requirements" -m CSV  
-o CustomerRequirements.csv
```

Example 4

Similar to example 2, but specifies no markup and uses the date as a record separator.

```
C:\>doc_out -user fred -pwd fredspassword -project  
myproject -location bigserver.ic -n "Get Customer  
Requirements" -m none -su "09/15/2000"  
-o CustomerRequirements.txt
```

Example 5

Similar to Example 3, but uses a variable to specify a collection that identifies a subset of the objects

```
C:\>doc_out -user fred -pwd fredspassword -project myproject  
-location bigserver.ic -#LookIn Baseline1 -n "Get  
Customer Requirements" -m CSV -o CustomerRequirements.csv
```

Using Script Variables with doc_out

Variables can be used within a Dimensions RM reporting scripts only when the script is run by doc_out. Attempting to use them in RM Browser results in erroneous results because the variable values are substituted in doc_out before submitting the script to Dimensions RM.

To use variables in scripts, follow these rules:

- Use UPPER CASE for the variable name in both the script and the command line reference.
- Enclose spaces or punctuation in values in double quotation marks.
- In the command line, precede the variable name with a '#', but in the script, include the variable name without any special markings.

The following example is a parameterized version of the baseline check script provided in the RMDemo sample project. The script identifies three subsets of objects given two collections used as baselines. The first subset is (the first select statement) the set of objects in the earlier baseline that are not deleted and are still in the later baseline (as identified by the second select statement). The second subset is those objects that are in the later baseline, but were not in the earlier baseline. The third subset is those objects that were in the earlier baseline and were deleted.

```
select <PUID>PUID <Earlier>TEXT from CustomerRequirements where  
group in ('EARLY') and STATUS != 'Deleted'  
xref source secondary_history  
select <PUID>PUID <Later Modifications>TEXT from  
CustomerRequirements where group in ('LATE')  
plus  
select <PUID>PUID <Later Additions>TEXT from CustomerRequirements  
where group in ('LATE') and group not in ('EARLY') and  
NOT_SECONDARY_IN immediate  
plus  
select <PUID>PUID <Earlier Deletions>TEXT from  
CustomerRequirements where group in ('EARLY') and STATUS='Deleted'
```

The baseline check script is invoked to compare Baseline 1 and Baseline 2 from the DOS command line as:

```
C:\>doc_out -user fred -pwd fredspassword -project rmdemo  
-location bigserver.ic baselinecheck.rmdoc -#EARLY  
"Baseline 1" -#LATE "Baseline 2"
```


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