

CA Aion[®] Rule Manager

Administration Guide

r11



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CA Technologies Product References

This document references the following CA Technologies products:

- CA Aion® Rule Manager (CA Aion Rule Manager)
- CA Aion® Business Rules Expert (CA Aion BRE)
- CA Embedded Entitlement Manager (CA EEM)

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Chapter 1: Introduction

This guide describes administrative and technical concepts and procedures needed to support the CA Aion Rule Manager and its components. Topics include user administration and security, rule project and repository setup and maintenance.

This section contains the following topics:

[Audience](#) (see page 7)

[Prerequisites](#) (see page 7)

[What's In This Guide](#) (see page 7)

Audience

This guide is intended for personnel who act as administrators for CA Aion Rule Manager sites and systems.

Administrators can be information technology (IT) personnel, system programmers, or other technical specialists. A business owner or manager may serve as an administrator for purposes of creating Rule Manager projects and defining business terms. At some sites, a CA BRE programmer may serve as the CA Aion Rule Manager administrator.

Prerequisites

It would be helpful if Administrators have experience with the Java language, databases (including Structured Query Language and DBA functions), LDAP, and XML. Familiarity with the Internet and the World Wide Web is assumed.

What's In This Guide

Repository and Jetspeed2 Portal Administration

The CA Aion Rule Manager Database and Jetspeed2 Portal are discussed in detail in the chapter [Repository and Jetspeed2 Portal Administration](#) (see page 9).

The Portal is a single unified web-based end-user interface that interacts with the Rule Manager. Rule Manager portlets are deployed on an open-source JSR-168 compliant Jetspeed 2 portal server from Apache. User and group security of Rule Manager is handled by EEM and thus we have overridden the Apache Jetspeed 2 security mechanism to authenticate and authorize users as per EEM policies.

Note: For additional information about the CA Aion Rule Manager Database and Jetspeed2 portal, see the CA Aion Rule Manager documentation.

Rule Manager

The Rule Manager is discussed in detail in the chapter [Rule Manager Administration](#) (see page 19).

Rule Manager is a portal-based facility that provides the business user with business rule editing and management. Through this interface, business users define business terms, organize rules into logical groups, edit rules graphically, and test rules. Rule Manager provides management functions such as access control based on named users and groups, locking, versioning, rollback, and controls for effective dating of rules.

Note: For information about Rule Manager operations, see the *Product Guide*.

Business Vocabulary Manager

The Business Vocabulary Manager helps you create, edit and delete vocabularies, types and terms. You can add types based on the default types. This feature integrates seamlessly with the Rules Manager. The vocabulary is provided with check-out and check-in features. The vocabulary is stored in XSD (XML Schema Definition) format.

Rule Application Server (RAS)

Deployment of Rule Manager projects as Web services is discussed in detail in the chapter [Rule Manager Administration](#) (see page 19).

Note: For additional information on accessing rules as Web services, see the *Product Guide*.

Acknowledgements

CA and third-party license agreements for software used with CA Aion Rule Manager are provided in the Acknowledgements appendix.

Chapter 2: Repository and Jetspeed2 Portal Administration

This section contains the following topics:

[CA Aion Rule Manager Database](#) (see page 9)

[Jetspeed2 Portal](#) (see page 9)

[Log In to Portal](#) (see page 10)

[Portlets](#) (see page 10)

[Folder Portlet](#) (see page 10)

[Notifications Portlet](#) (see page 11)

[Checked-Out Content Portlet](#) (see page 12)

[Content Search](#) (see page 12)

[Manage Groups](#) (see page 13)

[Add New Users](#) (see page 13)

[Administer Rule Manager Projects](#) (see page 15)

[Back Up the Database](#) (see page 17)

CA Aion Rule Manager Database

This product comes with a database repository called the CA Aion Rule Manager Database. It is an optimized relational database that coordinates the separate components used in the CA Aion Rule Manager.

Note: The Rule Manager database is installed on MS SQL Server. The Local and Remote Connections of the MS SQL Server must be TCP/IP enabled for the Rule Manager to run. For more information about MS SQL database considerations for CA Aion Rule Manager, refer to SQL Server RDBMS Support Instructions in *Readme* and *Access CA Aion Rule Manager Database in Product Guide*.

Jetspeed2 Portal

This product comes with a web-based management portal. The portal environment is the environment from Jetspeed2.

Note: For detailed information about administering Jetspeed2, see <http://portals.apache.org/jetspeed-2/>.

Log In to Portal

JetSpeed2 Portal uses a web-based browser interface. To access Portal, you must know the name of the Portal server and the port the server is listening on.

Servename and port are the same ones used when you installed the product. By default, the servename is the machine name, and the port is 8080.

To launch the portal, open your web-browser and type the following URL:
`http://servename:port/rmportal`

The JetSpeed2 Portal login screen appears.

By default, the following user is already created:

Username	Role	Description
rm admin	Rule Manager Administrator	Administrator level access to all Rule Manager functions. Though you can change the user name during installation, the user name rm admin is used throughout this document.

Portlets

Portlets are windows in a Portal page that manage content directly in the CA Aion Rule Manager infrastructure. They provide the ability to store, manipulate, publish, and distribute various types of digital assets such as documents, graphics, URLs, and so on. They can also function as containers; they can contain many different items, ranging from one or more files to small applications.

Folder Portlet

CA Aion Rule Manager includes a Folders portlet that is used for managing content.

Note: The Folders portlet is included on the Default Home page.

CA Aion Rule Manager content is largely comprised of files and applications.

Files exist in folders and can be documents, business forms, letters, spreadsheets, graphics, and URLs. This content can be checked out and edited.

Applications content consists of portlet definitions. The following standard CA Aion Rule Manager portlet definitions are installed with CA Aion Rule Manager

- Folders portlet
- Notifications portlet
- Checked-Out Content portlet
- Search portlet

Software developers can create new JSR 168 portlets and deploy them to the Jetspeed2 Portal environment.

Folder portlet allow users to perform a variety of content related activities, including the following:

- Add, delete, and update content using the CA Aion Rule Manager Library portlets or WebDAV client
- Assign permissions to content
- Create versions of content
- Check out content for modification
- Upload/download content
- Subscribe to content and receive notifications when content or its properties are changed
- View and update properties (metadata) for content

Note: For more information about CA Aion Rule Manager Folder Portlet features, see *Product Guide*.

Notifications Portlet

People in your organization may want to know when changes are made to items or folders. These users can subscribe to individual content items as well as to entire folders. When a change is made to the item or folder, the updated items and folders are listed in the Notification portlet. If an email id is registered with the CA Aion Rule Manager application, an automated mail is sent to the registered email id.

The Notification portlet on the Library page displays the content changes.

Checked-Out Content Portlet

Use the Checked-out Content portlet to see the files that you have checked-out. When you are working with a file, check it out of the Library so others cannot modify it.

By checking-out a file, you ensure that only one user at a time can update the file or its properties. When you check-in a file, a new version is created. Versioning allows you to record the progress of work on the document and view it as it appeared at different stages throughout the work cycle.

When a file is checked out, all users who have the appropriate permissions can do the following:

- See the file in the Folders portlet
- Open the file
- See the file properties
- Download the file

In addition, the user who checked out the file can do the following:

- Change the file properties
- Replace the file

Note: Changes are not seen by other users until the file is checked in.

Content Search

The Search Portlet enables rapid and efficient location of content in the CA Aion Rule Manager Library.

CA Aion Rule Manager includes Search and Advanced Search links on every page so that you can search for content at any time using various criteria. These links provide quick access to the Search and Advanced Search portlets. The Advanced Search feature lets you specify advanced filters to refine search criteria. The filters offer additional granularity including title, description, creation and modification dates, content location, and file type.

Manage Groups

To manage CA Aion Rule Manager group memberships

1. Login to EEM as the EEM administrator or as a Rule Manager Administrator, by selecting the Rule Manager application.
2. Select the Manage Access Policies tab.

The Manage Access Policies dialog appears.

The screenshot shows the CA Embedded Entitlements Manager interface. At the top, there is a navigation bar with tabs: Home, Manage Identities, Manage Access Policies (selected), Manage Reports, and Configure. Below the navigation bar is a breadcrumb trail: Policies > Calendars > Permission Check. The main content area is divided into two panes. The left pane, titled 'Search Policies', has two tabs: 'Explicit Grants' (selected) and 'Explicit Denies'. It contains a search box with the text 'Name: ' and three checkboxes: 'Show policies matching name' (checked), 'Show policies matching identity', and 'Show policies matching resource'. Below the search box is a 'Go' button. The right pane, titled 'Policy Table', has 'Export' and 'Close' buttons. It displays a table of 'Dynamic User Group Policies'. The table has columns: Name/Description, ResourceClassName, Options, Identities, Actions, Resources, and Filters. The table contains five rows of data.

Name/Description	ResourceClassName	Options	Identities	Actions	Resources	Filters
DUGPOL - Everyone	SafeDynamicUserGroup	Explicit Grant	[All Identities]	belong	Everyone	
DUGPOL - Migration Operators	SafeDynamicUserGroup	Explicit Grant	CERT-RuleManager dug:PortalAdministrators	belong	MigrationOperators	
DUGPOL - Portal Library Administrators	SafeDynamicUserGroup	Explicit Grant	CERT-RuleManager dug:PortalAdministrators	belong	PortalLibraryAdministrators	
DUGPOL - CPCM Administrators	SafeDynamicUserGroup	Explicit Grant	CERT-RuleManager EiamAdmin pm admin	belong	CPCMAAdministrators	
DUGPOL - Portal Administrators	SafeDynamicUserGroup	Explicit Grant	CERT-RuleManager EiamAdmin pm admin	belong	PortalAdministrators	

3. Scroll to the Dynamic User Group Policies tree branch.
4. Click the policy corresponding to the group you want to edit, such as DUGPOL - Portal Administrators.
5. In the Identities section of the policy, add any new identities (users or groups) by searching or entering the Identity name and clicking the right arrow icon to add them to the Selected Identities list.
6. Click Save.

The user or group is added to the dynamic user group.

Add New Users

CA Aion Rule Manager installs a standard set of pages for the rm admin user. If the number of users is small in number, you can decide to allow all users to log in as rm admin, but if you have a large number of users, or if security is an issue, each user profile can be configured separately.

Since building a user profile from scratch is labor-intensive, you can copy an existing user instead, and remove unneeded content. If you want to create a new user from scratch, see *Product Guide*.

To add users for CA Aion Rule Manager

1. Log in to EEM as an EEM administrator, selecting the Rule Manager application.

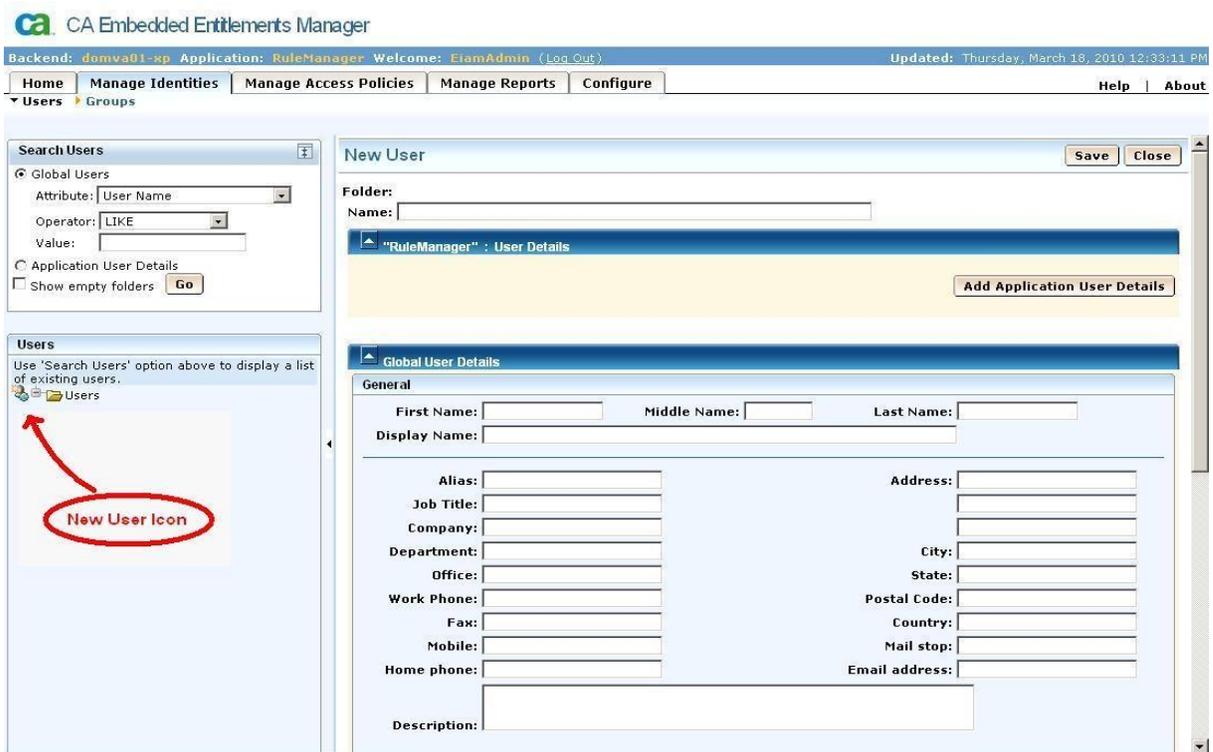
The EEM user interface appears.

2. Select the Manage Identities tab.

The Manage Identities dialog appears.

3. Select the New User icon located in the Users tree window to the left of the Users node.

The New User window opens.



4. Complete the New User dialog information.

Note: To display the available Groups, click Search in the Available Global User Groups section. Click the arrow that points to the right to add this group membership to the user profile.

5. Click Save.

The user is added.

Administer Rule Manager Projects

CA Aion Rule Manager administrators are responsible for regularly backing up rule projects using the Download capability of CA Aion Rule Manager Content Management Services (CPCM).

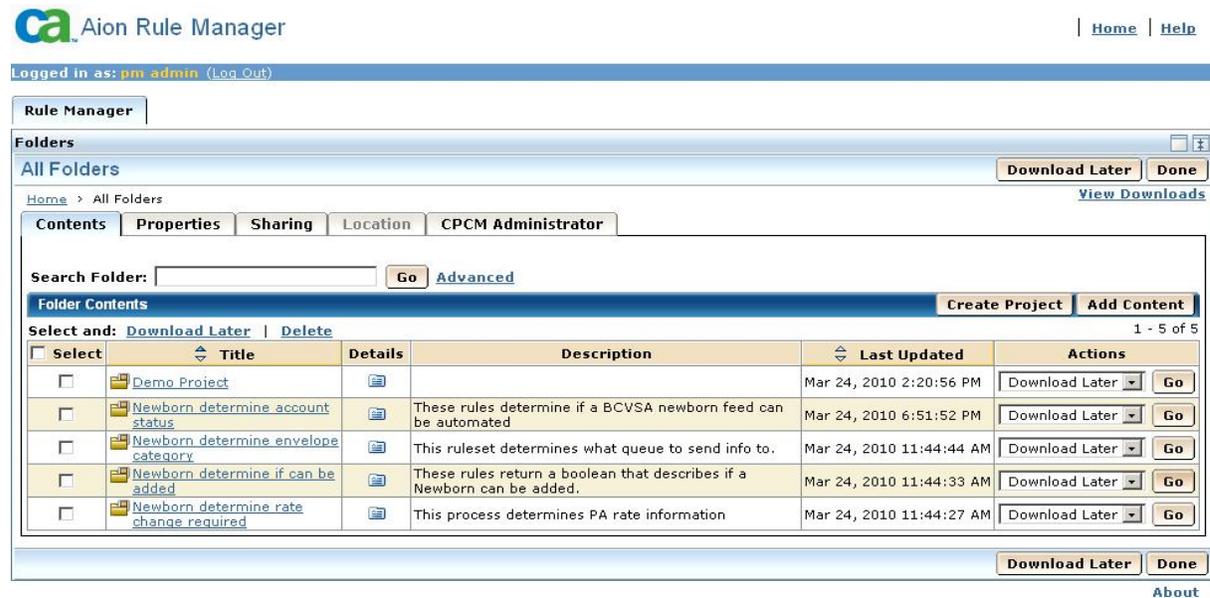
Back Up a Rule Manager Project

When you save a Rule Manager project, it will download as a zip file that can be later restored.

To back up a Rule Manager project

1. Log in to CA Aion Rule Manager as rm admin.

The Folder list appears.



The screenshot shows the CA Aion Rule Manager interface. At the top, it says "CA Aion Rule Manager" with a logo. Below that, it says "Logged in as: pm admin (Log Out)". The main content area is titled "Rule Manager" and "Folders". Under "Folders", there is a sub-section "All Folders" with buttons for "Download Later" and "Done". Below this, there are tabs for "Contents", "Properties", "Sharing", "Location", and "CPCM Administrator". A search bar is present with a "Go" button and a link to "Advanced". The "Folder Contents" section shows a table with the following data:

Select	Title	Details	Description	Last Updated	Actions
<input type="checkbox"/>	Demo Project			Mar 24, 2010 2:20:56 PM	Download Later Go
<input type="checkbox"/>	Newborn determine account status		These rules determine if a BCVSA newborn feed can be automated	Mar 24, 2010 6:51:52 PM	Download Later Go
<input type="checkbox"/>	Newborn determine envelope category		This ruleset determines what queue to send info to.	Mar 24, 2010 11:44:44 AM	Download Later Go
<input type="checkbox"/>	Newborn determine if can be added		These rules return a boolean that describes if a Newborn can be added.	Mar 24, 2010 11:44:33 AM	Download Later Go
<input type="checkbox"/>	Newborn determine rate change required		This process determines PA rate information	Mar 24, 2010 11:44:27 AM	Download Later Go

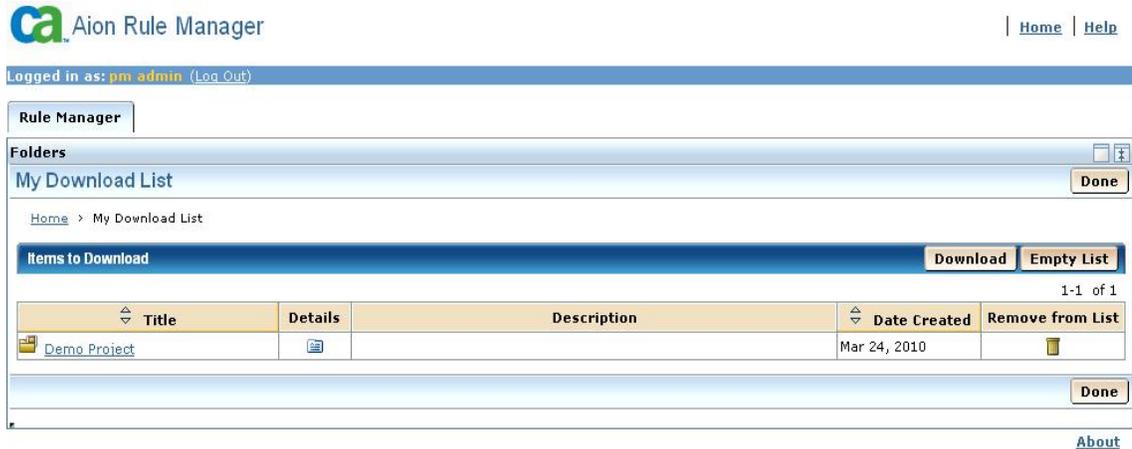
At the bottom of the table, there are buttons for "Download Later" and "Done".

2. Select the folders you want to back up.
3. Click the Download Later link.

The confirmation message appears.

4. Click the View Downloads link.

CPCM downloads the selected folder containing the project list. The result is a generically named ZIP file.



5. Click Download.
6. Save and rename the ZIP file to a name that is appropriate for your rule projects.
You may want to include a date string in the file name, for example, RuleBackup_20071202.zip.

Restore a Rule Manager Project

To restore a rule project that has been backed up, you import the ZIP file that was created using the CPCM Download capability. The following procedure assumes you have logged into Rule Manager as rm admin.

To import a project into Rule Manager

1. In the Folders portlet, click the Details icon for All Folders.
The Folder Contents page appears.
2. Click Add Content in the Folder Contents page.
The Select Content page appears.

- Click the Content Type: File option, and Browse to the location of the ZIP file that contains the Rule Manager project.

The screenshot shows the 'Add Content' dialog in the CA Aion Rule Manager. The 'Content Type' is set to 'File'. The 'Add File' field contains the path 'C:\Documents and Settings\kodha01\Desktop\Work Files\Maximus\CF' with a 'Browse...' button. There are also options for 'Upload and Do Not Extract' and 'Upload and Extract'. A 'Notifications' section states that notifications cannot be applied to compressed files. An 'Edit Properties' section at the bottom indicates no properties are associated with the file.

- Select the Upload and Extract option. Click OK to begin the import process. While the project is loading, a status message appears. If the upload process is successful, a confirmation message appears; otherwise an error message appears.
- To return to Rule Manager, click the CA Aion Rule Manager breadcrumb under the All Folders title bar.

Back Up the Database

It is important to perform regular backups of the database that contains your repository data.

Note: For more information on database backup and restore, see the *SQL Server* documentation.

Chapter 3: Rule Manager Administration

Rule Manager provides rule authoring for the business audience. It lets you define, deploy and maintain powerful business process services through business rules and web services technologies. Using Rule Manager, business users and mid-level managers can control the policies that run their business processes without having to delegate their definition to programmers.

The overall goal of the Rule Manager is to provide you with tools and environments to create rule manager projects to expose as services and for developers to access those services directly through runtime environments. These rule services are exposed as Web services in CA Aion Rule Manager.

IT becomes a consumer and integrator of these rules services, linking existing business applications with rule servers using standard Web services protocols.

This section contains the following topics:

[Rule Manager Application Administration](#) (see page 19)

[Rule Manager Project Administration](#) (see page 23)

[Set Up Data Sources](#) (see page 29)

[Exit Rule Manager](#) (see page 31)

Rule Manager Application Administration

A Rule Manager Configuration administrator can administer the Rule Manager Application configurations like the environment path settings, library path settings, and so on.

Note: The user has to be added to the DUGPOL – CPCM Administrator group along with the Portal administrator group to be able to edit the Application Configurations. By default, rm admin is added to the group during the Rule Manager installation.

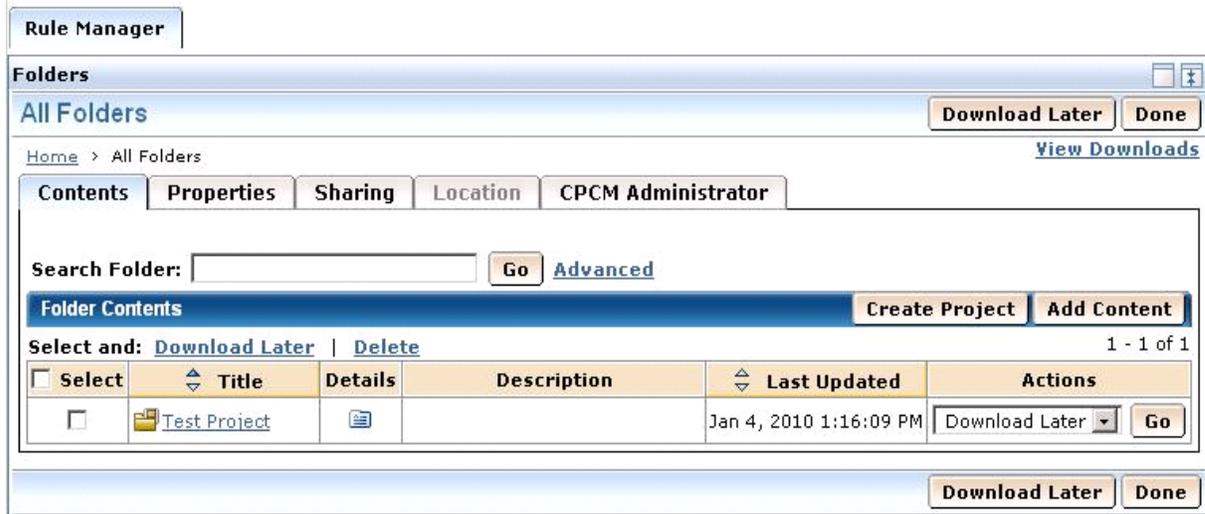
To configure the Rule Manager Application

1. Log in to CA Aion Rule Manager as a configuration administrator.

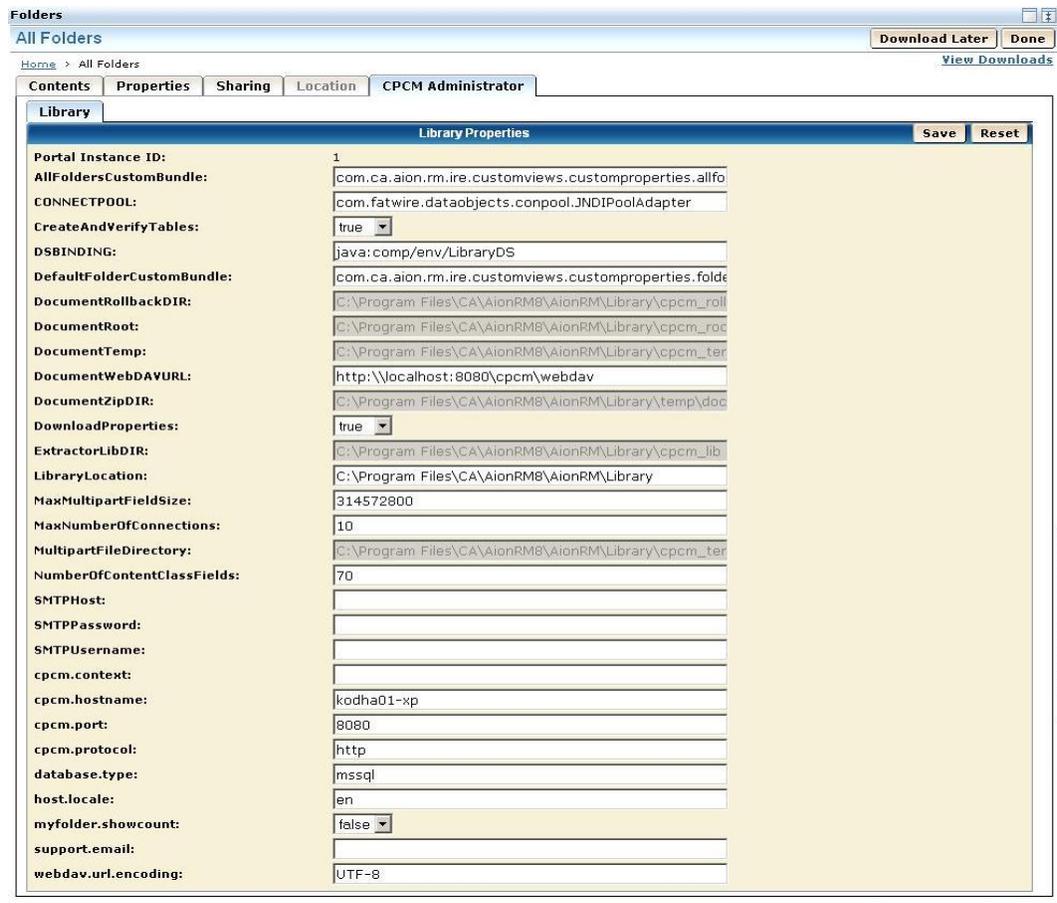
Note: On installation, the Default Home page, which contains an instance of the Folders portlet, is installed.

2. Click the Details icon next to All Folders in the Folders portlet.

The All Folders portlet appears.



3. Click CPCM Administrator tab.



4. Edit the configurations and click Save.

A confirmation message is displayed when the changes are saved.

Note: The changes made to the Configurations are applied only after the application is restarted.

The CPCM Administrator configuration page includes the following fields:

Portal Instance ID

Defines the instance id of the Rule Manager Application.

Note: The Portlet Instance ID cannot be changed.

AllFoldersCustomBundle

Indicates the default view defined for the All Folders Collection in the Folders portlet.

CONNECTPOOL

Defines the connection pool to the Fatwire content management system.

CreateAndVerifyTables

Specifies a Boolean check which enables the table creation in the database if the table is not pre-existent.

DSBINDING

Defines the JNDI data source name for the content management system.

DefaultFolderCustomBundle

Indicates the default view definition for the Folders portlet.

DocumentRollbackDIR

Defines the rollback directory path to store the older versions of the content in the Fatwire content management system.

DocumentRoot

Defines the root directory path to store the current versions of the content in the Fatwire content management system.

DocumentTemp

Defines the temporary directory where the temporary files are stored.

DocumentWeb DAVURL

Defines the url through which Rule Manager Application can be accessed in the WebDAV view.

DocumentZipDIR

Defines the temporary directory where all the zip files to be downloaded are stored.

DownloadProperties

Specifies a Boolean check which enables the metadata of the content to be downloaded as XML along with the content management files.

ExtractorLibDIR

Defines the temporary directory where the zip files to be uploaded are stored.

LibraryLocation

Defines the base path of the library. On changing the path of the LibraryLocation field automatically changes the paths of the all the other fields referring to the library.

MaxMultipartFieldSize

Defines the maximum size of the Multipart fields stored.

MaxNumberOfConnections

Defines the maximum number of connections that can be established with the Rule Manager Application.

MultipartFileDirectory

Defines the directory path where the multipart files are stored.

SMTPHost, SMTPPassword, SMTPUsername

Define the SMTP server configuration parameters from where the notification emails will be sent to the users.

cpcm.context, cpcm.host, cpcm.port, cpcm.protocol

Define the configuration parameters for the CPCM application.

database.type

Specifies the database type on which the Rule Manager application is running.

host.locale

Defines the locale of the Rule Manager application.

myfolder.showcount

Specifies a Boolean check which displays the count of the content in each of the folders in the Folders portlet in the Rule Manager Application.

support.email

Defines the email id from which the notification mails are sent to the users.

webdav.url.encoding

Defines the encoding type in which the WebDAV URL is encoded.

Rule Manager Project Administration

A Rule Manager administrator sets up the business rule authoring environment for the rule experts to write the rules.

Note: Any user who has read, write, and delete permissions to All Folders and its subfolders can administer the Rule Manager. On installation, only Rule Administrators have write permissions to the All Folders folder. You can grant other users permissions to All Folders using the Sharing tab.

The Rule Manager administrator performs the following tasks:

- Define the Rule Manager project (required)
- Define the project's external business vocabulary (optional)
- Define permission for the project (required)

More information:

[Share Projects](#) (see page 27)

Define a Rule Manager Project

Rule Manager requires that business rules be organized into projects (deployable units of business logic). A project is a special type of folder in the Rule Manager content hierarchy. Only a user with privileges to write to a folder can create a project in that folder. A project contains the business vocabulary, rulesets, rules, and test cases related to one business rule service.

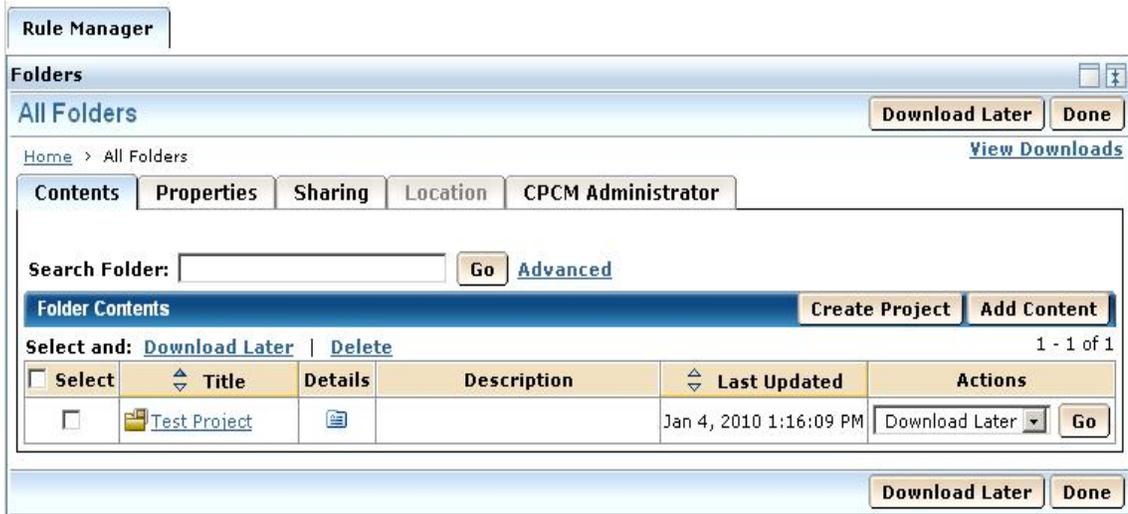
To define a Rule Manager project

1. Log in to CA Aion Rule Manager as a user with read and write privileges for All Folders.

Note: On installation, the Default Home page, which contains an instance of the Folders portlet, is installed.

2. Click the Details icon next to All Folders in the Folders portlet.

The All Folders portlet appears.



3. Click Create Project in the Folder Contents page to create a project.
4. Select a template from the Property Templates drop-down list. The templates listed are COLLECTION and PROJECTS.

Select PROJECTS when creating a Rule Manager project.

Default: COLLECTION

5. Complete the following fields:

Title

Defines the rule title. TLP Insurance for this example.

Description

(Optional) Defines the business purpose of the project. For example, Evaluates a TLP Insurance application and assigns a pricing tier.

Keywords

(Optional) Defines the words that describe the project. For example, customer stability, coverage liability, property risk, and pricing tier.

Notify Me When

(Optional) Notifies the user when the resource (for which the user registers the notification) is updated or deleted. You will receive an email notification if an email address was entered for the user in the EEM Profile.

Note: Description and keywords can be used for future searches.

The screenshot shows a 'Create Project' dialog box with the following fields and options:

- Property Templates:** PROJECTS
- Template Description:** RuleManager Project Folder
- Title:** TLP Insurance
- Description:** Evaluates a TLP Insurance application and assigns a pricing tier.
- Keywords:** stability, coverage liability, property risk, pricing tier
- Tip:** List words that can be used to search for this content.
- Notifications:**
 - Folder is Updated
 - Folder is Deleted

6. Click OK.

A confirmation message appears above the All Folders portlet. The Rule Manager Project folder is created.

The Rule Manager Project folder has options to create Vocabulary, Test Case, a folder to store all rulesets, and Content.

Note: The tabs Deployment, Administrator and the options Validate, Convert to BRE, Create Vocabulary, Create Test Case are available only for the Projects property template. Collection folder is used to store Projects or other content such as word documents and other external files.

Business Vocabulary Manager

A Rule Manager project needs to interface with the rest of the business environment. An administrator should create the environment and allow the Rule Authors to focus on the rules. Designating the usage of the terms defines the interface of the project with the rest of the business environment. The advantage of this best practice is that the administrator, who is aware of the system analysis leading up to this project, has the responsibility of defining this interface. The administrator focuses on the external interface of the rules to other systems and consumers of the rules. Rule Authors only introduce vocabulary that is necessary for writing the rules and establishing their interconnections.

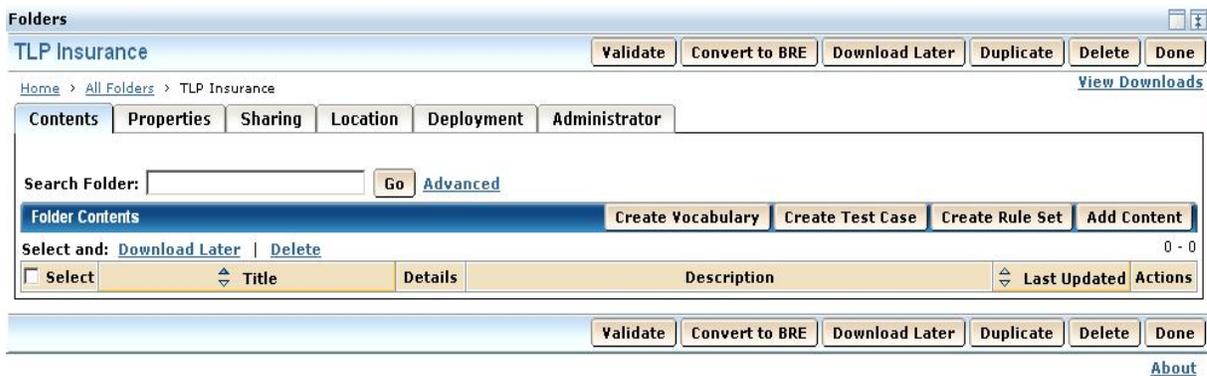
The Business Vocabulary Manager helps you create, edit and delete vocabularies, types and terms. You can add types based on the default types. This feature integrates seamlessly with the Rules Manager. The vocabulary is provided with check-out and check-in features. The vocabulary must be checked out to add or edit terms and types. The Vocabulary is stored in XSD (XML Schema Definition) format.

Create a Vocabulary

To create a vocabulary

1. Click New Vocabulary in the Rule Manager project folder.

The New Vocabulary page appears.



2. Enter the new Vocabulary name in the Name field.

The screenshot shows a 'New Vocabulary' dialog box. The title bar reads 'New Vocabulary' with 'OK' and 'Cancel' buttons. Below the title bar is a section labeled '=Required' and 'Properties'. The 'Name' field contains 'TLP Vocab'. The 'Description' field contains 'The business terms necessary to create a TLP insurance projects.' At the bottom right, there are 'OK', 'Cancel', and 'About' buttons.

3. (Optional) Enter a Description for the Vocabulary name.
4. Click Save.

The vocabulary file is created.

Note: For information on creating vocabulary terms and types, see the *Product Guide*.

Share Projects

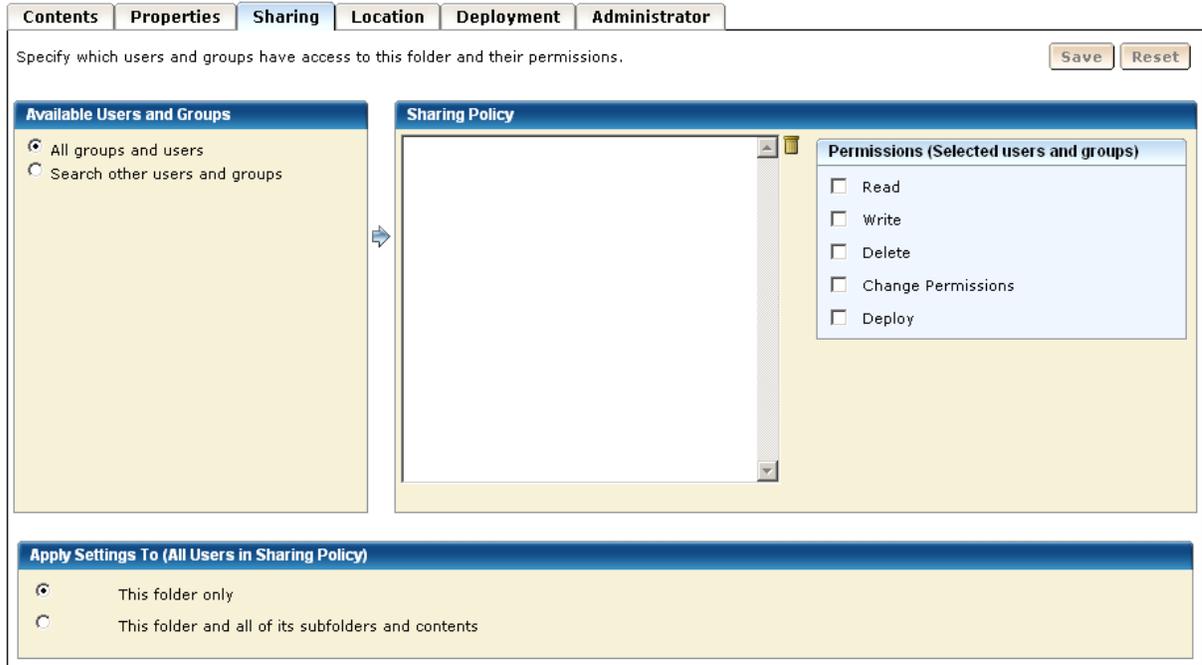
To enable rule writing by Rule Authors, the Rule Manager administrator establishes sharing privileges for the project. The Sharing tab of the Project Details page specifies which users and groups have access to a specific project and its contents. It also sets the level of permissions to view or change the contents of the project.

Note: A project/content can be shared to a user only when its root folder/project/collection is shared to the user.

Sharing levels can be defined for the whole project, individual rulesets, vocabulary, or even for specific rules within Rule Manager.

To display the sharing screen, select the Sharing tab.

On the left side of the window is the list of available users and groups. On the right is the default listing of users and groups that have access to the project. If you select a group from the right side, its Permissions area is updated with the information for that group.



Note: If you do not have Change Other's Permission access, you cannot view the Sharing tab. A Rule Manager Admin user is granted that permission by default.

From the list of available users, select the group you want to share, and click right arrow () to move the group to the Selected for Sharing list. Make sure that the group is highlighted in the Selected for Sharing list, and then select the following permissions: Read, Write, Delete, and Deploy. These permissions allow any user in the group to read, write, delete from any project(collection or project type) and deploy permissions on projects which have project template (for example, Rule Manager project) Under the Apply Settings To area, select This Project and all of its subfolders and contents option.

Click Save. A confirmation message displays the results of the save operation.

Note: You should verify the settings for other groups. Rule Manager Admin (group) should have all permissions checked, including the Change Other's Permissions option. ALL GROUPS should have only the Read option checked.

Set Up Data Sources

To allow users to create rules from data, connections to the sources of the data must already be defined within CA Aion Rule Manager. When connections must be made to data sources, the administrative (or IT) task is to update the list of JDBC Drivers and data connections. To set up data connections, click the Database link in the Administrator tab to display the Administer Database Connections page. Using the page you can add, delete, update, or test a connection.

To set up data connections

1. Click the Database link in the Administrator tab
The Administer Database Connections window opens.
2. Click Drivers to add or delete a driver.
3. Click Add to save the driver.

Note: To add a new driver that is not installed with the system (for example, the Oracle Driver), the user must put the appropriate jar files containing the driver classes into the *JBoss_install\server\default\lib* directory. Portal must be restarted to make the new driver available.

Define a Data Driver from Data Source Manager

To define a data driver

1. Log in to the CA Aion Rule Manager.
2. Click the Detail icon of an existing rule project.
3. Click the Administrator tab.
4. Click the Data Source Manager link.



5. Click Drivers.
6. You can add or delete a driver using this window.

Add a JDBC Driver

To add a JDBC driver:

1. Enter the new Driver Logical Name and JDBC Driver.

Note: Enter the Driver Logical Name and JDBC Driver names correctly as they are spelling and case sensitive.

2. Click Add.
3. Click Save and then click Done.

The Driver is added.

Note: Enter the Driver Logical Name and JDBC Driver names correctly as they are spelling and case sensitive.

Important! You must restart the Portal to make the new driver effective.

Add an ODBC Driver

Note: The configurations in this section are done outside of Rule Manager.

To add an ODBC Driver

1. Create an ODBC data source that points to your database. To do this, go to the ODBC Data Source Administrator and click Add. Make sure you do it under SystemDSN, not UserDSN.
2. Select the appropriate data source driver from the Create New Data Source dialog and click Finish.
3. Enter a name for the ODBC data source in the ODBC Data Source Connection Setup dialog.
4. (Optional). Enter a description.
5. Click Select to locate your database.
6. Select the file path that contains your database, and click OK.
7. Verify that the database path is in the Database section of the dialog, and click OK.
8. Verify that your ODBC name has been added to the list of System Data Sources.

Create a Data Source or Data Connection from Data Source Manager

To create a data connection

1. Log in to CA Aion Rule Manager.
2. Click the Detail icon of an existing rule project.
3. Click the Administrator tab.
4. Click the Data Source Manager link.
5. You can add, delete, update, or test a connection using this window. To add a connection, follow these steps:
6. Enter the new connection name to create in the text box and click Add and complete the following fields:
 - a. Enter the Database URI to connect to your database.
 - b. Select the Driver Name from the Driver Name drop-down list.
 - c. Enter the User name and password if necessary to connect the database and click Save.
 - d. Verify that you have confirmation of the saved connections by clicking Test Connection. Ensure that you receive the message Test Success.

The screenshot shows the 'Data Source Manager' window. At the top, there are buttons: 'Validate', 'Convert to BRE', 'Download Later', 'Duplicate', 'Delete', and 'Done'. Below these is a breadcrumb 'Home > All Folders > TLP Insurance' and a 'View Downloads' link. The 'Administrator' tab is active. Under 'Required', there are 'Save', 'Reset', and 'Drivers' buttons. The 'Connection Names' list contains 'Oracle DB Connection'. Below the list is an 'Add' button and a 'Test Connection' button. To the right, the following fields are visible:

- Database URI:
- Driver Name:
- User Name:
- Password:

 At the bottom of the window, there are buttons: 'Validate', 'Convert to BRE', 'Download Later', 'Duplicate', 'Delete', and 'Done'.

Exit Rule Manager

To exit Rule Manager, click the Log Out link at the upper left corner of the page.

Chapter 4: Rule Application Server Administration

The Rule Manager administrator uses the Rule Application Server (RAS) to generate rule services, deploy, manage, and monitor these services on the local application server. For deployment on remote systems, the Rule Application Server generates Web Application Archive (WAR) files that can be deployed on remote application servers complying with J2EE standards.

This section contains the following topics:

[Rule Manager Deployment](#) (see page 33)

[View Deployment Status and Web Service Interface](#) (see page 38)

[The RAS Web Service Call](#) (see page 40)

[Web Service Data Mapping](#) (see page 42)

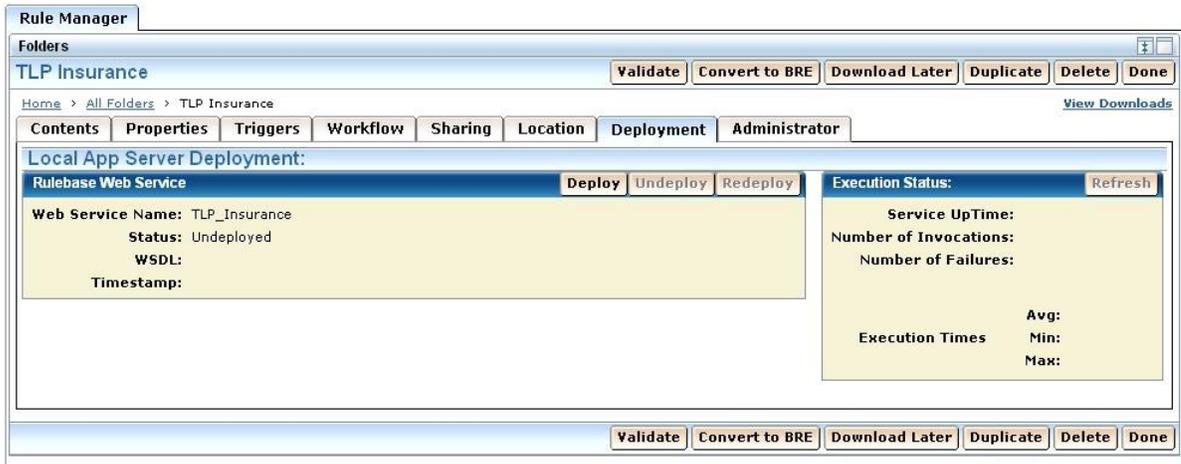
[RAS Configuration Parameters](#) (see page 46)

Rule Manager Deployment

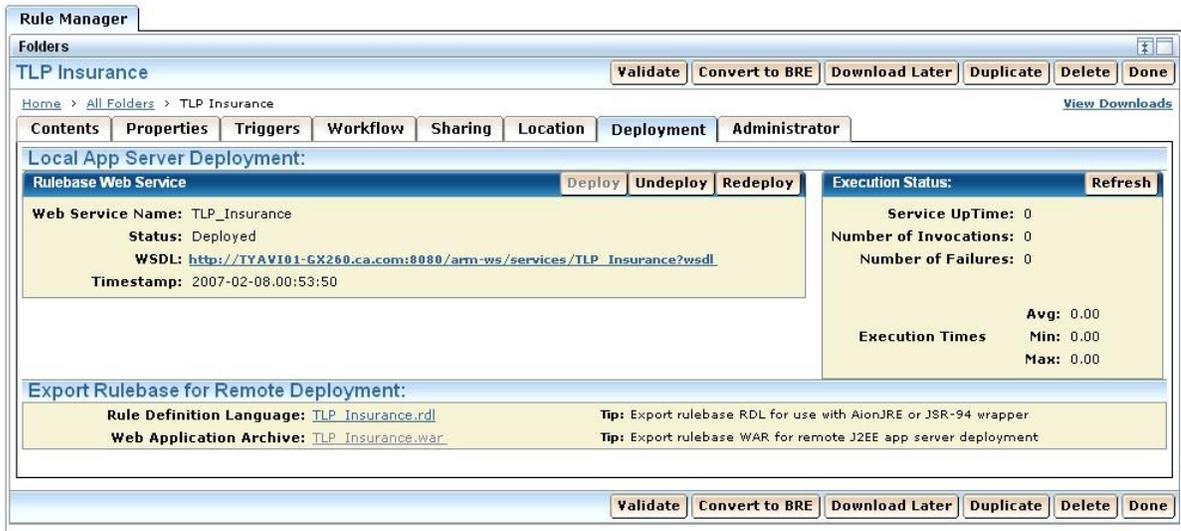
The Deployment tab displayed within Rule Manager Projects allows rules to be deployed as Web services.

When you deploy a project, the Rule Application Server (RAS) takes the rules and business terms and creates a callable web service from them. Rule services are deployed on the local application server for deployment testing. RAS also generates Web Application Archives (WAR) that can be deployed on remote application servers when moving rule services into production.

To deploy a project, open the Deployment tab and click the Deploy button, as shown in the following illustration:



To undeploy a project, select the click Undeploy as shown in the following illustration.



Local Deployment

Generate rule services and deploy, manage, and monitor these services on the local application server.

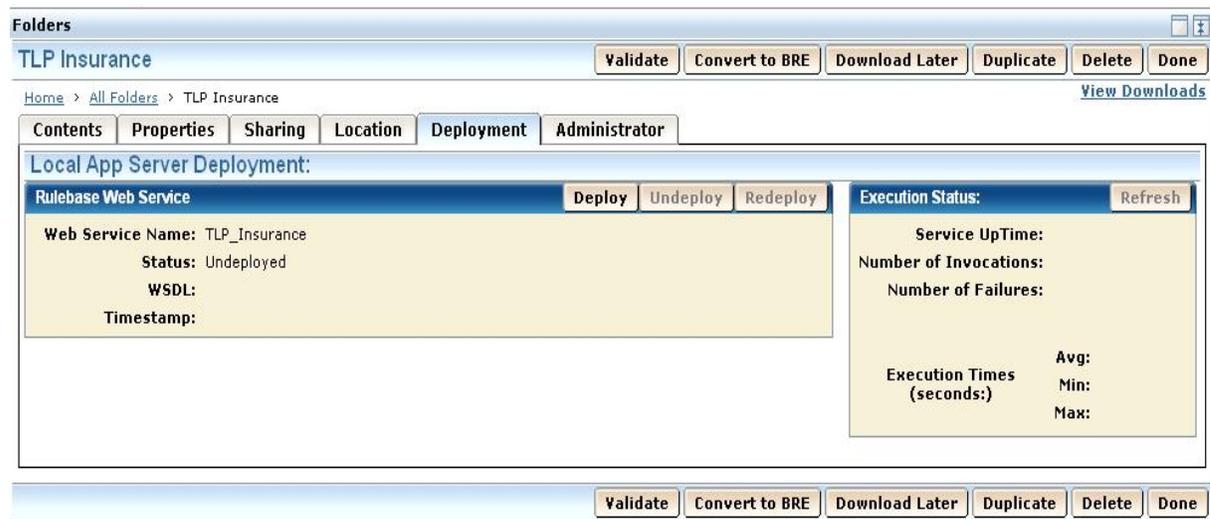
Deploy Rule Service

You can deploy an undeployed project as a Web service.

To deploy a rule service

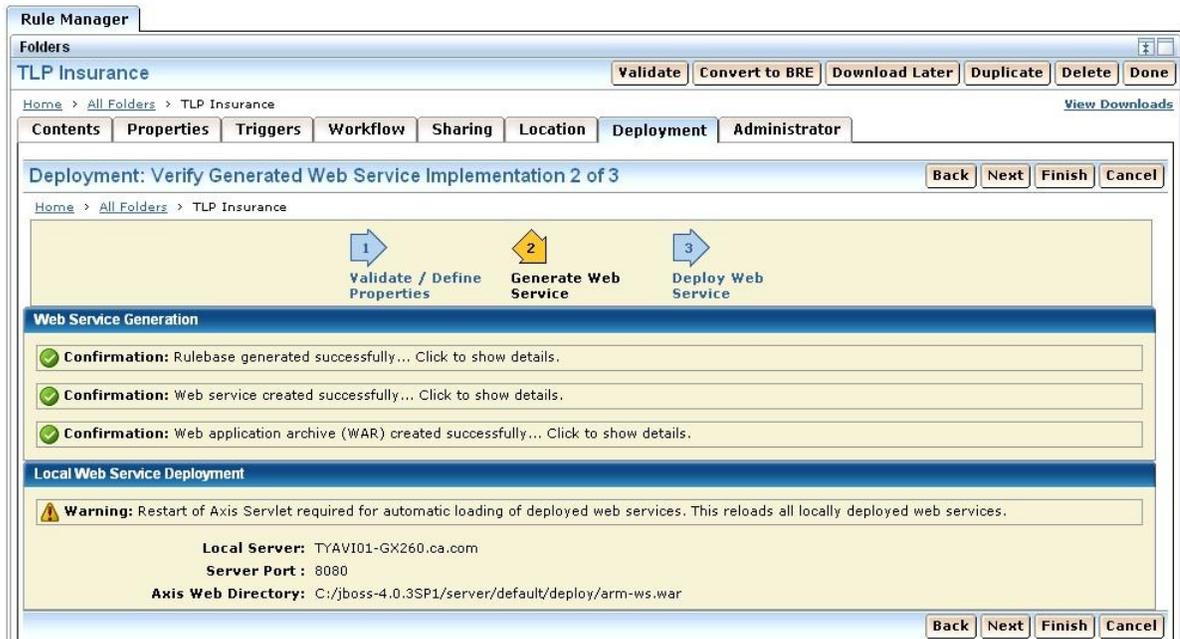
1. Open a project and click the Deployment tab.
2. Click Deploy.

Validation process is run. A confirmation message appears if the deploy is successful; otherwise, error messages are shown.



3. Click Next to generate the Web service.

Confirmation messages appear for project generation, web service creation, and web application archival.



4. Click Next to deploy Web service.

A confirmation message "Rule service deployed successfully" appears.

Note: The Rule Application Server must restart the Axis servlet to load of the newly generated rule service implementation and bean classes. Restarting Axis causes all other web services running under the local Axis servlet to be reloaded.

Undeploy Rule Service

An administrator can remove a deployed rulebase service.

To undeploy a rule service

1. Open a Project and click the Deployment tab.
2. Click Undeploy.

The project is undeployed.

The screenshot shows the 'TLP Insurance' project in the Rule Manager. The 'Deployment' tab is active, and the 'Undeploy' button is highlighted. The 'Local App Server Deployment' section shows the 'Rulebase Web Service' with the following details:

Rulebase Web Service	Execution Status:
Web Service Name: TLP_Insurance Status: Deployed WSDL: http://kodha01-xp.ca.com:8080/arm-ws/services/TLP_Insurance?wsdl Timestamp: 3/26/10 3:30 PM	Service UpTime: 0:00:05 Number of Invocations: 0 Number of Failures: 0 Execution Times (seconds): Avg: 0.000 Min: 0.000 Max: 0.000

The 'Export Rulebase for Remote Deployment' section shows the following details:

Export Rulebase for Remote Deployment:	Tip:
Rule Definition Language: TLP_Insurance.rdl Web Application Archive: TLP_Insurance.war	Tip: Export rulebase RDL for use with AionJRE or JSR-94 wrapper Tip: Export rulebase WAR for remote J2EE app server deployment

Note: The rule service is undeployed and removed from the local file system. The Rule Manager project remains available.

Redeploy Rule Service

When a rule service is deployed, input and output bean classes are generated which must be loaded into the application server. This is done by reloading the Axis servlet which restarts all locally deployed rule services.

A project can be redeployed as long as the input or output terms have not changed in the project since it was deployed. This allows the rules running in the deployed service to be reloaded without restarting the servlet.

To Redeploy Rule Service

1. Open a Project and click the Deployment tab.
2. Click Redeploy. If the service is deployed, the Redeploy button is enabled.
The project is redeployed.

Note: If input or output terms have changed since the project was deployed, an error message appears. Since the input/output classes have changed it is not possible to reload the rules without restarting the Axis servlet. The service must be undeployed and then deployed.

Remote Deployment

The Rule Application server generates Web Application Archive (WAR) files that can be deployed on remote application servers complying with J2EE standards.

- Use the deployment wizard to generate the Web service and deploy the project on local development system
- Verify the deployment on the local development system
- Download the generated project WAR to remote system
- Deploy the project WAR on the J2EE server and manage it using the tools or procedures provided for deployment of web applications in the server environment

View Deployment Status and Web Service Interface

View the project deployment status on the local application server by clicking the Deployment tab.

To display the status and WSDL for a project

1. Click the Deployment tab.

The Deployment summary screen appears.

The execution status portlet includes the following fields:

- **Service Uptime** is the time since the Web Service was loaded since it was deployed.

Note: Uptime is reset when the application server is restarted.

- **Number of Invocations** is the number of times the infer operation has been called.

- **Number of Failures** is the number of times an exception was thrown by the server.
- **Average Execution Time** is the average time to process infer operations since the most recent server startup.
- **Minimum Execution Time** is the shortest time to process infer operations, since the most recent server startup.
- **Maximum Execution Time** is the longest time to process infer operations since the most recent server startup.

The screenshot shows a 'Folders' window titled 'TLP Insurance'. The breadcrumb path is 'Home > All Folders > TLP Insurance'. The 'Deployment' tab is active, showing 'Local App Server Deployment: Rulebase Web Service'. The service name is 'TLP_Insurance', status is 'Deployed', and the WSDL URL is 'http://kodha01-xp.ca.com:8080/arm-ws/services/TLP_Insurance?wsdl'. The timestamp is '3/26/10 3:30 PM'. The 'Execution Status' section shows 'Service UpTime: 0:00:05', 'Number of Invocations: 0', and 'Number of Failures: 0'. The 'Execution Times (seconds)' are 'Avg: 0.000', 'Min: 0.000', and 'Max: 0.000'. Below this, the 'Export Rulebase for Remote Deployment' section shows 'Rule Definition Language: TLP_Insurance.rdl' and 'Web Application Archive: TLP_Insurance.war'. The window has buttons for 'Validate', 'Convert to BRE', 'Download Later', 'Duplicate', 'Delete', and 'Done' at the top and bottom.

2. Click the View WSDL link to return the interface to the web service for the project in its Web Service Description Language (WSDL) form.

The WSDL describes to Web service clients the interface to the service, the data types it uses and where the service is located. It has all the information that a client program needs to call the web service, and many application development environments can create client interface code in a desired language from scanning this file.

The link to the WSDL file has the following format:

http://hostname:port/arm-ws/services/service_name?wsdl

hostname

Specifies the full name of the server

port

Specifies the port that CA Aion Rule Manager is configured to use

service name

Specifies the name of the project, with any spaces replaced by underscore ('_') characters.

The RAS Web Service Call

Infer Method

Clicking Deploy causes the Rule Application Server to build and expose the project as a Web service. The RAS Web service includes a number of functions, many of which are used internally by CA Aion Rule Manager. The most important interface from the client point of view is the *infer* operation. An infer web service call exposed by RAS has the following format:

```
ProjectResults[] = infer(ProjectInputs[], [RASSettings]) throws RemoteException
```

The *ProjectInputs* is an array of objects, each of which contains values for the input business terms specified for the project, using their application names as defined in the Business Vocabulary Manager.

RASSettings is an optional object that contains runtime parameters for the call to the web service.

- `clientGMTOffset` is the difference between the client's local timezone and GMT. The offset string must use the following syntax:

`offsetString`

```
::= 'GMT'
```

```
::= ['GMT'] Sign HourDesc [MinuteDesc]
```

where:

- 'GMT' is case-insensitive.
- The Sign is either: '+' or '-'.
- The HourDesc is a one- or two-digit hour count in the range: 0-23 inclusive.
- The MinuteDesc is: ':' followed by an exactly two-digit minute count in the range: 0-59 inclusive.

Some examples (with resulting offset in minutes):

```
gmt          // 0
GMT-7       // -420
gmt+7:30    // +450
gmt-0:30    // -30
```

- `engineBaseDateTime` - the date/time to be used by the server, instead of its current local time (useful for testing purposes). This value is formatted as a W3C datetime string.

The engineBaseDateTime, as shown in the following screenshot, is in format yyyy-mm-dd. Its range of start date and end date specified in the properties tab of the rule in rule manager.

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:urn="urn:
  <soapenv:Header/>
  <soapenv:Body>
    <urn:infer2>
      <!--1 or more repetitions:-->
      <urn:inputs>
        <urn1:termName>inputNum</urn1:termName>
        <urn1:termValue>99</urn1:termValue>
      </urn:inputs>
      <urn:settings>
        <urn2:clientGMTOffset>gmt</urn2:clientGMTOffset>
        <urn2:disableBAMStats>true</urn2:disableBAMStats>
        <urn2:engineBaseDateTime>2009-09-29</urn2:engineBaseDateTime>
        <urn2:localeCountry>us</urn2:localeCountry>
        <urn2:localeLanguage>en</urn2:localeLanguage>
        <urn2:traceLevel>3</urn2:traceLevel>
      </urn:settings>
    </urn:infer2>
  </soapenv:Body>
</soapenv:Envelope>
  
```

- localeLanguage - The language argument is a valid ISO Language Code. These codes are the lower-case, two-letter codes as defined by ISO-639.
- localeCountry - The country argument is a valid ISO Country Code. These codes are the upper-case, two-letter codes as defined by ISO-3166. See JavaDocs for class java.util.Locale at: <http://java.sun.com/j2se/1.4.2/docs/api/java/util/Locale.html>
- traceLevel - level of detail for the messages returned by the web service. Valid values include:
 - 0**
Returns warning and error messages are returned.
 - 1**
Indicates minimal tracing, includes information on the highest level of inference engine operations.

2

Indicates more detailed information about the inference engine operations.

3

Indicates the most detailed level including the processing of the rules.

Values 0 and 3 are most relevant to tracing the Web service operations.

ProjectResults is an array of objects, each of which contains the values of the Input and Output business terms and an array of trace messages, corresponding to each element in the inputs array.

RemoteException is an object that is returned if an error occurs during the Web service call. This object contains a string variable that holds exception messages generated by the server.

All these data structures are defined in the WSDL file that is exposed for the deployed web service.

Infer2 Method

Infer2 is one of the important web services used by CA Aion BRE. Its input and output terms are primitive types and it does not support complex vocabulary types of Rule Manager.

An infer2 web service call exposed by RAS has the following format:

```
InferResults results = port.infer2(TermValues[],RASSettings) ) throws  
RemoteException, RASException
```

The TermValues [] is an array of input terms as objects of class Termvalue, each of which contains the name and its value for the input business terms specified for the project, using their application names as defined in the Business Vocabulary Manager.

Web Service Data Mapping

The Web service interface exposed for a Rule Manager Project is determined by the input and output terms as defined in the Business Vocabulary Manager. These terms are either default datatypes or references to user-defined types.

Default datatypes are mapped to Web service types as shown in the following table:

BVM Data Type	Java	Web Service
Numeric	java.math.BigDecimal	xsd:decimal
String	java.lang.String	xsd:string
Boolean	java.lang.Boolean	xsd:Boolean
Datetime	java.lang.String (W3C encoded DateTime string)	xsd:string
Duration	java.lang.String (W3C encoded Duration string)	xsd:string

User-defined types and enumerations defined in BVM are mapped to Web service bean classes that are generated during deployment. Fields defined in Java bean classes have no input/output designation and the Rule Manager Project should be accessed to determine their usage.

Note: Rules can optionally redefine the value of input terms; these terms are included in the Web service results.

Instance Names

RAS adds an instanceName field when generating Web service bean classes. Instance names are required to establish correspondence between Java objects in the Client application and project instances within the inference engine. For input objects passed from the Web service client the instanceName field should not be null or empty. Objects with null instance names are used to indicate referencing fields having the value of RDL NULL, that is, asserting absence of a reference.

Note: For information on assigning instance names, see the *Rule Engine: JSR-94 Implementation Guide*.

W3C DateTime Values

DateTime strings conform to the W3C schema data types: dateTime, date and time.

Data validation is case-sensitive and requires specification of uppercase alphabetic characters within these values.

DateTime values may specify one of the following formats:

- A combination of date and time values delimited by a T - *example* 2003-04-23T15:34:29 for April 23, 2003 3:34:29pm.
- A date value - *example* 2003-04-23 - defaulting to 00:00:00 for April 23, 2003.
- A time value - *example* 15:34:29 - defaulting to the Engine's *base* for 3:34:29pm.

Date components must be delimited by '-'; time components must be delimited by ':'. The value text may not include any embedded blanks.

Time values must be expressed in 24-hour (military) format.

Each component has a fixed or minimum width (requiring leading zeros as necessary):

- The Year specification must consist of at least four digits and must be greater or equal to 0001.
- The Month specification must consist of exactly two digits and must be in the range 01-12 inclusive.
- The Day specification must consist of exactly two digits and must be in the range 01-31 inclusive.
- If the Day specification is inappropriate for the Month specification, a successive Month is assumed, for example, 2003-04-31 is interpreted as 2003-05-01.
- The Hour specification must consist of exactly two digits and must be in the range 00-23 inclusive.
- The Minute specification must consist of exactly two digits and must be in the range 00-59 inclusive.
- The Second specification must consist of exactly two digits and must be in the range 00-59 inclusive.

The Second specification is optional, for example 15:02 is synonymous with 15:02:00.

A DateTime specification may optionally specify a Z suffix indicating Greenwich Mean Time (GMT). If the Z is not specified, the DateTime value refers to client-local time (CLT).

Examples

```
2003-04-23T15:34Z // April 23, 2003 3:34pm GMT
2003-04-23Z      // April 23, 2003 00:00 GMT
15:34Z          // Base date, 3:34pm GMT
15:34           // Base date, 3:34pm local time
```

Following are the other restrictions:

- The engine supports only Common-Era (CE - also known as AD) dates. This limitation is due to current W3C uncertainty concerning representation of dates for the Before-Common Era (BCE - also known as BC) era.
- The Engine restricts these DateTime values to the range:
`>=0001-01-01T00:00:00Z .. <=292278994-08-16T07:12:55Z`

Only a subset of the W3C specifications is supported. The following is not supported:

- Signed values for date and/or time values, for example, 2003-04-23
- Fractional-Second values, for example, 12:34:32.56
- Time-zone offsets, for example, 2003-04-23T12:34:00+03:00
- Hour values greater than 23, for example, 24:00:00 (as an optional specification for midnight)
- Second values greater than 59, for example, for leap seconds

In addition, a Z suffix is interpreted as denoting GMT rather than UTC (Coordinated Universal Time). Whereas GMT is based on astronomical observations, UTC is based on an atomic clock - and takes into account periodic leap second corrections. Practically speaking, GMT and UTC are the same.

W3C Duration Values

This value conforms to the W3C schema data type: duration with a P prefix and a T date/time separator.

Examples:

```
// 12 years, 17 months, 180 days, 100 hours, 100 minutes, 100 seconds
P12Y17M180DT100H100M100S
// A negative duration
-P12Y17M180DT100H100M100S
```

The value text may not include any embedded blanks.

Data validation is case-sensitive and requires specification of uppercase alphabetic characters within these values.

All Duration elements are optional but at least one element must be specified. Unspecified elements are assumed to have a zero value - that is, the following values are equivalent:

```
P12DT30S
P0Y0M12DT0H0M30S
```

If any Hour, Minute, or Second elements are specified, the value string must include a T date/time separator; otherwise it must not include such a separator.

Specification requirements for the elements follow:

- A Year specification must be an unsigned integer delimited by Y.
- A Month specification must be an unsigned integer delimited by M.
- A Day specification must be an unsigned integer delimited by D.
- An Hour specification must be an unsigned integer delimited by H.
- A Minute specification must be an unsigned integer delimited by M.
- A Second specification must be an unsigned integer delimited by S.

Additional Examples

```
P12Y           // 12 years
P12Y60M        // 12 years, 60 months
P12YT48H99M    // 12 years, 48 hours, 99 minutes
-PT48H         // -48 hours
```

The Engine imposes restrictions on the magnitude of Duration literal constants.

The maximum and minimum bounds vary according to the start DateTime (if any) associated with a Duration value. In any case, a Duration magnitude can never exceed +/- 9,223,372,036,768,375 seconds (approximately +/- 292,270,000 years).

Only a subset of the W3C specifications is supported. The Fractional-Second values, for example, P23YT100.34S, is not supported.

RAS Configuration Parameters

Some RAS configuration parameters reside in the Java property file `ras.properties`. This property file is typically located in the following directory:

```
c:\Program Files\CA\AionRM\RuleManager\ras
```

Some of the RAS configuration parameters defined in `ras.properties` include the following:

ws.mode

Specifies the default Web service mode (Axis style/use settings) for deployed services. Valid values are DOCLIT or RPCENC.

ras.gen_inout_arrays -

Generate rule service infer method with input and output arrays. Valid values are true or false.

ras.gen_enum_strings -

Generate Enumeration fields defined as strings instead of references to Enumeration classes. Valid values are true or false.

remote.j2ee.server -

Defines target application server for rule service WAR's to allow for differences in packaging of WAR's for different servers. Valid values are JBoss, Tomcat, Websphere or Weblogic.

For locally deployed rule services this properties file is loaded from the following directory:

jboss\server\default\deploy\arm-ws.war\WEB-INF\classes

When generating rule service WARs for remote deployment this properties file is copied from the following directory:

c:\Program Files\CA\AionRM\RuleManager\ras\axis-webapp\WEB-INF\classes

Appendix A: Acknowledgements

This section provides acknowledgements for CA and third-party software used with CA Aion Rule Manager.

This section contains the following topics:

[Ant 1.6.1](#) (see page 50)

[Apache Software License, Version 2.0](#) (see page 56)

[Apache Software License, Version 1.1](#) (see page 60)

[Batik 1.5.1](#) (see page 63)

[Castor](#) (see page 78)

[Computer Associates Trusted Open Source License](#) (see page 80)

[dom4j 1.6.1](#) (see page 88)

[Expat](#) (see page 89)

[JBoss 4.0.3 SP1](#) (see page 90)

[JBoss 4.0.3 SP1](#) (see page 91)

[MiniZip](#) (see page 100)

[MIT Kerberos](#) (see page 101)

[NUNIT](#) (see page 106)

[OpenLDAP](#) (see page 107)

[OpenSSL 0.9.7c](#) (see page 123)

[OpenSSL](#) (see page 126)

[PCRE](#) (see page 132)

[Sun JRE 1.6.0_02](#) (see page 135)

[wsdl4j-1.5.1.jar 1.5.1](#) (see page 140)

[XStream 1.1.2](#) (see page 146)

[XPP3 1.1.4c](#) (see page 147)

Ant 1.6.1

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* @(#)queue.h 8.5 (Berkeley) 8/20/94

* \$FreeBSD: src/sys/sys/queue.h,v 1.32.2.5 2001/09/30 21:12:54 luigi Exp \$

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